DESCRIPTION

The ML-6576 is a three-electrode tube designed specifically for use as a modulator or amplifier in broadcast and communication service, and as an R-F amplifier in single-sideband transmission systems where low distortion is of utmost importance. The ML-6576 is mechanically equivalent to the ML-356 tube; filament characteristics are also identical. Features include rugged kovar-glass seals and rigidly supported grid and filament assemblies. The anode is water cooled and is capable of dissipating 22.5 kW with a water flow of approximately 12 gpm. The cathode is a thoriated-tungsten, stress-free filament employing no sliding contacts, insulators or tension springs. Maximum ratings of 12 kVdc plate voltage and 45 kW plate input apply at frequencies up to 25 Mc.

GENERAL CHARACTERISTICS

**Electrical**

- Filament Voltage: 7.5 Volts
- Filament Current at 7.5 Volts: 170 Amps
- Filament Starting Current, maximum: 800 Amps
- Filament Cold Resistance, maximum: 0.0056 Ohms
- Amplification Factor: 5.5
- Interelectrode Capacitances:
  - Grid-Plate: 44 uuf
  - Grid-Filament: 33 uuf
  - Plate-Filament: 4.0 uuf

**Mechanical**

- Mounting Position: Vertical, anode down
- Type of Cooling: Water and Forced Air
- Water Flow on anode, minimum for 22.5 kW dissipation: 12 gpm*
- Maximum outgoing water temperature: 70 °C
- Air flow on center of dish from 3" nozzle: 50 cfm†
- Maximum Glass Temperature: 165 °C
- Net Weight, approximate: 14 lbs.

*This rate of water flow applies when Machlett Water Jacket F-10690 with spiral is employed.

†At frequencies above 10 Mc, more air flow may be necessary; special attention should be given to adequate ventilation of the dish and seals to keep the temperature at the hottest point below 165°C. Heat radiating connectors for grid and filament posts are recommended.
MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS
(Continuous Commercial Service)

Audio-Frequency Power Amplifier and Modulator
Class AB

Maximum Ratings, Absolute Values

D-C Plate Voltage .................................................. 12000 volts
Max-Signal D-C Plate Current* ............................................. 5.0 amps
Max-Signal Plate Input* .................................................. 45 kW
Plate Dissipation* .................................................... 22.5 kW

Typical Operation (Values are for two tubes)

D-C Plate Voltage .................................................. 10000 volts
D-C Grid Voltage ................................................ 1800 - 2150 volts
Peak A-F Grid-to-Grid Voltage ................................. 3550 4250 volts
Peak A-F Plate-to-Plate Voltage ................................. 14000 19000 volts
Zero-Signal D-C Plate Current ....................................... 1.8 1.8 amps
Max-Signal D-C Plate Current ..................................... 7.6 5.7 amps
Effective Load Resistance, Plate-to-Plate .................... 2300 4200 ohms
Max-Signal Driving Power, approx. .............................. 0 0 kW
Max-Signal Power Output, approx. .............................. 42 43 kW

Radio-Frequency Power Amplifier
Class AB Single-Sideband

Two-tone test conditions per tube

Maximum Ratings, Absolute Values

D-C Plate Voltage .................................................. 12000 volts
D-C Plate Current ................................................ 5.0 amps
Plate Input ......................................................... 45 kW
Plate Dissipation .................................................. 22.5 kW

Typical Operation

D-C Plate Voltage .................................................. 10000 volts
D-C Grid Voltage ................................................ 1900 volts
D-C Grid Current ................................................ 3.0 amps
D-C Grid Current, approximate ................................... 0 mA
Driving Power, approximate** .................................... 0 kW
Peak Envelope Power Output, approximate ................. 36 kW

Radio-Frequency Power Amplifier
Class B

Carrier conditions per tube for use with a maximum modulation factor of 1.0

Maximum Ratings, Absolute Values

D-C Plate Voltage .................................................. 12000 volts
D-C Plate Current ................................................ 4.0 amps
Plate Input ......................................................... 40 kW
Plate Dissipation ................................................ 15 kW

Typical Operation

D-C Plate Voltage .................................................. 12000 volts
D-C Grid Voltage ................................................ -2150 volts
Peak R-F Grid Voltage ............................................ 1375 volts
Peak R-F Plate Voltage ............................................ 10000 volts
D-C Plate Current ................................................ 3.0 amps
D-C Grid Current ................................................ 0 mA
Driving Power, approximate** .................................... 100 watts
Power Output, approximate ...................................... 12 kW

R-F Power Amplifier and Oscillator
Class C Telegraphy

Key-down conditions per tube without amplitude modulation‡

Maximum Ratings, Absolute Values

D-C Plate Voltage .................................................. 10000 volts
D-C Grid Voltage ................................................ -2400 volts
D-C Plate Current ................................................ 6.0 amps
D-C Grid Current ................................................ 0.20 amp
Plate Input ......................................................... 60 kW
Plate Dissipation ................................................ 22.5 kW

Typical Operation

D-C Plate Voltage .................................................. 8000 volts
D-C Grid Voltage ................................................ -2000 volts
Peak R-F Grid Voltage ............................................ 2600 volts
Peak R-F Plate Voltage ............................................ 6700 volts
D-C Plate Current ................................................ 4.9 amps
D-C Grid Current, approximate ................................... 0.12 amp
Driving Power, approximate ..................................... 300 watts
Power Output, approximate .................................... 29 kW

* Averaged over any audio-frequency cycle of sine-wave form.
** At crest of audio-frequency cycle with modulation factor of 1.0.
‡ Modulation essentially negative may be used if the positive peak of the envelope does not exceed 115% of the carrier conditions.
Constant Current Characteristics

$E_T = 7.5 \text{ V}$

Grid Voltage in Volts

Grid Current in Amperes

Plate Current in Amperes

Plate Voltage in Kilovolts

0 1 2 3 4 5 6 7 8 9 10 11 12