



RCA MANUFACTURING COMPANY, INC.

A RADIO CORPORATION OF AMERICA SUBSIDIARY

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RCA RADIOTRON
D I V I S I O N

APPLICATION NOTE No. 85

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APPLICATION NOTE
ON
OPERATION OF THE 6AC5-G

An important requirement of an auto-radio receiver or mobile power-amplifier is low A-battery drain. As an aid in satisfying this requirement without sacrificing power output, it is customary to employ a class B output stage having low zero-signal plate current. Of course, plate current increases with power output in a class B amplifier, but the plate-circuit efficiency is quite high compared to that of a class A amplifier.

The 6AC5-G is a single high- μ triode suitable for use in a class B amplifier. With 250 volts applied to the plates of two 6AC5-G's connected in push-pull, nearly 7.5 watts can be obtained with the voltage taken from an ideal power-supply unit and 4.6 watts with the voltage taken from a practical power-supply unit. Under these conditions, the zero-signal plate current of two tubes is only 5 milliamperes. An ideal power-supply unit is defined as one which has zero internal resistance; a good value of internal resistance for a practical power-supply unit is 1000 ohms.

Data on the operation of two 6AC5-G's connected as a zero-bias class B amplifier are presented in this Note. This information is summarized in the accompanying chart; detailed operating data are given by the curves. Data showing the performance of the tubes with a nearly perfect interstage transformer and an ideal power-supply unit are included in order to show what can be obtained under the most favorable conditions in comparison with what can be expected under typical operating conditions.

The types 6J5 and 76 were selected as drivers because their plate-current drain is low and because they can furnish the power required by the grids of the output tubes with reasonable distortion. In all tests, the input signal was applied to the driver; full output is defined as that obtained at the grid-current point of the driver. The operating data shown by the curves apply to both the 6J5 and 76 drivers, provided the proper interstage-transformer ratio is used with each type of driver.

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**SUMMARY TABLE
CLASS B OPERATION OF TYPE 6AC5-G TUBES**

Tube Type	DRIVER STAGE				INTERSTAGE TRANSFORMER	OUTPUT STAGE								
	Input Signal (Peak Volts)	Zero-Signal D-C Plate Current (Milliamperes)	Max.-Signal D-C Plate Current (Milliamperes)	Grid-Bias Resistor (Ohms)		Resistance of Power-Supply Unit (Ohms)	Grid Input Peak Voltage (Volts, Grid-to-Grid)	D-C Grid Current (Milliamperes, 2 Tubes)	Zero-Signal D-C Plate Current (Milliamperes, 2 Tubes)	Max.-Signal D-C Plate Current (Milliamperes, 2 Tubes)	Zero-Signal Plate Voltage (Volts)	Max.-Signal Plate Voltage (Volts)	Plate-to-Plate Load (Ohms)	Power Output (Watts, 2 Tubes)
6J5-G	7.2	8.6	8.82	930	Primary 1/2 Secondary 3.25 : 1 ¹	57.3	12.1	5.0	47.0	250	250	11000	7.30	6.7
6J5-G	5.9	8.4	7.45	930		3.0 : 1 ²	52.1	10.0	5.0	38.0	250	216	11000	4.65
76	13.4	4.9	5.05	2750	4.0 : 1 ¹ 4.0 : 1 ²	58.0	12.1	5.0	47.5	250	250	11000	7.40	7.5
76	11.2	4.8	4.20	2750		50.5	9.6	5.0	37.9	250	218	11000	4.65	6.3

¹ Resistance of primary of a nearly ideal transformer is 320 ohms; average resistance of total secondary is 255 ohms.

² Resistance of primary of practical transformer is 680 ohms; average resistance of total secondary is 325 ohms.



OPERATION CHARACTERISTICS OF 6AC5-G

