

Power Triode

WATER AND FORCED-AIR COOLED

GROUNDED-GRID TYPE

GENERAL DATA

Electrical:

Filament, Multistrand Thoriated-Tungsten:

Voltage (AC or DC) 11 ± 0.6 volts

Current at filament volts = 11 285 amp

Starting Current: It is not necessary to provide means for limiting filament starting current on this type. Full rated filament voltage can be applied safely to the cold filament.

Minimum Heating Time 15 sec

Amplification Factor 40 ←

Direct Interelectrode Capacitances

(Approx.):

Grid to plate 53 pf

Grid to filament 89 pf

Plate to filament 1.2 pf

Mechanical:

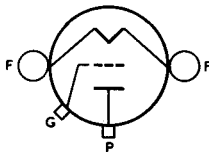
Operating Position Vertical, filament end up

Maximum Overall Length 24-1/2"

Maximum Diameter 9-1/2"

Terminal Diagram (See *Dimensional Outline*):

F—Filament
G—Grid



P—Plate

Thermal:

Water Flow 20 to 25 gpm

The specified water flow must start before the application of any voltages, and may be removed simultaneously with the filament and plate power.

Air Flow:

To plate seal and bulb:

At frequencies below 1.7 Mc Natural

At frequencies above 1.7 Mc Up to 250 cfm

Adequate forced-air cooling should be provided to limit the temperature of the plate seal and bulb to their specified maximum values. The amount of air flow required will increase with the operating frequency. The cooling air should start before the application of any voltages and should be distributed uniformly around the plate seal by means of a suitable air manifold and an airdeflector. The airflow may be removed simultaneously with filament and plate power.

← Indicates a change.



To filament seals and grid seal 10 min. cfm
 The specified air flow should be directed vertically from a 1-1/4" diameter nozzle into the filament heater before and during the application of any voltages. It may be removed simultaneously with filament and plate power.

Outlet Water Temperature. 70 max. °C
 Bulb Temperature. 180 max. °C
 Seal Temperature (Filament, grid, and plate) . 165 max. °C

AF POWER AMPLIFIER & MODULATOR — Class B

Maximum CCS^a Ratings, Absolute-Maximum Values:

| | | |
|---|------------|-------|
| DC PLATE VOLTAGE. | 15000 max. | volts |
| MAX.-SIGNAL DC PLATE CURRENT ^b | 6 max. | amp |
| Max.-SIGNAL PLATE INPUT ^b | 90 max. | kw |
| PLATE DISSIPATION ^b | 50 max. | kw |

Typical Push-Pull Operation:

Values are for 2 tubes

| | | | |
|--|-------|-------|-------|
| DC Plate Voltage. | 10200 | 15000 | volts |
| DC Grid Voltage | -220 | -320 | volts |
| Peak AF Grid-to-Grid Voltage. | 900 | 1560 | volts |
| Zero-Signal DC Plate Current. | 0.6 | 0.6 | amp |
| Max.-Signal DC Plate Current. | 5.8 | 12 | amp |
| Effective Load Resistance (Plate to plate). | 3600 | 2640 | ohms |
| Max.-Sig. Driving Power (Approx.) ^c | 120 | 688 | watts |
| Max.-Sig. Power Output (Approx.). | 37 | 117 | kw |

PLATE-MODULATED RF POWER AMPLIFIER — Class C Telephony

*Carrier conditions per tube for use
 with a maximum modulation factor of 1*

Maximum CCS Ratings, Absolute-Maximum Values:

| | | |
|-----------------------------|------------|-------|
| DC PLATE VOLTAGE. | 12500 max. | volts |
| DC GRID VOLTAGE | -2000 max. | volts |
| DC PLATE CURRENT. | 5.0 max. | amp |
| DC GRID CURRENT.. | 1.25 max. | amp |
| PLATE INPUT | 60 max. | kw |
| PLATE DISSIPATION | 33 max. | kw |

Typical Operation:

| | | | |
|--|-------|-------|-------|
| DC Plate Voltage. | 10200 | 12500 | volts |
| DC Grid Voltage: ^d | | | |
| From a fixed-supply | -1500 | -1500 | volts |
| From a grid resistor of 2100 ohms. | -1500 | - | volts |
| From a grid resistor of 1400 ohms. | - | -1500 | volts |
| Peak RF Grid Voltage. | 2070 | 2180 | volts |
| DC Plate Current. | 3.3 | 4.5 | amp |
| DC Grid Current (Approx.) ^e | 0.72 | 1.1 | amp |
| Driving Power (Approx.) ^e | 1350 | 2160 | watts |
| Power Output (Approx.). | 28 | 45 | kw |



RF POWER AMPLIFIER & OSCILLATOR — Class C Telegraphy^f

Maximum CCS Ratings, Absolute-Maximum Values:

| | | |
|-----------------------------|------------|-------|
| DC PLATE VOLTAGE | 17000 max. | volts |
| DC GRID VOLTAGE | -2000 max. | volts |
| DC PLATE CURRENT | 9 max. | amp |
| DC GRID CURRENT | 1.25 max. | amp |
| PLATE INPUT | 150 max. | kw |
| PLATE DISSIPATION | 50 max. | kw |

Typical Operation in Grounded-Filament Circuit:

| | | | |
|--|-------|-------|-------|
| DC Plate Voltage | 14000 | 17000 | volts |
| DC Grid Voltage: ^g | | | |
| From a fixed supply | -900 | -1450 | volts |
| From a cathode resistor of 125 ohms. | -900 | - | volts |
| From a cathode resistor of 150 ohms. | - | -1450 | volts |
| From a grid resistor of 750 ohms. | -900 | - | volts |
| From a grid resistor of 1320 ohms | - | -1450 | volts |
| Peak RF Grid Voltage | 1600 | 2375 | volts |
| DC Plate Current | 6 | 8.5 | amp |
| DC Grid Current (Approx.) ^e | 1.2 | 1.1 | amp |
| Driving Power (Approx.) ^e | 1700 | 2300 | watts |
| Power Output (Approx.) ^e | 65 | 105 | kw |

Typical Operation in Grounded-Grid Circuit:

Same values as for Grounded-Filament
Circuit with the following exceptions:

| | | | |
|--|------|-------|-------|
| Driving Power (Approx.) ^e | 6250 | 11200 | watts |
| Power Output | 70 | 114 | kw |

^a Continuous Commercial Service.

^b Averaged over any audio-frequency cycle of sine-wave form.

^c The driving stage should have good regulation and should be capable of supplying considerably more than the specified driving power.

^d Obtained from a fixed supply, grid resistor, or a combination of both.

^e For effect of load resistance on grid current and driving power, refer to TUBE RATINGS-Grid Current and Driving Power in the General Section.

^f Key-down conditions per tube without amplitude modulation. Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115 per cent of the carrier conditions.

^g Obtained from a fixed supply, a cathode resistor, a grid resistor, or from a combination of a fixed supply and self-bias.

CHARACTERISTICS RANGE VALUES

| | Note | Min. | Max. | |
|--------------------------------------|------|------|------|---------|
| Filament Current | 1 | 265 | 305 | amp |
| Amplification Factor | 1,2 | 35 | 45 | ← |
| Grid-Plate Capacitance | - | 47 | 59 | pf |
| Grid-Filament Capacitance | - | 74 | 104 | pf |
| Plate-Filament Capacitance | - | 0.8 | 1.6 | pf |
| Grid Voltage | 1,3 | -310 | -490 | volts |
| Plate Voltage | 1,4 | 7100 | 9100 | volts ← |
| Plate Voltage | 1,5 | 3600 | 4600 | volts |
| Peak Cathode Current | 1,6 | 50 | - | amp |
| Useful Power Output | 1,7 | 80 | - | kw ← |

← Indicates a change.



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- Note 1: With 11 volts ac on filament.
- Note 2: With dc grid voltage of -50 volts, and with plate voltage adjusted to give dc plate current of 2 amperes.
- Note 3: With dc plate voltage of 15000 volts, and with grid voltage adjusted to give dc plate current of 0.05 ampere.
- Note 4: With dc grid voltage of -100 volts, and with plate voltage adjusted to give a dc plate current of 2 amperes.
- Note 5: With dc grid voltage of 0 volts, and with plate voltage adjusted to give dc plate current of 2 amperes.
- Note 6: Represents the maximum usable cathode current (plate current and grid current) for the tube under any condition of operation.
- Note 7: With dc plate voltage of 17000 volts, dc plate current of 8.8 amperes, dc grid current of 1.05 to 1.25 amperes, grid resistor of $1600 \pm 10\%$ ohms, and frequency of 1.6 Mc.

MAXIMUM RATINGS vs OPERATING FREQUENCY

| OPERATING FREQUENCY Mc | MAXIMUM PERMISSIBLE PERCENTAGE OF MAXI- MUM-RATED PLATE VOLTAGE & PLATE INPUT | |
|----------------------------------|--|------------------------|
| | TELEPHONY | TELEGRAPHY |
| | Class C Plate-Modulated | Class C Unmodulated |
| 20 | 100 | 100 |
| 27 | 88 | 88 |
| 35 | 77 | 77 |

CURVES
shown under Type 5671
also apply to the 5770

→ Indicates a change.

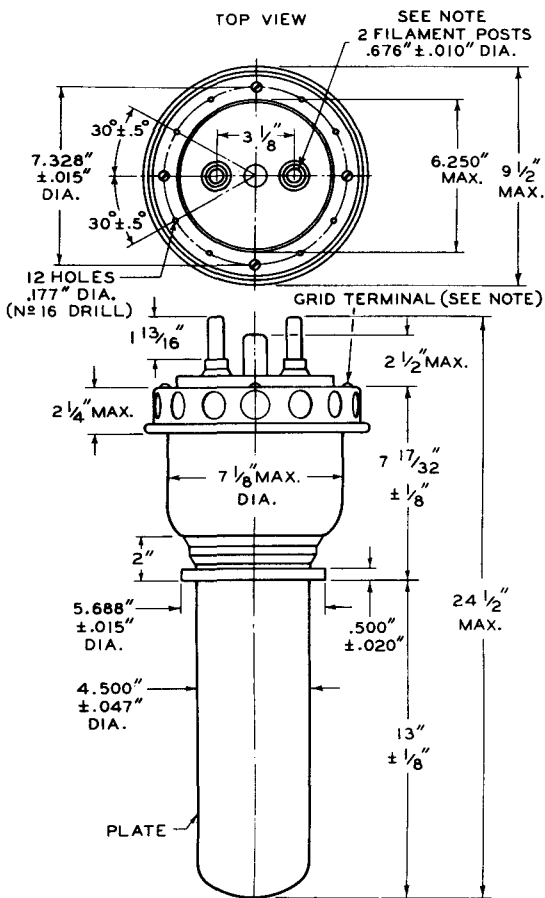




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POWER TRIODE

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NOTE: FLEXIBLE CONNECTIONS ARE REQUIRED.

92CM-7070