

tube current by means of a special winding on the fly-back transformer and use of the resultant voltage drop (across a resistor) to control the grid circuit of the regulator tube.

Fig. 93 shows the schematic diagram and significant waveforms for a circuit that uses a 17KV6A beam-power pentode for the regulator tube. During trace and retrace, the cathode of the 17KV6A is held at B+. During the trace period, the screen grid of the 17KV6A is biased well below the cathode voltage and is unaffected by the beam current drawn by the picture tube. The control-grid bias is determined by the resistive voltage-divider network R_2 , R_3 , R_4 , and R_5 and is directly dependent on the beam current of the picture tube. The damper tube conducts during the trace period and holds the plate potential of the 17KV6A at B+. With the plate-to-cathode potential at zero and the screen grid negative with respect to the cathode, the regulator tube is completely cut off during the trace period. At the start of the retrace period, however, the damper tube becomes reverse-biased, and the voltage on the plate of the regulator tube begins to rise. This increasing voltage is coupled to the screen grid through C_1 and R_1 and to the control grid through the interelectrode capacitance of the tube.

Pulse Regulator Circuit—In a pulse-regulator system, the regulator circuit is effectively shunted across part of the horizontal winding of the horizontal-output transformer. During operation, the pulse-regulator circuit maintains a substantially constant pulse amplitude in the primary winding of the horizontal-output transformer with changing loads on the high-voltage power supply. A constant-amplitude, stepped-up pulse is then applied to the high-voltage rectifier tube, and the high voltage developed from this pulse is maintained at a constant value. In the pulse-regulator system, regulator control is achieved by sampling the picture-

The waveforms in Fig. 93 show that at the start of retrace the plate and screen grid of the 17KV6A have both been driven positive with respect to the cathode and the control grid has become less negative with respect to the cathode. The regulator tube then begins to conduct. The pulses impressed on the screen and control grids are short in duration so that the screen grid remains positive with respect to the cathode and the control grid remains near cathode potential for only a short time. The regulator tube is driven into conduction for approximately 2 to 4 microseconds at the start of retrace and is then cut off. As the beam current increases or decreases, the voltage developed across the re-

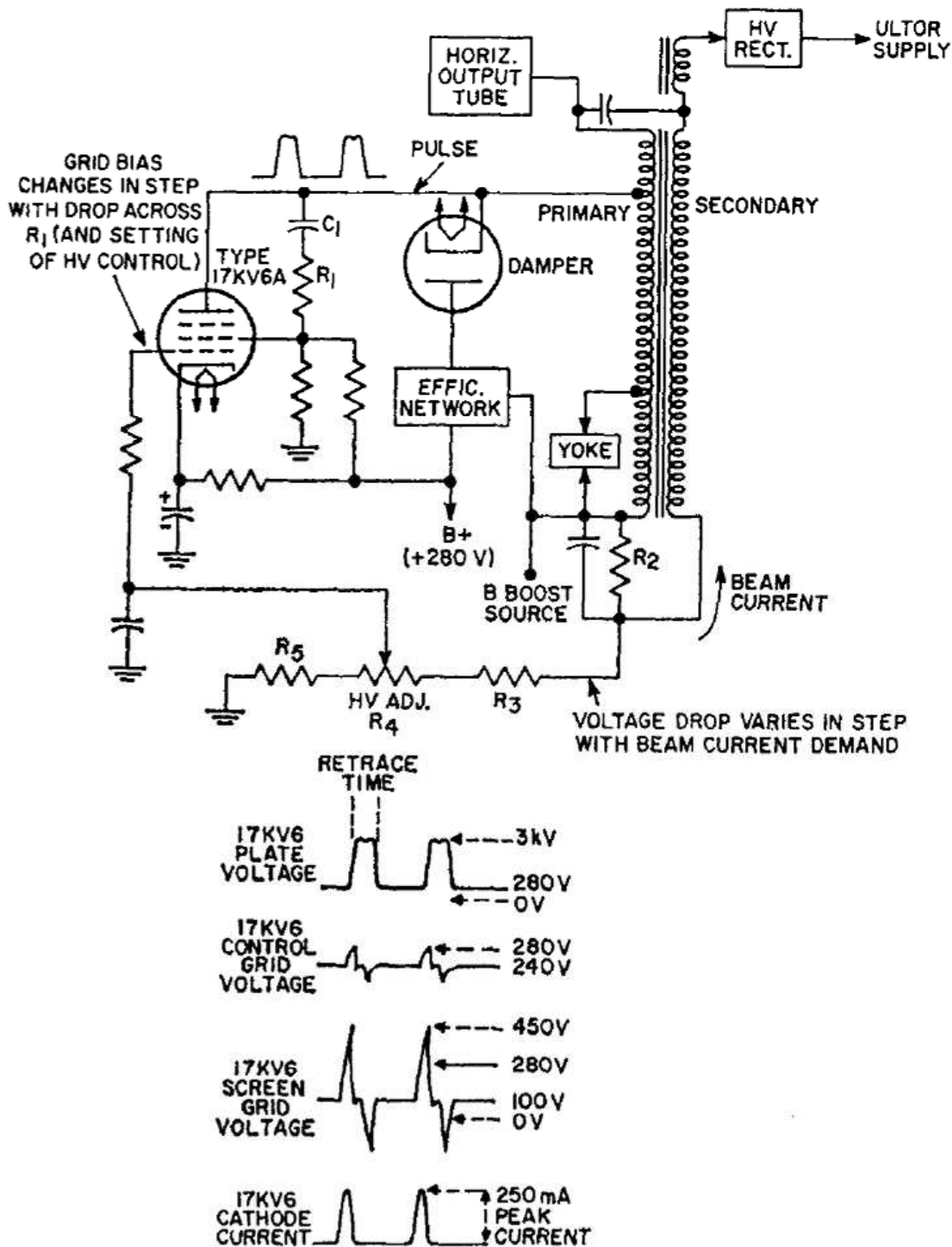


Fig. 93—Schematic diagram and significant waveforms for a typical pulse-regulator circuit.

sistive voltage-divider network R_2 , R_3 , R_4 , and R_5 tracks these changes and is applied to the control grid of the regulator tube. In this way, the conduction of the regulator tube is increased or decreased as required to maintain a constant high-voltage output. By re-

moval of the energy from the rising edge of the flyback pulse in this fashion, the height of the pulse used to develop the high voltage is controlled. At the same time interference with the shape of the deflection pulse is held to a minimum.