



**Springdale, Connecticut**



# MACHLETT

## *Electron Tubes*

This catalog is registered in the name of

HAROLD W. ULMER

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A compilation of technical data and important user information covering Machlett electron tubes.

As changes, additions or deletions are made in the line, corrective notices or specification sheets will be automatically forwarded to the holder.

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**MACHLETT LABORATORIES, INC.**

SPRINGDALE



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ELECTRONIC EQUIPMENT MANUFACTURERS PRICE LIST  
CONFIDENTIAL — FOR INTERNAL USE ONLY

**Electron  
Tube  
Price  
List**

**Effective Date  
October 1, 1959**

**MACHLETT  
LABORATORIES  
INCORPORATED  
Springdale,  
Connecticut**



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INCORPORATED

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**MODULATORS—AMPLIFIERS—OSCILLATORS**

| Tube Type   | Class     | Shipping Weight-Lbs. | Suggested Users Net | Mfrs. Net   | Tube Type | Class        | Shipping Weight - Lbs. | Suggested Users Net | Mfrs. Net |
|-------------|-----------|----------------------|---------------------|-------------|-----------|--------------|------------------------|---------------------|-----------|
| ML-2C39A    | ▲ UHF TRI | 1*                   | \$ 22.50            | \$ 14.50 †† | ML-5668   | WC TRI       | 20                     | \$ 330.00           | \$ 250.00 |
| ML-2C39WA   | ▲ UHF TRI | 1*                   | 30.00               | 20.00 ††    | ML-5669   | FAC TRI      | 100                    | 490.00              | 383.00    |
| ML-2C41     | ▲ UHF TRI | 1*                   | 26.50               | 19.50 ††    | ML-5681   | WC TRI       | 123                    | 1875.00             | 1575.00   |
| ML-3CX100A5 | ▲ UHF TRI | 1*                   | 32.15               | 22.50 ††    | ML-5682   | WC TRI       | 328                    | 2625.00             | 2100.00   |
| ML-212E     | RC TRI    | 10                   | 210.00              | 170.00      | ML-5736   | FAC TRI      | 15                     | 190.00              | 150.00    |
| ML-220C     | WC TRI    | 49                   | 449.00              | 360.00      | ML-6256   | WC TRI       | 10                     | 240.00              | 180.00    |
| ML-220CA    | FAC TRI   | 85                   | 550.00              | 435.00      | ML-6257   | WC TRI       | 11                     | 252.00              | 190.00    |
| ML-232B     | WC TRI    | 49                   | 670.00              | 545.00      | ML-6258   | FAC TRI      | 22                     | 280.00              | 210.00    |
| ML-241B     | RC TRI    | 10                   | 210.00              | 170.00      | ML-6420   | WC TRI       | 15                     | 360.00              | 265.00    |
| ML-242C     | ▲ RC TRI  | 3                    | 30.00               | 22.00 †     | ML-6421   | FAC TRI      | 30                     | 425.00              | 315.00    |
| ML-279A     | RC TRI    | 15                   | 415.00              | 325.00      | ML-6421F  | FAC TRI      | 72                     | 440.00              | 325.00    |
| ML-298A     | WC TRI    | 121                  | 1485.00             | 1310.00     | ML-6422   | WC TRI       | 35                     | 385.00              | 290.00    |
| ML-342A     | WC TRI    | 48                   | 670.00              | 545.00      | ML-6423   | FAC TRI      | 50                     | 495.00              | 370.00    |
| ML-342AA    | FAC TRI   | 84                   | 775.00              | 632.00      | ML-6423F  | FAC TRI      | 93                     | 510.00              | 385.00    |
| ML-343A     | WC TRI    | 49                   | 449.00              | 360.00      | ML-6424   | WC TRI       | 35                     | 455.00              | 340.00    |
| ML-343AA    | FAC TRI   | 84                   | 550.00              | 435.00      | ML-6425   | FAC TRI      | 50                     | 580.00              | 425.00    |
| ML-354      | WC TRI    | 123                  | 1750.00             | 1475.00     | ML-6425F  | FAC TRI      | 93                     | 600.00              | 440.00    |
| ML-356/5771 | WC TRI    | 18                   | 635.00              | 480.00      | ML-6426   | WC TRI       | 45                     | 675.00              | 510.00    |
| ML-357B     | RC TRI    | 10                   | 170.00              | 138.00      | ML-6427   | FAC TRI      | 55                     | 830.00              | 640.00    |
| ML-379A     | RC TRI    | 15                   | 440.00              | 365.00      | ML-6442   | ▲ UHF TRI    | 1*                     | 39.25               | 30.00 ††  |
| ML-833A     | ▲ RC TRI  | 6                    | 55.00               | 40.00       | ML-6544   | ▲ PM TRI     | 33                     | 1200.00             | 950.00    |
| ML-880      | WC TRI    | 18                   | 595.00              | 475.00      | ML-6576   | WC TRI       | 22                     | 680.00              | 540.00    |
| ML-889A     | WC TRI    | 15                   | 235.00              | 195.00      | ML-6623   | FAC TRI      | 17                     | 205.00              | 160.00    |
| ML-889RA    | FAC TRI   | 72                   | 370.00              | 275.00      | ML-6696   | WC TRI       | 60                     | 1090.00             | 825.00    |
| ML-891      | WC TRI    | 16                   | 295.00              | 230.00      | ML-6697   | FAC TRI      | 80                     | 1310.00             | 1010.00   |
| ML-891R     | FAC TRI   | 60                   | 460.00              | 370.00      | ML-7002   | ▲ PM TRI     | 33                     | 2500.00             | 2000.00   |
| ML-892      | WC TRI    | 16                   | 290.00              | 225.00      | ML-7003   | ▲ FAC PM TRI | 44                     | 2500.00             | 2000.00   |
| ML-892R     | FAC TRI   | 60                   | 455.00              | 365.00      | ML-7007   | FAC TET      | 28                     | 1120.00             | 860.00    |
| ML-893A     | WC TRI    | 24                   | 800.00              | 635.00      | ML-7120   | WC TRI       | 15                     | 425.00              | 315.00    |
| ML-893AR    | FAC TRI   | 400                  | 1340.00             | 1065.00     | ML-7121   | FAC TRI      | 30                     | 495.00              | 375.00    |
| ML-5530     | FAC TRI   | 49                   | 330.00              | 245.00      | ML-7124   | WC TRI       | 35                     | 760.00              | 575.00    |
| ML-5530H    | FAC TRI   | 49                   | 330.00              | 245.00      | ML-7125   | FAC TRI      | 50                     | 920.00              | 710.00    |
| ML-5531     | FAC TRI   | 76                   | 630.00              | 470.00      | ML-7209   | ▲ UHF TRI    | 1                      | 30.25               | 22.00 ††  |
| ML-5541     | FAC TRI   | 76                   | 500.00              | 385.00      | ML-7210   | ▲ UHF TRI    | 1                      | 65.00               | 45.00 ††  |
| ML-5604     | FAC TRI   | 93                   | 600.00              | 450.00      | ML-7211   | ▲ UHF TRI    | 1                      | **                  | **        |
| ML-5606     | WC TRI    | 12                   | 288.00              | 223.00      | ML-7248   | ▲ SW TET     | 10                     | 1075.00             | 800.00    |
| ML-5619     | WC TRI    | 18                   | 443.00              | 335.00      | ML-7249   | ▲ SW TET     | 10                     | 1150.00             | 850.00    |
| ML-5658     | WC TRI    | 18                   | 595.00              | 475.00      | ML-7333   | ▲ PM TRI     | 2                      | 1050.00             | 800.00    |
| ML-5666     | WC TRI    | 12                   | 280.00              | 230.00      | ML-7335   | ▲ PM TRI     | 10                     | 1550.00             | 1200.00   |
| ML-5667     | FAC TRI   | 72                   | 370.00              | 275.00      |           |              |                        |                     |           |

**PHOTOSENSITIVE AND STORAGE TUBES**

| Tube Type | Class  | Shipping Weight-Lbs. | Suggested Users Net | Mfrs. Net | Tube Type | Class | Shipping Weight-Lbs. | Suggested Users Net | Mfrs. Net |
|-----------|--------|----------------------|---------------------|-----------|-----------|-------|----------------------|---------------------|-----------|
| ML-5820   | ● I.O. | 4                    | \$1200.00           | \$990.00  | ML-7291   | ● VID | 2                    | \$ 375.00           | \$ 290.00 |
| ML-6198   | ● VID  | 2                    | 230.00              | 165.00    | ML-7351   | ● VID | 2                    | 415.00              | 300.00    |
| ML-6577   | ● S.D. | 12                   | 2250.00             | 1800.00   | ML-C19K   | ● D   | 73                   | 2125.00             | 1700.00   |
| ML-7038   | ● VID  | 2                    | 265.00              | 195.00    |           |       |                      |                     |           |

★★ Please refer to Machlett Laboratories for prices.

★ Shipping weights in lots of 36 domestic packing = 12 lbs.  
Shipping weights in lots of 72 export packing = 55 lbs.

† Minimum ordering quantity = 4

†† Minimum ordering quantity = 10





# ML-C19K SCRIPTRON® SHAPED BEAM TUBE

DESCRIPTIONS & RATINGS

## DESCRIPTION:

The SCRIPTRON Shaped Beam Tube of the C19K type is a 19-inch round cathode-ray tube designed primarily for use as a large screen visual display device. It is capable of displaying alphanumeric and special characters in combination with analog data on the viewing screen of the tube at a speed greater than 20,000 characters per second, which is over five times faster than functionally similar mechanical devices now available. The tube is especially useful in applications where simultaneous identification of radar tar-

gets is desired, together with normal plan position indication.

The generation of characters with a beam having cross sections formed into shapes of predetermined characters provides excellent display quality and inherent letter component registry.

The SCRIPTRON Shaped Beam Tube requires the use of a deflection yoke, convergence coil, and mount assembly manufactured by Stromberg-Carlson, or their equivalent.

## GENERAL CHARACTERISTICS

### Electrical

|                          |                 |
|--------------------------|-----------------|
| Selection Method .....   | Electrostatic   |
| Reference Method .....   | Electrostatic   |
| Deflection Method .....  | Electromagnetic |
| Convergence Method ..... | Electromagnetic |

### Optical

|                            |             |
|----------------------------|-------------|
| Phosphor Number .....      | P 14*       |
| Fluorescent Color .....    | Blue        |
| Phosphorescent Color ..... | Orange      |
| Persistence .....          | Medium Long |
| Faceplate .....            | Round Clear |

### Mechanical

|                                      |                                |
|--------------------------------------|--------------------------------|
| Minimum Useful Screen Diameter ..... | 17 inches                      |
| Neck Length .....                    | 21 $\frac{1}{8}$ Inches        |
| Display orientation** .....          | By index mark                  |
| Matrix .....                         | 64 character position Type FD  |
| Height of displayed character† ..... | 0.115 ± 0.015 inch             |
| Yoke .....                           | Stromberg-Carlson Type Y17-25C |
| Convergence Coil .....               | Stromberg-Carlson Type C18-9C  |
| Mount Assembly .....                 | Stromberg-Carlson Type S22A    |

\*Other phosphors may be supplied upon request.

\*\*Correct screen orientation is indicated by the index mark on periphery of tube panel which denotes the 12 o'clock position on the panel.

†These are typical values based on the use of a 64-character Type FD matrix with an 8 x 8 array.

### MAXIMUM RATINGS†

|                                                                                                 |               |
|-------------------------------------------------------------------------------------------------|---------------|
| Third Anode Voltage .....                                                                       | +15,000 volts |
| Second Anode & Matrix Voltage .....                                                             | +3600 volts   |
| First Anode Voltage .....                                                                       | +1300 volts   |
| Grid Voltage .....                                                                              |               |
| Negative Bias Value .....                                                                       | -200 volts    |
| Positive Bias Value .....                                                                       | 0 volts       |
| Positive Peak Value .....                                                                       | +2 volts      |
| Peak Voltage Between Second Anode and<br>Matrix and any Selection or Refer-<br>ence Plate ..... | 500 volts     |

### TYPICAL OPERATING CONDITIONS‡

|                           |                     |
|---------------------------|---------------------|
| Heater Voltage .....      | 6.3 volts           |
| Heater Current .....      | $0.6 \pm 0.06$ amps |
| Third Anode Voltage ..... | +12000 volts        |

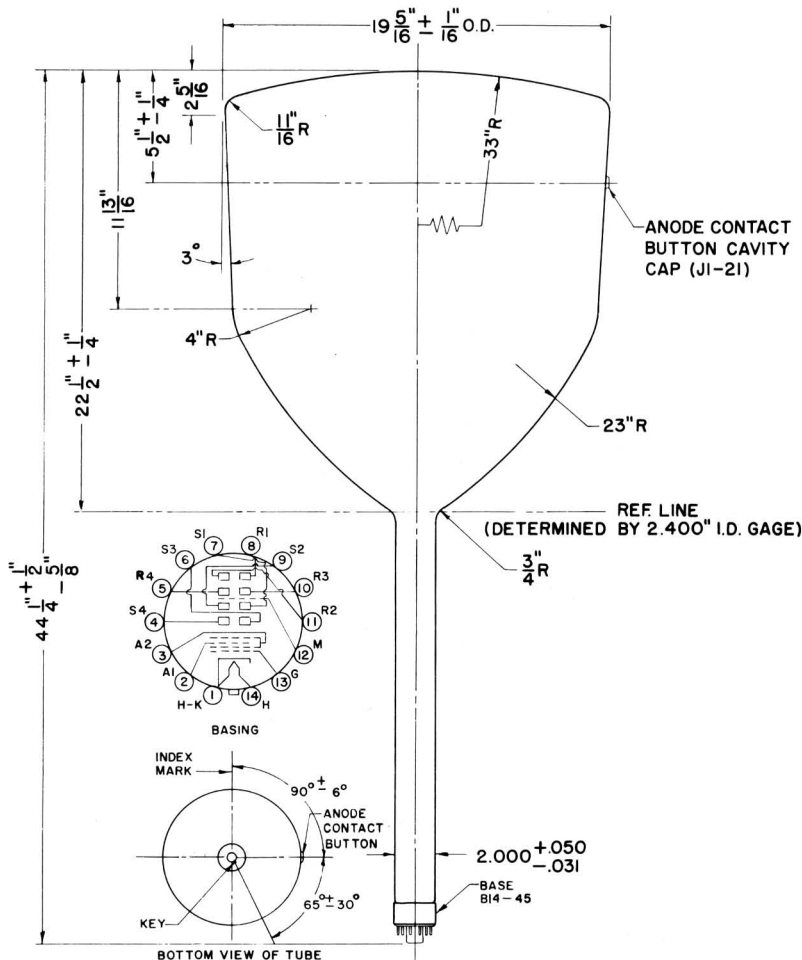
†These are typical values based on the use of a 64-character Type FD matrix with an 8 x 8 array.

‡All voltages, except selection and reference voltages, are referenced to cathode.

††First anode voltage adjusted so that beam diameter at matrix is equal to the character-to-character spacing.

‡‡Currents in selection and reference trim windings adjusted to produce correct beam orientation with respect to the selection and reference plates.

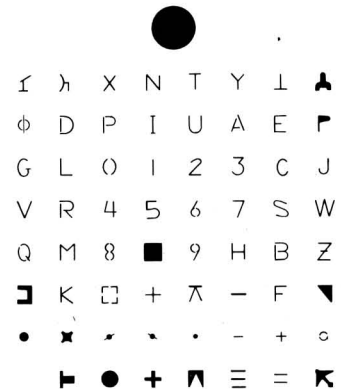
|                                                 |                            |
|-------------------------------------------------|----------------------------|
| Third Anode Current (Max.) .....                | 300 microamps              |
| Second Anode & Matrix Voltage .....             | +3300 volts                |
| First Anode Voltage†† .....                     | +650 to<br>+1150 volts     |
| Grid Cutoff .....                               | -60 to<br>-110 volts       |
| Convergence-Winding Current .....               | $38 \pm 2$ ma              |
| Trim-Winding Currents‡‡ .....                   | $0 \pm 30$ ma              |
| Character-Selection Factors† .....              |                            |
| S1, S2 (Vertical) Selection Factor ....         | $25.5 \pm 2.5$ volts/char. |
| S3, S4 (Horizontal) Selection Factor ..         | $14.5 \pm 1.5$ volts/char. |
| Character-Reference Factors† .....              |                            |
| R1, R2 (Vertical) Reference Factor ..           | $16 \pm 1.6$ volts/char.   |
| R3, R4 (Horizontal) Reference Fac-<br>tor ..... | $16 \pm 1.6$ volts/char.   |



### BASING

| PIN | ELEMENT                |
|-----|------------------------|
| 1   | HEATER-CATHODE (H-K)   |
| 2   | FIRST ANODE (A1)       |
| 3   | SECOND ANODE (A2)      |
| 4   | HORIZ. SEL. PLATE (S4) |
| 5   | HORIZ. REF. PLATE (R4) |
| 6   | HORIZ. SEL. PLATE (S3) |
| 7   | VERT. SEL. PLATE (S1)  |
| 8   | VERT. REF. PLATE (R1)  |
| 9   | VERT. SEL. PLATE (S2)  |
| 10  | HORIZ. REF. PLATE (R3) |
| 11  | VERT. REF. PLATE (R2)  |
| 12  | MATRIX (M)             |
| 13  | CONTROL GRID (G)       |
| 14  | HEATER (H)             |

### MATRIX



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