

BEAM POWER AMPLIFIER TYPES 5AQ5, 6AQ5, 6AQ5-A AND 12AQ5

The 5AQ5, 6AQ5, 6AQ5-A and 12AQ5 are miniature 7-pin beam power pentode types designed for service as audio output amplifiers in home or automobile receivers. They may also be used as vertical deflection amplifiers in television receiver sweep circuits.

The 5AQ5 and 6AQ5-A have been designed for use in receivers which employ series connected heaters, especially in television receivers where the picture-tube heater is in series with other heaters. When each is employed in this type of circuit with other tubes similarly designed having the same heater current rating, heater voltage surges across individual tubes are minimized inasmuch as heater warm-up characteristic is controlled.

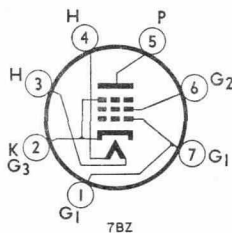
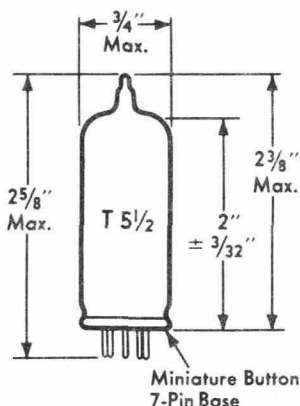
GENERAL DATA

ELECTRICAL:

Cathode.....	Coated Unipotential			
Heater:	5AQ5	6AQ5	12AQ5	
	6AQ5-A			
Voltage (ac or dc)	4.7	6.3	12.6	Volts
Current	0.60	0.45	0.30	Ampere
Warm-up Time▲.....	11	11●	-	Seconds
Direct Interelectrode Capacitances (Unshielded):				
Grid 1 to Plate			0.35	uuf
Input.....			8.3	uuf
Output			8.2	uuf

MECHANICAL:

Bulb	T-5-1/2
Base.....	7-Pin Miniature (JETEC E7-1)
Outline	5-3
Basing	7BZ
Mounting Position	Any



AF POWER AMPLIFIER - CLASS A

MAXIMUM RATINGS:

Design Center Values

Plate Voltage	250	max.	Volts
Grid 2 Voltage (Screen).....	250	max.	Volts
Plate Dissipation.....	12	max.	Watts
Grid 2 Dissipation	2	max.	Watts
Heater-Cathode Voltage:	5AQ5	6AQ5	12AQ5
	6AQ5-A		

Heater Negative with Respect to Cathode:

Total DC + Peak.	200	90	100	max.	Volts
-----------------------	-----	----	-----	------	-------

Heater Positive with Respect to Cathode:

DC Component	100	-	100	max.	Volts
DC + Peak.	200	90	100	max.	Volts

Bulb Temperature□.....	250° C				
------------------------	--------	--	--	--	--

Grid 1 Circuit Resistance:

Fixed Bias	0.1	max.	Megohm
Cathode Bias	0.5	max.	Megohm

CHARACTERISTICS AND TYPICAL OPERATION:

Plate Voltage	180	250	Volts
Grid 2 Voltage	180	250	Volts
Control Grid Voltage	-8.5	-12.5	Volts
Peak AF Control Grid Voltage	8.5	12.5	Volts
Zero-Signal Plate Current	29	45	Ma.
Max.-Signal Plate Current	30	47	Ma.
Zero-Signal Grid 2 Current	3	4.5	Ma.
Max.-Signal Grid 2 Current.....	4	7	Ma.
Plate Resistance, approx.	58000	52000	Ohms
Transconductance	3700	4100	umhos
Load Resistance	5500	5000	Ohms
Power Output	2.0	4.5	Watts
Total Harmonic Distortion, approx. .	8	8	Percent

Supersedes 5AQ5 Data Sheet Dated November 5, 1954

Supersedes 6AQ5 Data Sheet Dated July 1, 1954

Supersedes 12AQ5 Data Sheet Dated April 1, 1955

Receiving Tube Section

AF POWER AMPLIFIER - CLASS AB₁

VERTICAL DEFLECTION AMPLIFIER §

Triode Connection #

MAXIMUM RATINGS:

Design Center Values

Plate Voltage	250	max.	Volts
Grid 2 Voltage	250	max.	Volts
Plate Dissipation	12	max.	Watts
Grid 2 Dissipation	2	max.	Watts
Heater-Cathode Voltage:	5AQ5 6AQ5 12AQ5		

6AQ5-A

Heater Negative with Respect to Cathode:

Total DC + Peak	200 90 100	max.	Volts
-----------------	------------	------	-------

Heater Positive with Respect to Cathode:

DC Component	100 - 100	max.	Volts
--------------	-----------	------	-------

DC + Peak	200 90 100	max.	Volts
-----------	------------	------	-------

Bulb Temperature □	250	max.	°C
--------------------	-----	------	----

Grid 1 Circuit Resistance:

For Fixed Bias	0.1	Megohm
----------------	-----	--------

For Cathode Bias	0.5	Megohm
------------------	-----	--------

TYPICAL PUSH-PULL OPERATION

(Values for two tubes unless otherwise specified)

Plate Voltage	250	Volts
Grid 2 Voltage	250	Volts
Grid 1 Voltage	-15	Volts
Peak AF Grid-to-Grid Voltage	30	Volts
Transconductance (per tube)	3750	umhos
Zero Signal Plate Current	70	Ma.
Max. Signal Plate Current	79	Ma.
Zero Signal Screen Current	5.0	Ma.
Max. Signal Screen Current	13	Ma.
Plate Resistance (per tube)	60000	Ohms
Effective Load Resistance:		
Plate-to-Plate	10000	Ohms
Total Harmonic Distortion	5	Percent
Power Output	10	Watts

MAXIMUM RATINGS:

Design Center Values, except as noted

Plate Voltage	315	Volts
Peak Positive Plate Voltage	1200 abs. max.	Volts
Plate Dissipation ♦	9	max. Watts
Peak Negative Grid Voltage	250	max. Volts
Average Cathode Current	35	max. Ma.
Peak Cathode Current	105	max. Ma.
Grid Circuit Resistance Cathode Bias	2.2	max. Megohms

TRIODE CONNECTED CHARACTERISTICS:

Plate Voltage	250	Volts
Grid Voltage	-12.5	Volts
Plate Current	49.5	Ma.
Transconductance	5000	umhos
Amplification Factor	9.8	
Plate Resistance	1960	Ohms
Grid Voltage, approx.:		
for $I_b = 0.5$ ma.	-36	Volts

▲ Heater Warm-up Time is defined as the time required for the voltage across the heater to reach 80% of its rated value after applying four times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to three times rated heater voltage divided by rated heater current.

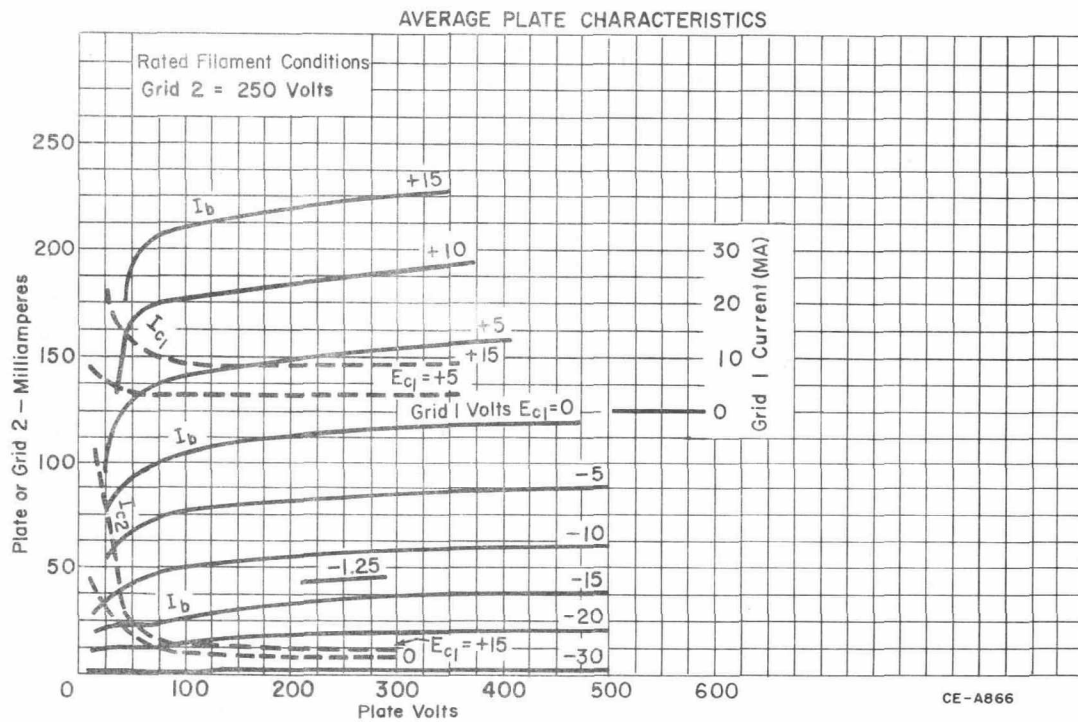
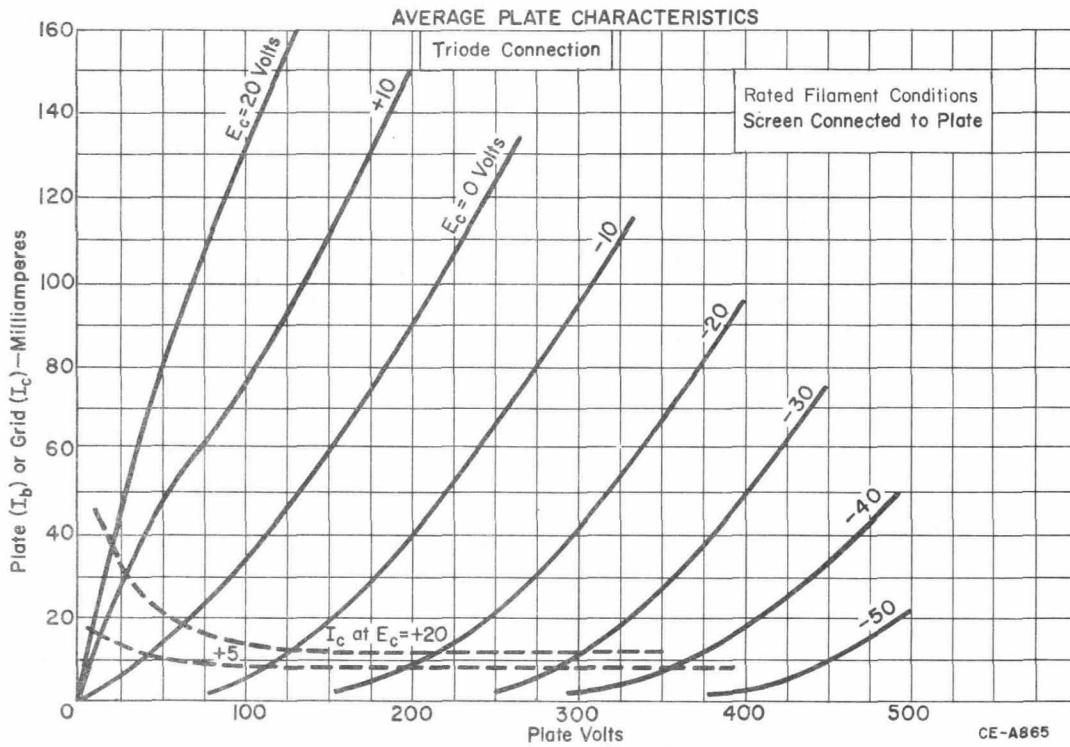
♦ Stages operating with grid leak bias must use an adequate cathode bias resistor or similar means in order to protect the tube in the absence of excitation.

● Applies to 6AQ5-A only.

§ For operation in a 525-line, 30-frame system as described in "Standards of Good Engineering Practice for Television Broadcast Stations; Federal Communications Commission". The duty cycle of the voltage pulse not to exceed 15% of a scanning cycle.

Plate and grid 2 tied together.

□ High ambient temperature and shielding may necessitate a reduction in operating dissipation. When tube shields are used, it is advisable to paint both inside and outside surfaces of the tube shield a dull black and to provide ventilation slots to reduce operating temperature.



OPERATION CHARACTERISTICS

