

ELECTRONIC VALVE SPECIFICATIONS

Specification M. O. A. / CV5220

Issue 1 Dated 18.1.61

AMENDMENT NO. 1

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Amend Joint Service Catalogue Number  
to read 5960-99-037-2070.

SEPTEMBER 1961  
N.72712/D

ROYAL AIRCRAFT ESTABLISHMENT

VALVE ELECTRONIC

CV 5220

MINISTRY OF AVIATION (D.L.R.D.) R.A.E.

Specification M.O.A./CV.5220 Issue No. 1 Dated 18.1.61 To be read in conjunction with K.1001 BS.448 and BS.1409		<u>SECURITY</u>																											
		<u>Specification</u>	<u>Valve</u>																										
		UNCLASSIFIED	UNCLASSIFIED																										
<b>TYPE OF VALVE:-</b> Beam Power Output Pentode <b>CATHODE:-</b> Indirectly Heated <b>ENVELOPE:-</b> Glass (parallel sided) <b>PROTOTYPE:-</b> Kt.88		<u>MARKING</u> See K.1001/4																											
		<u>BASE</u> BS.448/B.80																											
<u>RATINGS</u> (All limiting values are absolute)		<u>CONNECTIONS</u>																											
		Notes																											
Heater Volts (V)	6.3	B  B	<table border="1"> <thead> <tr> <th>PIN</th> <th>ELECTRODE</th> </tr> </thead> <tbody> <tr><td>1</td><td>Shield</td><td>s</td></tr> <tr><td>2</td><td>Heater</td><td>h</td></tr> <tr><td>3</td><td>Anode</td><td>a</td></tr> <tr><td>4</td><td>Screen Grid</td><td>g<sup>2</sup></td></tr> <tr><td>5</td><td>Control Grid</td><td>g<sup>1</sup></td></tr> <tr><td>6</td><td>No Pin</td><td>NP</td></tr> <tr><td>7</td><td>Heater</td><td>h</td></tr> <tr><td>8</td><td>Cathode and Beam Plates</td><td>k + BP</td></tr> </tbody> </table>	PIN	ELECTRODE	1	Shield	s	2	Heater	h	3	Anode	a	4	Screen Grid	g <sup>2</sup>	5	Control Grid	g <sup>1</sup>	6	No Pin	NP	7	Heater	h	8	Cathode and Beam Plates	k + BP
PIN	ELECTRODE																												
1	Shield			s																									
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7	Heater			h																									
8	Cathode and Beam Plates			k + BP																									
Heater Current (A)	1.6																												
Max. Anode Volts (V)	600																												
Max. Screen Volts (V)	600																												
Max. Anode Dissipation (W)	35																												
Max. Screen Dissipation (W)	6																												
Max. Anode plus Screen Dissipation (W)	40																												
Max. Cathode Current (mA)	175																												
Max. Heater-Cathode Voltage (V)	150																												
Max. Grid-Cathode Resistance (Cathode Bias) (K.Ohms)	220																												
Max. Grid-Cathode Resistance (Fixed Bias) (K.Ohms)	100																												
Max. Bulk Temperature (°C)	250																												
<u>Capacitances (Note C)</u>		<u>DIMENSIONS</u> K.1001/A1/D1																											
C <sub>ag</sub> (max.) (pF)	1.2	<table border="1"> <thead> <tr> <th>Dimensions m/m</th> <th>Min.</th> <th>Max.</th> </tr> </thead> <tbody> <tr><td>"A" Overall Length</td><td>-</td><td>125</td></tr> <tr><td>"B" Diameter</td><td>-</td><td>52</td></tr> <tr><td>"L" Seated Height</td><td>-</td><td>110</td></tr> </tbody> </table>		Dimensions m/m	Min.	Max.	"A" Overall Length	-	125	"B" Diameter	-	52	"L" Seated Height	-	110														
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"A" Overall Length	-	125																											
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C <sub>in</sub> (nom.) (pF)	15.5	<u>MOUNTING POSITION</u>																											
C <sub>out</sub> (nom.) (pF)	11.25	Vertical Note A																											
<u>CHARACTERISTICS</u>																													
<u>PENTODE CONNECTED</u>		<u>TRIODE CONNECTED</u>																											
V <sub>a</sub> (V)	250	V <sub>a</sub> (V)	250																										
V <sub>g2</sub> (V)	250	I <sub>a</sub> (mA)	160																										
I <sub>a</sub> (mA)	140	g <sub>m</sub> (mA/V)	12																										
S <sub>m</sub> (mA/V)	11	r <sub>a</sub> (Ohms)	670																										
r <sub>a</sub> (K.Ohms)	12	μ	8																										
μ <sub>g1 - g2</sub>	8																												
<u>NOTES</u>																													
A. Alternatively the valve may be mounted horizontally providing pins 4 and 8 are in a vertical plane.																													
B. These figures also apply when triode connected.																													
C. Tested on an R.F. (1 Mc/s) Bridge with the valve mounted in a fully shielded socket. Valve unscreened.																													
D. The Joint Services Catalogue Number is 5960-99-000-5220																													

# CV5220

Test conditions unless otherwise stated:-									
$V_h$ (V)	$V_a$ (b) (V)	$V_{g2}$ (b) (V)	$R_k$ ( $\Omega$ )	$C_k$ ( $\mu F$ )					
6.3	250	250	81.5 $\pm$ 1%	1000					
K1001 Ref.	Test	Test Conditions	AQL %	Insp. Level	Sym- bol	Limits			Units
						Min	Bogey	Max	
	<u>Group A</u>								
	Anode Current (1)	Note 1	-	100%	$I_a$	121	147.5	174	mA
	Screen Current	$R_k = 400\Omega \pm 1\%$ Note 1	-	100%	$I_{g2}$	-	-	6.0	mA
	Reverse Grid Current	Note 1	-	100%	$-I_{g1}$	-	-	6.0	$\mu A$
	<u>Group B</u>	Combined AQL	4.0						
	Heater Cathode Leakage Current	$V_{hk} = \pm 100V$	2.5	I	$I_{hk}$	-	-	20	$\mu A$
	Mutual Conductance	$C_k = 1000\mu F$ $V_{g1}$ swing = $\pm 0.5V$ max.	2.5	I	$g_m$	8.9	11.6	14.2	mA/V
	Emission	A + $g^2$ + $g_1$ Strapped RK = 0 Adj $V_a$ for IK = 350mA Note 2	2.5	I	$V_a + g^2$ $+g_1$	-	-	35	V
	<u>Group C</u>	Combined AQL	4.0						
	Heater Current		2.5	IA	$I_h$	1.47	1.60	1.73	A
	Anode Current (2)	$V_{g1} = -57V$	2.5	IA	$I_a$ Tail	-	-	50	$\mu A$
AIII	<u>Group D</u> Capacitances	Measured on 1 Mc/s bridge with the valve mounted in a fully screened socket. No shield. Note 3	6.5	IC	$C_{ag}$ $C_{in}$ $C_{out}$	- 14.0 9.5	- 15.5 11.25	1.2 17.0 13.0	pF pF pF

NOTES

1. Valve to be pre-heated for five minutes under the following conditions:-

$$V_h = 6.5V$$

$$W_a = 42.0 \text{ W (Approx.)}$$

2. Maximum duration of test to be 2.0 seconds.

3. Capacitance connections as follows:-

Capacitance	HP	LP	E
$C_{ag}$	3	5	1,2,4,6,7,8,C
$C_{in}$	5	1,2,4,6,7,8,C	3
$C_{out}$	3	1,2,4,6,7,8,C	5