

BEAM POWER AMPLIFIER TYPE 7591

The 7591 is a glass octal beam power pentode designed for use as an audio frequency power output tube. The tube has high power sensitivity and high efficiency and is especially designed for applications where high power output is required. Plate construction with special heavy material of high heat conductivity will allow the use of the tube at a higher plate dissipation than is possible with conventional plates. A power output as high as 43 watts with 1.5% total harmonic distortion is available in push-pull Class AB1 application with 450 volt plate voltage and 350 screen voltage.

In ultra linear push-pull class AB1 operation, a power output of 32 watts with a total harmonic distortion of 1.0% is available with 400 volt plate voltage.

MECHANICAL:

Bulb	T-9 Glass
Base	Octal 7 Pin B7-233
Cathode	Coated Unipotential
Mounting Position	Any

ELECTRICAL:

Heater Characteristics:

Heater Voltage, AC or DC	6.3	Volts
Heater Current	0.80	Amperes
Heater-Cathode Voltage (Design Maximum Values):		
Heater Negative with Respect to Cathode		
Total DC and Peak	200	Volts
Heater Positive with Respect to Cathode		
D.C.	100	Volts
Total D.C. and Peak	200	Volts

Direct Interelectrode Capacitances:

Grid-to-Plate	.25	$\mu\mu\text{f}$
Input	10.0	$\mu\mu\text{f}$
Output	5.0	$\mu\mu\text{f}$

RATINGS

Design-Maximum Values:

Plate Voltage	550	Volts
Screen Voltage	440	Volts
Plate Dissipation	19.0	Watts
Screen Dissipation	3.3	Watts
Cathode Current	85	Ma.
Grid No. 1 Circuit Resistance:		
With Fixed Bias	0.3	Megohms
With Cathode Bias	1.0	Megohms

Amplifier-Class A1-Typical Operation

Plate Voltage	300	Volts
Screen Voltage	300	Volts
Grid No. 1 Voltage	-10	Volts
Peak A.F. Grid Voltage	10.0	Volts
Plate Current (Zero Signal)	60	Ma.
Plate Current (Max. Signal)	75	Ma.
Screen Current (Zero Signal)	8.0	Ma.
Screen Current (Max. Signal)	15.0	Ma.
Transconductance	10,200	Micromhos
Plate Resistance	29,000	Ohms
Triode Amplification Factor	16.8	
Load Resistance	3000	Ohms
Power Output	11	Watts
Total Harmonic Distortion	13	Percent

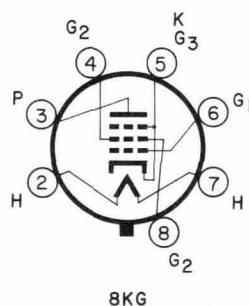
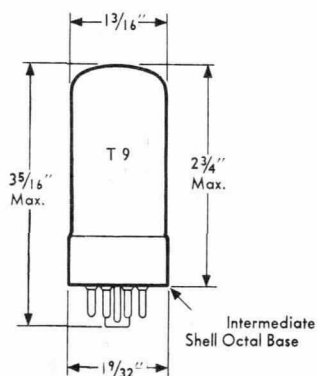
Push-Pull Class AB1 - Ultra-Linear[▲] Operation (Values for Two Tubes)

	Fixed Bias	Cathode Bias	
Plate Supply Voltage	400	425	Volts
Grid 1 Voltage	-20.5	--	Volts
Cathode Resistor (Common to Two Tubes)			
	--	185	Ohms
Peak A.F. Grid-to-Grid Voltage	41	42	Volts
Zero Signal Plate Current	80	88	Ma.
Maximum Signal Plate Current	138	104	Ma.
Zero Signal Screen Current	11.5	13.0	Ma.
Maximum Signal Screen Current	26.4	17.5	Ma.
Effective Load, Plate-to-Plate	6600	6600	Ohms
Total Harmonic Distortion	1.0	2.0	Percent
Maximum Signal Power Output	32	26	Watts

▲ Screen dissipation may be permitted to reach 6 watts during the periods of maximum input of speech and music signals. For efficient operation of the screen, the two screen connections, pins 4 and 8, should be externally tied together.

▲ Screen tapped at 40% of primary turns.

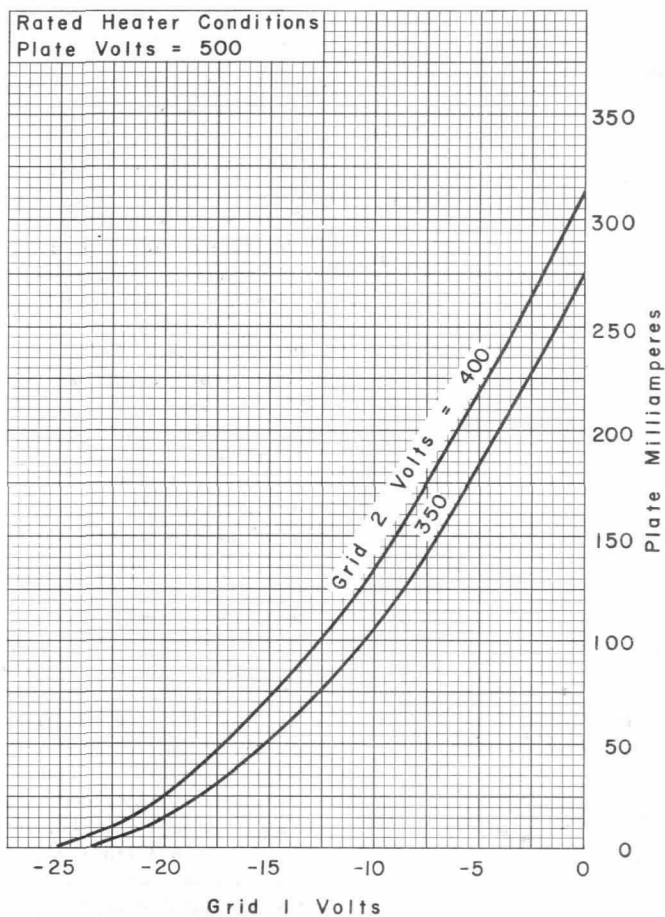
Receiving Tube Section



Push-Pull Class AB1-Pentode Connection (Values for Two Tubes)

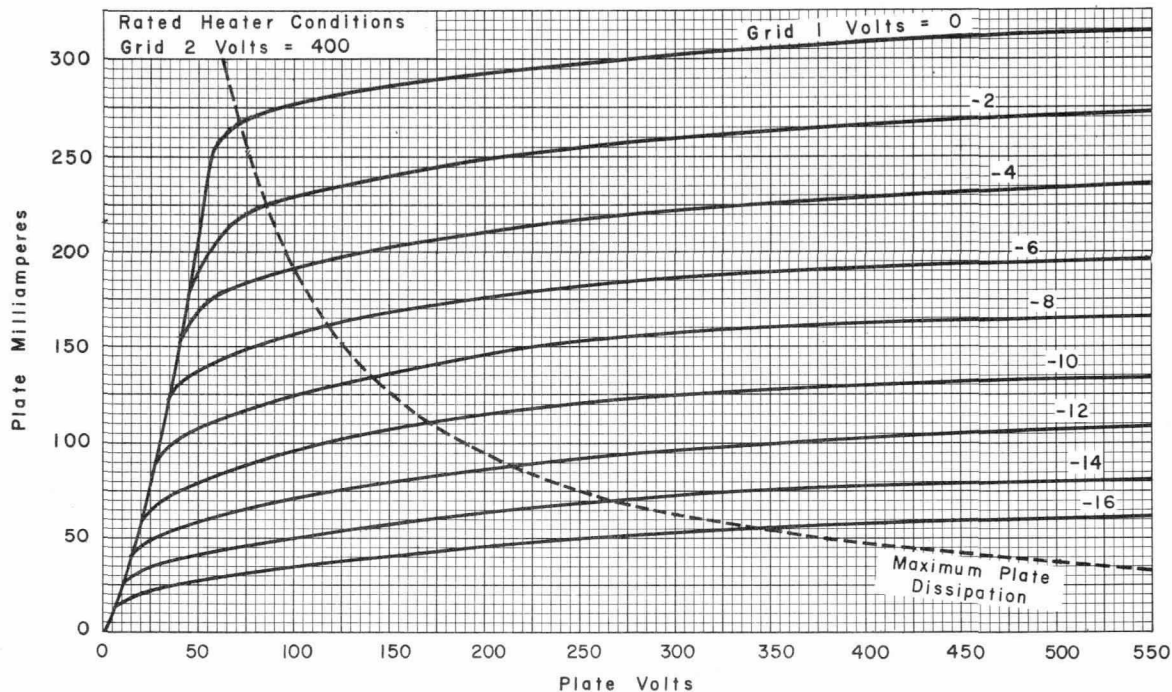
		Fixed Bias					Cathode Bias	
Plate Supply Voltage	300	350	400	450	450	450	450	Volts
Screen Supply Voltage	300	350	350	350	400	400	400	Volts
Grid 1 Voltage	-12.5	-15.5	-16.0	-16.5	-21	--	--	Volts
Common Cathode Resistor	--	--	--	--	--	200	--	Ohms
Peak AF Grid-to-Grid Voltage	25	31	32	33	42	28	--	Volts
Zero Signal Plate Current	86	92	85	77	66	82	--	Ma.
Max. Signal Plate Current	116	130	143	153	144	94	--	Ma.
Zero Signal Screen Current	12.6	13.0	11.0	9.6	9.4	11.5	--	Ma.
Max. Signal Screen Current	26.0	28.6	27.0	27.0	30.0	22	--	Ma.
Effective Load, Plate-to-Plate	6600	6600	6600	6600	6600	9000	--	Ohms
Total Harmonic Distortion	2.5	2.0	1.5	1.5	1.5	2.0	--	Percent
Maximum Signal Power Output	23	30	37	43	45	28	--	Watts

AVERAGE TRANSFER CHARACTERISTICS



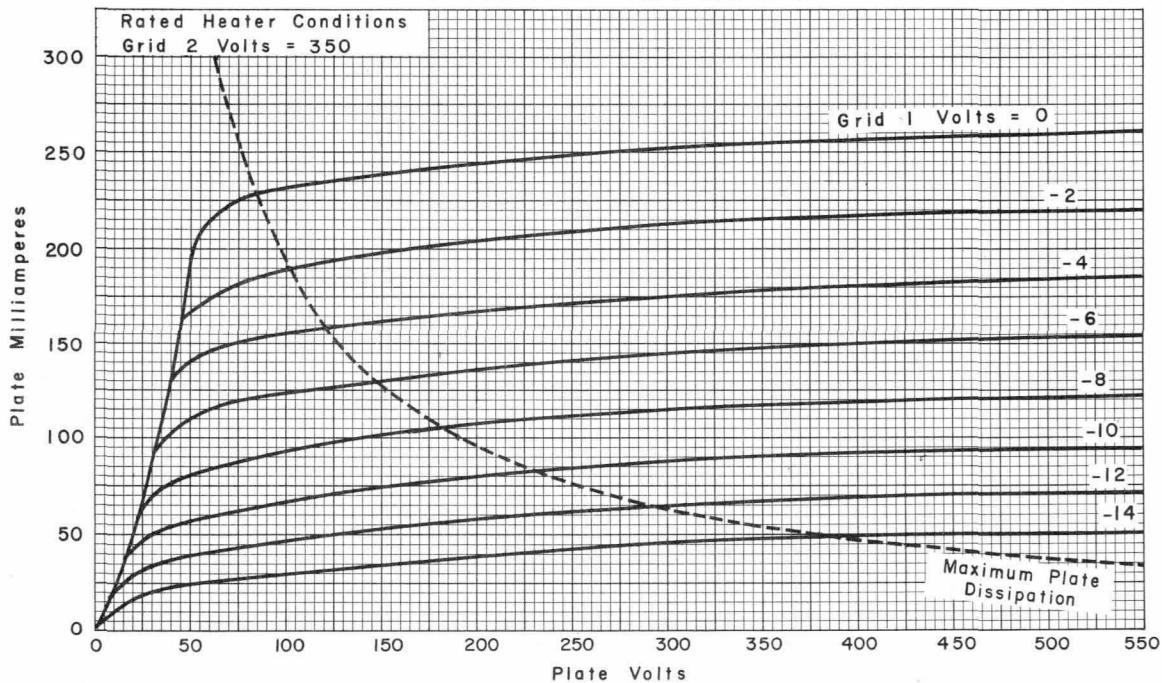
CE-A1551

AVERAGE PLATE CHARACTERISTICS



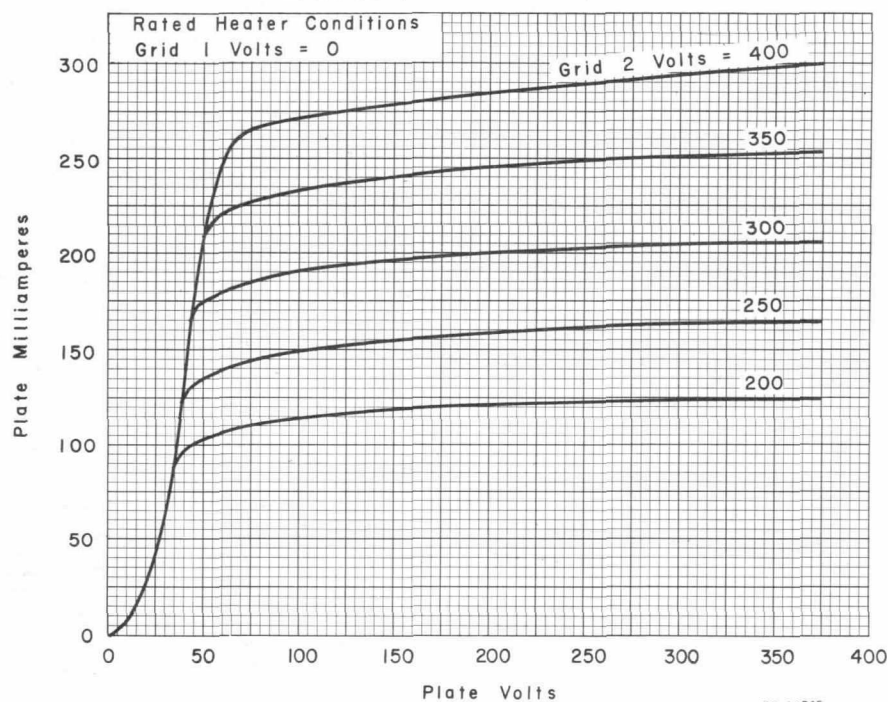
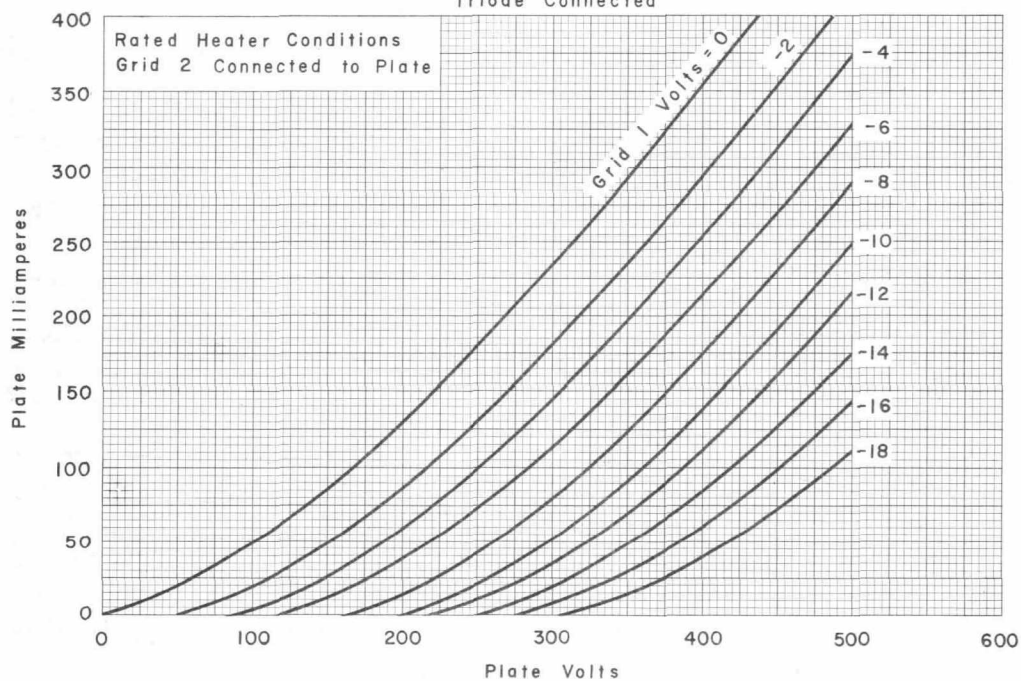
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AVERAGE PLATE CHARACTERISTICS

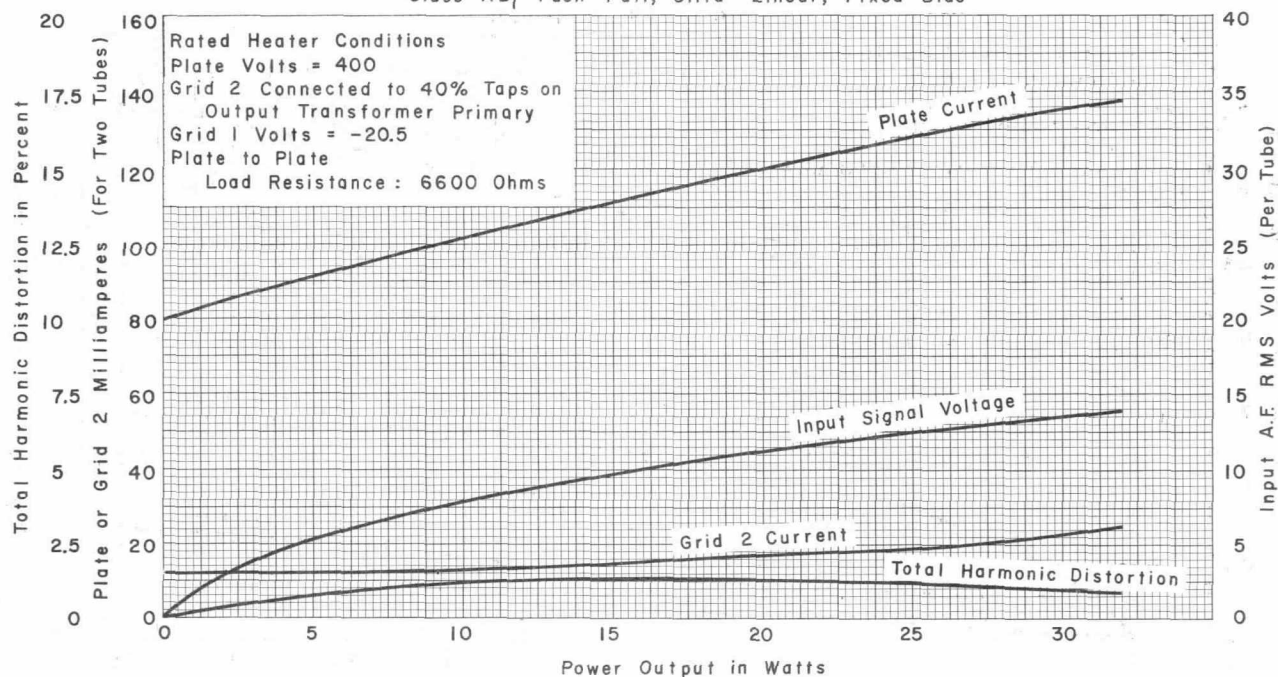


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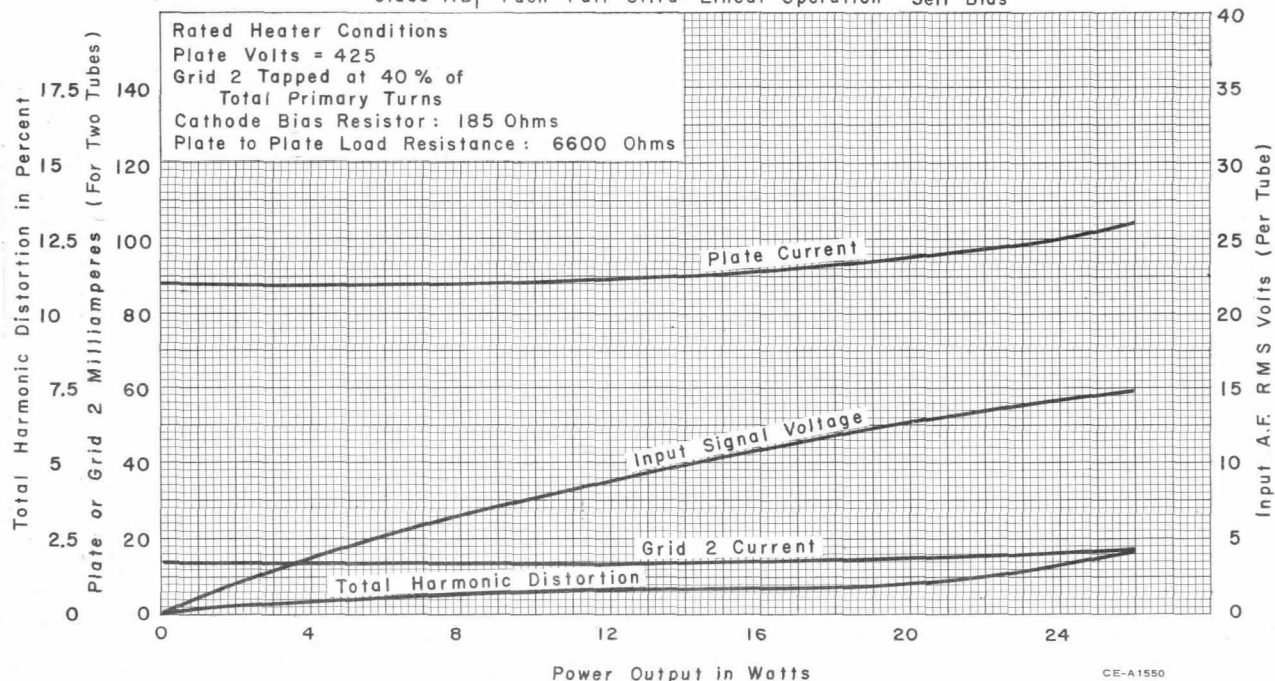
AVERAGE PLATE CHARACTERISTICS

AVERAGE PLATE CHARACTERISTICS
Triode Connected

AVERAGE OPERATING CHARACTERISTICS Class AB₁ Push-Pull, Ultra-Linear, Fixed Bias



AVERAGE OPERATING CHARACTERISTICS Class AB₁ Push-Pull Ultra-Linear Operation Self Bias



AVERAGE OPERATING CHARACTERISTICS
Class AB₁ Push-Pull

