

RA-1599-A
POWER SUPPLY

TECHNICAL INFORMATION BULLETIN

Westrex

RA-1599-A POWER SUPPLY

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Westrex Corporation

HOLLYWOOD DIVISION

TECHNICAL INFORMATION BULLETIN OPERATING AND MAINTENANCE INSTRUCTIONS FOR RA-1599-A POWER SUPPLY

1.0 Use

The RA-1599-A Power Supply is designed to furnish plate voltage for low-noise-level equipment requiring a well-regulated supply with a low ripple content.

2.0 Illustrations

Figure 1 Schematic Circuit of RA-1599-A Power Supply

Figure 2 Wiring Diagram of RA-1599-A Power Supply

3.0 General Data

3.1 Electrical Characteristics

Input: Strapping provides regulated operation over a ± 10 volt range for nominal input voltages of 105, 115, or 125 volts, 50 or 60 cycles. Approximately 1.5 ampere input current required for full load operation.

Output: 265 to 300 volts d-c, adjustable. 0 to 200 milliamperes.

Regulation: With a load variation of 0 to 200 milliamperes, the 275-volt output varies not more than 1 volt. $275V \pm 1V$.

A variation of ± 10 volts in input voltage, for any

input-voltage tap, will not change the 275-volt output by more than 1 volt.

Output Ripple: Approximately 1 to 3 millivolts for 60-cycle operation; approximately 1 to 5 millivolts for 50-cycle operation.

Protection: A 3-ampere Littelfuse in the input power circuit and a $\frac{1}{4}$ -ampere Littelfuse ahead of the series regulator afford protection for the equipment.

Controls: A power switch and an indicator lamp are mounted on the control panel.

A screwdriver-operated potentiometer on the mounting-board assembly permits adjustment of voltage over a range of approximately 265 to 300 volts.

3.2 Mechanical Characteristics

Mounting: Intended to occupy $\frac{1}{2}$ the width of a standard $5\frac{1}{2}$ " high dished chassis (R-94483 Mounting Plate). A front mat is normally required per 0-94413, Details 1 to 6.

Dimensions: $5\frac{1}{8}$ " high, $8\frac{1}{2}$ " wide, $9\frac{3}{4}$ " deep.

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3.0 General Data (Continued)

Weight: Approximately 13½ pounds.

4.0 Description

The schematic circuit of the RA-1599-A Power Supply is shown in Figure 1. It is line and load regulated. The input circuit to the transformer contains a power switch and a 3-ampere fuse. Three taps on the transformer accommodate different ranges of input voltage. The high-voltage winding of the transformer goes to V-1 which is a full-wave rectifier and contains an indirectly heated cathode. This insures that the other vacuum tubes are operating before the rectifier tube functions. The output from V-1 is filtered by condenser C-1, goes through fuse F2 which has a ¼ ampere value, and then goes to the plate circuit of V2 which is the series regulator tube. The output of V2 goes to terminal 5 on the terminal strip which is the high voltage output terminal. V3 is a two-stage dual-triode amplifier. V4 is a regulator tube which provides a constant reference voltage at the grid of the first half of V3.

A voltage divider applies a portion of the voltage that appears at the output terminal #5 to the cathode of the first section of V3. The d-c output voltage is fixed by the setting of P-1. Variations from the normal output voltage are

amplified in the two stages of V3 and the appropriate voltage and proper phase are applied to the grids of V2 and alter the impedance of the series regulator stage to correct the differential in output voltage.

A ripple voltage appearing at terminal 5 likewise affects V3 and the opposite phased voltage is applied to the grids of V2, thus reducing the ripple to a very low value.

It is intended that the -275 volt output receive an external ground.

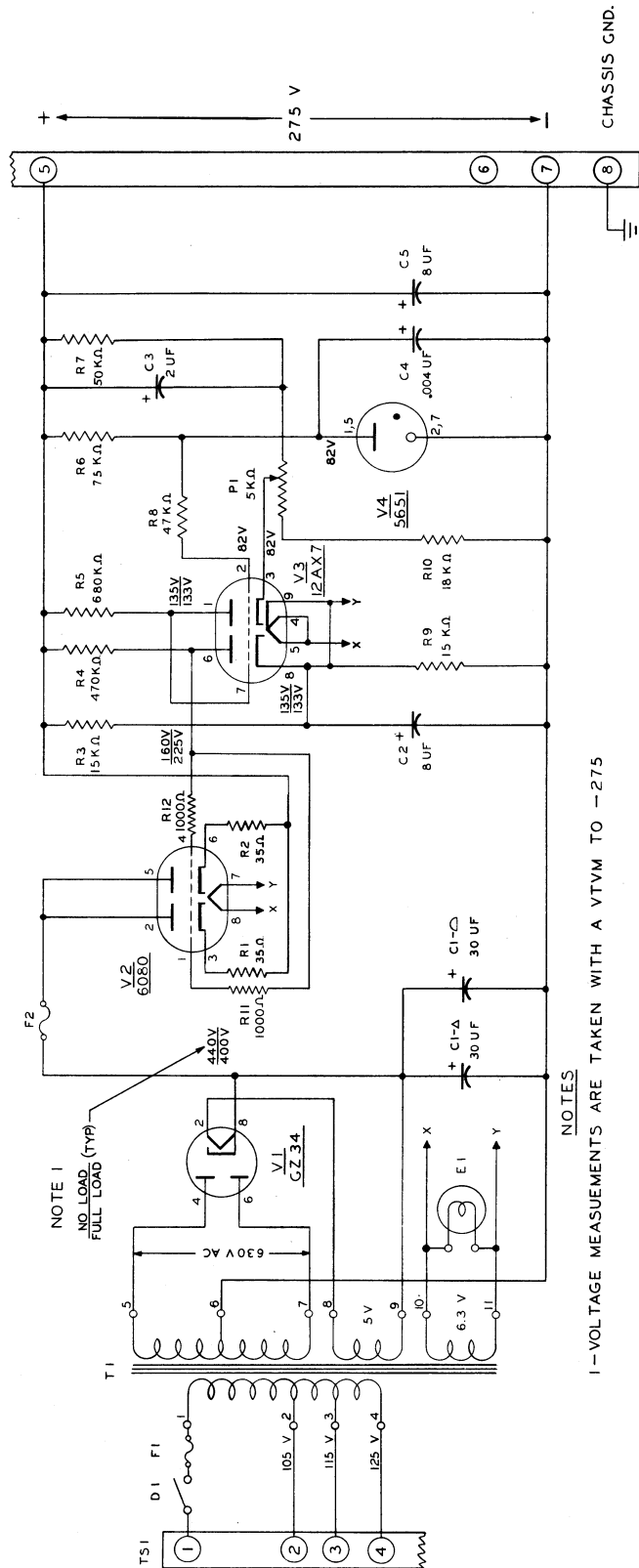
5.0 Maintenance

No maintenance is ordinarily required other than the routine testing and replacement when necessary of the vacuum tubes. Should trouble develop it can be traced by reference to Figure 1, the schematic circuit, and the wiring diagram which is shown in Figure 2. The schematic circuit shows typical point-to-ground voltages.

If excessive ripple is encountered, try replacing first V3 and then V2, then check condenser C-1 and check the point-to-ground voltages.

If lack of regulation is encountered, try replacing V4, V3 and V2 in that order.

If low output is encountered, try replacing V-1 and V4. If this does not correct the difficulty check the point-to-ground voltages.



NOTE 1
NO. LOAD (TYP)
FULL LOAD

NOTES

1-VOLTAGE MEASUREMENTS ARE TAKEN WITH A VTVM TO -275

Figure 1 Schematic Circuit of RA-1599 - A Power Supply

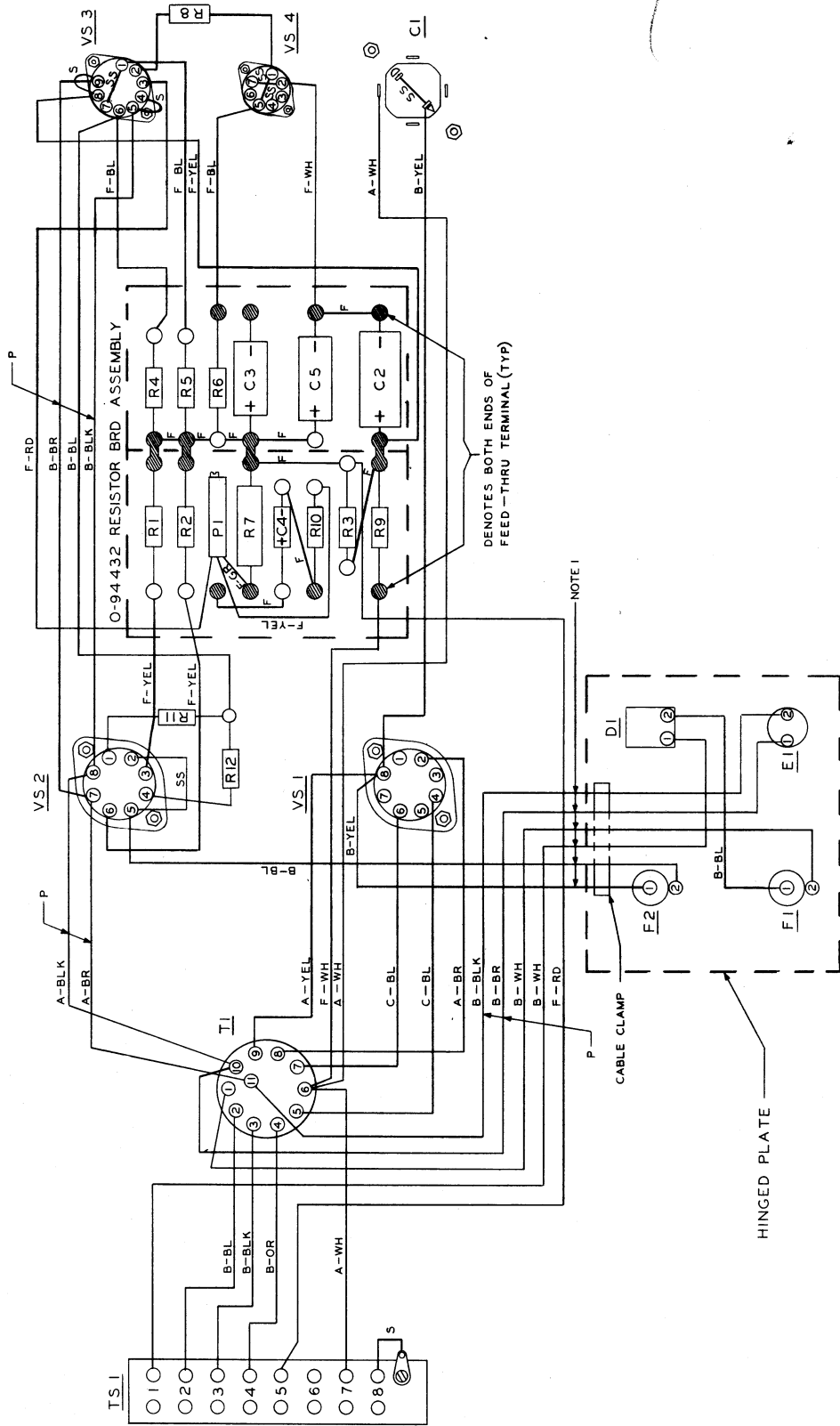


Figure 2 Wiring Diagram of RA-1599-A Power Supply