VALVE ELECTRONIC

CV6209-10
CV6211-12

Specification Min. Tech./CV 6209-10-11-12 Issue No. 1, Dated December 1967 To be read in conjunction with K1001 and DEF-133	SECURITY Valve: Unclassified Specification: Unclassified

TYPE OF VALVE: Miniature, Noise Generator

CATHODE: Cold

PROTOTYPE: VX9252

MARKING

See K1001/4

RATINGS
(Not for Inspection Purposes)

			Note
Striking Conditions			
Power Unit Open Circuit Voltage	(V)	200 ±2½%	A
Transient Pulse Length	(μS)	10 ±5%	A
Transient Pulse Voltage	(kV)	1.4 ±5%	A
Nominal Operating Voltage (Ia = 100mA)	(V)	37	
Nominal Continuous Operating Current	(mA)	100	B
Nominal Noise Power (Ia = 100mA)	(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	

DIMENSIONS

See drawing on page 4.

CONNECTIONS

Anode - Flexible lead

Cathode - Metal body Electrical connection to the cathode being made by the helicoil inserts in the flange faces.

MOUNTING POSITION

Any - See Note D

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 ± 5MHz	f_2 =	CV_{6209}	8.655 GHz ± 5MHz
	CV 6210	9.325 GHz ± 5MHz		CV_{6210}	9.200 GHz ± 5MHz
	CV 6211	9.500 GHz ± 5MHz		CV_{6211}	9.375 GHz ± 5MHz
	CV 6212	9.600 GHz ± 5MHz		CV6212	9.475 GHz ± 5MHz

f_3 =	CV6209	8.905 GHz ± 5MHz
	CV6210	9.450 GHz ± 5MHz
	CV6211	9.625 GHz ± 5MHz
	CV6212	9.725 GHz ± 5MHz

K1001 Ref	Test	Test Conditions	Insp Level	Symbol	Limits Min	Limits Max	Unit
	GROUP A TESTS						
	V.S.W.R. (1)	Ia = 0, Frequency = f_1	100%	-	0.9	-	-
	Noise Output	Ia = 100mA ± 2mA, Frequency = f_1. Notes 1 and 2.	100%	F	13	13.5	dB
	Anode Voltage	Ia = 100mA ±2mA	100%	Va	34	40	V
	Tube Striking Time	Open circuit voltage = 200V ±5V. Transient Pulse Length = 10μS±0.5μS. Transient Pulse Voltage = 1.4kV ±0.7kV. Note 3.	100%	s Ia	- 80	5 -	Sec. mA
	GROUP B TESTS		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						
	GROUP E TESTS		Q.A.				
	Sequential Tests (i) Visual Examination (ii) Vibration (a) Resonant Search (b) Vibration Funotional (c) Vibration Endurance	DEF-133:- Clause 6.1 Clause 8.4 to Figure 6, Curve A.					

TESTS (Cont'd.)

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K1001 Ref	Test		Test Conditions	Insp. Level	Symbol	Limits Min.	Limits Max.	Unit
	GROUP E (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 previding 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

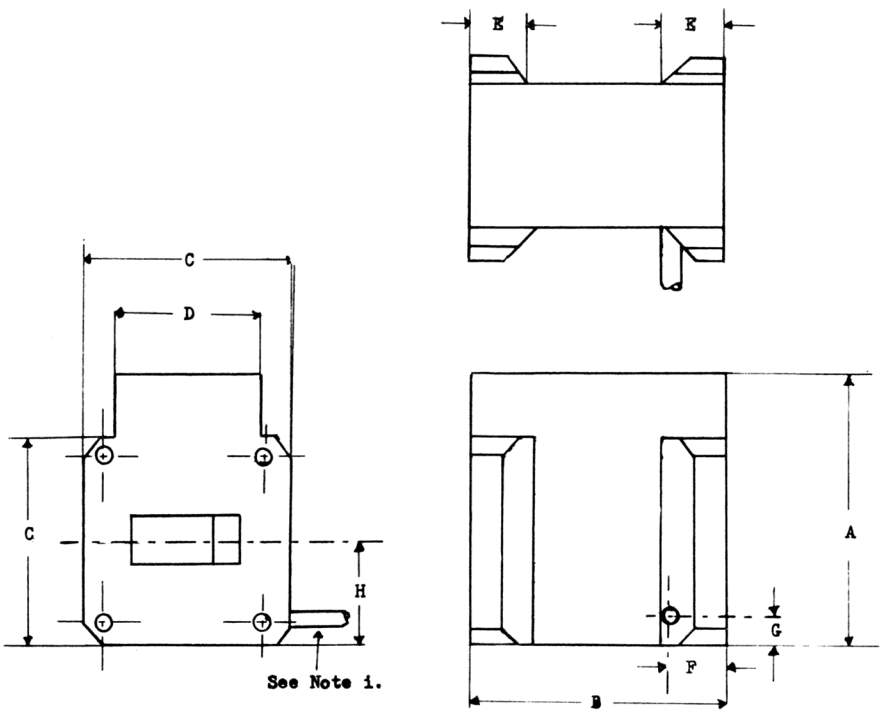


TABLE OF DIMENSIONS		
Symbol	Inches	Millimetre
A	$2\frac{1}{8}$	54.0
B	2	50.8
C	$1\frac{5}{8}$	41.3
D	$1\frac{1}{8}$	28.6
E	$\frac{1}{2}$	12.7
F	$\frac{27}{64}$	10.7
G	$\frac{7}{32}$	5.6
H	0.812	20.6

Original Dimensions in inches.

Tolerances (on inch dimensions):-

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

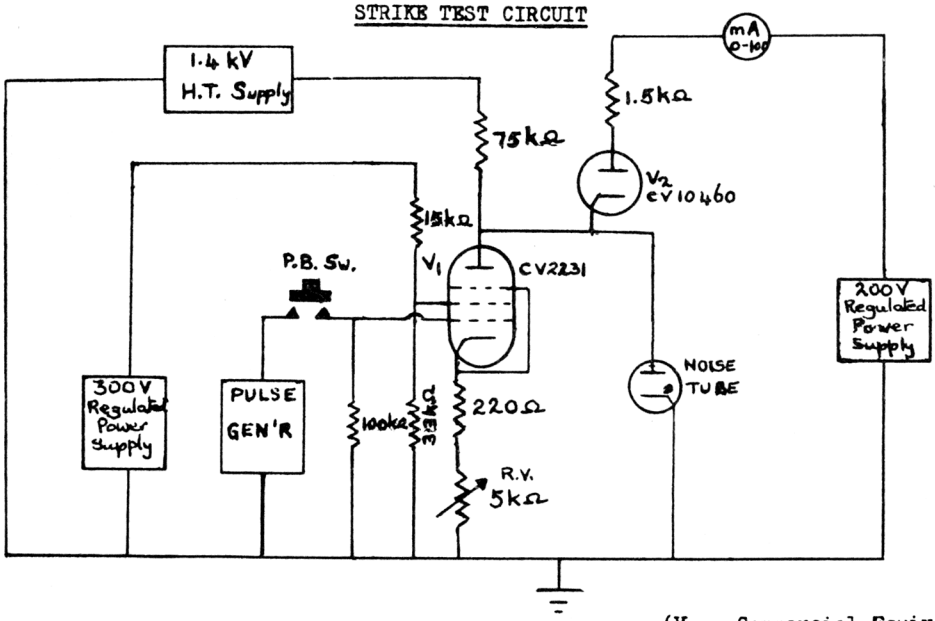
Decimal $\pm$ 0.005

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.

STRIKE TEST CIRCUIT



(V_2 - Commercial Equivalent is Mullard PY88.)

CIRCUIT NOTES

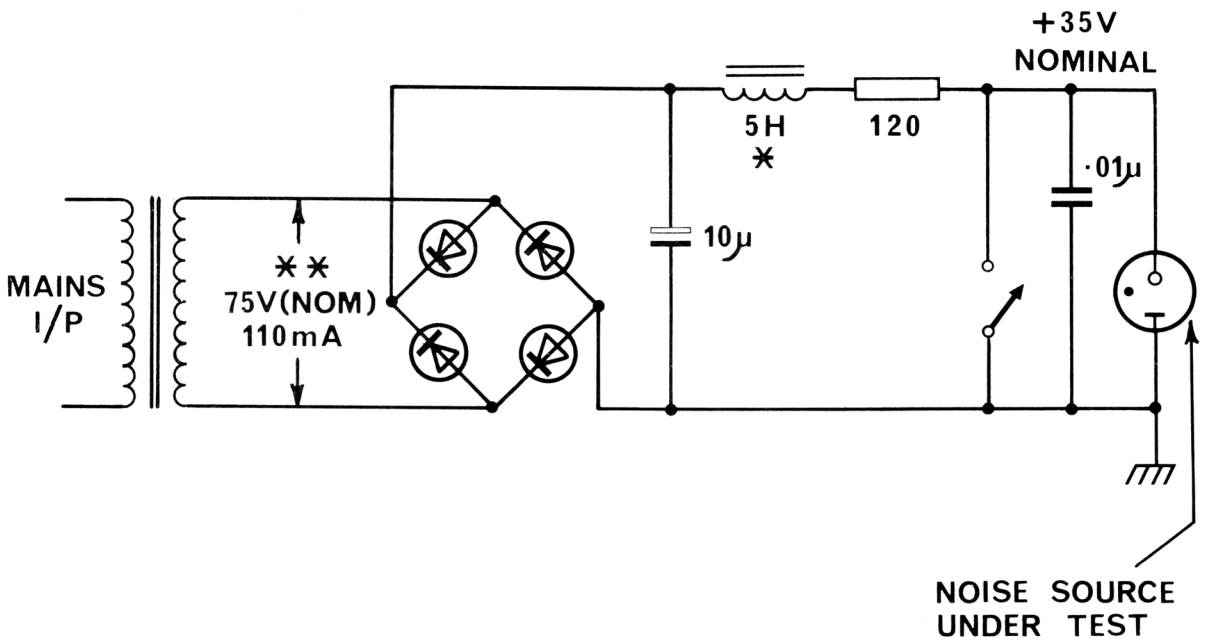
(i) The output of the pulse generator should be square negative pulses, of amplitude 75 volts, duration 10μSecs. and p.r.f. 50 p.p.s.. The output impedance should be less than 10kΩ.

(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 syncronised so that the leading edge of the 10μSec. pulse occurs 5μSec. before the peak value of the a.c..

(iii) The leads from the 75 kΩ resistor to the anode of V_1, the noise tube and cathode of V_2 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 Nº1 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: "Specificstion 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 kV $\pm$ 0.7 kV"
Insert: "Transient Pulse Voltage = 1.4 kV $\pm$ 0.07 kV"

b ADDITIONAL TEST:-

Below the Tube Striking Time test in appropriate column

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