



SERVICE SLANTS

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ISSUED BY WURLITZER SERVICE DEPT., NORTH TONAWANDA, N. Y.

SUBJECT: Operation of the Voltage Doubler Circuit Used in the Power Supply for the Model 538 Stereo Amplifier.

A simplified circuit of a voltage doubler using diodes is shown in Fig. 1. The capacitors are charged approximately to the peak voltage of the transformer secondary on alternate half cycles, and the polarities are such that the D. C. voltages add thereby giving double the potential across either one.

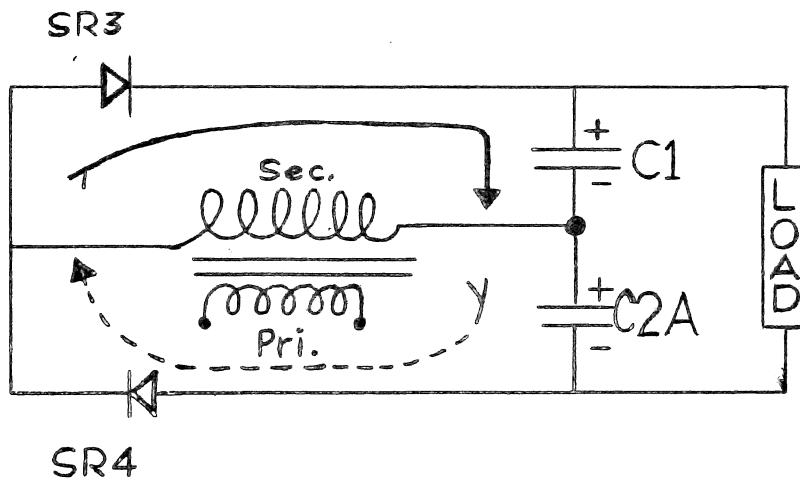


Fig. 1

Referring to Fig. 1, the diode, SR3 (silicon rectifier), conducts only on one half cycle. By following the solid line arrow, the current path may be seen, and also the charge on C1. On the other half cycle only the diode, SR4, conducts and charges C2A as indicated by the dashed arrow. The polarities of the charges on C1 and C2A are shown.

OVER

A third silicon diode, SR5, is used to obtain screen voltage for the 6973 output tubes and voltages for portions of the automatic lever control circuit.

SR5 is shown in Fig. 2 which is drawn in the configuration of the circuit in the 2400 Series Service Manual, Pages 45 - 46. It is in a half-wave rectifier circuit. The voltage developed by it is superposed on half of the D. C. voltage produced by the voltage doubler. The current path while SR5 is conducting is shown by the dashed arrow.

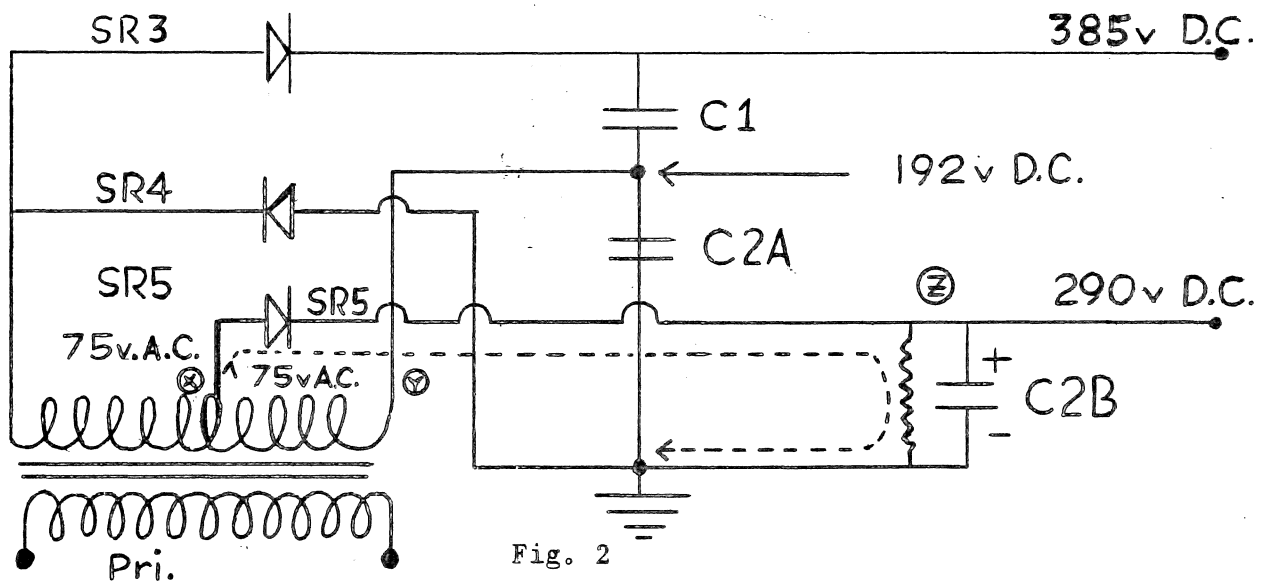


Fig. 2

SR5 can conduct only when "X" is positive with respect to "Y". "Y" connects to the junction of C1 and C2A. This point has a potential of about 192 volts D. C. Hence, the voltage at "Z" will be 192 plus approximately the peak of 75 volts A. C. This sum turns out to be about 290 volts.