

3ABP- CATHODE-RAY TUBE

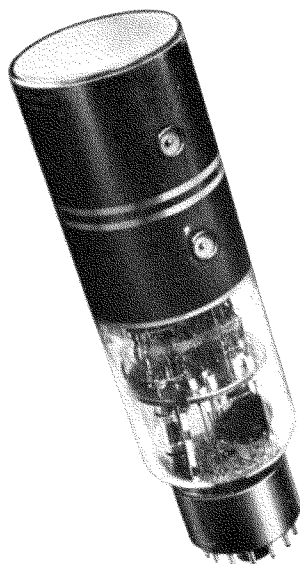
The Du Mont Type 3ABP- is a flat-faced electrostatically focused and deflected cathode-ray tube containing two separate electron-guns. Each electron beam is independent of the other except for the accelerator, heater and cathode connections. For high brightness with maximum deflection sensitivity, post-acceleration is utilized. The Type 3ABP- is one of the line of Du Mont tight-tolerance cathode-ray tubes.

The Type 3ABP- is used in applications requiring a two-beam presentation with high deflection sensitivity and good tracking accuracy on a short three-inch cathode-ray tube.

Deflection electrodes are designed for excellent deflection and tracking accuracy and are electrostatically shielded from each other to prevent interaction.

Both electron-guns employ a design requiring essentially zero focusing anode current.

All connections except for the accelerator and post-accelerator are brought out to the base pins to simplify the problem of connection. For insulation, the accelerator and post-accelerator connections are bulb terminals.



GENERAL CHARACTERISTICS (Note 1)

Electrical

Heater Voltage	6.3 Volts
Heater Current (Both Units)	$1.2 \pm 10\%$ Ampere
Focusing Method	Electrostatic
Deflecting Method	Electrostatic

	No. 1	No. 2	No. 7	No. 11
Phosphor				
Fluorescence	Green	Green	Blue	Blue
Phosphorescence	———	Green	Yellow	———
Persistence	Medium	Long	Long	Short

Direct Interelectrode Capacitances	Min.	Max.	
Cathodes to all other electrodes	4.8	7.2	μmf
Grid No. 1 to all other electrodes	3.7	5.5	μmf
D1 to D2	1.7	2.6	μmf
D3 to D4	1.7	2.6	μmf
D1 to all other electrodes except D2	5.6	8.4	μmf
D2 to all other electrodes except D1	5.6	8.4	μmf
D3 to all other electrodes except D4	4.9	7.3	μmf
D4 to all other electrodes except D3	4.9	7.3	μmf

Mechanical

Overall Length	$10\frac{3}{4} \pm \frac{1}{4}$ Inches
Greatest Diameter of Bulb	$3 \pm \frac{1}{16}$ Inches
Minimum Useful Screen Diameter	2.62 Inches
Bulb Contacts (Recessed Small Ball Caps)	J1-22
Base (Medium shell diheptal, 14 Pin)	E14-38
Basing	14T
Base Alignment	
D3D4 trace aligns with Pin No. 5 and Tube Axis	± 10 Degrees

Positive voltage on D1 deflects beam approximately towards Pin No. 1

Positive voltage on D3 deflects beam approximately towards Pin No. 12

Bulb Contact Alignment

J1-22 contacts align with D3D4 trace ± 10 Degrees

J1-22 contacts on same side as Pin No. 5

Trace Alignment

Angle between D1D2 and D3D4 traces 90 ± 1 Degree

Corresponding traces of each gun align with each other Within 1 Degree

MAXIMUM RATINGS

Post-Accelerator Voltage 6,000 Max. Volts D-C

Accelerator Voltage (Note 2) 2,000 Max. Volts D-C

Ratio Post-Accelerator Voltage to

Accelerator Voltage (Note 3) 3 Max.

Focusing Voltage 1,000 Max. Volts D-C

Grid No. 1 Voltage

Negative Bias Value 200 Max. Volts D-C

Positive Peak Value 0 Max. Volts D-C

Positive Bias Value 0 Max. Volts

Peak Voltage between Accelerator and any

Deflection Electrode 550 Max. Volts

TYPICAL OPERATING CONDITIONS

For Post-Accelerator Voltage of 4,000 Volts D-C

For Accelerator Voltage of 2,000 Volts D-C

Focusing Voltage 380 to 580 Volts D-C

Grid No. 1 Voltage (Note 4) -45 to -75 Volts D-C

Modulation Factor (Note 5) 40 Max. Volts D-C

Line Width "A" (Note 6) 018 Max. Inches

P1 Light Output (Note 6) 20 Ft. L. Min.

Deflection Factors:

D1 and D2 164 to 198 Volts DC/Inch

D3 and D4 148 to 181 Volts DC/Inch

Deflection Factor Uniformity (Note 7) $2\frac{1}{2}\%$ Maximum

Tracking Error (Note 8) 2%

Pattern Distortion @ 75% of Minimum

Useful Screen Diameter (Note 9) 2% Max.

Interaction Factor (Note 11) 000012 Max. Inches/Volt

Spot Position (Undelected, Focused) (Note 12) Within a $\frac{1}{4}$ Inch Radius Circle

CIRCUIT DESIGN VALUES

Focusing Voltage 190 to 290 Volts per Kilovolt of Accelerator Voltage

Focusing Current for any operating condition -50 to +10 Microamperes

Grid No. 1 Voltage (Note 4) -22.5 to -37.5 Volts per Kilovolt of Accelerator Voltage

Grid No. 1 Circuit Resistance 1.5 Max. Megohms

Deflection Factors:

Post-Accelerator Voltage = Accelerator Voltage

D1 and D2 63 to 77 Volts D-C/Inch/KV of Accelerator Voltage

D3 and D4 59.5 to 72.5 Volts D-C/Inch/KV of Accelerator Voltage

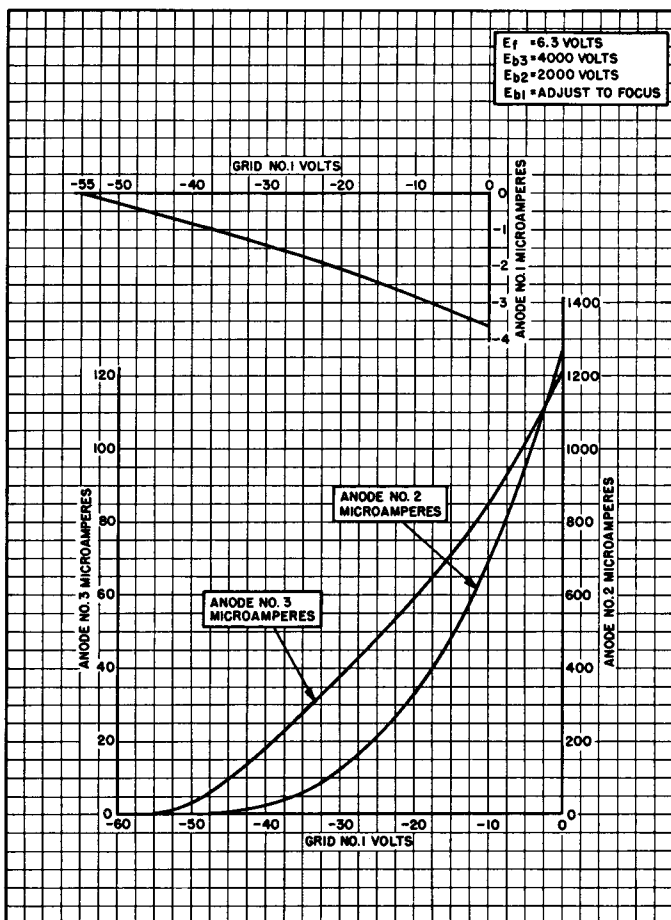
Resistance in any Deflecting-Electrode Circuit (Note 13) 5.0 Max. Megohms

NOTES

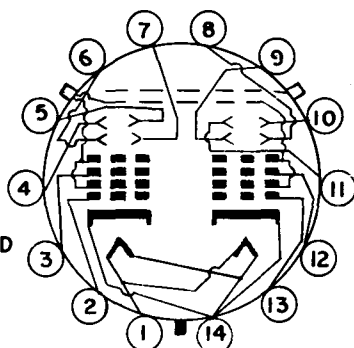
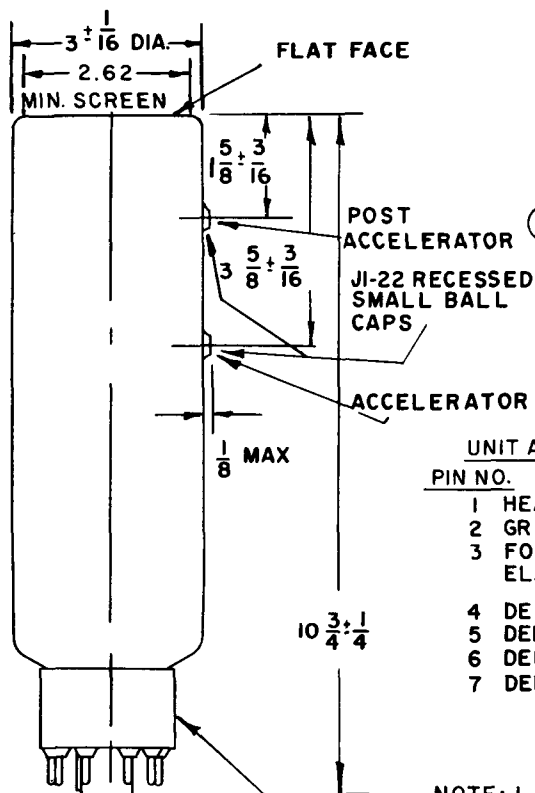
1. Values are for each unit unless otherwise stated.
2. Accelerator power input (avg.) should be limited to 6 watts.
3. This tube is designed for optimum performance when operating at an Eb3/Eb2 ratio of 2.0. Operation at other ratios of Eb3/Eb2 may result in increased deflection (non) uniformity, pattern distortion and tracking error.
4. For visual extinction of the focused undelected spot.
5. The increase in Grid No. 1 voltage from cut-off to produce an Ib3 of 25 μ ADC.
6. Measured in accordance with MIL-E-1 specifications using an Ib3 of 25 μ ADC.
7. The deflection factor (For both D1D2 and D3D4 plate pairs, separately) for deflections of less than 75% of the useful scan will not differ from the deflection factor for a deflection of 25% of the useful scan by more than the indicated value.

8. The positions of the spot of each beam, when deflected from the center by applied voltages proportional to the deflection factor will not deviate from each other by more than the indicated percentage of the deflection.
9. The edges of a raster pattern, whose mean dimensions are the indicated percentage of useful screen diameter, shall not deviate from the mean dimension rectangle by more than the specified amount.
10. Deflection accuracy may be obtained by combining angle between traces, deflection factor uniformity and pattern distortion characteristics. In general, for deflections less than those indicated the accuracy will improve.
11. The deflection of one beam when balanced DC Voltages are applied to the deflection electrodes of the other beam will not be greater than the indicated value.
12. Centered with respect to the tube face and with the tube shielded.
13. Deflection electrode circuit resistance should be equal.

TYPE 3ABP- AVERAGE CHARACTERISTICS



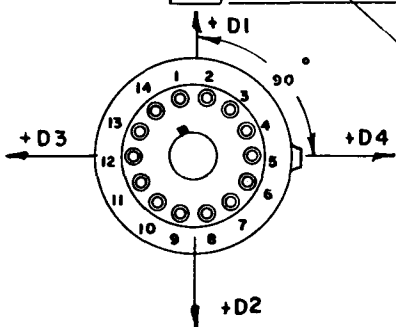
TYPE 3ABP-



BOTTOM VIEW 14 T

UNIT A		UNIT B	
PIN NO.	ELEMENT	PIN NO.	ELEMENT
1	HEATER	8	DEFLECTOR 4
2	GRID NO.1	9	DEFLECTOR 3
3	FOCUSING ELECTRODE	10	DEFLECTOR 2
4	DEFLECTOR 1	11	DEFLECTOR 1
5	DEFLECTOR 2	12	FOCUSING ELECTRODE
6	DEFLECTOR 3	13	GRID NO.1
7	DEFLECTOR 4	14	HEATER & CATHODE

NOTE: 1. PIN NOS. 1 AND 14, HEATER AND CATHODE ARE COMMON TO BOTH UNITS.
2. THE BULB SHALL BE A J24-X1



BOTTOM VIEW

MEDIUM SHELL
14 PIN DIHEPTAL
BASE (B14-38)