

# TEST LEADS, PATCH CORDS & JUMPERS

**Smith Test Leads, Patch Cords and Jumpers are precision-made interconnect wire devices for temporary attachment of wire leads between equipment and circuitry. Each style of Lead is meant for a specific application and will provide the greatest degree of safety and convenience when used properly.**

TEST LEADS are the most commonly used temporary connection devices. They are usually attached to a meter or other instrument at one end and have a device for probing circuitry and contacts at the other end. Since the operator is usually in close proximity to live circuitry when using test leads, safety design is of paramount importance. At the instrument end, a variety of connection plugs are available. All of the Safety-Designed plugs have fully shrouded insulation covering metal parts and are made to fit all popular safety input schemes. Test Leads are also offered with plugs to fit older-style instruments and are made with connectors that expose the least amount of metal when seated.

At the Probe end, all Smith Test Leads feature a safety prod, which combines many safety features in an original Smith design:

- . The prods are made of a tough, flame-retardant plastic which resists deformation and cracking under the most severe service.
- . The shape is ergonomically designed for comfort and provides a slip-proof grip.
- . Finger-grip grooves and a generous guard-washer prevent accidental contact with live conductors.
- . The prod tip is permanently secured in the prod and cannot be accidentally removed or unscrewed.
- . The lead wire is soldered to the tip and held with an internal strain relief for maximum security against breakage.
- . The probe tip is unique in that it serves multiple purposes:
  - . It is precision .080 phone tip for insertion in standard jacks.
  - . It has a specially-formed sharp tip for insulation piercing.
  - . A special groove at the front lays over solid wires without slipping.
  - . An 8-32 thread at the rear allows the attachment of standard adapters, such as alligator clips, which maintain the integrity of insulation to the prod.










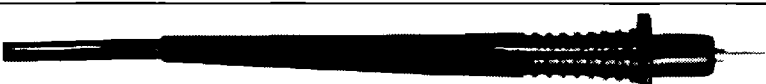



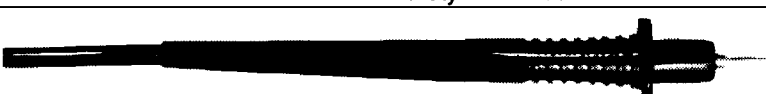

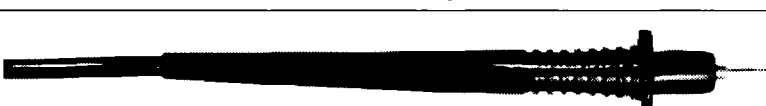

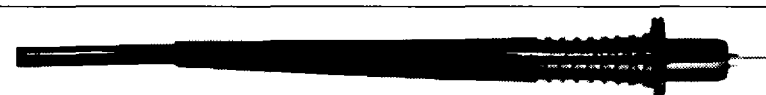

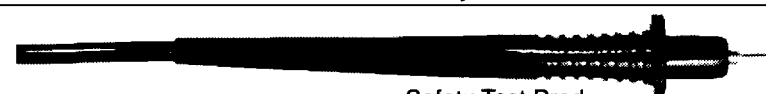

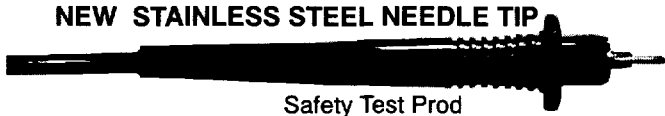


PATCH CORDS serve a similar purpose but are usually used to simultaneously connect two-circuit cables and devices to each other, generally having signal and ground connections. Low-frequency, low-impedance patch cords have twisted-pair cable, while the High and RF-frequency Patch Cords are made with coaxial cable. Smith standard RF patch cords are made with 50 ohm coaxial cable and are available with other cables on special order. Interconnections can be made using Alligator Clips, Dual Banana Plugs and both BNC and UHF series coaxial connectors. Additional types and lengths can be specially ordered from our factory. Please note that, except for types with coaxial connectors at both ends, impedance mismatches will exist when using these cables for temporary connections.

JUMPERS are the simplest, most universal of the interconnect cables. Jumpers come in a variety of wire sizes, lengths and end configurations. Jumpers are the most common universal connection devices which clip on wires, terminals, chassis, posts and many other electrical terminations to rapidly interconnect two circuits for measurement or testing. Standard and miniature, booted and uninsulated styles are offered in a large variety of lengths and colors. However, Clip Jumpers are electrically noisy and may be unsafe at power voltage levels and should only be used for temporary connections. The preferred technique is to use a Jumper with a connector matching the post, jack, or other terminal to which it is desired to connect.

The balance of Jumpers offered in this catalog are multiple combinations of these connectors on various types of wire and lengths. In addition to insulated Alligator Clips, the choice can be made among Banana Plugs, Phone Tips and Spade Lugs. These connectors will offer solid, semi-permanent connections between instruments with a maximum of safety and reliability.

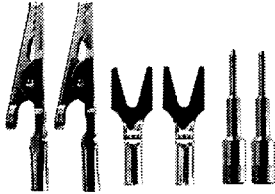
# SAFETY TEST LEADS

All packaged in pairs of 1 Red and 1 Black. All test leads are 4' long.

| PART # | METER END  | TEST PROBE END  |
|--------|--|---|
| 9325P  | <br>Shrouded Safety Banana Plug - Safety designed to fit most digital Volt meters that have safety jack input.          | <br>Safety Test Prod  |
| 9321P  | <br>Shrouded Safety Banana Jack - Safety designed to fit most digital Volt meters that have shrouded safety plug input. | <br>Safety Test Prod  |
| 9829P  | <br>Shrouded Safety Jack for Simpson Model 260 Series 7   | <br>Safety Test Prod  |
| 623P   | <br>Standard Banana Plug  | <br>Safety Test Prod  |
| 9327P  | <br>Standard Angled Banana Plug  | <br>Safety Test Prod  |
| 9323P  | <br>Minature Angled Banana Plug   | <br>Safety Test Prod  |
| 625P   | <br>Right-Angle Phone Tip   | <br>Safety Test Prod  |
| 685P   | <br>Right-Angle Standard Banana Plug  | <br>Safety Test Prod  |
| 603P   | <br>Standard Phone  | <br>Safety Test Prod  |
| 615P   | <br>Standard Alligator Clip with Boot   | <br>Safety Test Prod  |
| 622P   | <br>Standard Banana Plug  | <br><b>NEW STAINLESS STEEL NEEDLE TIP</b><br>Safety Test Prod |
| 9317P  | <br>Standard Banana Plug  | <br><b>NEW TEST PROD</b><br>Safety Test Prod                  |

# TEST LEADS

## INTERCHANGEABLE TIP TEST LEAD KIT



| PART NO. | QUANTITY | ACCESSORIES     |
|----------|----------|-----------------|
| 610P     | 2        | Phone Tips      |
|          |          | Alligator Clips |
|          |          | Spade Lugs      |

**DESCRIPTION:** Banana plug test lead kit, with additional parts for universal attachment to various instrument input connectors. Adapters plug on Banana Plug end. Alligator clip #720 threads on prod handle (not supplied).

**PROD HANDLE:** Molded ABS.

**PROD TIP:** Brass, Nickel-plated.

**BANANA PLUG:** Molded Polycarbonate handle. Beryllium copper spring Nickel-plated.

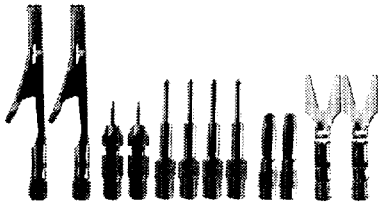
**WIRE:** #18 PVC insulated, extra-flexible, kink resistant. Nominal length 48".

**COLORS:** Supplied as a pair, one each, Red and Black.

### Replacement Parts for 610P:

| PART NO. | DESCRIPTION   | QUANTITY       |
|----------|---------------|----------------|
| 610-25   | Accessory Kit | Phone Tip      |
|          |               | Alligator Clip |
|          |               | Spade Lug      |

## UNIVERSAL TEST LEAD KIT



| PART NO. | QUANTITY | ACCESSORIES     |
|----------|----------|-----------------|
| 699      | 2        | Phone Tips      |
|          |          | Alligator Clips |
|          |          | Spade Lugs      |
|          | 4        | Phone Tips      |
|          | 2        | Needle Tips     |

**DESCRIPTION:** An indispensable kit for every technician, laboratory, production control station and repair/service facility. A pair of ribbed safety-grip test prods, permanently fixed on one end. Meter ends and prods have modular connectors into which fit a complete assortment of instrument input accessories. One pair of leads and accessories are supplied in a handy folding vinyl pouch.

**WIRE:** #18 PVC insulated, extra-flexible, kink resistant. Nominal length - 48".

**COLORS:** Supplied as a pair, one each, Red and Black.

### Replacement Parts for 699:

| PART NO. | DESCRIPTION            | QTY.            |
|----------|------------------------|-----------------|
| 699-20   | Accessory Kit          | Needle Tips     |
|          |                        | Alligator Clips |
|          |                        | Spade Lugs      |
|          |                        | Banana Plugs    |
|          |                        | 4 each          |
|          |                        | Phone Tips      |
| 699-Lead | Replacement Test leads | 1 each          |
|          |                        | Red, Black      |

## COIL-CORD PHONE TIP TEST LEADS



**PROD HANDLE:** Molded ABS.

**PROD TIP:** Brass, Nickel-plated.

**PLUG:** Molded Nylon.

**WIRE:** 41/36 stranded #20 AWG rubber insulated coil-cord wire. Nominal O.D. is .165". Retracted length of cord is 12", extended length is 6'.

**COLORS:** Supplied as a pair, one each, Red and Black.

| PART NO. | METER END          |
|----------|--------------------|
| 618      | Standard Phone tip |

# PATCH CORDS

## BNC MALE PATCH CORDS







Wire - RG 58/U Coaxial Cable

Impedance - 50 Ohms CTR

\* WIRE - RG174/U Coaxial Cable

Insulation - Polyethylene

Jacket - Black PVC

| PART #   | LENGTH |  |                                      |
|----------|--------|--|--------------------------------------|
| 1587-12  | 12     |    |                                      |
| 1587-24  | 24     |  |                                      |
| 1587-36  | 36     |  |                                      |
| 1587-48  | 48     |  |                                      |
| 1587-60  | 60     |  |                                      |
|          |        | BNC Male   | Standard Alligator Clips with Boots  |
| *1791-12 | 12     |    |                                      |
| *1791-24 | 24     |  |                                      |
| *1791-36 | 36     |  |                                      |
| *1791-48 | 48     |  |                                      |
| *1791-60 | 60     |  |                                      |
|          |        | BNC Male   | Miniature Alligator Clips with Boots |
| 1589-12  | 12     |    |                                      |
| 1589-24  | 24     |  |                                      |
| 1589-36  | 36     |  |                                      |
| 1589-48  | 48     |  |                                      |
| 1589-60  | 60     |  |                                      |
|          |        | BNC Male   | BNC Male                             |
| 1878-12  | 12     |    |                                      |
| 1878-24  | 24     |  |                                      |
| 1878-36  | 36     |  |                                      |
| 1878-48  | 48     |  |                                      |
| 1878-60  | 60     |  |                                      |
|          |        | BNC Male   | BNC Female                           |
| 1879-12  | 12     |   |                                      |
| 1879-24  | 24     |  |                                      |
| 1879-36  | 36     |  |                                      |
| 1879-48  | 48     |  |                                      |
| 1879-60  | 60     |  |                                      |
|          |        | BNC Male   | UHF Male                             |
| 1584-12  | 12     |  |                                      |
| 1584-24  | 24     |  |                                      |
| 1584-36  | 36     |  |                                      |
| 1584-48  | 48     |  |                                      |
| 1584-60  | 60     |  |                                      |
|          |        | BNC Male   | Dual Banana Plug                     |


## BNC FEMALE PATCH CORDS

Wire - RG 58/U Coaxial Cable

Impedance - 50 Ohms

Insulation - Polyethylene

Jacket - Black PVC

| PART #  | LENGTH |  |            |
|---------|--------|--|------------|
| 1869-12 | 12     |  |            |
| 1869-24 | 24     |  |            |
| 1869-36 | 36     |  |            |
| 1869-48 | 48     |  |            |
| 1869-60 | 60     |  |            |
|         |        | BNC Female   | BNC Female |


## UHF MALE PATCH CORDS

Wire - RG 58/U Coaxial Cable

Impedance - 50 Ohms

Insulation - Polyethylene



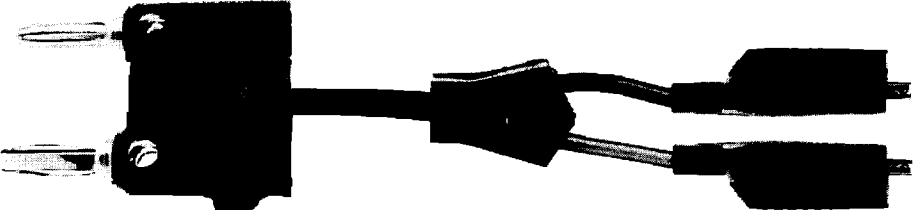
Jacket - Black PVC

| PART #  | LENGTH |  |          |
|---------|--------|--|----------|
| 1871-12 | 12     |  |          |
| 1871-24 | 24     |  |          |
| 1871-36 | 36     |  |          |
| 1871-48 | 48     |  |          |
| 1871-60 | 60     |  |          |
|         |        | UHF Male   | UHF Male |

# PATCH CORDS

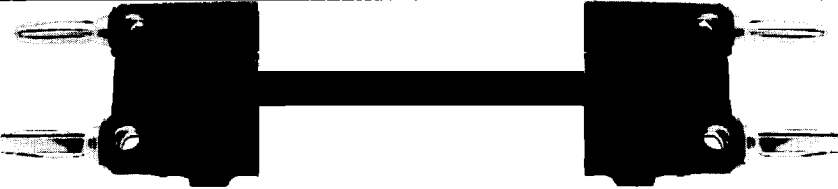

## LOW FREQUENCY PATCH CORDS

Wire — 2 Conductor twisted pair cable. Stranding — 65/36  
 AWG — 18 Insulation — PVC

| PART #  | LENGTH                     |    |
|---|----------------------------|--|
|   | INCHES                     |  |
| 1532-12<br>1532-24<br>1532-36<br>1532-48<br>1532-60 | 12<br>24<br>36<br>48<br>60 | <p>Dual Banana Plug</p> <p>Tinned Leads</p>  |
| 1530-12<br>1530-24<br>1530-36<br>1530-48<br>1530-60 | 12<br>24<br>36<br>48<br>60 |  <p>Dual Banana Plug</p> <p>Dual Banana Plug</p>                     |
| 1531-12<br>1531-24<br>1531-36<br>1531-48<br>1531-60 | 12<br>24<br>36<br>48<br>60 |  <p>Dual Banana Plug</p> <p>Standard Alligator Clips with Boots</p> |

















## R.F. PATCH CORDS

Wire — RG 58/U Coaxial Cable. Insulation — PE  
 Impedance — 50 Ohms Jacket — Black PVC

| PART #  | LENGTH                     |   |
|---|----------------------------|---|
| 1580-12<br>1580-24<br>1580-36<br>1580-48<br>1580-60 | 12<br>24<br>36<br>48<br>60 | <p>Dual Banana Plug</p> <p>Dual Banana Plug</p>   |
| 1581-12<br>1581-24<br>1581-36<br>1581-48<br>1581-60 | 12<br>24<br>36<br>48<br>60 |  <p>Dual Banana Plug</p> <p>Standard Alligator Clips with Boots</p> |

Ntt-Smith 632 Arch Street Meadville, Pa. 16335  
 Phone (814) 724-6440 FAX (814) 333-1912  
 Quality Connectors and Cable Assemblies

# JUMPERS

| PART #  | WIRE |          | LENGTH<br>INCHES           | UNIT | COLORS | TEST END   | METER END   |
|---|------|----------|----------------------------|------|--------|--|---|
|   | AWG  | MATERIAL |                            |      |        |  |   |
| 1332  | 18   | PVC      | 48                         | Pair | A      |    |    |
| 1596-12<br>1596-24<br>1596-36<br>1596-48<br>1596-60 | 18   | PVC      | 12<br>24<br>36<br>48<br>60 | One  | D      |    |    |
| 629<br>657<br>658<br>659                            | 20   | Rubber   | 12<br>24<br>36<br>48       | Pair | A      |    |    |
| 1866-12<br>1866-24<br>1866-36<br>1866-48<br>1866-60 | 18   | PVC      | 12<br>24<br>36<br>48<br>60 | One  | D      |    |    |
| 1867-12<br>1867-24<br>1867-36<br>1867-48<br>1867-60 | 18   | PVC      | 12<br>24<br>36<br>48<br>60 | One  | D      |  |  |
| 649   | 20   | Rubber   | 48                         | Pair | A      |  |  |
| 1865-12<br>1865-24<br>1865-36<br>1865-48<br>1865-60 | 18   | PVC      | 12<br>24<br>36<br>48<br>60 | One  | D      |  |  |
| 1510-8<br>1510-12<br>1510-24<br>1510-36             | 18   | PVC      | 8<br>12<br>24<br>36        | One  | B      |  |  |

**Color Code for Jumpers**  
(add color number as suffix to part number)

A - Pair, one Red lead, one Black lead

C - Available in 10 colors:














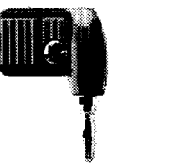
-101 White -103 Black -105 Blue -107 Yellow -112 Violet  
-102 Red -104 Green -106 Orange -108 Brown -113 Gray

B - Available in 6 colors:

-101 White -103 Black -105 Blue  
-102 Red -104 Green -107 Yellow

D - Available In Red (-102) and Black (-103) ONLY

# JUMPERS

| PART #  | WIRE |          | LENGTH<br>INCHES           | UNIT | COLORS | TEST END   | METER END   |
|---|------|----------|----------------------------|------|--------|--|---|
|   | AWG  | MATERIAL |                            |      |        |  |   |
| 1590-6<br>1590-12<br>1590-18<br>1590-24             | 24   | PVC      | 6<br>12<br>18<br>24        | One  | C      |    |    |
| 1595-8<br>1595-12<br>1595-24<br>1595-36             | 18   | PVC      | 8<br>12<br>24<br>36        | One  | B      |    |    |
| 1591-6<br>1591-12<br>1591-18<br>1591-24             | 24   | PVC      | 6<br>12<br>18<br>24        | One  | D      |    |    |
| 1864-12<br>1864-24<br>1864-36<br>1864-48<br>1864-60 | 18   | PVC      | 12<br>24<br>36<br>48<br>60 | One  | D      |   |   |
| 627   | 20   | Rubber   | 48                         | Pair | A      |  |  |
| 628   | 20   | Rubber   | 48                         | Pair | A      |  |  |
| 647   | 20   | Rubber   | 48                         | Pair | A      |  |  |

**Color Code for Jumpers**  
(add color number as suffix to part number)

A - Pair, one Red lead, one Black lead

C - Available in 10 colors:

















B - Available in 6 colors:

-101 White -103 Black -105 Blue  
-102 Red -104 Green -107 Yellow

-101 White -103 Black -105 Blue -107 Yellow -112 Violet  
-102 Red -104 Green -106 Orange -108 Brown -113 Gray

D - Available In Red (-102) and Black (-103) ONLY

# JUMPERS

| PART #   | WIRE |          | LENGTH<br>INCHES                 | UNIT | COLORS | TEST END   | METER END   |
|--|------|----------|----------------------------------|------|--------|--|---|
|  | AWG  | MATERIAL |                                  |      |        |  |   |
| 604<br>605<br>606<br>607                                       | 20   | Rubber   | 12<br>24<br>36<br>48             | Pair | A      |    |    |
|  |      |          |                                  |      |        | Standard Alligator Clip  | Standard Alligator Clip   |
| 1342   | 24   | PVC      | 48                               | Pair | A      |    |    |
|  |      |          |                                  |      |        | Miniature Alligator Clip with Boot   | Miniature Angled Banana Plug  |
| 1597-12<br>1597-18<br>1597-24<br>1597-36<br>1597-48<br>1597-60 | 24   | PVC      | 12<br>18<br>24<br>36<br>48<br>60 | One  | D      |    |    |
|  |      |          |                                  |      |        | Miniature Alligator Clip with Boot   | Miniature Alligator Clip with Boot  |
| 716<br>717<br>718<br>719                                       | 20   | Rubber   | 12<br>18<br>24<br>36             | Pair | A      |    |    |
|  |      |          |                                  |      |        | Miniature Alligator Clip with Boot   | Miniature Alligator Clip with Boot  |
| 671  | 20   | Rubber   | 48                               | Pair | A      |  |  |
|  |      |          |                                  |      |        | Crocodile Clip with Boot   | Spade Lug   |
| 675  | 20   | Rubber   | 48                               | Pair | A      |  |  |
|  |      |          |                                  |      |        | Crocodile Clip with Boot   | Right Angle Phone Tip   |
| 648  | 20   | Rubber   | 48                               | Pair | A      |  |  |
|  |      |          |                                  |      |        | Crocodile Clip with Boot   | Right Angle Banana Plug   |
| 1334-8<br>1334-12<br>1334-24<br>1334-36                        | 18   | PVC      | 8<br>12<br>24<br>36              | One  | D      |  |  |
|  |      |          |                                  |      |        | Standard Angled Banana Plug  | Standard Angled Banana Plug   |

### Color Code for Jumpers

(add color number as suffix to part number)

A - Pair, one Red lead, one Black lead

C - Available in 10 colors:

-101 White -103 Black -105 Blue -107 Yellow -112 Violet  
-102 Red -104 Green -106 Orange -108 Brown -113 Gray









B - Available in 6 colors:

-101 White -103 Black -105 Blue  
-102 Red -104 Green -107 Yellow

D - Available In Red (-102) and Black (-103) ONLY



# JUMPERS

| PART #                                   | WIRE |          | LENGTH | UNIT | COLORS | TEST END   | METER END   |
|--|------|----------|--------|------|--------|--|---|
|  | AWG  | MATERIAL | INCHES |      |        |  |   |
| 1349-8<br>1349-12<br>1349-24<br>1349--36 | 24   | PVC      | 8      | One  | C      |  |  |
| 12                                       |      |          |        |      |        |  |   |
| 24                                       |      |          |        |      |        |  |   |
| 36                                       |      |          |        |      |        |  |   |
| 1336-8<br>1336-12<br>1336-24<br>1336-36  | 18   | PVC      | 8      | One  | C      |  |  |
| 12                                       |      |          |        |      |        |  |   |
| 24                                       |      |          |        |      |        |  |   |
| 36                                       |      |          |        |      |        |  |   |
| 1335-8<br>1335-12<br>1335-24<br>1335-36  | 18   | PVC      | 8      | One  | C      |  |  |
| 12                                       |      |          |        |      |        |  |   |
| 24                                       |      |          |        |      |        |  |   |
| 36                                       |      |          |        |      |        |  |   |
| 1344-8<br>1344-12<br>1344-24<br>1344-36  | 24   | PVC      | 8      | One  | C      |  |  |
| 12                                       |      |          |        |      |        |  |   |
| 24                                       |      |          |        |      |        |  |   |
| 36                                       |      |          |        |      |        |  |   |

### Color Code for Jumpers

(add color number as suffix to part number)

A - Pair, one Red lead, one Black lead

C - Available in 10 colors:

-101 White -103 Black -105 Blue -107 Yellow -112 Violet  
-102 Red -104 Green -106 Orange -108 Brown -113 Gray

B - Available in 6 colors:

-101 White -103 Black -105 Blue  
-102 Red -104 Green -107 Yellow

D - Available In Red (-102) and Black (-103) ONLY

## TABLE A

TEST LEADS are always provided in standard 4-foot lengths and in Red and Black pairs.

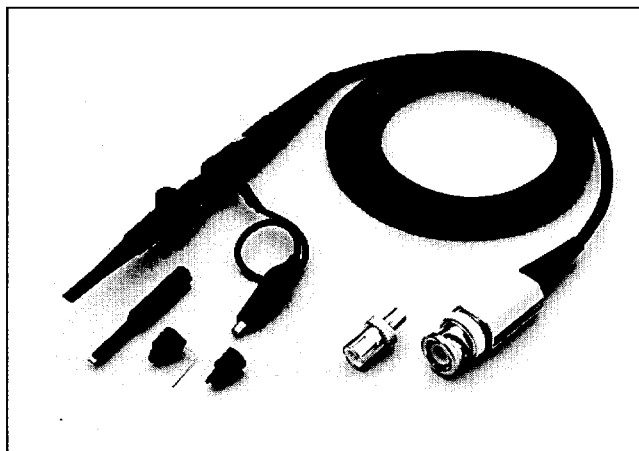
PATCH CORDS are offered in standard lengths and in colors to match cable jacket. Other lengths and end-configurations are available on special order.

JUMPERS are offered in pairs of Red and Black and in other colors separately in many cases. The lengths cataloged are the most popular for usual applications but can be provided in any length on special order.

### TEST LEAD WIRE SPECIFICATIONS

| AWG<br>SIZE | MATERIAL        | O.D.   | STRANDING | RATINGS |         |
|-------------|-----------------|--------|-----------|---------|---------|
|             |                 |        |           | VOLTAGE | CURRENT |
| #18         | PVC             | 0.140" | 65/36     | 10KV    | 10 AMP  |
| #18         | Rubber (Buna N) | 0.140" | 65/36     | 10KV    | 10 AMP  |
| #20         | Rubber          | 0.120" | 26/34     | 5KV     | 8 AMP   |
| #24         | PVC             | 0.090" | 19/36     | 5KV     | 5 AMP   |

# OSCILLOSCOPE PROBE KITS



## Features

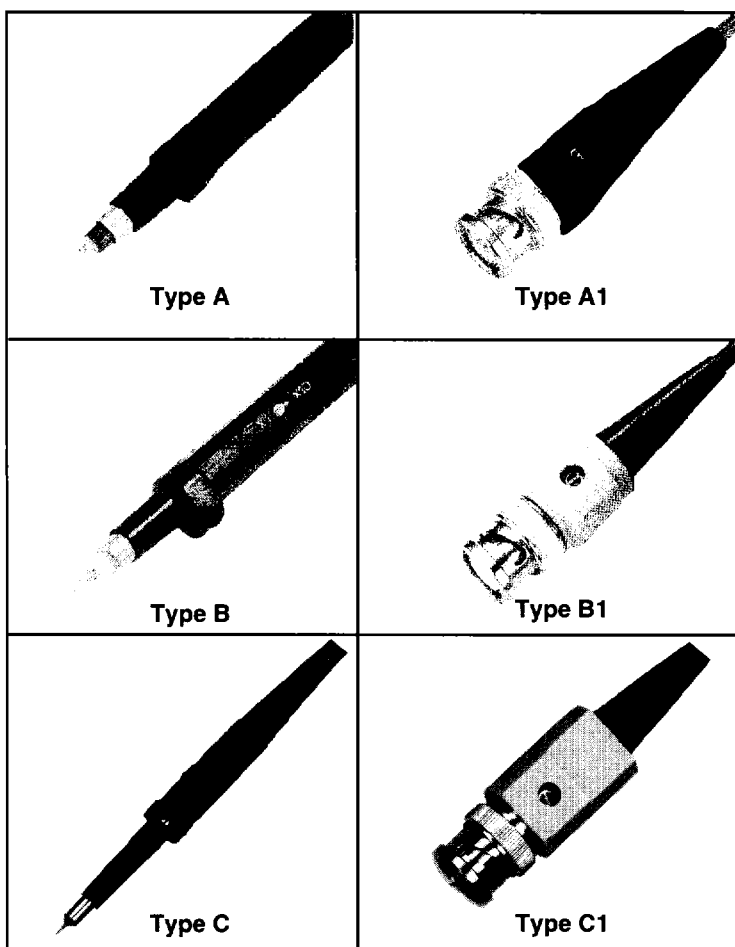
- Stable response throughout bandwidth for accurate measurements.
- Protective shielding eliminates distortion from body induction.
- Low noise cable for signal clarity.
- Glass filled retractable pincher tip for increased heat resistance.
- Detachable/replaceable ground leads with rotating collar for easy handling.
- Rugged, durable construction that withstands tension.
- Light weight and compact design for easy access to high density circuitry.
- Length: 1.5 M

| Part Number | Bandwidth        | Attenuation | Input       |                        | Compensation Range | Max Input Voltage | Probe Configuration | Compensation Configuration |
|-------------|------------------|-------------|-------------|------------------------|--------------------|-------------------|---------------------|----------------------------|
|             |                  |             | Resistance  | Capacitance            |                    |                   |                     |                            |
| OP1010      | 100 MHZ          | 10X         | 10MΩ        | 12.5 PF                | 20-35 PF           | 600 V DC          | A                   | A1                         |
| OP1110      | 100 MHZ<br>6 MHZ | 10X<br>1X   | 10MΩ<br>1MΩ | 14 PF<br>150 PF (Max.) | 20-35 PF<br>N/A    | 600 V DC          | B                   | B1                         |
| OP1112      | 60 MHZ<br>6 MHZ  | 10X<br>1X   | 10MΩ<br>1MΩ | 22 PF<br>200 PF (Max.) | 20-45 PF<br>N/A    | 600 V DC          | B                   | B1                         |
| OP2010      | 300 MHZ          | 10X         | 10MΩ        | 14 PF                  | 15-35 PF           | 600 V DC          | C                   | C1                         |

All Scope Probe Kits are supplied in a handy folding vinyl pouch.

Standard Accessories (Supplied in Each Kit)

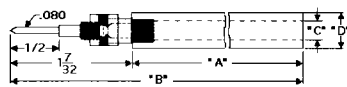
- Retractable Pincher Tip
  - Ground Lead
  - Ground Bayonet
  - IC Tip
  - BNC Adapter
  - Screwdriver
- } Except OP1112



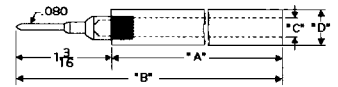
# TEST PRODS



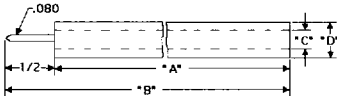
**A**



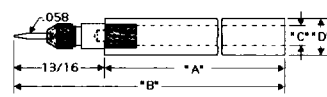
**B**



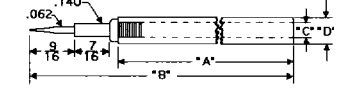
**C**



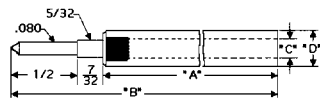
**D**



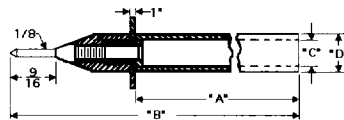
**E**



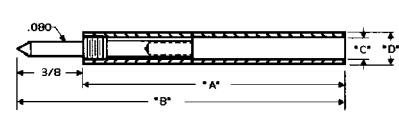
**F**



**G**



**H**



**J**

Colors: Add color number as suffix to part number.  
 -102 Red      -103 Black

| PART # | ILLUS. | MATERIAL | TIP         | WIRE CONNECTION | A HANDLE LENGTH | B OVERALL LENGTH     | C I.D. | D O.D. |         |      |     |
|--------|--------|----------|-------------|-----------------|-----------------|----------------------|--------|--------|---------|------|-----|
| 302    | A      | ABS      | Threaded    | Solderless      | 4               | 5-1/4                | 3/16   | 3/8    |         |      |     |
| 303    |        |          | Replaceable |                 | 5-1/2           | 6-3/4                |        |        |         |      |     |
| 323    | B      | Fiber    | Force fit   | Solderless      | 4               | 5-7/32               | 1/4    | 3/8    |         |      |     |
| 382    |        |          |             |                 |                 | 5-1/4                | 3/16   |        |         |      |     |
| 352    |        |          |             |                 |                 | 1/4                  |        |        |         |      |     |
| 383    |        |          |             |                 |                 | 3/16                 |        |        |         |      |     |
| 353    |        | 1/4      |             |                 |                 |                      |        |        |         |      |     |
| 384    |        | 5        |             |                 | 6-1/4           | 7/32                 | 5/16   |        |         |      |     |
| 319    |        | C        |             |                 | ABS             | Threaded Replaceable | Solder | 4      | 5-3/16  | 3/16 | 3/8 |
| 329    |        |          |             |                 |                 |                      |        | 5-1/2  | 6-11/16 |      |     |
| 363    | D      | Phenolic | 4           | 4-1/2           | 7/32            |                      |        | 5/16   |         |      |     |
| 364    |        |          | 5-1/2       | 6               |                 |                      |        |        |         |      |     |
| 317    | E      | Phenolic | 4           | 4-13/16         | 7/32            |                      |        | 5/16   |         |      |     |
| 318    |        |          | 5-1/2       | 6-5/16          |                 |                      |        |        |         |      |     |
| 314    | F      | Phenolic | 4           | 5-3/32          | 7/32            |                      |        | 5/16   |         |      |     |
| 313    |        |          | 6           | 7-3/32          |                 |                      |        |        |         |      |     |
| 322    | G      | Phenolic | 4           | 4-23/32         | 3/16            | 1/4                  |        |        |         |      |     |
| 630    | H      | Fiber    | 4-1/8       | 5-3/4           | 1/2             | 1                    |        |        |         |      |     |
| 666    | J      | Butyrate | 3           | 3-3/8           | 1/8             | 3/16                 |        |        |         |      |     |