



**ELECTRON TUBE DEPARTMENT ■ COMPONENTS DIVISION**  
INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION, CLIFTON, NEW JERSEY

**F-7174**  
**IATRON \***

**ITT** EXPORT CORPORATION  
67 BROAD STREET • NEW YORK 4, N. Y.

T E N T A T I V E

DESCRIPTION:

THE F-7174 IS A 4 INCH IATRON (DIRECT VIEW STORAGE CATHODE-RAY TUBE) THAT PRODUCES A BRIGHT VISUAL DISPLAY OF ELECTRICALLY STORED INFORMATION. IT IS ELECTROMAGNETICALLY FOCUSED AND DEFLECTED. THE TUBE DISPLAYS BRIGHT IMAGES THAT CAN BE VIEWED IN DIRECT SUNLIGHT AND FEATURES THE ABILITY TO WRITE, STORE, AND ERASE INFORMATION AT WILL. GREY SHADES ARE PRODUCED IN ACCORDANCE WITH AMPLITUDE VARIATIONS OF THE INPUT SIGNAL. THE TUBE HAS TWO ELECTRON GUNS, A WRITING GUN, WHICH WRITES THE INPUT SIGNAL ON A STORAGE MESH, AND A FLOOD GUN, WHICH ILLUMINATES THE VIEWING SCREEN IN ACCORDANCE WITH THE STORED SIGNAL.

GENERAL:

DIMENSIONS

SEE OUTLINE AND FUNCTIONAL SCHEMATIC

|                                 |      |            |
|---------------------------------|------|------------|
| NOMINAL TUBE DIAMETER           | 4    | INCHES     |
| MINIMUM USEFUL DISPLAY DIAMETER | 3    | INCHES     |
| PHOSPHOR                        | P-20 | ALUMINIZED |
| OPERATING POSITION              |      | ANY        |
| WEIGHT                          | 0.89 | POUNDS     |
| CATHODE PRE-HEATING TIME        | 30   | SECONDS    |
| FOCUS METHOD                    |      | MAGNETIC   |
| DEFLECTION METHOD               |      | MAGNETIC   |

DIRECT INTER-ELECTRODE CAPACITANCES WITHOUT EXTERNAL SHIELD (APPROX.)

|                                       |     |     |
|---------------------------------------|-----|-----|
| GRID #1 TO ALL OTHER ELECTRODES       | 2.5 | UUF |
| WRITE CATHODE TO ALL OTHER ELECTRODES | 8.0 | UUF |
| FLOOD CATHODE                         | 3.0 | UUF |
| ANODE #1                              | 3.7 | UUF |

MAXIMUM RATINGS

FLOOD SECTION

|                   |     |      |
|-------------------|-----|------|
| VIEWING SCREEN    | 18  | KVDC |
| BACKING ELECTRODE | 25  | VDC  |
| COLLECTOR         | 250 | VDC  |
| ANODE #4          | 150 | VDC  |
| ANODE #3          | 150 | VDC  |
| ANODE #2          | 150 | VDC  |
| ANODE #1          | 80  | VDC  |
| CATHODE           | 200 | VDC  |
| HEATER-CATHODE    | 125 | VDC  |

\* TRADEMARK OF THE INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION

MAXIMUM RATINGS (CONTINUED)

HEATER CATHODE  
CATHODE  
GRID #1  
GRID #2  
GRID #3  
PEAK VOLTAGE BETWEEN GRID #2 AND  
GRID #1 OR GRID #3

WRITE SECTION

125 VDC  
-1000 VDC  
-150 VDC RESPECT WRITE CATHODE  
/500 VDC RESPECT WRITE CATHODE  
INTERNALLY CONNECTED TO ANODE #2  
500 VDC

TYPICAL OPERATING VALUES:

VIEWING SCREEN  
BACKING ELECTRODE  
COLLECTOR  
ANODE #4  
ANODE #3  
ANODE #2  
ANODE #1  
CATHODE  
HEATER

FLOOD SECTION

15 KVDC (1.7 MA MAX.)  
/10 VDC AND ERASE PULSES  
/180 VDC .5 TO 1.7 MA  
/90 VDC 35 TO 300 UA  
/20 VDC 200 TO 500 UA  
/30 VDC 1 TO 1.5 MA  
/60 VDC .5 TO 2.0 MA  
0 VDC 4.7 MA MAX.  
6.3 V AC OR DC 1.4 A

WRITE SECTION

HEATER  
CATHODE  
GRID #1 (CUT-OFF NOTE 1)  
GRID #2  
GRID #3

6.3 V AC OR DC .6 A  
-450 VDC .5 TO 1.5 MA  
-35 VDC RESPECT WRITE CATHODE  
/150 VDC RESPECT WRITE CATHODE  
INTERNALLY CONNECTED TO ANODE #2

RANGE OF TYPICAL OPERATING ADJUSTMENTS:

ANODE #2 25 TO 40 VOLTS ADJUST FOR BEST COLLIMATION  
ANODE #3 10 TO 25 VOLTS ADJUST FOR BEST COLLIMATION  
GRID #1 (CUT-OFF NOTE 1) -28 TO -46 VOLTS  
ERASE PULSES 3-12 VOLTS, 1.5 USEC. WIDE, 100-5000 PRF  
ADJUST FOR DESIRED VIEWING TIME

TYPICAL PERFORMANCE:

RESOLUTION (NOTE 2)  
AT 50% OF FULL BRIGHTNESS  
BRIGHTNESS  
WRITING SPEED  
20 VOLTS DRIVE TO 90%  
ERASE TIME (NOTE 3)  
VIEWING TIME (NOTE 4)  
NUMBER OF HALF-TONE STEPS

35 LINES PER INCH  
15,000 FT. LAMBERTS  
25,000 INCHES PER SECOND  
3 MILLISECONDS  
2 SECONDS  
4

NOTES:

1. VISUAL CUT-OFF OF THE STORED, FOCUSED, STATIONARY SPOT.
2. RESOLUTION IS MEASURED BY THE SHRINKING RASTOR METHOD AT THE CENTER OF THE VIEWING SCREEN.
3. ERASE TIME IS THE SHORTEST TIME IN WHICH INFORMATION CAN BE REMOVED FROM THE TUBE AFTER BEING STORED AT FULL BRIGHTNESS.
4. VIEWING TIME IS THE TIME THAT A SIGNAL STORED AT FULL BRIGHTNESS ANYWHERE IN THE DISPLAY AREA CAN BE VIEWED WITH ERASE PULSES APPLIED TO COUNTERACT ION WRITING.

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 18 KV.

THE FULL VOLTAGE SHOULD NOT BE APPLIED TO THE VIEWING SCREEN INSTANTANEOUSLY. AN ORDINARY RC FILTER AT THE OUTPUT OF THE POWER SUPPLY PROVIDES ADEQUATE ASSURANCE THAT THE VOLTAGE BUILD UP WILL NOT BE TOO ABRUPT. THE MINIMUM RESISTANCE OF THE HIGH VOLTAGE LEAD SHOULD BE 1 MEGOHM.

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, WHICH MAY REMAIN FOR SEVERAL HOURS OR EVEN PERMANENTLY. THEREFORE, DEFLECTION VOLTAGES SHOULD BE APPLIED BEFORE OPERATING THE WRITING BEAM.

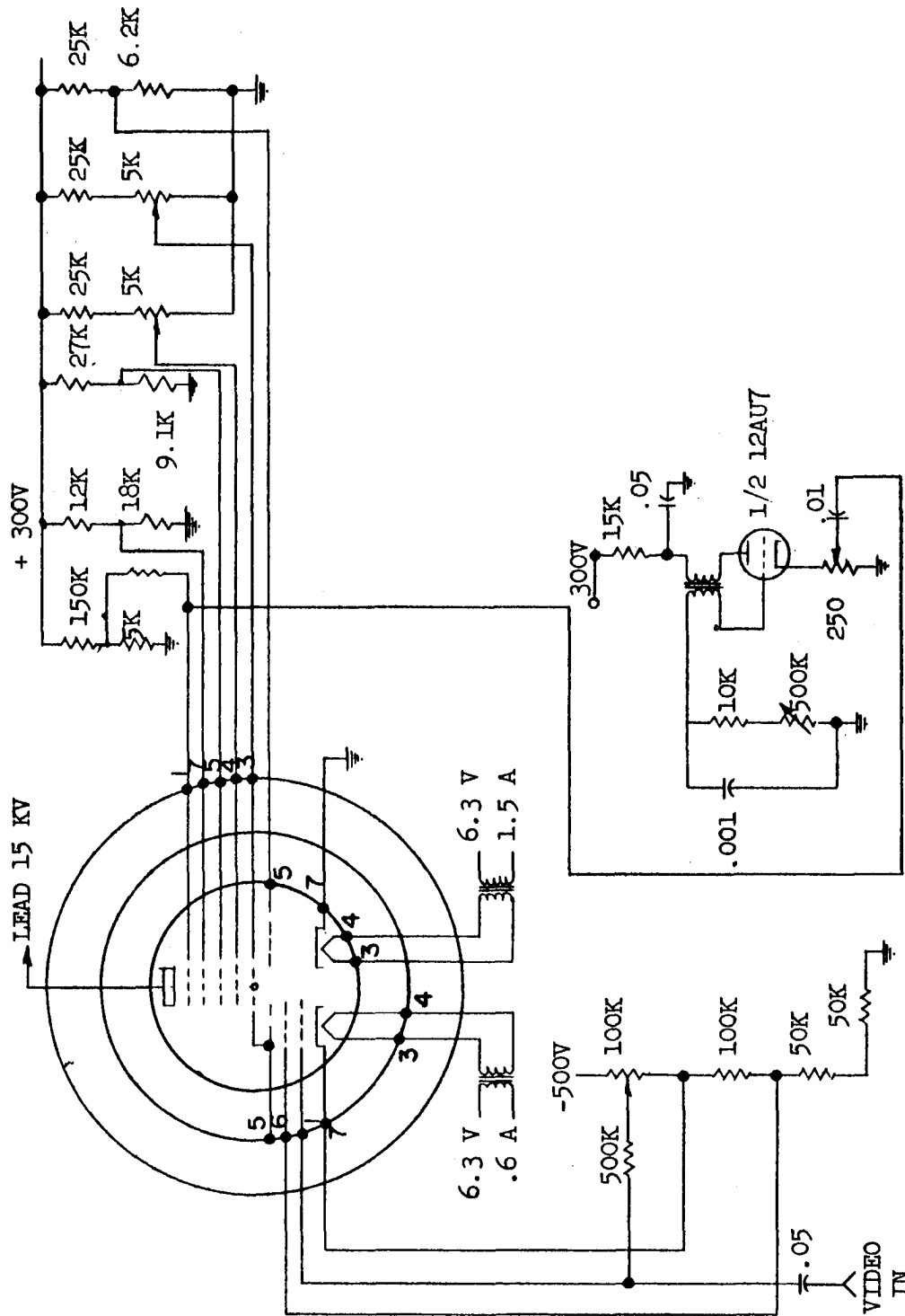
ADDITIONAL INFORMATION FOR SPECIFIC APPLICATIONS CAN BE OBTAINED FROM THE

ELECTRON TUBE APPLICATIONS SECTION  
ITT COMPONENTS DIVISION  
POST OFFICE BOX 7065  
ROANOKE, VIRGINIA

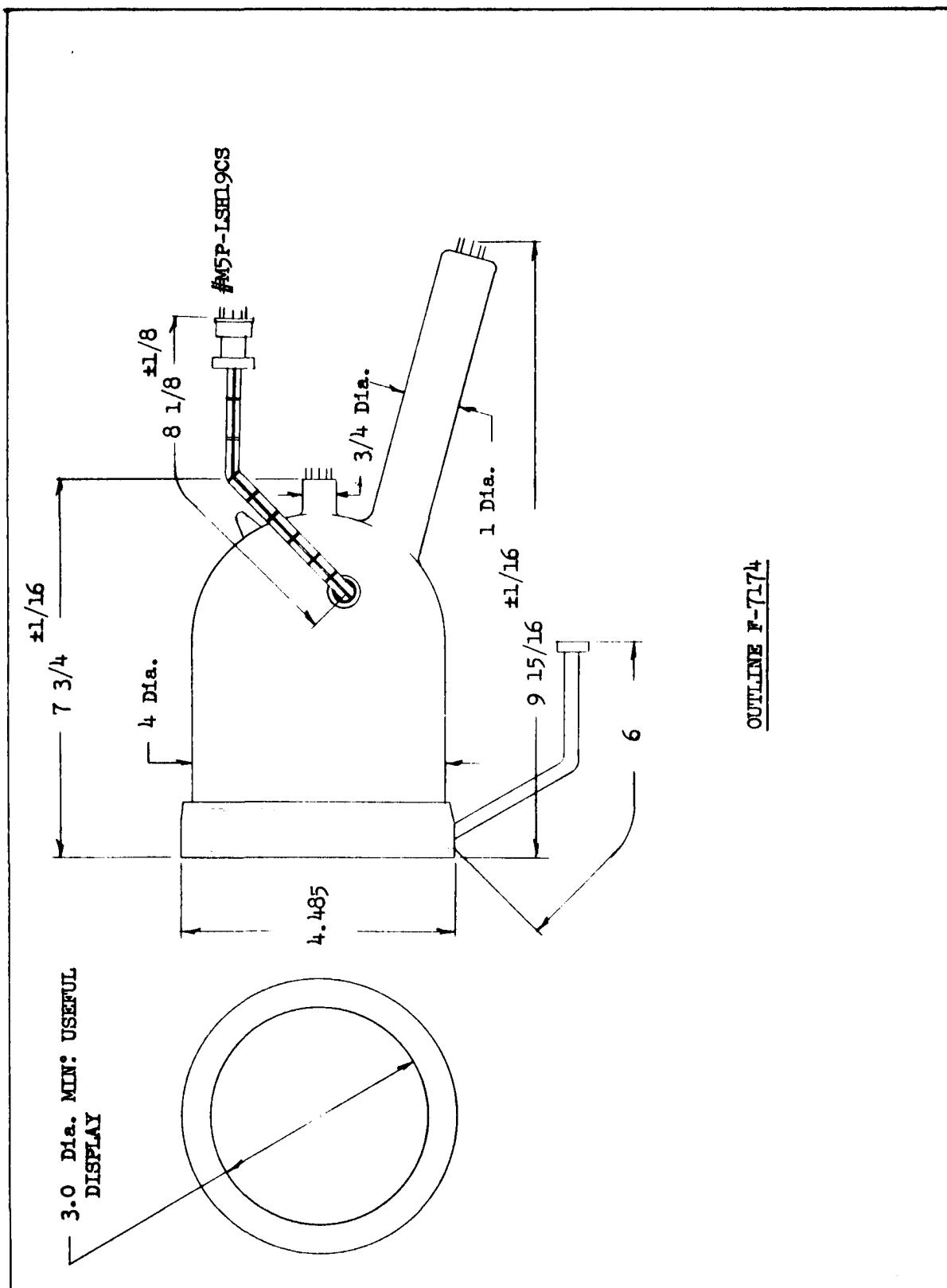
\* TRADEMARK OF ITT



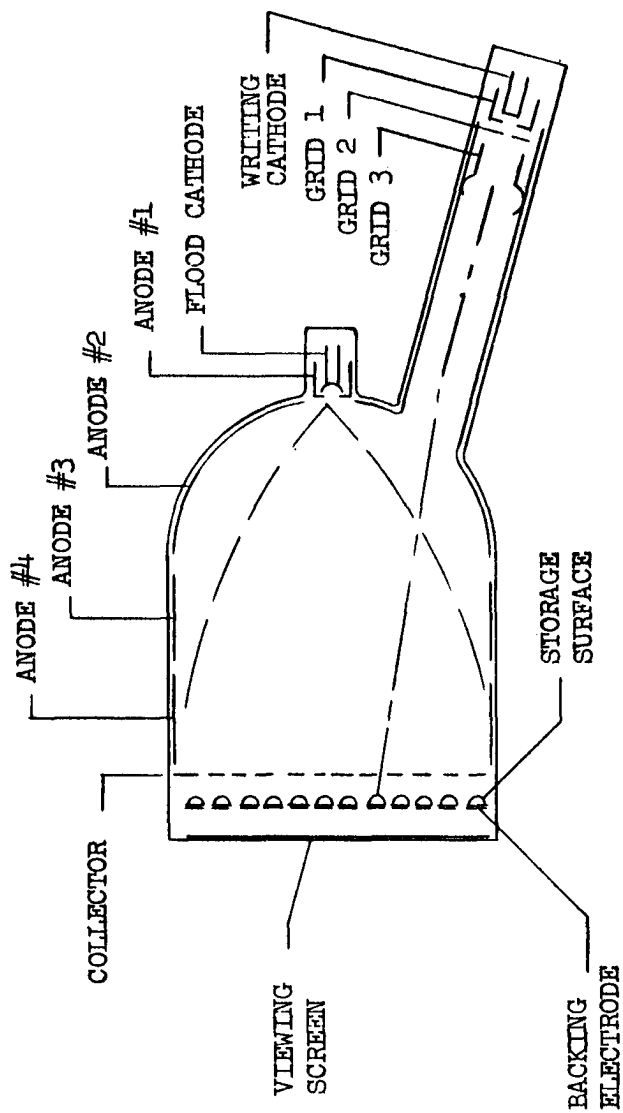
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TYPICAL 7174 CIRCUIT

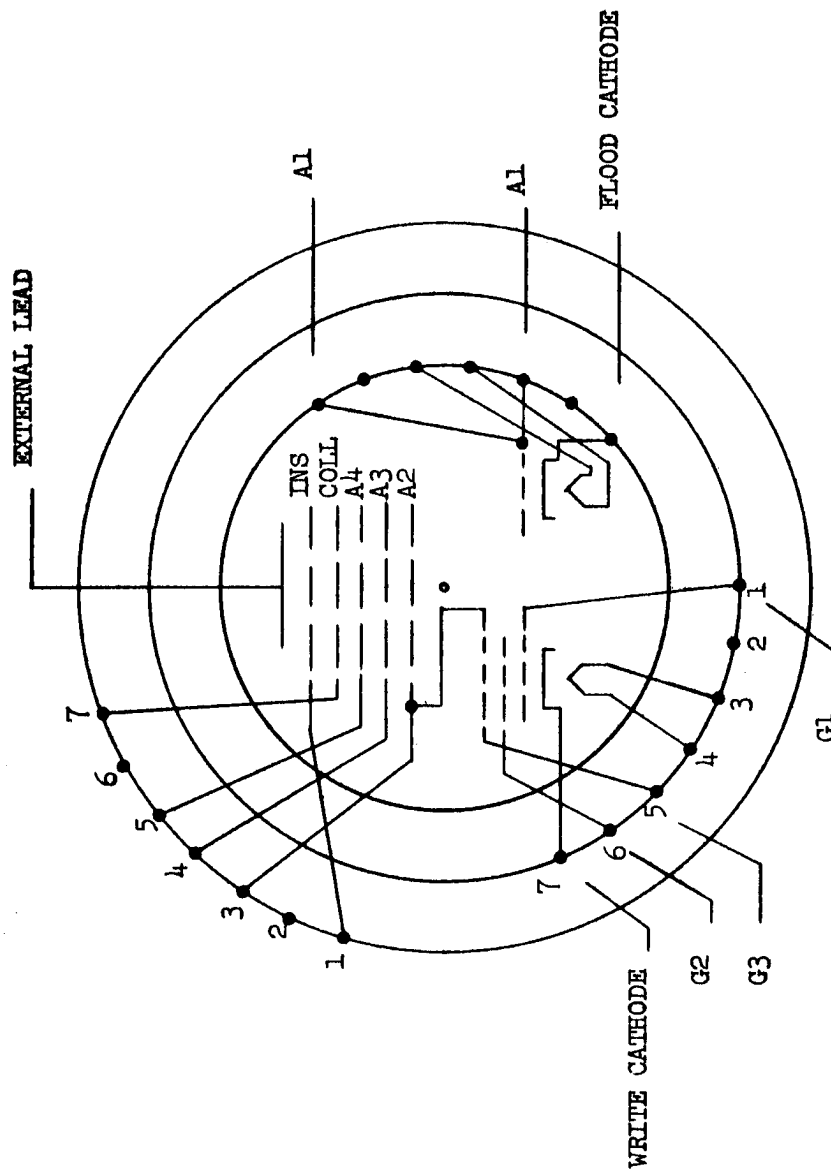


OUTLINE F-7774



FUNCTIONAL SCHEMATIC

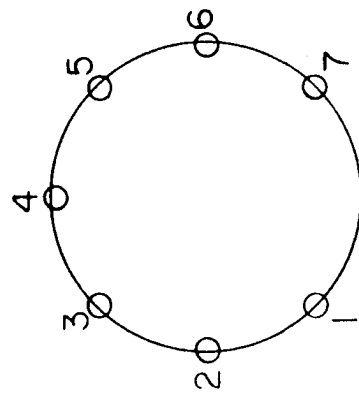
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NOTE: INNER CIRCLE ---- FLOOD GUN, E7-1 SMALL BUTTON MINIATURE  
 CENTER CIRCLE ---- WRITING GUN, E7-1 SMALL BUTTON MINIATURE  
 OUTER CIRCLE ---- BULB CONNECTIONS, E7- MINIATURE BASE

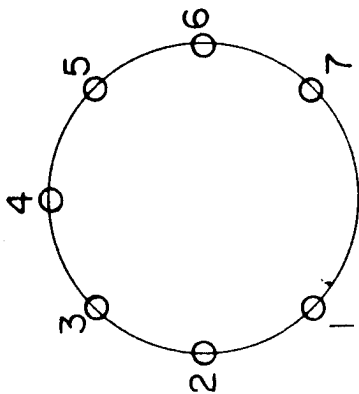
7174 BASING DIAGRAM





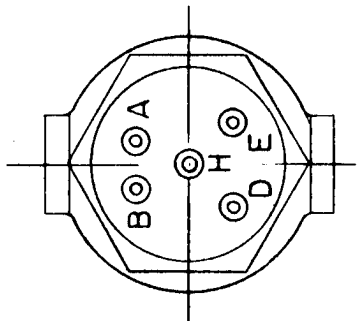
BOTTOM VIEW  
FLOOD GUN

| Pin | Element  |
|-----|----------|
| 1.  | Anode #1 |
| 2.  | N/C      |
| 3.  | Heater   |
| 4.  | Heater   |
| 5.  | Anode #1 |
| 6.  | N/C      |
| 7.  | Cathode  |



BOTTOM VIEW  
WRITE GUN

| Pin | Element           |
|-----|-------------------|
| 1.  | Grid #1           |
| 2.  | N/C               |
| 3.  | Heater            |
| 4.  | Heater            |
| 5.  | Grid #3, Anode #2 |
| 6.  | Grid #2           |
| 7.  | Cathode           |



WINCHESTER PLUG  
M5P-LSH19CS

| Pin | Element     |
|-----|-------------|
| A.  | Rear Wall   |
| B.  | Center Wall |
| D.  | Collector   |
| E.  | Front Wall  |
| H.  | Insulator   |

7174 PIN CONNECTIONS

SUPERSEDES OUTLINE DATED 7/61