

Solderless and Solder Breadboards (Protoboards)

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Solderless breadboards are made of plastic with a series of contacts in rows and columns. They are reusable and are very handy for constructing prototypes since you can change parts and add features as you wish. Some solderless breadboards have their own power supplies built in. The disadvantage of solderless breadboards is that parts can fall out or short to other parts when it is moved around. Many times I have heard the statement "Well, it was working yesterday." If I grade your circuit, I mark it as not working.

Solder Breadboards range in complexity from just a fiberglass board with holes to a board with patterned holes and traces. The most common type has holes with a copper pad around the hole to solder the part in. Once a circuit is correctly soldered on, this type of board it becomes rugged and long lasting. My recommendation is that to build and test the circuit on a solderless breadboard. If you only need measurements this is enough. If you need to turn in the circuit, move the circuit to the solder breadboard and solder it in.

When using a solder breadboard you should use sockets for the IC's. Solder the socket in and make connections to it without the IC in place. This will protect the IC from the heat of the soldering iron. This technique also allows you to replace a bad IC without re-soldering anything. Since IC's are usually your most expensive items, the sockets allow you to reuse IC's in other circuits.

For both solderless and solder breadboards, you should label the connections for your inputs, outputs, and power supplies. This helps prevent connecting the wrong voltages to the circuit and eases grading and data collecting. You should also include nodes to connect scope probes up to on the soldered boards. These can be made with a small loop of wire.



Figure 1. A medium size solderless breadboard. The three posts at the top are used to connect the power supplies to the circuit. Assuming that the breadboard is rotated so that the writing is correct, the two rows on the top and bottom are the power bus connections. There are really eight of these since the row is not connected in the center of the board. In the center of the board there are two rows of five-hole columns. Each five-hole column is a node. An IC will be placed over the grove in the center allowing each pin a node with 4 connections. If you are unsure of the connections, use an ohmmeter to check the contacts.



Figure 2. A small solderless breadboard. The row of holes on the outside edge is one node usually used to connect the power supplies. IC's are places across the groove in the center allowing 4 other connections to a single pin.

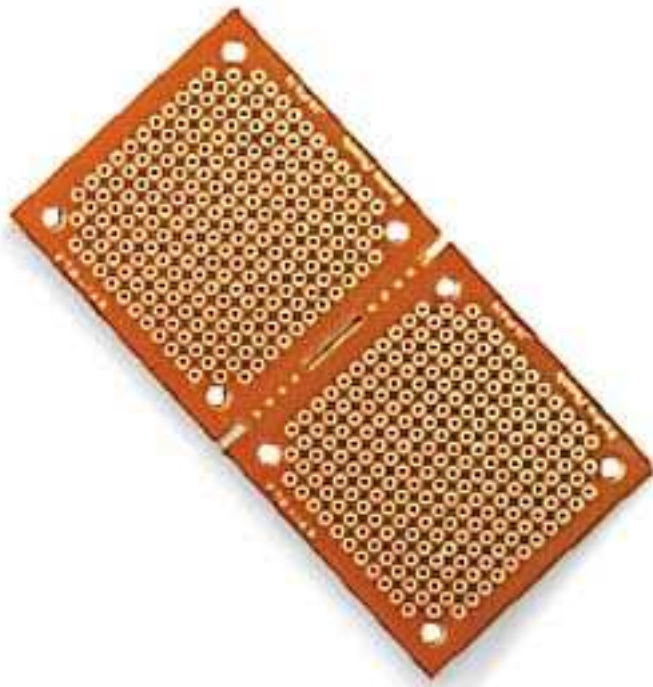


Figure 3. A solder breadboard. This type of board sometimes has a ground copper plane.