



3E22

*Absolute*  
*4/6/2*

3E22

# PUSH-PULL H-F BEAM POWER AMPLIFIER

Unless otherwise specified, values are for both units

## GENERAL DATA

### Electrical:

Heaters, for Unipotential Cathodes.

Arrangement . . . . .	Series	Parallel	
Voltage . . . . .	12.6 ± 10%	6.3 ± 10%	ac or dc volts ←
Current . . . . .	0.8	1.6	amp

Transconductance, for plate current of 25 ma. . . . . 4000 . . . . . μmhos

Grid-Screen Mu-Factor . . . . . 6.5

Direct Interelectrode Capacitances (Each Unit):\*

Grid No.1 to Plate. . . . .	0.22 max.	μf
Input . . . . .	14	μf
Output. . . . .	8.5	μf

### Mechanical:

Mounting Position . . . . . Vertical, base up or down; or Horizontal, plane of plates vertical

Overall Length. . . . . 4-3/8" ± 3/16"

Seated Length . . . . . 3-13/16" ± 3/16"

Maximum Diameter. . . . . 2-3/8"

Bulb. . . . . T-16

Caps (Two). . . . . Small

Base. . . . . Large Wafer Octal 8-Pin Micanol with Sleeve No. T253 ←

Basing Designation for BOTTOM VIEW. . . . . 8BY

Pin 1-Heater

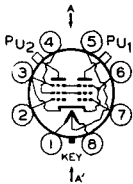
Pin 2-Grid No.1 of Unit No.2

Pin 3-Cathode, Grid No.3, Internal Shield

Pin 4-Grid No.2

Pin 5-Heater

Center-Tap



Pin 6-Cathode, Grid No.3, Internal Shield

Pin 7-Grid No.1 of Unit No.1 ←

Pin 8-Heater

PU<sub>1</sub> - Plate of Unit No.1

PU<sub>2</sub> - Plate of Unit No.2

PLANE OF ELECTRODES OF EACH UNIT IS PARALLEL TO PLANE THROUGH AXIS OF TUBE AND AA'

## PLATE-MODULATED PUSH-PULL RF POWER AMP. — Class C Telephony

Carrier conditions per tube for use with a maximum average modulation factor of 0.25

### Maximum Ratings, Absolute Values:

	INS*
DC PLATE VOLTAGE. . . . .	560 max. volts
DC GRID-No.2 (SCREEN) VOLTAGE . . . . .	225 max. volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE . . . . .	-175 max. volts
DC PLATE CURRENT. . . . .	160 max. ma.
DC GRID-No.1 CURRENT. . . . .	11 max. ma.
PLATE INPUT . . . . .	90 max. watts

\*. See next page.

← Indicates a change.

3E22



3E22

## PUSH-PULL H-F BEAM POWER AMPLIFIER

GRID-No.2 INPUT . . . . .	6 max. watts
PLATE DISSIPATION . . . . .	30 max. watts
PEAK HEATER-CATHODE VOLTAGE:	
Heater negative with respect to cathode . . . . .	100 max. volts
Heater positive with respect to cathode . . . . .	100 max. volts

### Typical Operation:

DC Plate Voltage . . . . .	560 . . volts
DC Grid-No.2 Voltage <sup>□</sup> . . . . .	200 . . volts
DC Grid-No.1 Voltage <sup>Δ</sup> . . . . .	18000 . . ohms
	-50 . . volts
	7700 . . ohms
Peak RF Grid-No.1-to-Grid-No.1 Voltage . . . . .	130 . . volts
DC Plate Current . . . . .	160 . . ma.
DC Grid-No.2 Current . . . . .	20 . . ma.
DC Grid-No.1 Current (Approx.) . . . . .	6.5 . . ma.
Driving Power (Approx.) . . . . .	0.4 . . watt
Power Output (Approx.) . . . . .	67 . . watts

### Maximum Circuit Values:

Grid-No.1-Circuit Resistance <sup>§</sup> . . . . .	30000 max. ohms
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### PUSH-PULL RF POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

*Key-down conditions per tube without modulation #*

### Maximum Ratings, Absolute Values:

	<i>INS</i> <sup>•</sup>
DC PLATE VOLTAGE . . . . .	600 max. volts
DC GRID-No.2 (SCREEN) VOLTAGE . . . . .	225 max. volts
DC GRID-No.1 (CONTROL GRID) VOLTAGE . . . . .	-175 max. volts
DC PLATE CURRENT . . . . .	175 max. ma.
DC GRID-No.1 CURRENT . . . . .	11 max. ma.
PLATE INPUT . . . . .	100 max. watts
GRID-No.2 INPUT . . . . .	6 max. watts
PLATE DISSIPATION . . . . .	35 max. watts
PEAK HEATER-CATHODE VOLTAGE:	
Heater negative with respect to cathode . . . . .	100 max. volts
Heater positive with respect to cathode . . . . .	100 max. volts

### Typical Operation:

DC Plate Voltage . . . . .	600 . . volts
DC Grid-No.2 Voltage <sup>•</sup> . . . . .	200 . . volts
DC Grid-No.1 Voltage <sup>‡</sup> . . . . .	20000 . . ohms
	-55 . . volts
	7850 . . ohms
	295 . . ohms
Peak RF Grid-No.1-to-Grid-No.1 Voltage . . . . .	140 . . volts
DC Plate Current . . . . .	160 . . ma.
DC Grid-No.2 Current . . . . .	20 . . ma.
DC Grid-No.1 Current (Approx.) . . . . .	7 . . ma.

\* , • , □ , Δ , # , † , § : See next page.

DEC. 20, 1946

TUBE DEPARTMENT

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY



3E22

# PUSH-PULL H-F BEAM POWER AMPLIFIER

Driving Power (Approx.) . . . . .	0.45 . . watt
Power Output (Approx.) . . . . .	72 . . watts

### Maximum Circuit Values:

Grid-No.1-Circuit Resistance§. . . . . 30000 max. ohms

• Intermittent Mobile Service (IMS) is defined to include those applications, such as aircraft, where the transmitter design factors of minimum size, light weight, and exceedingly high power output for short intervals are the primary requirements, even though the average life expectancy of tubes used in such transmitters is reduced to about 100 hours.

Tube ratings for IMS service are established on the basis that the transmissions have maximum "on" periods of 15 seconds followed by "off" periods of at least 60 seconds, except that it is permissible to make equipment tests with maximum "on" periods of 5 minutes followed by off periods of at least 5 minutes provided the total "on" time of such periods does not exceed 10 hours during the life of any tube.

Although the use of tubes under IMS ratings involves great reduction in tube life, such use can be justified as economical practice in applications where high power is intermittently desired from small tubes.

\* With no external shielding.

□ Obtained preferably from a separate source modulated with the plate supply or from the modulated plate-supply through a series resistor of the value shown.

△ Obtained from grid-resistor of value shown or by partial self-bias methods.

# Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of carrier conditions.

⊕ Obtained preferably from a separate source, or from the plate-voltage supply with a voltage divider, or through a series resistor of the value shown. The grid-No.2 voltage must not exceed 600 volts under key-up conditions.

‡ Obtained from fixed-supply, by grid resistor of value shown, or cathode resistor of value shown, respectively.

§ Any additional bias required must be supplied by a cathode resistor or a fixed supply.

OUTLINE DIMENSIONS AND CURVES for the 3E22 are the same as those for the 815.