

BEAM POWER AMPLIFIER TYPE 7591A

The 7591A 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 45 watts with 1.5% total harmonic distortion is available in push-pull Class AB1 application with 450 volt plate voltage and 400 screen voltage.

The 7591A is a direct replacement for type 7591 and has controlled zero-bias plate and screen currents. It also features a special low-loss base.

MECHANICAL:

Bulb	T-9 Glass
Base	Plaskon, Octal 7 Pin B7-238
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 (Note 1)	3.3	Watts
Cathode Current	90	Ma.
Grid No. 1 Circuit Resistance:		
With Fixed Bias	0.3	Megohms
With Cathode Bias	1.0	Megohms

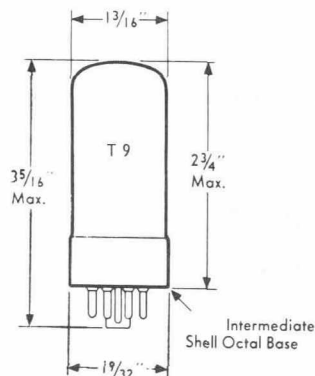
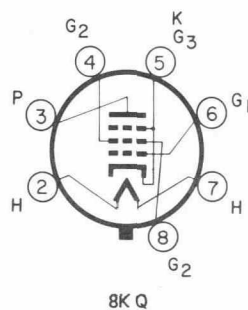
CHARACTERISTICS & TYPICAL OPERATION

Plate Voltage	60 (Note 2)	300	Volts
Screen Voltage	250 (Note 2)	300	Volts
Grid No. 1 Voltage	0	-10	Volts
Peak A.F. Grid Voltage	--	10.0	Volts
Plate Current (Zero Signal)	140 (Note 3)	60	Ma.
Plate Current (Max. Signal)	--	75	Ma.
Screen Current (Zero Signal)	30 (Note 3)	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 (Note 4)

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



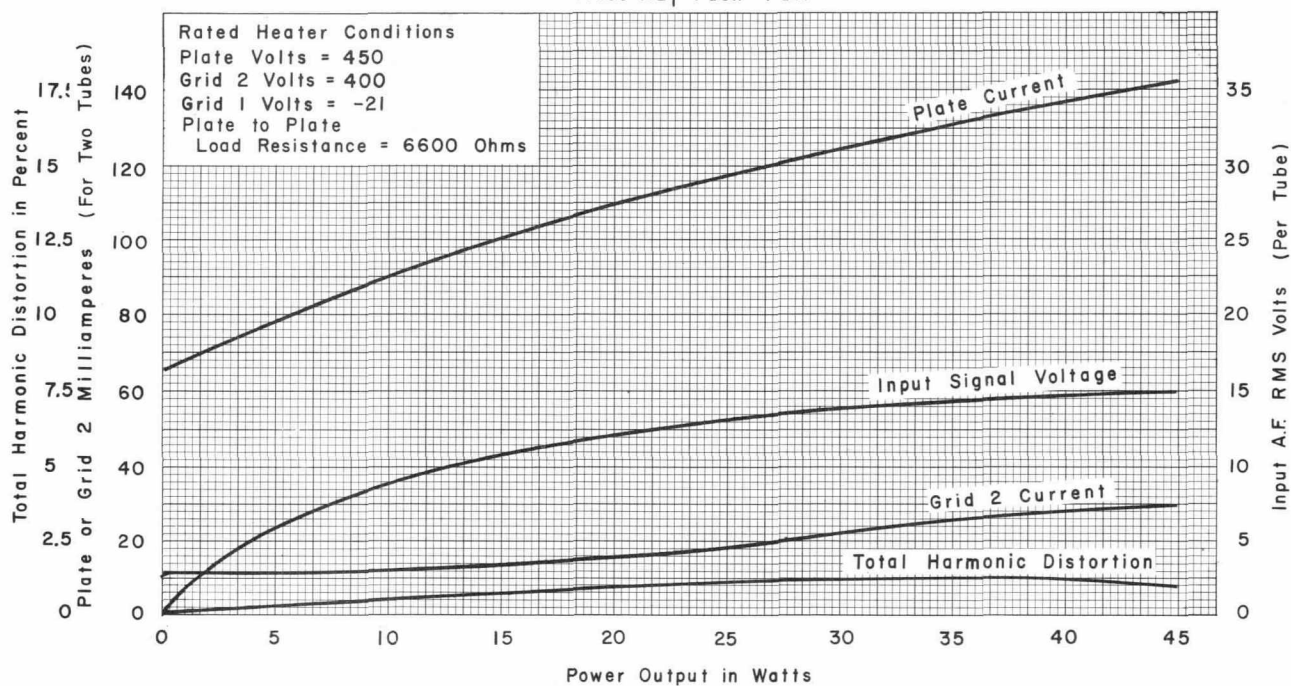
Push-Pull Class AB₁-Pentode Connection (Values for Two Tubes)

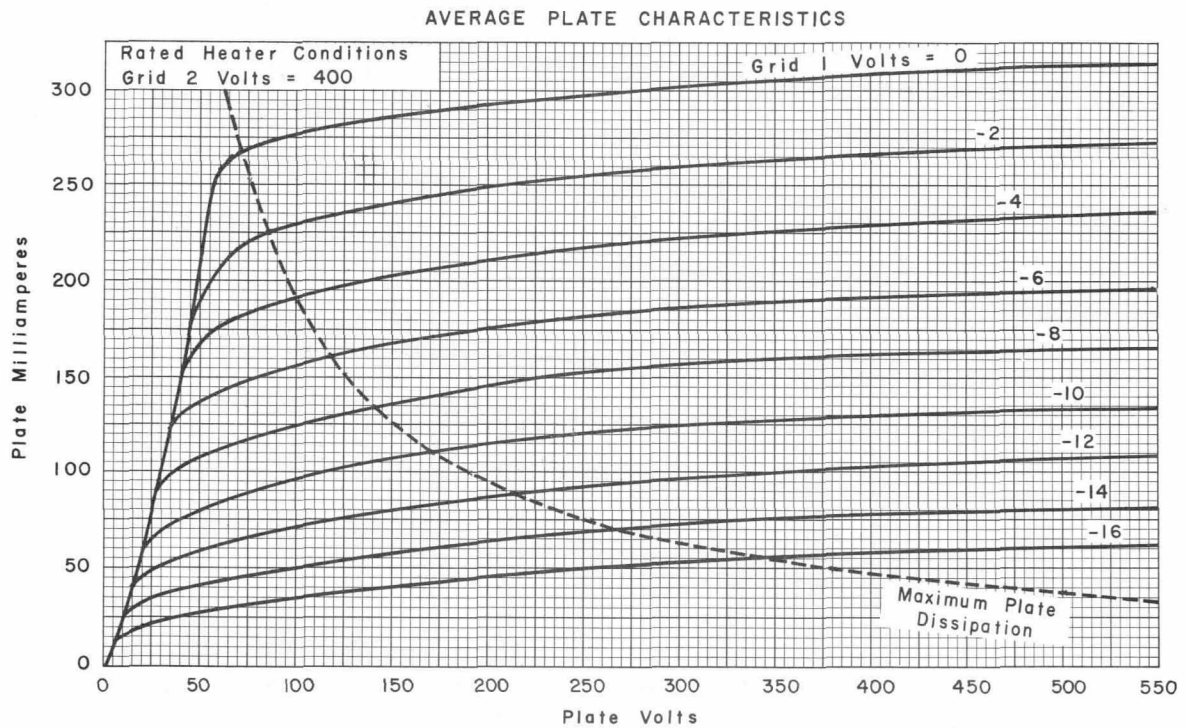
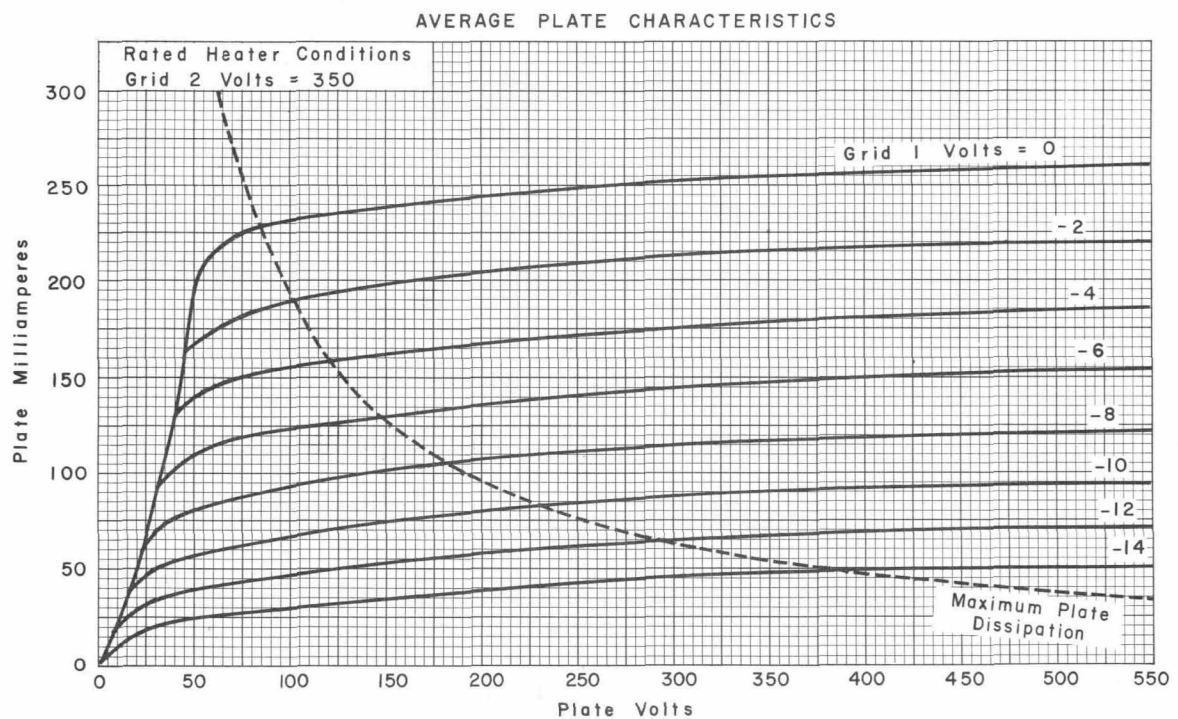
		Fixed Bias				Cathode Bias	
Plate Supply Voltage	300	350	400	450	450	450	Volts
Screen Supply Voltage	300	350	350	350	400	400	Volts
Grid 1 Voltage	-12.5	-15.5	-16.0	-16.5	-21	--	Volts
Common Cathode Resistor	--	--	--	--	--	200	Ohms
Peak AF Grid-to-Grid Voltage	25	31	32	33	42	28	Volts
Zero Signal Plate 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

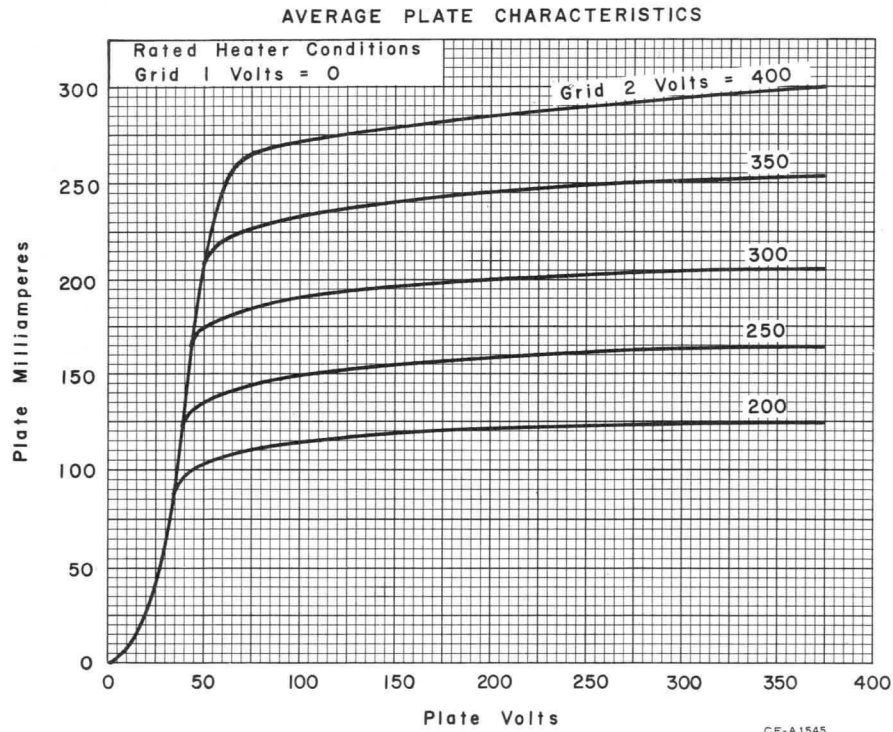
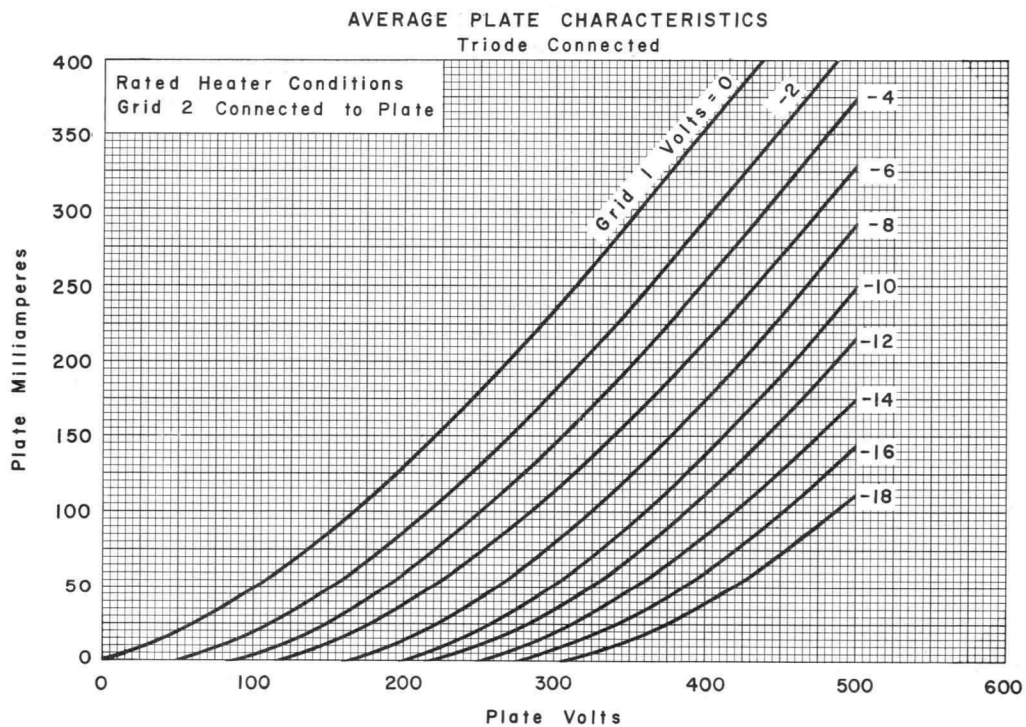
NOTES

1. 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.
2. Applied for short interval (2 seconds maximum) so as not to damage tube.
3. These values can be measured by a method involving a recurrent waveform such that the plate and grid 2 dissipation will be kept within ratings to prevent damage to the tube.
4. Screen tapped at 40% of primary turns.

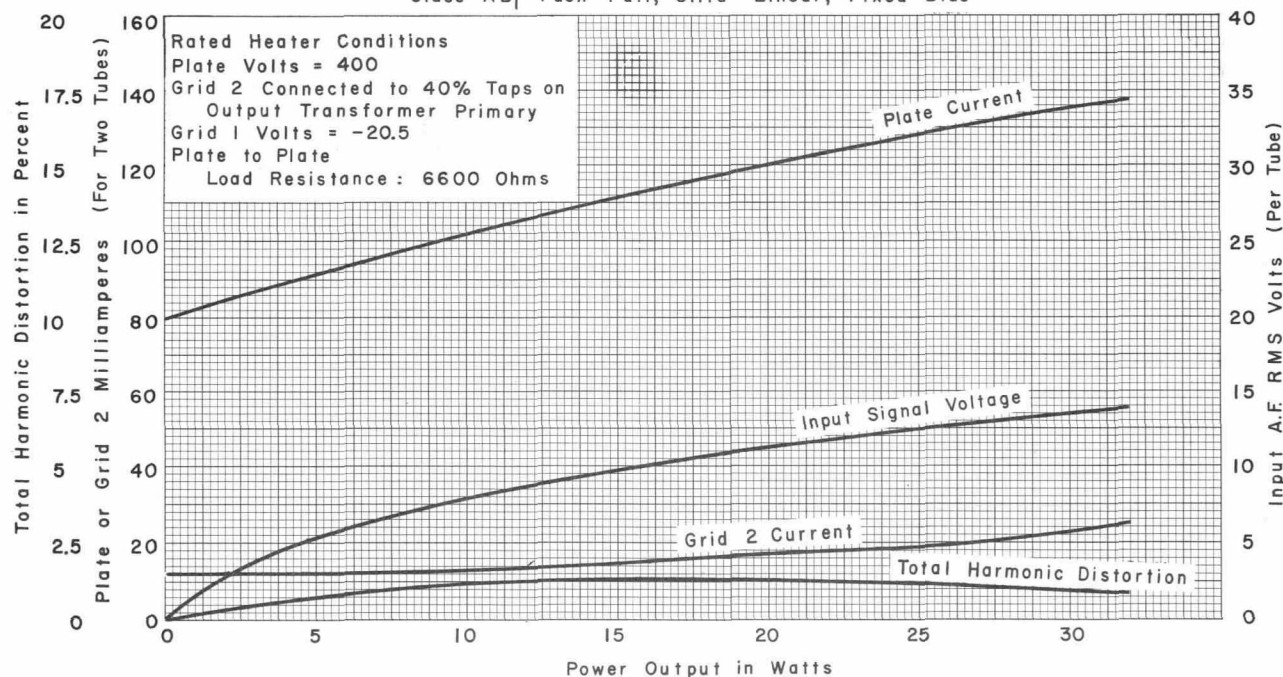
AVERAGE OPERATING CHARACTERISTICS

Class AB₁ Push-Pull

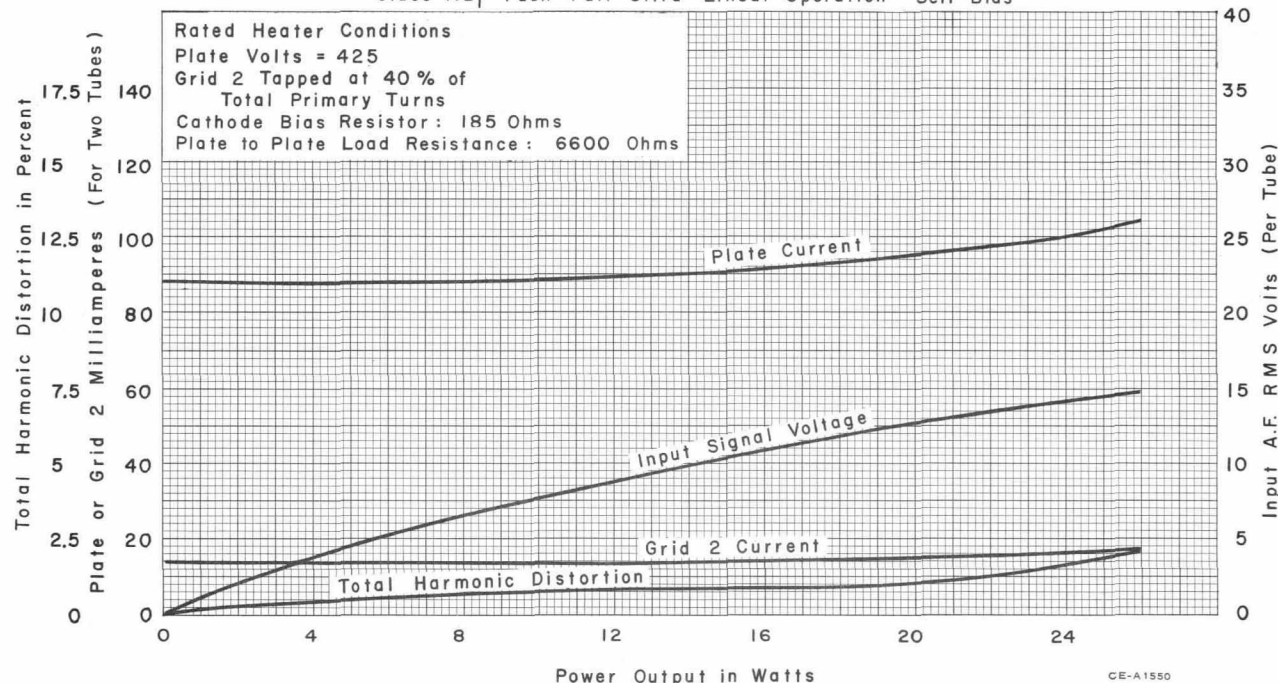


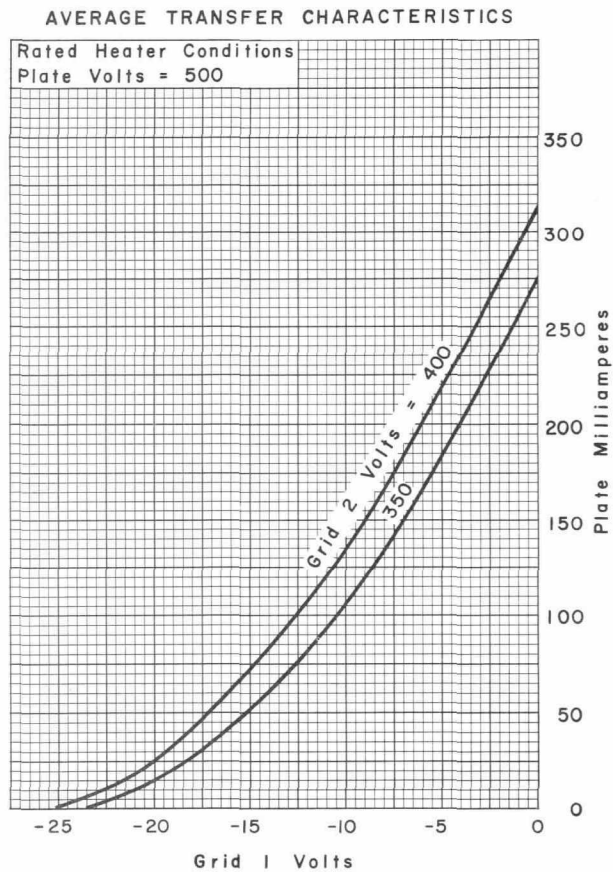


AVERAGE OPERATING CHARACTERISTICS Class AB₁ Push-Pull, Ultra-Linear, Fixed Bias



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





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