

**TUBE TEST CONDITIONS**  
**FOR**  
**HICKOK CARDMATIC**  
**TUBE TESTER**  
**MODEL 123A**

**The HICKOK ELECTRICAL INSTRUMENT CO.**  
10514 DUPONT AVENUE • CLEVELAND 8, OHIO

## MODEL 123A

### Symbol Definitions

Avg.	Average
Ckt.	Circuit
Ec	DC negative voltage applied to the control grid
Ep	DC positive voltage applied to the plate
Esc	DC positive voltage applied to the screen
F-W	Full-wave, rectifying circuit
H-K	Heater-cathode leakage reject value in micro-amperes.
Ip	Plate current
MA	Milliamperes
Rk	Self-bias cathode resistance in ohms
Spl	Special
VAC	Volts A-C
Umhos	Micromhos (Mutual Conductance)

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The Hickok Electrical Instrument Co.  
10514 Dupont Ave. - Cleveland 8, Ohio

TUBE	TEST	Full-Scale		H-K	Test Condition
		Umhos	MA		
OZ4	1 of 1	-	120	-	Ep = 250 VAC (F-W)
1A5	1 of 1	1100	-	-	Ep = 100 Esc = 100 Ec = -6.0
1A7	1 of 2	900	-	-	Ep = 50 Esc = 50 Ec = -1.0
1A7	2 of 2	500	-	-	Ep = 50 Esc = 50 Ec = -1.0
1AG4	1 of 1	1200	-	-	Ep = 50 Esc = 50 Ec = -4.7
1AX2	1 of 1	-	2.2	-	Ep = 100
1B5	1 of 1	-	6.1	-	Ep = 100
1B5	1 of 1	900	-	-	Ep = 100 Esc = 100 Ec = -1.0
1B5	1 of 2	800	-	-	Ep = 50 Esc = 50 Ec = -1.0
1B5	2 of 2	1400	-	-	Ep = 50 Ec = 1.0 Spl. Ckt.
1B4	1 of 1	1500	-	-	Ep = 50 Esc = 50 Ec = -6.8
1S5	1 of 2	-	2.0	-	Ep = 100 Esc = 100 Ec = -2.0 (Emission Test)
1S5	2 of 2	-	0.4	-	Ep = 9
1T4	1 of 1	900	-	-	Ep = 50 Esc = 50 Ec = -1.0
1U4	1 of 1	1000	-	-	Ep = 100 Esc = 100 Ec = -1.0
1U5	1 of 2	-	2.0	-	Ep = 100 Esc = 100 Ec = 2.0 (Emission Test)
1U5	2 of 2	-	0.4	-	Ep = 9
1V2	1 of 1	-	3.9	-	Ep = 100
1V6	1 of 2	-	0.50	-	Ep = 50 Esc = 50 Ec = 1.5 (Emission Test)
1V6	2 of 2	-	0.50	-	Ep = 50 Ec = 3.0 (Emission Test)
1X2	1 of 1	-	6.1	-	Ep = 100
2AP4	1 of 1	6800	-	20	Ep = 100 Rk = 270
2RN4	1 of 1	8600	-	20	Ep = 150 Rk = 220

TUBE	TEST	Full-Scale		H-K	Test Condition
		Umhos	MA		
2T4	1 of 1	7600	-	20	Ep = 100 Rk = 270
3A2	1 of 1	-	12	-	Ep = 100
3AF4	1 of 1	6800	-	20	Ep = 100 Rk = 270
3AL5	1 of 2	-	26	10	Ep = 9
3AL5	2 of 2	-	26	10	Ep = 9
3AU6	1 of 1	6300	-	20	Ep = 150 Esc = 150 Rk = 70
3AV6	1 of 3	1600	-	20	Ep = 100 Ec = -1.0
3AV6	2 of 3	-	0.6	-	Ep = 10
3AV6	3 of 3	-	0.6	-	Ep = 10
3BA6	1 of 1	5400	-	20	Ep = 100 Esc = 100 Rk = 70
3BC5	1 of 1	7000	-	20	Ep = 150 Esc = 150 Rk = 180
3BE6	1 of 2	600	-	20	Ep = 100 Esc = 100 Ec = -3.1 Spl. Ckt.
3BE6	2 of 2	8600	-	20	Ep = 100 Ec = -1.0 Spl. Ckt.
3BN6	1 of 2	1500	-	20	Ep = 50 Esc = 50 Rk = 350 Spl. Ckt.
3BN6	2 of 2	1500	-	20	Ep = 50 Esc = 50 Rk = 150 Spl. Ckt.
3BY6	1 of 2	2100	-	20	Ep = 100 Esc = 100 Ec = 2.5 Spl. Ckt.
3BY6	2 of 2	600	-	20	Ep = 100 Esc = 100 Ec = 2.5
3BZ6	1 of 1	7300	-	20	Ep = 150 Esc = 150 Rk = 180
3C2	1 of 1	-	12	-	Ep = 100
3CB6	1 of 1	7600	-	20	Ep = 150 Esc = 150 Rk = 180
3CE5	1 of 1	7600	-	20	Ep = 150 Esc = 150 Rk = 180
3CF6	1 of 1	7600	-	20	Ep = 150 Esc = 150 Rk = 180
3CS6	1 of 2	1500	-	20	Ep = 50 Esc = 50 Ec = -1.5
3CS6	2 of 2	1500	-	20	Ep = 50 Esc = 50 Ec = -1.0

TUBE	TEST	Full-Scale			Test Condition
		Umhos	MA	H-K	
3D16	1 of 2	1000	-	20	Ep = 100 Esc = 100 Rk = 2100
3D16	2 of 2	600	-	20	Ep = 100 Esc = 100 Ec = -1.7 Spl. Ckt.
3Q4	1 of 1	2700	-	-	Ep = 100 Esc = 100 Ec = 5.8
3Q5	1 of 1	2000	-	-	Ep = 100 Esc = 100 Ec = -6.3
3S4	1 of 1	1900	-	-	Ep = 50 Esc = 50 Ec = -4.0
3V4	1 of 1	2700	-	-	Ep = 100 Esc = 100 Ec = -5.8
4B15	1 of 1	7000	-	20	Ep = 150 Esc = 150 Rk = 180
4B18	1 of 2	7800	-	20	Ep = 150 Rk = 220
4B18	2 of 2	7800	-	20	Ep = 150 Rk = 220
4B26	1 of 2	1500	-	20	Ep = 50 Esc = 50 Rk = 350 Spl. Ckt.
4B26	2 of 2	1500	-	20	Ep = 50 Esc = 50 Rk = 150 Spl. Ckt.
4BQ7A	1 of 2	8000	-	20	Ep = 150 Rk = 220
4BQ7A	2 of 2	8000	-	20	Ep = 150 Rk = 220
4B58	1 of 2	9000	-	20	Ep = 150 Rk = 220
4B58	2 of 2	9000	-	20	Ep = 150 Rk = 220
4B77	1 of 2	8600	-	20	Ep = 150 Rk = 240
4B77	2 of 2	8600	-	20	Ep = 150 Rk = 220
4B28	1 of 2	8200	-	20	Ep = 150 Rk = 150
4B28	2 of 2	8200	-	20	Ep = 150 Rk = 150
4CB6	1 of 1	7600	-	20	Ep = 150 Esc = 150 Rk = 180
4C15	1 of 1	7600	-	20	Ep = 150 Esc = 150 Rk = 180

TUBE	TEST	Full-Scale			Test Condition
		Umhos	MA	H-K	
4DT6	1 of 2	1600	-	20	Ep = 100 Esc = 100 Rk = 2100
4DT6	2 of 2	600	-	20	Ep = 100 Esc = 100 Ec = -1.7 Spl. Ckt.
5AM8	1 of 2	8500	-	20	Ep = 150 Esc = 150 Rk = 120
5AM8	2 of 2	-	22	10	Ep = 9
5AN8	1 of 2	7600	-	20	Ep = 150 Esc = 150 Rk = 180
5AN8	2 of 2	4100	-	20	Ep = 150 Ec = -4.4
5AQ5	1 of 1	4700	-	30	Ep = 150 Esc = 150 Ec = -4.2
5AS4	1 of 1	-	320	-	Ep = 250 VAC (I-W)
5AS8	1 of 2	7600	-	20	Ep = 150 Esc = 150 Rk = 180
5AS8	2 of 2	-	26	10	Ep = 9
5A18	1 of 2	5800	-	20	Ep = 150 Esc = 150 Rk = 200
5A18	2 of 2	7300	-	20	Ep = 100 Rk = 100
5A14	1 of 1	-	320	-	Ep = 250 VAC (I-W)
5AV8	1 of 2	7600	-	20	Ep = 150 Esc = 150 Rk = 180
5AV8	2 of 2	4100	-	20	Ep = 150 Ec = -4.4
5AW4	1 of 1	-	320	-	Ep = 250 VAC (I-W)
5B8	1 of 2	7600	-	20	Ep = 150 Esc = 150 Rk = 180
5B8	2 of 2	4100	-	20	Ep = 150 Ec = -4.4
5B18	1 of 2	5700	-	20	Ep = 100 Esc = 100 Rk = 70
5B18	2 of 2	10700	-	20	Ep = 150 Rk = 60
5BK7A	1 of 2	11700	-	20	Ep = 150 Rk = 60
5BK7A	2 of 2	11700	-	20	Ep = 150 Rk = 60
5BQ7A	1 of 2	8000	-	20	Ep = 150 Rk = 220
5BQ7A	2 of 2	8000	-	20	Ep = 150 Rk = 220

TUBE	TEST	Full-Scale			Test Condition
		Umhos	MA	H-K	
SBR8	1 of 2	5700	-	20	Ep = 100 Esc = 100 Rk = 70
SBR8	2 of 2	10700	-	20	Ep = 150 Rk = 60
5BZ7	1 of 2	8600	-	20	Ep = 150 Rk = 220
5BZ7	2 of 2	8600	-	20	Ep = 150 Rk = 220
5J6	1 of 2	6000	-	20	Ep = 100 Rk = 50 Spl. Ckt.
5J6	2 of 2	6000	-	20	Ep = 100 Rk = 50 Spl. Ckt.
5T8	1 of 4	1600	-	20	Ep = 100 Ec = -1.0
5T8	2 of 4	-	22	10	Ep = 9
5T8	3 of 4	-	22	10	Ep = 9
5T8	4 of 4	-	22	10	Ep = 9
5L4	1 of 1	-	320	-	Ep = 250 VAC (F-W)
5L8	1 of 2	5700	-	20	Ep = 100 Esc = 100 Rk = 70
5L8	2 of 2	10700	-	20	Ep = 150 Rk = 60
5V3	1 of 1	-	320	-	Ep = 250 VAC (F-W)
5V4	1 of 2	-	148	-	Ep = 500 VAC (F-W)
5V4	2 of 2	-	148	-	Ep = 500 VAC (H-W)
5V6	1 of 1	4700	-	50	Ep = 150 Esc = 150 Ec = 6.0
5X4	1 of 1	-	320	-	Ep = 250 VAC (F-W)
5X8	1 of 2	5800	-	20	Ep = 150 Esc = 150 Rk = 200
5X8	2 of 2	7300	-	20	Ep = 100 Rk = 100
5Y3	1 of 1	-	200	-	Ep = 250 VAC (F-W)
5Y4	1 of 1	-	200	-	Ep = 250 VAC (F-W)
6AB4	1 of 1	5000	-	20	Ep = 100 Rk = 270
6AC7	1 of 1	11300	-	20	Ep = 150 Esc = 150 Rk = 160
6AF4	1 of 1	6800	-	20	Ep = 100 Rk = 270

TUBE	TEST	Full-Scale			Test Condition
		Umhos	MA	H-K	
6AG5	1 of 1	6000	-	20	Ep = 150 Esc = 150 Rk = 180
6AG7	1 of 1	14000	-	50	Ep = 150 Esc = 150 Ec = -3.0
6AH4	1 of 1	7500	-	50	Ep = 150 Ec = 12
6AH6	1 of 1	11300	-	20	Ep = 150 Esc = 150 Rk = 160
6AK5	1 of 1	6500	-	20	Ep = 100 Esc = 100 Rk = 100
6AK6	1 of 1	4900	-	20	Ep = 150 Esc = 150 Ec = -5.5
6AL5	1 of 2	-	26	10	Ep = 9
6AL5	2 of 2	-	26	10	Ep = 9
6AL7	1 of 2	-	-	20	Rac = 250 VAC Spl. Ckt. (Brite)
6AL7	2 of 2	-	-	20	Rac = 250 VAC Spl. Ckt. (Dim)
6AM8	1 of 2	8500	-	20	Ep = 150 Esc = 150 Rk = 120
6AM8	2 of 2	-	22	10	Ep = 9
6AN4	1 of 1	12,600	-	20	Ep = 150 Rk = 90
6AN6	1 of 2	7600	-	20	Ep = 150 Esc = 150 Rk = 180
6AN8	2 of 2	4100	-	20	Ep = 150 Ec = -4.4
6AQ5	1 of 1	4700	-	50	Ep = 150 Esc = 150 Ec = -4.2
6AQ6	1 of 3	1400	-	20	Ep = 100 Ec = -1.0
6AQ6	2 of 3	-	0.6	-	Ep = 10
6AQ6	3 of 3	-	0.6	-	Ep = 10
6AQ7	1 of 3	1900	-	20	Ep = 150 Ec = -1.0
6AQ7	2 of 3	-	1.2	-	Ep = 10
6AQ7	3 of 3	-	1.2	-	Ep = 10
6AR5	1 of 1	1900	-	20	Ep = 100 Esc = 100 Ec = -7.0
6AS5	1 of 1	7000	-	50	Ep = 100 Esc = 100 Ec = -6.5

TUBE	TEST	Full-Scale			Test Condition
		Umhos	MA	H-K	
6AS7	1 of 2	8300	-	100	Ep = 150 Rk = 370
6AS7	2 of 2	8300	-	100	Ep = 150 Rk = 370
6AS8	1 of 2	7600	-	20	Ep = 150 Esc = 150 Rk = 180
6AS8	2 of 2	-	26	10	Ep = 9
6AT6	1 of 3	1700	-	20	Ep = 100 Ec = -1.0
6AT6	2 of 3	-	0.6	-	Ep = 10
6AT6	3 of 3	-	0.6	-	Ep = 10
6AT8	1 of 2	5800	-	20	Ep = 150 Esc = 150 Rk = 200
6AT8	2 of 2	7300	-	20	Ep = 100 Rk = 100
6AU4	1 of 1	-	148	10	Ep = 500 VAC: (H-W)
6AU5	1 of 2	7000	-	100	Ep = 150 Esc = 150 Ec = -16.0
6AU5	2 of 2	-	294	100	Ep = 60 Esc = 150 Ec = 0
6AU6	1 of 1	6300	-	20	Ep = 150 Esc = 150 Rk = 70
6AU7	1 of 2	3800	-	20	Ep = 150 Esc = -3.0
6AU7	2 of 2	3800	-	20	Ep = 150 Esc = 3.0
6AUB	1 of 2	8800	-	20	Ep = 100 Esc = 100 Rk = 60
6AUB	2 of 2	6200	-	20	Ep = 150 Rk = 150
6AV5	1 of 2	6900	-	100	Ep = 150 Esc = 150 Ec = -21
6AV5	2 of 2	-	316	100	Ep = 60 Esc = 150 Esc = 0
6AV6	1 of 3	1600	-	20	Ep = 100 Esc = -1.0
6AV6	2 of 3	-	0.6	-	Ep = 10
6AV6	3 of 3	-	0.6	-	Ep = 10
6AW8A	1 of 2	11,300	-	20	Ep = 150 Esc = 150 Rk = 180
6AW8A	2 of 2	6300	-	20	Ep = 150 Ec = -1.2
6AX4	1 of 1	-	148	10	Ep = 500 VAC: (H-W)

TUBE	TEST	Full-Scale			Test Condition
		Umhos	MA	H-K	
6AX5	1 of 1	-	200	150	Ep = 250 VAC (F-W)
6AX7	1 of 2	1600	-	20	Ep = 100 Ec = -1.0
6AX7	2 of 2	1600	-	20	Ep = 100 Ec = -1.0
6BA6	1 of 1	5400	-	20	Ep = 100 Esc = 100 Rk = 70
6BA7	1 of 2	2200	-	20	Ep = 100 Esc = 100 Ec = -1.0
6BA7	2 of 2	8800	-	20	Ep = 100 Esc = 100 Ec = -1.0
6BA8	1 of 2	10,700	-	20	Ep = 150 Esc = 150 Rk = 180
6BA8	2 of 2	3300	-	20	Ep = 150 Ec = -5.0
6BC5	1 of 1	7000	-	20	Ep = 150 Esc = 150 Rk = 180
6BC7	1 of 3	-	38	10	Ep = 9
6BC7	2 of 3	-	38	10	Ep = 9
6BC7	3 of 3	-	38	10	Ep = 9
6BC8	1 of 2	7800	-	20	Ep = 150 Rk = 220
6BC8	2 of 2	7800	-	20	Ep = 150 Rk = 220
6BD6	1 of 1	3200	-	20	Ep = 100 Esc = 100 Ec = -1.0
6BE6	1 of 2	600	-	20	Ep = 100 Esc = 100 Ec = -3.1 Spl. Ckt.
6BE6	2 of 2	8600	-	20	Ep = 100 Ec = -1.0 Spl. Ckt.
6BE8	1 of 2	5700	-	20	Ep = 100 Esc = 100 Rk = 70
6BE8	2 of 2	10,700	-	20	Ep = 150 Rk = 60
6BF5	1 of 1	10,000	-	70	Ep = 100 Esc = 100 Ec = -6.2
6BF6	1 of 3	2500	-	20	Ep = 150 Esc = -3.0
6BF6	2 of 3	-	0.6	-	Ep = 10
6BF6	3 of 3	-	0.6	-	Ep = 10
6BG6	1 of 2	8800	-	100	Ep = 150 Esc = 150 Esc = -1.9
6BG6	2 of 2	-	126	100	Ep = 50 Esc = 150 Ec = 0

TUBE	TEST	Full-Scale		H-K	Test Condition
		Umhos	MA		
6BH6	1 of 1	4,300	-	20	Ep = 100 Eac = 100 Ec = -1.0
6BH8	1 of 2	8,800	-	20	Ep = 100 Eac = 100 Rk = 60
6BH6	2 of 2	4,100	-	20	Ep = 150 Ec = -5.0
6BJ6	1 of 1	4,600	-	20	Ep = 100 Eac = 100 Ec = -1.0
6BK4	1 of 1	-	1.3	10	Ec = +9.0 VIX Spl. Ckt
6BK5	1 of 1	10,000	-	70	Ep = 150 Eac = 150 Ec = -1.0
6BK7A	1 of 2	11,700	-	20	Ep = 150 Rk = 60
6BK7A	2 of 2	11,700	-	20	Ep = 150 Rk = 60
6BL4	1 of 1	-	148	10	Ep = 500 VAC (H-W)
6BL7	1 of 2	12,600	-	50	Ep = 150 Ec = -2.3
6BL7	2 of 2	12,600	-	50	Ep = 150 Ec = -2.3
6BN4	1 of 1	8,600	-	20	Ep = 150 Rk = 220
6BN6	1 of 2	1,500	-	20	Ep = 50 Eac = 50 Rk = 350 Spl. Ckt.
6BN6	2 of 2	1,500	-	20	Ep = 50 Eac = 50 Rk = 150 Spl. Ckt.
6BN8	1 of 3	4,400	-	20	Ep = 100 Ec = -1.0
6BN6	2 of 3	-	22	10	Ep = 9
6BN8	3 of 3	-	22	10	Ep = 9
6BQ6	1 of 2	6,900	-	100	Ep = 150 Eac = 150 Ec = -2.1
6BQ6	2 of 2	-	316	100	Ep = 60 Eac = 150 Ec = 0
6BQ7A	1 of 2	8,000	-	20	Ep = 150 Rk = 220
6BQ7A	2 of 2	8,000	-	20	Ep = 150 Rk = 220
6BR6	1 of 2	5,700	-	20	Ep = 100 Eac = 100 Rk = 70
6BR8	2 of 2	10,700	-	20	Ep = 150 Rk = 60
6BS8	1 of 2	9,000	-	20	Ep = 150 VIX Rk = 220
6BS8	2 of 2	9,000	-	20	Ep = 150 VIX Rk = 220
6BW4	1 of 1	-	160	150	Ep = 250 VAC (H-W)
6BY5	1 of 2	-	148	10	Ep = 500 VAC (H-W)
6BY5	2 of 2	-	148	10	Ep = 500 VAC (H-W)

TUBE	TEST	Full-Scale		H-K	Test Condition
		Umhos	MA		
6BY6	1 of 2	2,100	-	20	Ep = 100 Eac = 100 Ec = -2.5
6BY6	2 of 2	600	-	20	Ep = 100 Eac = 100 Ec = -2.5
6BZ6	1 of 1	7,300	-	20	Ep = 150 Eac = 150 Rk = 180
6BZ7	1 of 2	8,600	-	20	Ep = 150 Rk = 220
6BZ7	2 of 2	8,600	-	20	Ep = 150 Rk = 220
6BZ8	1 of 2	8,200	-	20	Ep = 150 Rk = 150
6BZ8	2 of 2	8,200	-	20	Ep = 150 Rk = 150
6C4	1 of 1	3,800	-	20	Ep = 150 Ec = -3.0
6CA5	1 of 1	10,000	-	70	Ep = 100 Eac = 100 Ec = -3.2
6CB5	1 of 2	11,000	-	100	Ep = 150 Eac = 150 Ec = -2.3
6CB5	2 of 2	-	350	100	Ep = 45 Eac = 100 Ec = 0
6CB6	1 of 1	7,600	-	20	Ep = 150 Eac = 150 Rk = 180
6CD6	1 of 2	10,700	-	100	Ep = 150 Eac = 150 Ec = -2.3
6CD6	2 of 2	-	316	100	Ep = 60 Eac = 100 Ec = 0
6CE5	1 of 1	7,600	-	20	Ep = 150 Eac = 150 Rk = 180
6CF6	1 of 1	7,600	-	20	Ep = 150 Eac = 150 Rk = 180
6CG7	1 of 2	3,500	-	20	Ep = 150 Ec = -2.9
6CX7	2 of 2	5,500	-	20	Ep = 150 Ec = -2.9
6C1D7	1 of 2	8,600	-	20	Ep = 150 Rk = 220
6C1D7	2 of 2	8,600	-	20	Ep = 150 Rk = 220
6C1L6	1 of 1	14,000	-	50	Ep = 150 Eac = 150 Ec = -3.0
6CM6	1 of 1	4,700	-	50	Ep = 150 Eac = 150 Ec = -4.2
6CM7	1 of 2	3,300	-	20	Ep = 150 Ec = -3.0
6CM7	2 of 2	6,300	-	20	Ep = 150 Ec = -3.5
6CN7	1 of 3	1,600	-	20	Ep = 100 Ec = -1.0
6CN7	2 of 3	-	22	10	Ep = 9
6CN7	3 of 3	-	22	10	Ep = 9

TUBE	TEST	Full-Scale		H-K	Test Condition
		Umhos	MA		
6CS6	1 of 2	1,500	-	20	Ep = 50 Eac = 50 Ec = -1.5
6CS6	2 of 2	1,500	-	20	Ep = 50 Eac = 50 Ec = -1.0
6CLJ6	1 of 2	6,900	-	100	Ep = 150 Eac = 150 Ec = -21
6CLJ6	2 of 2	-	316	100	Ep = 60 Eac = 150 Ec = 0
6LX6	1 of 1	6,500	-	20	Ep = 150 Eac = 150 Rk = 180
6DE6	1 of 1	7,600	-	20	Ep = 150 Eac = 150 Rk = 180
6DC6	1 of 1	10,100	-	70	Ep = 150 Eac = 150 Ec = -12
6DQ6	1 of 2	7,000	-	100	Ep = 150 Eac = 150 Ec = -21
6DQ6	2 of 2	-	420	100	Ep = 60 Eac = 150 Ec = 0
6DJ6	1 of 2	1,000	-	20	Ep = 100 Eac = 100 Rk = 2100
6DJ6	2 of 2	600	-	20	Ep = 100 Eac = 100 Ec = 1.7 Spl. Ckt.
6F5	1 of 1	1,400	-	20	Ep = 100 Ec = -1.0
6F6	1 of 1	3,500	-	70	Ep = 150 Eac = 150 Ec = -3.3
6F8	1 of 2	3,500	-	20	Ep = 150 Ec = -2.9
6F8	2 of 2	3,500	-	20	Ep = 150 Ec = -2.9
6G6	1 of 1	2,800	-	20	Ep = 150 Eac = 150 Ec = -5.5
6H6	1 of 2	-	6.1	10	Ep = 9
6H6	2 of 2	-	6.1	10	Ep = 9
6J5	1 of 1	3,500	-	20	Ep = 150 Ec = -2.9
6J6	1 of 2	6,600	-	20	Ep = 100 Rk = 50 Spl. Ckt.
6J6	2 of 2	6,600	-	20	Ep = 100 Rk = 50 Spl. Ckt.
6K6	1 of 1	1,900	-	20	Ep = 100 Eac = 100 Ec = -7.0
6K7	1 of 1	2,100	-	20	Ep = 100 Eac = 100 Ec = -1.0
6L6	1 of 1	6,700	-	70	Ep = 150 Eac = 150 Ec = -7.0
6Q7	1 of 3	1,500	-	20	Ep = 100 Ec = -1.0

TUBE	TEST	Full-Scale		H-K	Test Condition
		Umhos	MA		
6Q7	2 of 3	-	0.6	-	Ep = 10
6Q7	3 of 3	-	0.6	-	Ep = 10
6S4	1 of 1	6,900	-	20	Ep = 150 Ec = -2.0
6S8	1 of 4	1,100	-	20	Ep = 100 Ec = -1.0
6S8	2 of 4	-	0.8	-	Ep = 10
6S8	3 of 4	-	0.8	-	Ep = 10
6S8	4 of 4	-	0.8	-	Ep = 10
6SA7	1 of 2	700	-	20	Ep = 100 Eac = 100 Ec = -1.0
6SA7	2 of 2	4,800	-	20	Ep = 100 Eac = 100 Ec = -1.0 Spl. Ckt.
6SC7	1 of 2	1,400	-	20	Ep = 150 Ec = -1.0
6SC7	2 of 2	1,400	-	20	Ep = 150 Ec = -1.0
6SF5	1 of 1	1,400	-	20	Ep = 100 Ec = -1.0
6SF7	1 of 2	2,500	-	20	Ep = 100 Eac = 100 Ec = -1.0
6SF7	2 of 2	-	0.6	-	Ep = 10
6SC7	1 of 1	5,100	-	20	Ep = 100 Eac = 100 Rk = 90
6SH7	1 of 1	5,000	-	20	Ep = 100 Eac = 100 Ec = -1.0
6SJ7	1 of 1	2,000	-	20	Ep = 100 Eac = 100 Ec = 3.0
6SK7	1 of 1	3,000	-	20	Ep = 100 Eac = 100 Ec = -1.0
6SL7	1 of 2	1,400	-	20	Ep = 100 Ec = -1.0
6SL7	2 of 2	1,400	-	20	Ep = 100 Ec = -1.0
6SN7	1 of 2	3,500	-	20	Ep = 150 Ec = -2.9
6SN7	2 of 2	3,500	-	20	Ep = 150 Ec = -2.9
6XQ7	1 of 3	1,100	-	20	Ep = 100 Ec = -1.0
6SQ7	2 of 3	-	0.6	-	Ep = 10
6SQ7	3 of 3	-	0.6	-	Ep = 10
6SR7	1 of 3	2,500	-	20	Ep = 150 Ec = -3.0
6SR7	2 of 3	-	0.6	-	Ep = 10
6SR7	3 of 3	-	0.6	-	Ep = 10
6T4	1 of 1	7,600	-	20	Ep = 100 Rk = 270



TUBE	TEST	Full-Scale			Test Condition
		UMFEXN	MA	H-K	
6T8	1 of 4	1,600	-	2H	$E_p = 100$ $E_c = -1.0$
6T8	2 of 4	-	22	10	$E_p = 9$
6T8	3 of 4	-	22	10	$E_p = 9$
6T8	4 of 4	-	22	10	$E_p = 9$
6L8	1 of 2	5,700	-	20	$E_p = 100$ $E_{sc} = 100$ $R_k = 70$
6L8	2 of 2	10,700	-	2H	$E_p = 150$ $R_k = 60$
6V3	1 of 1	-	148	10	$E_p = 500$ VAC (H-W)
6V6	1 of 1	4,700	-	50	$E_p = 150$ $E_{sc} = 150$ $E_c = -4.2$
6V8	1 of 4	1,500	-	20	$E_p = 100$ $E_c = -1.0$
6V8	2 of 4	-	0.6	-	$E_p = 10$
6V8	3 of 4	-	44	10	$E_p = 9$
6V8	4 of 4	-	44	10	$E_p = 9$
6W4	1 of 1	-	148	10	$E_p = 500$ VAC (H-W)
6W6	1 of 1	10,100	-	70	$E_p = 150$ $E_{sc} = 150$ $E_c = -12$
6X4	1 of 1	-	112	150	$E_p = 250$ VAC (H-W)
6X5	1 of 1	-	112	150	$E_p = 250$ VAC (H-W)
6X8	1 of 2	3,800	-	20	$E_p = 150$ $E_{sc} = 150$ $R_k = 200$
6X8	2 of 2	7,300	-	20	$E_p = 100$ $R_k = 100$
6Y6	1 of 1	9,400	-	70	$E_p = 100$ $E_{sc} = 100$ $E_c = -8.0$
7AF7	1 of 2	2,400	-	20	$E_p = 100$ $E_c = -3.0$
7AF7	2 of 2	2,400	-	20	$E_p = 100$ $E_c = -3.0$
7AG7	1 of 1	3,300	-	20	$E_p = 100$ $E_{sc} = 100$ $E_c = -1.0$
7AU7	1 of 2	3,800	-	20	$E_p = 150$ $E_c = -3.0$
7AU7	2 of 2	3,800	-	20	$E_p = 150$ $E_c = -3.0$
7H6	1 of 3	1,100	-	20	$E_p = 100$ $E_c = -1.0$
7H6	2 of 3	-	0.6	-	$E_p = 10$
7H6	3 of 3	-	0.6	-	$E_p = 10$
7B8	1 of 2	700	-	20	$E_p = 100$ $E_{sc} = 100$ $E_c = -5.8$
7B8	2 of 2	1,800	-	20	$E_p = 100$ $E_{sc} = 100$ $E_c = -7.6$

TUBE	TEST	Full-Scale			Test Condition
		UMFEXN	MA	H-K	
7C5	1 of 1	4,700	-	50	$E_p = 150$ $E_{sc} = 150$ $E_c = -4.2$
7E6	1 of 3	2,500	-	20	$E_p = 150$ $E_c = -3.0$
7E6	2 of 3	-	0.6	-	$E_p = 10$
7E6	3 of 3	-	0.6	-	$E_p = 10$
7F8	1 of 2	6,500	-	10	$E_p = 150$ $R_k = 100$
7F8	2 of 2	6,500	-	10	$E_p = 150$ $R_k = 100$
7H7	1 of 1	5,000	-	2H	$E_p = 100$ $E_{sc} = 100$ $E_c = -1.5$
7K7	1 of 2	3,500	-	2H	$E_p = 150$ $E_c = -2.9$
7K7	2 of 2	3,500	-	20	$E_p = 150$ $E_c = -2.9$
7Q7	1 of 2	900	-	20	$E_p = 100$ $E_{sc} = 100$ $E_c = -1.0$
7Q7	2 of 2	5,700	-	20	$E_p = 100$ $E_c = -1.0$ Spl. Ckt.
7W7	1 of 1	6,900	-	20	$E_p = 150$ $E_{sc} = 150$ $R_k = 160$
8AW8A	1 of 2	11,300	-	20	$E_p = 150$ $E_{sc} = 150$ $R_k = 180$
8AW8A	2 of 2	6,300	-	20	$E_p = 150$ $E_c = -1.2$
8CG7	1 of 2	3,500	-	20	$E_p = 150$ $E_c = -2.9$
8CG7	2 of 2	3,500	-	20	$E_p = 150$ $E_c = -2.9$
8CM7	1 of 2	3,300	-	20	$E_p = 150$ $E_c = -4.0$
8CM7	2 of 2	6,300	-	20	$E_p = 150$ $E_c = -3.5$
9AU7	1 of 2	3,800	-	20	$E_p = 150$ $E_c = -3.0$
9AU7	2 of 2	3,800	-	20	$E_p = 150$ $E_c = -3.0$
12A8	1 of 2	700	-	20	$E_p = 100$ $E_{sc} = 100$ $E_c = -5.8$
12A8	2 of 2	1,800	-	20	$E_p = 100$ $E_{sc} = 100$ $E_c = 7.6$
12AB5	1 of 1	4,700	-	50	$E_p = 150$ $E_{sc} = 150$ $E_c = -4.2$
12AC6	1 of 1	600	-	20	$E_p = 9$ $E_{sc} = 9$ $E_c = 1.0$ Spl. Ckt.
12AD6	1 of 1	800	-	20	$E_p = 9$ $E_{sc} = 9$ $E_c = -1.0$ Spl. Ckt.

TUBE	TEST	Full-Scale			Test Condition
		Umhos	MA	H-K	
12A16	1 of 3	600	-	20	Ep = 9 Esc = -1.0
12A16	2 of 3	-	0.6	-	Ep = 10
12A16	3 of 3	-	0.6	-	Ep = 10
12A16	1 of 1	1,500	-	20	Ep = 9 Esc = 9 Ec = -1.0 Spl. Ckt.
12A15	1 of 2	-	26	10	Ep = 9
12A15	2 of 2	-	26	10	Ep = 9
12A15	1 of 1	4,700	-	50	Ep = 150 Esc = 150 Ec = -4.2
12A16	1 of 3	1,700	-	20	Ep = 100 Ec = -1.0
12A16	2 of 3	-	0.6	-	Ep = 10
12A16	3 of 3	-	0.6	-	Ep = 10
12A17	1 of 2	5,000	-	20	Ep = 100 Rk = 270
12A17	2 of 2	5,000	-	20	Ep = 100 Rk = 270
12A16	1 of 1	6,300	-	20	Ep = 150 Esc = 150 Rk = 70
12A17	1 of 2	3,800	-	20	Ep = 150 Ec = -3.0
12A17	2 of 2	3,800	-	20	Ep = 150 Ec = -3.0
12AV5	1 of 2	6,900	-	100	Ep = 150 Esc = 150 Ec = -21
12AV5	2 of 2	-	316	100	Ep = 60 Esc = 150 Ec = 0
12AV6	1 of 3	1,600	-	20	Ep = 100 Ec = -1.0
12AV6	2 of 3	-	0.6	-	Ep = 10
12AV6	3 of 3	-	0.6	-	Ep = 10
12AV7	1 of 2	10,700	-	20	Ep = 150 Rk = 60
12AV7	2 of 2	10,700	-	20	Ep = 150 Rk = 60
12AX4	1 of 1	-	148	10	Ep = 500 VAC (H-W)
12AX7	1 of 2	1,600	-	20	Ep = 100 Ec = -1.0
12AX7	2 of 2	1,600	-	20	Ep = 100 Ec = -1.0
12AZ7	1 of 2	5,000	-	20	Ep = 100 Rk = 270
12AZ7	2 of 2	5,000	-	20	Ep = 100 Rk = 270
12BA1	1 of 1	7,900	-	20	Ep = 150 Ec = -18
12BA6	1 of 1	5,900	-	20	Ep = 100 Esc = 100 Rk = 70

TUBE	TEST	Full-Scale			Test Condition
		Umhos	MA	H-K	
12BA7	1 of 2	2,200	-	20	Ep = 100 Esc = 100 Ec = -1.0
12BA7	2 of 2	8,800	-	20	Ep = 100 Esc = 100 Ec = -1.0
12BD6	1 of 1	3,200	-	20	Ep = 100 Esc = 100 Ec = -1.0
12BE6	1 of 2	600	-	20	Ep = 100 Esc = 100 Ec = -3.1 Spl. Ckt.
12BE6	2 of 2	8,600	-	20	Ep = 100 Ec = -1.0 Spl. Ckt.
12BF6	1 of 3	2,500	-	20	Ep = 150 Ec = -3.0
12B16	2 of 3	-	0.6	-	Ep = 10
12B16	3 of 3	-	0.6	-	Ep = 10
12BH7	1 of 2	4,800	-	20	Ep = 150 Ec = -5.0
12BH7	2 of 2	4,800	-	20	Ep = 150 Ec = -5.0
12BK5	1 of 1	10,000	-	70	Ep = 150 Esc = 150 Ec = -1.0
12BN6	1 of 2	1,500	-	20	Ep = 50 Esc = 50 Rk = 350 Spl. Ckt.
12BN6	2 of 2	1,500	-	20	Ep = 50 Esc = 50 Rk = 150 Spl. Ckt.
12BQ6	1 of 2	6,900	-	100	Ep = 150 Esc = 150 Ec = -21
12BQ6	2 of 2	-	316	100	Ep = 60 Esc = 150 Ec = 0
12BR7	1 of 3	5,000	-	20	Ep = 100 Rk = 270
12BR7	2 of 3	-	18	10	Ep = 9
12BR7	3 of 3	-	18	10	Ep = 9
12BW4	1 of 1	-	160	150	Ep = 250 VAC (H-W)
12BY7A	1 of 1	13,800	-	20	Ep = 150 Esc = 150 Rk = 70
12BZ7	1 of 2	4,500	-	20	Ep = 150 Ec = -1.0
12BZ7	2 of 2	4,500	-	20	Ep = 150 Ec = -1.0
12C5	1 of 1	10,000	-	70	Ep = 100 Esc = 100 Ec = -6.2
12CA5	1 of 1	10,000	-	70	Ep = 100 Esc = 100 Ec = -3.2
12CM6	1 of 1	4,700	-	50	Ep = 150 Esc = 150 Ec = -4.2
12CR6	1 of 2	2,500	-	20	Ep = 100 Esc = 100 Ec = -2.0
12CR6	2 of 2	-	0.6	-	Ep = 10

TUBE	TEST	Full-Scale			Test Condition
		Umhos	MA	H-K	
12CS6	1 of 2	1,500	-	20	$E_p = 50$ $E_{sc} = 50$ $E_c = -1.5$
12CS6	2 of 2	1,500	-	20	$E_p = 50$ $E_{sc} = 50$ $E_c = 1.0$
12CU6	1 of 2	6,900	-	100	$E_p = 150$ $E_{sc} = 150$ $E_c = -21$
12CL6	2 of 2	-	316	100	$E_p = 60$ $E_{sc} = 150$ $E_c = 0$
12DQ6	1 of 2	7,100	-	110	$E_p = 150$ $E_{sc} = 150$ $E_c = 21$
12DQ6	2 of 2	-	420	100	$E_p = 60$ $E_{sc} = 150$ $E_c = 0$
12H6	1 of 2	-	6.1	10	$E_p = 9$
12H6	2 of 2	-	6.1	10	$E_p = 9$
12J5	1 of 1	3,500	-	30	$E_p = 150$ $E_c = -2.9$
12L6	1 of 1	10,100	-	70	$E_p = 150$ $E_{sc} = 150$ $E_c = -12$
12SA7	1 of 2	700	-	20	$E_p = 100$ $E_{sc} = 100$ $E_c = -1.0$
12SA7	2 of 2	4,800	-	20	$E_p = 100$ $E_{sc} = 100$ $E_c = -1.0$ Spl. Ckt.
12SC7	1 of 2	1,400	-	20	$E_p = 150$ $E_c = -1.0$
12SC7	2 of 2	1,400	-	20	$E_p = 150$ $E_c = -1.0$
12SF7	1 of 2	2,500	-	20	$E_p = 100$ $E_{sc} = 100$ $E_c = -1.0$
12SF7	2 of 2	-	0.6	-	$E_p = 10$
12SG7	1 of 1	5,100	-	20	$E_p = 100$ $E_{sc} = 100$ $R_k = 90$
12SI7	1 of 1	5,000	-	20	$E_p = 100$ $E_{sc} = 100$ $E_c = 1.0$
12SJ7	1 of 1	2,000	-	20	$E_p = 100$ $E_{sc} = 100$ $E_c = -3.0$
12SK7	1 of 1	3,000	-	20	$E_p = 100$ $E_{sc} = 100$ $E_c = -1.0$
12SL7	1 of 2	1,400	-	20	$E_p = 100$ $E_c = -1.0$
12SL7	2 of 2	1,400	-	20	$E_p = 100$ $E_c = -1.0$
12SN7	1 of 2	3,300	-	20	$E_p = 150$ $E_c = -2.9$
12SN7	2 of 2	3,500	-	20	$E_p = 150$ $E_c = -2.9$
12SQ7	1 of 3	1,100	-	20	$E_p = 100$ $E_c = -1.0$
12SQ7	2 of 3	-	0.6	-	$E_p = 10$
12SQ7	3 of 3	-	0.6	-	$E_p = 10$

TUBE	TEST	Full-Scale			Test Condition
		Umhos	MA	H-K	
12SR7	1 of 3	2,500	-	20	$E_p = 150$ $E_c = -3.0$
12SR7	2 of 3	-	0.6	-	$E_p = 10$
12SR7	3 of 3	-	0.6	-	$E_p = 10$
12V6	1 of 1	4,700	-	50	$E_p = 150$ $E_{sc} = 150$ $E_c = -6.0$
12W6	1 of 1	10,100	-	70	$E_p = 150$ $E_{sc} = 150$ $E_c = -12$
12X4	1 of 1	-	112	150	$E_p = 250$ VAC (H-W)
17AV5	1 of 2	6,900	-	100	$E_p = 150$ $E_{sc} = 150$ $E_c = -21$
17AV5	2 of 2	-	316	100	$E_p = 60$ $E_{sc} = 150$ $E_c = 0$
17AX4	1 of 1	-	148	10	$E_p = 500$ VAC (H-W)
17CA5	1 of 1	10,000	-	70	$E_p = 100$ $E_{sc} = 100$ $E_c = 3.2$
17DQ6	1 of 2	7,000	-	100	$E_p = 150$ $E_{sc} = 150$ $E_c = -21$
17DQ6	2 of 2	-	420	100	$E_p = 60$ $E_{sc} = 150$ $E_c = 0$
19AU4	1 of 1	-	148	10	$E_p = 500$ VAC (H-W)
19BC6	1 of 2	8,800	-	100	$E_p = 150$ $E_{sc} = 150$ $E_c = -1.9$
19BC6	2 of 2	-	126	100	$E_p = 50$ $E_{sc} = 150$ $E_c = 0$
19J5	1 of 2	6,600	-	20	$E_p = 100$ $R_k = 50$ Spl. Ckt.
19J6	2 of 2	6,600	-	20	$E_p = 100$ $R_k = 50$ Spl. Ckt.
19TS	1 of 4	1,600	-	20	$E_p = 100$ $E_c = -1.0$
19T8	2 of 4	-	22	10	$E_p = 9$
19T8	3 of 4	-	22	10	$E_p = 9$
19T8	4 of 4	-	22	10	$E_p = 9$
25AV5	1 of 2	6,900	-	100	$E_p = 150$ $E_{sc} = 150$ $E_c = -21$
25AV5	2 of 2	-	316	100	$E_p = 60$ $E_{sc} = 150$ $E_c = 0$
25AX4	1 of 1	-	148	10	$E_p = 500$ VAC (H-W)
25BK5	1 of 1	10,000	-	70	$E_p = 150$ $E_{sc} = 150$ $E_c = -1.0$

TUBE	TEST	Full-Scale		H-K	Test Condition
		Umhos	MA		
25BQ6	1 of 2	6,900	-	100	$E_p = 50$ $E_{sc} = 150$ $E_c = -21$
25BQ6	2 of 2	-	316	100	$E_p = 60$ $E_{sc} = 150$ $E_c = 0$
25C5	1 of 1	10,000	-	70	$E_p = 100$ $E_{sc} = 100$ $E_c = -6.2$
25CA5	1 of 1	10,000	-	70	$E_p = 100$ $E_{sc} = 100$ $E_c = -3.2$
25CD6	1 of 2	10,700	-	100	$E_p = 150$ $E_{sc} = 150$ $E_c = -23$
25C116	2 of 2	-	316	100	$E_p = 60$ $E_{sc} = 100$ $E_c = 0$
25CD6	1 of 2	6,900	-	100	$E_p = 150$ $E_{sc} = 150$ $E_c = -21$
25C116	2 of 2	-	316	100	$E_p = 60$ $E_{sc} = 150$ $E_c = 0$
251XQ6	1 of 2	7,000	-	100	$E_p = 150$ $E_{sc} = 150$ $E_c = -21$
251XQ6	2 of 2	-	420	100	$E_p = 60$ $E_{sc} = 150$ $E_c = 0$
25L6	1 of 1	10,100	-	70	$E_p = 150$ $E_{sc} = 150$ $E_c = -12$
25W4	1 of 1	-	148	10	$E_p = 500$ VAC (H-W)
25W6	1 of 1	10,100	-	70	$E_p = 150$ $E_{sc} = 150$ $E_c = -12$
25Z6	1 of 2	-	120	100	$E_p = 250$ VAC (H-W)
25Z6	2 of 2	-	120	100	$E_p = 250$ VAC (H-W)
35A5	1 of 1	7,300	-	70	$E_p = 100$ $E_{sc} = 100$ $E_c = -6.0$
35B5	1 of 1	7,300	-	70	$E_p = 100$ $E_{sc} = 100$ $E_c = -6.11$
35C5	1 of 1	7,300	-	70	$E_p = 100$ $E_{sc} = 100$ $E_c = -6.0$
35L6	1 of 1	7,300	-	70	$E_p = 100$ $E_{sc} = 100$ $E_c = -6.0$
35W4	1 of 1	-	160	100	$E_p = 250$ VAC (H-W)
35Y4	1 of 1	-	160	100	$E_p = 250$ VAC (H-W)
35Z5	1 of 1	-	160	100	$E_p = 250$ VAC (H-W)
50A5	1 of 1	10,100	-	70	$E_p = 150$ $E_{sc} = 150$ $E_c = -12$
50B5	1 of 1	10,000	-	70	$E_p = 100$ $E_{sc} = 100$ $E_c = -6.2$
50BK5	1 of 1	10,100	-	70	$E_p = 150$ $E_{sc} = 150$ $E_c = -1.0$

TUBE	TEST	Full-Scale		H-K	Test Condition
		Umhos	MA		
50C5	1 of 1	10,000	-	70	$E_p = 100$ $E_{sc} = 100$ $E_c = -6.2$
50L6	1 of 1	10,100	-	70	$E_p = 150$ $E_{sc} = 150$ $E_c = -12$
117L7	1 of 2	6,500	-	100	$E_p = 100$ $E_{sc} = 100$ $E_c = -5.0$
117L7	2 of 2	-	120	150	$E_p = 250$ VAC (H-W)
117M7	1 of 2	6,500	-	100	$E_p = 100$ $E_{sc} = 100$ $E_c = -5.0$
117M7	2 of 2	-	120	150	$E_p = 250$ VAC (H-W)
117N7	1 of 3	8,800	-	70	$E_p = 100$ $E_{sc} = 100$ $E_c = -6.0$
117N7	2 of 3	-	-	70	Rect. Sect. Shorts and Leakage Test Only
117N7	3 of 3	-	25	-	$E_p = 117$ VAC (H-W) Spl. Ckr.
117Z3	1 of 1	-	144	100	$E_p = 250$ VAC (H-W)
X155	1 of 2	8,200	-	20	$E_p = 150$ $R_k = 150$
X155	2 of 2	8,200	-	20	$E_p = 150$ $R_k = 150$
5879	1 of 1	1,200	-	10	$E_p = 100$ $E_{sc} = 100$ $E_c = -2.6$