



MODULATOR, AMPLIFIER, OSCILLATOR ENGINEERING INFORMATION

GENERAL RATINGS

Number of Electrodes	4
Filament Voltage	10.0 volts
Current	3.25 amperes
Type	Thoriated Tungsten
Average Characteristic Values Calculated at: 50 ma. Plate Current	
Amplification Factor (approx.)	200
Mutual Conductance	1100 micromhos
Average Direct Interelectrode Capacities:	
Grid to Plate (with external shielding) max.....	0.08 uuf
Grid to Filament	7.75 uuf
Plate to Filament	7.5 uuf
Maximum Overall Dimensions:	
Length	8 3/4 inches
Radius	4 1/4 inches
Bulb	GT-30 with arm
Base	Medium 4-Pin Ceramic, Bayonet
Type of Cooling	Air
Net Weight	10 oz.

MAXIMUM RATINGS

Maximum D-C Plate Voltage Modulated	2000 volts
Maximum D-C Plate Voltage Unmodulated	3000 volts
Maximum D-C Plate Current Modulated	85 ma.
Maximum D-C Plate Current Unmodulated	150 ma.
Maximum Plate Dissipation	100 watts
Maximum D-C Grid Current	40 ma.

Frequency Rating for Operating Conditions with Maximum
Rated Power Input and Nominal Output:

Below	30 megacycles
Above	10 meters

*Maximum Frequency Rating with Reduced Power Input
and Output:

Below	120 megacycles
Above	2.5 meters

*For operation at the higher frequencies, the plate voltage, plate current, plate dissipation, and d-c grid current should not exceed 50% of the Maximum Ratings. The R-F grid current should never exceed the maximum rated value.

INSTALLATION

The base of the UNITED 860 is designed for mounting in a standard four-prong, bayonet type socket. The tube should always be mounted vertically with ample air space provided for ventilation.

The filament of the 860 should be operated at the rated value of 10 volts. Operation at other than rated value may result in loss of filament emission and short life. Except in cases where freedom from hum is essential the filament of the 860 should be operated from an a-c source.

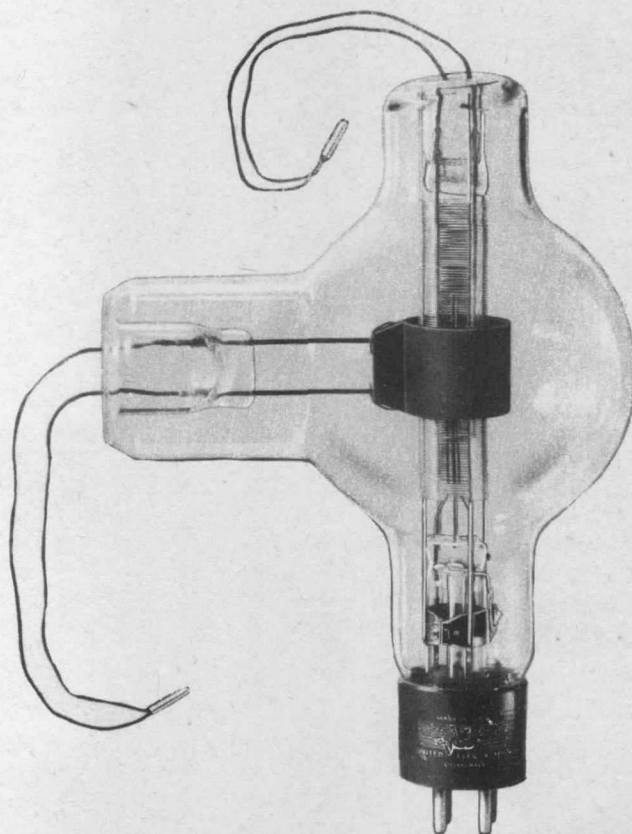
The plate dissipation of the 860 should never exceed the values given under Maximum Ratings and Typical Operation Conditions.

GRAPHITE ANODE

A specially processed graphite anode is used in this tube type because of several specific advantages over metals such as tantalum, molybdenum, and nickel. The radiating area of graphite is approximately twice the projected anode area because of its surface porosity and it will dissipate at least four times more heat than metal.

Graphite, being infusible will not warp or twist. The exact form of graphite is maintained under all temperatures; hence constant inter-element relationships and uniform characteristics result. The inherent advantages of graphite over metal are of primary importance in designing tubes of this type for long and satisfactory service.

All ratings given are for continuous service. Higher ratings are permissible for intermittent operation. Additional data will be furnished upon request.



UNITED TYPE 860

No Neutralization Required
High Interelectrode Insulation
Low Electrode Capacitances
High Power Sensitivity Low Driving Power

R-F POWER AMPLIFIER—CLASS B TELEPHONY

(Carrier Conditions—Modulation Factor = 1.0)

Maximum D-C Plate Voltage	3000	volts
Maximum D-C Screen Voltage	500	volts
Maximum D-C Plate Current	85	ma.
Maximum Plate Input	150	watts
Maximum Screen Input	10	watts
Maximum Plate Dissipation	100	watts

Typical Operation:

A-C Filament Voltage	10	10	volts
D-C Plate Voltage	2000	3000	volts
D-C Screen Voltage	300	300	volts
D-C Grid Voltage	-50	-50	volts
D-C Plate Current	60	43	ma.
Power Output approx.	30	40	watts

**PLATE MODULATED R-F POWER AMPLIFIER
CLASS C TELEPHONY**

(Carrier Conditions—Modulation Factor = 1.0)

Maximum D-C Plate Voltage	2000	volts
Maximum D-C Plate Current	85	ma.
Maximum Plate Input	170	watts
Maximum Screen Input	6.7	watts
Maximum Plate Dissipation	67	watts
Maximum D-C Screen Voltage	500	volts
Maximum D-C Grid Voltage	-800	volts
Maximum D-C Grid Current	40	ma.

Typical Operation:

A-C Filament Voltage	10	10	10	volts
D-C Plate Voltage	1500	1800	2000	volts
D-C Screen Voltage	300	300	220	volts
D-C Grid Voltage	-225	-225	-200	volts
Peak R-F Grid Voltage	—	—	500	volts
D-C Plate Current	70	67	85	ma.
D-C Screen Current	—	—	25	ma.
D-C Grid Current† approx.	30	30	38	ma.
Driving Power† approx.	15	15	17	watts
Power Output approx.	45	60	105	watts

**R-F POWER AMPLIFIER AND OSCILLATOR
CLASS C TELEGRAPHY**

(Key Down Conditions)

Maximum D-C Plate Voltage	3000	volts
Maximum D-C Plate Current	150	ma.
Maximum Plate Input	300	watts
Maximum Screen Input	10	watts
Maximum Plate Dissipation	100	watts
Maximum D-C Screen Voltage	500	volts
Maximum D-C Grid Voltage	-800	volts
Maximum D-C Grid Current	40	ma.

Typical Operation:

A-C Filament Voltage	10	10	10	10	volts
D-C Plate Voltage	1500	2000	2500	3000	volts
D-C Screen Voltage	300	300	300	300	volts
D-C Grid Voltage	-150	-150	-150	-150	volts
D-C Plate Current	90	90	90	85	ma.
D-C Grid Current† approx.	15	15	15	15	ma.
Driving Power† approx.	7	7	7	7	watts
Power Output approx.	60	100	135	165	watts

†Subject to wide variations depending on the impedance of the load circuit. The driver stage should have a tank circuit of good regulation and should be capable of delivering considerably more than the required driving power.

