SERVICE TO PRINTED CIRCUIT PANELS

INTRODUCTION

This manual has been published to assist service mechanics in effecting speedier and more efficient repairs and adjustments to S.T.C. printed wiring panels.

In practice servicing printed circuits is similar to servicing conventionally wired circuits. Any serviceman can make repairs, including replacement of all components by following the procedures given in this manual.

A printed circuit begins as a laminated plastic board with a sheet of thin copper foil bonded to one side. To form the necessary wiring, some of the copper foil is removed by a photographic and etching process. Holes are punched in the board through which various component leads are inserted. The leads of standard size components are cut and bent over the copper foil wiring. The wiring side of the board is then dipped in molten solder to make all solder connections at once. The copper foil wiring also picks up solder, thus increasing its ability to carry current. The result is a circuit with uniformity of wiring, compactness, and freedom from wiring errors.

CIRCUIT TRACING AND VOLTAGE MEASUREMENTS

Circuit tracing of the printed wiring panel is simpler than that of the conventional wiring due to the uniform layout of the wiring. Since the panel is translucent, a 60 watt light bulb placed underneath the side being traced will facilitate location of connections. Test points can easily be located in in this manner without the necessity of viewing both sides of the board.

Resistance or continuity measurements of coils, resistors, and some capacitors, can be made from the component side of the board. In some cases, a magnifying glass will assist in locating very small breaks in the wiring. Voltage measurements can be made on either side of the board. However, on the wiring side of the board, a needle point probe for circuit checking should be used, since the varnish coating must be "broken through" to make contact. The clockwise directions is the usual practice when the socket is viewed from the bottom. ***Note:*** When the socket is mounted on the component side of the panel, the socket key can be located when viewing the wiring side, by the absence of a lug hole in the board at the key position.

PRECAUTIONS TO BE OBSERVED WHEN SERVICING

Printed circuit receivers, can be more easily repaired, if certain precautions are observed. Standard components are used throughout and can be removed by any serviceman. No special tools or skills are necessary. However, some parts which have special mounting and connection lugs should be replaced with exact duplicate parts.

AVOID DAMAGE TO COPPER FOIL: Be careful when removing components from the board. However, if the copper foil wiring is damaged, a piece of wire can be used to replace the damaged foil. Small breaks can be "jumped" with molten solder. Larger breaks can be repaired with ordinary hook up wire. It is unnecessary to replace the entire board because of foil breakage.

AVOID DAMAGE TO PRINTED CIRCUIT BOARD: Do not apply excessive pressure to the printed circuit board or components. Although the board is sturdy in construction and mounting, it may crack or break if proper care is not taken when servicing. On exptrmely rare occasions, access to components on the board may be difficult. In this case the board may be removed from the chassis by removing the mounting screws around the edges and unsoldering a few leads that connect between the board and the chassis. If this is done, a vise with protected jaws should be used to hold the board while servicing and care should be taken not to exert excessive pressure against the board.

AVOID EXCESSIVE DEPOSITS OF SOLDER: In some areas on the printed wiring panel, wiring is very closely spaced. When resoldering a new component avoid excessive deposits of solder. Excessive solder may cause a short or an intermittent trouble to occur later which may be difficult to locate.

AVOID OVERHEATING: When using the soldering iron (35 watts or less), do not overheat the components terminals or the copper foil. Excessive heat (applying soldering iron longer than necessary, using a higher wattage soldering iron than recommended, or using a solder gun) may cause the bond between the board and foil to break. This will necessitate replacement or repair of foil connection.