SPECIFICATION CV.2349

ISSUE 1 DATED 22.8.55

AMENDMENT No.1

Page 2

Clause f

DELETE the whole of clause f.

Page 3

Figure 3

DELETE the circuit diagram shown in fig. 3.

T.V.C. Office
for Director
Royal Aircraft Establishment

MARCH 1957
N.87623R

MINISTRY OF SUPPLY - D.L.R.D.(A)/R.A.E.

VALVE ELECTRONIC

CV2349

Specification MOSA/CV2349 Issue 1 Dated 22.6.55 To be read in conjunction with BS448, BS1409 & K1001	SECURITY Specification: UNCLASSIFIED Valve: UNCLASSIFIED

TYPE OF VALVE - Gas-filled arc discharge Tetrode

CATHODE - Cold

ENVELOPE - Glass - Unmetallised

PROTOTYPE - EN.30

MARKING

See K1001/4

BASE

BS448/B7G

TOP CAP

BS448/CT1

RATING

		Note
Max. D.C. Voltage to Anode (V)	400	
Min. D.C. Voltage to Anode (V)	250	
Max. Peak Anode Current (A)	250	A
Max. Mean Anode Current (mA)	50	
Peak Inverse Anode Voltage (V)	350	
Trigger Voltage (V)	80-130	B
Max. Average Grid Current (mA)	10	
Max. Flashing Frequency (per sec)	250	
Ambient Temperature Range (°C)	-35° to +60°	
STARTING CHARACTERISTICS (See Note B)		
Min. Trigger Current (Va = 400) (μA)	50	
Min. Trigger Current (Va = 250) (μA)	300	
Max. Delay Time (μsecs)	40	C
TYPICAL OPERATING CONDITIONS AS A STROBOSCOPIC SOURCE		
D.C. Supply Voltage (V)	330	
Screen Voltage (V)	70	
Trigger Pulse Amplitude (V)	150	D
Charging Resistor (ohms)	6000	
Discharge Capacitor (μF) for operation at (c/s) 6 - 35	2	
30 - 50	1.5	
45 - 80	1.0	
80 - 150	0.5	
140 - 250	0.3	

CONNECTIONS

Pin	Electrode
1	g1
2	IC
3	IC
4	k
5	k
6	IC
7	g2
TC	a

DIMENSIONS

See BS448/B7G/2.2.
Size Ref. No.4

Dimensions (mm)	Min.	Max.
A. Seated Height	55.5	65.0
C. Diameter	16.0	19.0
D Overall Length	-	72.5

MOUNTING POSITION

Any

NOTES

A. A minimum of 5 amps is necessary for the formation of an arc discharge with a tube drop of approximately 20 volts. If the main gap current is less than 5 amps peak, a glow discharge is likely to form with a 70 volt drop and result in excessive cathode dissipation.

B. For triggering between g2 and g1, with g2 positive with respect to g1. (See Fig.4).

C. Less than 40 μ secs dependent on circuit conditions. With higher energy pulses the delay time can be considerably reduced.

D. With 100 μ secs square pulses, negative with respect to g2 voltage. Narrower pulses require a higher amplitude.

Z.10171.R.

TESTS

To be performed in addition to those applicable in K1001

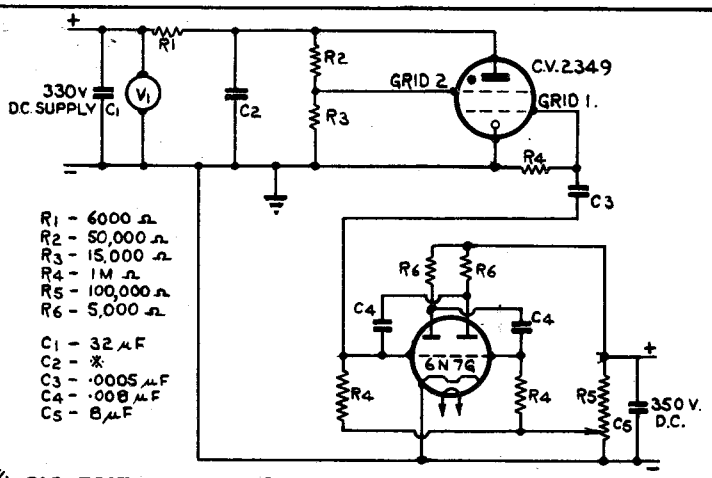
	Test Conditions	Test	Limits Min.	Limits Max.	No. Tested	Note
a	In the test circuit of Fig.1 the valve is triggered at frequency 50 p.p.s. with 330V D.C. across reservoir condenser C1. The accuracy of the valve to be tested by an approved method. Duration of test 5 to 15 secs.	Frequency Test The valve shall flash steadily at 50 p.p.s. C_2 = 1.5 µF			100%	1
b	In the test circuit of Fig.2 switch in position (b); 330V D.C. shall be applied across the reservoir condenser. The voltage on g2 shall be increased until the valve fires.	Grid 2 Starting Potential Grid 2 breakdown potential (measured just before conduction starts). (V)	80	130	100%	
c	In the test circuit of Fig.1 the valve is triggered at frequency 250 p.p.s. with 330V D.C. across reservoir condenser C1. The accuracy of the valve to be tested by an approved method. Min. duration of test 1 minutes.	Frequency Test The valve shall flash steadily at 250 p.p.s. C_2 = 0.5 µF			100%	1
d	In the test circuit of Fig.2 switch in position (b): 330V D.C. shall be applied across the reservoir condenser. The voltage on g2 shall be increased until the valve fires. This test to be done immediately after test "c".	(1) Grid 2 Starting Potential Grid 2 breakdown potential (measured just before conduction starts) (V) (2) Change of g2 starting potential from value in test "b" (V)	80 -	130 ±20	100%	
e	With the valve operating in the test circuit shown in Fig.2 and the switch set to position (a).	Anode - Grid 2 Breakdown Voltage (V)	330	-	100%	
f	The valve shall be operated in the test circuit shown in Fig.3 and adjusted initially to 180 p.p.s.	Life (hrs)	300	-	T.A.	

NOTES

1. A recommended method is to use an oscilloscope with a split phase 50 c/s supply for producing an elliptical image.

   The output pulses are superimposed on a deflector plate to enable pulses at 50 and 250 cycles to be examined.

CV2349

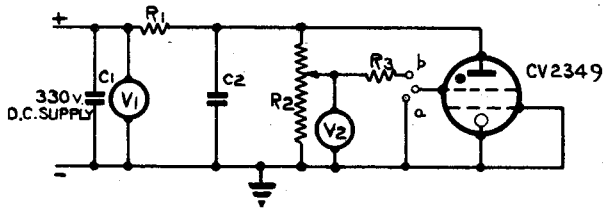


R_1 - 6000 Ω
R_2 - 50,000 Ω
R_3 - 15,000 Ω
R_4 - 1 M Ω
R_5 - 100,000 Ω
R_6 - 5,000 Ω

C_1 - 32 μF
C_2 - ※
C_3 - ·0005 μF
C_4 - ·008 μF
C_5 - 8 μF

※ FOR TEST (a), C2 = 1·5 μF. FOR TEST (c), C2 = 0·5 μF.

FIG. 1.

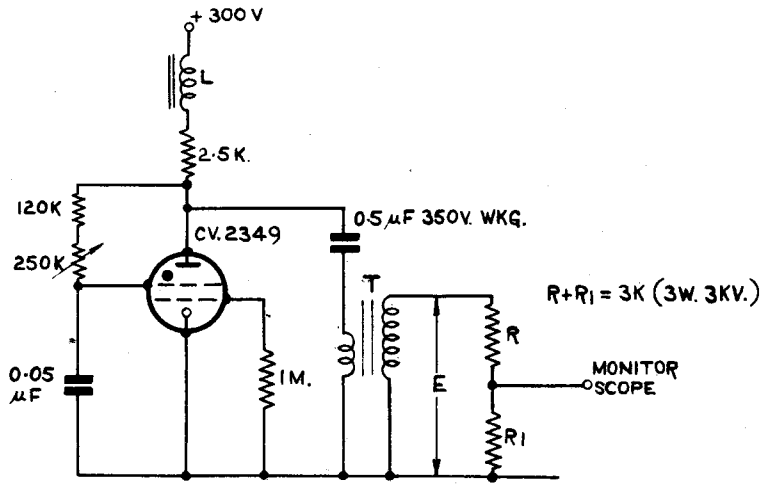


R_1 - 6,000 Ω
R_2 - 500,000 Ω
R_3 - 20,000 Ω

C_1 - 32 μF
C_2 - 1 μF

V_1 - MOVING COIL METER
V_2 - MOVING COIL METER OF 5000 Ω PER VOLT MINIMUM.

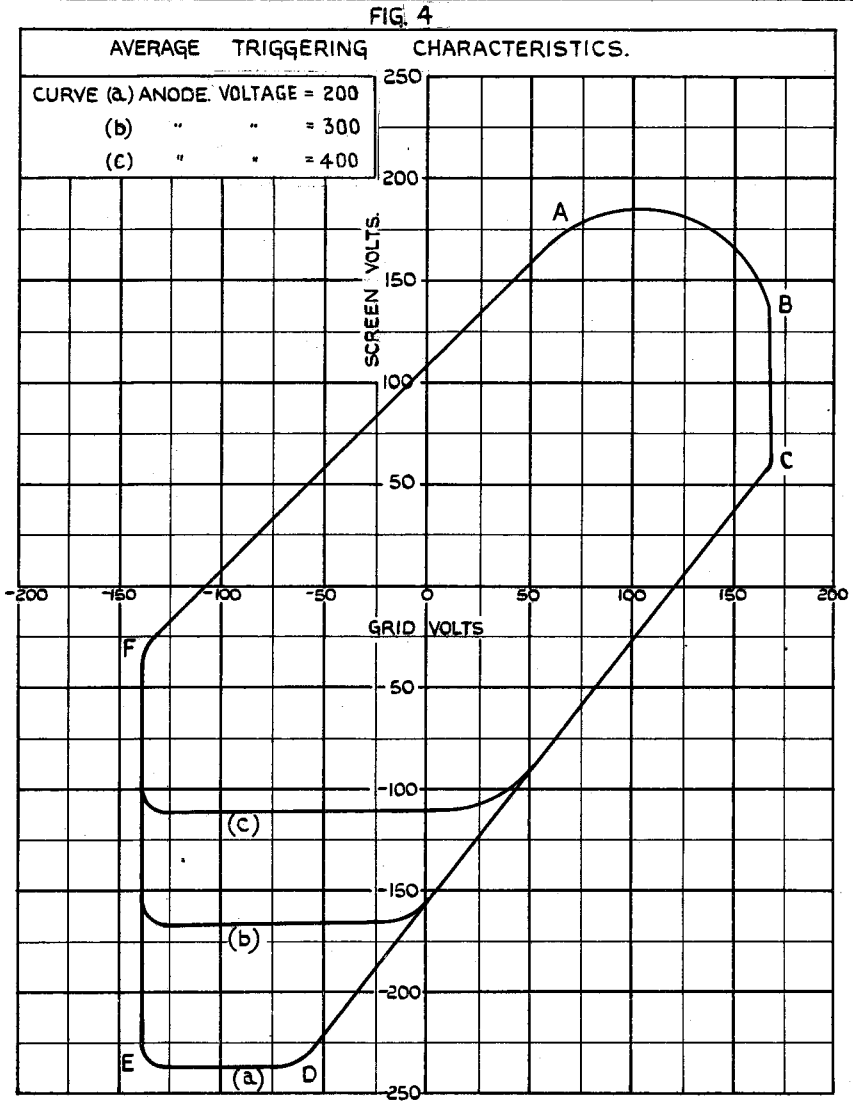
FIG. 2.



CHOKE L AND TRANSFORMER T ARE CONTAINED IN INDUCTOR TYPE 2389 (A.M. REF. Nº 10C/21152)

FIG. 3.

FIG. 4



The area enclosed by the loops is an area of non-conduction. If the vector sum of the voltages on two electrodes lies within the loop the valve will not fire. Any increase or decrease of either or both of these voltages which causes the vector sum to fall outside the loop will initiate a discharge which will in turn cause breakdown of the main gap.

As the triggering impulse carries the vector sum of the applied voltages outside the loop the point at which it crosses the loop indicates the manner in which the valve is triggered as follows:-

Between	AB Screen to Cathode Breakdown	DE Cathode to Screen Breakdown
	BC Grid to Cathode Breakdown	EF Cathode to Grid Breakdown
	CD Grid to Screen Breakdown	FA Screen to Grid Breakdown

For the best triggering condition the vector sum of the two grid voltages should cross the loop between A and F and the grid pulse should be negative.