EITEL-McCULLOUGH, INC.
SAN CARLOS · CALIFORNIA

**TENTATIVE DATA**

# 8159

# 3CX10,000A3

## MEDIUM-MU POWER TRIODE


The Eimac 3CX10,000A3 is a ceramic and metal power triode intended primarily for use as a power oscillator in industrial-heating applications. It is also recommended for use as a grounded-grid FM amplifier, as a conventional plate-modulated amplifier, or as a linear amplifier.

## GENERAL CHARACTERISTICS

| | Min. | Nom. | Max. | |
|---|---|---|---|---|
| ▶ ELECTRICAL | | | | |
| Filament: Thoriated-Tungsten | | | | |
| Voltage | - | 7.5 | - | volts |
| Current | 94 | - | 104 | amperes |
| Amplification Factor | - | 20 | - | |
| Interelectrode Capacitances, Grounded Cathode: | | | | |
| Input | 48 | - | 58 | μμf |
| Output | 1.2 | - | 1.5 | μμf |
| Feedback | 30 | - | 38 | μμf |
| Frequency for Maximum Ratings | - | - | - | 140 Mc |
| MECHANICAL | | | | |
| Base | - | - | - | Coaxial |
| Recommended Socket | - | - | - | Eimac SK-1300 |
| Recommended Chimney | - | - | - | Eimac SK-1306 |
| Operating Position | - | - | - | Vertical, base up or down |
| Cooling | - | - | - | Forced air |
| Maximum Operating Temperatures: | | | | |
| Anode Core | - | - | - | 250°C |
| Ceramic-to-Metal Seals | - | - | - | 250°C |
| Maximum Dimensions: | | | | |
| Height | - | - | - | 8.5 inches |
| Diameter | - | - | - | 7.0 inches |
| Net Weight | - | - | - | 12 pounds |

### R-F INDUSTRIAL OSCILLATOR CLASS-C

MAXIMUM RATINGS

| | |
|---|---|
| D-C PLATE VOLTAGE | 7000 MAX. VOLTS |
| D-C PLATE CURRENT | 4.0 MAX. AMPS |
| PLATE DISSIPATION | 10 MAX. KW |
| GRID DISSIPATION | 250 MAX. WATTS |

TYPICAL OPERATION, Optimum Load

| | | |
|---|---|---|
| D-C Plate Voltage | 6000 | 7000 volts |
| D-C Grid Voltage | -575 | -670 volts |
| D-C Plate Current | 4.0 | 4.0 amps |
| D-C Grid Current | 610 | 670 ma |
| Plate Input Power | 24 | 28 kw |
| Plate Output Power | 18.9 | 22.4 kw |

### R-F POWER AMPLIFIER GROUNDED-GRID, CLASS-C

MAXIMUM RATINGS

| | |
|---|---|
| D-C PLATE VOLTAGE | 7000 MAX. VOLTS |
| D-C PLATE CURRENT | 4.0 MAX. AMPS |
| PLATE DISSIPATION | 10 MAX. KW |
| GRID DISSIPATION | 250 MAX. WATTS |

TYPICAL OPERATION

| | | |
|---|---|---|
| D-C Plate Voltage | 6000 | 7000 volts |
| D-C Grid Voltage | -535 | -625 volts |
| D-C Plate Current | 4.0 | 4.0 amps |
| D-C Grid Current | 545 | 530 ma |
| Driving Power | 3700 | 4100 watts |
| Plate Output Power | 20.5 | 24.5 kw |



▶ Indicates change from sheet dated 7-1-61

R-F POWER AMPLIFIER
PLATE-MODULATED, CLASS-C

MAXIMUM RATINGS

| | |
|---|---|
| D-C PLATE VOLTAGE | 5500 MAX. VOLTS |
| D-C PLATE CURRENT | 3.0 MAX. AMPS |
| PLATE DISSIPATION | 6.5 MAX. KW |
| GRID DISSIPATION | 250 MAX. WATTS |

TYPICAL OPERATION

| | | |
|---|---|---|
| D-C Plate Voltage | 4000 | 5000 volts |
| D-C Grid Voltage | -480 | -600 volts |
| D-C Plate Current | 3.0 | 3.0 amps |
| D-C Grid Current | 660 | 550 ma |
| Driving Power | 530 | 515 watts |
| Plate Output Power | 9.7 | 12.4 kw |

R-F LINEAR AMPLIFIER
GROUNDED-GRID, CLASS-AB2

MAXIMUM RATINGS

| | |
|---|---|
| D-C PLATE VOLTAGE | 7000 MAX. VOLTS |
| D-C PLATE CURRENT | 5.0 MAX. AMPS |
| PLATE DISSIPATION | 12 MAX. KW |
| GRID DISSIPATION | 250 MAX. WATTS |

TYPICAL OPERATION

| | | |
|---|---|---|
| D-C Plate Voltage | 6000 | 7000 volts |
| Zero-Sig Grid Voltage* | -270 | -325 volts |
| Max-Sig D-C Plate Current | 4.0 | 4.0 amps |
| Max-Sig D-C Grid Current | 300 | 250 ma |
| Driving Power | 1900 | 2050 watts |
| Plate Output Power | 18 | 20 kw |

*Adjust to give 500 milliamperes zero-signal d-c plate current.

Note: "TYPICAL OPERATION" data are obtained by caluclation from published characteristics curves and confirmed by direct tests. No allowance for circuit losses, either input or output, has been made.

## APPLICATION

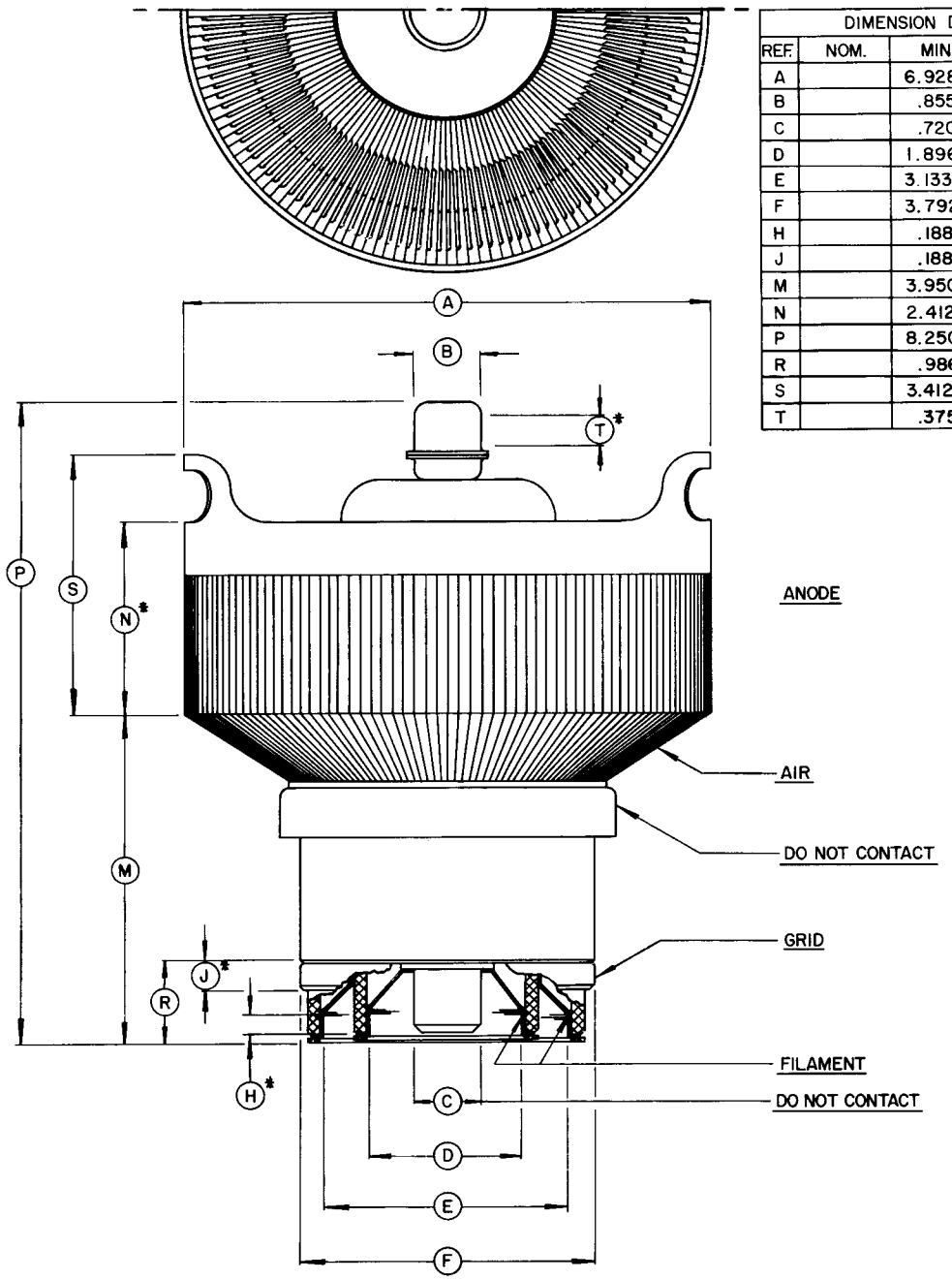
**Cooling** - The maximum temperature rating for the external surfaces of the 3CX10,000A3 is 250°C. Sufficient forced-air cooling must be provided to keep the temperature of the anode core and the temperature of the ceramic-metal seals below 250°C. Tube life is usually prolonged if these areas are maintained at temperatures below this maximum rating. Minimum air-flow requirements to maintain anode-core and seal temperatures below 225°C with an inlet-air temperature of 50°C are tabulated. The use of these air-flow rates through the recommended socket/chimney and tube combination in the base-to-anode direction provides effective cooling of the tube.

| | Sea Level | | 10,000 Feet | |
|---|---|---|---|---|
| Plate** Dissipation (Watts) | Air Flow (CFM) | Pressure Drop (Inches of Water) | Air Flow (CFM) | Pressure Drop (Inches of Water) |
| 4000 | 85 | 0.18 | 125 | 0.25 |
| 6000 | 145 | 0.38 | 210 | 0.55 |
| 8000 | 215 | 0.68 | 315 | 0.99 |
| 10,000 | 295 | 1.08 | 430 | 1.60 |
| 12,000 | 390 | 1.62 | 565 | 2.35 |

**Since the power dissipated by the filament is about 750 watts and since grid dissipation can, under some circumstances, represent another 250 watts, allowance has been made in preparing this tabulation for an additional 1000 watts dissipation.

**Filament Operation** - The rated filament voltage for the 3CX10,000A3 is 7.5 volts. Filament voltage, as measured at the socket, should be maintained at this value to obtain maximum tube life. In no case should it be allowed to deviate from the rated value by more than five percent.

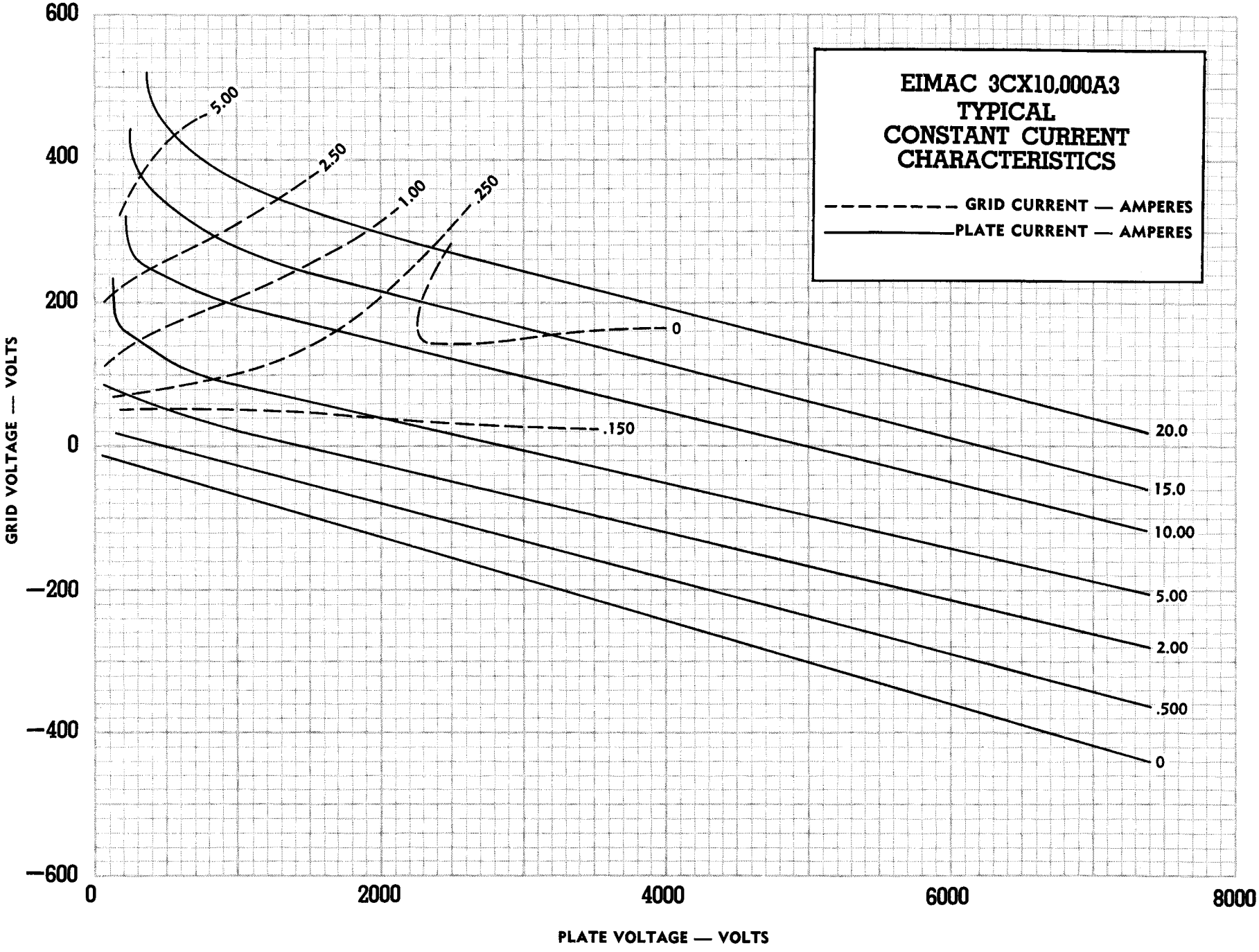
**Special Applications** - If it is desired to operate this tube under conditions widely different from those given here, write to Power Grid Tube Marketing, Eitel-McCullough, Inc., 301 Industrial Way, San Carlos, California, for information and recommendations.




| DIMENSION DATA | | | |
|---|---|---|---|
| REF. | NOM. | MIN. | MAX. |
| A | | 6.928 | 7.050 |
| B | | .855 | .895 |
| C | | .720 | .760 |
| D | | 1.896 | 1.936 |
| E | | 3.133 | 3.173 |
| F | | 3.792 | 3.832 |
| H | | .188 | |
| J | | .188 | |
| M | | 3.950 | 4.300 |
| N | | 2.412 | 2.788 |
| P | | 8.250 | 8.750 |
| R | | .986 | 1.050 |
| S | | 3.412 | 3.788 |
| T | | .375 | |

*CONTACT SURFACE
ALL DIMENSIONS IN INCHES

▶ Indicates change from sheet dated 7-1-61


EIMAC 3CX10,000A3
TYPICAL
CONSTANT CURRENT
CHARACTERISTICS
GRID CURRENT — AMPERES
PLATE CURRENT — AMPERES
GRID VOLTAGE — VOLTS
PLATE VOLTAGE — VOLTS
600
400
200
0
−200
−400
−600
0
2000
4000
6000
8000
5.00
2.50
1.00
.250
0
.150
20.0
15.0
10.00
5.00
2.00
.500
0