



ALPHANUMERIC NIXIE® TUBES

TYPES
B-5971
B-8971
B-7971

The Alphanumeric NIXIE tube has the ability to display all the letters of the alphabet, numerals 0 thru 9 and special characters in a single tube. (See Figure 1).

From the standpoint of both readability and electrical characteristics, the Alphanumeric NIXIE tube provides many unique benefits including: 1) All DC operation; 2) Uniform, continuous line characters of equal height; 3) Memory with simple solid state drive circuits; 4) Readability in high ambient light...200 footlamberts brightness; and 5) Maintenance-free operation...long life with no loss of brightness.

The tube consists of 13 or 15 cathode segments and a common anode. Alphanumeric characters are formed by the application of a negative voltage (with respect to the common anode) to the appropriate combination of cathode segments. The characters appear as a bright "continuous line" red neon glow which can be easily read under high ambient light conditions from distances of 25 to 100 feet and at angles exceeding 150°. The tube's rectangular shape provides maximum read-out density in multi-character displays.

For further information write to Burroughs Corporation, Electronic Components Division, Box 1226, Plainfield, New Jersey 07061.



B-5971



B-8971



B-7971



Figure 1. ALPHANUMERIC DISPLAY

ELECTRICAL SPECIFICATIONS

ABSOLUTE RATINGS

CONDITION	STANDARD B-5971	MEDIUM B-8971	LARGE B-7971
Supply Voltage (E _{bb}) (V _{dc} min)	170	170	170
Cathode Current (MA Max)			
1K (Total all cathodes)	12.0	14.0	21.0
1K (Individual cathodes) B-5971			
K1 through K12 (except K8 and K10)	1.7	—	—
K10, K13	1.5	—	—
K8	3.0	—	—
1K (Individual cathodes) B-8971 / B-7971			
K1, K4, K15	—	6.0	6.0
K7, K9, K11, K13	—	5.0	5.5
K10, K14	—	3.5	4.0
K2, K3, K5, K6, K8, K12	—	4.5	5.0

TEST CONDITIONS

Supply Voltage (E _{bb}) (V _{dc})	170	170	170
Series Anode Resistor (R _p) (Ohms) (+1%)	6.8K	4.3K	1.8K

ELECTRICAL SPECIFICATIONS (CONT)

TEST LIMITS

CONDITION	STANDARD B-5971	MEDIUM B-8971	LARGE B-7971
Individual Cathode Current Minimum (Note 2)	50 μ a	75 μ a	75 μ a
Maximum (Note 4)	4.0ma	6.0ma	6.0ma
Anode Current (max) (Notes 2,3)	7.0ma	13.5ma	19.0ma
Ionization Voltage (max) (Vdc)	170	170	170
Leakage Current (max) (Note 5)	5.0 μ a	5.0 μ a	5.0 μ a

MECHANICAL SPECIFICATIONS

	B-5971	B-8971	B-7971
Outline Drawing	Figure 2	Figure 2	Figure 2
Pin Connections (Table 1)	Figure 4	Figure 4	Figure 4
Socket	SK169	SK174	SK137
Pin Straightner	LS210	LS209	LS209

ENVIRONMENTAL DATA

CONDITION	B-5971	B-8971	B-7971
Altitude (ft)	70,000	70,000	70,000
Temperature (1)	-20°C to +55°C	-20°C to +55°C	-20°C to +55°C
(2)	-65° to 85°C (reduced life)	-65° to 85°C (reduced life)	-65° to 85°C (reduced life)
Vibration	10-50-10 cps at .08"D.A. 5 min. ea. in X,Y, Z axis	10-50-10 cps at .08"D.A. 5 min. ea. in X,Y, Z axis	10-50-10 cps at .08"D.A. 5 min. ea. in X,Y, Z axis
Shock	50 G's, 11 millisec. 350 G's, 1 millisec.	50 G's, 11 millisec. 200 G's, 1 millisec.	50 G's, 11 millisec. 200 G's, 1 millisec.
Expected Life (Dynamic)	50,000 hours	50,000 hours	50,000 hours

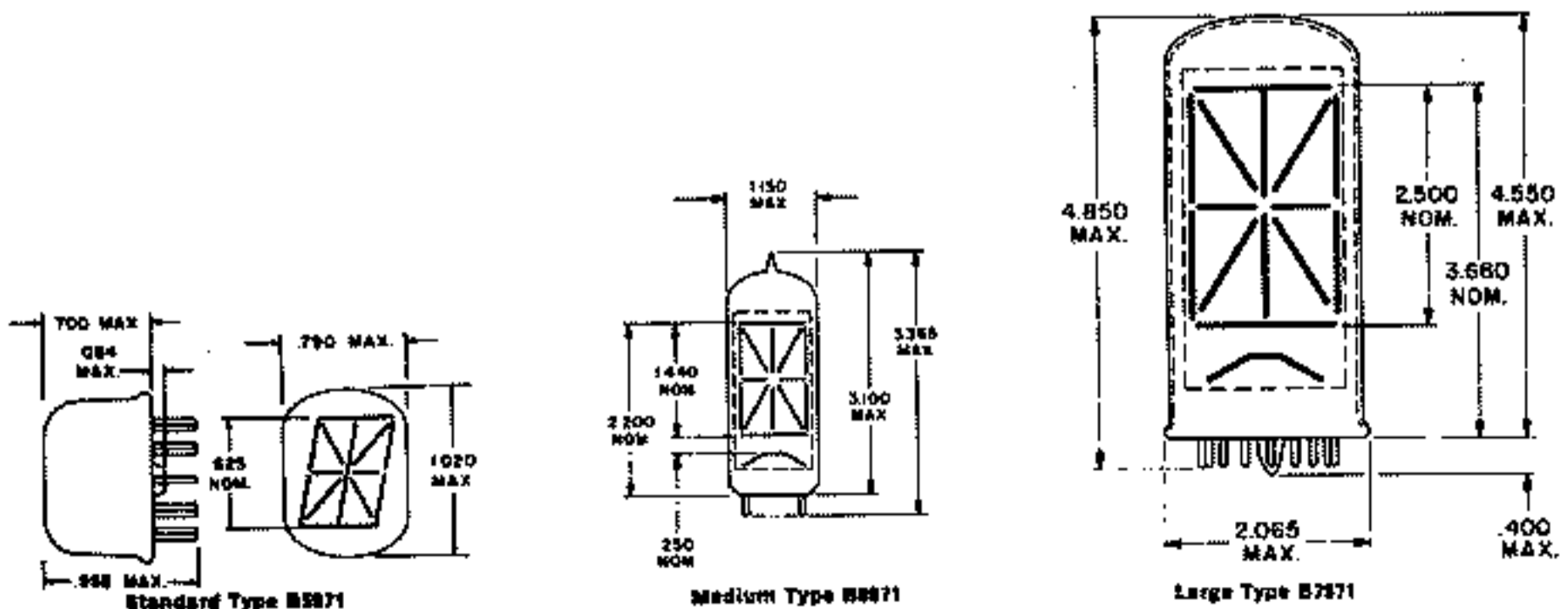


Figure 2. OUTLINE DRAWINGS

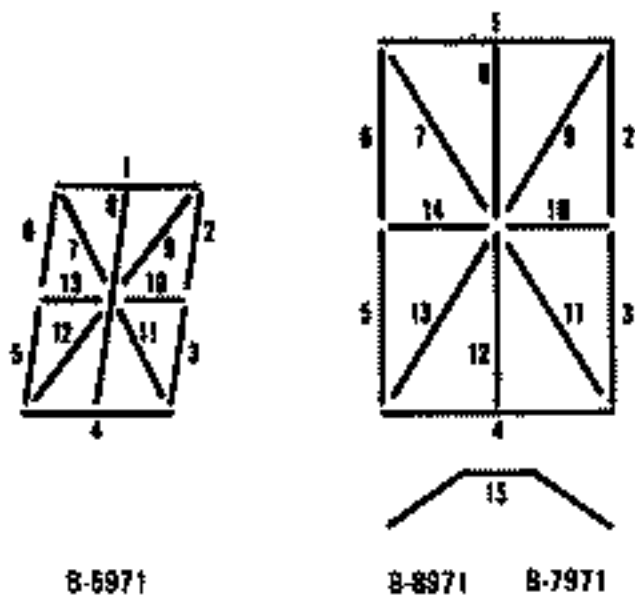


Figure 3. SEGMENT DESIGNATIONS

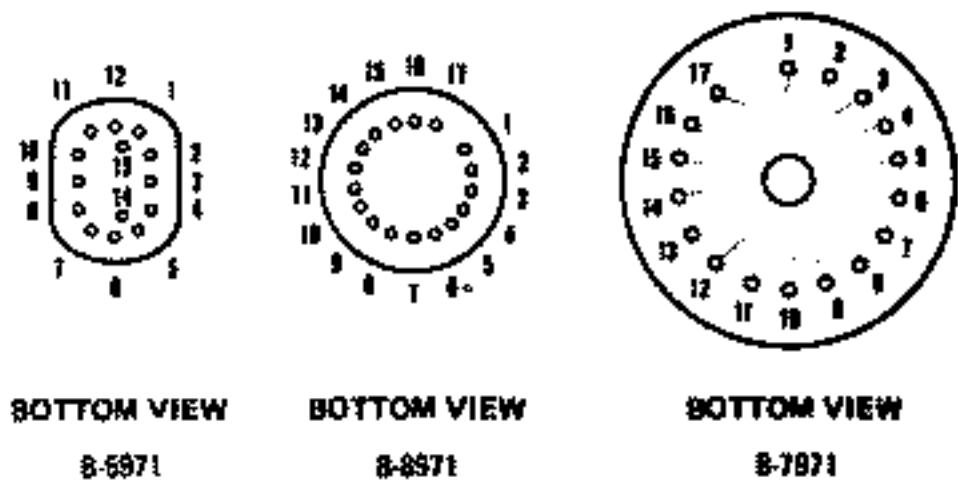


Figure 4. PIN CONNECTIONS

PIN NUMBER	CONNECTION		
	B-5971	B-8971	B-7971
1	Anode	Anode	Segment 8
2	Segment 6	Segment 9	Segment 15
3	Segment 13	Segment 2	Segment 11
4	Segment 5	Segment 3	Segment 9
5	Segment 12	Segment 10	Segment 2
6	Segment 4	Segment 1	Segment 3
7	Segment 11	Segment 4	Segment 10
8	Segment 3	Segment 15	Segment 1
9	Segment 10	Segment 8	Segment 4
10	Segment 2	Segment 7	Segment 12
11	Segment 9	Segment 5	Internal Connection
12	Segment 1	Segment 6	Segment 14
13	Segment 7	Segment 14	Anode
14	Segment 8	Segment 13	Segment 5
15	-----	Segment 12	Segment 6
16	-----	Segment 11	Segment 7
17	-----	Internal Connection	Segment 13

Table 1. PIN CONNECTIONS

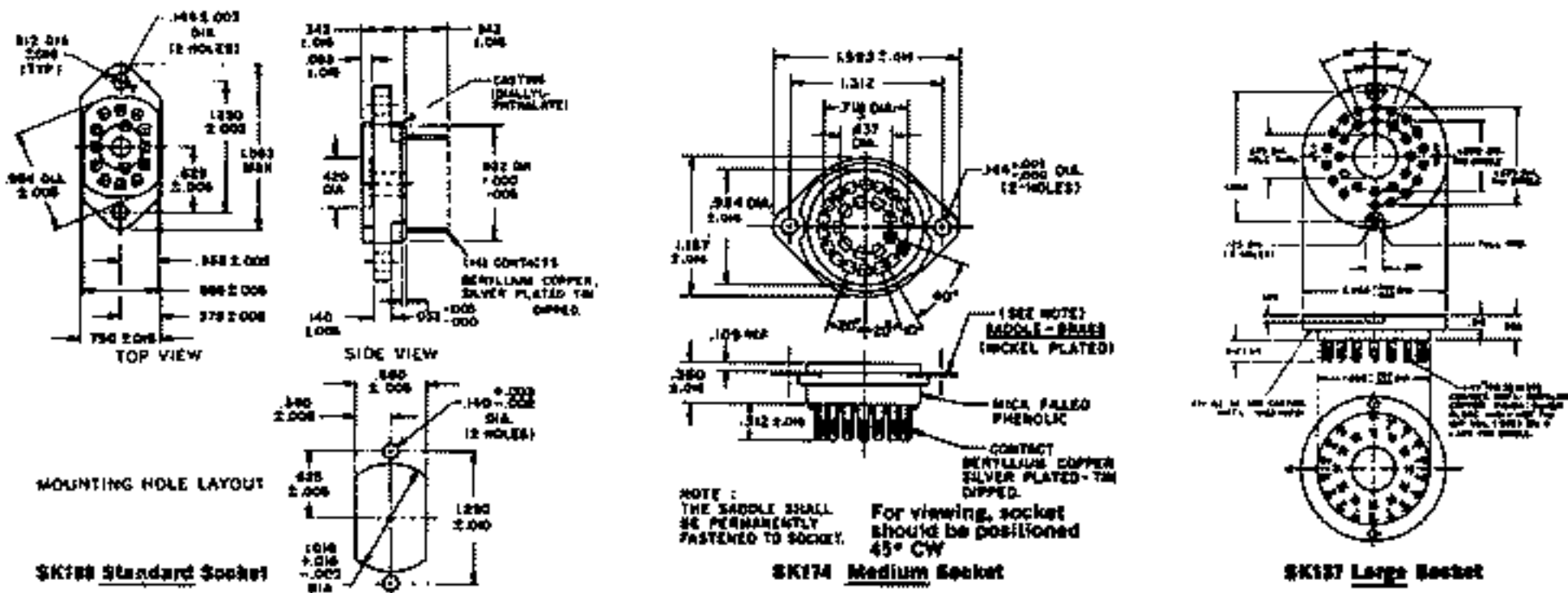


Figure 5. SOCKETS

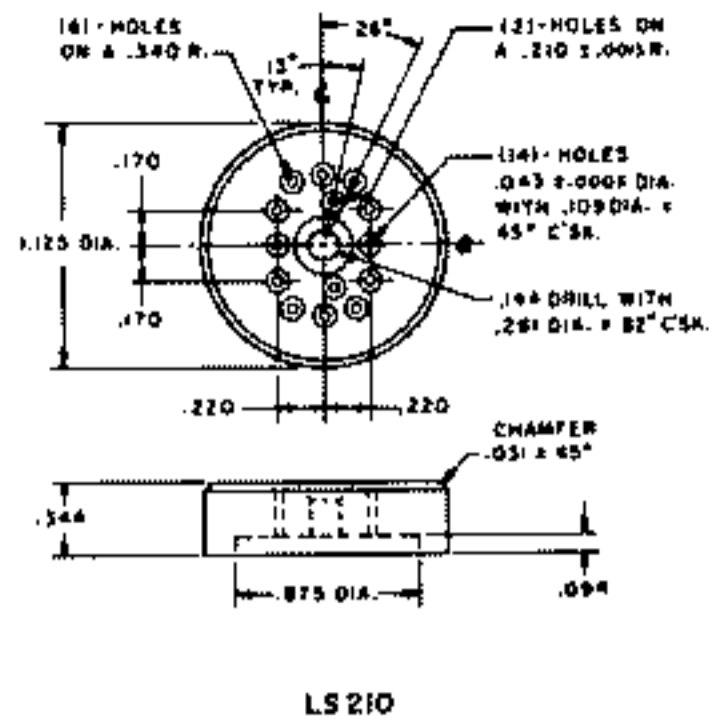
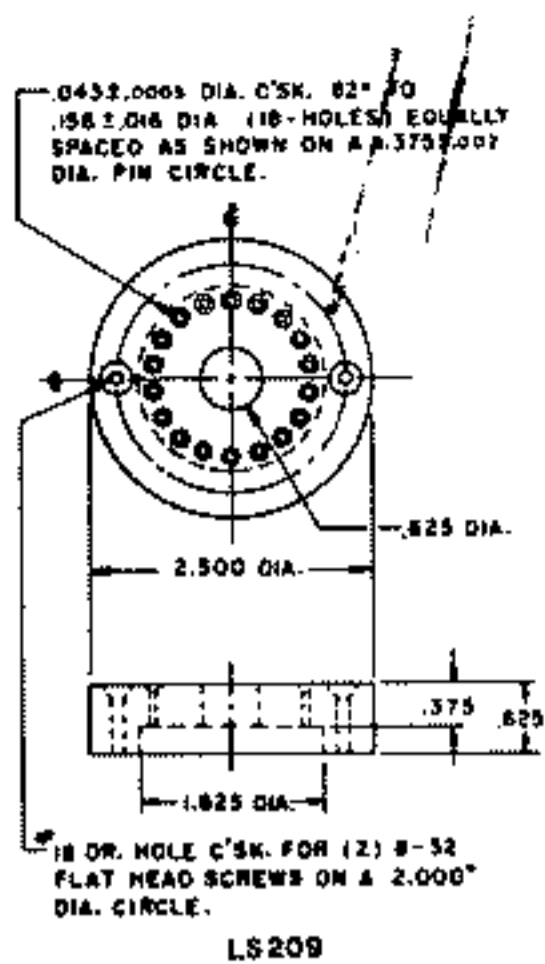


Figure 6. PIN STRAIGHTENERS

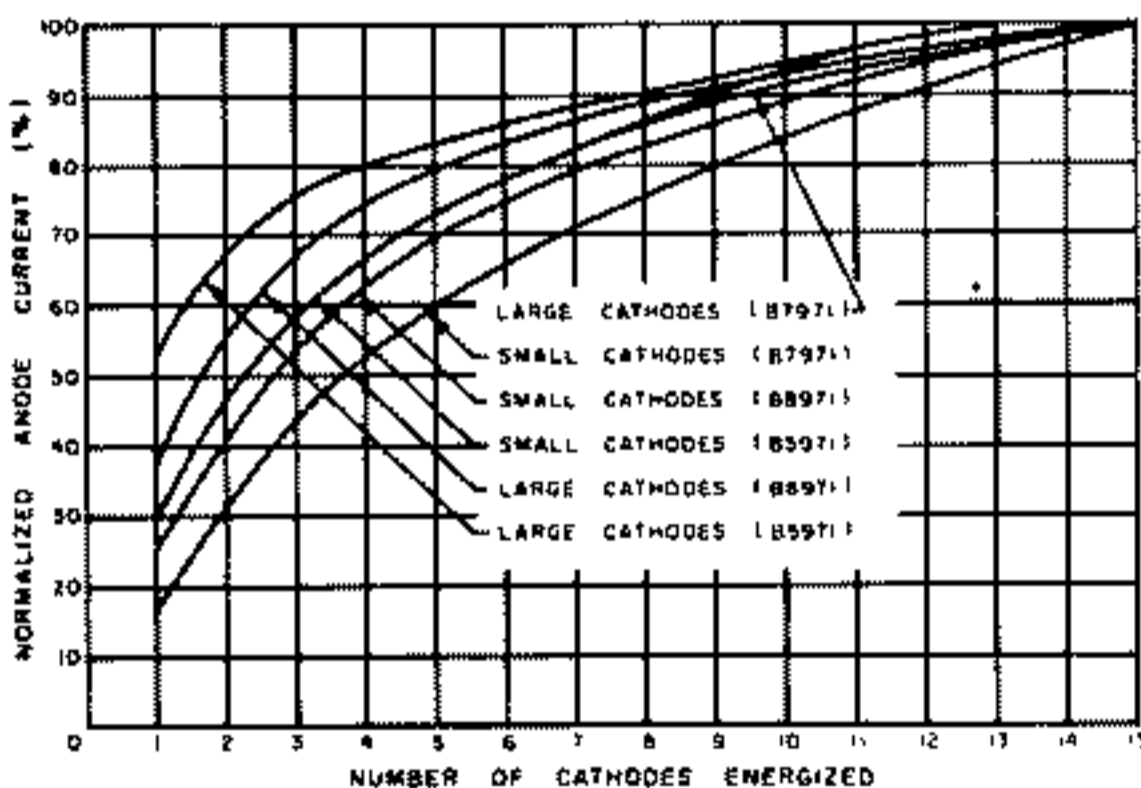


Figure 7. ANODE CURRENT DISTRIBUTION

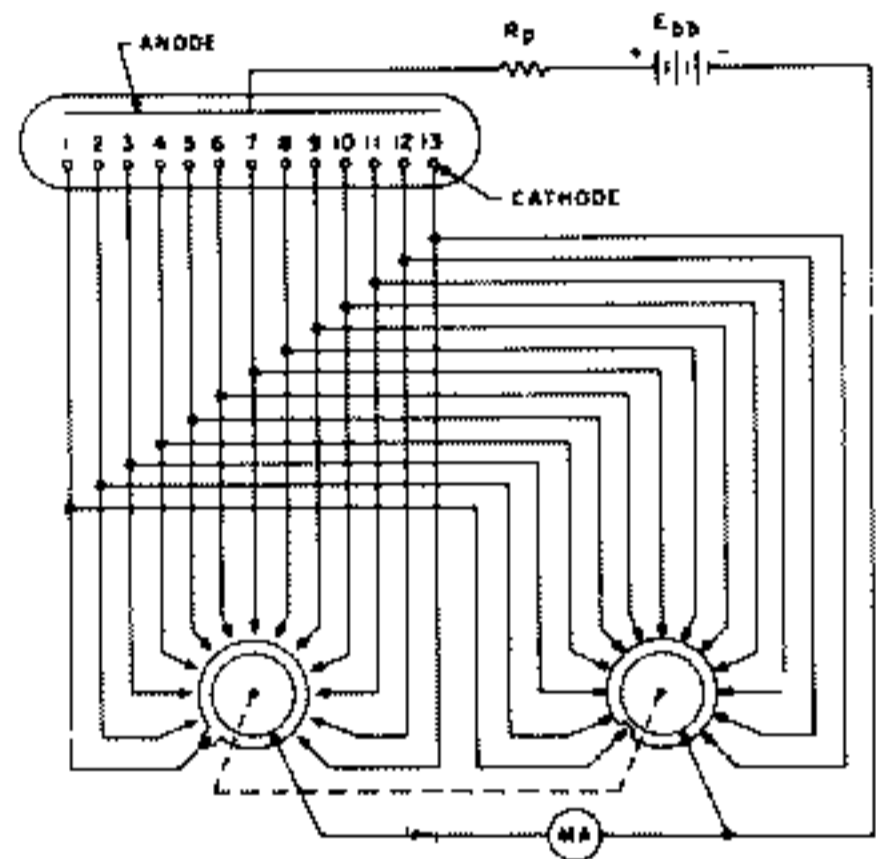


Figure 8. TEST CIRCUIT

NOTES

1. These conditions are also recommended for operation. Higher values of supply voltage and series resistor limit the ability of the tube's dynamic impedance to compensate for different numbers (1 to 15) of cathodes being ionized.
2. These tests are conducted with all cathodes ionized as shown in Figure B except as noted (See notes 4 and 5)
3. Under the specified conditions, all cathodes will exhibit uniform glow over their entire surface.
4. Maximum cathode current is measured with the following cathodes energized: B-5971-K₈; B-8971 and B-7971-K₁, K₄ or K₁₅ (all other cathodes floating).
5. Leakage current is measured from one element to all others under the following conditions: Ebb=50Vdc and R_p = 2.6 megohms.
6. Power requirements for the tubes depend to a large extent upon the application; i.e., the maximum number of cathodes required to be ionized at any one time. The graph shown in Fig. 7 gives the normalized anode current as a function of the number of cathodes ionized.

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