

PART IV MAINTENANCE

10. PLUG-IN COMPONENTS

If the instrument fails to perform satisfactorily, the trouble can probably be eliminated by substituting new plug-in components for those most likely to fail. Therefore, a spare parts stock of the electron tubes and the chopper will facilitate servicing this instrument. Suggested spare parts are listed in Section 15.

Substitute all tubes and the chopper with good spare components. If this restores normal operation, the old parts can be replaced one by one to locate the faulty part.

When substituting spare components, make sure they are properly seated in the correct sockets.

Standard tube types are used. V1 is specially selected for low noise and must be ordered from the L&N Co. The other tubes may be purchased locally but it is advisable to order them from L&N Co. where they receive a complete quality check before shipment.

If spare tubes and a chopper are not available, these may be tested rather than replaced. Check the chopper in accordance with Section 14.

11. CIRCUIT CHECKS

After a fault has been isolated to a particular stage, and/or if the failure is not corrected by component replacement, a systematic check of circuit voltages and resistances will usually locate the fault. Key voltage check values are given on the tube socket voltage-reading diagram in Fig. 7. If any measured voltage is not within the specified tolerance

limits, analyze the circuit to determine which component is most likely to cause the erroneous voltage. Where necessary, use an ohmmeter to check continuity and resistance values. Resistance from tube socket pins to the main chassis are also given in Fig. 7. All voltage values are based on a line voltage of 120 volts, sixty cycles. When checking the instrument for zero input conditions, place the sensitivity switch in a zero check position.

12. SOLDERED PARTS AND WIRING

When replacing defective parts, install the new parts and wiring to conform to the original arrangement. When resoldering, use as little solder as possible, but be sure a satisfactory connection is made. All soldered connections in low-level sections of the instrument are made with a special solder having a low thermal emf characteristic against copper. The use of this solder reduces thermal emfs, which would create a zero-offset. When making new solder joints in any part of the input circuit (the input plugs and area shaded in Fig. 7) or any solder joint painted with green lacquer, do not use ordinary solder. Use special thermal free solder at these points. Special soldering techniques are required in the use of this solder. Refer to Directions 77-39-0-7 supplied with the solder. This solder may be ordered from Leeds & Northrup Company by specifying Part 107-1-0-1.

13. CAPACITOR TESTING

Capacitors of 0.1 microfarad and higher may be tested with an ohmmeter set to its highest ohms range. When taking a resistance reading across a capacitor, or a circuit where the capacitor shunts the ohmmeter or