Sylvania

TYPE 59

TRIPLE GRID POWER AMPLIFIER

CHARACTERISTICS

Heater Voltage AC or DC	2.5 Volts
Heater Current	2.0 Amperes
Maximum Over-all Length	5¼"
Maximum Diameter	2⅛"
Bulb	ST-16
Base—Medium 7-Pin	7-A

Operating Conditions and Characteristics:

CLASS B POWER AMPLIFIER—TRIODE OPERATION

(Grid Su tied to plate; grids G and Gs connected together)

Heater Voltage	2.5 Volts
Plate Voltage	400 Volts Max.
Dynamic Peak Plate Current	200 Ma. Max.
Average Plate Dissipation	10 Watts Max.
Average Grid Dissipation (Grids G and Gs together)	1.5 Watts Max.

Typical Operation (two tubes):

Plate Voltage	300	400 Volts Max.
Grid Voltage	0	0 Volts
Static Plate Current (Per Tube)	10	13 Ma.
Load Resistance (Plate to Plate)	4600	6000 Ohms
Power Output (2 tubes)	15	20 Watts

CLASS A POWER AMPLIFIER

	Triode (T)	Pentode (P)
Heater Voltage	2.5	2.5 Volts
Plate Voltage	250	250 Volts Max.
Grid Voltage	−28	−18 Volts
Screen Voltage	....	250 Volts Max.
Plate Current	26	35 Ma.
Screen Current	....	9 Ma.
Plate Resistance	2300	40000 Ohms
Mutual Conductance	2600	2500 μmhos
Amplification Factor	6	100
Load Resistance	5000*	6000 Ohms
Power Output (7% Total Distortion)	1.25	3.0 Watts

T = Grids Su and Gs tied to plate.
P = Grid Su tied to cathode.
*Approx. twice this value is recommended for load of driver for Class B stage.

CIRCUIT APPLICATION

Sylvania 59 is a triple grid power amplifier tube of the cathode type, designed especially for household receivers and other applications where the low hum and increased flexibility will be advantageous. The three grids are brought out to separate base pins and the design of each is such that pentode characteristics similar to the Type 47 may be obtained. Class B operation similar to the Type 46 may also be had by connecting the grids in another way, while a third method of connection permits very acceptable performance as a triode.

In normal service as a pentode, the arrangement of grids is entirely conventional. Grid No. 1, nearest to the cathode, is the control grid; grid No. 2, placed just outside of the control grid, acts as the screen grid; and grid No. 3, between screen grid and plate, is connected back to the cathode externally to act as a suppressor grid. When operation as a Class A power amplifier is desired, grids No. 2 and No. 3 are connected to the plate to act as a single electrode; grid No. 1 is used as a control grid in the normal manner. To operate the 59 as a Class B output tube, it is only necessary to connect grids No. 1 and No. 2 together, utilizing these grids as the control grid (thus securing the necessary high amplification factor), while grid No. 3 is connected to the plate.

Resistors used in the grid circuit of Type 59, operating as a Class A amplifier (either pentode or triode) should not exceed 0.5 megohm when the tube is self-biased. Without self-bias this resistor should be limited to 0.25 megohm. Excessive resistances in the grid circuits may cause loss of bias and overheating and damage to the tube.