

Specification Min. Tech./CV 6209-10-11-12 Issue No. 1, Dated December 1967 To be read in conjunction with K1001 and DEF-133	<u>SECURITY</u> <table border="1"> <tr> <td>Valve</td><td>Specification</td></tr> <tr> <td>Unclassified</td><td>Unclassified</td></tr> </table>	Valve	Specification	Unclassified	Unclassified
Valve	Specification				
Unclassified	Unclassified				

TYPE OF VALVE: Miniature Noise Generator CATHODE: Cold PROTOTYPE: VX9252	<u>MARKING</u> See K1001/4																										
<u>RATINGS</u> (Not for Inspection Purposes) <table border="1"> <thead> <tr> <th data-bbox="149 578 365 602">Striking Conditions</th><th data-bbox="806 578 855 596">Note</th></tr> </thead> <tbody> <tr> <td>Power Unit Open Circuit Voltage (V)</td><td>200 $\pm 2\frac{1}{2}\%$ A</td></tr> <tr> <td>Transient Pulse Length (μS)</td><td>10 $\pm 5\%$ A</td></tr> <tr> <td>Transient Pulse Voltage (kV)</td><td>1.4 $\pm 5\%$ A</td></tr> <tr> <td>Nominal Operating Voltage ($I_a = 100$mA) (V)</td><td>37 B</td></tr> <tr> <td>Nominal Continuous Operating Current (mA)</td><td>100 B</td></tr> <tr> <td>Nominal Noise Power ($I_a = 100$mA) (dB)</td><td>13.2 C</td></tr> <tr> <td>Nominal Noise Power Output Change with Current (dB/mA)</td><td>+0.012</td></tr> <tr> <td>Maximum Frequency Range (V.S.W.R. = 0.85)</td><td></td></tr> <tr> <td>CV6209 (GHz)</td><td>8.655 to 8.905</td></tr> <tr> <td>CV6210 (GHz)</td><td>9.2 to 9.45</td></tr> <tr> <td>CV6211 (GHz)</td><td>9.375 to 9.625</td></tr> <tr> <td>CV6212 (GHz)</td><td>9.475 to 9.725</td></tr> </tbody> </table>	Striking Conditions	Note	Power Unit Open Circuit Voltage (V)	200 $\pm 2\frac{1}{2}\%$ A	Transient Pulse Length (μ S)	10 $\pm 5\%$ A	Transient Pulse Voltage (kV)	1.4 $\pm 5\%$ A	Nominal Operating Voltage ($I_a = 100$ mA) (V)	37 B	Nominal Continuous Operating Current (mA)	100 B	Nominal Noise Power ($I_a = 100$ mA) (dB)	13.2 C	Nominal Noise Power Output Change with Current (dB/mA)	+0.012	Maximum Frequency Range (V.S.W.R. = 0.85)		CV6209 (GHz)	8.655 to 8.905	CV6210 (GHz)	9.2 to 9.45	CV6211 (GHz)	9.375 to 9.625	CV6212 (GHz)	9.475 to 9.725	<u>DIMENSIONS</u> See drawing on page 4. <u>CONNECTIONS</u> Anode - Flexible lead Cathode - Metal body Electrical connection to the cathode being made by the helicoil inserts in the flange faces. <u>MOUNTING POSITION</u> Any - See Note D
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NOTES

- A. The striking conditions required for gas discharge tubes are of a complex nature. The data given is to provide more concise information on this parameter rather than simpler less useful data.
- B. Operating Current
100 mA is recommended for normal radar applications and 115 mA for Doppler type radar equipment. The figure of 115mA will be subject to an increase of nominal noise output of 0.13dB.
When the tube is run at 100mA some low frequency oscillations may occur which in normal radar applications can be disregarded but may be disadvantageous in Doppler equipments. 115mA will ensure the lack of parasitic oscillation.
- C. Relative to thermal noise at 17°C.
- D. To ensure the minimum spread of noise output with aerial and feed mismatch, the source should be mounted with the iris loaded end nearest the receiver. This end can be identified as being adjacent to the lead-out wire.
- E. NATO STOCK NUMBERS:-
- | | |
|--------|------------------|
| CV6209 | 5960-99-037-5583 |
| CV6210 | 5960-99-037-5584 |
| CV6211 | 5960-99-037-5585 |
| CV6212 | 5960-99-037-5586 |

To be performed in addition to those applicable in K1001

Test Frequencies:-							
$f_1 =$ CV 6209 8.780 GHz $\pm$ 5MHz				$f_2 =$ CV6209 8.655 GHz $\pm$ 5MHz			
CV 6210 9.325 GHz $\pm$ 5MHz				CV6210 9.200 GHz $\pm$ 5MHz			
CV 6211 9.500 GHz $\pm$ 5MHz				CV6211 9.375 GHz $\pm$ 5MHz			
CV 6212 9.600 GHz $\pm$ 5MHz				CV6212 9.475 GHz $\pm$ 5MHz			
$f_3 =$ CV6209 8.905 GHz $\pm$ 5MHz							
CV6210 9.450 GHz $\pm$ 5MHz							
CV6211 9.625 GHz $\pm$ 5MHz							
CV6212 9.725 GHz $\pm$ 5MHz							
K1001 Ref	Test	Test Conditions	Insp Level	Sym- bol	Limits		Unit
					Min	Max	
	<u>GROUP A TESTS</u>						
	V.S.W.R. (1)	Ia = 0, Frequency = f_1	100%	-	0.9	-	-
	Noise Output	Ia = 100mA $\pm$ 2mA, Frequency = f_1 , Notes 1 and 2.	100%	F	13	13.5	dB
	Anode Voltage	Ia = 100mA $\pm$ 2mA	100%	Va	34	40	V
	Tube Striking Time	Open circuit voltage = 200V $\pm$ 5V. Transient Pulse Length = 10 μ S $\pm$ 0.5 μ S. Transient Pulse Voltage = 1.4kV $\pm$ 0.7kV. Note 3.	100%	s Ia	- 80	5 -	Sec. mA
	<u>GROUP B TESTS</u>		Note 4				
	V.S.W.R. (2)	Ia = 0, Frequency = f_2 Note 1.	10%	-	0.85	-	-
	V.S.W.R. (3)	Ia = 0, Frequency = f_3 Note 1.	10%	-	0.85	-	-
	Insertion Loss	Ia = 0, Frequency = f_1 Note 1.	10%	-	-	0.15	dB
GROUP D Omitted							
	<u>GROUP E TESTS</u>		Q.A.				
	Sequential Tests	DEF-133:-					
	(i) Visual Examination	Clause 6.1					
	(ii) Vibration	Clause 8.4 to Figure 6, Curve A.					
	(a) Resonant Search						
	(b) Vibration Functional						
	(c) Vibration Endurance						

K1001 Ref	Test	Test Conditions	Insp. Level	Sym- bol	Limits		Unit
					Min.	Max.	
	<u>GROUP E</u> (Cont'd.)						
	(iii) Extra Low Temperature	Clause 12.1 Min. temp. = -55°C.					
	(iv) Dry Heat	Clause 11, Test B.					
	(v) Low Temperature/ Low Pressure	Clause 12.2, Test C.					
	(vi) Damp Heat	Clause 11.1.					
	(vii) Low Temperature/ Low Pressure	Clause 12.2, Test C.					
	(viii) Damp Heat	Clause 11.1.					
	(ix) Low Temperature/ Low Pressure	Clause 12.2, Test C.					
	(x) Damp Heat	Clause 11.1.					
	(xi) Low Temperature/ Low Pressure	Clause 12.2, Test C.					
	(xii) Damp Heat	Clause 11.1.					
	(xiii) Tropical Exposure, 28 Days	Clause 11.2.					
	(xiv) Salt Corrosion	Clause 14.0.					
	(xv) Shock or Impact (30g)	Clause 7.3, Test A.					
	(xvi) Bump	Clause 7, Test A.					
	(xvii) Visual Examination	Clause 6.1.					

NOTES

1. The free port of the noise generator shall be terminated by a load whose V.S.W.R. value is better than 0.95.
2. The noise output shall be measured using an approved standard noise source connected in an approved circuit.
3. Tube to be tested in an approved circuit as given on page 5, or equivalent.
4. For Group B tests, the lot is acceptable providing the combined number of rejects for all the tests specified does not exceed 1. If the combined number of rejects exceed 1, the lot shall be rejected and 100% inspection imposed.

OUTLINE DRAWING

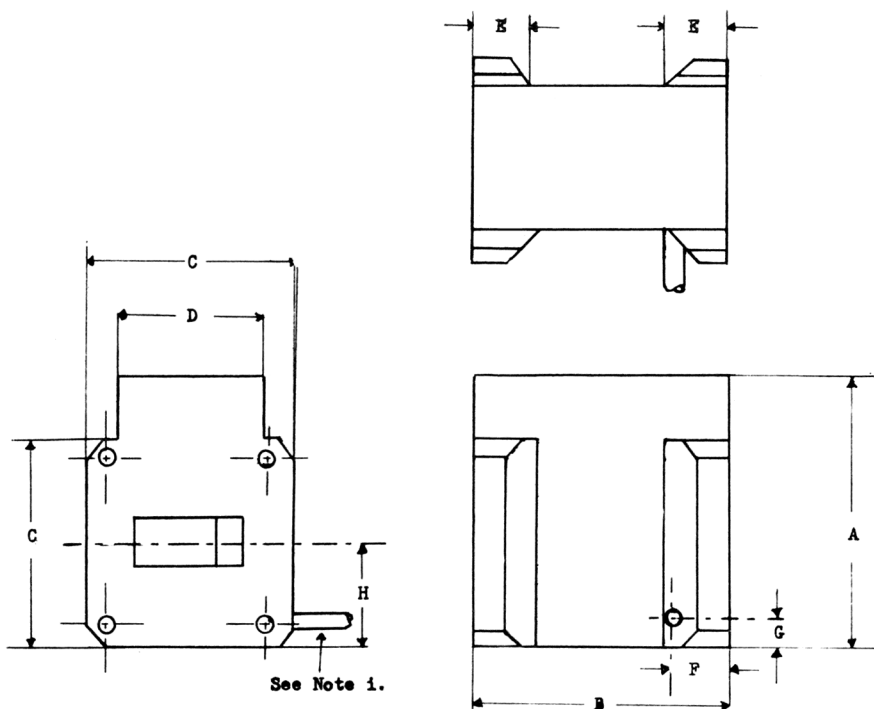


TABLE OF DIMENSIONS

Symbol	Inches	Millimetre
A	2 $\frac{1}{8}$	54.0
B	2	50.8
C	1 $\frac{5}{8}$	41.3
D	1 $\frac{1}{8}$	28.6
E	$\frac{1}{2}$	12.7
F	$\frac{27}{64}$	10.7
G	$\frac{3}{32}$	5.6
H	0.812	20.6

Original Dimensions in inches.

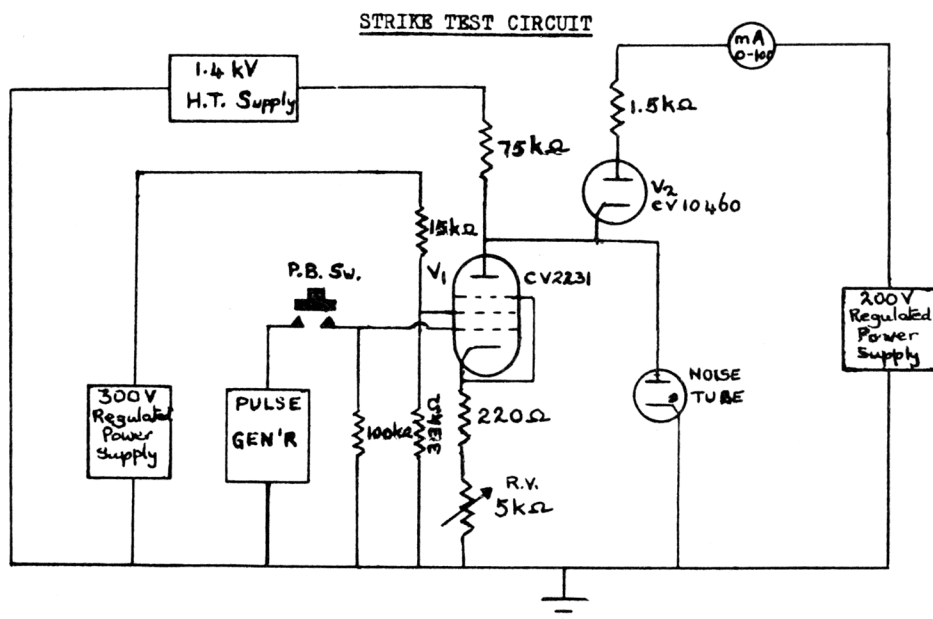
Tolerances (on inch dimensions):-

Fractional $\pm \frac{1}{64}$

Decimal ± 0.005

DRAWING NOTES

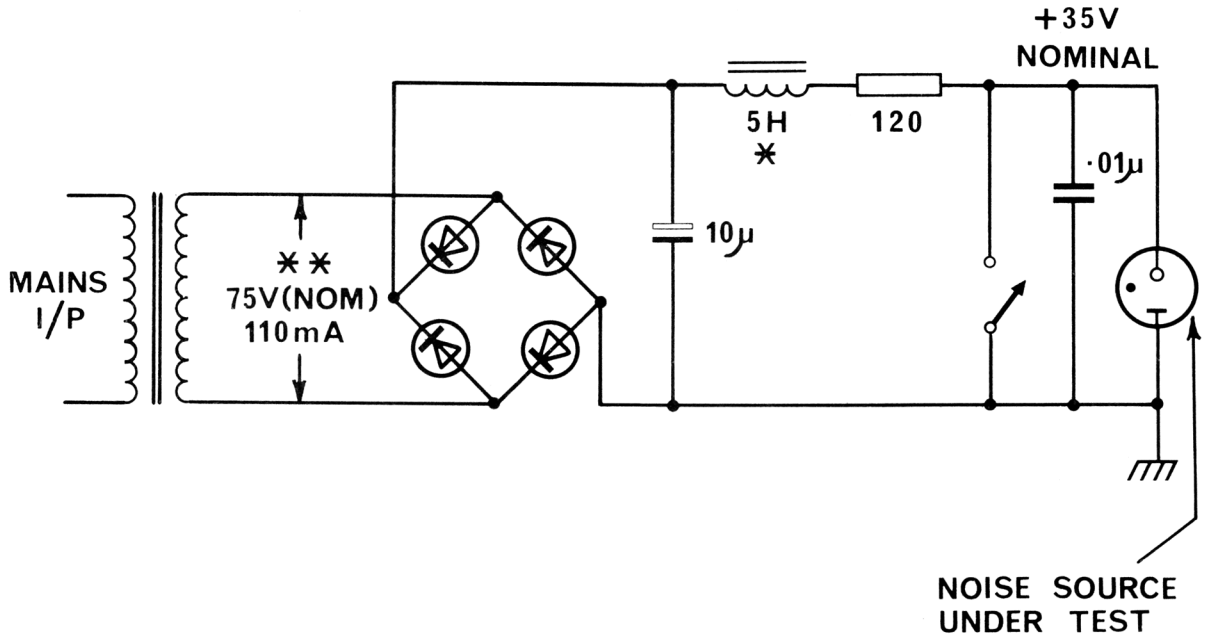
- (i) Silicon rubber lead-out cable
14/.0076 tinned annealed copper
core, nominal outside diameter
0.148 x 9 inches minimum length.
- (ii) 4 holes (both ends) fitted with
8 - 32 UNC. x 1 diameter wire
inserts (tangs broken off).
Position of holes and waveguide
aperture to WG. 16 square flange
to Drg. TR/B 610180, Issue 10.



(V₂ - Commercial Equivalent is Mullard PY88.)

CIRCUIT NOTES

- (i) The output of the pulse generator should be square negative pulses, of amplitude 75 volts, duration 10 μ Secs. and p.r.f. 50 p.p.s.. The output impedance should be less than 10k Ω .
- (ii) The 1.4kV H.T. supply may be d.c. or 1.4kV peak a.c.. If the latter the pulse generator must be synchronised so that the leading edge of the 10 μ Sec. pulse occurs 5 μ Sec. before the peak value of the a.c..
- (iii) The leads from the 75 k Ω -resistor to the anode of V₁, the noise tube and cathode of V₂ shall have the minimum possible capacitance to earth to maintain the pulse shape.
- (iv) Before a series of tests, without the noise tube connected, all the power supplies shall be applied and R.V. adjusted to give a current of 4 - 5 mA in the milliammeter.
- (v) With the noise tube connected, the 1.4kV H.T. supply shall be applied last. The strike time shall be measured from the instant that the push button is pressed.



* SELECTED FOR MINIMUM TOLERANCE

** SELECTED FOR MINIMUM OUTPUT VOLTAGE

ADDITIONAL TEST CIRCUIT FOR CV6209 - CV6212

(Inserted by Amendment N^o1 dated January 1973. CV6209-12/1/6)

ELECTRONIC VALVE SPECIFICATIONS

SPECIFICATION MOA/CV 6209-10-11-12, ISSUE 1 DATED DECEMBER 1967
AMENDMENT NO 1

1 PAGE 1 (Top left hand corner)

a NO OF PAGES

Delete: Page 1 (No of pages 5)

Insert: Page 1 (No of pages 6)

b SPECIFICATION AUTHORITY

Delete: "MINISTRY OF TECHNOLOGY - DLRD/RRE"

Insert: "Ministry of Defence (PE), Royal Radar Establishment"

c SPECIFICATION TITLE

Delete: "Specifiction Min Tech CV 6209-10-11-12"

Insert: "Specification MOD(PE)/CV 6209-10-11-12"

2 PAGE 2 GROUP A TESTS

a TUBE STRIKING TIME

In column headed "Test Conditions"

Delete: "Transient Pulse Voltage = $1.4 \text{ kV} \pm 0.7 \text{ kV}$ "

Insert: "Transient Pulse Voltage = $1.4 \text{ kV} \pm 0.07 \text{ kV}$ "

b ADDITIONAL TEST:-

Below the Tube Striking Time test in appropriate column

Insert: "Functional Strike Test; Note 5; 100%; -; Tube shall; -; strike"