872

HALF-WAVE MERCURY-VAPOR RECTIFIER

Filament*	Coated	
Voltage	5.0	a-c volts
Current	10	amp.
Maximum Overall Length		8-1/2"
Maximum Diameter		2-5/16"
Bulb		T-18
Cap		Medium Metal
Base#		Jumbo 4-Large Pin

MAXIMUM RATINGS

Peak Inverse Voltage:

Supply Freq.	*Cond. Mercury Temp. Range*	
Up to 150 ~	40° - 60°C	7500 max. volts
Peak Plate Current		5.0 max. amp.
Average Plate Current	Averaged over period of 15 sec.	1.25 max. amp.
Tube Voltage Drop		15 approx. volts

* The filament of the 872 should be allowed to come up to operating temperature before plate voltage is applied. For average conditions the delay is approximately 30 seconds.

\# Base shell is not connected within base to either filament lead.

For *shielding and r-f filter circuits*, refer to Type 871.

The table below classifies suitable rectifier circuits for the 872 and shows their safe maximum input and maximum output operating conditions. The values are based on sine-wave input and the use of a suitable choke preceding any condenser in the filter circuit.

For Circuits, refer to 92S-4315 on next page.

CIRCUIT	MAXIMUM A-C INPUT VOLTS (RMS)	APPROX. D-C OUTPUT VOLTS TO FILTER	MAXIMUM D-C LOAD CURRENT amperes
SINGLE-PHASE FULL-WAVE (2 tubes) FIG.1	2650 per tube	2300	2.5
SINGLE-PHASE FULL-WAVE (4 tubes) FIG.2	5300 total	4750	2.5
THREE-PHASE HALF-WAVE FIG.3	3050 per leg	3500	3.75
THREE-PHASE DOUBLE-Y PARALLEL FIG.4	3050 per leg	4500	7.5
THREE-PHASE FULL-WAVE FIG.5	3050 per leg	7000	3.75

OUTLINE DIMENSIONS, TUBE SYMBOL, and SOCKET CONNECTIONS for the 872 are the same as for the 872-A.

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RCA MANUFACTURING COMPANY, INC.

CIRCUITS FOR HOT-CATHODE MERCURY-VAPOR RECTIFIER TUBES

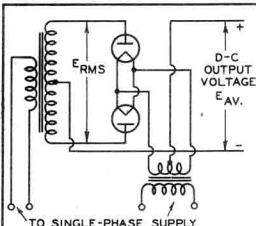

FIG. 1

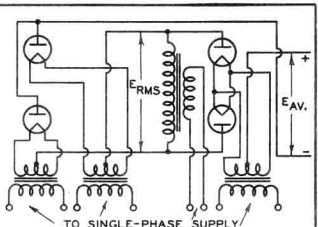

FIG. 2

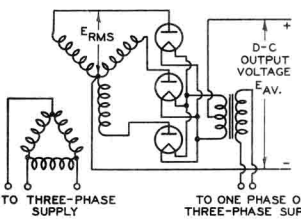

FIG. 3

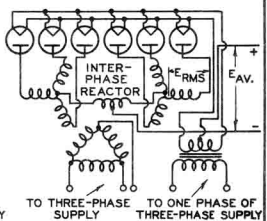

FIG. 4

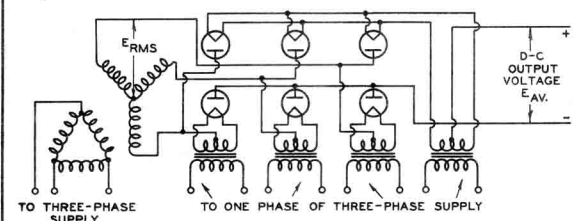

FIG. 5

FIGURE	CIRCUIT	$E_{AVERAGE}$	$E_{INVERSE}$	$I_{AVERAGE}$
1	SINGLE-PHASE FULL-WAVE (2 TUBES)	$0.318\,E_{MAXIMUM}$ $0.450\,E_{RMS}$	$3.14\,E_{AVERAGE}$	$0.636\,I_{MAXIMUM}$
2	SINGLE-PHASE FULL-WAVE (4 TUBES)	$0.636\,E_{MAXIMUM}$ $0.900\,E_{RMS}$	$1.57\,E_{AVERAGE}$	$0.636\,I_{MAXIMUM}$
3	THREE-PHASE HALF-WAVE	$0.827\,E_{MAXIMUM}$ $1.170\,E_{RMS}$	$2.09\,E_{AVERAGE}$	$0.827\,I_{MAXIMUM}$
4	THREE-PHASE DOUBLE-Y PARALLEL	$0.827\,E_{MAXIMUM}$ $1.170\,E_{RMS}$	$2.09\,E_{AVERAGE}$	$1.91\,I_{MAXIMUM}$
5	THREE-PHASE FULL-WAVE	$1.65\,E_{MAXIMUM}$ $2.34\,E_{RMS}$	$1.045\,E_{AVERAGE}$	$0.955\,I_{MAXIMUM}$

CONDITIONS ASSUMED :-

(1) SINE-WAVE SUPPLY (2) BALANCED PHASE VOLTAGES (3) ZERO TUBE DROP (4) PURE RESISTANCE LOAD (5) NO FILTER USED

872

HALF-WAVE MERCURY-VAPOR RECTIFIER

Filament*	Coated	
Voltage	5.0	a-c volts
Current	10	amp.
Maximum Overall Length		8-1/2"
Maximum Diameter		2-5/16"
Bulb		T-18
Cap		Medium Metal
Base#		Jumbo 4-Large Pin
Peak Inverse Voltage:		
Supply Freq. / *Ambient Temp.Range*		
Up to 150 ~ / 0° - 50°C		7500 max. volts
Peak Plate Current		5.0 max. amp.
Average Plate Current (Averaged over period of 15 sec.)		1.25 max. amp.
Tube Voltage Drop		15 approx.volts

* The filament of the 872 should be allowed to come up to operating temperature before plate voltage is applied. For average conditions the delay is approximately 30 seconds.

\# Base shell is not connected within base to either filament lead.

For *shielding and r-f filter circuits,* refer to Type 871.

The table below classifies suitable rectifier circuits for the 872 and shows their safe maximum input and maximum output operating conditions. The values are based on sine-wave input and the use of a suitable choke preceding any condenser in the filter circuit.

For Circuits, refer to 92S-4315 on next page.

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OUTLINE DIMENSIONS, TUBE SYMBOL, and SOCKET CONNECTIONS for the 872 are the same as for the 872-A.

CIRCUITS FOR HOT-CATHODE MERCURY-VAPOR RECTIFIER TUBES

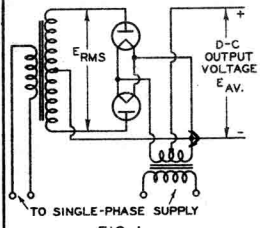


FIG. 1

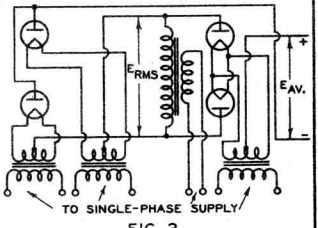


FIG. 2

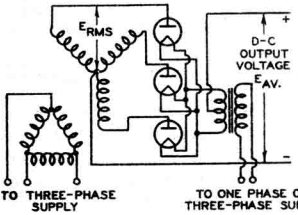


FIG. 3

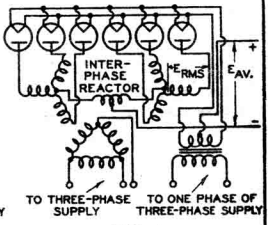
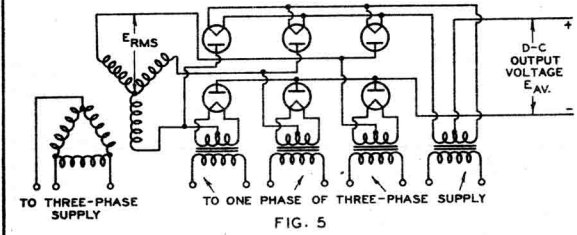


FIG. 4



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5	THREE-PHASE FULL-WAVE	$1.65\,E_{MAXIMUM}$ $2.34\,E_{RMS}$	$1.045\,E_{AVERAGE}$	$0.955\,I_{MAXIMUM}$

CONDITIONS ASSUMED :-

(1) SINE-WAVE SUPPLY (2) BALANCED PHASE VOLTAGES (3) ZERO TUBE DROP (4) PURE RESISTANCE LOAD (5) NO FILTER USED

872-A

HALF-WAVE MERCURY-VAPOR RECTIFIER

Filament*	Coated	
Voltage	5.0	a-c volts
Current	6.75*	amp.
Maximum Overall Length		8-1/2"
Maximum Diameter		2-5/16"
Bulb		T-18
Cap		Medium Metal
Base#		Jumbo 4-Large Pin

MAXIMUM RATINGS

Peak Inverse Voltage:

Supply Freq.	*Condensed Mercury Temp. Range*		
Up to 150 ∿	20°-70°C	5000 max.	volts
Up to 150 ∿	20°-60°C	10000 max.	volts
Peak Plate Current		5.0 max.	amp.
Average Plate Current	Averaged over period of 15 sec.	1.25 max.	amp.
Tube Voltage Drop		10 approx.	volts

* The filament transformer should be designed for 10 amperes per tube. The filament should be allowed to come up to operating temperature before plate voltage is applied. For average conditions the delay is approximately 30 seconds.

Base shell is not connected within base to either filament lead.

For *shielding and r-f filter circuits*, refer to Type 871.

NOTE: The 872-A differs from the 872 in that the filament of the 872-A is partially shielded from the plate.

The table below classifies suitable rectifier circuits for the 872-A and shows their safe maximum input and maximum output operating conditions for a peak inverse voltage of 10000 volts. The values are based on sine-wave input and the use of a suitable choke preceding any condenser in the filter circuit. If the 872-A is to be used under temperature conditions such that the peak inverse voltage is limited to 5000 volts, the a-c input voltage and d-c output voltage values in the table should be multiplied by a factor of 0.5 to give the maximum values for the 5000-volt conditions.

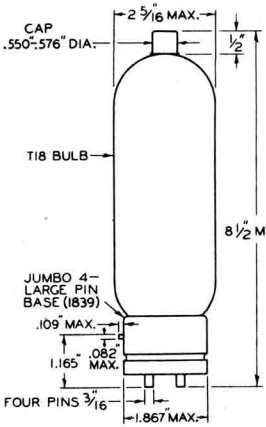
For Circuits, refer to 92S-4315 (page backing Type 872)

CIRCUIT	MAXIMUM A-C INPUT VOLTS□ (RMS)	APPROX. D-C OUTPUT VOLTS TO FILTER	MAXIMUM D-C LOAD CURRENT amperes
SINGLE-PHASE FULL-WAVE (2 tubes) FIG. 1	3535 per tube	3180	2.5
SINGLE-PHASE FULL-WAVE (4 tubes) FIG. 2	7070 total	6360	2.5
THREE-PHASE HALF-WAVE FIG. 3	4080 per leg	4780	3.75
THREE-PHASE DOUBLE-Y PARALLEL FIG. 4	4080 per leg	4780	7.5
THREE-PHASE FULL-WAVE FIG. 5	4080 per leg	9570	3.75

□ For maximum peak inverse voltage of 10000 volts.

872-A

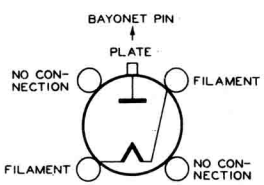
HALF-WAVE MERCURY-VAPOR RECTIFIER



BOTTOM VIEW OF BASE

92S-4323

TUBE SYMBOL & TOP VIEW
OF
SOCKET CONNECTIONS



RCA
872-A

HALF-WAVE MERCURY-VAPOR RECTIFIER

Filament*	Coated	
Voltage	5.0	a-c volts
Current	6.75*	amp.
Maximum Overall Length		8-1/2"
Maximum Diameter		2-5/16"
Bulb		T-18
Cap		Medium Metal
Base#		Jumbo 4-Large Pin

Peak Inverse Voltage:

Supply Freq.	*Ambient Temp. Range*		
Up to 150 ∿	15° ÷ 60°C	5000 max.	volts
Up to 150 ∿	15° - 50°C	10000 max.	volts
Peak Plate Current		5.0 max.	amp.
Average Plate Current	Averaged over period of 15 sec.	1.25 max.	amp.
Tube Voltage Drop		10 approx.	volts

* The filament transformer should be designed for 10 amperes per tube. The filament should be allowed to come up to operating temperature before plate voltage is applied. For average conditions the delay is approximately 30 seconds.

Base shell is not connected within base to either filament lead.

For *shielding and r-f filter circuits,* refer to Type 871.

NOTE: The 872-A differs from the 872 in that the filament of the 872-A is partially shielded from the plate.

The table below classifies suitable rectifier circuits for the 872-A and shows their safe maximum input and maximum output operating conditions for a peak inverse voltage of 10000 volts. The values are based on sine-wave input and the use of a suitable choke preceding any condenser in the filter circuit. If the 872-A is to be used under temperature conditions such that the peak inverse voltage is limited to 5000 volts, the a-c input voltage and d-c output voltage values in the table should be multiplied by a factor of 0.5 to give the maximum values for the 5000-volt conditions.

For Circuits, refer to 92S-4315 (page backing Type 872)

CIRCUIT	MAXIMUM A-C INPUT VOLTS[□] (RMS)	APPROX. D-C OUTPUT VOLTS TO FILTER	MAXIMUM D-C LOAD CURRENT amperes
SINGLE-PHASE FULL-WAVE (2 tubes) FIG. 1	3535 per tube	3180	2.5
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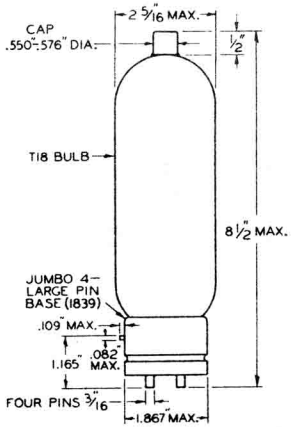
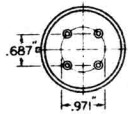
THREE-PHASE DOUBLE-Y PARALLEL FIG. 4	4080 per leg	4780	7.5
THREE-PHASE FULL-WAVE FIG. 5	4080 per leg	9570	3.75

[□] For maximum peak inverse voltage of 10000 volts.

872-A

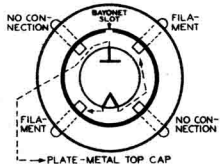
HALF-WAVE MERCURY-VAPOR RECTIFIER





BOTTOM VIEW OF BASE

TUBE SYMBOL & TOP VIEW
OF
SOCKET CONNECTIONS



878

HALF-WAVE HIGH-VACUUM RECTIFIER

FOR USE WITH CATHODE-RAY TUBES

Filament	Tungsten	
Voltage	2.5	a-c volts
Current	5.0	amp.
Overall Length		7" to 7-5/8"
Maximum Diameter		1-13/16"
Bulb		T-14
Cap		Medium Metal Skirted
Base		Medium 4-Pin

Operating Conditions:

Filament Voltage	2.5	a-c volts
A-C Plate Voltage (RMS)	7100 max.	volts
Peak Inverse Voltage	20000 max.	volts
D-C Output Current (Continuous)	5 max.	ma.

The 878 is for use in suitable rectifying devices to supply the d-c voltage requirements of cathode-ray tubes.

It is important that the filament transformer secondary be insulated to withstand the maximum peak inverse voltage encountered in the installation.

The *maximum peak plate current* of the 878 is limited by the available emission from the filament. In normal operation, the peak current is practically independent of the size of input filter condenser and is approximately 20 milliamperes.

Filter requirements are ordinarily met by the use of a 0.5 to 2.0 μf condenser shunted across the bleeder circuit. The shunt condenser should have a rating sufficient to withstand the instantaneous peak value of the a-c input voltage. If this filtering is inadequate for a definite application, a two-section filter is recommended.

In a *voltage-doubler circuit*, two 878's may be operated to deliver approximately twice the voltage obtainable from a half-wave rectifier circuit for the same a-c input voltage. However, a separate filament-supply winding is required for each tube.

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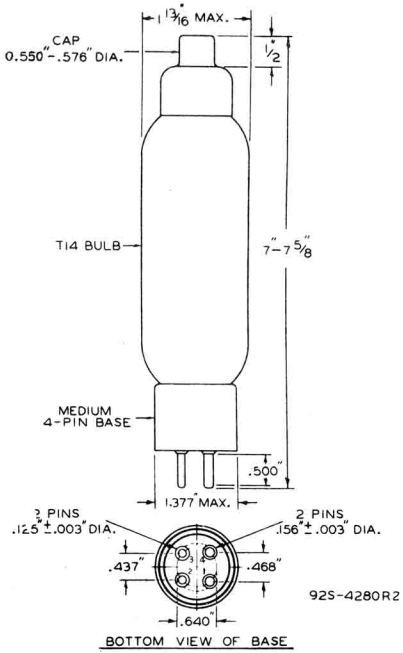
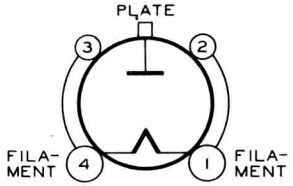
HALF-WAVE HIGH-VACUUM RECTIFIER



TUBE SYMBOL & TOP VIEW
OF
SOCKET CONNECTIONS



RCA

879

HALF-WAVE HIGH-VACUUM RECTIFIER

FOR USE WITH CATHODE-RAY TUBES

Filament	Coated	
Voltage	2.5	a-c volts
Current	1.75	amp.
Overall Length		4-9/32" to 4-17/32"
Maximum Diameter		1-9/16"
Bulb		ST-12
Cap		Small Metal
Base		Small 4-Pin

Operating Conditions:

Filament Voltage	2.5	a-c volts
A-C Plate Voltage (RMS)	2650 max.	volts
Peak Inverse Voltage	7500 max.	volts
Peak Plate Current	100 max.	ma.
D-C Output Current (Continuous)	7.5 max.	ma.

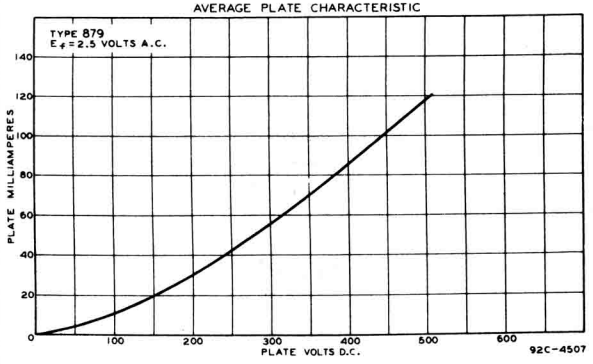
The 879 is for use in suitable rectifying devices to supply the d-c voltage requirements of cathode-ray tubes.

It is important that the filament transformer secondary be insulated to withstand the maximum peak inverse voltage encountered in the installation.

Filter requirements are ordinarily met by the use of a 0.5 to 2.0 μf condenser shunted across the bleeder circuit. The shunt condenser should have a rating sufficient to withstand the instantaneous peak value of the a-c input voltage. If this filtering is inadequate for a definite application, a two-section filter is recommended.

In a *voltage-doubler circuit*, two 879's may be operated to deliver approximately twice the voltage obtainable from a half-wave rectifier circuit for the same a-c input voltage. However, a separate filament-supply winding is required for each tube.

AVERAGE PLATE CHARACTERISTIC



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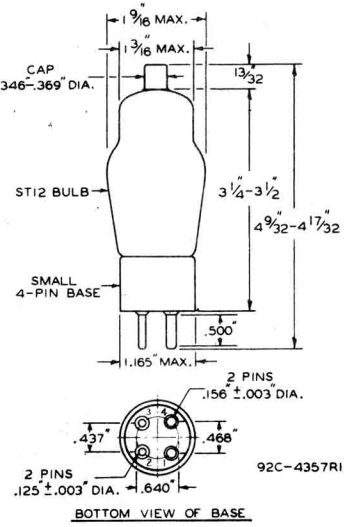
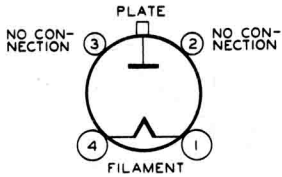
879

HALF-WAVE HIGH-VACUUM RECTIFIER



TUBE SYMBOL & TOP VIEW
OF
SOCKET CONNECTIONS



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RCA MANUFACTURING COMPANY INC.

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R-F POWER AMPLIFIER, OSCILLATOR

(WATER & FORCED-AIR COOLED)

Filament	Tungsten	
Voltage	11	a-c or d-c volts
Current	24	amp.
Amplification Factor	10	
Direct Interelectrode Capacitances (approx.)♣:		
Grid to Plate	6.9	μμf
Grid to Filament	2.5	μμf
Plate to Filament	2.7	μμf
Maximum Overall Length		7-3/8"
Maximum Radius		2-1/16"
Water Jacket		Integral part of tube

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

This tube can often be operated with reduced filament voltage as explained on sheet TYPES OF CATHODES in front of book.

R-F POWER AMPLIFIER - Class B Telephony

Carrier conditions per tube for use with a max. modulation fact. of 1.0

D-C Plate Voltage		3000 max.	volts
D-C Plate Current		200 max.	ma.
Plate Input		600 max.	watts
Plate Dissipation		600 max.	watts
Typical Operation:			
Filament Voltage	11	11	a-c volts
D-C Plate Voltage	2500	3000	volts
D-C Grid Voltage	-250	-300	volts
Peak R-F Grid Voltage	290	320	volts
D-C Plate Current	200	200	ma.
D-C Grid Current **	2	1	approx.ma.
Driving Power ** o	45	50	approx.watts
Power Output	165	200	approx.watts

PLATE-MODULATED R-F POWER AMPLIFIER - Class C Telephony

Carrier conditions per tube for use with a max. modulation fact. of 1.0

D-C Plate Voltage		2000 max.	volts
D-C Grid Voltage		-500 max.	volts
D-C Plate Current		200 max.	ma.
D-C Grid Current		75 max.	ma.
Plate Input		400 max.	watts
Plate Dissipation		400 max.	watts
Typical Operation:			
Filament Voltage	11	11	a-c volts
D-C Plate Voltage	1500	2000	volts
D-C Grid Voltage	-450	-500	volts
Peak R-F Grid Voltage	800	850	volts
D-C Plate Current	200	200	ma.

o At crest of a-f cycle with modulation factor of 1.0.

** See next page.

♣ With grid shield and water jacket.

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R-F POWER AMPLIFIER, OSCILLATOR

(continued from preceding page)

D-C Grid Current **	50	50	approx.ma.
Driving Power **	35	40	approx.watts
Power Output	200	300	approx.watts

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation #

D-C Plate Voltage			3000 max.	volts
D-C Grid Voltage			-500 max.	volts
D-C Plate Current			400 max.	ma.
D-C Grid Current			75 max.	ma.
Plate Input			1200 max.	watts
Plate Dissipation			1000 max.	watts
Typical Operation:				
Filament Voltage	11	11	11	a-c volts
D-C Plate Voltage	2000	2500	3000	volts
D-C Grid Voltage	-400	-450	-500	volts
Peak R-F Grid Voltage	825	875	925	volts
D-C Plate Current	400	400	400	ma.
D-C Grid Current **	45	45	45	approx.ma.
Driving Power **	35	35	35	approx.watts
Power Output	450	625	800	approx.watts

** Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

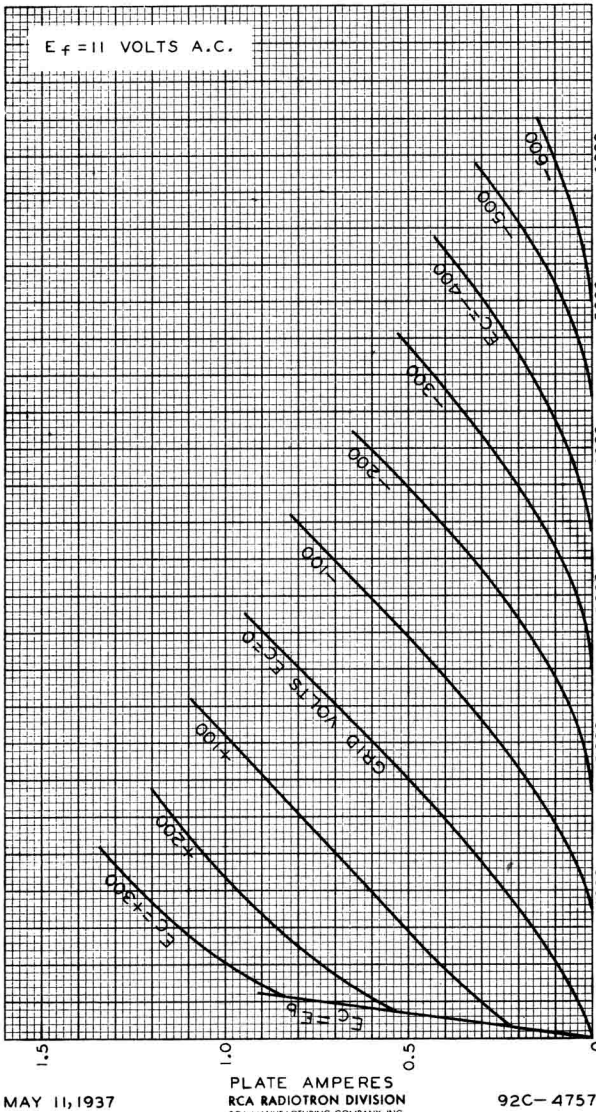
Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.

For use of the 887 at the higher frequencies, refer to curve 92C-4763 under Type 888 and sheet TRANS. TUBE RATINGS vs FREQUENCY.

OUTLINE DIMENSIONS, TUBE SYMBOL, and MOUNTING for the 887 are the same as for the 888.

887

AVERAGE PLATE CHARACTERISTICS



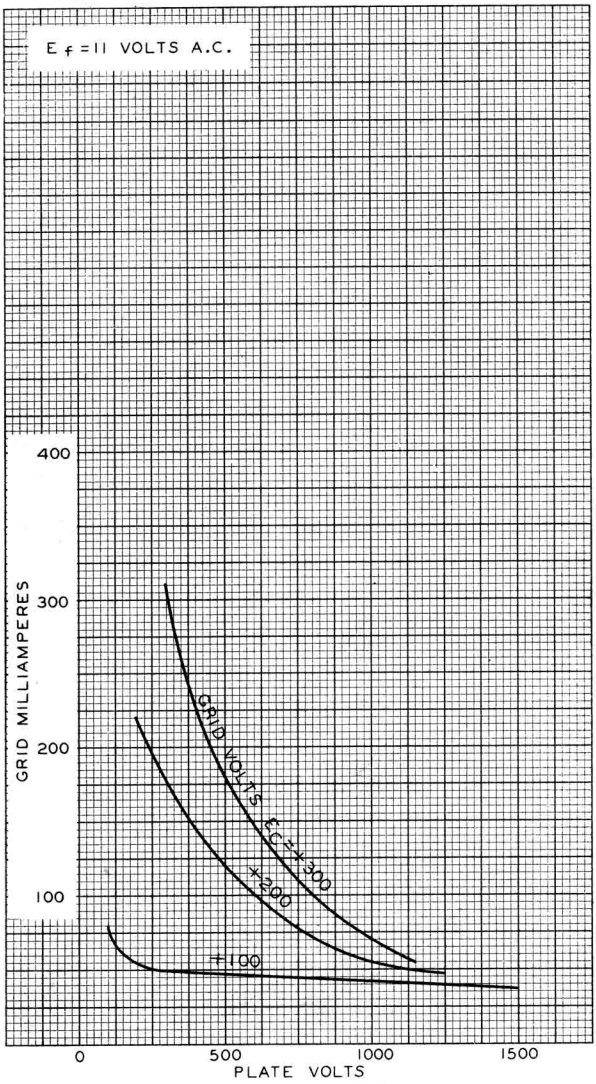
MAY 11, 1937

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4757

887

TYPICAL CHARACTERISTICS



888

R-F POWER AMPLIFIER, OSCILLATOR

(WATER & FORCED-AIR COOLED)

Filament	Tungsten	
Voltage	11	a-c or d-c volts
Current	24	amp.
Amplification Factor	30	
Direct Interelectrode Capacitances (approx)♦:		
Grid to Plate	7.8	μμf
Grid to Filament	2.8	μμf
Plate to Filament	2.5	μμf
Maximum Overall Length		7-3/8"
Maximum Radius		2-1/16"
Water Jacket		Integral part of tube

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

This tube can often be operated with reduced filament voltage as explained on sheet TYPES OF CATHODES in front of book.

R-F POWER AMPLIFIER - Class B Telephony

Carrier conditions per tube for use with a max. modulation fact. of 1.0

D-C Plate Voltage		3000 max.	volts
D-C Plate Current		200 max.	ma.
Plate Input		600 max.	watts
Plate Dissipation		600 max.	watts
Typical Operation:			
Filament Voltage	11	11	a-c volts
D-C Plate Voltage	2500	3000	volts
D-C Grid Voltage	-80	-100	volts
Peak R-F Grid Voltage	200	220	volts
D-C Plate Current	200	200	ma.
D-C Grid Current **	15	15	approx.ma.
Driving Power ** o	45	50	approx.watts
Power Output	165	200	approx.watts

PLATE-MODULATED R-F POWER AMPLIFIER - Class C Telephony

Carrier conditions per tube for use with a max. modulation fact. of 1.0

D-C Plate Voltage		2000 max.	volts
D-C Grid Voltage		-500 max.	volts
D-C Plate Current		200 max.	ma.
D-C Grid Current		100 max.	ma.
Plate Input		400 max.	watts
Plate Dissipation		400 max.	watts
Typical Operation:			
Filament Voltage	11	11	a-c volts
D-C Plate Voltage	1500	2000	volts
D-C Grid Voltage	-300	-350	volts
Peak R-F Grid Voltage	600	650	volts
D-C Plate Current	200	200	ma.

o At crest of a-f cycle with modulation factor of 1.0.

** See next page.

♦ With grid shield and water jacket.

888

R-F POWER AMPLIFIER, OSCILLATOR

(continued from preceding page)

D-C Grid Current **		80	80	approx.ma.
Driving Power **		40	40	approx.watts
Power Output		200	300	approx.watts

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation #

D-C Plate Voltage			3000 max.	volts
D-C Grid Voltage			-500 max.	volts
D-C Plate Current			400 max.	ma.
D-C Grid Current			100 max.	ma.
Plate Input			1200 max.	watts
Plate Dissipation			1000 max.	watts
Typical Operation:				
Filament Voltage	11	11	11	a-c volts
D-C Plate Voltage	2000	2500	3000	volts
D-C Grid Voltage	-265	-280	-300	volts
Peak R-F Grid Voltage	625	640	650	volts
D-C Plate Current	400	400	400	ma.
D-C Grid Current **	80	80	80	approx.ma.
Driving Power **	45	45	45	approx.watts
Power Output	450	625	800	approx.watts

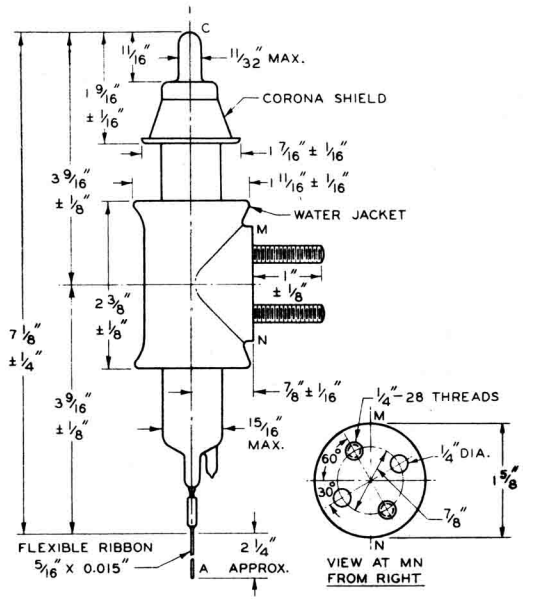
** Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

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

For use of the 888 at the higher frequencies, refer to curve 92C-4763 under this type and sheet TRANS. TUBE RATINGS vs FREQUENCY.

888

R-F POWER AMPLIFIER, OSCILLATOR



TUBE SYMBOL AND TERMINAL CONNECTIONS

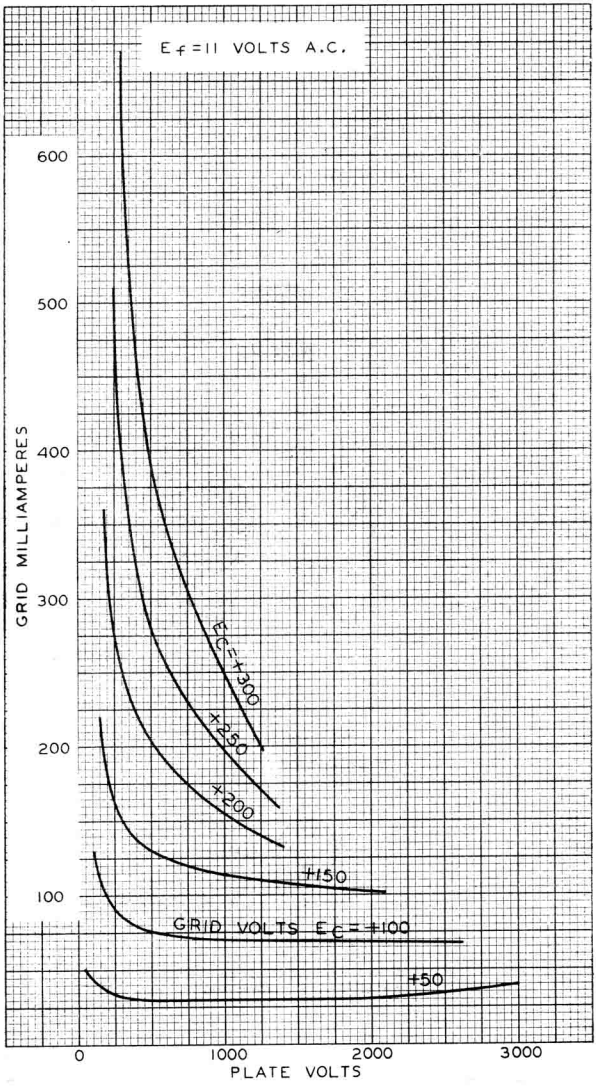
A-FILAMENT
C-GRID
PLATE CONNECTION TO WATER-JACKET MOUNTING

888

RCA

888

TYPICAL CHARACTERISTICS



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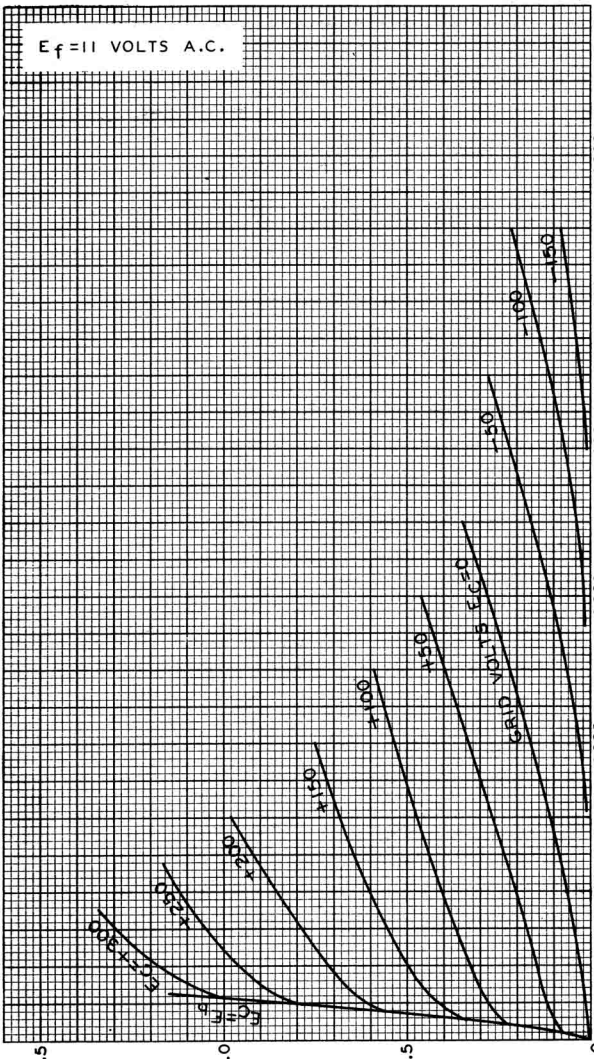
RCA MANUFACTURING COMPANY, INC.

92C-4760

RCA

888

AVERAGE PLATE CHARACTERISTICS



MAY 11, 1937

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4759

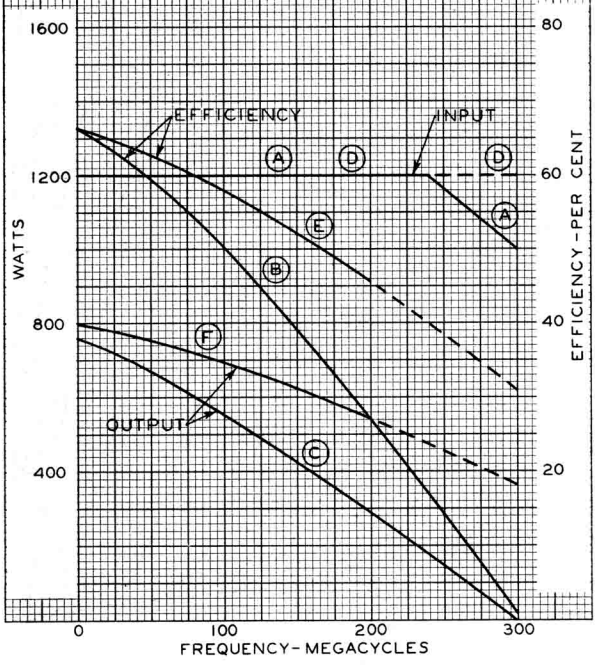
887
888

TYPES: 887, 888

FREQUENCY PERFORMANCE CHARACTERISTICS

UNMODULATED CLASS C AMPLIFIER & OSCILLATOR

CURVE	DESCRIPTION
A	OSCILLATOR INPUT
B	OSCILLATOR EFFICIENCY
C	OSCILLATOR OUTPUT = TUBE OUTPUT MINUS GRID DRIVING POWER
D	POWER AMPLIFIER INPUT
E	POWER AMPLIFIER EFFICIENCY
F	POWER AMPLIFIER OUTPUT = TUBE OUTPUT



891

R-F POWER AMPLIFIER, MODULATOR

(WATER COOLED)

Filament	Tungsten, Two-unit Type	
Excitation	1φ A.C., 2φ A.C., or D.C.	
Voltage	11	volts
Current per unit	60	amp.
Amplification Factor	8	
Direct Interelectrode Capacitances (approx.):		
Grid to Plate	27	μμf
Grid to Filament	18	μμf
Plate to Filament	2	μμf
Maximum Overall Length		20-5/8"
Maximum Radius		6-1/2"
Base		No. 3232
Cap		No. 3950
Water Jacket		UT-1285-A

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

This tube can often be operated with reduced filament voltage as explained on sheet TYPES OF CATHODES in front of book.

A-F POWER AMPLIFIER & MODULATOR - Class A

D-C Plate Voltage	12000 max.	volts
Plate Input	7.5 max.	kw
Plate Dissipation	7.5 max.	kw
Typical Operation:		
Filament Voltage - See FILAMENT CONNECTIONS 92C-4629R1		
D-C Plate Voltage	8000	volts
D-C Grid Voltage **	-730	volts
Peak A-F Grid Voltage	800	volts
D-C Plate Current	0.9	amp.
Load Resistance	5200	ohms
U.P.O. (5% second harmonic)	2	kw

A-F POWER AMPLIFIER & MODULATOR - Class B

D-C Plate Voltage		15000 max.		volts
Max.-Signal D-C Plate Current *		2.0 max.		amp.
Max.-Signal Plate Input *		20 max.		kw
Plate Dissipation *		5 max.		kw ←
Typical Operation - 2 tubes:				
Unless otherwise specified, values are for 2 tubes.				
Filament Voltage - See FILAMENT CONNECTIONS 92C-4629R1				
D-C Plate Voltage	6000	10000	12500	volts
D-C Grid Voltage **	-700	-1200	-1560	volts
Peak A-F Grid-to-Grid Volt.	2400	3600	4160	volts
Zero-Sig. D-C Plate Cur.	0.5	0.5	0.4	amp.
Max.-Sig. D-C Plate Cur.	2.3	3.2	2.8	amp.
Load Resistance (per tube)	1250	1600	2500	ohms
Effective Load Resistance (plate to plate)	5000	6400	10000	ohms

* Averaged over any audio frequency cycle of sine-wave form. ←

** With a-c filament supply.

← Indicates a change

891

R-F POWER AMPLIFIER, MODULATOR

(continued from preceding page)

Max.-Signal Driving Power	260	324	350	approx.watts
Max.-Signal Power Output	8	20	22	approx.kw

R-F POWER AMPLIFIER - Class B Telephony

Carrier conditions per tube for use with a max. modulation fact. of 1.0

D-C Plate Voltage	15000 max.	volts
D-C Plate Current	1.0 max.	amp.
R-F Grid Current	24 max.	amp.
Plate Input	10 max.	kw
Plate Dissipation	6 max.	kw

Typical Operation:

Filament Voltage - See FILAMENT CONNECTIONS 92C-4629R1

D-C Plate Voltage	6000	10000	14000	volts
D-C Grid Voltage □	-700	-1230	-1750	volts
→ Peak R-F Grid Voltage	700	930	1100	volts
D-C Plate Current	0.7	0.8	0.56	amp.
→ Driving Power °∞	82	0	0	approx.watts
Power Output	1	2	2.275	approx.kw

° At crest of a-f cycle with modulation factor of 1.0.

PLATE-MODULATED R-F POWER AMPLIFIER - Class C Telephony

Carrier conditions per tube for use with a max. modulation fact. of 1.0

D-C Plate Voltage	8000 max.	volts
D-C Grid Voltage	-3000 max.	volts
D-C Plate Current	1.0 max.	amp.
D-C Grid Current	0.15 max.	amp.
R-F Grid Current	24 max.	amp.
Plate Input	8 max.	kw
Plate Dissipation	4 max.	kw

Typical Operation:

Filament Voltage - See FILAMENT CONNECTIONS 92C-4629R1

D-C Plate Voltage	6000	8000	volts
D-C Grid Voltage	-2000	-2400	volts
Peak R-F Grid Voltage	2650	3100	volts
D-C Plate Current	0.75	0.78	amp.
D-C Grid Current ∞	0.1	0.08	approx.amp.
Driving Power ∞	260	260	approx.watts
Power Output	3.5	5	approx.kw

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation ##

D-C Plate Voltage	12000 max.	volts
D-C Grid Voltage	-3000 max.	volts
D-C Plate Current	2.0 max.	amp.
D-C Grid Current	0.15 max.	amp.
R-F Grid Current	30 max.	amp.
Plate Input	18 max.	kw

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

□ With d-c filament supply.

∞ Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

← Indicates a change

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R-F POWER AMPLIFIER, MODULATOR

(continued from preceding page)

Plate Dissipation		6 max.	kw
Typical Operation:			
Filament Voltage – See FILAMENT CONNECTIONS		92C-4629	
D-C Plate Voltage	8000	10000	volts
D-C Grid Voltage	-1800	-2000	volts
Peak R-F Grid Voltage	2500	2900	volts
D-C Plate Current	1.1	1.45	amp.
D-C Grid Current [oo]	0.06	0.105	approx.amp.
Driving Power [oo]	150	310	approx.watts
Power Output	6.5	10	approx.kw

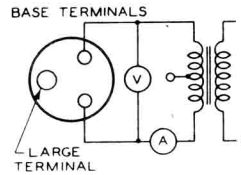
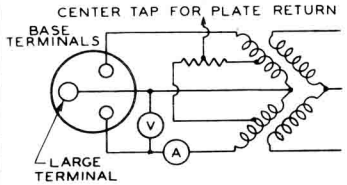
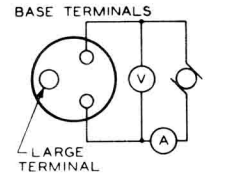
[oo] Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

For use of the 891 at the higher frequencies, refer to sheet TRANS. TUBE RATINGS vs FREQUENCY.

THE FILAMENT EMISSION CHARACTERISTIC FOR THE 891 IS THE SAME AS FOR TYPE 207. THE FILAMENT CHARACTERISTIC IS GIVEN UNDER TYPE 892. FOR CHARACTERISTIC CURVES, REFER TO TYPE 848.

891

FILAMENT CONNECTIONS AND EXCITATION CIRCUITS

WITH SINGLE-PHASE A-C EXCITATION	 V = 22 VOLTS A = 60 AMPERES
WITH TWO-PHASE (QUARTER PHASE) A-C EXCITATION	 V = 11 VOLTS A = 60 AMPERES
WITH D-C EXCITATION	 V = 22 VOLTS A = 60 AMPERES

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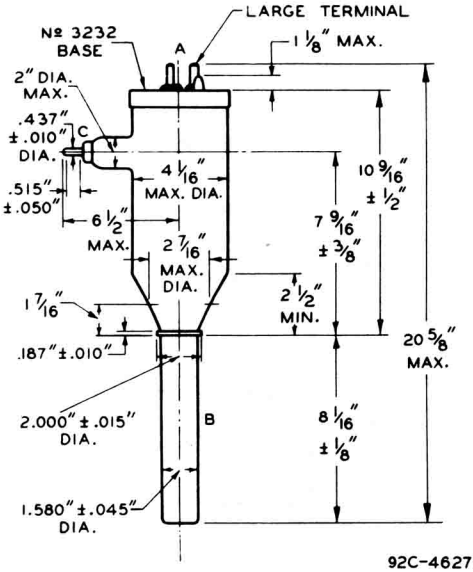
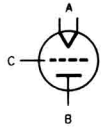
891

R-F POWER AMPLIFIER, MODULATOR



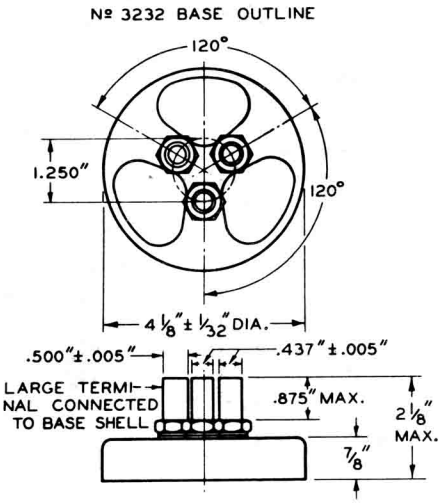
TUBE SYMBOL AND TERMINAL CONNECTIONS



A – FILAMENT
B – PLATE
C – GRID

891

R-F POWER AMPLIFIER, MODULATOR



892

R-F POWER AMPLIFIER, CLASS B MODULATOR

WATER COOLED

Filament	Tungsten, Two-unit Type	
Excitation	1φ A.C., 2φ A.C. or D.C.	
Voltage per unit	11	volts
Current per unit	60	amp.
Amplification Factor	50	
Direct Interelectrode Capacitances:		
Grid to Plate	27	μμf
Grid to Filament	18	μμf
Plate to Filament	2	μμf
Maximum Overall Length		20-5/8"
Maximum Radius		6-1/2"
Base		No.3232
Cap		No.3950
Water Jacket		UT-1285A

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

This tube can often be operated with reduced filament voltage as explained on sheet TYPES OF CATHODES in front of book.

A-F POWER AMPLIFIER & MODULATOR - Class B

D-C Plate Voltage			15000 max.	volts
Max.-Signal D-C Plate Current *			2.0 max.	amp.
Max.-Signal Plate Input *			20 max.	kw
Plate Dissipation *			7.5 max.	kw
Typical Operation - 2 tubes:				
Unless otherwise specified, values are for 2 tubes.				
Filament Voltage - See FILAMENT CONNECTIONS 92C-4629				
D-C Plate Voltage	6000	10000	12500	volts
D-C Grid Voltage #	-10	-120	-200	volts
Peak A-F Grid-to-Grid Volt.	1200	1620	1530	volts
Zero-Sig. D-C Plate Cur.	0.5	0.5	0.4	amp.
Max.-Sig. D-C Plate Cur.	2.5	3.2	2.8	amp.
Load Resistance (per tube)	1050	1600	2500	ohms
Effective Load Resistance (plate to plate)	4200	6400	10000	ohms
Max.-Signal Driving Power	415	525	420	approx.watts
Max.-Signal Power Output	8	20	22	approx.kw

R-F POWER AMPLIFIER - Class B Telephony

Carrier conditions per tube for use with a max. modulation fact. of 1.0

D-C Plate Voltage			15000 max.	volts
D-C Plate Current			1.0 max.	amp.
R-F Grid Current			24 max.	amp.
Plate Input			15 max.	kw
Plate Dissipation			10 max.	kw
Typical Operation:				
Filament Voltage - See FILAMENT CONNECTIONS 92C-4629				
D-C Plate Voltage	6000	10000	14000	volts

* Averaged over any audio-frequency cycle.

\# With d-c filament supply.

(continued on next page)

892
R-F POWER AMPLIFIER, CLASS B MODULATOR

(continued from preceding page)

D-C Grid Voltage #	-10	-135	-220	volts
Peak R-F Grid Voltage °	600	940	1020	volts
D-C Plate Current	0.67	0.93	0.95	amp.
Driving Power °	65	50	30 approx.	watts
Power Output	1	2.5	4 approx.	kw

° At crest of a-f cycle with modulation factor of 1.0.

PLATE-MODULATED R-F POWER AMPLIFIER - Class C Telephony

Carrier conditions per tube for use with a max. modulation fact. of 1.0

D-C Plate Voltage	10000 max.	volts
D-C Grid Voltage	-3000 max.	volts
D-C Plate Current	1.0 max.	amp.
D-C Grid Current	0.25 max.	amp.
R-F Grid Current	24 max.	amp.
Plate Input	10 max.	kw
Plate Dissipation	6.6 max.	kw

Typical Operation:

Filament Voltage - See FILAMENT CONNECTIONS 92C-4629

D-C Plate Voltage	6000	8000	10000	volts
D-C Grid Voltage	-1000	-1300	-1600	volts
Peak R-F Grid Voltage	1675	2000	2400	volts
D-C Plate Current	0.77	0.75	0.72	amp.
D-C Grid Current °°	0.185	0.175	0.115 approx.	amp.
Driving Power °°	310	350	260 approx.	watts
Power Output	3.5	5	6 approx.	kw

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation ##

D-C Plate Voltage	15000 max.	volts
D-C Grid Voltage	-3000 max.	volts
D-C Plate Current	2.0 max.	amp.
D-C Grid Current	0.25 max.	amp.
R-F Grid Current	30 max.	amp.
Plate Input	30 max.	kw
Plate Dissipation	10 max.	kw

Typical Operation:

Filament Voltage - See FILAMENT CONNECTIONS 92C-4629

D-C Plate Voltage	8000	10000	12000	volts
D-C Grid Voltage	-1000	-1300	-1600	volts
Peak R-F Grid Voltage	1800	2300	2800	volts
D-C Plate Current	1.1	1.4	1.64	amp.
D-C Grid Current °°	0.18	0.18	0.18 approx.	amp.
Driving Power °°	320	400	500 approx.	watts
Power Output	6.5	10	14 approx.	watts

With d-c filament supply.

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

°° Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

(continued on next page)

892

R-F POWER AMPLIFIER, CLASS B MODULATOR

(continued from preceding page)

For use of the 892 at the higher frequencies, refer to sheet TRANS. TUBE RATINGS vs FREQUENCY.

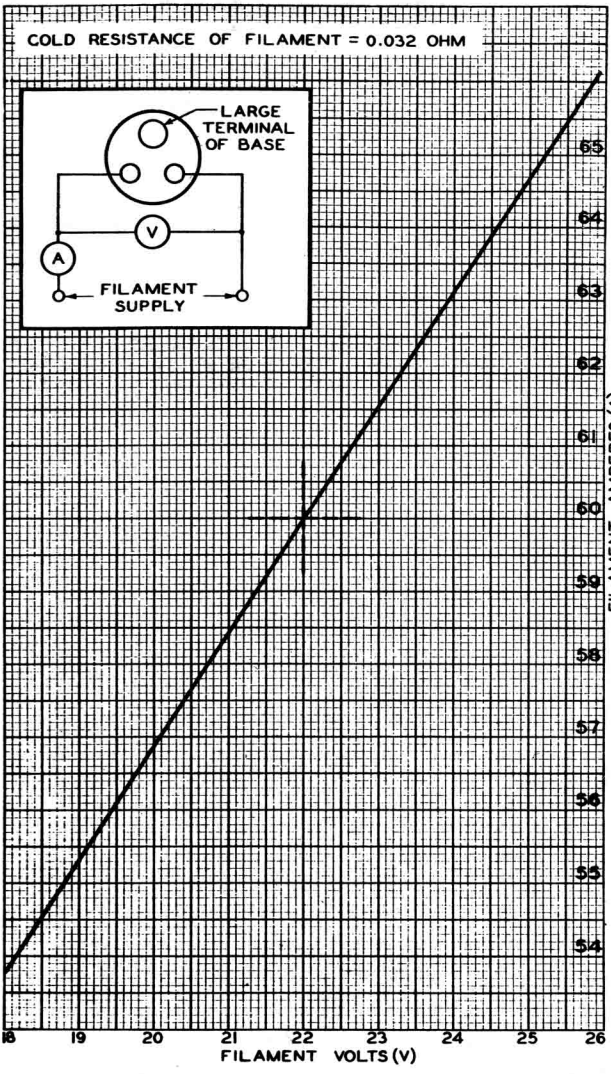
OUTLINE DIMENSIONS, TUBE SYMBOL, and TERMINAL CONNECTIONS for the 892 are the same as for the 891.

THE FILAMENT EMISSION CHARACTERISTIC FOR THE 892 IS THE SAME AS FOR THE 207. FILAMENT CONNECTIONS ARE SHOWN IN 92C-4629 UNDER TYPE 891. FOR CHARACTERISTIC CURVES, REFER TO TYPE 863.

892

892

AVERAGE FILAMENT CHARACTERISTIC

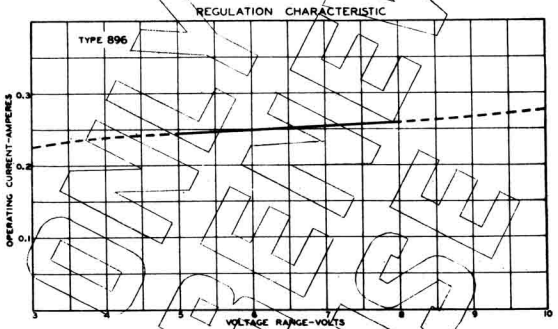


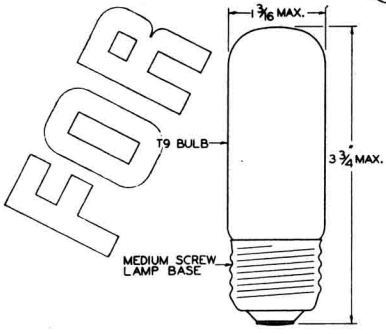
896

CURRENT REGULATOR
(BALLAST TUBE)

Filament	Tungsten	
Maximum Overall Length		3-3/4"
Maximum Diameter		1-3/16"
Bulb		T-9
Base		Medium Screw
Operating Conditions:		
Voltage Range	5 to 8	volts
Operating Current	0.25	amp.
Ambient Temperature	150 max.	°F.

NOTE: The 896 operates at high bulb temperature. It must be surrounded by a metal ventilating enclosure for proper performance and protection against flying glass in case of bulb failure.





898

OSCILLATOR, R-F POWER AMPLIFIER, CLASS B MODULATOR

(WATER & FORCED-AIR COOLED)

Filament	Multistrand Tungsten		
Excitation	1, 3, or 6 φ A.C.	D.C.	
Voltage per strand	17.3	16.5	volts
Current per terminal	71.5	70	amp.
Amplification Factor	44		
Direct Interelectrode Capacitances (approx.):			
Grid to Plate	75		μμf
Grid to Filament	52		μμf
Plate to Filament	2		μμf
Maximum Overall Length			60-3/8"
Maximum Radius			10"
Base (with nozzle for air-cooling of filament seal)			No.6628
Water Jacket			UT-1289

A-F POWER AMPLIFIER & MODULATOR - Class B

D-C Plate Voltage	15000 max.	volts
Max-Signal D-C Plate Current (per tube)*	7.5 max.	amp.
Max-Signal Plate Input (per tube)*	100 max.	kw
Plate Dissipation (per tube)*	50 max.	kw
Typical Operation (2 tubes):		
Filament Voltage - See FILAMENT CONNECTIONS (92C-4385)		
D-C Plate Voltage	12000	volts
D-C Grid Voltage °	-100 approx.	volts
Peak A-F Grid Voltage	1100 approx.	volts
Zero-Signal D-C Plate Cur. (per tube)	1.0	amp.
Max-Signal D-C Plate Cur. (per tube)	6.5	amp.
Max-Signal Plate Input (per tube)	78	kw
Load Resistance (per tube)	500	ohms
Effective Load Res. (plate to plate)	2000	ohms
Max-Signal Driving Power	6 approx.	watts
Max-Signal Power Output (2 tubes)	90 approx.	kw

* Averaged over any audio-frequency cycle.

R-F POWER AMPLIFIER - Class B Telephony

Carrier Conditions per tube; for use with a Modulation Factor up to 1.0

D-C Plate Voltage	20000 max.	volts
D-C Plate Current	5.0 max.	amp.
R-F Grid Current	48 max.	amp.
Plate Input	100 max.	kw
Plate Dissipation	75 max.	kw

Typical Operation:

Filament Voltage - See FILAMENT CONNECTIONS (92C-4388)

D-C Plate Voltage	12000	15000	18000	volts
D-C Grid Voltage °	-100	-175	-250 approx.	volts
Peak R-F Grid Voltage**	1050	1300	1550 approx.	volts
D-C Plate Current	2.8	3.5	4.2	amp.
Driving Power # **	0.5	0.75	1.1 approx.	kw
Power Output	11	17.5	25 approx.	kw

° With a-c filament excitation.
** At crest of a-f cycle with Modulation Factor of 1.0.
# See next page.

(continued on next page)

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OSCILLATOR, R-F POWER AMPLIFIER, CLASS B MODULATOR

(continued from preceding page)

PLATE-MODULATED R-F POWER AMPLIFIER - Class C Telephony

Carrier Conditions per tube; for use with a Modulation Factor up to 1.0

D-C Plate Voltage	12000 max.	volts
D-C Grid Voltage	-3000 max.	volts
D-C Plate Current	5.0 max.	amp.
D-C Grid Current	1.25 max.	amp.
R-F Grid Current	48 max.	amp.
Plate Input	60 max.	kw
Plate Dissipation	50 max.	kw
Typical Operation:		
Filament Voltage - See FILAMENT CONNECTIONS (92C-4388)		
D-C Plate Voltage	12000	volts
D-C Grid Voltage °	-800 approx.	volts
Peak R-F Grid Voltage	2000 approx.	volts
D-C Plate Current	5.0	amp.
D-C Grid Current #	1 approx.	amp.
Driving Power #	2 approx.	kw
Power Output	45 approx.	kw

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down Conditions per tube without modulation##

D-C Plate Voltage	20000 max.	volts
D-C Grid Voltage	-3000 max.	volts
D-C Plate Current	10 max.	amp.
D-C Grid Current	1.0 max.	amp.
R-F Grid Current	60 max.	amp.
Plate Input	200 max.	kw
Plate Dissipation	100 max.	kw
Typical Operation:		

Filament Voltage - See FILAMENT CONNECTIONS (92C-4388)

D-C Plate Voltage	12000	15000	18000	volts
D-C Grid Voltage °	-800	-900	-1000 approx.	volts
Peak R-F Grid Voltage	2050	2300	2550 approx.	volts
D-C Plate Current	6.25	7.5	8.33	amp.
D-C Grid Current #	0.8	0.85	0.9	amp.
Driving Power #	1.6	2.0	2.4 approx.	kw
Power Output	50	75	100 approx.	kw

° With a-c filament excitation.

Subject to wide variations depending on the impedance of the load circuit. High-impedance load circuits require more grid current and driving power to obtain the desired output. Low-impedance circuits need less grid current and driving power, but sacrifice plate-circuit efficiency. The driving-stage should have a tank circuit with good regulation and should be capable of delivering considerably more than the required driving power.

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

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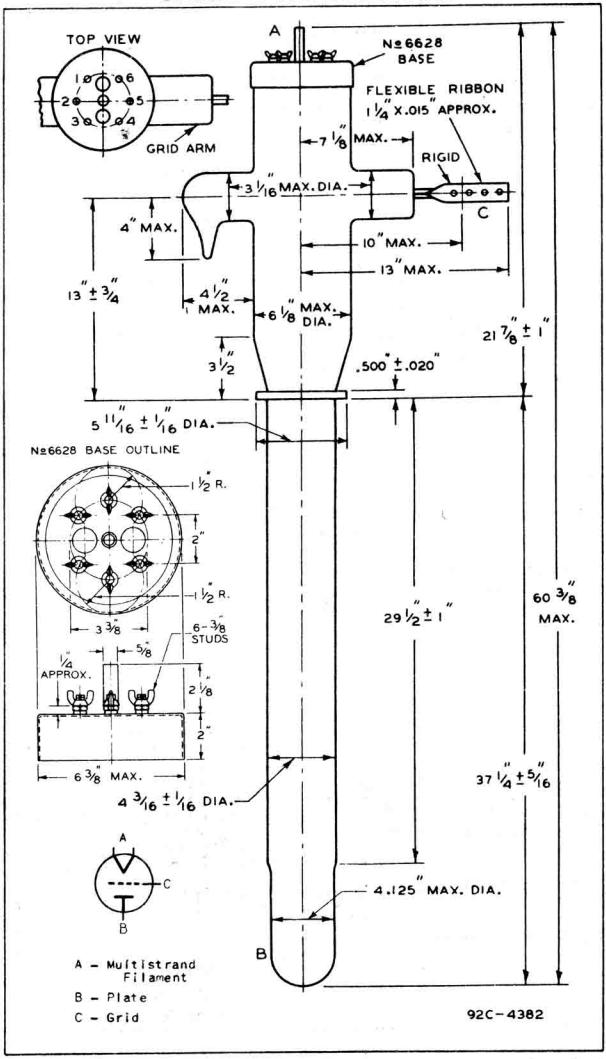
OSCILLATOR, R-F POWER AMPLIFIER CLASS B MODULATOR



RCA

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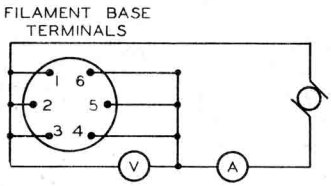
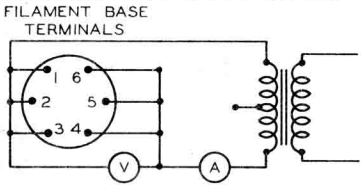
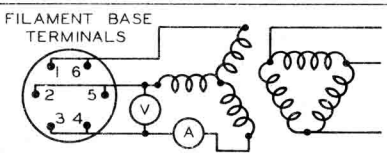
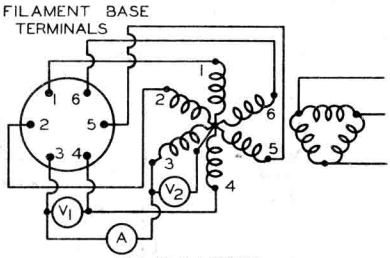
FILAMENT CONNECTIONS AND EXCITATION CIRCUITS

D-C FILAMENT EXCITATION	 V = 33 VOLTS A = 210 AMP.
SINGLE-PHASE A-C FILAMENT EXCITATION	 V = 34.5 VOLTS A = 214.5 AMP.
THREE-PHASE A-C FILAMENT EXCITATION	 V = 30 VOLTS A = 143 AMP.
SIX-PHASE A-C FILAMENT EXCITATION NOTE: TERMINALS MUST BE CONNECTED IN CORRECT PHASE RELATION AS SHOWN	 V_1 = 17.3 VOLTS V_2 = 17.3 VOLTS A = 71.5 AMP.

RCA

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AVERAGE FILAMENT CHARACTERISTIC

FILAMENT VOLTS A.C.-ANY TERMINAL TO NEUTRAL

0 4 8 12 16 20

FILAMENT AMPERES PER TERMINAL

0 10 20 30 40 50 60 70 80

FEB. 8, 1935

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4389

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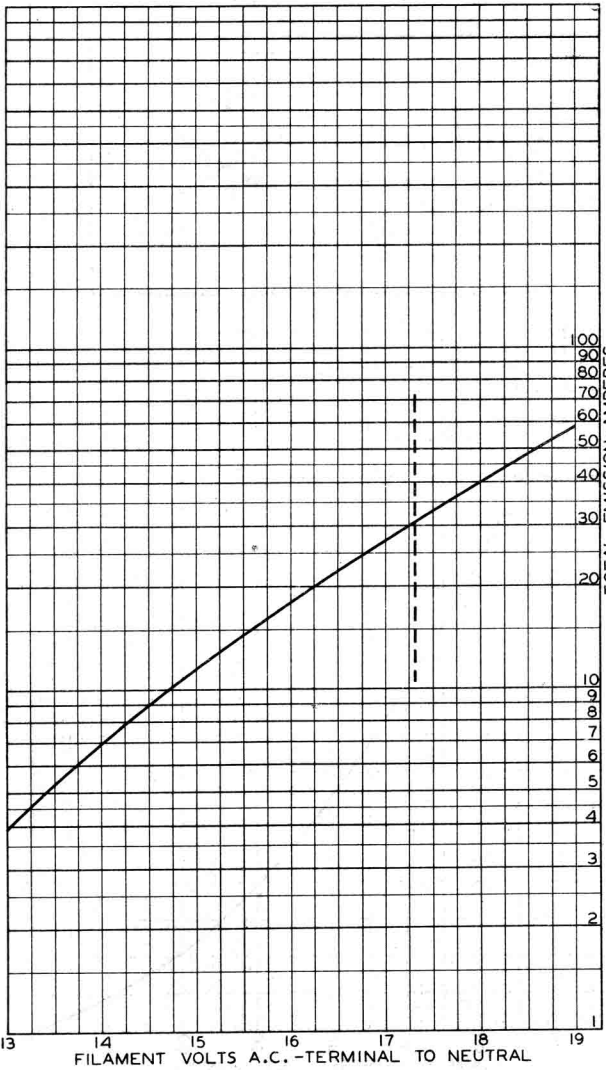
AVERAGE FILAMENT EMISSION CHARACTERISTIC



FEB. 8, 1935

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92C-4390

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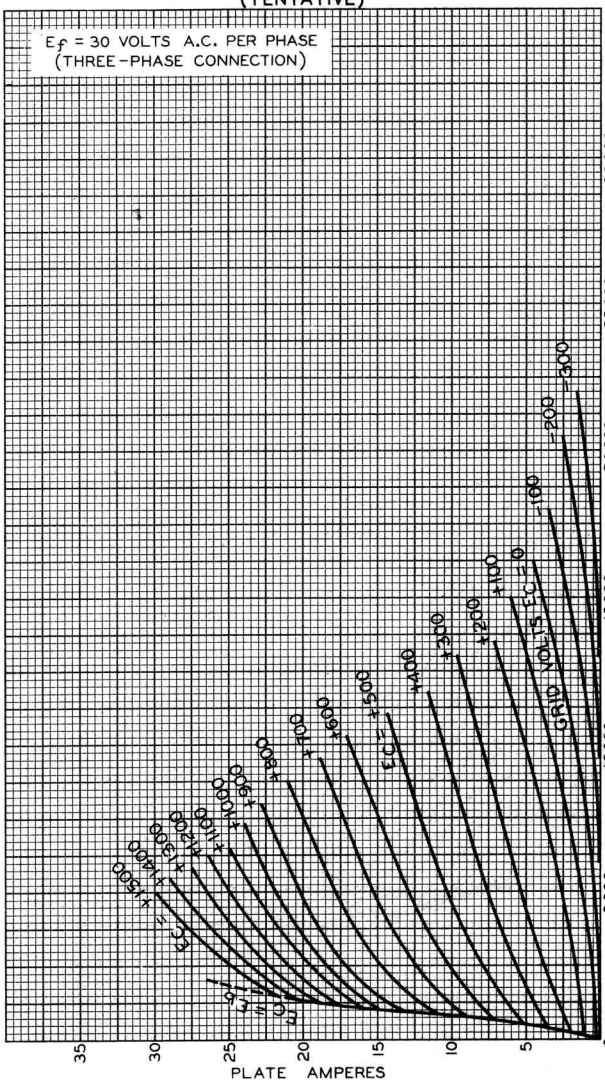
AVERAGE PLATE CHARACTERISTICS
(TENTATIVE)



JAN. 30, 1935

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4383

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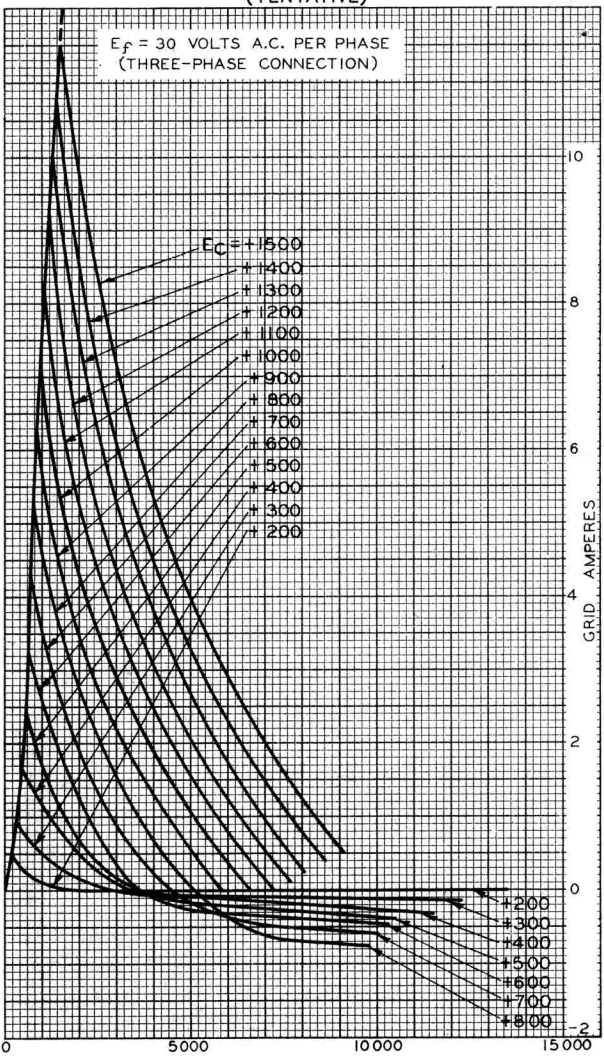
TYPICAL CHARACTERISTICS
(TENTATIVE)



1602

AMPLIFIER TRIODE

For applications critical as to microphonics.
Previously designated as RCA-10 Special.

Filament	Thoriated Tungsten	
Voltage	7.5	a-c or d-c volts
Current	1.25	amp.
Amplification Factor	8	
Direct Interelectrode Capacitances (approx.):		
Grid to Plate	7	μμf
Grid to Filament	4	μμf
Plate to Filament	3	μμf
Maximum Overall Length		5-5/8"
Maximum Diameter		2-3/16"
Bulb		S-17
Base		Medium 4-Pin Bayonet

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

A-F POWER AMPLIFIER & MODULATOR - Class A

D-C Plate Voltage			425 max.	volts
Plate Dissipation			12 max.	watts
Typical Operation:				
Filament Voltage	7.5	7.5	7.5	a-c volts
D-C Plate Voltage	250	350	425	volts
D-C Grid Voltage	-23.5	-32	-40	volts
Peak A-F Grid Voltage	18.5	27	35	volts
D-C Plate Current	10	16	18	ma.
Plate Resistance	6000	5150	5000	ohms
Mutual Conductance	1330	1550	1600	μmhos
Load Resistance	13000	11000	10200	ohms
U.P.O. (5% second harmonic)	0.4	0.9	1.6	watts

A-F POWER AMPLIFIER & MODULATOR - Class B

D-C Plate Voltage			425 max.	volts
Max-Signal D-C Plate Current*			60 max.	ma.
Max-Signal Plate Input*			25 max.	watts
Plate Dissipation*			12 max.	watts
Typical Operation - 2 tubes:				
Unless otherwise specified, values are for 2 tubes.				
Filament Voltage	7.5	7.5	7.5	a-c volts
D-C Plate Voltage	250	350	425	volts
D-C Grid Voltage	-28	-40	-50	volts
Peak A-F Grid-to-Grid Volt.	220	240	260	volts
Zero-Sig. D-C Plate Cur.	8	8	8	ma.
Max-Sig. D-C Plate Cur.	110	110	110	ma.
Load Resistance (per tube)	1000	1500	2000	ohms
Effective Load Res. (plate to plate)	4000	6000	8000	ohms
Max-Signal Driving Power	2.1	2.3	2.5	approx. watts
Max-Signal Power Output	13	20	25	approx. watts

* Averaged over any audio-frequency cycle.

(continued on next page)

1602

AMPLIFIER TRIODE

(continued from preceding page)

R-F POWER AMPLIFIER - Class B Telephony

Carrier conditions per tube for use with a max. modulation fact. of 1.0

D-C Plate Voltage		450 max.	volts
D-C Plate Current		45 max.	ma.
R-F Grid Current		4 max.	amp.
Plate Input		18 max.	watts
Plate Dissipation		15 max.	watts
Typical Operation:			
Filament Voltage	7.5	7.5	a-c volts
D-C Plate Voltage	350	450	volts
D-C Grid Voltage	-40	-53	volts
Peak R-F Grid Voltage	75	85	volts
D-C Plate Current	40	40	ma.
D-C Grid Current **	1	1	approx. ma.
Driving Power ° **	2	2.3	approx. watts
Power Output	3	4.5	approx. watts

° At crest of a-f cycle, with modulation factor of 1.0.

PLATE-MODULATED R-F POWER AMPLIFIER - Class C Telephony

Carrier conditions per tube for use with a max. modulation fact. of 1.0

D-C Plate Voltage		350 max.	volts
D-C Plate Current		50 max.	ma.
D-C Grid Current		15 max.	ma.
R-F Grid Current		4 max.	amp.
Plate Input		17.5 max.	watts
Plate Dissipation		10 max.	watts
Typical Operation:			
Filament Voltage	7.5	7.5	a-c volts
D-C Plate Voltage	250	350	volts
D-C Grid Voltage	-95	-135	volts
Peak R-F Grid Voltage	196	235	volts
D-C Plate Current	45	45	ma.
D-C Grid Current **	15	15	approx. ma.
Driving Power **	3	3.5	approx. watts
Power Output	5.5	8	approx. watts

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation #

D-C Plate Voltage		450 max.	volts
D-C Plate Current		60 max.	ma.
D-C Grid Current		15 max.	ma.
R-F Grid Current		5 max.	amp.
Plate Input		27 max.	watts
Plate Dissipation		15 max.	watts
Typical Operation:			
Filament Voltage	7.5	7.5	a-c volts
D-C Plate Voltage	350	450	volts
D-C Grid Voltage	-90	-115	volts
Peak R-F Grid Voltage	190	215	volts

**, #: See next page.

(continued on next page)

1602

AMPLIFIER TRIODE

(continued from preceding page)

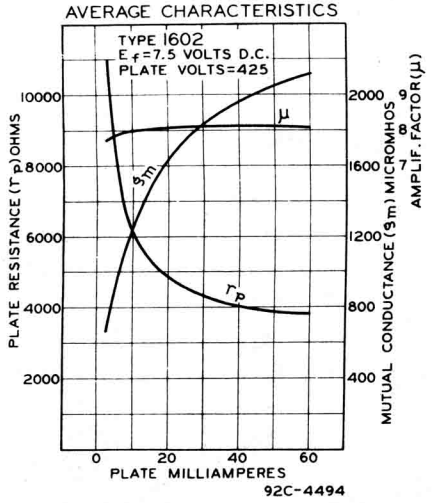
D-C Plate Current	55	55	ma.
D-C Grid Current **	15	15	ma.
Driving Power **	3	3.3	approx. watts
Power Output	9	13	approx. watts

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

** Subject to wide variations as explained on sheet TRANS. TUBE RATINGS.

For use of the 1602 at the higher frequencies, refer to sheet TRANS. TUBE RATINGS vs Frequency.

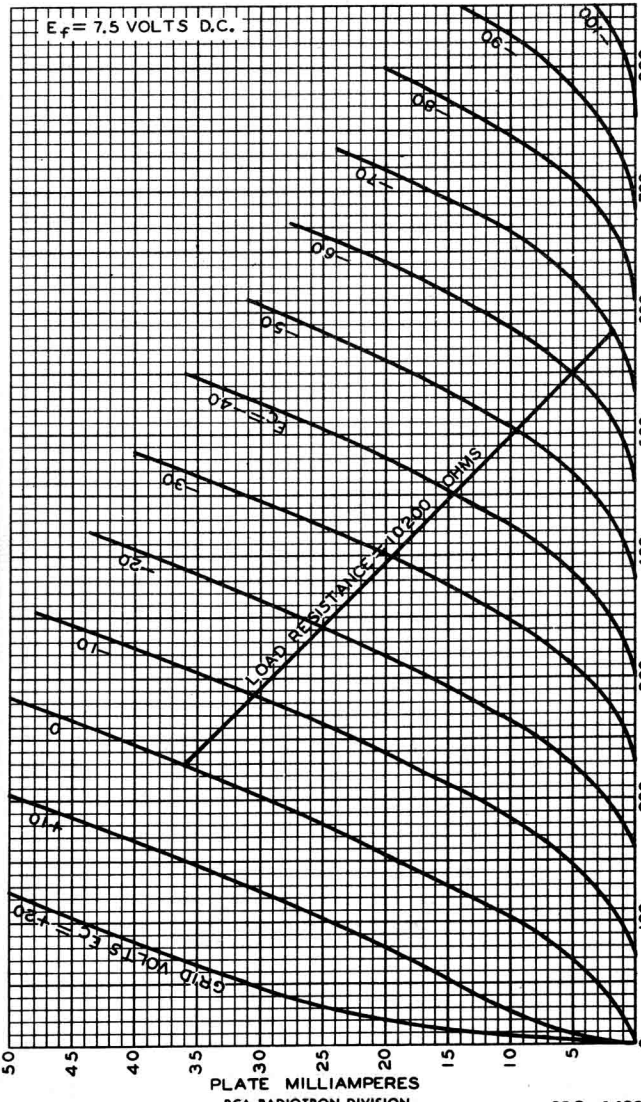
OUTLINE DIMENSIONS, TUBE SYMBOL, and SOCKET CONNECTIONS for the 1602 are the same as for the 841.



RCA

1602

AVERAGE PLATE CHARACTERISTICS



OCT. 10, 1935

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4493

1608

R-F POWER AMPLIFIER, OSCILLATOR, CLASS B MODULATOR

Filament	Coated	
Voltage	2.5	a-c or d-c volts
Current	2.5	amp.
Amplification Factor	20	
Direct Interelectrode Capacitances:		
Grid to Plate	9	μμf
Grid to Filament	8.5	μμf
Plate to Filament	3	μμf
Bulb		ST-16
Base	Medium 4-Pin Ceramic, Bayonet	

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

A-F POWER AMPLIFIER & MODULATOR - Class B

D-C Plate Voltage	425 max.	volts
Max.-Signal D-C Plate Current *	95 max.	ma.
Max.-Signal Plate Input *	40 max.	watts
Plate Dissipation *	20 max.	watts

Typical Operation - 2 tubes:

Unless otherwise specified, values are for 2 tubes.

Filament Voltage	2.5	2.5	a-c volts
D-C Plate Voltage	350	425	volts
D-C Grid Voltage	-10	-15	volts
Peak A-F Grid-to-Grid Voltage	60	65	volts
Zero-Signal D-C Plate Cur.	30	36	ma.
Max.-Signal D-C Plate Cur.	190	190	ma.
Load Resistance (per tube)	950	1200	ohms
Effective Load Res. (plate to plate)	3800	4800	ohms
Max.-Signal Driving Power	2.2	2.2	approx.watts
Max.-Signal Power Output	38	50	approx.watts

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

R-F POWER AMPLIFIER - Class B Telephony

Carrier conditions per tube for use with a max. modulation fact. of 1.0

D-C Plate Voltage	425 max.	volts
D-C Plate Current	70 max.	ma.
Plate Input	30 max.	watts
Plate Dissipation	20 max.	watts

Typical Operation:

Filament Voltage	2.5	2.5	a-c volts
D-C Plate Voltage	350	425	volts
D-C Grid Voltage	-10	-15	volts
Peak R-F Grid Voltage	35	40	volts
D-C Plate Current	70	70	ma.
D-C Grid Current **	4	4	approx.ma.
Driving Power ** °	2	2	approx.watts
Power Output	7	10	approx.watts

** See next page.

° At crest of a-f cycle with modulation factor of 1.0.

1608
R-F POWER AMPLIFIER, OSCILLATOR, CLASS B MODULATOR

(continued from preceding page)

PLATE-MODULATED R-F POWER AMPLIFIER - Class C Telephony

Carrier conditions per tube for use with a max. modulation fact. of 1.0

D-C Plate Voltage		350 max.	volts
D-C Grid Voltage		-200 max.	volts
D-C Plate Current		85 max.	ma.
D-C Grid Current		25 max.	ma.
Plate Input		30 max.	watts
Plate Dissipation		13.5 max.	watts
Typical Operation:			
Filament Voltage	2.5	2.5	a-c volts
D-C Plate Voltage	325	350	volts
D-C Grid Voltage	-80	-80	volts
Peak R-F Grid Voltage	150	165	volts
D-C Plate Current	85	85	ma.
D-C Grid Current **	20	20	approx.ma.
Driving Power **	2.7	3	approx.watts
Power Output	16	18	approx.watts

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation #

D-C Plate Voltage		425 max.	volts
D-C Grid Voltage		-200 max.	volts
D-C Plate Current		95 max.	ma.
D-C Grid Current		25 max.	ma.
Plate Input		40 max.	watts
Plate Dissipation		20 max.	watts
Typical Operation:			
Filament Voltage	2.5	2.5	a-c volts
D-C Plate Voltage	350	425	volts
D-C Grid Voltage	-85	-90	volts
Peak R-F Grid Voltage	150	155	volts
D-C Plate Current	95	95	ma.
D-C Grid Current **	20	20	approx.ma.
Driving Power **	3	3	approx.watts
Power Output	20	27	approx.watts

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

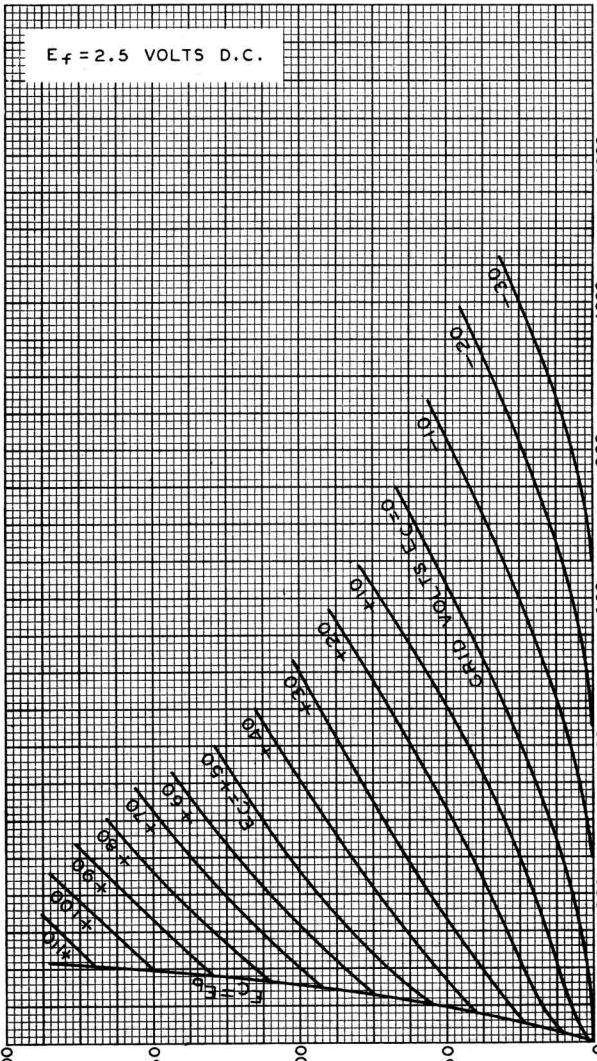
** Subject to considerable variation as explained on sheet TRANS. TUBE RATINGS.

For use of the 1608 at the higher frequencies, refer to sheet TRANS. TUBE RATINGS vs FREQUENCY.

OUTLINE DIMENSIONS, TUBE SYMBOL, and SOCKET CONNECTIONS for the 1608 are the same as for the 801.

1608

AVERAGE PLATE CHARACTERISTICS



FEB. 4, 1937

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

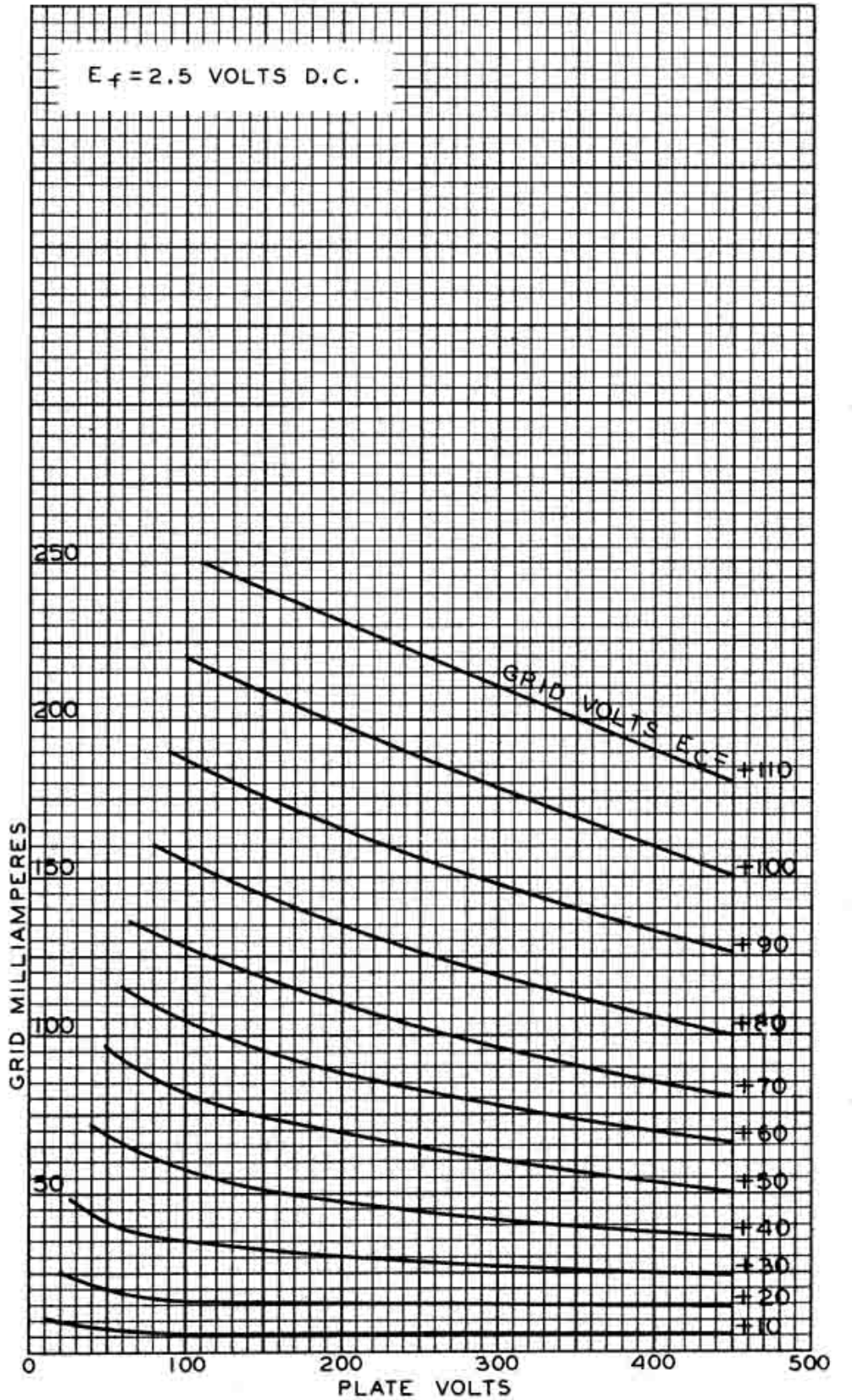
92C-4729

1608

RCA

1608

AVERAGE CHARACTERISTICS



FEB. 5, 1937

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4730

1610

CRYSTAL-OSCILLATOR PENTODE

Filament	Coated	
Voltage	2.5	a-c or d-c volts
Current	1.75	amp.
Transconductance for plate current of 31 ma.	2500	μmhos
Direct Interelectrode Capacitances:		
Grid to Plate	1.2	μμf
Input	8.6	μμf
Output	13	μμf
Maximum Overall Length		5-3/8"
Maximum Diameter		2-1/16"
Bulb		ST-16
Base		Medium 5-Pin

MAXIMUM RATINGS and TYPICAL OPERATING CONDITIONS

R-F POWER AMPLIFIER & OSCILLATOR - Class C Telegraphy

Key-down conditions per tube without modulation #

D-C Plate Voltage		400 max.	volts
D-C Screen Voltage (Grid #2)		200 max.	volts
D-C Grid Voltage (Grid #1)		-100 max.	volts
D-C Plate Current		30 max.	ma.
D-C Grid Current		3 max.	ma.
Plate Input		9 max.	watts
Screen Input		2 max.	watts
Plate Dissipation		6 max.	watts
Typical Operation:			
Filament Voltage	2.5	2.5	a-c volts
D-C Plate Voltage	300	400	volts
D-C Screen Voltage	125	150	volts
D-C Grid Voltage	-60▲	-50▲	volts
Peak R-F Grid Voltage	110	75	volts
D-C Plate Current	30	22.5	ma.
D-C Screen Current	13	7	ma.
D-C Grid Current	2.5	1.5	approx.ma.
Driving Power	0.25	0.1	approx.watt
Power Output	5	5	approx.watts

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

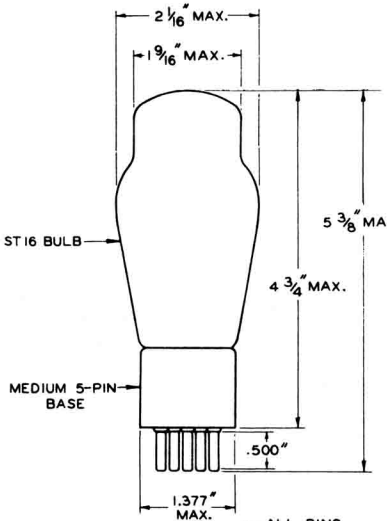
▲ Bias may also be obtained with 30000-ohm grid resistor.

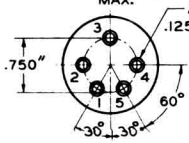
For use of the 1610 at the higher frequencies, refer to sheet TRANS. TUBE RATINGS vs FREQUENCY.

1610

CRYSTAL-OSCILLATOR PENTODE

(continued from preceding page)

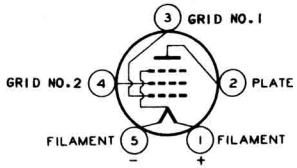




BOTTOM VIEW OF BASE

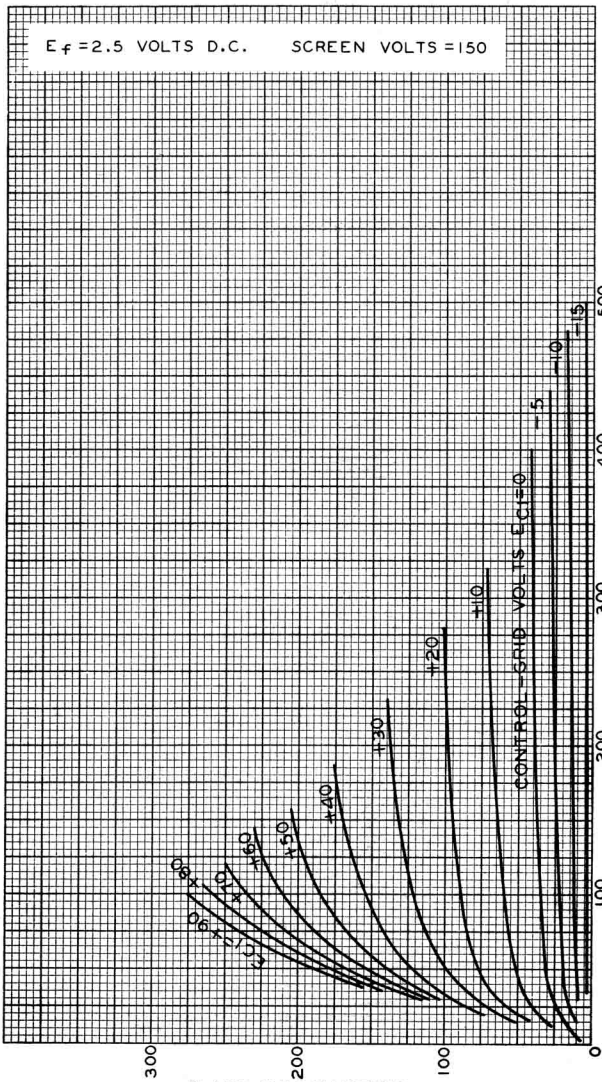
92C-4770

TUBE SYMBOL & TOP VIEW OF SOCKET CONNECTIONS



1610

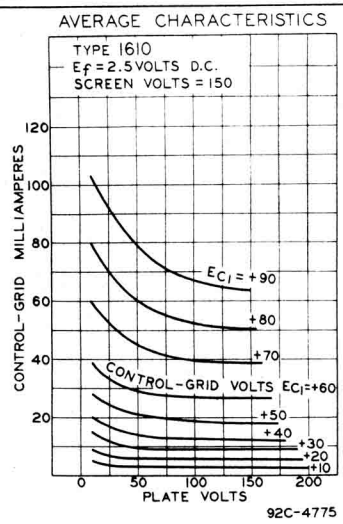
AVERAGE PLATE CHARACTERISTICS

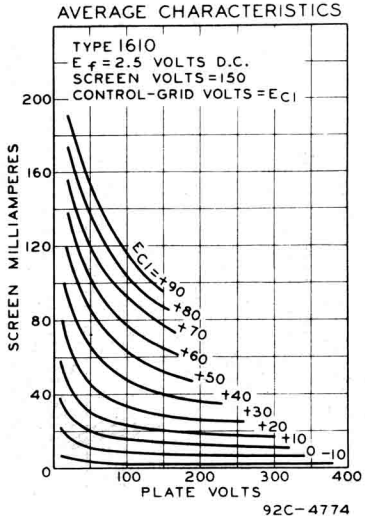


JUNE 8, 1937
RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.
92C-4773

1610

CRYSTAL-OSCILLATOR PENTODE





1651

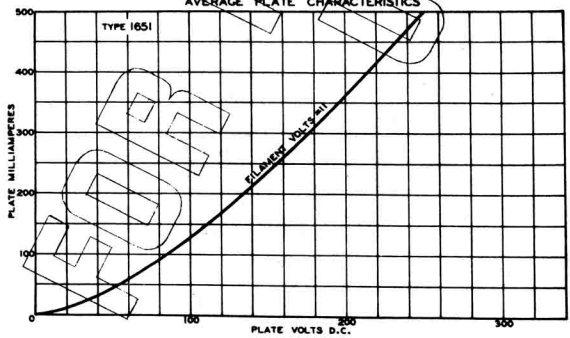
HALF-WAVE RECTIFIER

Filament*	Tungsten	
Voltage	11.0	a-c volts
Current	14.75	amp.
Overall Length		14-1/4" ± 1/8"
Maximum Diameter		4-1/16"
Bulb		T-32
Cap		No. 1904
Base#		No. 3502
Peak Inverse Voltage		11000 max. volts
Peak Plate Current		0.75 max. amp.

* The filament of the 1651 should be allowed to come up to operating temperature before plate voltage is applied.

\# Base shell is not connected within base to either filament lead.

AVERAGE PLATE CHARACTERISTICS



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1651

HALF-WAVE RECTIFIER

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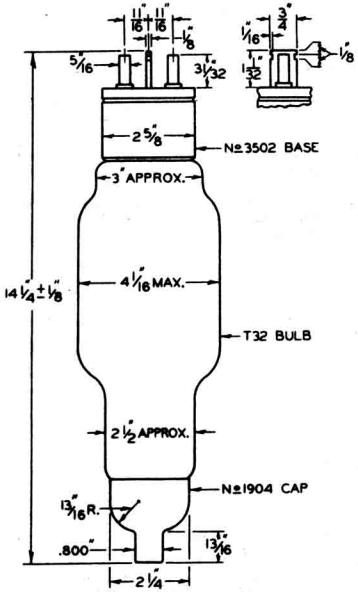
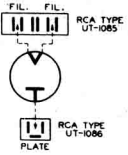


TUBE SYMBOL & CONNECTIONS
TO END-MOUNTINGS



1652
OSCILLATOR, R-F POWER AMPLIFIER
(WATER COOLED)

Filament	Tungsten	
Voltage	14.5	a-c or d-c volts
Current	52	amp.
Amplification Factor	14	
Direct Interelectrode Capacitances (approx.):		
Grid to Plate	27	μμf
Grid to Filament	18	μμf
Plate to Filament	2	μμf
Maximum Overall Length		20-1/4"
Maximum Radius		6-1/2"
Bulb		T-32 with arm
Base		No. 3906
Water Jacket		UT-1285

R-F POWER AMPLIFIER - Class B (Telephony)

Carrier Conditions; for use with a Modulation Factor up to 1.0

D-C Plate Voltage			7500 max.	volts
D-C Plate Current			0.625 max.	amp.
Plate Dissipation			5000 max.	watts
R-F Grid Current			5.0 max.	amp.
Typical Operation:				
Filament Voltage	14.5	14.5	14.5	a-c volts
D-C Plate Voltage	5000	6000	7500	volts
Grid Voltage	-400	-475	-600	approx.volts
D-C Plate Current	0.45	0.5	0.625	amp.
Peak Power Output	3000	4000	6000	approx.watts
Carrier Power Output	750	1000	1500	approx.watts

PLATE-MODULATED R-F POWER AMPLIFIER - Class C (Telephony)

Carrier Conditions; for use with a Modulation Factor up to 1.0

D-C Plate Voltage			6000 max.	volts
D-C Plate Current			0.625 max.	amp.
Plate Dissipation			5000 max.	watts
R-F Grid Current			3.0 max.	amp.
D-C Grid Current			0.075 max.	amp.
Typical Operation:				
Filament Voltage		14.5	14.5	a-c volts
D-C Plate Voltage		5400	6000	volts
Grid Voltage		-1000	-1150	approx.volts
D-C Plate Current		0.625	0.625	amp.
Power Output		2750	2500	approx.watts

R-F POWER AMPLIFIER & OSCILLATOR - Class C (Telegraphy)

Key-down Conditions

D-C Plate Voltage	7500 max.	volts
D-C Plate Current	1.25 max.	amp.
Plate Dissipation	5000 max.	watts

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1652

OSCILLATOR, R-F POWER AMPLIFIER

(continued from preceding page)

R-F Grid Current			5.0 max.		amp.
D-C Grid Current			0.075 max.		amp.
Typical Operation:					
Filament Voltage	14.5	14.5	14.5	a-c	volts
D-C Plate Voltage	5000	6000	7500		volts
Grid Voltage	-1000	-1200	-1500	approx.	volts
D-C Plate Current	0.9	1.0	1.25		amp.
Power Output	3000	4000	6000	approx.	watts

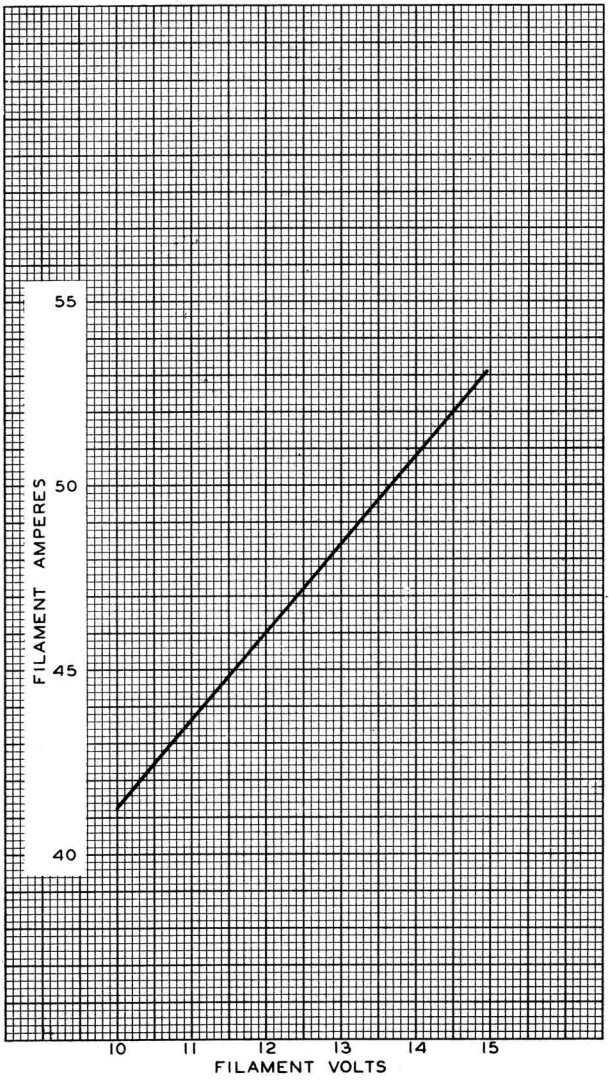
NOTE: Regardless of the type of service in which the 1652 is used, the maximum ratings apply only for single-tube operation at frequencies below 3 megacycles (wavelengths above 100 meters). For operation at higher frequencies, refer to TRANSMITTING TUBE RATINGS vs. OPERATING FREQUENCY.

When two or more 1652's are operated in parallel, the plate voltage and output should be reduced. The amount of reduction depends on the number of tubes paralleled as well as the type of circuit and service contemplated.

OUTLINE DIMENSIONS, TUBE SYMBOL, and TERMINAL CONNECTIONS for the 1652 are the same as for the 207.

1652

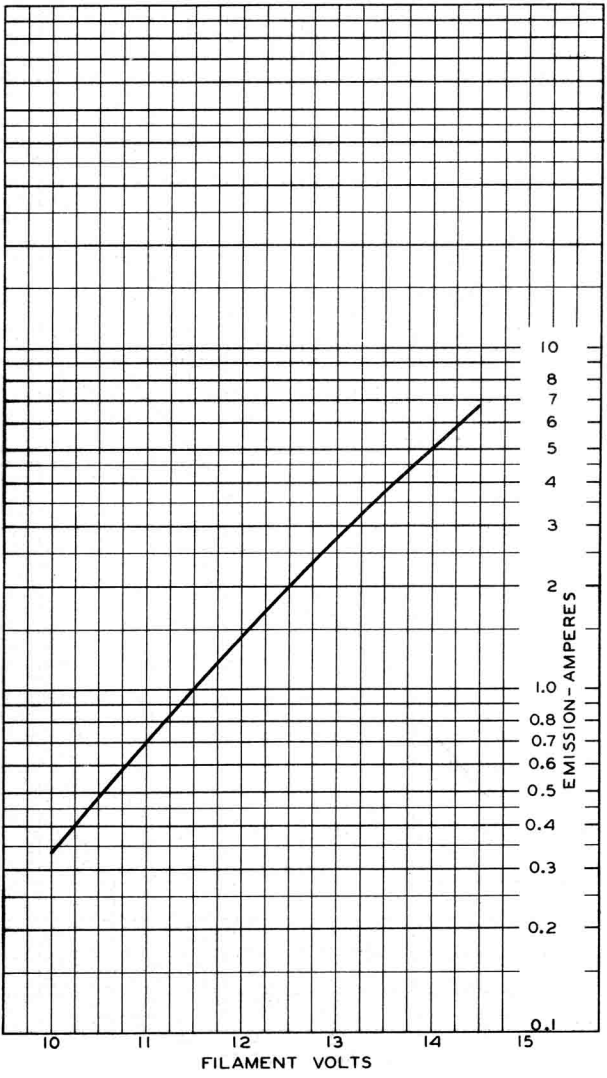
AVERAGE FILAMENT CHARACTERISTIC



1652

1652

AVERAGE FILAMENT-EMISSION CHARACTERISTIC



JAN. 4, 1932

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4506

RCA

1652

AVERAGE PLATE CHARACTERISTICS