



T E N T A T I V E

DESCRIPTION:

THE F-7423 IS A 5 INCH IATRON (DIRECT VIEW STORAGE CATHODE-RAY TUBE) THAT PRODUCES A BRIGHT VISUAL DISPLAY OF ELECTRICALLY STORED INFORMATION. IT IS ELECTROSTATICALLY FOCUSED AND DEFLECTED. THE TUBE DISPLAYS BRIGHT IMAGES THAT CAN BE VIEWED IN DIRECT DAYLIGHT, AND THE TUBE FEATURES THE ABILITY TO WRITE, STORE AND ERASE SIGNAL INFORMATION AT THE WILL OF THE OPERATOR. GRAY SHADES ARE PRODUCED IN ACCORDANCE WITH THE AMPLITUDE VARIATIONS OF THE INPUT SIGNAL. THE TUBE HAS TWO ELECTRON GUNS, A WRITING GUN WHICH WRITES THE INPUT SIGNAL ON AN INSULATOR STORAGE SCREEN, AND A FLOOD GUN WHICH ILLUMINATES THE PHOSPHOR IN ACCORDANCE WITH THE STORED SIGNAL.

GENERAL:

DIMENSIONS

NOMINAL TUBE DIAMETER  
MINIMUM USEFUL DISPLAY DIAMETER

PHOSPHOR

OPERATING POSITION

WEIGHT (APPROXIMATE)

CATHODE PRE-HEATING TIME

FOCUS METHOD

DEFLECTION METHOD

SEE OUTLINE ATTACHED

5 INCHES

4 INCHES

P-20 ALUMINIZED

ANY

2 LB. 8 OZ.

30 SECONDS

ELECTROSTATIC

ELECTROSTATIC

MAXIMUM RATINGS:

FLOOD SECTION

VIEWING SCREEN

10 KV

BACKING ELECTRODE

25 V

COLLECTOR

250 V

ANODE #4

150 V

ANODE #3

150 V

ANODE #2

150 V

ANODE #1

80 V

HEATER-CATHODE VOLTAGE

125 V

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WRITE SECTION

|                                     |  |
|-------------------------------------|--|
| WRITE CATHODE                       | -1000 V  |
| GRID #1                             | NEGATIVE VOLTAGE RESPECT WRITE CATHODE 150 V<br>POSITIVE VOLTAGE RESPECT WRITE CATHODE 0 V |
| GRID #2                             | $\pm$ 150 V  |
| GRID #3                             | $\pm$ 500 V RESPECT WRITE CATHODE  |
| HEATER-CATHODE VOLTAGE              | $\pm$ 125 V  |
| GRID #2 TO ANY DEFLECTING ELECTRODE | $\pm$ 500 V  |

TYPICAL OPERATING VALUES:

FLOOD SECTION

|                   |                 |                |
|-------------------|-----------------|----------------|
| VIEWING SCREEN    | $\pm$ 8.5 KV DC | 2 MA (MAX.)    |
| BACKING ELECTRODE | $\pm$ 10 VDC    |                |
| COLLECTOR         | $\pm$ 180 VDC   | 2 MA (MAX.)    |
| ANODE #4          | $\pm$ 90 VDC    | 1.5 MA (MAX.)  |
| ANODE #3          | $\pm$ 20 VDC    | 1.5 MA (MAX.)  |
| ANODE #2          | $\pm$ 30 VDC    | 1.8 MA (MAX.)  |
| ANODE #1          | $\pm$ 60 VDC    | 5.0 MA (MAX.)  |
| FLOOD CATHODE     | 0 VDC           | 10.0 MA (MAX.) |
| HEATER            | 6.3 V AC OR DC  | 1.4 A          |

WRITE SECTION

|                               |                |                       |
|-------------------------------|----------------|-----------------------|
| WRITE CATHODE                 | -750 VDC       | 3.0 MA (MAX.)         |
| GRID #1 CUTOFF (NOTE 1)       | -60 VDC        | RESPECT WRITE CATHODE |
| GRID #2                       | 0 VDC          |                       |
| GRID #3                       | $\pm$ 165 VDC  | RESPECT WRITE CATHODE |
| HEATER                        | 6.3 V AC OR DC | .6 A                  |
| MEAN DEFLECTION PLATE VOLTAGE | 0 V            |                       |

RANGE OF TYPICAL OPERATING ADJUSTMENTS:

|                            |                |   |
|----------------------------|----------------|---|
| ANODE #2                   | 25 TO 35 VDC   | ADJUST FOR BEST COLLIMATION   |
| ANODE #3                   | 15 TO 30 VDC   | ADJUST FOR BEST COLLIMATION   |
| GRID #1 CUTOFF<br>(NOTE 1) | -40 TO -85 VDC |   |
| GRID #3 FOCUS              | 105 TO 210 VDC | ADJUST FOR BEST FOCUS   |
| ERASE PULSES               | 0 TO 10        | VOLT AMPLITUDE, 1 USECOND WIDE,<br>100-5000 PRF - ADJUST FOR DESIRED<br>VIEWING TIME. |

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TYPICAL PERFORMANCE.

|                                 |                      |
|---------------------------------|----------------------|
| RESOLUTION (NOTE 2)             |                      |
| 50% OF FULL BRIGHTNESS          | 40 LINES/INCH        |
| BRIGHTNESS                      | 4,000 FT. LAMBERTS   |
| WRITING SPEED                   |                      |
| 20 VOLT DRIVE TO 50% BRIGHTNESS | 20,000 INCHES/SECOND |
| 40 VOLT DRIVE TO 50% BRIGHTNESS | 40,000 INCHES/SECOND |
| ERASE TIME (NOTE 3)             | 12 MILLISECONDS      |
| VIEWING TIME (NOTE 4)           | 10 SECONDS           |
| STORAGE TIME (NOTE 5)           | 20 SECONDS           |
| DEFLECTION FACTOR               |                      |
| D1-D2                           | 40-49 VOLTS/INCH     |
| D3-D4                           | 38-47 VOLTS/INCH     |
| HALF-TONE STEPS                 | 4 (MINIMUM)          |

ENVIRONMENTAL DATA:

|                              |                            |
|------------------------------|----------------------------|
| AMBIENT TEMPERATURE RANGE    |                            |
| OPERATING                    | -55° TO +71° C             |
| NON-OPERATING                | -65° TO +100° C            |
| ALTITUDE                     | 70,000 FEET                |
| VIBRATION (CONTINUOUS)       | 3G, 5 CPS TO 500 CPS       |
| SHOCK (3 AXES)               |                            |
| OPERATING                    | 15G FOR 40 MS, 18 IMPACTS  |
| OPERATING                    | 25G FOR 5 MS, 6000 IMPACTS |
| NON-OPERATING (CRASH SAFETY) | 30G FOR 11 MS, 2 IMPACTS   |

NOTES:

1. VISUAL CUTOFF OF THE STORED, FOCUSED, UNDEFLECTED SPOT.
2. RESOLUTION IS MEASURED BY THE SHRINKING RASTER METHOD AT THE CENTER OF THE TUBE
3. ERASE TIME IS THE SHORTEST TIME IN WHICH A SIGNAL CAN BE REMOVED FROM THE TUBE AFTER BEING STORED AT FULL BRIGHTNESS.
4. VIEWING TIME IS THE MINIMUM TIME THAT A SIGNAL STORED AT FULL BRIGHTNESS ANYWHERE IN THE DISPLAY AREAS CAN BE VIEWED WITH ERASE PULSES CONTINUOUSLY APPLIED TO COUNTERACT ION WRITING.

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5. STORAGE TIME IS THE TIME REQUIRED FOR THE BRIGHTNESS TO INCREASE FROM CUTOFF TO 50 PER CENT OF FULL VALUE IN THE ABSENCE OF ERASE PULSES.

SPECIAL PRECAUTIONS:

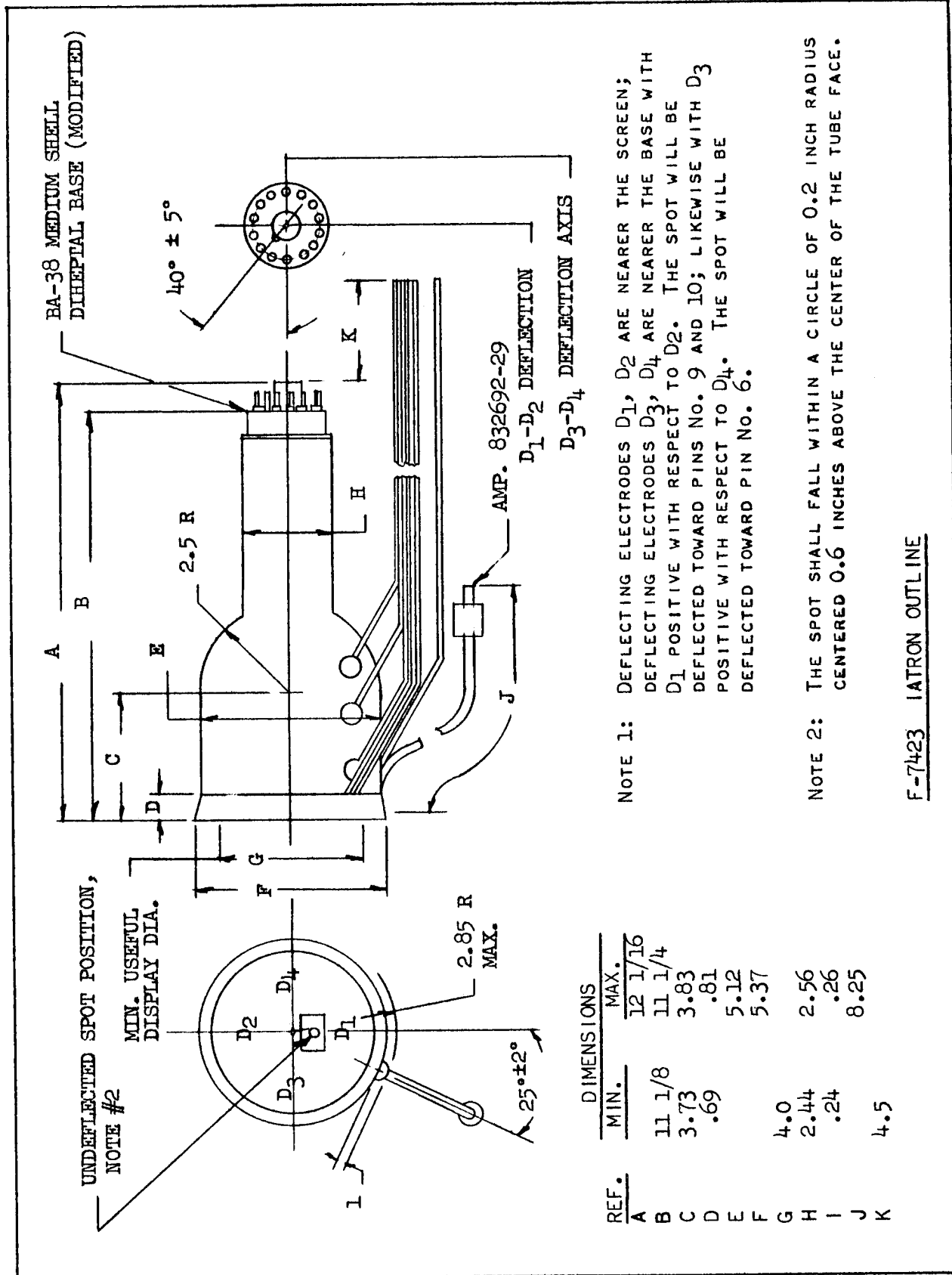
OBSERVE MAXIMUM RATINGS TO AVOID POSSIBLE DAMAGE TO THE TUBE. IN PARTICULAR THE VIEWING SCREEN VOLTAGE SHOULD BE LIMITED SO AS TO NEVER EXCEED 10 KV. THE FULL VOLTAGE SHOULD NOT BE APPLIED TO THE VIEWING SCREEN INSTANTANEOUSLY. AN ORDINARY RC FILTER AT THE OUTPUT OF THE POWER SUPPLY WILL PROVIDE ADEQUATE ASSURANCE THAT THE VOLTAGE BUILD UP WILL NOT BE TOO ABRUPT. THE MINIMUM RESISTANCE OF THE HIGH VOLTAGE CIRCUIT SHOULD BE 1 MEG OHM.

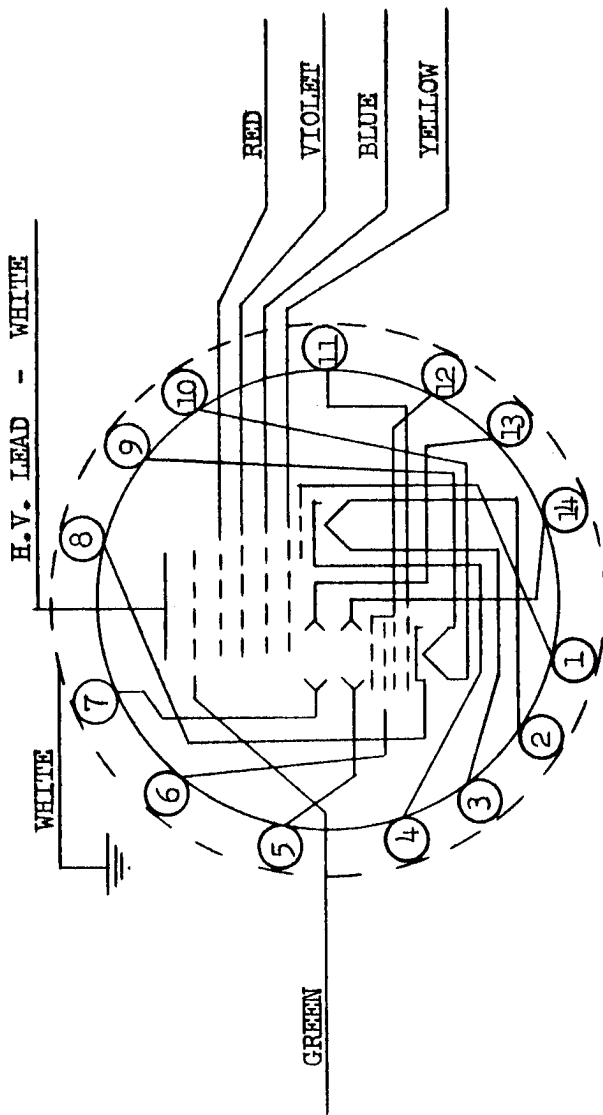
REPEATED BOMBARDMENT WITH A HIGH CURRENT FOCUSED WRITING BEAM ON A SMALL AREA OF THE STORAGE SURFACE CAN BURN A DARK IMAGE INTO THE DISPLAY AREA, WHICH MAY REMAIN FOR SEVERAL HOURS OR EVEN PERMANENTLY. THEREFORE, DEFLECTION VOLTAGES SHOULD BE APPLIED BEFORE OPERATING THE WRITING BEAM.

ADDITIONAL INFORMATION FOR SPECIFIC APPLICATIONS CAN BE OBTAINED FROM THE

ELECTRON TUBE APPLICATIONS SECTION  
ITT COMPONENTS DIVISION  
POST OFFICE BOX 412  
CLIFTON, NEW JERSEY

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14 PIN BASE

- 1 ANODE #1
- 2 FLOOD HEATER
- 3 FLOOD HEATER
- 4 FLOOD CATHODE
- 5 D-3
- 6 GRID #3 (FOCUS)
- 7 D-1
- 8 WRITE CATHODE
- 9 WRITE HEATER
- 10 WRITE HEATER
- 11 GRID #1
- 12 GRID #2
- 13 D-2
- 14 D-4

FLYING LEADS

- WHITE SMALL DIAMETER ELECTROSTATIC SHIELD
- WHITE LARGE DIAMETER VIEWING SCREEN
- YELLOW ANODE #2
- BLUE ANODE #3
- VIOLET ANODE #4
- RED COLLECTOR
- GREEN BACKING ELECTRODE

F-7423 IATRON