# Solderless Breadboards and Accessories




3M *Innovation*

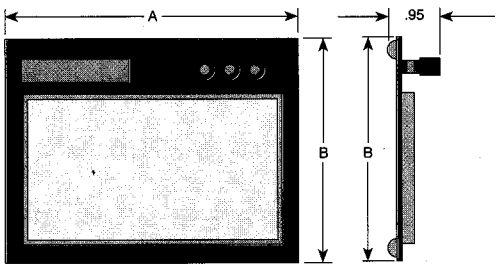
## Solderless Breadboards

3M Series 300 Breadboards incorporate state-of-the-art techniques in design and fabrication to yield a circuit-building system with unparalleled flexibility and reliability.

A voltage distribution system is integrated with the basic component breadboarding matrix, and 5-way binding posts provide the interface for connections from the power supply, signal generators or other external equipment.

All models incorporate the 3M laboratory-proven multi-tie-point terminal design for convenient, solderless, plug-in circuit building. Each terminal position contains electrically connected tie-points spaced on a continuous .100" matrix to accept any component with .100" lead spacing as well as components whose leads can be dressed to fit.

The surface of the steel base is high gloss baked enamel for protection. Rubber feet prevent sliding during benchwork.

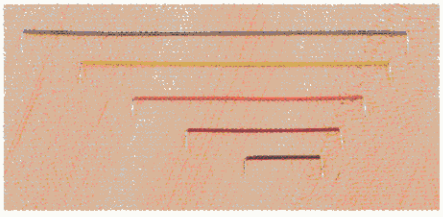



- Simply plug in components and interconnect with ordinary 22-gauge solid wire. Time consuming soldering is eliminated and all components can be used again and again.
- Alpha-numeric identification along the strips allows for fast and easy layout designs and project applications. Every tie-point position on the strip can quickly be identified by a letter and number combination.
- 3M jumper wires are included.
- The sturdy metal base plate serves as a ground plane to help minimize noise and voltage spikes in today's high-speed circuits.
- DIPs of all sizes and a wide variety of discrete components with lead diameters of up to .032" can be used.
- By jumping across the center area, full length distribution buses can be created vertically.
- Use the 5-way binding posts for easy connection to ground, power supply, or other external equipment.

| Model | Part Number | Dip Capacity Up To | Base Dimensions A | B | Total Tie Points | Total Tie Points Terminal | Vertical Distribution Buses | Horizontal Distribution Buses | Binding Post |
|---|---|---|---|---|---|---|---|---|---|
| 306 | 922306 | 6-14 Pin | 5.4" [137.16] | 4.0" [101.6] | 610 | 94 | 0 | 4 | 2 |
| 309 | 922309 | 9-14 Pin | 7.0" [177.8] | 4.0" [101.6] | 840 | 128 | 0 | 8 | 3 |
| 318 | 922318 | 18-14 Pin | 7.75" [196.85] | 6.25" [158.75] | 1824 | 256 | 4 | 16 | 3 |
| 327 | 922327 | 27-14 Pin | 8.0" [203.2] | 9.25" [234.95] | 2712 | 384 | 24 | 4 | 4 |
| 336 | 922336 | 36-14 Pin | 10.25" [260.35] | 9.25" [234.95] | 3648 | 512 | 32 | 4 | 4 |
| 345 | 922345 | 45-14 Pin | 12.44" [315.976] | 9.75" [247.65] | 4520 | 640 | 40 | 4 | 4 |
| 354 | 922354 | 54-14 Pin | 14.69" [373.126] | 9.75" [247.65] | 5424 | 768 | 48 | 8 | 4 |

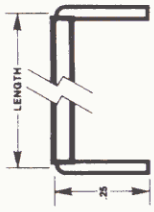
## Breadboard Accessories

3M has all the accessories you'll need for fast, safe and easy circuit building. You'll speed circuit building with our pre-measured, pre-formed, color coded jumper wires in a wide variety of sizes. Our patch cords provide the extra reach and convenience you need when connections are changed frequently or when off-board or test clip / breadboard connections are required. And our plunger activated probes make test connections to individual component leads faster and easier, while minimizing the possibility of accidental shorts. Everything you need, in the quantities you require.



### Jumper Wires

- Pre-measured, pre-formed, color coded jumper wires
- Wires are #22 AWG solid, tinned copper, PVC insulated, stripped 1/4" and bent 90° on both ends for easy insertion
- Available in 14 different lengths
- Jumper Wire Kits contain an assortment of 350 jumper wires
- Individual packages are sold in 0.1" increments from 0.1" to 1.0" and in 1.0" increments from 1.0" to 5.0" (exclusive of 1/4" ends)




| Part Number | Qty/Pkg | Length(in.) | Color |
|---|---|---|---|
| 923345-01 | 200 | 0.1 | No Insulation |
| 923345-02 | 200 | 0.2 | Red |
| 923345-03 | 200 | 0.3 | Orange |
| 923345-04 | 200 | 0.4 | Yellow |
| 923345-05 | 200 | 0.5 | Green |
| 923345-06 | 150 | 0.6 | Blue |
| 923345-07 | 150 | 0.7 | Violet |
| 923345-08 | 150 | 0.8 | Gray |
| 923345-09 | 150 | 0.9 | White |
| 923345-10 | 100 | 1.0 | Brown |
| 923345-20 | 100 | 2.0 | Red |
| 923345-30 | 75 | 3.0 | Orange |
| 923345-40 | 75 | 4.0 | Yellow |
| 923345-50 | 75 | 5.0 | Green |



### Patch Cords

- Provide the flexibility to frequently change connections
- Ideal for off-board connections or breadboard / test clip connections
- Wires are #26 AWG stranded with PVC insulation, color coded by length
- Available with pin and socket contacts, solder plated or plunger activated probes
- Pin and socket contacts have a sleeve insulation and are stackable on 0.1" centers

| Description | Part Number | Qty/ Pkg | Color/Length Assortment | Pin/Socket Size | Recommended Applications |
|---|---|---|---|---|---|
| Pin Plug to Pin Plug | 924961 | 20 | Assort. A | .019 | IC Sockets |
| | 924962 | 20 | Assort. A | .030 | 3M Breadboards |
| Socket to Socket | 924963 | 20 | Assort. A | .019/0.28 | Extension for .019 Pin Plug |
| | 924964 | 20 | Assort. A | .028/.035 | TC to TC. TC to .025 sq. post |
| Pin Plug to Socket | 924965 | 20 | Assort. A | .019 (.019/0.28) | IC Socket to .019 Pin Plug |
| | 924966 | 20 | Assort. A | .030 (.028/.035) | 3M Breadboards to TC, .025sq. post |
| Pin Plug to Probe | 924967 | 10 | Assort. B | .019 | IC Socket to TC, .025 sq. post, etc. |
| | 924968 | 10 | Assort. B | .030 | 3M Breadboard to TC, .025 sq. post, etc. |
| Socket to Probe | 924969 | 10 | Assort. B | .019/0.28 | .019 Pin Plug to TC, .025 sq. post, etc. |
| | 924970 | 10 | Assort. B | .028/.035 | TC, .025 post to TC .025 post, etc. |

Assortment A (20 pieces): 9 pieces - 2" - Yellow, 6 pieces - 4" - Blue, 3 pieces - 6" - Red, 2 pieces - 9" - Black
Assortment B (10 pieces): 5 pieces - 15" - Red, 5 pieces - 15" - Black



## Probes

- Provide a safe, fast and easy method of testing individual component leads
- Minimize the possibility of accidental shorts
- Phosphor-bronze contact hooks are sheathed in the nylon body of the probe until exposure is needed
- Probes are easily attached to component leads being tested. Expose contact hooks by pressing the cap of the probe. Place on component lead. Release for a safe and secure attachment
- Are available in 4 different sizes – from 1.63" to 3.56"
- Can be soldered to stranded hook-up wire

| Description | Color | Part Number |
|---|---|---|
| Micro Probe-It (2 per package) | Red | 923830-RD |
| | Black | 923830-BK |
| | Blue | 923830-BU |
| | Green | 923830-GN |
| | Yellow | 923830-YL |
| | White | 923830-WT |
| Micro Probe-It Assortment (6 per package) | One of Each | 923848 |
| Mini Probe-It (2 per package) | Red | 923835-RD |
| | Black | 923835-BK |
| | Blue | 923835-BU |
| | Green | 923835-GN |
| | Yellow | 923835-YL |
| | White | 923835-WT |
| Mini Probe-It Assortment (6 per package) | One of Each | 923850 |
| Standard Probe-It (2 per package) | Red | 923840-RD |
| | Black | 923840-BK |
| Maxi Probe-It (2 per package) | Red | 923845-RD |
| | Black | 923845-BK |





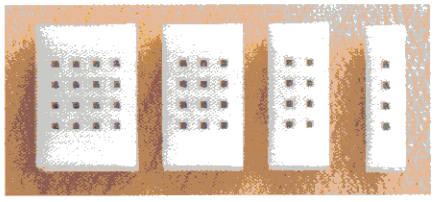








* Dimensions with hook contact retracted



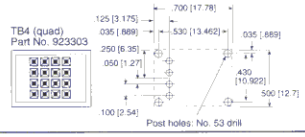
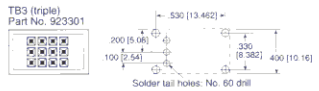
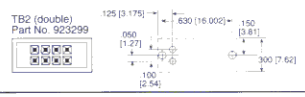
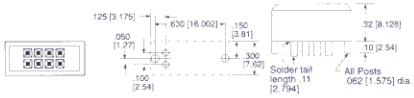
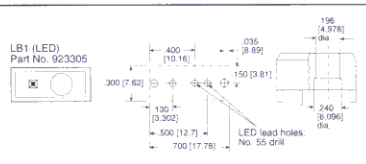
## Tie-Point Blocks

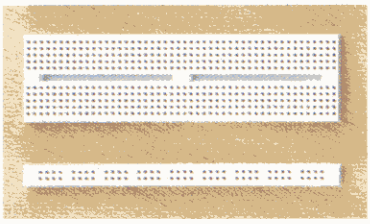
- Ideal for connections to power, ground, clock lines and status monitors, etc.
- Can be used to mount switches, indicators, relays, LED displays and more
- Each group of 4 tie-points has a solder tail for connection to the circuit
- Mounting posts on the plastic body press fit into holes in the PC Board
- The LED-mount version has a single tie-point and solder tail for plug-in connection to LED (LED not included)
- The 0.1" matrix will accept any lead up to 0.32"; #22 AWG solid wire is recommended for connections

### Specifications

| Model | Part No. | One Pkg. |
|---|---|---|
| TB1 (Single)* | 923297 | 20 pcs |
| TB1 (Double) | 923428 | 20 pcs |
| TB2 (Double)* | 923299 | 20 pcs |
| TB1 (Triple)* | 923301 | 20 pcs |
| TB1 (Quad)* | 923303 | 20 pcs |
| TB1 (LED Mount)* | 923305 | 20 pcs |
| TBA** | 923306 | 20 pcs |

** 4 of each of the * models listed above

| Dimensions | Part Number |
|---|---|
|  | **923303** TB4 (quad) |
|  | **923301** TB3 (triple) |
|  | **923299** TB2 (double) |
|  | **923297** TB1 (single) |
|  | **923428-B** TB1 (double) |
|  | **923305** LB1 (LED) LB1 lbocks are designed to accept (press fit) any standard LED indicator with max. bulb diameter of 3/16". Flange may vary from .210" to .230". |



# Solderless Circuit Building Breadboard Strips

Terminal Strip, Distribution Strip, Super Strip and Circuit Strip building blocks provide unlimited freedom in the layout and implementation of custom breadboarding systems.

DIP's and all components with lead diameters up to .032" simply plug into the strips and interconnect with 3M color-coded, pre-measured, pre-formed #22 AWG jumper wires.

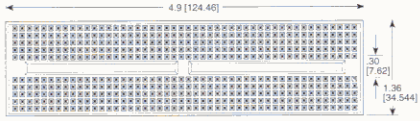
Terminal Strips have spring clips arranged side-by-side. Distribution Strips have spring clips arranged end-to-end. Super Strip and the smaller Circuit Strip breadboarding unit combine Terminal and Distribution building blocks in a single unit, using the plug-in ease of the 0.1" x 0.1" solderless tie-point matrix combined with the convenience of separate distribution buses for power, ground and signal lines.

## Terminal Strips

**923261** Full Terminal Strip 128 5 tie-point terminals (2 rows of 64)



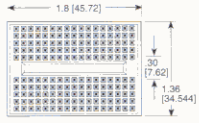

**923265** 3/4 Terminal Strip 96 5 tie-point terminals (2 rows of 48)



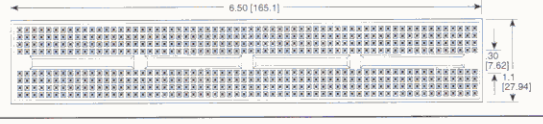

**923269** Half Terminal Strip 68 5 tie-point terminals (2 rows of 34)




**923273** 1/4 Terminal Strip 34 5 tie-point terminals (2 rows of 17)




**923289** Full Terminal Strip (4 pos.) 128 4 tie-point terminals (2 rows of 64)




**923291** Single Terminal Strip 54 4 tie-point terminals (1 row)

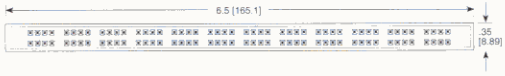



**923292** Single Terminal Strip same as above but with solder-tail terminals




## Distribution Strips

**923277** Full Distribution Strip 2 rows of 12 connected 4 tie-point ternimals




**923281** 3/4 Distribution Strip 2 rows of 9 connected 4 tie-point ternimals




**923285** Half Distribution Strip 2 rows of 6 connected 4 tie-point ternimals

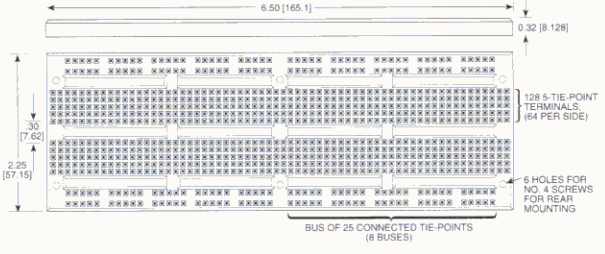



**923293** 3-row Distribution Strip 6 rows of 6 connected 4 tie-point terminals



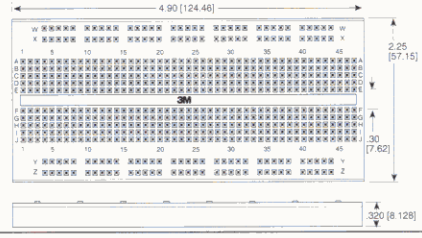

## Super Strips

**923252**
**923748*** Full Terminal Strip 128 5-tie-point terminals (2 rows of 64) and 8 buses of 25 connected tie-points




## Circuit Strips

**923253**
**923749*** 3/4 Terminal Strip 96 5-tie-point terminals (2 rows of 48) and 4 buses of 35 connected tie-points




* Terminals Gold Plated at 10 millionths thick

For sales, ordering and technical information contact your local 3M distributor or 3M at **800-321-9668**

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