



3JPI

3JPI

OSCILLOGRAPH TUBE

POST-DEFLECTION ACCELERATOR

ELECTROSTATIC FOCUS

ELECTROSTATIC DEFLECTION

DATA

General:

Heater, for Unipotential Cathode:

Voltage	6.3	ac or dc volts
Current	0.6	amp

Direct Interelectrode Capacitances (Approx.):

Grid ^o No.1 to All Other Electrodes	8	$\mu\mu\text{f}$
Cathode to All Other Electrodes	8	$\mu\mu\text{f}$
DJ ₁ to DJ ₂	2.5	$\mu\mu\text{f}$
DJ ₃ to DJ ₄	2	$\mu\mu\text{f}$
DJ ₁ to All Other Electrodes	8	$\mu\mu\text{f}$
DJ ₂ to All Other Electrodes	7	$\mu\mu\text{f}$
DJ ₃ to All Other Electrodes	7	$\mu\mu\text{f}$
DJ ₄ to All Other Electrodes	8	$\mu\mu\text{f}$

Phosphor (For Curves, see front of this Section) P1
 Fluorescence and Phosphorescence Green
 Persistence of Phosphorescence Medium

Focusing Method Electrostatic

Deflection Method Electrostatic

Overall Length 10" \pm 1/4"

Greatest Diameter of Bulb 3" \pm 1/16"

Minimum Useful Screen Diameter 2-3/4"

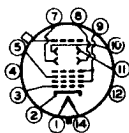
Mounting Position Any

Cap. Recessed Small Ball (JETEC No. J1-22)

Base Medium-Shell Diheptal 12-Pin (JETEC No. B12-37)

Basing Designation for BOTTOM VIEW 14J1

- | | |
|--|---|
| Pin 1 - Heater | Pin 9 - Anode No. 2,
Grid No. 2 |
| Pin 2 - Cathode | Pin 10 - Deflecting
Electrode
DJ ₂ |
| Pin 3 - Grid No. 1 | Pin 11 - Deflecting
Electrode
DJ ₁ |
| Pin 4 - Internal
Connection-
Do Not Use | Pin 12 - No
Connection |
| Pin 5 - Anode No. 1 | Pin 14 - Heater
Cap - Anode No. 3 |
| Pin 7 - Deflecting
Electrode
DJ ₃ | |
| Pin 8 - Deflecting
Electrode DJ ₄ | |



*DJ₁ and DJ₂ are nearer the screen
 DJ₃ and DJ₄ are nearer the base*

With DJ₁ positive with respect to DJ₂, the spot is deflected toward pin 5. With DJ₃ positive with respect to DJ₄, the spot is deflected toward pin 2.

The plane through the tube axis and each of the following items may vary from the trace produced by DJ₁ and DJ₂ by the following angular tolerances measured about the tube axis: Pin 5, 10°; Cap (on same side of tube as pin 5), 10°.

The angle between DJ₁ - DJ₂ trace and DJ₃ - DJ₄ trace is 90° \pm 3°.



3JPI

OSCILLOGRAPH TUBE

Maximum Ratings, Design-Center Values:

ANODE-No.3 VOLTAGE	4000 max.	volts
ANODE-No.2 ^o VOLTAGE.	2000 max.	volts
RATIO OF ANODE-No.3 VOLTAGE TO		
ANODE-No.2 VOLTAGE	2.3 : 1 max.	
ANODE-No.1 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 ANODE No.2		
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 anode-No.3 voltage (E_{b3}) between 2000* and 4000 volts
and any anode-No.2 voltage (E_{b2}) between 1500** and 2000 volts

Anode-No.1 Voltage 20% to 34.5% of E_{b2} volts

Grid-No.1 Voltage† 1.5% to 4.5% of E_{b2} volts

Anode-No.1 Current for any

Operating Condition -50 to +10 μ amp

Deflection Factors:

	<i>When $E_{b3} = 2 \times E_{b2}$</i>	
DJ ₁ & DJ ₂	85 to 115	v dc/in./kv of E_{b2}
DJ ₃ & DJ ₄	62.5 to 85	v dc/in./kv of E_{b2}
	<i>When $E_{b3} = E_{b2}$</i>	
DJ ₁ & DJ ₂	68 to 92	v dc/in./kv of E_{b2}
DJ ₃ & DJ ₄	50 to 68	v dc/in./kv of E_{b2}
Spot Position.	#	

□ Anode No.2 and grid No.7, which are connected together within tube, and referred to herein as anode No.2.

● At or near this rating, the effective resistance of the anode supply should be adequate to limit the anode-No.2 input power to 6 watts.

* It is recommended that anode-No.3 voltage be not less than 3000 volts for high-speed transients.

** Recommended minimum value of anode-No.2 voltage.

With heater voltage of 6.3 volts, anode-No.3 voltage of 3000 volts, anode-No.2 voltage of 1500 volts, anode-No.1 voltage adjusted for focus, grid-No.1 voltage adjusted to give spot that is just visible, each deflecting electrode connected through 1-megohm resistor to anode No.2, and tube shielded from all extraneous fields, the undeflected focused spot will fall within a 15-mm square centered at the geometric center of the tube face and having one side parallel to the trace produced by DJ₁ and DJ₂.

†: See next page.



3JPI

3JPI

OSCILLOGRAPH TUBE

Examples of Use of Design Ranges:

For anode-No. 3 voltage of	2000	3000	4000	volts
and anode-No. 2 voltage of	2000	1500	2000	volts
Anode-No. 1 Volt.	400 to 690	300 to 515	400 to 690	volts
Grid-No. 1 Volt.†	-30 to -90	22.5 to -67.5	-30 to -90	volts
Deflection Factors:				
DJ ₁ & DJ ₂ . . .	136 to 184	127 to 173	170 to 230	■
DJ ₃ & DJ ₄ . . .	100 to 136	94 to 128	125 to 170	■

Maximum Circuit Values:

Grid-No. 1-Circuit Resistance	1.5 max. megohms
Resistance in Any Deflecting-Electrode Circuit [▲]	5.0 max. megohms

† For visual extinction of undeflected focused spot.

■ volts dc/in.

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

OPERATING NOTES

The 3JPI utilizes a medium-persistence screen having green fluorescence and phosphorescence. The screen has high visual efficiency and exceptionally good brightness contrast between the scanned line and the background. Under conditions of high ambient light, contrast may be maintained by the use of a green filter, such as Wratten No. 58.

For high-speed scanning, it is recommended that the anode-No. 3 (post-deflection accelerator) voltage be not less than 3000 volts, but for low- and medium-speed scanning, anode No. 3 may be operated at a voltage as low as 2000 volts.

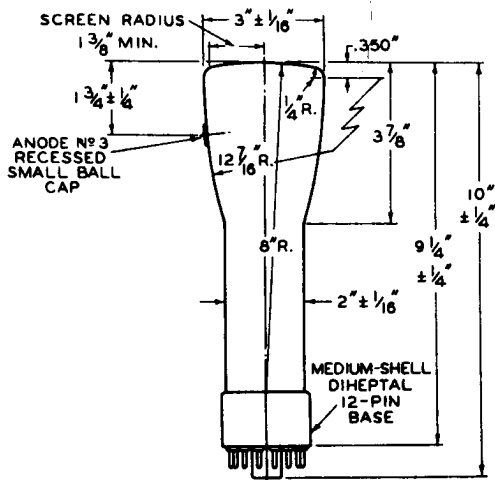
Because of its medium persistence, the 3JPI is particularly useful where either medium-speed non-recurring phenomena or medium- and high-speed recurring phenomena are to be observed. The persistence is such that the 3JPI can be operated with scanning frequencies as low as 20 cycles per second without excessive flicker.

3JPI



3JPI

OSCILLOGRAPH TUBE



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

92CM-6583



3JPI

3JPI

CHARACTERISTICS

$E_f = 6.3$ VOLTS

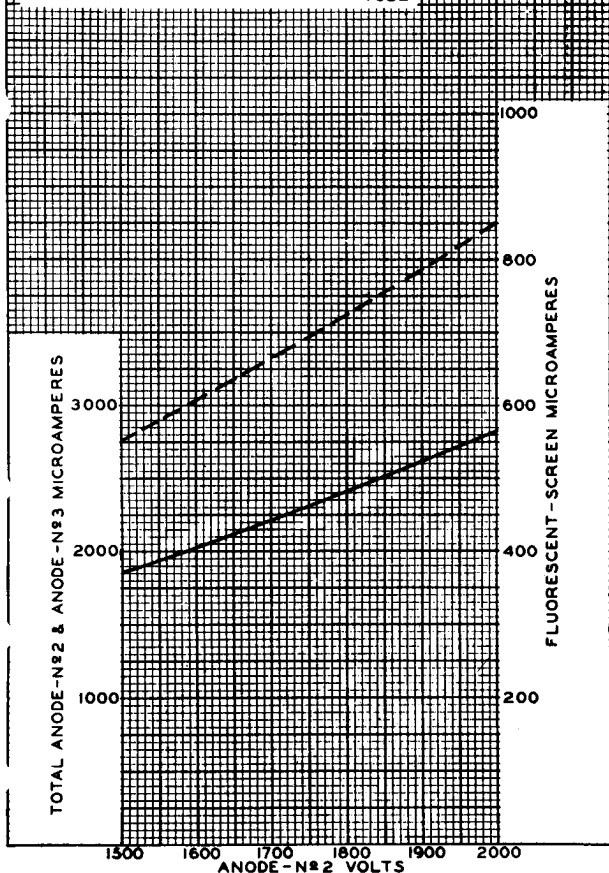
ANODE-N $\#$ 1 VOLTS ADJUSTED FOR FOCUS

ANODE-N $\#$ 3 VOLTS GREATER THAN
ANODE-N $\#$ 2 VOLTS

GRID-N $\#$ 1 VOLTS = 0

--- TYPICAL FLUORESCENT-SCREEN
(ANODE-N $\#$ 3) CURRENT

— MAX. TOTAL CURRENT FOR ANY
TUBE



3JPI



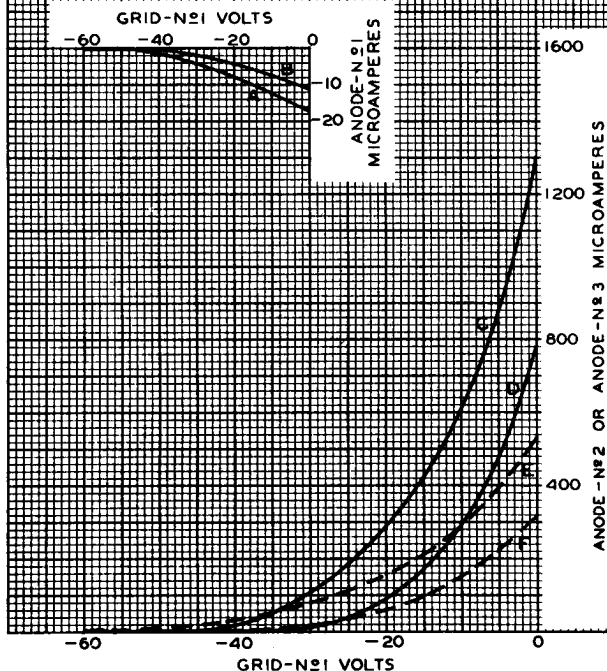
3JPI

AVERAGE CHARACTERISTICS

 $E_f = 6.3$ VOLTS

ANODE-Nº1 VOLTS ADJUSTED TO GIVE FOCUS

CURVE	ELECTRODE CURRENT	ANODE-Nº2 VOLTS	ANODE-Nº3 VOLTS
A	ANODE Nº 1	2000	4000
B	ANODE Nº 1	1500	3000
C	ANODE Nº 2	2000	4000
D	ANODE Nº 2	1500	3000
E	ANODE Nº 3	2000	4000
F	ANODE Nº 3	1500	3000



JUNE 22, 1951

TUBE DEPARTMENT

92CM-7670

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



3JP7

3JP7

OSCILLOGRAPH TUBE

POST-DEFLECTION ACCELERATOR

ELECTROSTATIC FOCUS

ELECTROSTATIC DEFLECTION

The 3JP7 is electrically and mechanically like the 3JP1 but utilizes a long-persistence, cascade (two-layer) screen which exhibits bluish fluorescence of short persistence and greenish-yellow phosphorescence which persists for several minutes under conditions of adequate excitation and low ambient light.

Because of its long persistence, the 3JP7 is particularly useful where either low-speed non-recurring phenomena or high-speed recurring phenomena are to be observed.

The persistence is such that the 3JP7 without filter can be operated with scanning frequencies as low as 30 cycles per second without excessive flicker. When used with a yellow filter, such as Wratten No.15 (G), the 3JP7 can be operated with much lower scanning frequencies.

GENERAL DATA, MAXIMUM RATINGS, AND EQUIPMENT DESIGN RANGES

for the 3JP7 are identical with those for the 3JP1 except that Spot Position is defined as follows:

With heater voltage of 6.3 volts, anode-No.3 voltage of 4000 volts, anode-No.2 voltage of 2000 volts, anode-No.1 voltage adjusted for focus, grid-No.1 voltage adjusted to give spot that is just visible, each deflecting electrode connected through 1-megohm resistor to anode No.2, and tube shielded from all extraneous fields, the undeflected focused spot will fall within a 12-mm square centered at the geometric center of the tube face and having one side parallel to the trace produced by DJ₁ and DJ₂.

THE SPECTRAL-ENERGY EMISSION CHARACTERISTIC,
BUILDUP CHARACTERISTICS,
and PERSISTENCE CHARACTERISTICS of
the P7 Phosphor are shown at the
front of this Section.