3RP1-A

OSCILLOGRAPH TUBE

ELECTROSTATIC FOCUS ELECTROSTATIC DEFLECTION

DATA

General:

Heater, for Unipotential Cathode:		
Voltage	6.3	ac or dc volts
Current	0.6 ± 10%	amp
Direct Interelectrode Capacitances (Approx.):		
Grid No.1 to all other electrodes	8	μμf
Deflecting electrode DJ_1 to deflecting electrode DJ_2	2	μμf
Deflecting electrode DJ_3 to deflecting electrode DJ_4	2	μμf
DJ_1 to all other electrodes	11	μμf
DJ_2 to all other electrodes	8	μμf
DJ_3 to all other electrodes	7	μμf
DJ_4 to all other electrodes	8	μμf
Faceplate	Flat Clear Glass	
Phosphor (For Curves, see front of this Section)	P1	
Fluorescence	Green	
Phosphorescence	Green	
Persistence	Medium	
Focusing Method	Electrostatic	
Deflection Method	Electrostatic	
Overall Length	9-1/8" ± 1/4"	
Greatest Diameter of Bulb	3" ± 1/16"	
Minimum Useful Screen Diameter	2-3/4"	
Mounting Position	Any	
Weight (Approx.)	12 oz	
Bulb	J-24S1	
Base	Small-Shell Duodecal 10-Pin (JETEC No.B10-75), or Small-Shell Duodecal 12-Pin (JETEC No.B12-43)	
Basing Designation for BOTTOM VIEW	12E	

Pin 1 – Heater
Pin 2 – Grid No.1
Pin 3 – Cathode
Pin 4 – Grid No.3
Pin 5▲– Internal Connection–Do Not Use
Pin 6 – Deflecting Electrode DJ_3
Pin 7 – Deflecting Electrode DJ_4

Pin 8 – Ultor (Grid No.2, Grid No.4, Collector)
Pin 9 – Deflecting Electrode DJ_2
Pin 10 – Deflecting Electrode DJ_1
Pin 11▲– Internal Connection–Do Not Use
Pin 12 – Heater

DJ_1 and DJ_2 are nearer the screen
DJ_3 and DJ_4 are nearer the base

▲ Pins 5 and 11 are omitted from the 10-pin base.

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

3RP1-A

OSCILLOGRAPH TUBE

With DJ_1 positive with respect to DJ_2, the spot is deflected toward pin 4. With DJ_3 positive with respect to DJ_4, the spot is deflected toward pin 1.

The plane through the tube axis and pin 1 may vary from the trace produced by DJ_3 and DJ_4 by 10° (measured about the tube axis).

The angle between $DJ_1 - DJ_2$ trace and $DJ_3 - DJ_4$ trace is 90° ± 3°.

Maximum Ratings, *Design-Center Values:*

ULTOR° VOLTAGE	2500 max.	volts
ULTOR INPUT (AVERAGE)	6 max.	watts
GRID-No.3 VOLTAGE	1000 max.	volts
GRID-No.1 VOLTAGE:		
Negative bias value	200 max.	volts
Positive bias value	0 max.	volts
Positive peak value	2 max.	volts
PEAK VOLTAGE BETWEEN ULTOR AND ANY DEFLECTING ELECTRODE	500 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	125 max.	volts
Heater positive with respect to cathode	125 max.	volts

Equipment Design Ranges:

For any ultor voltage (E_{c_4}) between 500 and 2500 volts*

Grid-No.3 Voltage for Focus	16.5% to 31% of E_{c4}	volts
Maximum Grid-No.1 Voltage for Visual Extinction of Undeflected Focused Spot	−6.75% of E_{c4}	volts
Grid-No.3 Current for Any Operating Condition	−15 to +10	μamp
Deflection Factor:		
DJ_1 & DJ_2	73 to 99	v dc/in./kv of E_{c4}
DJ_3 & DJ_4	52 to 70	v dc/in./kv of E_{c4}
Spot Position	##	

° The "ultor" in a cathode-ray tube is the electrode to which is applied the highest dc voltage for accelerating the electrons in the beam prior to its deflection. In the 3RP1-A, the ultor function is performed by grid No.4. Since grid No.4, grid No.2, and collector are connected together within the 3RP1-A, they are collectively referred to simply as "ultor" for convenience in presenting data and curves.

* Brilliance and definition decrease with decreasing ultor voltage. A value as low as 500 volts is recommended only for low-velocity deflection and low ambient-light levels.

The center of the undeflected focused spot will fall within a circle having 7.5-mm radius concentric with the center of the tube face.

TUBE DIVISION
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

3RP1-A

OSCILLOGRAPH TUBE

Examples of Use of Design Ranges:

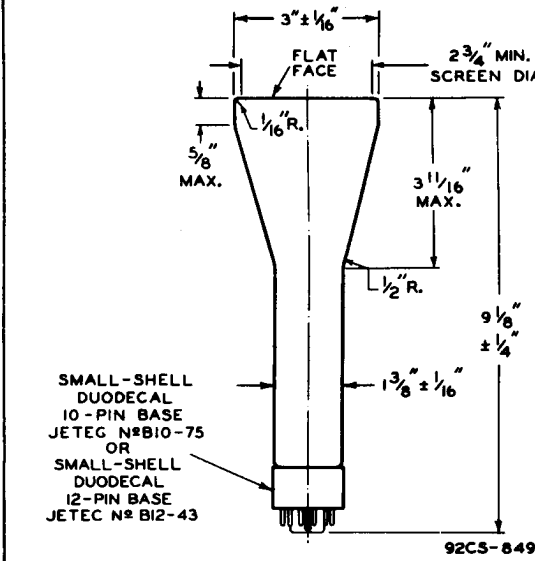
For ultor voltages of	*1000*	*2000*	*volts*
Grid-No.3 Voltage for Focus.	165 to 310	330 to 620	volts
Maximum Grid-No.1 Voltage for Visual Extinction of Undeflected Focused Spot	-67.5	-135	volts
Deflection Factors:			
DJ_1 & DJ_2.	73 to 99	146 to 198	volts dc/in.
DJ_3 & DJ_4.	52 to 70	104 to 140	volts dc/in.

Maximum Circuit Values:

Grid-No.1-Circuit Resistance . . . . . 1.5 max. megohms

Resistance in Any Deflecting-Electrode Circuit■ . . . . . 5 max. megohms

■ It is recommended that the deflecting-electrode circuit resistances be approximately equal.

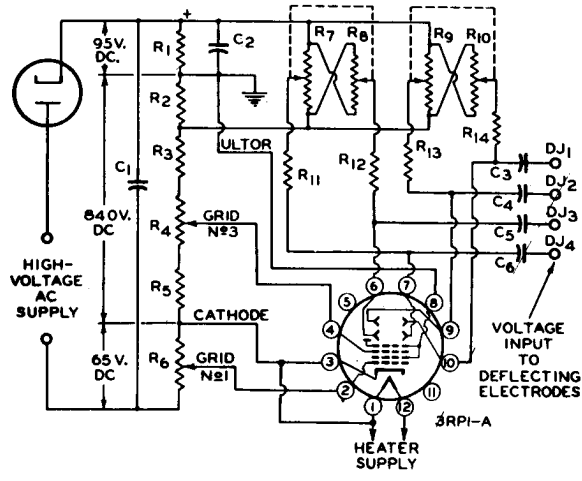


CENTER LINE OF BULB WILL NOT DEVIATE MORE THAN 2° IN ANY DIRECTION FROM PERPENDICULAR ERECTED AT CENTER OF BOTTOM OF BASE.

3RP1-A

3RP1-A
OSCILLOGRAPH TUBE

TYPICAL OSCILLOGRAPH CIRCUIT



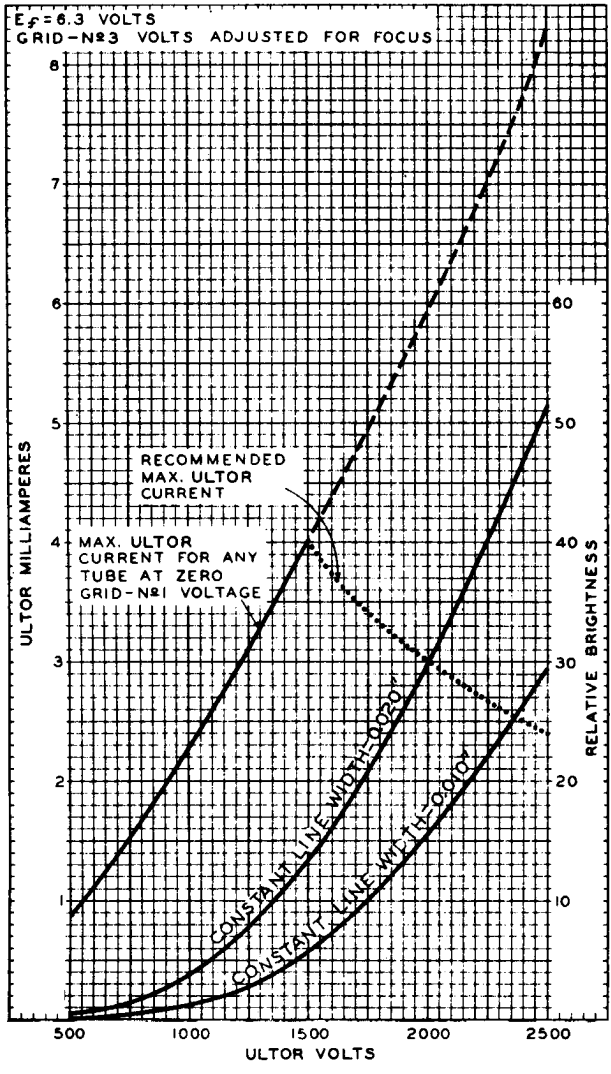
92CS-6777RI

C1: 0.2 μf
C2: 1.0 μf
C3 C4 C5 C6: 0.05-μf Blocking Capacitors*
R1 R2: 2.5 Megohms, 0.5 Watt
R3: 2.5 Megohms, 1 Watt
R4: 1.0-Megohm Potentiometer
R5: 0.5 Megohm, 0.5 Watt
R6: 0.35 Megohm, 0.5 Watt
R7 R8: Dual 5-Megohm Potentiometer
R9 R10: Dual 5-Megohm Potentiometer
R11 R12 R13 R14: 2 Megohms, 0.5 Watt

* When cathode is grounded, capacitors should have high voltage rating; when ultor is grounded, they may have low voltage rating. For dc amplifier service, deflecting electrodes should be connected direct to amplifier output. In this service, it is preferable usually to remove deflecting-electrode resistors to minimize loading effect on amplifier. In order to minimize spot defocusing, it is essential that ultor be returned to a point in the amplifier system which will give the lowest possible potential difference between ultor and the deflecting electrodes.

RCA

3RP1-A
CHARACTERISTICS



RCA

3RP1-A

AVERAGE CHARACTERISTICS