

When you position the insulated wires, be careful that the insulation does not rub over a bare metal edge, and that the insulation is not pinched across a metal edge. This may cause the insulation to wear through and result in a short.

When wiring the contacts of the switches, be careful not to bend the switch contacts. Bending would reduce the spring tension of the contacts.

The soft tubing supplied is called "spaghetti". Spaghetti is used to cover the bare leads of some of the parts. Whenever it is necessary to use some of this spaghetti, the exact length is given. The spaghetti must cover the entire lead where there is a chance that the bare wire would touch another lead, a connection, or the chassis.

Follow the pictorial diagrams closely. This unit will work best with components and wires positioned as shown.

## PRINTED CIRCUITS

Printed circuits are used throughout your receiver, including the hand-switch. These printed circuits greatly simplify the wiring. A printed circuit is basically a pattern of conducting material on an insulating support. The conducting material is usually copper and the insulator is usually laminated plastic. The insulator sheet is first covered with a thin layer of copper foil. To form the wiring, some of the copper foil is removed by a photographic and etching process. Holes are then drilled in the board through which the leads of the various parts are inserted. The components are soldered directly to the wiring pattern. The result is a circuit with uniform wiring, compact size, and free from wiring errors.

Inspect both of the printed circuit boards carefully. You will notice that the boards have two different sides—a component side which has an outline of the parts layout printed on it, and a metal foil side which has the wiring pattern etched on it.

Hold the board so the component side of the board is toward you. The holes in the board are spaced to accept the leads from the parts to be mounted. Bend the part leads sharply, close to the body of the part. Insert the leads through the holes in the board and bend them over on the other side, to hold the part in place. Mount all parts on the component side of the board, unless otherwise specified.

It is important that the capacitors with a "+" sign are installed as shown. This maintains the proper polarity of these capacitors.

## PRINTED CIRCUIT WIRING

Soldering a printed circuit is easy if a few rules are carefully followed. Avoid applying too much heat or not enough heat to the work. For most electronics work, a soldering iron rated at 100 watts, with a small tip, should be used.

Not enough heat from the iron will result in a poor connection or no connection at all. (This is the most common trouble for beginners.)

Avoid using too much solder. In some areas on the printed circuit board, the wiring is closely spaced. Too much solder may cause a short circuit or intermittent trouble.

## HOW TO CARE FOR YOUR SOLDERING IRON

Your soldering iron is the key to good soldering since it supplies the essential ingredient—HEAT. If the tip is covered by a dirt (oxide) film, the iron will not be able to transfer its full heat. A new tip can be protected from film by coating it with solder the first time it is heated. An old copper tip should first be cleaned with a file until bare copper is exposed. Then solder-coat it like a new tip.

Never use the iron like a brush—soldering is not a paste-spreading operation. To get the most heat from the iron, always press the iron firmly to the connection. Hold it so the greatest tip surface is directly in contact with the connection.