

# HH Smith



## C A T A L O G I 0 0




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<ul style="list-style-type: none"> <li>◆ Custom Cable Assemblies 2</li> <li>◆ Custom Test Accessories 3</li> <li>◆ Custom Connectors 4</li> <li>◆ Sockets and Assemblies 5</li> </ul>	<ul style="list-style-type: none"> <li>◆ Production Capabilities 6</li> </ul>		CAPABILITIES
<ul style="list-style-type: none"> <li>◆ Test Leads 8</li> <li>◆ Test Lead Kits 10</li> <li>◆ Oscilloscope Probes 11</li> <li>◆ Jumpers 12</li> <li>◆ Patch Cords 14</li> </ul>	<ul style="list-style-type: none"> <li>◆ Test Prods 17</li> <li>◆ Alligator Clips 18</li> <li>◆ Test Lead Attachments 19</li> <li>◆ Dual Instrument Test Adapters 20</li> </ul>		TEST LEADS PATCH CORDS
<ul style="list-style-type: none"> <li>◆ Insulated Binding Posts 25</li> <li>◆ Dual Binding Posts 28</li> <li>◆ Metal Binding Posts 29</li> <li>◆ Insulated Banana Plugs 32</li> <li>◆ Metal Banana Plugs 34</li> </ul>	<ul style="list-style-type: none"> <li>◆ Banana Jacks 36</li> <li>◆ Insulated Tip Plugs 38</li> <li>◆ Metal Tip Plugs 39</li> <li>◆ Test Jacks 40</li> <li>◆ Printed Circuit Test Jacks 41</li> </ul>		POSTS, PLUGS & JACKS
<ul style="list-style-type: none"> <li>◆ Decoupled Filter Connectors 43</li> <li>◆ BNC Receptacles 44</li> <li>◆ BNC Plugs &amp; Terminators 47</li> <li>◆ Standard Phono Plugs 48</li> <li>◆ PCB and Panel Mount Phono Jacks 49</li> </ul>	<ul style="list-style-type: none"> <li>◆ Chassis Mount Phono Jacks 50</li> <li>◆ R.F. Connectors 51</li> <li>◆ Coaxial Antenna Plugs 52</li> </ul>		CONNECTORS
<ul style="list-style-type: none"> <li>◆ Terminal Strip Boards 53</li> <li>◆ Solder Lugs and Terminals 54</li> <li>◆ Screws, Nuts and Washers 58</li> <li>◆ Grommets, Bumpers and Chassis Feet 62</li> <li>◆ Cable Clamps and Strain Reliefs 64</li> </ul>	<ul style="list-style-type: none"> <li>◆ Hole Plugs 66</li> <li>◆ Instrument Cases 66</li> <li>◆ Handles 67</li> <li>◆ Shaft Accessories 68</li> <li>◆ High Voltage Insulators 70</li> </ul>		HARDWARE
<ul style="list-style-type: none"> <li>◆ Brass Spacers &amp; Standoffs 73</li> <li>◆ Brass Swivel Standoffs 77</li> <li>◆ Brass Chassis Fasteners 77</li> <li>◆ Aluminum Spacers &amp; Standoffs 78</li> <li>◆ PC Board Supports 81</li> </ul>	<ul style="list-style-type: none"> <li>◆ Nylon Round Spacers &amp; Standoffs 82</li> <li>◆ Phenolic Spacers &amp; Standoffs 84</li> <li>◆ Ceramic Standoffs 85</li> </ul>		SPACERS/ STANDOFFS
	<p>INDEX 86</p>		



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# Custom CAPABILITIES

offer endless

# POSSIBILITIES

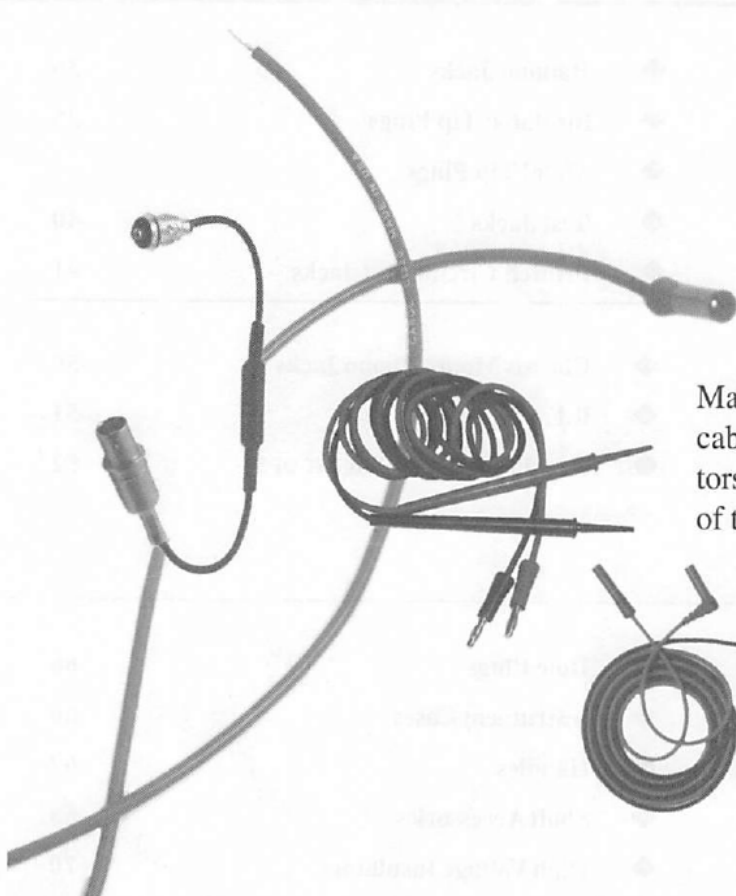


You already know HH Smith stands for **QUALITY**, but did you also know that it means **CUSTOM MANUFACTURING??**

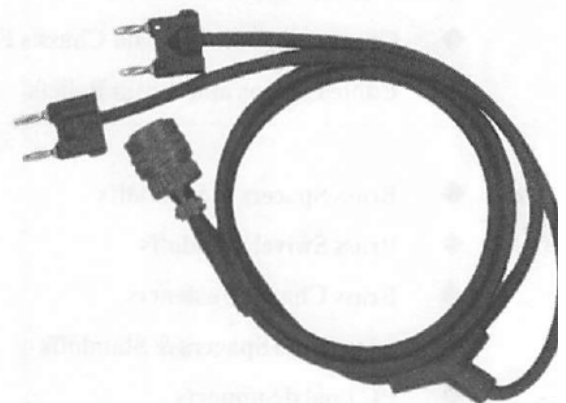
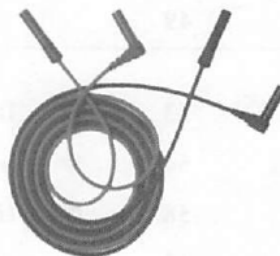
That's right, we're not just about hardware anymore.

So if you hear, *"This is perfect for our application, but..."* call HH Smith.

With over forty years of technical expertise in electrical cables, connectors, and components we excel in meeting your custom manufacturing needs.



Many of these are simply variations of our standard cables, or engineered using our standard connectors. Alternative wire, color or connection are some of the examples shown here.



### Custom Cables:

HH Smith has designed custom cables for many industries, and applications including Test & Measurement replacement and supplement leads, Computer cables and connections, Medical instrumentation accessories, Telecommunication adapters, and Military equipment connections.

2

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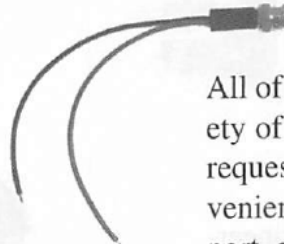
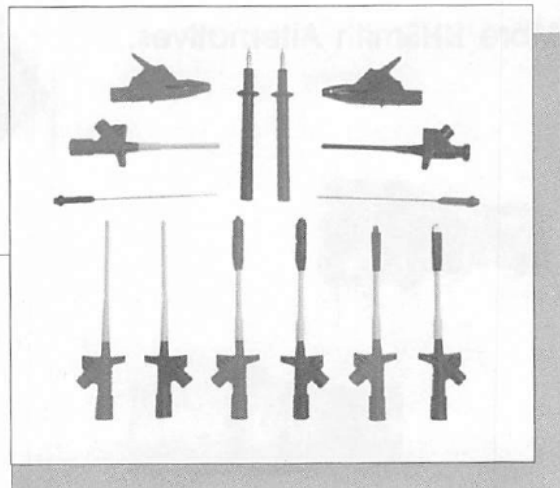
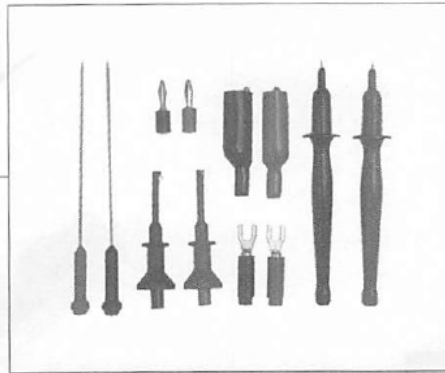
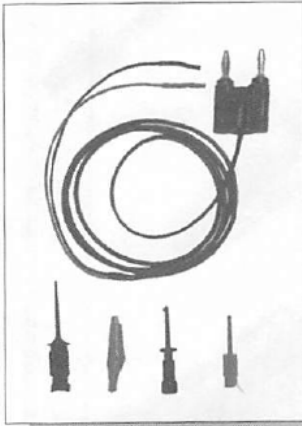
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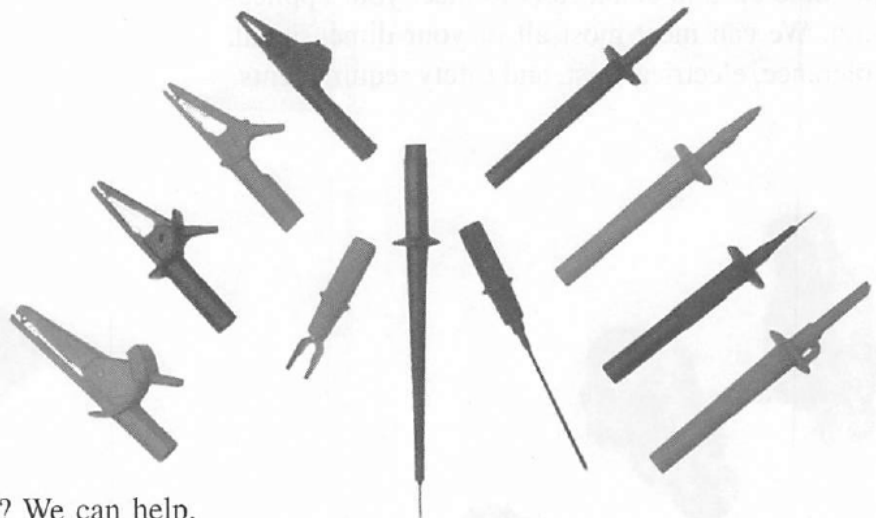
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**Molding:**

Our molding capability allows us to customize most any of our products to fit our customers special needs. HH Smith is able to design custom jumpers, BNCs, coaxial cables, test leads, dual adapters, specialty cables, plugs or jacks for most any application.



All of our products can be designed to meet a variety of plating, color, and even packaging needs as requested. Other internal capabilities for your convenience include EDI, Technical and design Support, online inventory and more.



Need a special application test kit? We can help. For small or large runs, call your nearest HH Smith dealer for assistance.

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3



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More HHSmith Alternatives...



Custom Connectors:

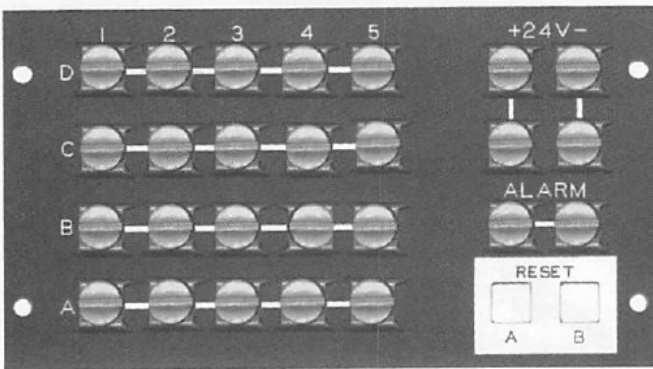
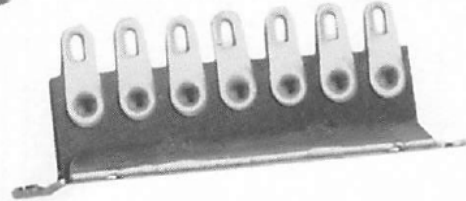
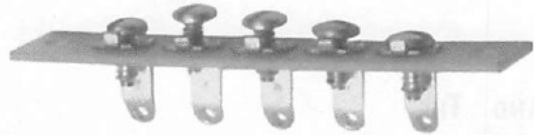
With the combination of our experienced engineering, machining, and molding capabilities, we pride ourselves in being able to provide an endless list of possible custom connectors to meet your application. We can meet most all of your dimensional, tolerance, electrical, test, and safety requirements.



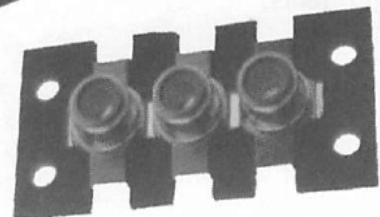
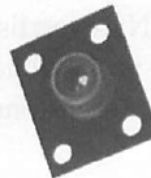
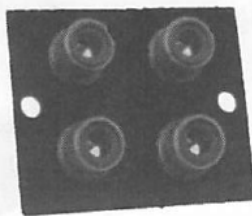
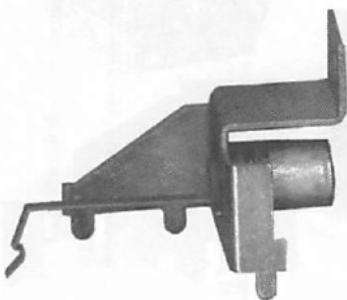
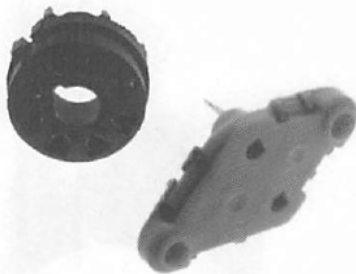
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HH Smith's 40,000 square foot facility houses the equipment and expertise for custom strip assemblies. Over fifty years of machining and assembly makes HH Smith *Still the Right Choice*.



A wide variety of ground straps can be designed with mounting clips for printed circuit board, panel, screw, or rivet connections. Telephone or general purpose style relay sockets are molded and assembled using our own close tolerance brass or phosphur bronze contacts. Terminal strip boards can be made to specified lengths and terminal quantities, or choose specialized lugs for particular applications. Power transistor sockets can be ordered with hole variations in all sizes.



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5

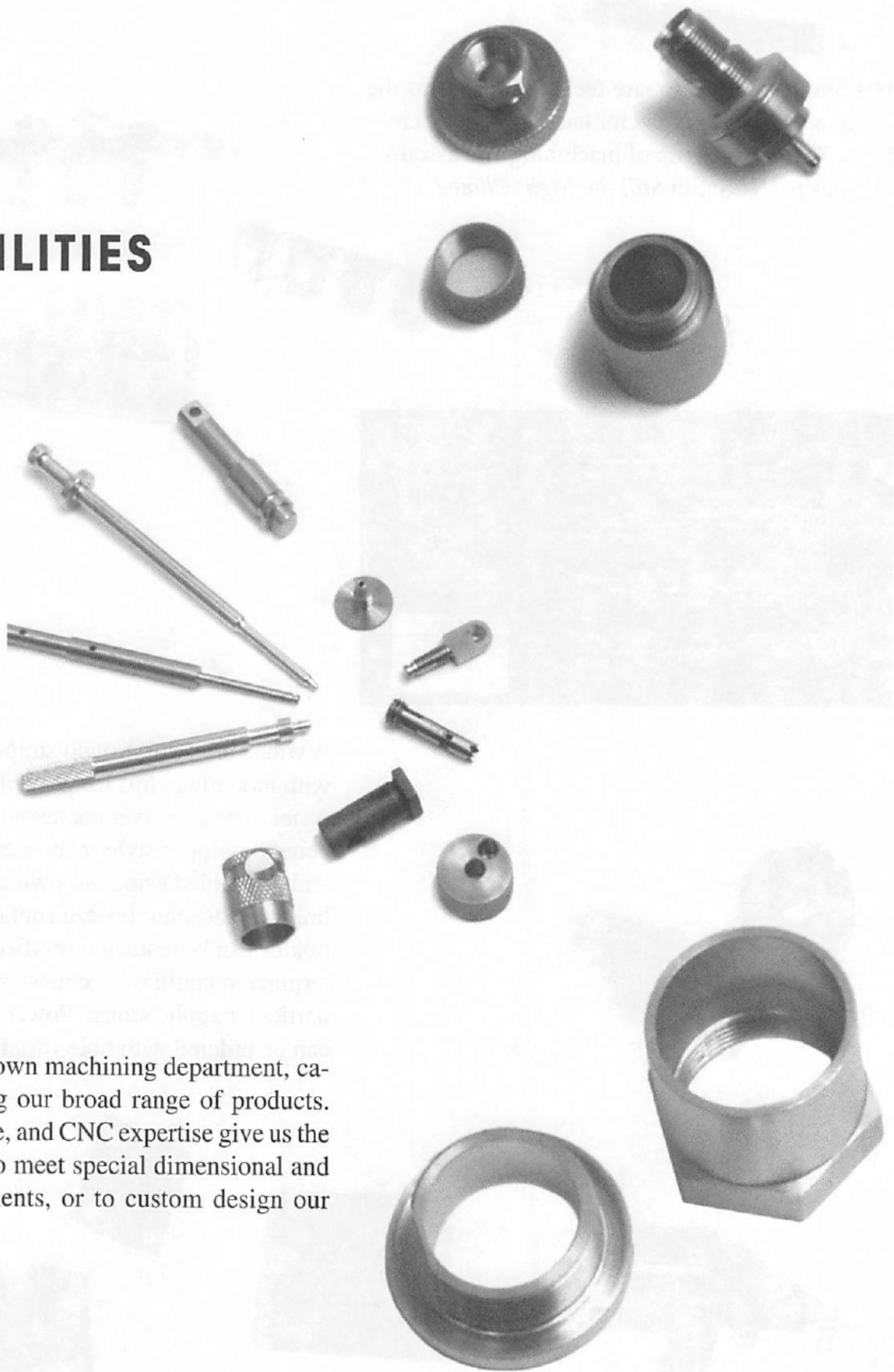
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AND THE  
**POSSIBILITIES**



Machining:

HH Smith has it's own machining department, capable of supporting our broad range of products. Our Screw Machine, and CNC expertise give us the competitive edge to meet special dimensional and tolerance requirements, or to custom design our products.





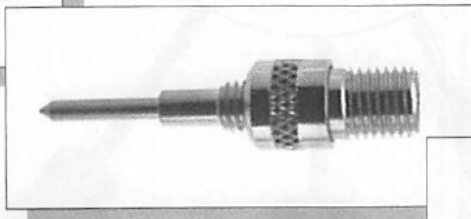
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# ENDLESS



So call your nearest HH Smith stocking distributor to make sure that you have

**THE PART THAT FITS...**



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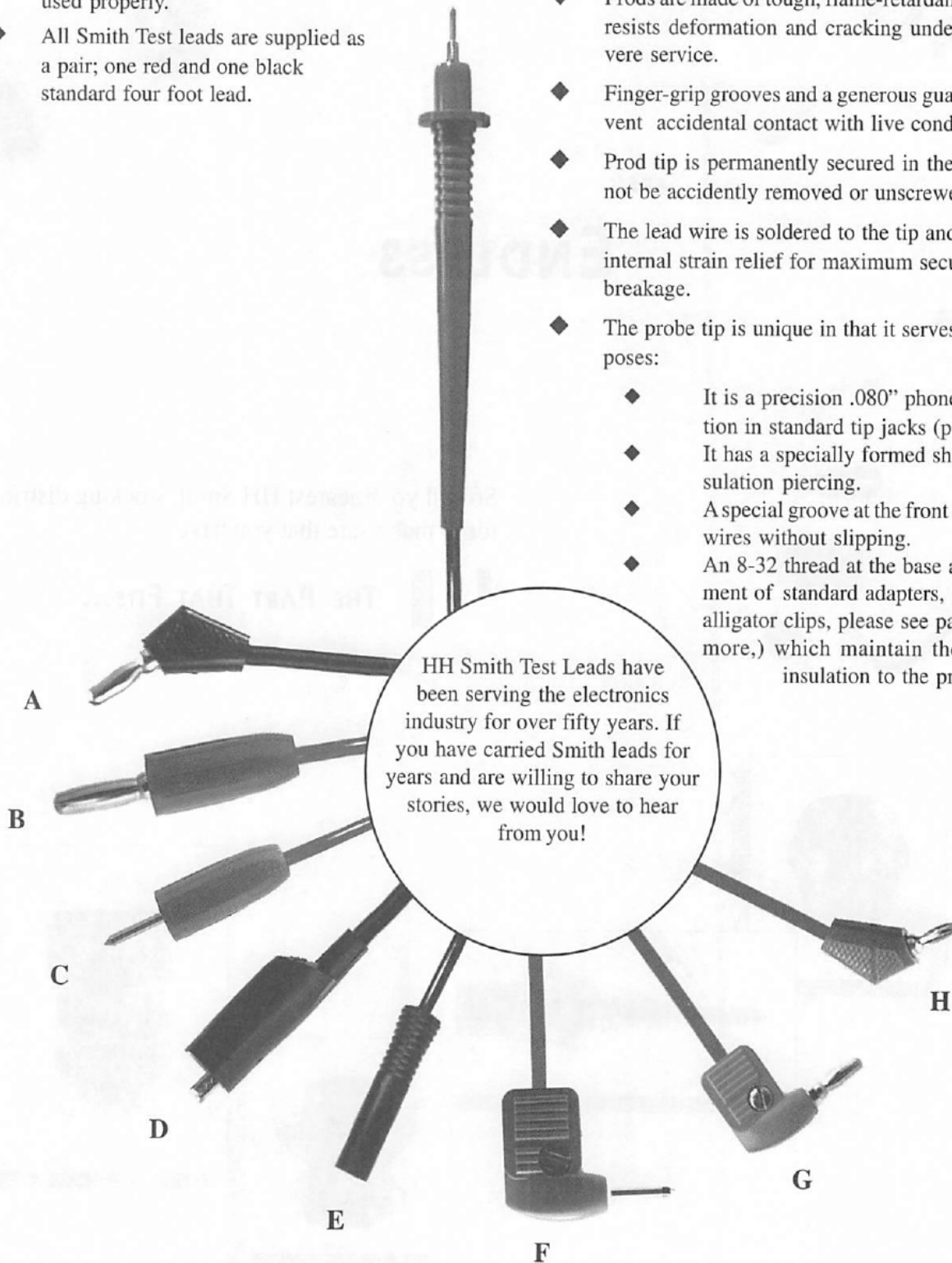
## TEST LEADS

TEST LEADS

- ◆ Smith Test Leads 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.
- ◆ All Smith Test leads are supplied as a pair; one red and one black standard four foot lead.

All of the safety designed plugs have fully shrouded insulation covering metal parts and are made to fit all popular safety input schemes. At the probe end, all Smith Test Leads feature a safety prod, which combines many safety features in an original Smith design:

- ◆ Prods are made of tough, flame-retardant plastic which resists deformation and cracking under the most severe service.
- ◆ Finger-grip grooves and a generous guard washer prevent accidental contact with live conductors.
- ◆ Prod tip is permanently secured in the prod and can not 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 several purposes:
  - ◆ It is a precision .080" phone tip for insertion in standard tip jacks (page 36.)
  - ◆ 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 base allows attachment of standard adapters, (such as alligator clips, please see page 18 for more,) which maintain the integrity of insulation to the prod.



8

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**SMITH TEST LEAD DESCRIPTIONS**

**9327P**

A Meter End: Standard Angled Banana Plug

**623P**

B Meter End: Standard Banana Plug

**622P**

B Meter End: Standard Banana Plug with Rubber Insulated Coil Cord

**603P**

C Meter End: Standard Phone Tip Plug

**615P**

D Meter End: Standard Alligator Clip with Boot

**9325P**

E Meter End: Shrouded Safety Banana Plug - Safety designed to fit most digital volt meters that have safety jack input.

**9321P**

E Meter End: Shrouded Safety Banana Jack - Safety designed to fit most digital volt meters that have shrouded safety plug input.

**9829P**

E Meter End: Shrouded Safety Jack for Simpson Model 260 Series 7

**625P**

F Meter End: Right-Angle Phone Tip

**685P**

G Meter End: Right-Angle Standard Banana Plug

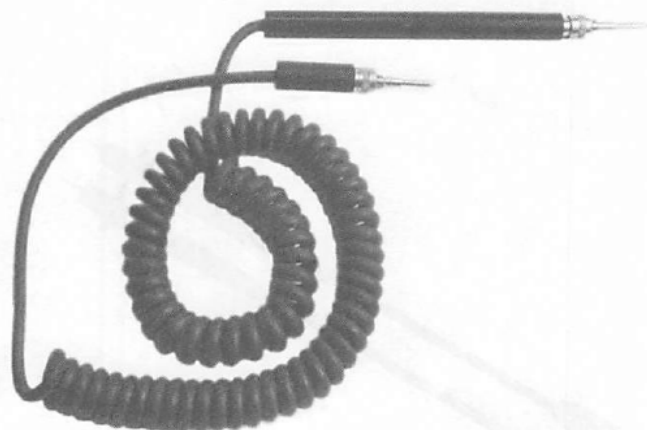
**9323P**

H Meter End: Miniature Angled Banana Plug

**TEST LEAD WIRE SPECIFICATIONS**

AWG WIRE	INSULATION	O.D.	STRAND	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

- ◆ Need something a little different? HH Smith can manufacture custom test leads designed to your specifications. Call your nearest HH Smith distributor or representative for details



**618**

**Coil-Cord Phone Tip Test Leads**

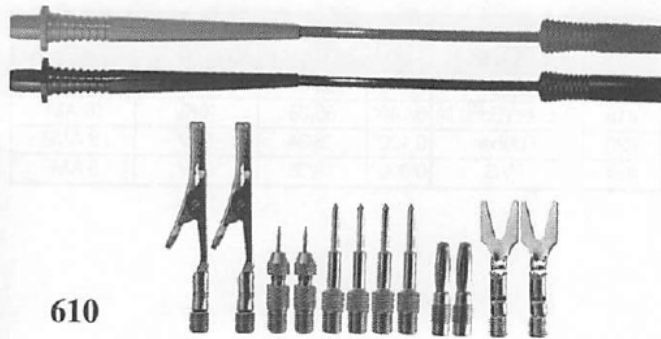
- ◆ Molded ABS handle.
- ◆ Brass, nickel plated phone tips are insulated with molded nylon.
- ◆ Coil-cord wire is 41/36 stranded #20 AWG, rubber insulated. Nominal O.D. is .165". Retractable length of cord is 12". Extended length is 6'.

TEST LEADS



## TEST LEAD KITS

TEST LEAD KITS

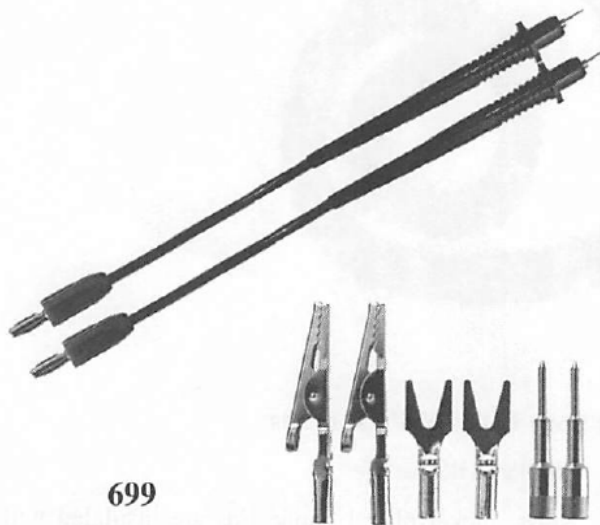


610

### UNIVERSAL TEST LEAD KIT

- ◆ An indispensable kit for every technician, laboratory, production control station and repair/service facility. A pair of ribbed safety-grip test prods are 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 (one red and one black,) and accessories are supplied in a handy folding vinyl pouch.
- ◆ Lead wire is #18 PVC insulated. It is extra-flexible and kink resistant. Please refer to page 9 for ratings. Nominal length is 48".

PART NO.	DESC.	QTY.	ACCESSORIES
610P	Complete Kit	2	Alligator Clips
		2	Spade Lugs
		2	Phone Tips
610-25	Repl. Accessory Kit	2	Alligator Clips
		2	Spade Lugs
		2	Phone Tips
623P	Repl. Leads	2	One red, one black



699

### INTERCHANGEABLE TIP TEST LEAD KIT

- ◆ Banana plug test lead kit, with additional parts for universal attachment to various instrument input connectors. Adapters plug onto banana plug end. Alligator clip no. 720 (page 18,) threads onto prod handle (not supplied).
- ◆ One pair of leads (one red and one black,) and accessories are supplied in a handy folding vinyl pouch.
- ◆ Lead wire is #18 PVC insulated. Please refer to page 9 for ratings. Nominal length is 48".

PART NO.	DESC.	QTY.	ACCESSORIES
699	Complete Kit	2	Banana Plugs
		2	Alligator Clips
		2	Spade Lugs
		4	Phone Tips
699-20	Repl. Accessory Kit	2	Banana Plugs
		2	Alligator Clips
		2	Spade Lugs
		4	Phone Tips
699-25	Repl. Leads	2	One red, one black

10

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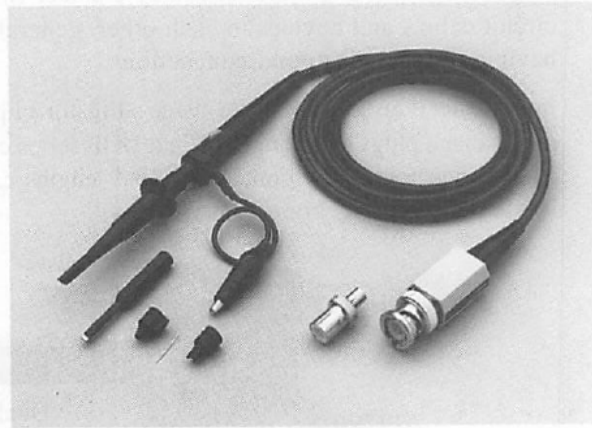
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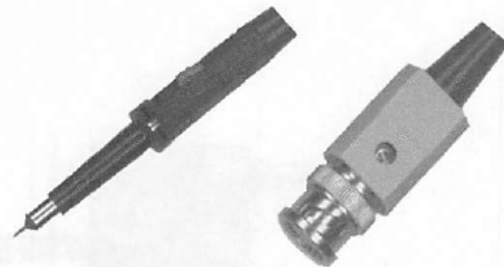
**Features**

- ◆ Stable response throughout bandwidth for accurate measurements.
- ◆ Protective shielding eliminates distortion for 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.
- ◆ Lightweight and compact design for easy access to high density circuitry.
- ◆ Length: 1.5 M



**Standard Accessories:**

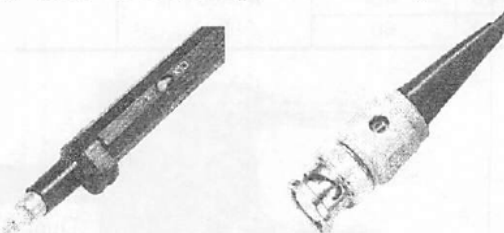
- ◆ Retractable pincher tip
- ◆ Ground Lead
- ◆ Ground Bayonet
- ◆ IC Tip
- ◆ BNC Adapter
- ◆ Screwdriver



OP 2010 - Probe/Compensation Configuration



OP 1110 - Probe/Compensation Configuration



OP 1010 - Probe/Compensation Configuration

PART NUMBER	BANDWIDTH	ATTENUATION	INPUT		COMPENSATION RANGE	MAX INPUT VOLTAGE
			RESISTANCE	CAPACITANCE		
OP1010	100 MHZ	10X	10 MΩ	12.5 PF	20-35 PF	600 V DC
OP1110	100 MHZ	10X	10 MΩ	14 PF	20-32 PF	600 V DC
	6 MHZ	1X	1 MΩ	150 PF (Max.)	N/A	
OP2010	300 MHZ	10X	10 MΩ	14 PF	15-35 PF	600 V DC

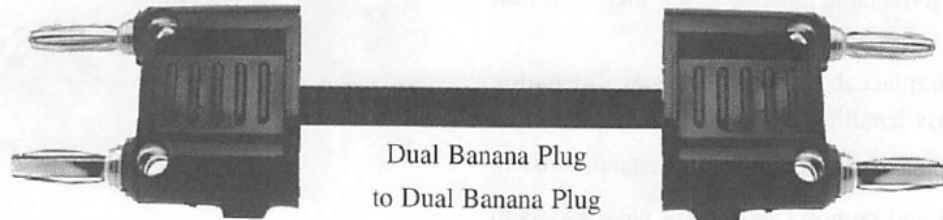


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## LOW FREQUENCY & RF PATCH CORDS

LOW, RF FREQUENCY  
PATCH CORDS

- ◆ Patch cords serve to simultaneously connect two-circuit cables and devices to each other, generally having signal and ground connections.
- ◆ 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 factory.
- ◆ Low-frequency, low-impedance patch cords have twisted pair cable, while high-frequency 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.



Dual Banana Plug  
to Dual Banana Plug

PART NO.	LENGTH INCHES	WIRE	INSULATION
1532-12	12	#18 AWG 2 Conductor Twisted Pair	PVC
1532-24	24		
1532-36	36		
1532-48	48		
1532-60	60		



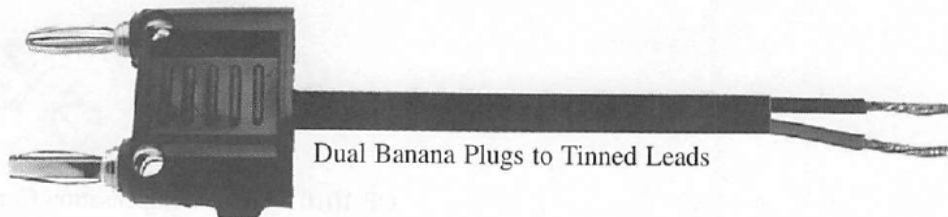
Dual Banana Plug to Standard  
Alligator Clips with Boots

LOW FREQUENCY

RF FREQUENCY

PART NO.	LENGTH INCHES	WIRE	INSULATION
1530-12	12	#18 AWG 2 Conductor Twisted Pair	PVC
1530-24	24		
1530-36	36		
1530-48	48		
1530-60	60		

PART NO.	LENGTH INCHES	WIRE	INSULATION
1580-12	12	RG 58/U Coaxial Cable 50 Ohms Impedance	Polyethylene Black PVC Jacket
1580-24	24		
1580-36	36		
1580-48	48		
1580-60	60		



Dual Banana Plugs to Tinned Leads

LOW FREQUENCY

RF FREQUENCY

PART NO.	LENGTH INCHES	WIRE	INSULATION
1531-12	12	#18 AWG 2 Conductor Twisted Pair	PVC
1231-24	24		
1531-36	36		
1531-48	48		
1531-60	60		

PART NO.	LENGTH INCHES	WIRE	INSULATION
1581-12	12	RG 58/U Coaxial Cable 50 Ohms Impedance	Polyethylene Black PVC Jacket
1581-24	24		
1581-36	36		
1581-48	48		
1581-60	60		

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BNC Male to Standard Alligator Clips with Boots

PART NO.	LENGTH INCHES	WIRE	INSULATION
1587-12	12	RG 58/U Coaxial Cable Impedance 50 Ohms CTR	Polyethylene Insulation Black PVC Jacket
1587-24	24		
1587-36	36		
1587-48	48		
1587-60	60		



BNC Male to Miniature Alligator Clips with Boots

PART NO.	LENGTH INCHES	WIRE	INSULATION
1791-12	12	RG 58/U Coaxial Cable Impedance 50 Ohms CTR	Polyethylene Insulation Black PVC Jacket
1791-24	24		
1791-36	36		
1791-48	48		
1791-60	60		



BNC Male to BNC Male

PART NO.	LENGTH INCHES	WIRE	INSULATION
1589-12	12	RG 58/U Coaxial Cable Impedance 50 Ohms CTR	Polyethylene Insulation Black PVC Jacket
1589-24	24		
1589-36	36		
1589-48	48		
1589-60	60		



BNC Male to Dual Banana Plug

PART NO.	LENGTH INCHES	WIRE	INSULATION
1584-12	12	RG 58/U Coaxial Cable Impedance 50 Ohms CTR	Polyethylene Insulation Black PVC Jacket
1584-24	24		
1584-36	36		
1584-48	48		
1584-60	60		

◆ Please note that, except for types with coaxial connectors at both ends, impedance mismatches will exist when using these cables for temporary connections.

◆ Please refer to the Test Lead Specifications table on page 9 for rating information.



**New!!**

- ◆ New to the Smith selection is this retractable shrouded banana plug. It is offered as a 36" lead with a stripped end ready for your application.



289-36

- ◆ A standard gold plated banana plug is housed in a spring loaded Nylon 6/6 housing. This plug, developed for maximum safety, is available in red (-102) or black (-103.) Please add color as suffix to part number.

- ◆ All Jumpers shown here are supplied as either a pair, (one red, one black) or individually in red (-102) or black (-103). Add color as suffix to part number.



A  
Standard Booted Alligator Clip to Angled Banana Plug



B  
Standard Booted Alligator Clip at each end



C  
Standard Booted Alligator Clip to Stacking Banana Plug



D  
Standard Booted Alligator Clip to Spade Lug



E  
Standard Alligator Clip to Spade Lug



F  
Standard Booted Alligator Clip to Stacking Phone Tip



G  
Standard Stacking Banana Plug at each end

PART NO.	FIG.	LENGTH INCHES	WIRE	INSULATION	UNIT
1332	A	48	#18 AWG	PVC	Pair
1596-12-	B	12	#18 AWG	PVC	One
1596-24-	B	24	#18 AWG	PVC	One
1596-36-	B	36	#18 AWG	PVC	One
1596-48-	B	48	#18 AWG	PVC	One
1596-60-	B	60	#18 AWG	PVC	One
629	B	12	#20 AWG	Rubber	Pair
657	B	24	#20 AWG	Rubber	Pair
658	B	36	#20 AWG	Rubber	Pair
659	B	48	#20 AWG	Rubber	Pair
1866-12-	C	12	#18 AWG	PVC	One
1866-24-	C	24	#18 AWG	PVC	One
1866-36-	C	36	#18 AWG	PVC	One
1866-48-	C	48	#18 AWG	PVC	One
1866-60-	C	60	#18 AWG	PVC	One
1867-12-	D	12	#18 AWG	PVC	One
1867-24-	D	24	#18 AWG	PVC	One
1867-36-	D	36	#18 AWG	PVC	One
1867-48-	D	48	#18 AWG	PVC	One
1867-60-	D	60	#18 AWG	PVC	One
649	E	48	#20 AWG	Rubber	Pair
1865-12-	F	12	#18 AWG	PVC	One
1865-24-	F	24	#18 AWG	PVC	One
1865-36-	F	36	#18 AWG	PVC	One
1865-48-	F	48	#18 AWG	PVC	One
1865-60-	F	60	#18 AWG	PVC	One
1510-8-	G	8	#18 AWG	PVC	One
1510-12-	G	12	#18 AWG	PVC	One
1510-24-	G	24	#18 AWG	PVC	One
1510-36-	G	36	#18 AWG	PVC	One

PATCH CORD RATINGS

AWG WIRE	INSULATION	O.D.	STRAND	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

◆ Jumpers are common universal connection devices for measurement or testing. These connectors will offer solid, semi-permanent connections between instruments with a maximum of safety and reliability. They are however, 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.

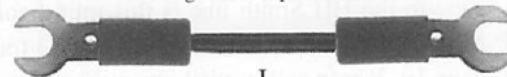
◆ \*Please note that figures K, L, M and N are offered with an insulated handle, (not shown.)

◆ Please add color as suffix to part number.

PART NO.	FIG.	LENGTH INCHES	WIRE	INSULATION	UNIT
1595-8-	H	8	#18 AWG	PVC	One
1595-12-	H	12	#18 AWG	PVC	One
1595-24-	H	24	#18 AWG	PVC	One
1595-36-	H	36	#18 AWG	PVC	One
1864-12-	J	12	#18 AWG	PVC	One
1864-24-	J	24	#18 AWG	PVC	One
1864-36-	J	36	#18 AWG	PVC	One
1864-48-	J	48	#18 AWG	PVC	One
1864-60-	J	60	#18 AWG	PVC	One
627	K	48	#20 AWG	Rubber	Pair
628	L	48	#20 AWG	Rubber	Pair
647	M	48	#20 AWG	Rubber	Pair
604	N	12	#20 AWG	Rubber	Pair
605	N	24	#20 AWG	Rubber	Pair
606	N	36	#20 AWG	Rubber	Pair
607	N	48	#20 AWG	Rubber	Pair
671	O	48	#20 AWG	Rubber	Pair
675	P	48	#20 AWG	Rubber	Pair
648	Q	48	#20 AWG	Rubber	Pair
1334-8-	R	8	#18 AWG	PVC	One
1334-12-	R	12	#18 AWG	PVC	One
1334-24-	R	24	#18 AWG	PVC	One
1334-36-	R	36	#18 AWG	PVC	One
1336-8-	S	8	#18 AWG	PVC	One
1336-12-	S	12	#18 AWG	PVC	One
1336-24-	S	24	#18 AWG	PVC	One
1336-36-	S	36	#18 AWG	PVC	One
1335-8-	T	8	#18 AWG	PVC	One
1335-12-	T	12	#18 AWG	PVC	One
1335-24-	T	24	#18 AWG	PVC	One
1335-36-	T	36	#18 AWG	PVC	One



H  
Stacking Phone Tips at each end



J  
Spade Lug to Spade Lug



K  
Alligator Clip to Stacking Tip Plug



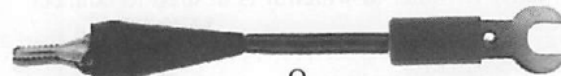
L  
Alligator Clip\* to Right Angle Tip Plug



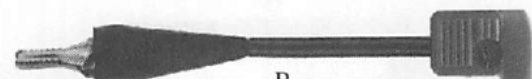
M  
Alligator Clip\* to Right Angle Banana Plug



N  
Alligator Clip\* to Alligator Clip\*



O  
Crocodile Clip with Boot to Spade Lug



P  
Crocodile Clip with Boot to Right Angle Phone Tip



Q  
Crocodile Clip with Boot to Right Angle Banana Plug



R  
Standard Angled Banana Plug at each end



S  
Standard Angled Banana Plug to Stacking Phone Tip



T  
Standard Angled Banana Plug to Standard Stacking Banana Plug

JUMPERS



**New!!**

- ◆ New to the HH Smith line is this mini-hook lead. More new Smith test accessories can be found on page 19. Please call or visit our website for more information and updates.

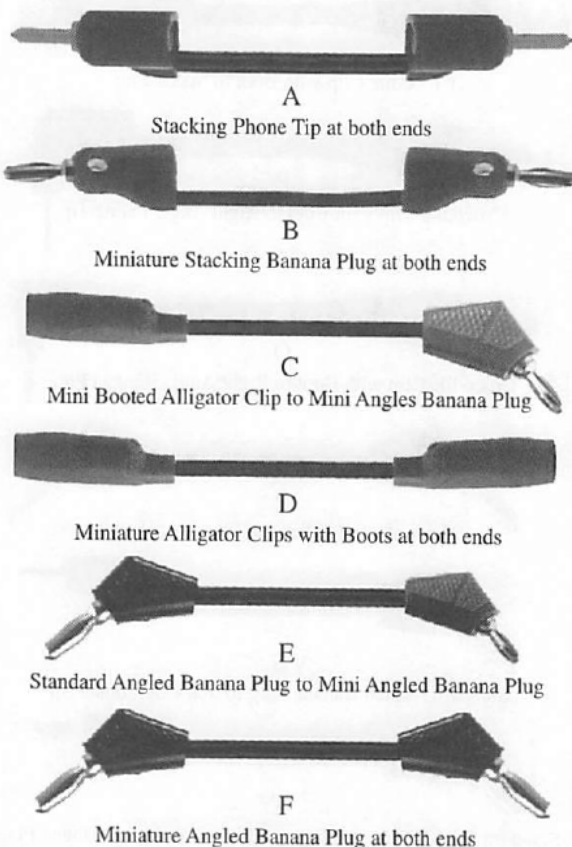


1868

**1868**

- ◆ This handy little lead allows connection just about everywhere. With a mini hook grabber at each end, this 24 gauge rubber insulated wire comes in one, two or three foot lengths.
- ◆ Available in red (-102) or black (-103) standard colors. Other colors may be obtained by special order.
- ◆ Please indicate length and color as suffix to the part number.

- ◆ Jumpers are common universal connection devices for measurement or testing. These connectors will offer solid, semi-permanent connections between instruments with a maximum of safety and reliability. They are however, 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.



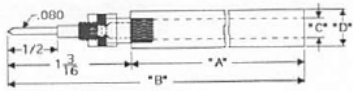
**Patch Cord Wire Ratings**

AWG WIRE	INSULATION	O.D.	STRAND	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

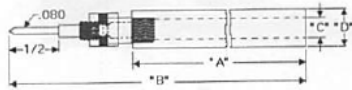
PART NO.	FIG.	LENGTH INCHES	WIRE	INSULATION	UNIT			
1590-6-	A	6	#24 AWG	PVC	One			
1590-12-		12						
1590-18-		18						
1590-24-		24						
1591-6-	B	6						
1591-12-		12						
1591-18-		18						
1591-24-	24							
1342	C	48						Pair
1597-12-	D	12				#20 AWG	Rubber	One
1597-18-		18						
1597-24-		24						
1597-36-		36						
1597-48-		48						
1597-60-		60						
716	D	12			Pair			
717		18						
718		24						
719		36						
1349-8-	E	8	#24 AWG	PVC	One			
1349-12-		12						
1349-24-		24						
1349-36-		36						
1344-8-	F	8						One
1344-12-		12						
1344-24-		24						
1344-36-		36						



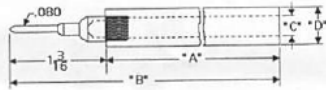
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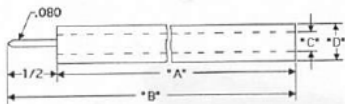
A



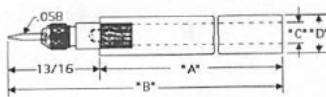
B



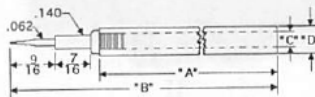
C



D



E



F

◆ Test prod handles are offered in red (-102) or black (-103.) Please add color as suffix to part number.

◆ A variety of tips and handle sizes are offered with the test prods shown here. Precision machined tips are nickel plated brass; handles are as indicated in table.

PART NO.	ILLUS.	MATERIAL	TIP	WIRE CONNECTION	HANDLE LENGTH	OVERALL LENGTH	I.D.	O.D.	
					A	B	C	D	
302	A	ABS	Threaded Replaceable	Solderless	4	5-1/4	3/16	3/8	
303					5-1/2	6-3/4			
382	B		Force Fit		Solderless	4	5-1/4		1/4
352						4	5-1/4		
383			Force Fit	Solderless	5-1/2	6-3/4	3/16		
353					5-1/4	6-1/2			
384	C		Threaded Replaceable	Solder	5	6-1/4	3/16	3/8	
319					4	5-3/16			
329	D		Threaded Replaceable	Solder	5-1/2	6-11/16	3/16	3/8	
363					4	4-1/2			
364	E	Threaded Replaceable	Solder	5-1/2	6	3/16	3/8		
317				4	4-13/16				
318	F	Phenolic	Threaded Replaceable	Solder	5-1/2	6-5/16	7/32	5/16	
314					4	5-3/32			
313					6	7-3/32			

# ALLIGATOR CLIPS

ALLIGATOR CLIPS



A



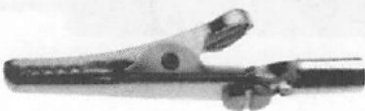
B



C



D



E



F



G



H

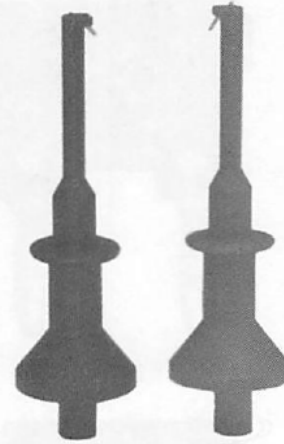
PART NO.	STYLE	FIG.	MATERIAL	PLATING	LENGTH	BARREL OD	CONNECTION
300	Standard	A	Steel	Bright Tin	2	3/16	
380			Copper	Clear Chromate			
301-102	Insulated - Red	B	Steel	Bright Tin	2-7/16	3/8	Solder or Banana Plug
301-103	Insulated - Black						
381-102	Insulated - Red						
381-103	Insulated - Black						
720	Threaded 8-32	C	Steel	Bright Tin	2	1/4	Threads onto Test Prod
310	Threaded 10-32						
347	Internal Tooth						
350	Standard	E	Steel	Bright Tin	2	3/16	Solder or Banana Plug
360							
351-102	Insulated - Red	D	Steel	Bright Tin	2-7/16	3/8	Solder or Banana Plug
351-103	Insulated - Black						
361-102	Insulated - Red						
361-103	Insulated - Black						
333	Standard	G	Steel	Bright Tin	2	3/16	Accepts .080" Phone Tip
338	Miniature	F	Copper	Clear Chromate	1-1/4	Forked End	Solder Connection
367							
331-102	Standard Boot	H	Rubber	Red	2	9/32	Covers Standard Clips
331-103				Black			
389-102	Miniature Boot			Red	1-3/8	7/32	Covers Miniature Clips
389-103				Black			



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### 3069 RB

- ◆ Threaded Hook Attachments
- ◆ 8-32 threaded attachment.
- ◆ Nylon housing offers full insulation for safety.
- ◆ Beryllium copper hooks are nickel plated.
- ◆ Overall length of 2.25"
- ◆ Supplied as set of one red and one black hook.



MINIATURE HOOK GRABBERS

TEST ATTACHMENTS

### 3068

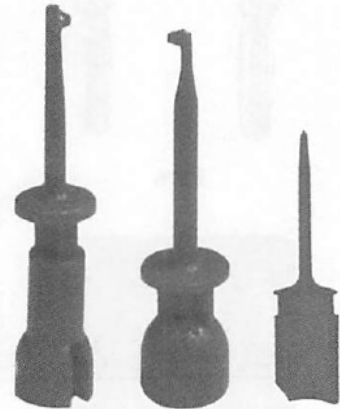
- ◆ Test Hook
- ◆ Gold plated beryllium copper hook, nylon housing.
- ◆ Grabber is ideal for hook-up over square pins.

### 1870

- ◆ Lightweight, designed specifically for difficult IC test connections. Will not damage sensitive components.
- ◆ Gold plated beryllium copper hook, nylon housing.

### 3080

- ◆ Two stainless steel blades enable difficult test connections
- ◆ Offered as set of two. Add color to part number as suffix: -102 Red, -103 Black. Other colors are also available upon request.



3068

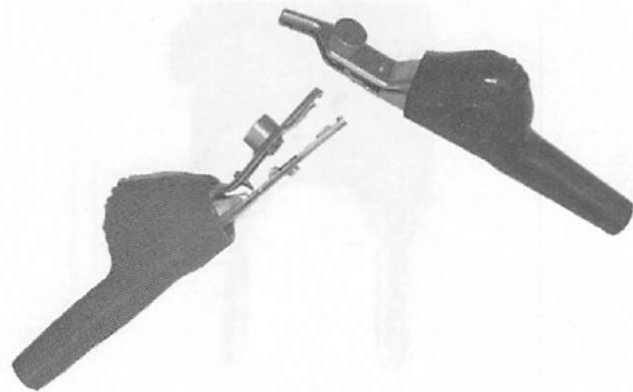
1870

3080

## HEAVY DUTY TEST CLIPS

### 728RB

- ◆ Heavy duty clips feature a single pin for piercing insulation, plus tiny needles for gripping.
- ◆ 8-32 Thread attachment fit most leads.\*\*\*
- ◆ Overall length is 2.59", 15/16" wide.
- ◆ Supplied as a set of two, including one red and one black boot.



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19



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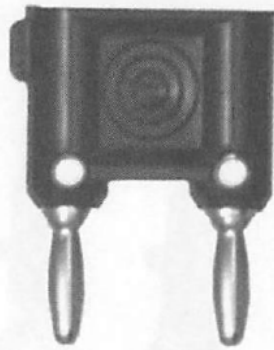
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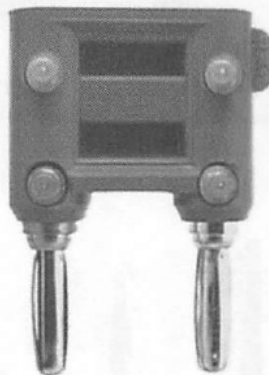
<https://www.AngicGlobal.com> [Sales@AngicGlobal.com](mailto:Sales@AngicGlobal.com)

## DUAL INSTRUMENT TEST ADAPTERS

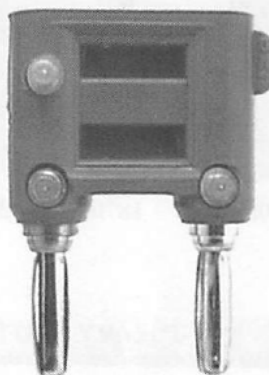
DUAL INSTRUMENT  
TEST ADAPTERS



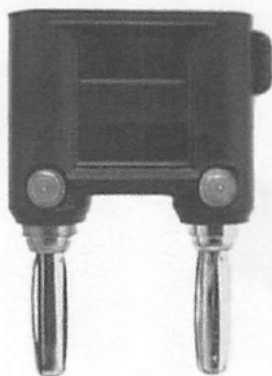
1516



1696



1770



1676

### 1516

- ◆ Shorting type adapter with dual banana jacks to dual banana plugs. Internal busbar shorted across line.
- ◆ ABS body contains banana jack holes for side stacking. Banana plug springs are Beryllium Copper. Standard 3/4" centers.

### 1696

- ◆ Dual banana plugs to dual banana jacks. Cable mount design.
- ◆ Turret terminal connections to isolated front and rear conductors in both ground and hot circuits allow insertion of matching pads or other 4-terminal networks in input circuit.
- ◆ ABS body; banana springs are beryllium copper. Dual plugs have 3/4" standard centers.

### 1770

- ◆ Dual banana plugs to dual banana jacks. Cable mount design.
- ◆ Turret terminal connections to isolated front and rear conductors in hot circuit and straight-through connection of ground circuit with terminal. Allows insertion of 'T' and 'Pi' networks..
- ◆ ABS body; banana springs are beryllium copper. 3/4" Standard centers.

### 1676

- ◆ Dual banana plugs to dual banana jacks. Cable mount design.
- ◆ Turret terminal connections for permanent solder or wires or components.
- ◆ ABS body; banana springs are beryllium copper. 3/4" Standard centers.
- ◆ All adapters shown are available in red (-102) or black (-103).

### Ratings

- ◆ Rated at 15 AMPS AC, for 10°C temperature rise, continuous duty, except where limited by coaxial connectors.
- ◆ 5KV, 60 cycle AC continuous working voltage except where limited by coaxial connectors.
- ◆ Capacitance: 1.0 pf between conductors
- ◆ Resistance: 1 Milliohm or less per conductor

### 210

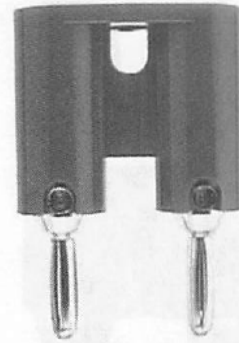
- ◆ Dual banana plugs to dual banana jack. Cable mounted design.
- ◆ ABS body features ground polarity indicator. Internal set screws hold wire secure. Available in red (-102), or black (-103).

### 1679

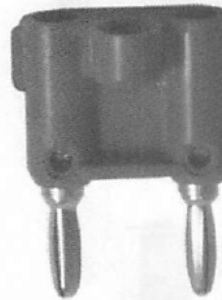
- ◆ Dual banana plug to dual .080" phone jacks.
- ◆ Banana jack holes for side stacking. Adapts phone tips, banana jacks or binding posts.
- ◆ Available in black only.

### 1675

- ◆ Dual banana plugs to dual banana jacks. 7/32" diameter cable mount design.
- ◆ Set screws secure leads to conductors.
- ◆ Standard 3/4" centers. ABS body, nickel plated beryllium copper springs. Available in red (-102) or black (-103).
- ◆ \* Please refer to ratings as illustrated following part number 1676 (page 20.)



210 & 1679



1675

DUAL INSTRUMENT  
TEST ADAPTERS

## MINIATURE TEST ADAPTERS

### 1749

- ◆ Dual banana plugs to dual banana jacks. Component mounting option with ABS body. Set-screws secure leads to conductors.

### 1750

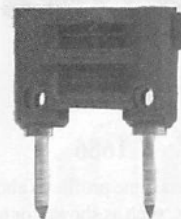
- ◆ Isolated dual banana plugs to dual banana jacks. Turret terminals for permanent solder connections of components to leads.

### 1753AA

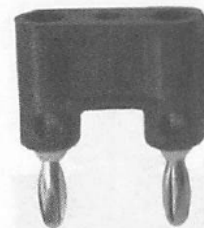
- ◆ Double pin tip plug with shorting bar to dual tip jack. ABS body is available in red only.

### Ratings:

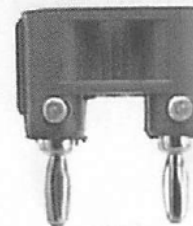
- ◆ Rated at 5 AMPS AC, for 10°C temperature rise, continuous duty, except where limited by coaxial connectors. 2KV, 60 cycle AC continuous working voltage except where limited by coaxial connectors.
- ◆ Capacitance: 3.0 pf between conductors.
- ◆ Resistance: 1 Milliohm or less per conductor.



1753AA



1749



1750

HH Smith



21

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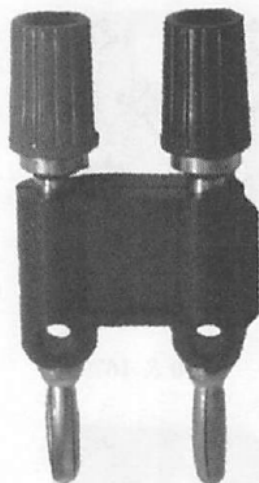
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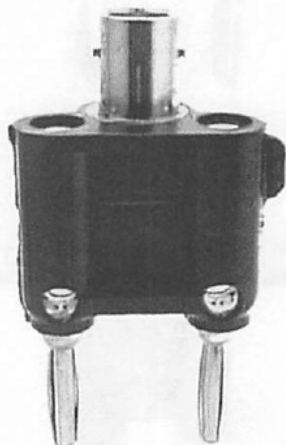
## DUAL INSTRUMENT TEST ADAPTERS



1682

### 1682

- ◆ Insulated dual binding posts to standard dual banana plugs.
- ◆ ABS body contains banana jack holes for side stacking. Banana plug springs are Beryllium Copper.
- ◆ Available in black body; one red, one black binding post head. 3/4" standard centers.



1686

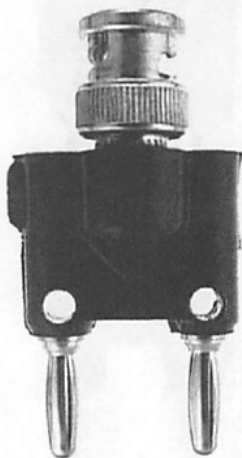
### 1697

- ◆ BNC female coaxial connector to isolated dual banana plugs.
- ◆ Turret terminal connections to isolated front and rear conductors in both ground and hot circuits allow insertion of matching pads or other 4-terminal networks in input circuit.
- ◆ Available in black ABS body, 3/4" standard centers.

### 1686

- ◆ BNC coaxial jack to dual banana plugs.
- ◆ ABS body contains banana jack holes for side stacking. Banana plug springs are Beryllium Copper.
- ◆ Available in black body; one red, one black binding post head. 3/4" standard centers.

\*1697 Adapter has same profile as above, except has four turret terminals, such as shown for part number 1698.



1687

### 1687

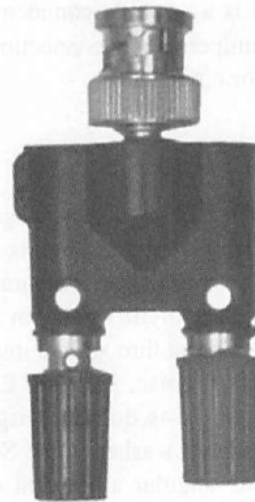
- ◆ BNC coaxial plug to standard dual banana plugs.
- ◆ ABS body contains banana jack holes for side stacking. Available in black body; one red, one black binding post head. 3/4" standard centers.

### Ratings:

- ◆ Rated at 15 AMPS AC, for 10°C temperature rise, continuous duty, except where limited by coaxial connectors.
- ◆ 5KV, 60 cycle AC continuous working voltage except where limited by coaxial connectors.
- ◆ Capacitance: 1.0 pf between conductors
- ◆ Resistance: 1 Milliohm or less per conductor

1688

- ◆ Insulated dual binding posts to male BNC coaxial connector. MIL UG-144/U style.
- ◆ ABS body contains banana jack holes for side stacking. Available in black body; one red, one black binding post head. 3/4" standard centers.
- ◆ Rated at 15 AMPS AC, for 10°C temperature rise, continuous duty, except where limited by coaxial connectors.
- ◆ 5KV, 60 cycle AC continuous working voltage except where limited by coaxial connectors.
- ◆ Capacitance: 1.0 pf between conductors.
- ◆ Resistance: 1 Milliohm or less per conductor.



1688

1698

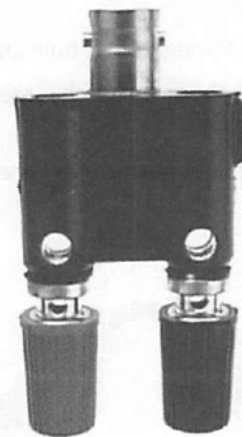
- ◆ Insulated dual binding posts to isolated male BNC coaxial plug.
- ◆ Turret terminal connections to isolated front and rear conductors in both ground and hot circuits allow insertion of terminal networks in input circuits.
- ◆ Available in black body; one red, one black binding post head. 3/4" standard centers.
- ◆ Rated at 15 AMPS AC, for 10°C temperature rise, continuous duty, except where limited by coaxial connectors.
- ◆ 5KV, 60 cycle AC continuous working voltage except where limited by coaxial connectors.
- ◆ Capacitance: 1.0 pf between conductors.
- ◆ Resistance: 1 Milliohm or less per conductor.



1698

1689

- ◆ Insulated dual binding posts to BNC coaxial jack.
- ◆ ABS body contains banana jack holes for side stacking. Available in black body; one red, one black binding post head. 3/4" standard centers.
- ◆ Rated 15 AMPS AC, for 10°C temperature rise, continuous duty where not limited by coax connectors.
- ◆ 5KV, 60 cycle AC continuous working voltage except where limited by coaxial connectors.
- ◆ Capacitance: 1.0 pf between conductors
- ◆ Resistance: 1 Milliohm or less per conductor



1689



- ◆ A binding post is a versatile connector that allows a temporary or semipermanent connection between electronic devices or circuits.

### CONSTRUCTION FEATURES:

- ◆ The contact surface clamp washer, against which the wire or lug is clamped by the head, is an integral part of the stud, and not a force-fitted separate washer. This avoids possible electrolytic corrosion across the mating faces due to current through the interface and subsequent increase in noise, galvanic EMF, and resistance. The cross-hole is drilled at right angles to a key-flat on the clamp washer in the Screw Machine, assuring absolute angular alignment of the finished post to the keyed flat in the instrument panel. Press-on base washers can have as much as five or ten degrees of angular misalignment.
- ◆ The behind-panel backup insulating washer is made of solid plastic, which reduces cost and increases insulation from flashover voltage of the post.
- ◆ A flat metal washer is provided as a bearing surface for the nut against the backup washer. This washer can be used without the insulating backup washer if it is desired to ground the post to the panel.
- ◆ All posts are supplied kit-packaged individually in a sealed bag. This maintains the integrity of the part set, and also does away with the need to disassemble the post before assembling it on the panel.

### CONNECTION OPTIONS:

- 1 Top insertion of banana plug
- 2 Alligator clip inserted through top jack hole
- 3 Spade lug positioned over stud and fastened by tightening the head
- 4 Wire inserted through cross hole and held by head,
- 5 Standard .080 phone tip can be inserted in cross hold and held by head
- 6 Wire wrapped around stud and fastened by tightening head

### DESIGN & APPLICATION FEATURES:

- ◆ Where only a simple, grounded, single wire connection is to be made to a panel or chassis, the metal compression type posts are recommended (parts 159,136)
- ◆ Where a grounded connection is required, but a variety of plugs, tips or wires may be used, the metal-head, multiple-use binding posts are ideal. The hex/octagon styles offer a variety of sizes and current ranges (part number 1835, 137), while the fluted metal head posts match the premium line of insulated posts in sizes and appearance (part numbers 1519). They are gold-plated for performance and appearance.
- ◆ For lowest cost in insulated binding posts, fluted head posts are the choice (part number 1480). The thread is molded as an integral part of the head, reducing cost but maintaining quality. Versions are offered to ground the post directly to the panel, to ground the post with an insulated panel top-washer for matching to other posts, or to fully insulate the post with a plastic backup washer.
- ◆ Our premium quality insulated binding posts feature brass threaded inserts in the head, separable washer construction, and a variety of head styles, stud sizes, mounting space requirements, and metal finishes.
- ◆ High current posts are available in both hex and fluted heads, whereas the thinner styles offer narrow fluted heads for space efficiency; (part numbers 257, 1517, 459). Both of these types are made in military specifications style in the gold-plated versions. Tin-plated posts have all the features of the MIL-Spec posts with the bright solder-able pure Tin plating for greater economy.
- ◆ A subminiature post is offered to fit subminiature banana plugs and miniature alligator clips and spade lugs; (part number 3015).
- ◆ The line of dual binding posts offer all features and economies of the single posts, but with the added convenience of pre-mounting on exact 3/4" or 1/2" centers on a common panel insulator; (part numbers 209, 269, 1477, 1813, 1814, 3016).
- ◆ For more information on **Material Specifications**, please refer to page 31.

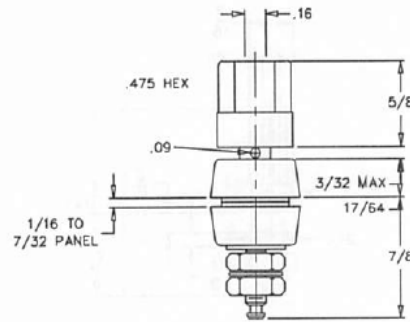
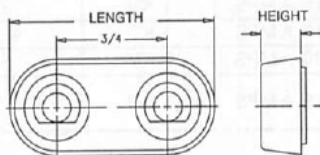
- ◆ Post head is molded Lexan Polycarbonate, hex or fluted. Captivated to prevent loss.
- ◆ Body is brass with gold or tin plating as indicated.
- ◆ Insulated washers are molded polycarbonate and completely insulate post from panel. Keyed to panel and body to prevent rotation.
- ◆ Body mounts in 3/8" or 1/2" round or "D" hole for anti-rotation, (see diagram.)
- ◆ Connects with .080" phone tip plug, 1/4" spade lug, standard banana plug, alligator clip or wire (to #14.)
- ◆ To connect circuit, wrap wire around solder turret or attach to solder lug between nuts. (Lug not supplied.)
- ◆ Please refer to Table A on page 26 for post rating information.
- ◆ All posts shown here are available in standard red (-102) and black (-103.) Other colors are available from factory. Please add color to part number as suffix.

PART NO.	FIG.	HEAD SHAPE	POST THREAD	PLATING
257	A	Hex	10-32	Gold
257N			8-32	
899			10-32	Tin
899N			8-32	
459	B	Fluted	10-32	Gold
459N			8-32	
799			10-32	Tin
799N			8-32	
1275	C	Fluted	6-32	Tin
1275N			8-32	
1517			6-32	Gold
1514			8-32	

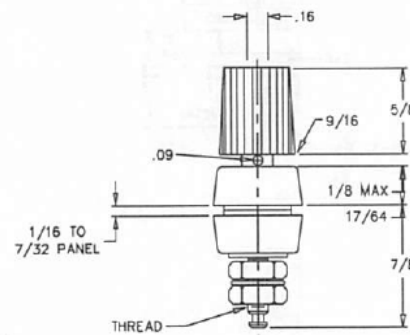
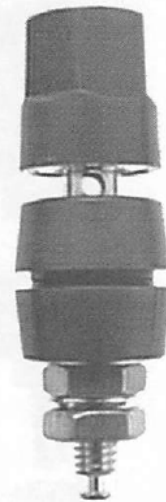
## BASE INSULATORS

- ◆ Use these molded Polycarbonate insulators to convert single posts to dual as indicated in table. Available in black.

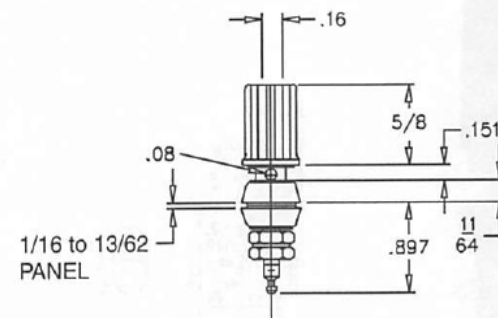
PART NO.	MNTG HOLE DIA.	LENGTH	HEIGHT	CONVERTS
1814-5	3/8	1-7/32	5/32	1517
207-03	1/2	1-3/8	17/64	257



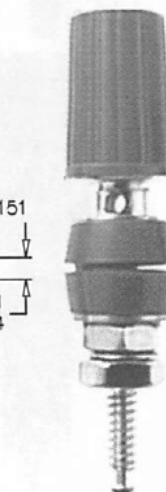
A



B



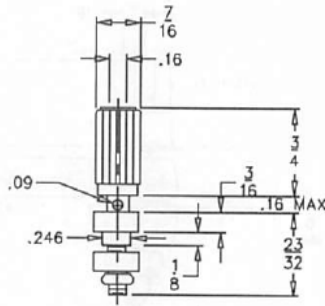
C



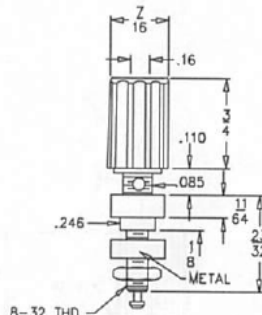
BINDING POSTS

# INSULATED BINDING POSTS

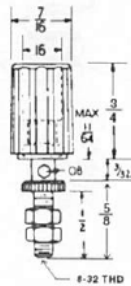
BINDING POSTS



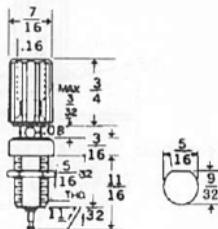
A



B



C



D

- ◆ Fluted post head is molded Lexan Polycarbonate. Captivated to prevent loss.
- ◆ Body is brass with nickel or tin plating as indicated.
- ◆ Insulated washers are molded polycarbonate and completely insulate post from panel. Keyed to panel and body to prevent rotation.
- ◆ Part numbers 1463 and 1464 have threaded, molded polycarbonate bodies that completely insulate post from panel.
- ◆ Body mounts as indicated in table.
- ◆ Connects with .080" phone tip plug, spade lug, standard banana plug, alligator clip or wire (to #14.)
- ◆ To connect circuit, wrap wire around solder turret or attach to solder lug between nuts. (Lug not supplied.)
- ◆ Please refer to Table A (below) for post rating information.
- ◆ All posts shown here are available in standard red (-102) and black (-103.) Other colors are available from factory. Please add color to part number as suffix.

PART NO.	FIG.	MNTG HOLE	POST THREAD	WASHER	PLATING
1480	A	1/4	8-32	Insulating	Nickel
1481	B			Grounding	
1482	C	11/16		None	
1463	D	5/16	8-32	Insulating	Tin
1464	D	5/16 "D"	8-32		

**TABLE A**  
**RATING FOR BINDING POSTS**

All current Ratings are 60 Hz RMS, and are for 110°C temperature rise over ambient, long term. Voltage Ratings are 60 Hz at sea level. Capacitance is to a 1/8" aluminum panel, component mounted as recommended. All ratings are working, and do not represent maximum values.

STUD SIZE	CURRENT	VOLTAGE	CAPACITANCE
#4	5 AMPS	1 KV	2.5 pF
#6	15 AMPS	1 KV	3 pF
#8	15 AMPS	1 KV	4.5 pF
#10	30 AMPS	2 KV	5 pF
5/16 Plastic	15 AMPS	5 KV	3.5 pF



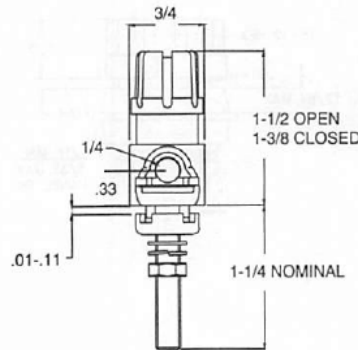
## HIGH VOLTAGE BINDING POST

**New!!**

- ◆ HH Smith now offers a 60 AMP binding post for high current applications.

**1548**

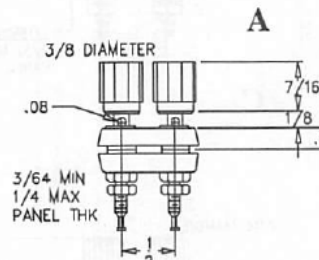
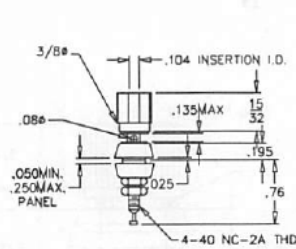
- ◆ The body is nickel plated brass.
- ◆ Insulated Polyamide housing is designed for safe handling.
- ◆ Mounts in 1/2" square hole.
- ◆ Accepts up to #12 AWG wire.
- ◆ Available in Red (-102) or Black (-103). Please add color to part number as suffix.



BINDING POSTS

## MINIATURE BINDING POST

- ◆ Fluted post head is molded Lexan Polycarbonate with a gold plated brass insert.
- ◆ Body is brass with gold plating.
- ◆ Washers are molded nylon with a gold plated brass insert.
- ◆ Mounts in panel hole as indicated in table.
- ◆ Connects with .080" phone tip plug, spade lug, miniature banana plug, alligator clip or wire (to #18.)
- ◆ To connect circuit, wrap wire around solder turret or attach to solder lug between nuts. (Lug not supplied.)
- ◆ Please refer to Table A (page 26) for post rating information.
- ◆ Posts shown here are available in standard red (-102) and black (-103.) Other colors are available from factory. Please add color to part number as suffix.



PART NO.	FIG.	MNTG HOLE	POST THREAD
3015	A	1/2	4-40
3016BB	B		
3016RB			
3016RR			

**HH Smith**



27



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Or call our Sales Department: 888-8 4 SMITH

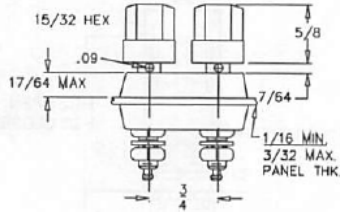
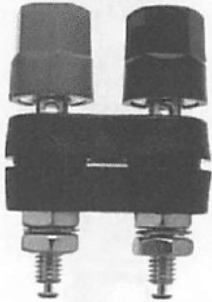
Angic Global Solutions

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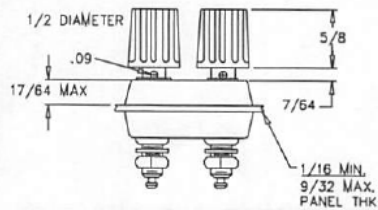
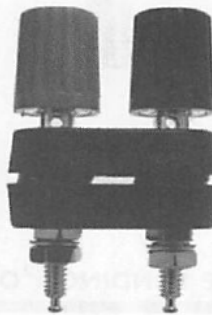
<https://www.AngicGlobal.com> Sales@AngicGlobal.com

# DUAL BINDING POSTS

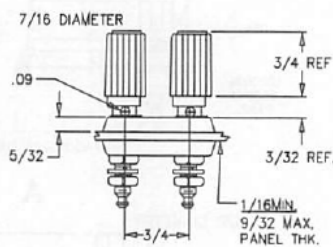
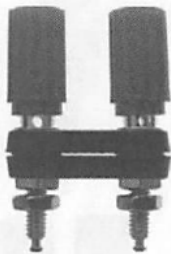
BINDING POSTS



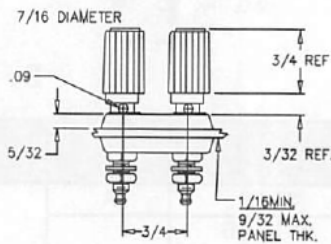
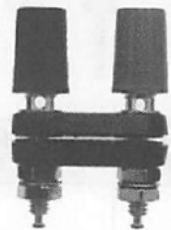
A



B



C



D

- ◆ Fluted or hex insulated post heads are molded Lexan Polycarbonate. Captivated to prevent loss.
- ◆ Body is brass with tin plating.
- ◆ Insulated washers are molded polycarbonate and completely insulate post from panel. Keyed to panel and body to prevent rotation.
- ◆ Body mounts into dual holes with 3/4" centers.
- ◆ Connects with .080" phone tip plug, spade lug (1/4"), standard banana plug, alligator clip, wire (to #14) and shorting links.
- ◆ To connect circuit, wrap wire around solder turret or attach to solder lug between nuts. (Lug not supplied.)
- ◆ Please refer to Table A (page 26) for ratings.
- ◆ All posts shown here are available with alternating head colors in red or black as indicated in table.

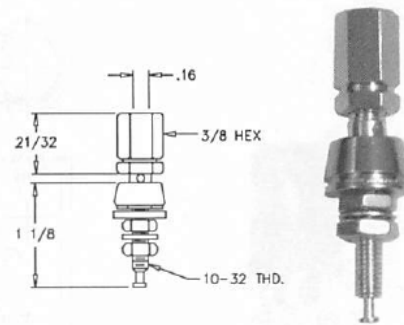
PART NO.	FIG.	MNTG HOLE	POST THREAD	HEAD SHAPE	HEAD COLORS
269BB	A	1/2	10-32	Hex	Black - Black
269RB					Red - Black
269RR					Red - Red
1808BB	B		8-32	Hex	Black - Black
1808RB					Red - Black
1808RR					Red - Red
1813BB	B	10-32	Fluted	Black - Black	
1813RB				Red - Black	
1813RR				Red - Red	
1812BB	C	8-32		Fluted	Black - Black
1812RB					Red - Black
1812RR					Red - Red
1477BB	C	3/8	6-32	Fluted	Black - Black
1477RB					Red - Black
1477RR					Red - Red
1810BB	D		8-32	Fluted	Black - Black
1810RB					Red - Black
1810RR					Red - Red
1814BB	D	6-32	Fluted	Black - Black	
1814RB				Red - Black	
1814RR				Red - Red	
1809BB	D	8-32	Fluted	Black - Black	
1809RB				Red - Black	
1809RR				Red - Red	



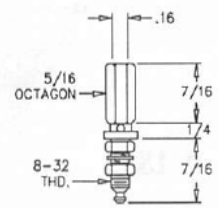
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- ◆ Post heads are nickel plated brass.
- ◆ Bodies are machined brass with tin plating.
- ◆ Insulated washers are molded polycarbonate and completely insulate post from panel. Keyed to panel and body to prevent rotation.
- ◆ Dual post body mounts into dual holes with 3/4" centers.
- ◆ Connects with .080" phone tip plug, spade lug (1/4"), standard banana plug, alligator clip, and wire (to #14).
- ◆ To connect circuit, wrap wire around solder turret or attach to solder lug between nuts. (Lug not supplied.)
- ◆ Please refer to Table A (page 26) for post rating information.

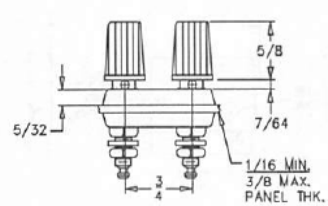
PART NO.	FIG.	MNTG HOLE	POST THREAD	HEAD SHAPE
1835	A	1/2 "D"	10-32	Hex
137	B	3/8	8-32	Octagon
209	C	1/2	10-32	Hex
1807			8-32	Hex



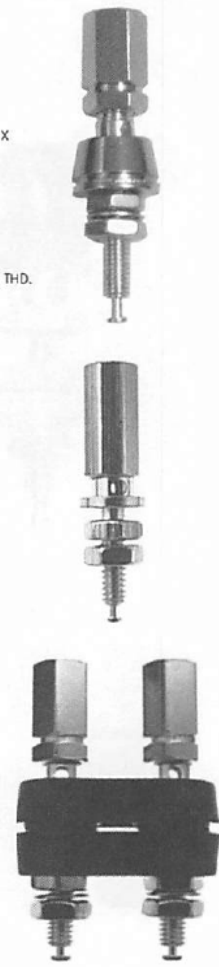
A



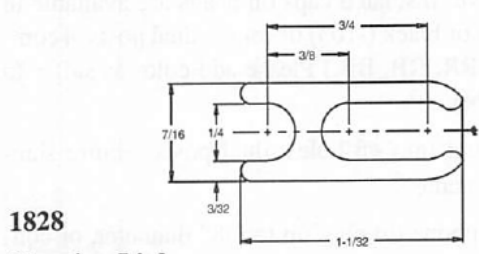
B



C



BINDING POSTS



1828  
Shorting Link

- ◆ Constructed of spring brass with nickel plating.
- ◆ Rated at 20AMPs.
- ◆ Fits 269 style posts, (page 28.)

### Smith Binding Posts

#### Safety Features:

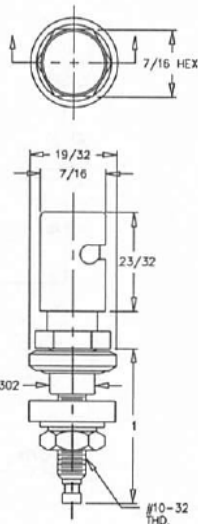
- ◆ Insulating material is high-temperature, flame-retardant Polycarbonate, with a UL continuous-use temperature of 220°F (110°C), and UL Flammability rating of 94 V-O.
- ◆ Restricted head-opening prevents contact with live metal parts, even with the head screwed back. Positive internal captivation does not allow the head to be removed, even with excessive torque.
- ◆ Recessed and insulated banana-jack opening will not allow contact with the metal stud, even with the head screwed down. HH Smith recommends using the 289 style shrouded banana plug for the highest possible safety level.
- ◆ Positive, double-keyed insulating washers prevent rotation of the stud or body when tightened into a keyed panel hole.



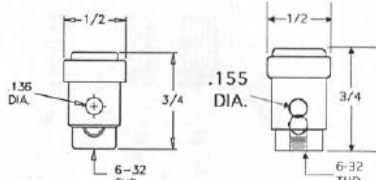
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# SPRING LOADED BINDING POSTS

BINDING POSTS

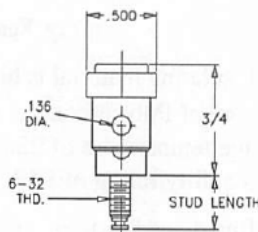


**A 1837**

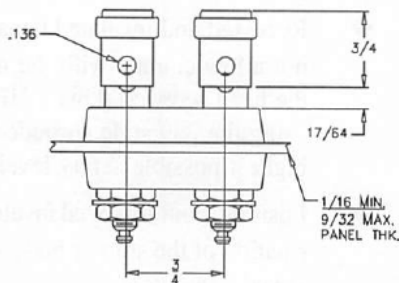
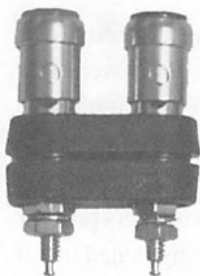


**B**

**C**



**D**



**E**

## 1837

- ◆ ML-P-55149/8 Commercial Version, this heavy duty, waterproof post is meant for rugged applications.
- ◆ Body is nickel plated brass.
- ◆ Insulated washers are molded nylon. Cap is silicon rubber, as are "O" ring waterproof seals for panel.
- ◆ Body mounts into 5/16" hole in panel from 1/16" to 1/8" thick.
- ◆ Spring loaded push cap tightly grips wire in side slot.
- ◆ To connect circuit, wrap wire around solder turret or attach to solder lug between nuts. (Lug not supplied.)
- ◆ Please refer to Table A (page 26) for post rating information.
- ◆ Available in red (-102, MIL Spec Type PB 08NA02,) or black (-103, MIL Spec Type PB 08NA01.)

PART NO.	FIG.	MNTG HOLE	POST THREAD	STUD LENGTH	PLATING
1837-	A	5/16	10-32	3/8	Nickel
2802	B	#6	6-32	1/2	
2803				3/4	
2804				6-32 THD	
2809	C				Gold
2810	D				Nickel
2810AA					
2713BB	E	1/2	8-32	1/16 MIN	Nickel
2713RB				9/32 MAX	
2713RR				PANEL THKNS.	

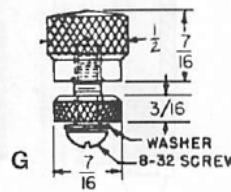
- ◆ Quick and secure wire connection is assured with these spring loaded binding posts.
- ◆ Heads and bodies are brass with plated finish as indicated above. Insulated caps on heads are available in red (-102) or black (-103) or for the dual posts, a combination (RR, RB, BB.) Please add color as suffix to part number.
- ◆ Posts mount into #6 holes, dual posts require standard 3/4" centers.
- ◆ Use with phone tip plug up to 1/8" diameter, or connect to wire up to #12 AWG.
- ◆ To connect circuit, wrap wire around solder turret or attach to solder lug between nuts. (Lug not supplied.)
- ◆ Please refer to Table A (page 26) for post rating information.



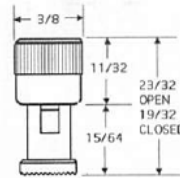
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- ◆ Where only a simple, grounded, single-wire connection is to be made to a panel or chassis, these metal compression type posts are recommended.
- ◆ Body is brass with tin plating, as are heads on part numbers 209 and 1807.
- ◆ Insulated washers are molded polycarbonate and completely insulate post from panel. Keyed to panel and body to prevent rotation.
- ◆ Body mounts into dual holes with 3/4" centers.
- ◆ Connects with .080" phone tip plug, spade lug (1/4"), standard banana plug, alligator clip, wire (to #14) and shorting links.
- ◆ To connect circuit, wrap wire around solder turret or attach to solder lug between nuts. (Lug not supplied.)
- ◆ Please refer to Table A (page 26) for post rating information.
- ◆ All posts shown here are available with alternating head colors in red or black as indicated in table.

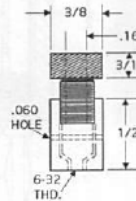
PART NO.	FIGURE	MOUNTING HOLE	MOUNTING THREAD
110	A	#8	8-32 Screw
159	B	#6	6-32 Thread
136	C	#6	6-32 Thread



A



B



C



BINDING POSTS

### FINISHES:

- ◆ MIL-Spec and certain other posts are supplied in Gold Plate in accordance with the requirements of the specifications. In all instances where Gold is plated on brass, a barrier of Nickel is provided to prevent migration.
- ◆ Excellent appearance and solderability are also provided by pure Tin plating on alternative versions of these posts, with lower cost. This is a bright, acid Tin, 99% pure, and NOT a solder plating.
- ◆ Where solderability of the post is not a requirement, bright Nickel plating is provided for maximum corrosion protection.
- ◆ Plastic parts are provided with a low-luster, semi-matte finish for a modern appearance on contemporary instruments.

### MATERIAL SPECIFICATIONS

All binding posts are machined from solid brass. Mounting nuts and washers are also brass.

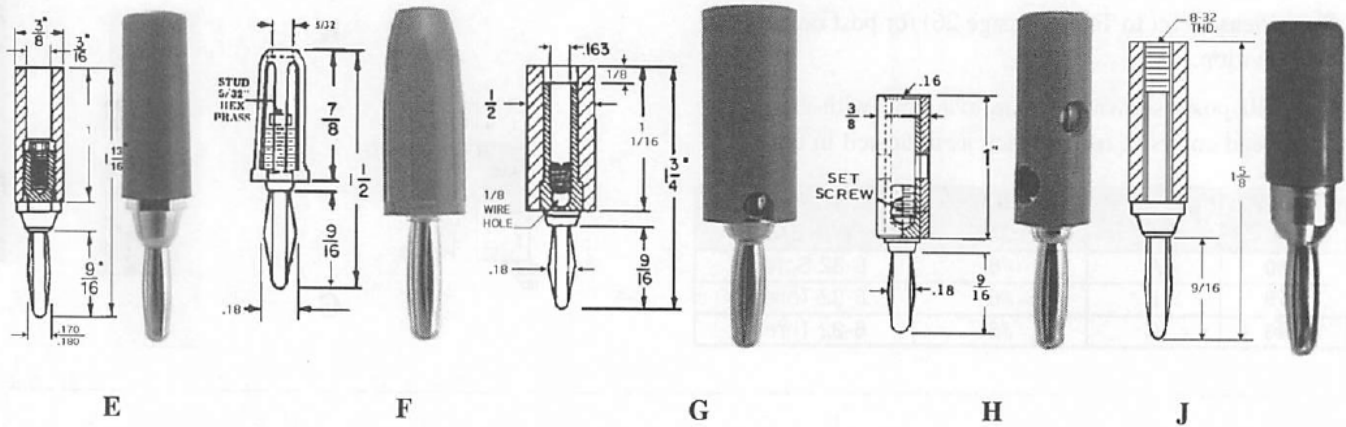
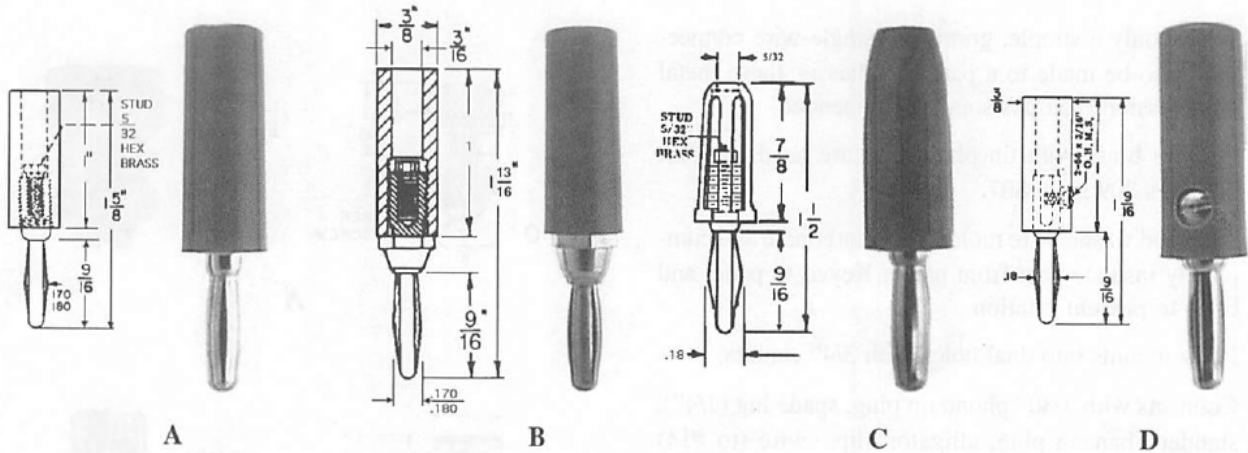
- ◆ **Brass:** Free-matching leaded brass, per QQ-B-626, Comp. 360, 1/2 hard.
- ◆ **Gold:** Gold plated, per MIL-G-45201, 5 micro-inch over 50 micro-inch hard nickel strike.
- ◆ **Nickel:** Nickel plate, per QQ-N-290, 200 micro-inch.
- ◆ **Tin:** Tin plate, per MIL-T-10727, 200 micro-inch Bright Acid Tin.

### PLASTICS

Type	SPECS	CONTINUOUS TEMPERATURE	FLAMMABILITY RATING - UL
Nylon Type 6/6	ASTM-D4066	185°F	94 V-2
Polycarbonate	UL-94	220°F	94 V-O
A.B.S.	L-P-1183	160°F	94 HB
Phenolic	-	220	94 HB



# STANDARD INSULATED BANANA PLUGS



BANANA PLUGS

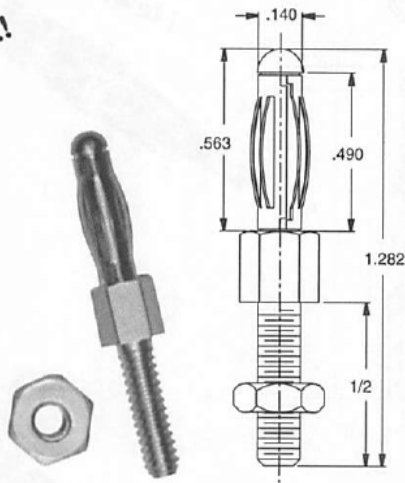
- ◆ Banana plug bodies are nickel plated brass with beryllium copper springs - \*except #388 has Inconel springs.
- ◆ Available in red (-102) and black (-103) as standard colors. Other colors are available upon request.
- ◆ Handles are molded plastic as indicated in table.

PART NO.	ILLUS.	TYPE	HANDLE	WIRING	RATING
211	A	Standard	Nylon	Stud or Well	10 Amps - 1 KV
212	B	Standard	Nylon	Stud or Well	10 Amps - 1 KV
388	B	Standard	Nylon	Stud or Well	10 Amps - 1 KV
476	C	Standard	Polycarbonate	Stud or Well	10 Amps - 1 KV
204	D	Standard	Nylon	Side Screw	10 Amps - 1 KV
295	E	Standard	Nylon	Solderless	10 Amps - 1 KV
455	F	Standard	Polycarbonate	Solderless	10 Amps - 1 KV
324	G	Standard	ABS	Clamp Screw	10 Amps - 1 KV
1512	H	Standard	ASB	Clamp Screw	10 Amps - 1 KV
214	J	Standard	Nylon	8-32 thread	15 Amps



# UNINSULATED BANANA PLUGS

New!!

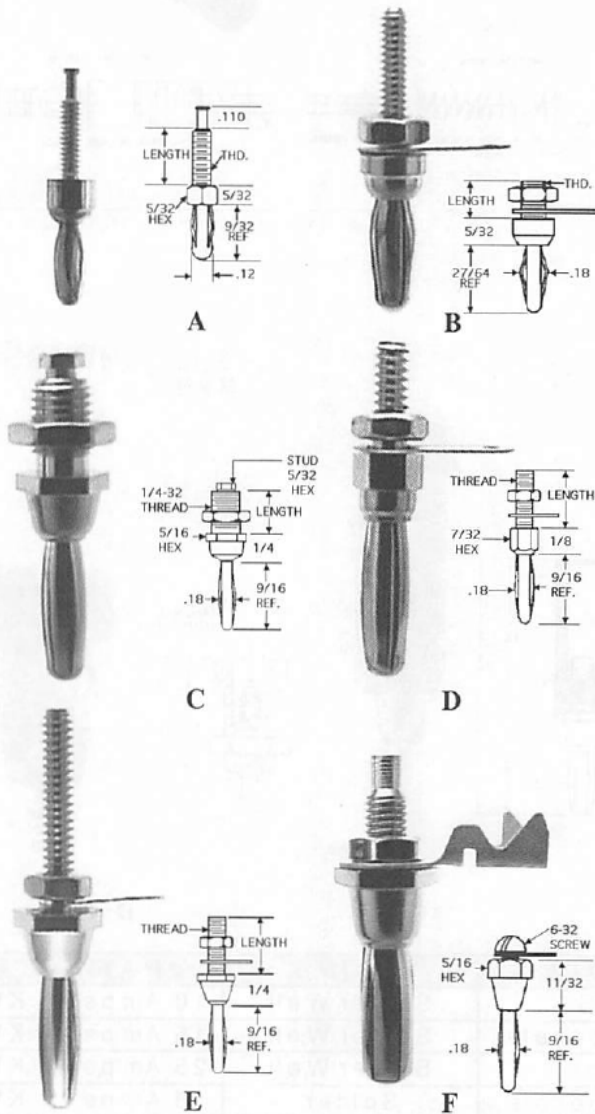


- ◆ This caged spring banana plug features nine 'leaves' for greater contact during use. Its design with a 6-32 threaded post for ease of assembly.

## 425 Caged Spring Banana Plug

- ◆ Body is precision machined from brass and nickel plated. Hardware included.
- ◆ Caged springs are made from beryllium copper and are nickel plated.
- ◆ Also available with gold plating. (# 425AA.)

BANANA PLUGS



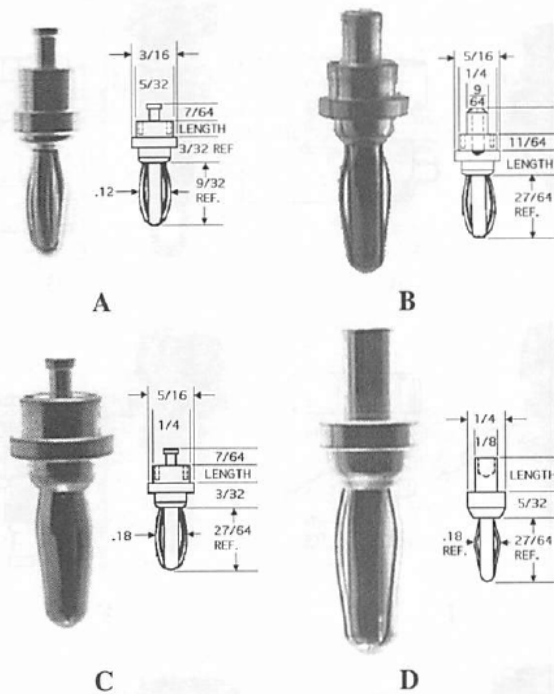
- ◆ Uninsulated Banana plugs have nickel plated brass bodies with nickel plated beryllium copper springs. All plugs shown here feature a male threaded stud as indicated in table.
- ◆ Wires solder to lug under nut (included.)

PART NO.	FIG.	TYPE	STUD		AMPS		
			THREAD	LENGTH			
192	A	Mini.	2-56	17/64	5		
460	B	Short	4-40	3/8	10		
461				1/2			
462				3/8			
463				1/2			
401	C	Standard	6-32	3/8	15		
103				1/2			
404				3/4			
405			8-32	3/8			
406				1/2			
407				3/4			
102			D	Standard		6-32	3/8
432							1/2
433						3/4	
434						3/8	
435	8-32	Standard	8-32	1/2			
436				3/4			
145	E	Standard	1/4-32	11/32			
100	F	Standard	6-32	Hole			

## UNINSULATED BANANA PLUGS

- ◆ Rivet stud type banana plugs have brass bodies and beryllium copper springs, finish as indicated below.
- ◆ To mount, bodies rivet to panel or board. Wire wraps around stud or may be soldered to well.

PART NO.	FIG.	TYPE	PANEL THKNS.	LENGTH	AMPS AC	FINISH
2073	A	Mini.	1/32	.093	5	Silver
191			1/16	.109		
2074			3/32	.135		
2075			1/8	.165		
2067	B		1/16	.109	10	Tin
2068			3/32	.135		
2069			1/8	.165		
2082	C	Short	1/16	.109		
2083			3/32	.135		
2084			1/18	.165		
121	D		3/16	7/32		Silver
143			1/18	3/16		
139			3/32	1/8		

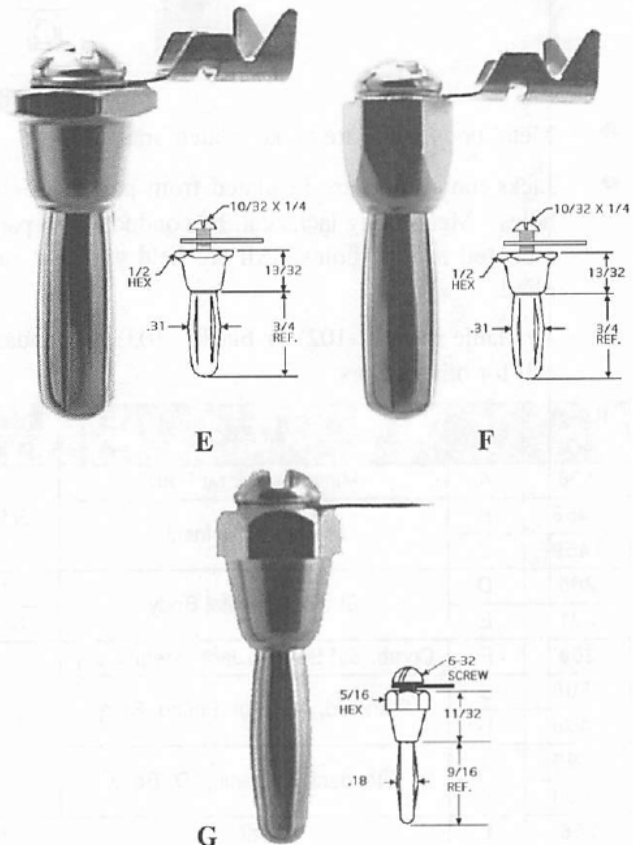


BANANA PLUGS  
UNINSULATED

## GIANT BANANA PLUGS

- ◆ Giant uninsulated banana plugs and machined brass bodies with nickel plating, and beryllium copper springs that are also nickel plated.
- ◆ Supplied with lug and screw as shown. Solder wire to lug between nut and panel.
- ◆ Fits 286 style giant insulated banana jacks (page 36,) or style 157 or 158 uninsulated giant banana jacks (page 37.)

PART NO.	FIG.	STUD		AMPS AC
		THREAD	LENGTH	
185	E	1/4-28	13/32	25
186	F	10-32	Hole	25
188	G	10-32	Hole	25



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35

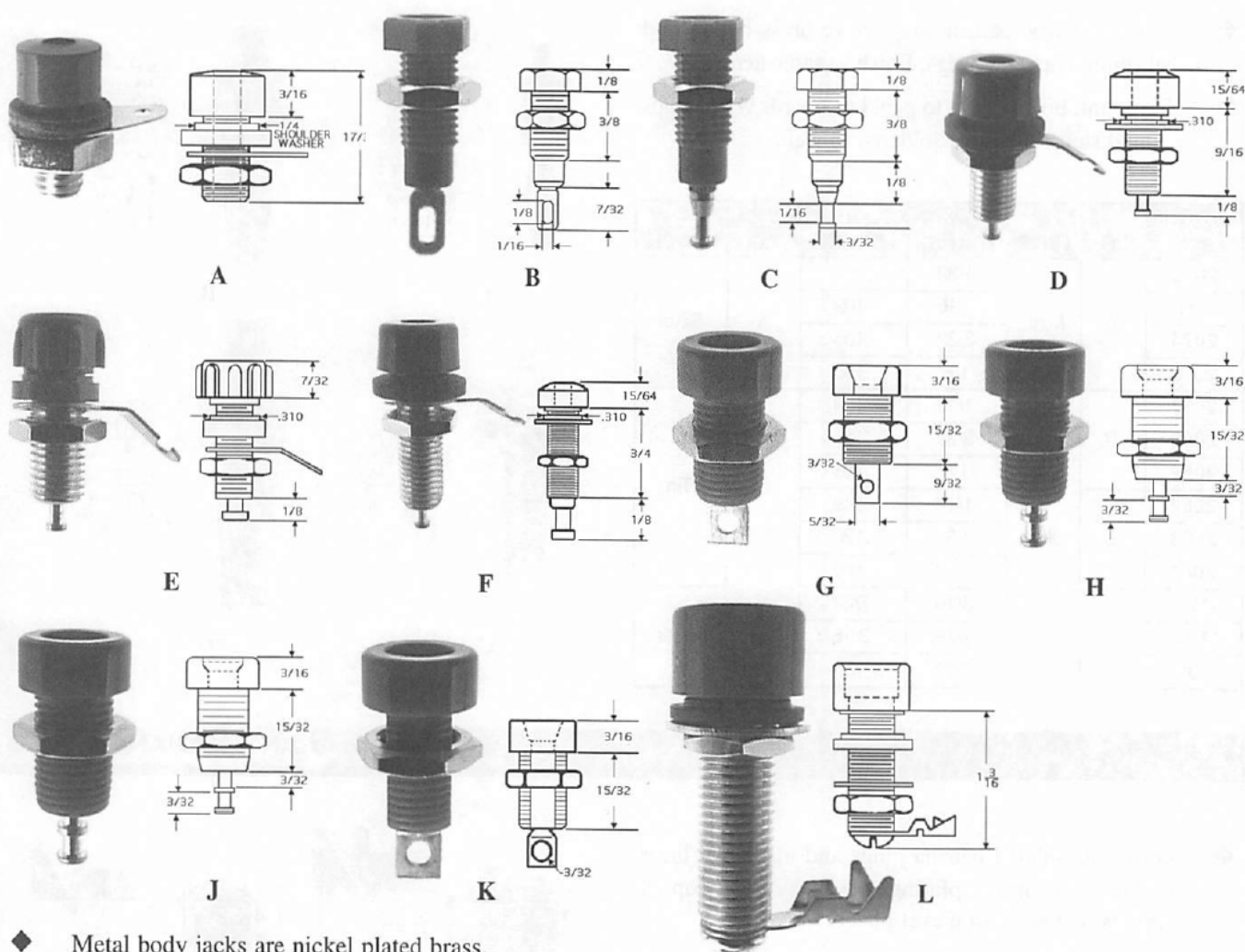


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# INSULATED BANANA JACKS

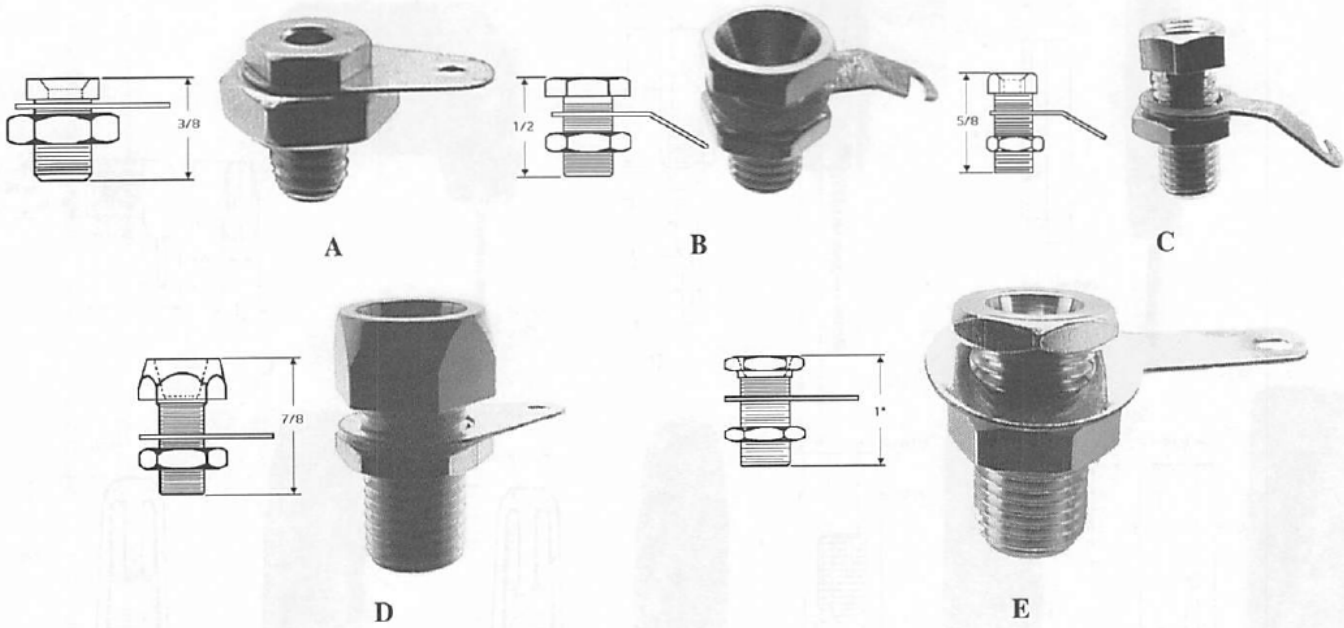


BANANA JACKS

- ◆ Metal body jacks are nickel plated brass.
- ◆ Jacks mount and are insulated from panel in 5/16" holes. Metal body jacks can be conductive-to-panel mounted in 1/4" holes. All are held with nut supplied.
- ◆ Available in red (-102) or black (-103) as standard, call for other colors.
- ◆ Wire wraps and solders around turret, or through hole in interior contact. Wire can be soldered to lug supplied on metal body jacks.
- ◆ Rated at 15 Amps AC for 10°C temperature rise, continuous duty. Voltage 1 KVAC.

PART NO.	FIG.	TYPE	HEAD DIA.	HEAD HEIGHT	BODY LENGTH	THREAD	I.D.	INSULATING MATERIAL		
196	A	Miniature, Metal Body	5/16	3/16	11/32	10-32	.104	Nylon		
1458	B	Miniature, All Insul.		1/8	5/8	1/4-32		.161	Polycarbonate	
1459	C			7/16	15/64		9/16		.161/.180	Nylon
205	D	Standard, Metal Body	3/8	7/32	23/32	.161/.180	Nylon			
221	E	Comb. Std Ban/Tip Jack, Metal Body	7/16	15/64	3/4			5/16-32	.161	Polycarbonate
206	F			Standard, All Insul. Round, Body	3/16	15/32	5/16-32			
1508	G	Standard, All Insul., "D" Body	7/16	3/16	15/32	5/16-32	.161	Polycarbonate		
1498	H								Standard, All Insul., "D" Body	5/8
1499	J	Giant	5/8	3/8	13/16	3/8-24	9/32	Nylon		
1509	K								Giant	5/8
286	L	Giant	5/8	3/8	13/16	3/8-24	9/32	Nylon		

## UNINSULATED BANANA JACKS



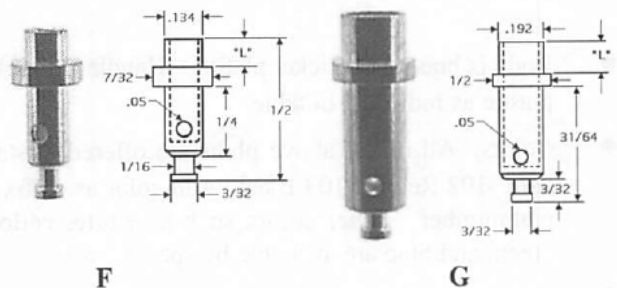
- ◆ Threaded bodies are machined from brass and nickel plated.
- ◆ Body is held to panel with nut. Wire solders to lug between nut and panel. Hardware included.

BANANA JACKS

PART NO.	ILLUS.	TYPE	HEAD DIA.	HEAD HEIGHT	BODY LENGTH	THD	I.D.
195	A	Miniature	1/4	1/16	5/16	10-32	.104
101	B	Standard	3/8	3/32	13/32	1/4-32	.161
109	C	Standard	5/16	1/8	1/2	1/4-32	.161
187	D	Giant	1/2	9/32	19/32	3/8-24	.275
157	E	Giant	5/8	1/5	7/8	1/2-20	.275

## UNINSULATED BANANA JACKS

PART NO.	FIG.	TYPE	MNTG. HOLE	LENGTH "L"	PANEL THKNS.	I.D.
193	F	Mini.	0.140	.083	1/32	.104
2076				.109	1/16	
2077				.135	3/32	
2078				.165	1/8	
2079	G	Standard	0.196	.109	1/16	.161
2080				.135	3/32	
2081				.165	1/8	



- ◆ Circuit is completed on both sides when jack is used in printed circuit board. Wire also solders to turret at rear of jack, or into side hole.

- ◆ Rivet stud type banana jacks have brass bodies and beryllium copper springs, finish as indicated below.

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37



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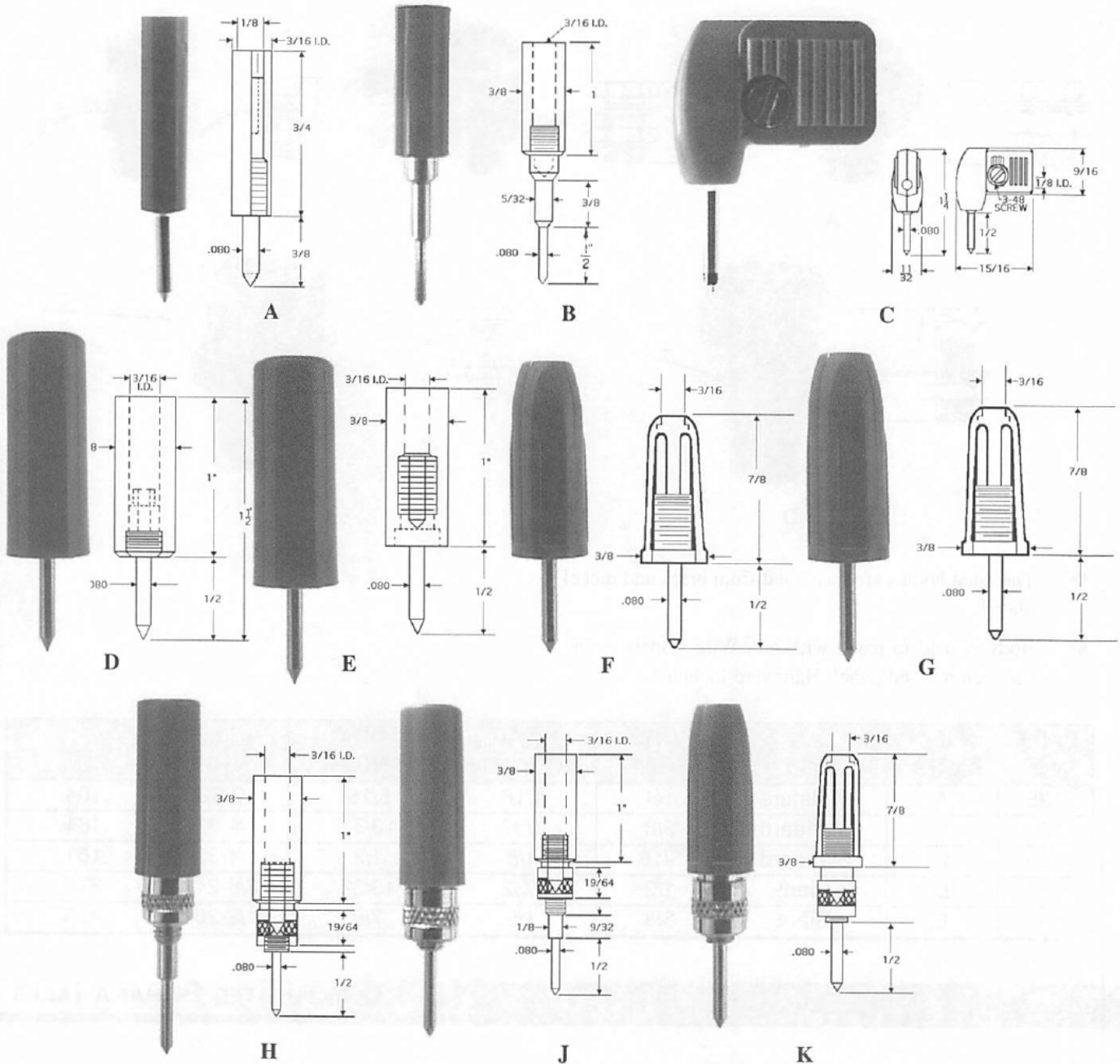
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# INSULATED PHONE TIP PLUGS

TIP PLUGS



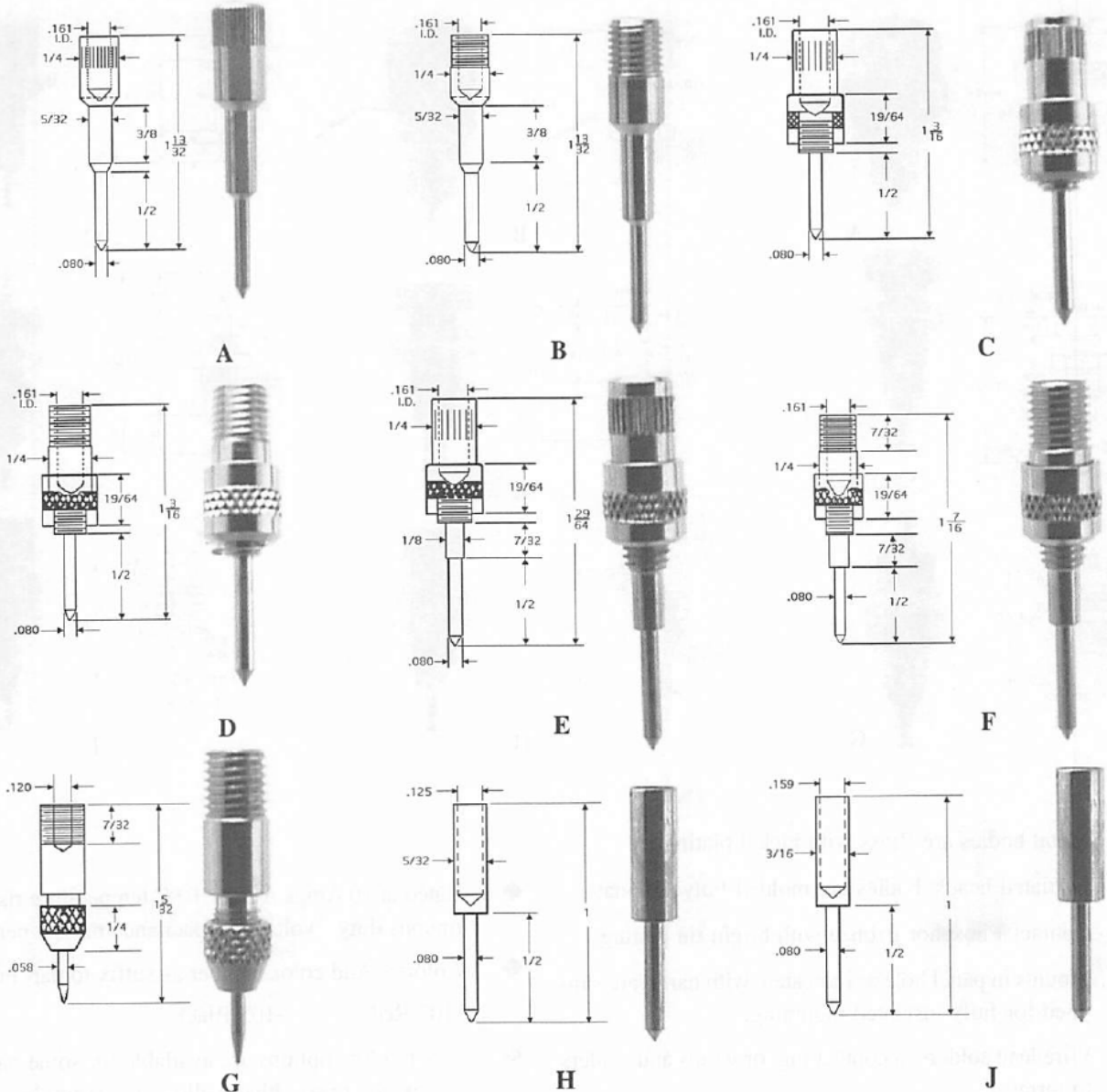
- ◆ Body is brass with nickel plating. Handle is molded plastic as indicated in table
- ◆ Colors: All of the above plugs are offered in standard -102 Red or -103 Black. Add color as suffix to part number. Other colors such as white, yellow, green, and blue are available by special order.
- ◆ Please see Pages 9, 14 for jumpers or test leads using these plugs, and page 17 for test prods. Need something similar but different? We have or can make what you need to get the job done.

PART NO.	FIG.	TYPE	HANDLE MATERIAL	AMPS	VOLTS
244	A	Min. Solder	ABS	2	0.600
229	B	Heavy Duty	Nylon	15	1 KV
235	C	RA Solder	ABS	12	1 KV
203	D	Solder	Nylon	12	1 KV
283	E	Solder	Nylon	12	1 KV
491	F	.078 Solder	Polycarbonate	12	1 KV
492	G	.154 Solder	Polycarbonate	12	1 KV
201	H	Solderless	Nylon	12	1 KV
200	J	Solderless	Nylon	12	1 KV
490	K	Solderless	Polycarbonate	12	1 KV



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# UNINSULATED PHONE TIP PLUGS



TIP PLUGS

PART NO.	FIG.	TYPE	MOUNTING	STYLE
156	A	Solder	Force Fit	Long, Heavy Duty
125	B	Solder	Treaded	Long, Heavy Duty
106	C	Solderless	Force Fit	Short Tip
127	D	Solderless	Treaded	Short Tip
105	E	Solderless	Force Fit	Long Tip
124	F	Solderless	Treaded	Long Tip
128	G	Solder	Treaded	Replaceable needle tip
108	H	Solder	Wire Mnt.	Earphone tip, machined
123	J	Solder	Wire Mnt.	Earphone tip, large ID

- ◆ Brass body with nickel plating.
- ◆ Needle tips are nickel plated steel.
- ◆ Force-fit types press into .240 max. hole in prods. Threaded types fit 1/4-32 internal tap, minimum of 9/32" deep.
- ◆ Wire leads solder into well in back of plug. On solderless types, wire fits through hole in body, wraps around screw portion, and is held with knurled collar.
- ◆ Rated at 12 Amps AC for 10°C temperature rise, continuous duty.



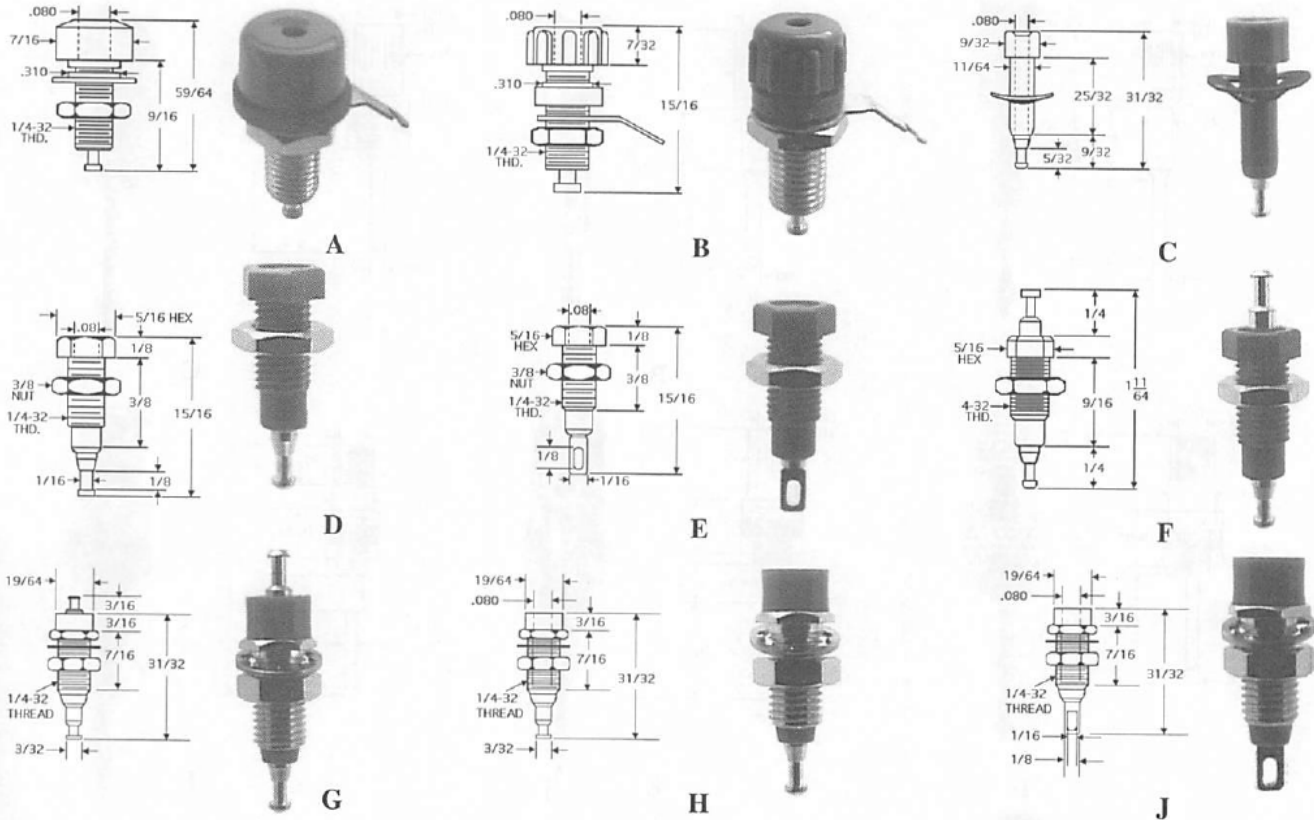
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# INSULATED TIP JACKS



INSULATED TIP JACKS

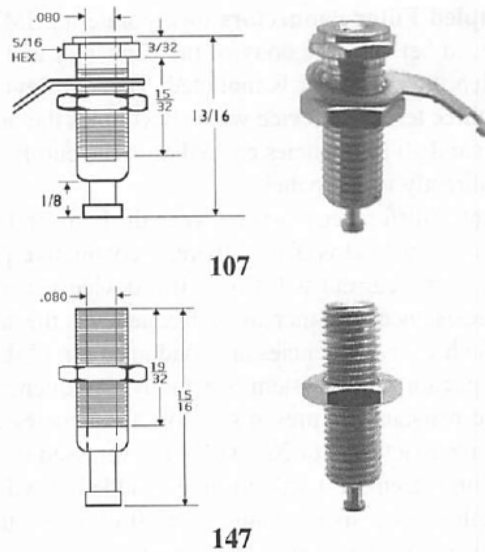
- ◆ Metal bodies are Brass with nickel plating.
- ◆ Insulated heads, bodies are molded Polycarbonate.
- ◆ Contact: Phosphor Bronze with bright tin plating.
- ◆ Mounts in panel hole as indicated, with hardware supplied for fully insulated mounting.
- ◆ Wire lead solders to contact lug, or wraps and solders to turret.
- ◆ Rated at 10 Amps AC for 10°C temperature rise, continuous duty. Voltage, capacitance ratings per table.
- ◆ Colors: Add color number as suffix to part number:  
-102 Red      -103 Black
- ◆ Other colors options are available for some parts; white, green, blue, yellow, for example.

PART NO.	ILLUS.	TYPE	MOUNTING HOLE	RATINGS	
				VOLTAGE	CAPACITY
202	A	Metal Body, Large Head	5/16	750	4.0 pf
241	B	Metal Body, Small Head			
1598	C	All insulated, Quick Mounting	3/16	1 KV	
1505	D	All insulated, Turret Term	1/4	2 KV	3.0 pf
1506	E	All insulated, Eyelet Term			
1507	F	All insulated, Feed-Thru Brass Turret			
1503	G	Insulated Body, Metal Shell, Feed-Thru			
3501	H	Insulated Body, Metal Shell, Turret Terminal MIL			10.0 pf
1501	H	Version Per MIL-C-39024/10			5.0 pf
3502	J	Insulated Body, Metal Shell, Eyelet Terminal MIL			10.0 pf
1502	J	Version Per MIL-C-39024/10			5.0 pf



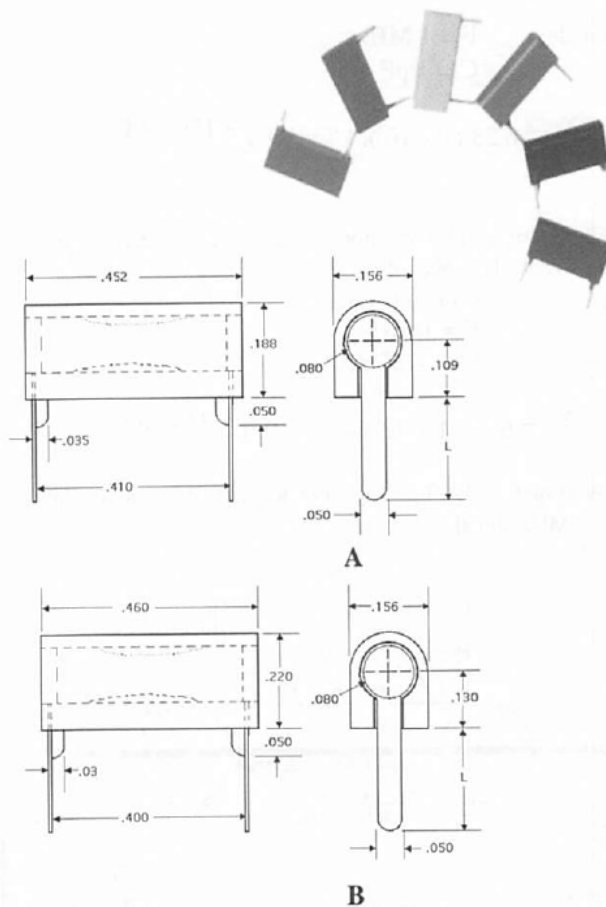
## UNINSULATED TIP JACKS

- ◆ Brass body with nickel plating
- ◆ Phosphor Bronze Contact
- ◆ Part #107, (hex head), mounts in a .250" hole in panels up to 375" thick, with nut supplied.
- ◆ Part #147, (headless) threads into a 1/4-32 tapped hole in the panel, and is locked with the nut supplied.
- ◆ Wire lead solders to lug on jack.
- ◆ Rated at 15 Amps AC for 10°C temperature rise, continuous duty.



## PRINTED CIRCUIT TEST JACKS

- ◆ Description: Double entry design; probe inserts at either end of jack. Accepts probes no larger than .084", contacts down to .074". Closed bottom construction keeps jack from fouling with solder or flux. Locking ears hold jack firmly to board until soldered. Premise dimensions allow automated assembly to boards.
- ◆ Body is molded Nylon per MIL-P-20693
- ◆ Beryllium Copper Spring
- ◆ Mounts into .052" Holes
- ◆ Data: Insertion force: 30 oz. max.  
Withdraw force: 8 oz. min with .080" probe.
- ◆ Ratings: Operating Voltage 1500 volts, 60cps RMS, Sea level. 350 volts, 60CPS RMS at 50,000 feet. 5 AMP AC max. current rating.
- ◆ Contact resistance: 20 Millivolt drop maximum at specified current at 25°C.
- ◆ Color: add color number as suffix to part number:  
-101 White -102 Red  
-103 Black -104 Green  
-105 Blue -107 Yellow



PART NO.	ILLUS.	LENGTH	FINISH	BOARD THKNS
325	A	.130	Gold	1/16
321	B	.219	Gold	1/8
430	C	.203	Gold	3/19

- ◆ This part is similar to MIL-C-39024/11A
- ◆ Other contact finishes are available as special order in quantity from the factory.

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## DECOUPLED FILTER CONNECTORS

**Decoupled Filter connectors** incorporate an SMT capacitor placed between the body of the connector and the panel to which the connector is mounted. This configuration creates a three terminal device which decouples the braid of the system and all frequencies carried on it the cutoff frequency ( $F_{co}$ ) directly to the panel.

A potential difference exists between the body and the panel. When a shunt load is placed there, a conductive path is established and current will flow. If a device which exhibits lower resistance with increasing frequency is the shunt load, only the higher frequencies are conducted out of the system. The capacitor in the system is actually a frequency resistor, and the resistance it presents to low frequencies is termed capacitive reactance, or  $X_c$ , which is expressed in ohms. In a 50 ohm system, if a 3rd terminal is added, it will not conduct unless its resistive value is  $< 50$  ohms (path of least resistance). As stated, capacitive reactance is a variable with respect to frequency.  $X_c$  can be approximated using the standard formula:

where  $F$  is the frequency in Hz and  $C$  is the capacitance in farads.

For example:  $F = 1 \text{ MHz}$   
 $C = 1 \text{ pF}$

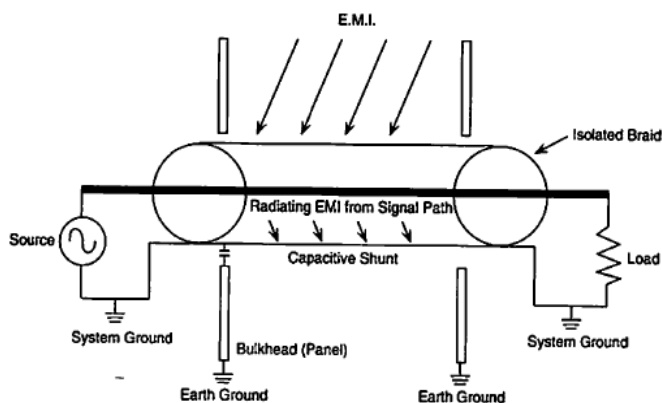
$$X_c = 6.28 (1 \times 10^6)(4.7 \times 10^{-9}) = 159.2 \text{ k}\Omega$$

In a 50 $\Omega$  system, a 1pF capacitor would conduct a percentage of a 1 MHz signal. However, if:

$F = 1 \text{ MHz}$   
 $C = 4700 \text{ pF}$

$$X_c = 6.28 (1 \times 10^6)(4.7 \times 10^{-9}) = 33.8 \text{ k}\Omega$$

In a 50W system, a 4700 pF capacitor would conduct a percentage of a 1 MHz signal.



### Capacitive Shunt Load Diagram

FCC regulations Part 15, Section J, specify the reduction of radiated EMI.

Capacitive element shunts high frequency harmonics to the panel, along with EMI induced in the braid by outside forces.

What this illustrates is a way to approximate a value of capacitance that will conduct a given range of frequencies. Parasitics of both capacitance and inductance exhibited by the connector configuration create real-world problems that make the actual evaluation a more involved process.

The low impedance of this configuration at the higher frequencies normally associated with EMI makes this connector an ideal decoupling element. Typically, up to 30db of attenuation is realized above  $F_{co}$ . Remember, a 10db loss will attenuate 70% of the transmitted voltage and 90% of available power. 20 db will attenuate 90% of the voltage.

Microprocessor and logic chips in various types of digital equipment generate signals contributing to the problem of EMI or electromagnetic interference. Certain EMI is the product of the fast rise times of digital pulses which comprise data transmission signals. These clock harmonics reach into the RF spectrum (30 - 300MHz specifically) and create noise problems if permitted to propagate in the environment. This form of EMI is transmitted in an antenna-like manner by interconnecting cables, and picked up by others. Other sources of EMI such as fluorescent light fixtures, motors, and switching power supplies also contribute to the problem of broadband EMI.

In coaxial cable networks, the braid, which is the return circuit of the system, behaves as an antenna and is susceptible to EMI. This EMI emanates from any of the listed sources including crosstalk which becomes a problem when transmission cables are grouped in clusters. The noise then becomes routed into the system and may cause problems such as false triggering, potentially leading to such problems as erroneous instrument readings. HH Smith filter connectors suppress RF noise at the termination point of the cable run, preventing it from interfering with device function.

HH Smith filter connections are a simple cost-effective method of suppressing broadband EMI. The connectors possess good isolation featuring compartmentalized components with no inductive leads. Useful in LAN systems, test equipment, communications, or any application where EMI must be eliminated.

**Mechanical:**

- ◆ Dimensions: to MIL-C-39012
- ◆ Mating Cycles: 500 Min.
- ◆ Mating Force: 3 lbs Max.
- ◆ Mating Torque: 1.0 in lbs. Min.  
2.5 lbs. Max.
- ◆ Cable Retention: 20 to 100 lbs.

**Materials:**

- ◆ Body: Die cast Zinc with nickel plating or screw machined brass, nickel plated.
- ◆ Contacts: 70/30 Brass Alloy with silver or gold plating.
- ◆ Insulators: Polyethylene/Valox or teflon

**Electrical:**

- ◆ Impedance: 50 Ohms Nominal (75 Ohms can be made to special order.)
- ◆ Working Voltage : 200 VDC
- ◆ Contact Resistance: 2.0 Milliohms Maximum
- ◆ Insulation Resistance: 5k megaohms
- ◆ Capacitance: 4-10 nF
- ◆ Dielectric Withstanding Voltage: 500 VDC
- ◆ VSWR: 1.3 Maximum
- ◆ VRMS: 60% of rated voltage DC
- ◆ Temperature Coefficient: +/- 15%, -55° to 125°C
- ◆ Dissipation Factor: <2% @ 1 KHZ, 25°C
- ◆ Aging: 2.5% per decade hou

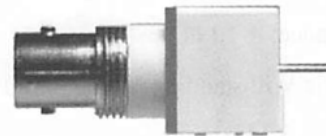
**Environmental:**

- ◆ Temperature Range: -55°C to +85°C
- ◆ Temperature Cycle: Method to 102-C
- ◆ Humidity: Method to 102-C
- ◆ Salt Spray: Method to 101-1



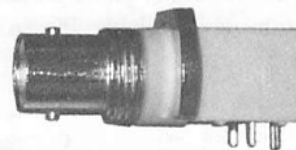
Right Angle PCB Mount

- BNC 70F12 10 nF
- BNC70F22 12 nF



Right Angle PCB Mount

- BNC 72F12 10 nF
- BNC72F22 12 nF



Right Angle PCB Mount

- BNC 74F12 10 nF
- BNC74F22 12 nF

**FILTERED BNC CONNECTORS**



## GENERAL SPECIFICATIONS FOR BNC CONNECTORS

### Mechanical

- ◆ Dimensions: to MIL-C-39012
- ◆ Mating Cycles: 500 Min.
- ◆ Mating Force: 3 lbs Max.
- ◆ Mating Torque: 1.0 in lbs. Min., 2.5 lbs. Max.
- ◆ Cable Retention: 20 to 100 lbs.

### Electrical:

- ◆ Impedance: 50 Ohms Nominal  
(75 Ohms are made to special order.)
- ◆ Working Voltage: 500 RMS
- ◆ Contact Resistance: 2.0 Milliohms Maximum
- ◆ Insulation Resistance: 5k megaohms
- ◆ Capacitance: 4-10 nF
- ◆ Dielectric Withstanding Voltage: 500 VDC
- ◆ VSWR: 1.3 Maximum
- ◆ Frequency Range: 0-4 GHZ

### Materials:

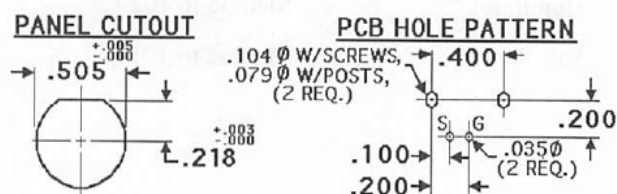
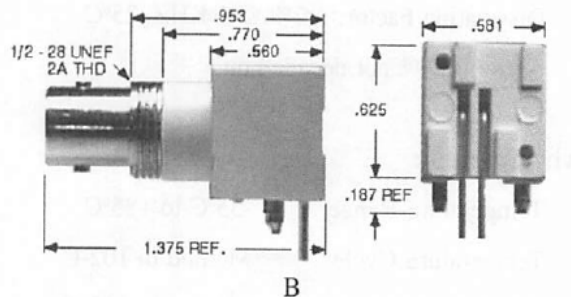
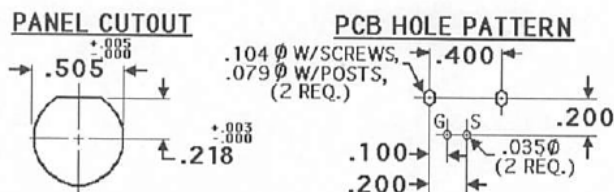
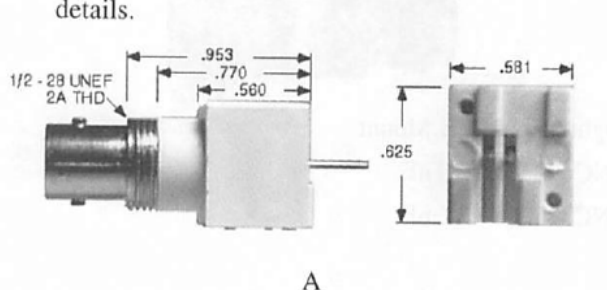
- ◆ Body: Die cast Zinc with nickel plating or machined brass with nickel plating
- ◆ Contacts: 70/30 Brass Alloy with silver or gold plating
- ◆ Insulators: Polyethylene/Valox or teflon
- ◆ Crimp Ferrules: Copper with nickel plating

### Environmental:

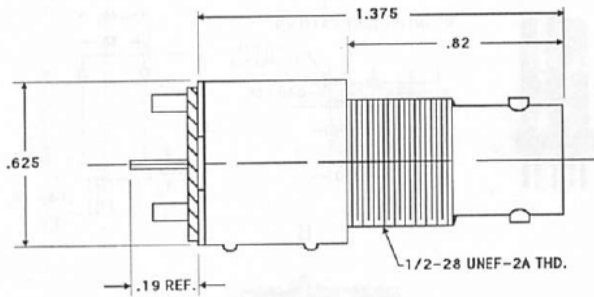
- ◆ Temperature Range: -55°C to +85°C
- ◆ Temperature Cycle: Method to 102-C
- ◆ Humidity: Method to 102-C
- ◆ Salt Spray: Method to 101-1
- ◆ Vibration: Method 204-B
- ◆ Shock: Method 213-1

- ◆ PCB mount receptacles utilize a die cast zinc shell with bright nickel plating, polyethylene insulators, and either silver or gold plated contacts. The molded valox body features troughs that isolate the signal and ground leads and greatly reduce fluctuations in impedance. They are offered in right angle or vertical versions with either solder posts or screws for mounting. Hardware packages for either panel grounding or insulating applications are available. Please see page 47 for details.

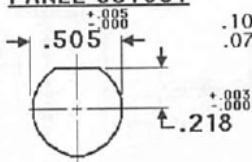
STYLE / MOUNTING	FIG.	SILVER PLATED CONTACT	GOLD PLATED CONTACT
Right Angle, posts	B	BNC 7057	BNC 7059
Right angle, screws	B	BNC 7154	BNC 7159
Vertical, posts	A	BNC 7254	BNC 7259
Vertical, screws	A	BNC 7354	BNC 7359



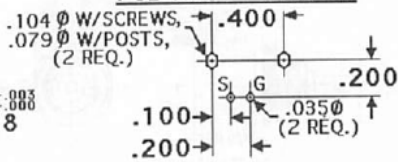
# ISOLATED PCB MOUNT BNC RECEPTACLES



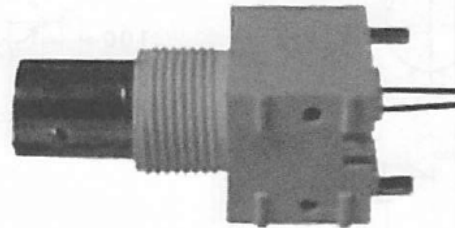
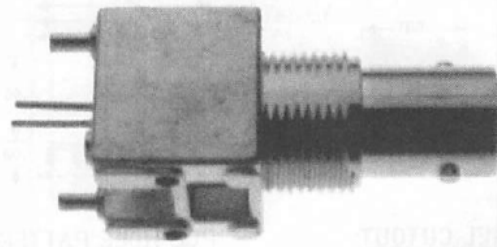
### PANEL CUTOUT



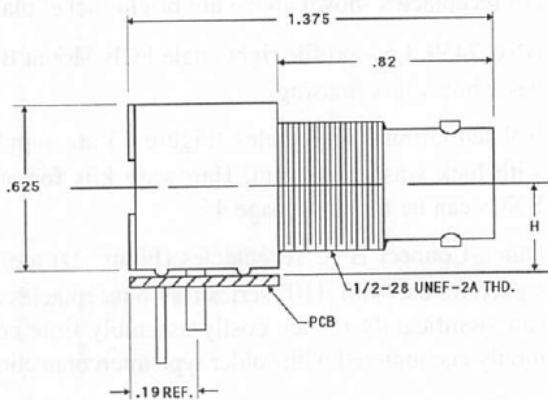
### PCB HOLE PATTERN



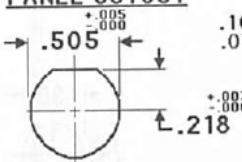
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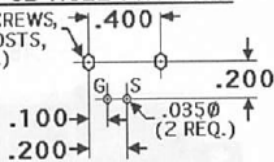
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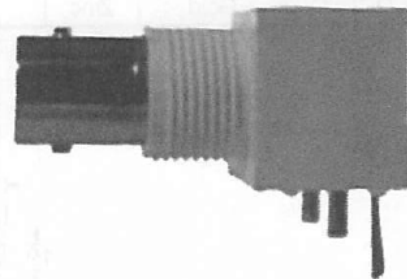
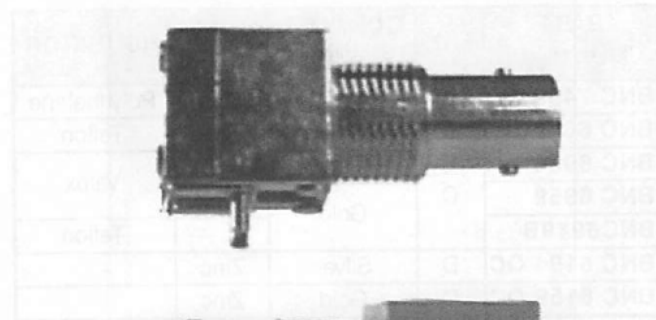
### PANEL CUTOUT



### PCB HOLE PATTERN



A



B

BNC RECEPTACLES

STYLE	FIG.	BODY	TIN PLATED CONTACT	GOLD PLATED CONTACT
Right Angle, mounting posts	A	Zinc	BNC 7050 D.C.	BNC 7059 D.C.
Right angle, mounting screw s	A	Zinc	BNC7150 D.C.	BNC 7159 D.C.
Vertical, mounting posts	B	Zinc	BNC 7250 D.C.	BNC 7259 D.C.
Vertical, mounting screw s	B	Zinc	BNC 7350 D.C.	BNC 7359 D.C.
Right Angle, mounting posts	A	Valox	BNC 9050 WHT	BNC 9059 WHT
Right angle, mounting screw s	A	Valox	BNC 9150 WHT	BNC 9159 WHT
Vertical, mounting posts	B	Valox	BNC 9250 WHT	BNC 9259 WHT
Vertical, mounting screw s	B	Valox	BNC 9350 WHT	BNC 9359 WHT

HH Smith



45

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Or call our Sales Department: 888-8 4 SMITH



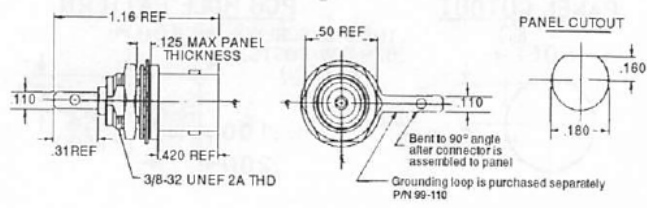
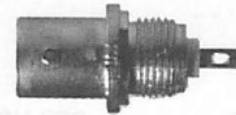
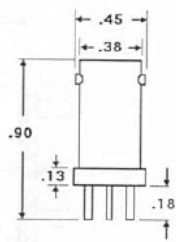
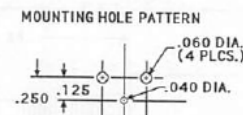
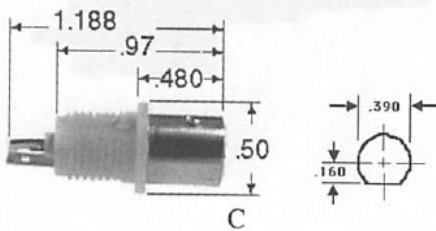
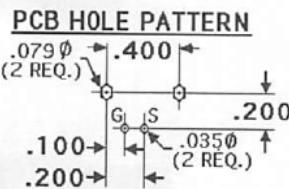
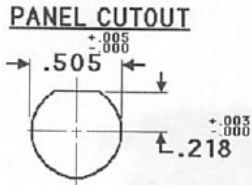
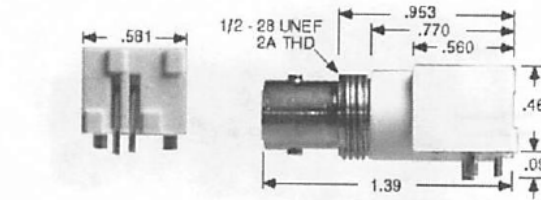
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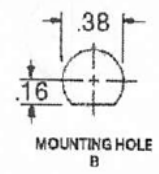
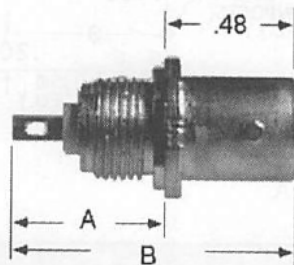
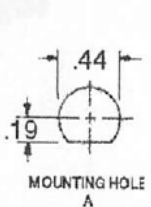
# BNC RECEPTACLES



PART NUMBER	FIG.	CONTACT PLATING	BODY	INSULATOR
BNC 7459	A	Gold	Zinc	Polythelene
BNC 6619	B		Brass	Teflon
BNC 6954	C	Silver		Valox
BNC 6959		Gold		
BNC6919B				Teflon
BNC 6154 QC	D	Silver	Zinc	
BNC 6159 QC	D	Gold	Zinc	

- ◆ All receptacles shown above are bright nickel plated.
- ◆ BNC 7459, Low profile right angle PCB Mount BNC has white valox housing.
- ◆ Isolated Ground receptacles (Figure C) are supplied with lock washer and nut. Hardware kits for other BNCs can be found on page 47.
- ◆ Quick-Connect BNC receptacles (Figure D) are designed for use with .110" series faston receptacles and can significantly reduce costly assembly time commonly encountered with solder type interconnections.

BNC RECEPTACLES



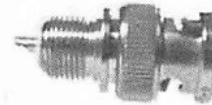
- ◆ Standard impedance rating is 50 Ohms. Contact your local sales office for further information on 75 Ohm BNC connectors.
- ◆ Please see page 47 for hardware kit.

PART NUMBER	DIMENSIONS		MAX. PANEL THKNS	MNTG HOLE	CONTACT PLATING	MILITARY NUMBER
	A	B				
BNC 6054	21/32	1.188	0.125	A	Silver	UG-625
BNC 6059					Gold	UG-625
BNC 6154					Silver	UG-1094
BNC 6159					Gold	UG-1094
BNC 6254	25/32	1.312	0.225	B	Silver	UG-1094A
BNC 6259					Gold	UG-1094A



## PANEL MOUNT BNC PLUGS

- ◆ Panel Mount BNC Plugs are machined brass with nickel plating.
- ◆ BNC 5554 is also available with wire assembled to desired length and stripped 3/16" from end. Add wire length desired as suffix to part number.



BNC 5554

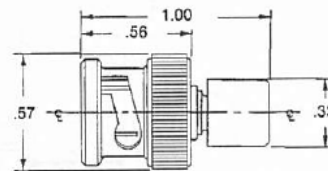


BNC 5654

## BNC TERMINATORS

- ◆ BNC Terminators utilize teflon insulators, gold plated contacts, and nickel plated brass bodies.

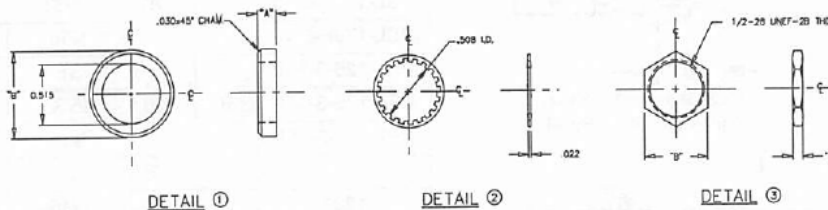
PART NUMBER*	IMPEDANCE	POWER RATING*
BNC 6719B	50 Ohms +/- 10%	.5 Watts
BNC 67193B	50 Ohms +/- 1%	.5 Watts
BNC 67191B	75 Ohms +/- 10%	.5 Watts
BNC 67194B	75 Ohms +/- 1%	.5 Watts
BNC 67192B	93 Ohms +/- 1%	.5 Watts



BNC Terminator

### Mounting Hardware Packages for PCB Mount BNC Receptacles

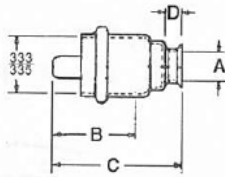
- ◆ All brass and steel nuts and/or washers are nickel plated.
- ◆ Grounded hardware packages are supplied with brass washers; insulated packages offer nylon washers.



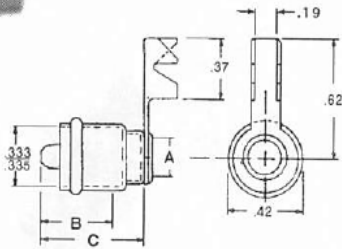
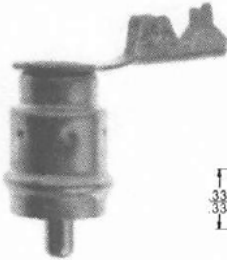
PANEL THICKNESS	P/N INSULATED	P/N GROUNDED	DIMENSIONS		
			O.D.	T	W
< .050"	H-9103	H-9203	.625	.200	.562
.050 - .100	H-9100	H-9200	.750	.160	.625
.100 - .150	H-9101	H-9201	.750	.110	.625
.150 - .200	H-9102	H-9202	.750	.060	.625



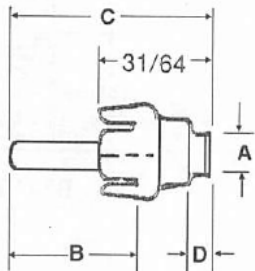
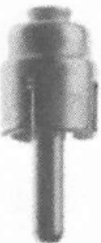
# PHONO PLUGS



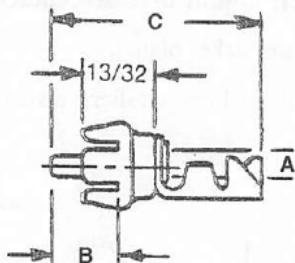
A



B

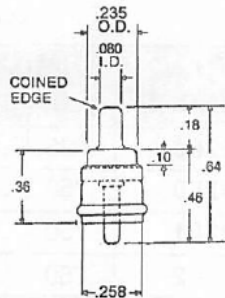


C



D

44BF Same as 1246 except Right Angle Strain Relief



E

### Product Facts:

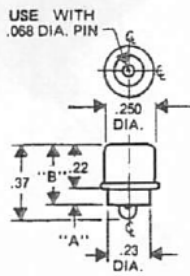
- ◆ Patented Improved Design
- ◆ Initial insertion 8# Maximum
- ◆ Virtually indestructable

### Materials:

- ◆ Steel shells are bright tin plated with .125" nickel plated pins.
- ◆ Insulation is a low loss phenolic material.
- ◆ Special plating and materials are available upon request.

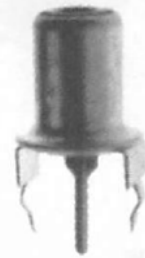
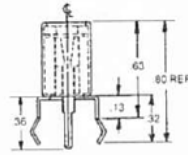
PART NO.	FIG.	A	B Pin Length	C	D	
PSL-126F-3-15	A	.126	15/32	49/64	3/32	
PSL-126F-3-18			9/16	7/8		
PSL-126F-6-12			3/8	25/32	3/16	
PSL-126F-6-15			15/32	7/8		
PSL-126F-6-18			9/16	31/32		
PSL-126F-8-15		.130	15/32	15/16	17/64	
PSL-156F-6-12		.156	15/32	3/8	25/32	3/16
PSL-156F-6-15				7/8		
PSL-156F-6-18				9/16	31/32	
PSL-176F-6-12		.176	15/32	3/8	25/32	
PSL-176F-6-15	7/8					
PSL-176F-6-18	9/16			31/32		
PSL-126-3-12L	B	.126	3/8	41/64	Right Angle Strain Relief	
PSL-126-3-15L			15/32	11/16		
PSL-126-3-18L			9/16	53/64		
1202	C	.175	3/8	11/16	1/16	
1201	C	.175	9/16	13/16	1/16	
N38 B	C	.125	3/8	11/16	1/16	
N38 C	C	.125	9/16	11/16	1/16	
1246	D	.145	3/8	1-5/32	Strain Relief	
N44BF	D	.145	9/16	1-5/32*	*Right Angle Strain Relief	
N33	E	.258	.460	.64	Miniature	
N3302	B	.080	.290	.610	Mini Right Angle Strain Relief	
N3308	E	.080	.290	.530	.07 Mini	





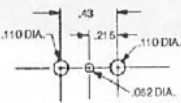
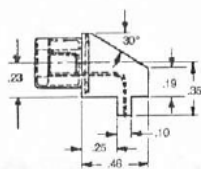
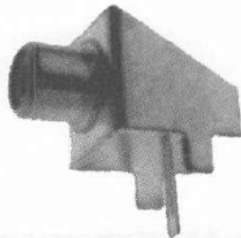
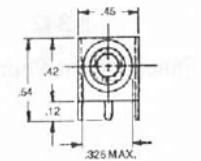
N132

Miniature Phono Jack



N333-51

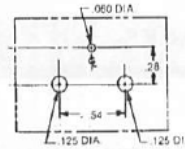
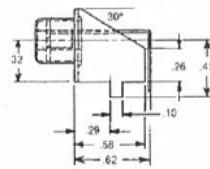
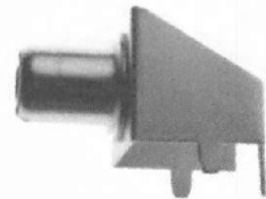
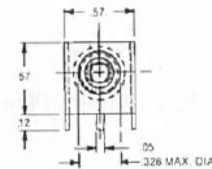
P.C.B. Mount Phono Jack



P.C.B. LAYOUT

N333-26

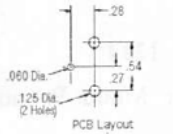
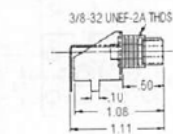
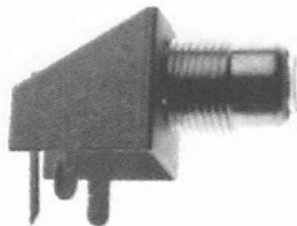
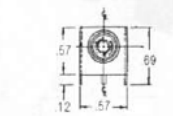
P.C.B. Mount Right Angle Phono Jack



P.C.B. LAYOUT

N333-15

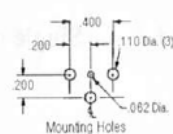
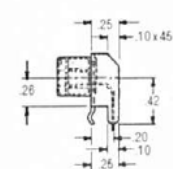
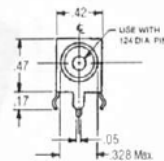
P.C.B. Mount Right Angle Phono Jack



PCB Layout

N342-15

P.C.B. Mount Right Angle Phono Jack



Mounting Holes

N334-15

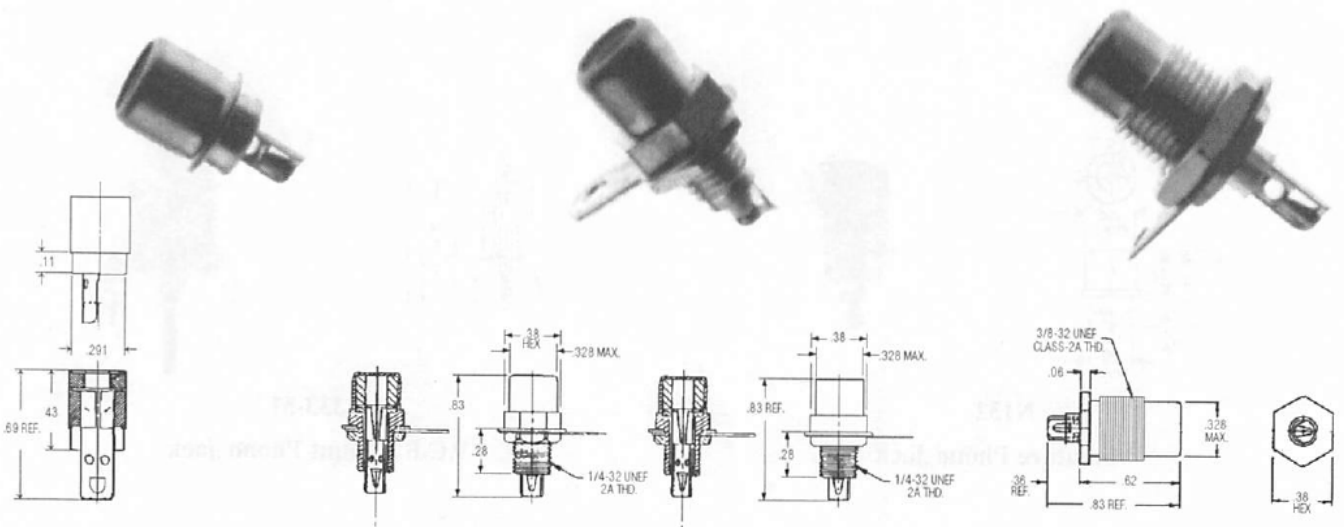
P.C.B. Mount Right Angle Phono Jack

PHONO JACKS



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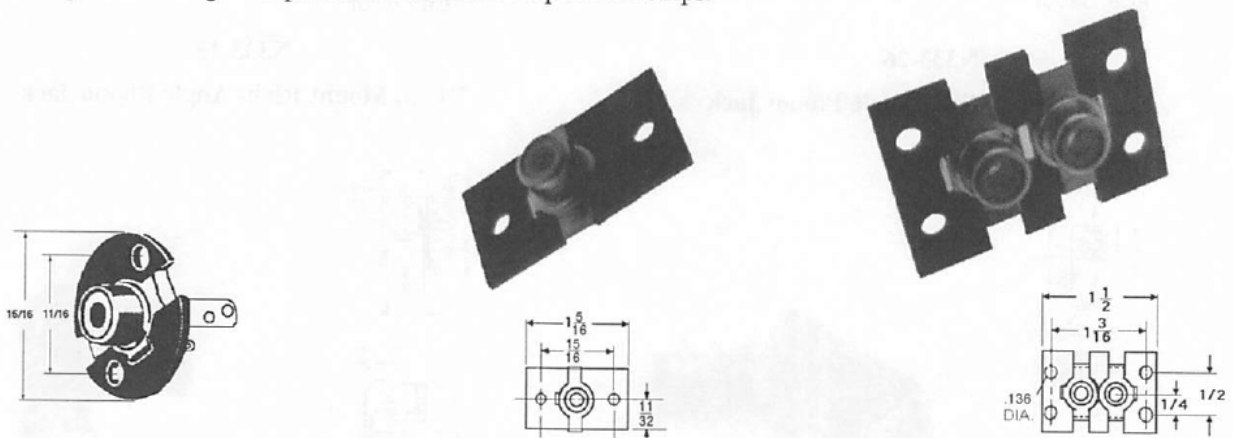
## PANEL MOUNT PHONO JACKS



**1233** Panel Mount Phono Jack    **N341** Hex Panel Mount Phono Jack    **1247** Panel Mount Phono Jack    **N342** Panel Mount Phono Jack

## PANEL MOUNT PHONO JACKS

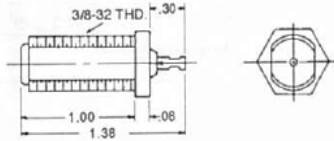
- ◆ Phono jacks are bright tin plated and mounted on phenolic strips.



**1203** Chassis Mount Phono Jack - Round    **1211** Single Chassis Mount Phono Jack    **1214** Double Chassis Mount Phono Jack

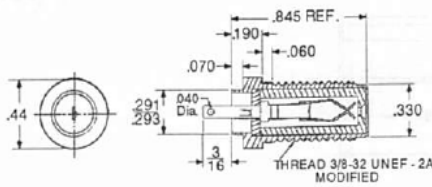
PHONO JACKS





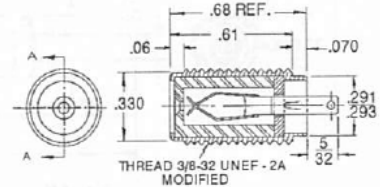
**J75-59-37**

**"F" Panel Mount Connector**



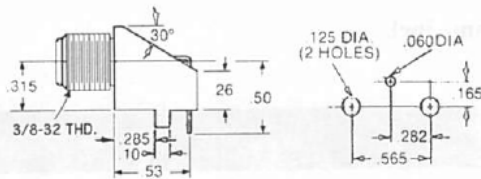
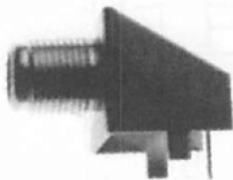
**J75-59-44**

**"F" Panel Mount Connector**



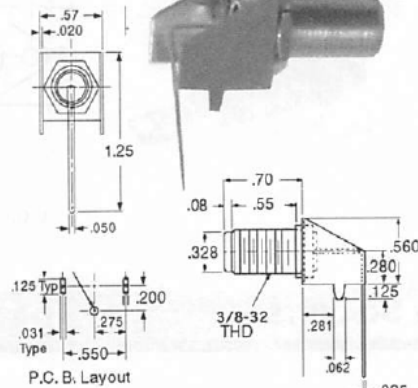
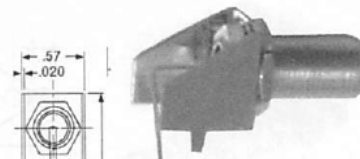
**J75-59-76**

**"F" Panel Mount Connector**



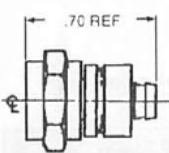
**6-72-15**

**Right Angle P.C. Mount "F" Jack**



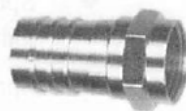
**J75-59-24**

**Right Angle PC Mount "F" Jack**



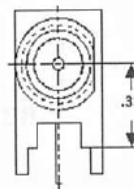
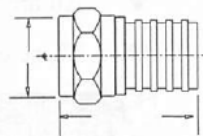
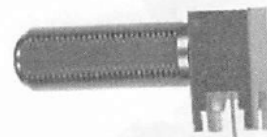
**1817**

**RG 59 "F" Connector**



**1815**

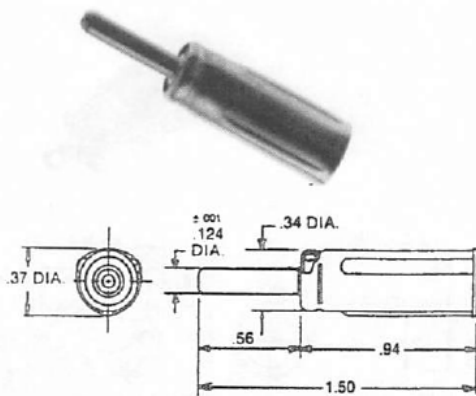
**RG 59 "F" Connector**



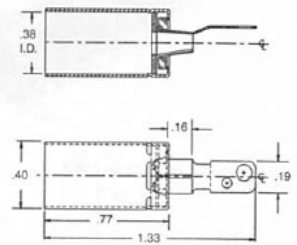
**1831**

**P.C.B. Mount "F" Jack**

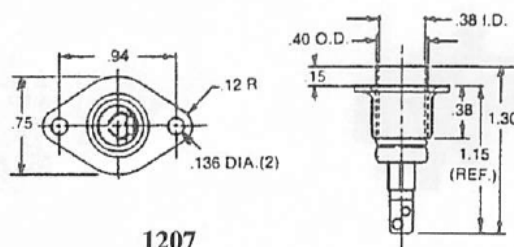
# COAXIAL ANTENNA CONNECTORS



**N6-68**  
Coaxial Antenna Plug

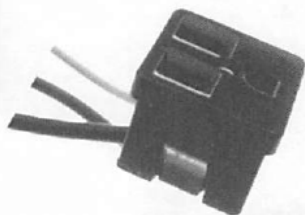


**1235**  
Coaxial Antenna Jack

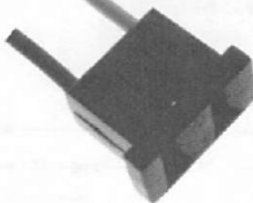


**1207**  
Coaxial Antenna Jack

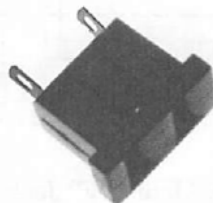
## OUTLETS & SOCKETS



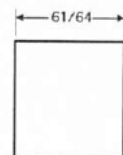
A



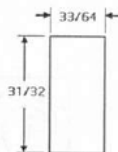
B



C



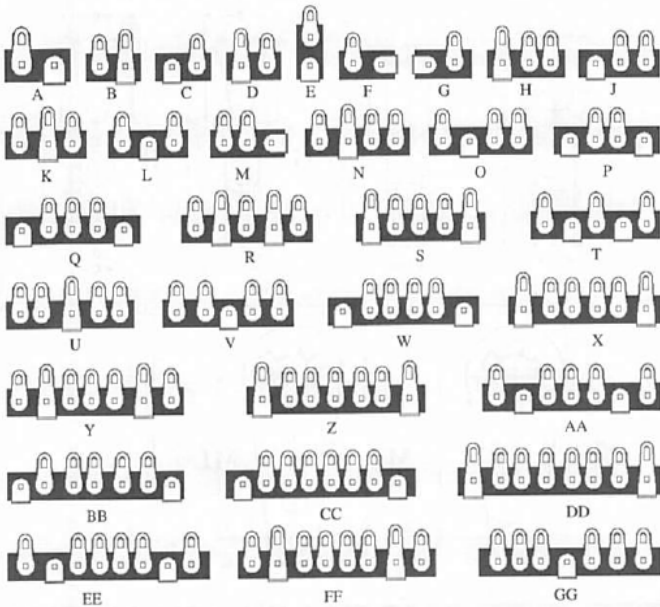
AA



BB

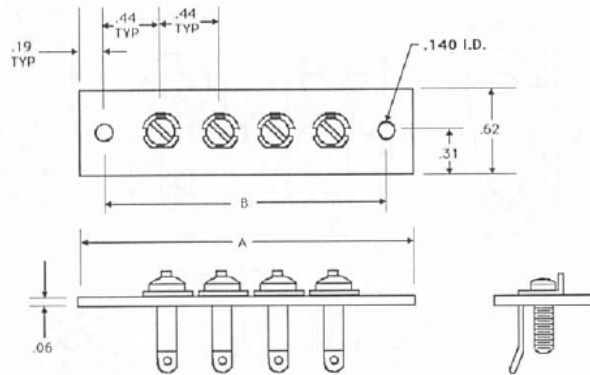
- ◆ Power outlets for use on a variety of small appliances and electronic equipment. All are black, general purpose phenolic. Part number 1280 is also available in white.
- ◆ Spring clips are made of steel with copper alloy tin plating.
- ◆ Spring clip snaps into panel cutout for mounting.
- ◆ Black and white 6" wire leads are stripped 1/2" for convenience. Style 1280 has green ground wire.
- ◆ All are UL and CSA approved.
- ◆ These outlets are rated at 15 amps, 125 Volts AC.

PART NO.	FIG.	PANEL CUTOUT	TERMINAL TYPE	POLARIZED
1280-101	A	AA	6" Wire Leads	Yes, w/ ground
1280-103				Yes
1283	B	BB	Solder Lugs	Yes
1284	C			



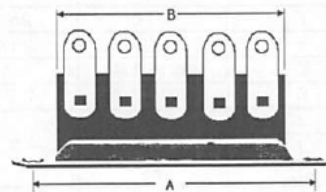
All lugs are electro-tin plated steel.  
 Strip material: flame retardant phenolic, .062" thk.  
 Lug Spacing: 3/8" Standard, 1/4" Miniature.  
 Strip Width: 3/8" Standard, 5/16" Miniature.  
 Mounting Hole: .140" ID Standard, .096" ID Mini.  
 Mounting Screw: #6 Standard, #3 or 3/32" rivet Mini.

STANDARD PART NO.	MINIATURE PART NO.	FIG.	NO. TERMINALS	
			INSULATED	GROUNDING
861	1061	A	-	-
862	1062	B	1	1
813	1003	C	-	-
820	1004	D	-	1
849	1039	E	1	-
828	1005	F	-	-
821	1009	G	1	-
830	1055	H	2	1
829	1043	J	-	-
864	1064	K	-	-
863	1063	L	2	1
846	1059	M	-	-
850	1074	N	-	-
857	1072	O	3	1
867	1067	P	2	-
853	1073	Q	-	-
868	1068	R	3	1
847	1071	S	-	-
865	1065	T	3	-
866	1066	U	-	1
855	1084	V	4	-
869	1069	W	-	-
854	1076	X	-	1
879	1158	Y	7	-
859	1156	Z	-	-
871	1157	AA	5	1
860	1060	BB	-	-
848	1078	CC	-	-
900	1075	DD	6	1
858	1096	EE	-	-
870	1070	FF	-	-
901	-	GG	6	1



Boards are 1/16" thick laminated Phenolic.  
 Terminals are 1/32" brass or steel, bright tin plated.  
 Screws are steel, zinc or bright tin plated.  
 Hardware, alternative dimensions, materials or finishes are available upon request.

PART NO.	QTY. LUGS	DIM. A	DIM. B	Mounting Holes ○ Terminals ●
914	1	1.25	.87	○●○
872	2	1.69	1.31	○●●○
873	3	2.12	1.75	○●●●○
874	4	2.56	2.19	○●●●●○
875	5	3.00	2.62	○●●●●○
876	6	3.44	3.06	○●●●●○
877	7	3.87	3.50	○●●●●○
928	8	4.31	3.94	○●●●●○
929	9	4.75	4.37	○●●●●○
930	10	5.19	4.82	○●●●●○
N2411	11	5.62	5.25	○●●●●○
N2422	12	6.06	5.69	○●●●●○

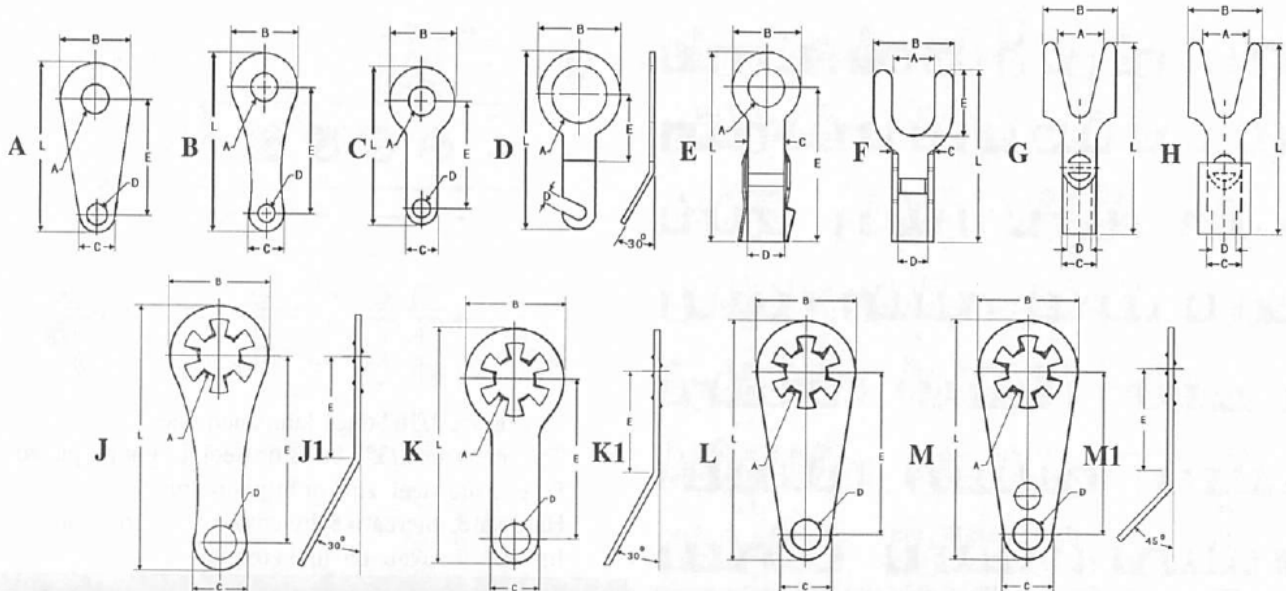


Strip material: flame retardant phenolic.  
 Lugs: Steel, Electro-tin plated, 5/16" centers.  
 Mounting holes for #6 screws, electro-tin plated base.

PART NO.	NO. TERMINALS	MNTG. CTRS.	LENGTH
		A	B
3002	2	1	.67
3003	3	1-5/16	.99
3004	4	1-5/8	1.30
3005	5	1-15/16	1.61
3006	6	2-1/4	1.92
3007	7	2-9/16	2.24
3008	8	2-7/8	2.55
3009	9	3-3/16	2.86
3010	10	3-1/2	3.17
3011	11	3-13/16	3.49
3012	12	4-1/8	3.80
3013	13	4-7/16	4.11

TERMINAL STRIPS

# SOLDER LUGS



PART NO.	ILLUS	STUD SIZE	LENGTH	THKNS.	O.D.	WIDTH	HOLE	CNTR
					B	C	D	E
1485-6	A	#6	9/16	.010	9/16	3/16	1/16	5/16
1485-8	A	#8						
1485-10	A	#10						
1497	A	1/4	7/8	.016	7/8	7/32	5/64	1/2
1486-4	B	#4	27/32	.010	5/16	5/32	1/16	5/8
1486-6	B	#6					1/16	5/8
1486-8	B	#8					1/16	5/8
1486-10	B	#10					1/16	5/8
1488-4	C	#4	9/16	.020	1/4	5/16	1/16	23/64
1488-6	C	#6					1/16	23/64
1488-8	C	#8					1/16	23/64
1496	D	1/4	25/32	.020	3/8	5/16	1/16	19/64
1494-8	E	#8	5/8	.020	5/16	3/32	3/32	15/32
1491	E	#10	15/16	.018	11/32	3/16	3/16	49/64
1493	E	1/4	1-3/32	.025*	1/2	3/16	3/16	27/32
1490	F	#10	25/32	.020	3/8	7/32	3/16	37/64
1495	F	#8	21/32	.020	11/32	3/32	9/64	33/64
129	G	#6 to 1/4"	1-1/4	.022	7/32	13/64	6/37	33/64
218	H	#6 to 1/4"	1-7/16	.022	3/8	3/8	6/37	33/64
1410-4	J	#4	7/8	.018	5/16	11/64	3/32	5/8
1410-6	J	#6		.018	5/16	11/64		5/8
1410-8	J	#8		.018	5/16	11/64		5/8
1410-10	J	#10		.018	11/32	11/64		5/8
1410-14	J	1/4	57/64	.018	7/16	3/16	1/2	
1414-4	J1	#4	13/16	.018	5/16	11/64	3/32	17/64
1414-6	J1	#6		.018	5/16	11/64		17/64
1414-8	J1	#8		.018	5/16	11/64		17/64
1414-10	J1	#10		.018	11/32	11/64		17/64
1411-4	K	#4	47/64	.018	5/16	5/32	3/32	17/32
1411-6	K	#6		.018				17/32
1411-8	K	#8		.018				17/32
1415-4	K1	#4	23/32	.018	5/16	5/32	3/32	7/32
1415-6	K1	#6		.018				7/32
1415-8	K1	#8		.018				7/32
1412-4	L	#4		5/8				.018
1412-4	L	#6	.018		3/8			
1412-8	L	#8	.018		3/8			
1413-4	M	#4	23/32	.018	5/16	3/16	3/8	15/32
1413-6	M	#6		.018				15/32
1413-8	M	#8		.018				15/32
1416-4	M1	#4		41/64				.018
1416-6	M1	#6	.018		1/4			
1416-8	M1	#8	.018		1/4			

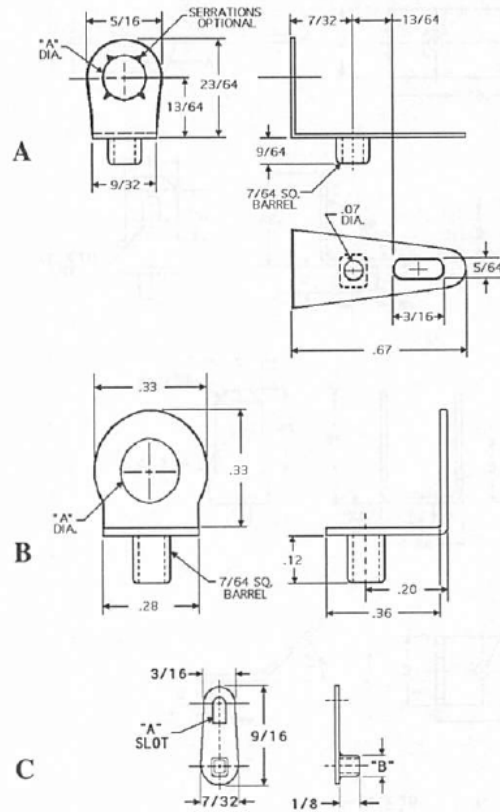
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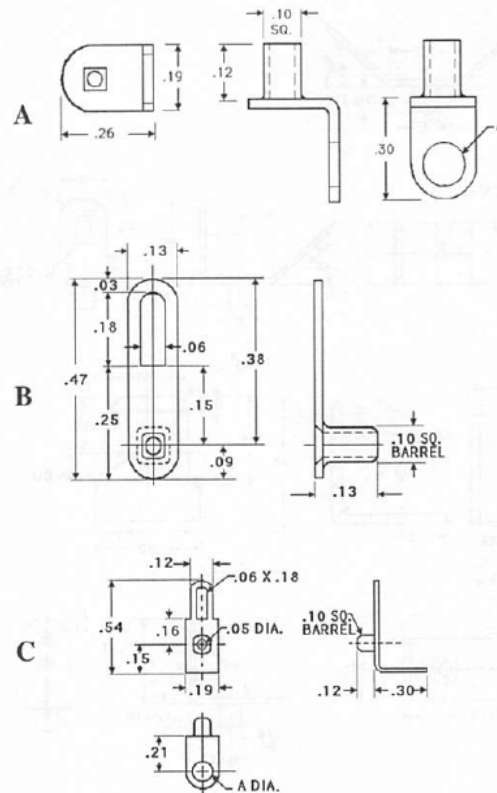
## MOUNTING LUGS

PART NO.	FIG.	MATERIAL	DIA
			A
N4301	A	.017 Brass	.144
N4302	A	.017 Brass	.169
N4303	A	.017 Brass	.199
N4304	A	.023 Brass	.169
N4307	B	.020 Brass	.140
N4308	B	.020 Brass	.169
N4309	B	.020 Brass	.199
N4001	C	.020 Brass	.16 x .08



## MINIATURE LUGS

PART NO.	FIG.	MATERIAL	DIA
			A
N4102	A	.017 Brass	.144
N4103	A	.017 Brass	.169
N4106	B	.017 Brass	.199
N4108	C	.023 Brass	.169
N4109	C	.020 Brass	.140



SOLDER LUGS

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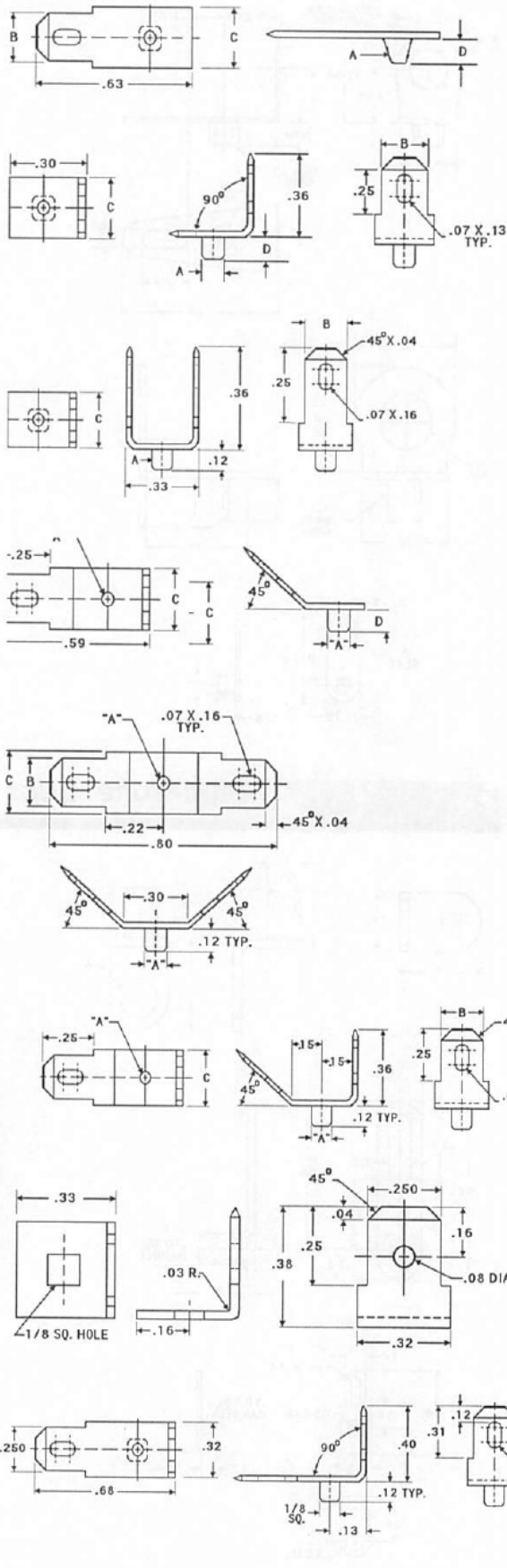
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# QUICK DISCONNECT TYPE TERMINALS



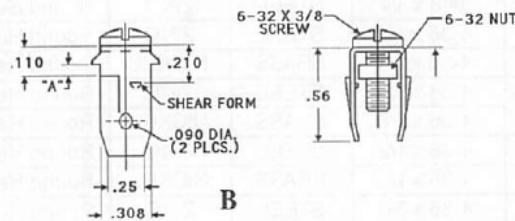
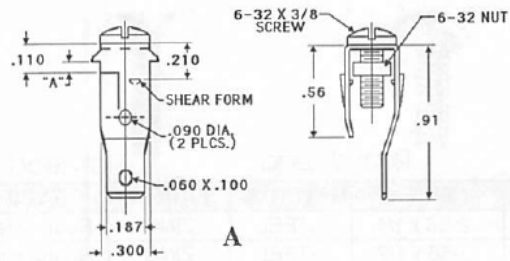
PART NO.	FIG.	MATERIAL	DIMENSIONS		
			A	B	C
N4201	A	.020 Brass	7/64 Sq. Barrel	.205	.27
N4220	A		1/8 Sq. Hole	.205	.27
N4231	A		7/64 Sq. Barrel	.250	.31
N4236	A		1/8 Sq. Hole	.250	.31
N4250	A	.032 Brass	1/8 Sq. Hole	.205	.27
N4258	A		1/8 Sq. Hole	.250	.31
N4289	A		1/8 Sq. Barrel	.250	.31
N4450	A	.020 Brass	7/64 Sq. Barrel	.187	.27
N4455	A		1/8 Sq. Hole	.187	.27
N4466	A		1/8 Sq. Hole	.187	.27
N4202	B		7/64 Sq. Barrel	.205	.27
N4221	B	.032 Brass	1/8 Sq. Barrel	.205	.27
N4232	B		7/64 Sq. Barrel	.250	.31
N4237	B		1/8 Sq. Hole	.250	.31
N4251	B	.020 Brass	1/8 Sq. Hole	.205	.27
N4259	B		1/8 Sq. Hole	.250	.31
N4451	B	.032 Brass	7/64 Sq. Barrel	.187	.27
N4456	B		1/8 Sq. Hole	.187	.27
N4467	B		1/8 Sq. Hole	.187	.27
N4205	C	.020 Brass	7/64 Sq. Barrel	.205	.27
N4224	C		1/8 Sq. Hole	.205	.27
N4235	C		7/64 Sq. Barrel	.250	.31
N4240	C	.032 Brass	1/8 Sq. Hole	.250	.31
N4254	C		1/8 Sq. Hole	.205	.27
N4262	C		1/8 Sq. Hole	.250	.31
N4270	C	.020 Brass	1/8 Sq. Hole	.187	.31
N4454	C		7/64 Sq. Barrel	.187	.27
N4459	C		1/8 Sq. Hole	.187	.27
N4225	D		7/64 Sq. Barrel	.205	.29
N4228	D	.032 Brass	1/8 Sq. Hole	.205	.29
N4241	D		7/64 Sq. Barrel	.250	.31
N4245	D		1/8 Sq. Hole	.250	.31
N4255	D	.020 Brass	1/8 Sq. Hole	.205	.29
N4263	D		1/8 Sq. Hole	.205	.31
N4271	D		1/8 Sq. Hole	.187	.29
N4460	D	.032 Brass	7/64 Sq. Barrel	.187	.29
N4463	D		1/8 Sq. Hole	.187	.29
N4226	E		7/64 Sq. Barrel	.205	.27
N4242	E	.020 Brass	7/64 Sq. Barrel	.250	.31
N4256	E		1/8 Sq. Hole	.205	.27
N4265	F		1/8 Sq. Hole	.250	.31
N4273	F	.032 Brass	1/8 Sq. Hole	.187	.27
N4475	G		1/8 Sq. Hole	.250	.32
N4482	H		1/8 Sq. Barrel	.250	.32
N4483	J	.032 Brass	1/8 Sq. Barrel	.250	.32



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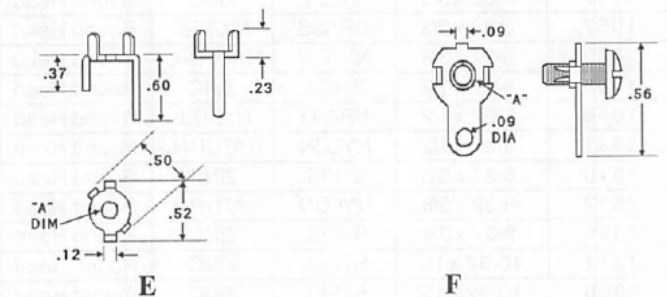
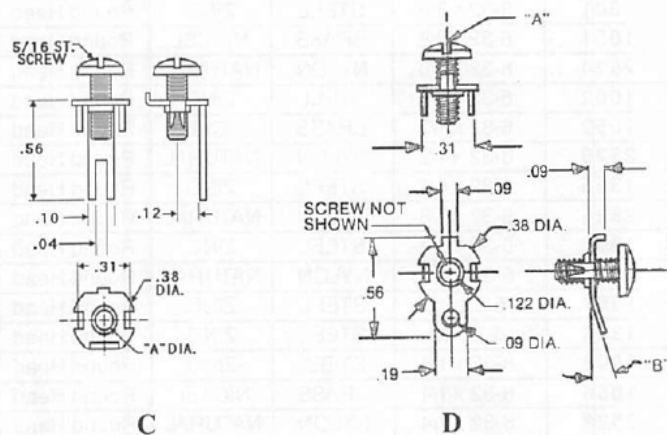
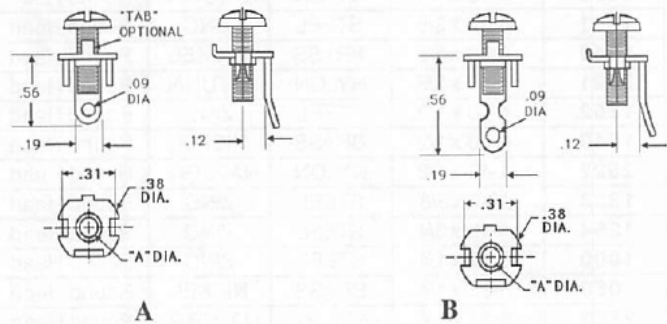
PART NO.	ILLUS.	MATERIAL	DIM. A	SCREW	NUT
NWAJ116	A	.028 Brass	.072	6-32X3/8	6-32 Nut
NWAJ332			.103		
NWAU116	B		.062		
NWAU332			.103		

◆ Snap-in Lugs and Screw Terminals are also available in steel, or with choice of finishes.



# SCREW TERMINALS

PART NO.	FIG.	MATERIAL	DIM. A	SCREW	COMMENTS			
N4430	F	.028 Brass	.108 Hole	None	-			
N4401	A				w/ Tab			
N4423	C	.032 Brass	.122 Hole		w/ Tab			
N4409		.028 Brass			no Tab			
N4409-2	D	.032 Brass	.125 Hole	6/32x1/4	B = 18°			
N4416				B = 0°				
N4416-6	B	.032 Brass	.125 Hole	None	B = 18°			
N4417					-			
N4406	A	.028 Brass	6-32 Thread	1/4 Steel	w/ Tab			
N4402				5/16 Steel	no Tab			
N4403				None	w/ Tab			
N4404				5/16 Steel	no Tab			
N4405				None	w/ Tab			
N4424				5/16 Brass	no Tab			
N4425				1/4 Steel	-			
N4426				5/16 Steel	w/ Tab			
N4407				C	.032 Brass	6-32 Thread	1/4 Steel	w/ Tab
N4408							5/16 Steel	no Tab
N4410	F	.032 Brass	8-32 Thread	1/4 Steel	w/ Tab			
N4410-2				5/16 Steel	no Tab			
N4410-5				1/4 Steel	w/ Tab			
N4411				5/16 Steel	no Tab			
N4411-1				1/4 Steel	w/ Tab			
N4411-2				5/16 Steel	no Tab			
N4411-2-1	1/4 Steel	w/ Tab						
N4411-5	5/16 Steel	no Tab						
N4411-5-1	1/4 Steel	w/ Tab						
N4429	E	.050 Brass	8-32 Thread	3/8 Steel	w/ Tab			
N4418	E	.050 Brass	8-32 Thread	3/8 Steel	no Tab			
N4419					no Tab			



SCREW TERMINALS



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# SCREWS



Round Head



Flat Head



Binder Head



Oval Head

PART NO.	SIZE	MATERIAL	FINISH	TYPE	PART NO.	SIZE	MATERIAL	FINISH	TYPE
1173	2-56 x 1/4	STEEL	ZINC	Round Head	1361	10-32 x 3/4	STEEL	ZINC	Round Head
1174	2-56 x 1/2	STEEL	ZINC	Round Head	1362	10-32 x 1	STEEL	ZINC	Round Head
1175	2-56 x 3/4	STEEL	ZINC	Round Head	2580	4-40 x 1/4	NYLON	NATURAL	Flat Head
1176	3/48 x 3/4	STEEL	ZINC	Round Head	2581	4-40 x 3/8	NYLON	NATURAL	Flat Head
1177	4-36 x 1/4	STEEL	ZINC	Round Head	2582	4-40 x 1/2	NYLON	NATURAL	Flat Head
1044	4-36 x 1/4	BRASS	NICKEL	Round Head	2583	6-32 x 1/4	NYLON	NATURAL	Flat Head
1178	4-36 x 3/8	STEEL	ZINC	Round Head	2584	6-32 x 3/8	NYLON	NATURAL	Flat Head
1045	4-36 x 3/8	BRASS	NICKEL	Round Head	2585	6-32 x 1/2	NYLON	NATURAL	Flat Head
1183	4-36 x 1/2	STEEL	ZINC	Round Head	2586	6-32 x 5/8	NYLON	NATURAL	Flat Head
1046	4-36 x 1/2	BRASS	NICKEL	Round Head	2587	6-32 x 3/4	NYLON	NATURAL	Flat Head
1184	4-36 x 5/8	STEEL	ZINC	Round Head	2589	8-32 x 1/4	NYLON	NATURAL	Flat Head
1185	4-36 x 3/4	STEEL	ZINC	Round Head	2590	8-32 x 3/8	NYLON	NATURAL	Flat Head
1350	4-40 x 1/4	STEEL	ZINC	Round Head	2591	8-32 x 1/2	NYLON	NATURAL	Flat Head
1047	4-40 x 1/4	BRASS	NICKEL	Round Head	2592	8-32 x 5-8	NYLON	NATURAL	Flat Head
2520	4-40 x 1/4	NYLON	NATURAL	Round Head	1369	2-56 x 1/4	STEEL	ZINC	Binder Head
1351	4-40 x 3/8	STEEL	ZINC	Round Head	1370	2-56 x 1/2	STEEL	ZINC	Binder Head
1048	4-40 x 3/8	BRASS	NICKEL	Round Head	1371	2-56 x 5/8	STEEL	ZINC	Binder Head
2521	4-40 x 3/8	NYLON	NATURAL	Round Head	1272	3-48 x 1/4	STEEL	ZINC	Binder Head
1352	4-40 x 1/2	STEEL	ZINC	Round Head	1372	4-40 x 1/4	STEEL	ZINC	Binder Head
1049	4-40 x 1/2	BRASS	NICKEL	Round Head	2500	4-40 x 1/4	NYLON	NATURAL	Binder Head
2522	4-40 x 1/2	NYLON	NATURAL	Round Head	2501	4-40 x 3/8	NYLON	NATURAL	Binder Head
1353	4/40 x 5/8	STEEL	ZINC	Round Head	1373	4-40 x 1/2	STEEL	ZINC	Binder Head
1354	4-40 x 3/4	STEEL	ZINC	Round Head	2502	4-40 x 1/2	NYLON	NATURAL	Binder Head
1000	6-32 x 1/4	STEEL	ZINC	Round Head	1374	4-40 x 3/4	STEEL	ZINC	Binder Head
1050	6-32 x 1/4	BRASS	NICKEL	Round Head	1273	6-32 x 1/8	STEEL	ZINC	Binder Head
2523	6-32 x 1/4	NYLON	NATURAL	Round Head	1375	6-32 x 3/16	STEEL	ZINC	Binder Head
1001	6-32 x 3/8	STEEL	ZINC	Round Head	1425	6-32 x 1/4	STEEL	ZINC	Binder Head
1051	6-32 x 3/8	BRASS	NICKEL	Round Head	2503	6-32 x 1/4	NYLON	NATURAL	Binder Head
2524	6-32 x 3/8	NYLON	NATURAL	Round Head	1426	6-32 x 3/8	STEEL	ZINC	Binder Head
1002	6-32 x 1/2	STEEL	ZINC	Round Head	2504	6-32 x 3/8	NYLON	NATURAL	Binder Head
1052	6-32 x 1/2	BRASS	NICKEL	Round Head	1427	6-32 x 1/2	STEEL	ZINC	Binder Head
2525	6-32 x 1/2	NYLON	NATURAL	Round Head	2505	6-32 x 1/2	NYLON	NATURAL	Binder Head
1355	6-32 x 5/8	STEEL	ZINC	Round Head	1376	6-32 x 5/8	STEEL	ZINC	Binder Head
2526	6-32 x 5/8	NYLON	NATURAL	Round Head	2506	6-32 x 5/8	NYLON	NATURAL	Binder Head
1356	6-32 x 3/4	STEEL	ZINC	Round Head	1377	6-32 x 3/4	STEEL	ZINC	Binder Head
2527	6-32 x 3/4	NYLON	NATURAL	Round Head	2507	6-32 x 3/4	NYLON	NATURAL	Binder Head
1357	6-32 x 1	STEEL	ZINC	Round Head	1428	8-32 x 1/4	STEEL	ZINC	Binder Head
1358	6-32 x 2	STEEL	ZINC	Round Head	2509	8-32 x 1/4	NYLON	NATURAL	Binder Head
1006	8-32 x 1/4	STEEL	ZINC	Round Head	1378	8-32 x 5/16	STEEL	ZINC	Binder Head
1056	8-32 x 1/4	BRASS	NICKEL	Round Head	2510	8-32 x 3/8	NYLON	NATURAL	Binder Head
2529	8-32 x 1/4	NYLON	NATURAL	Round Head	1429	8-32 x 3/8	STEEL	ZINC	Binder Head
1007	8-32 x 3/8	STEEL	ZINC	Round Head	1430	8-32 x 1/2	STEEL	ZINC	Binder Head
1057	8-32 x 3/8	BRASS	NICKEL	Round Head	2511	8-32 x 1/2	NYLON	NATURAL	Binder Head
2530	8-32 x 3/8	NYLON	NATURAL	Round Head	2512	8-32 x 5/8	NYLON	NATURAL	Binder Head
1008	8-32 x 1/2	STEEL	ZINC	Round Head	1379	8-32 x 3/4	STEEL	ZINC	Binder Head
1058	8-32 x 1/2	BRASS	NICKEL	Round Head	1380	10-32 x 1/2	STEEL	ZINC	Binder Head
2531	8-32 x 1/2	NYLON	NATURAL	Round Head	1381	10-32 x 3/4	STEEL	ZINC	Binder Head
1010	8-32 x 5/8	STEEL	ZINC	Round Head	1382	6-32 x 3/4	STEEL	ZINC	Oval Head
2532	8-32 x 5/8	NYLON	NATURAL	Round Head	1383	8-32 x 3/4	STEEL	ZINC	Oval Head
1359	8-32 x 3/4	STEEL	ZINC	Round Head	1111	10-32 x 1/2	STEEL	ZINC	Oval Head
1271	10-32 x 1/4	STEEL	ZINC	Round Head	1112	10-32 x 3/4	STEEL	ZINC	Oval Head
1360	10-32 x 1/2	STEEL	ZINC	Round Head					

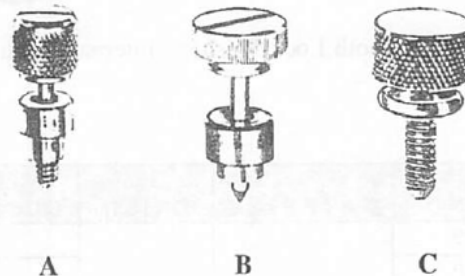
SCREWS



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- ◆ Designed for quick removal of panels from chassis or rack. Captive screws supplied with bushing. When installed, screw becomes non-removable. Bushing is annealed for curling.

PART NO.	FIG.	PANEL BUSHING	PANEL THKNS	THREAD
2375A	E	5/32	1/8	8-32
2365A	F		1/8	1/4-20
2375B	E	7/32	3/16	8-32
2365B	F		3/16	1/4-20
2375C	E	9/32	1/4	8-32
2365C	F		1/4	1/4-20
2366	G	-	-	6-32
2367				8-32
2368				10-32



- ◆ Captive and thumb screws are machined from brass and nickel plated.

WASHERS



BATTERY NUTS



KNURLED NUTS



HEX NUTS

HEX NUTS						HEX NUTS					
PART NO.	THREAD	HEX OD	THICKNESS	MATERIAL	FINISH	PART NO.	THREAD	HEX OD	THICKNESS S	MATERIAL	FINISH
1326	2-56	3/16	1/16	Brass	Nckel	1243	1/4-28	3/8	3/32	Brass	Nckel
1363				Steel	Zinc	1244			1/8	Brass	Nckel
1327	3-48			Brass	Nckel	1245	1/4-32	5/16	5/64	Brass	Nckel
1364				Steel	Zinc	1186		3/8	1/8	Steel	Zinc
1188	4-36	1/4	3/32	Brass	Nckel	1187			3/32	Brass	Nckel
1398				Steel	Zinc	1256	5/16-32	7/16	.101	Brass	Nckel
1168	4-40			Brass	Nckel	1195	3/8-32	1/2	3/32	Brass	Nckel
1365				Steel	Zinc	1199				Steel	Zinc
2554				Nylon	Natural	1258		9/16		Brass	Nckel
1189	6-32			Brass	Nckel	1196	15/32-32		5/64	Brass	Nckel
1179				Steel	Zinc	1260			3/32	Brass	Nckel
1190		5/16	7/64	Brass	Nckel	<b>BATTERY NUTS</b>					
1180				Steel	Zinc	1248	6-32	0.34375	13/64	Brass	Nckel
2555				Nylon	Natural	1249	8-32			Brass	Nckel
1328	8-32	1/4	3/32	Brass	Nckel	1313	6-32	0.375	1/4	Brass	Nckel
1366				Steel	Zinc	1314	8-32	0.4375	5/16	Brass	Nckel
1192		5/16	7/64	Brass	Nckel	1315	10-24	0.5	21/64	Brass	Nckel
1181				Steel	Zinc	1316	10-32			Brass	Nckel
2556		11/32	1/8	Nylon	Natural	1317	1/4-20	0.625	3/8	Brass	Nckel
1193	10-32	3/8		Brass	Nckel	<b>KNURLED RING NUTS</b>					
1367				Steel	Zinc	1120	1/2	0.5	1/16	Brass	Nckel
1329	1/4-20	7/16	3/16	Brass	Nckel	1198	5/8	0.625	3/16	Brass	Nckel
1368				Steel	Zinc						

SCREWS & NUTS



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# SCREWS



External Tooth Lock Washer   Internal Tooth Lock Washer   Flat Washer   Counter Sunk Washer

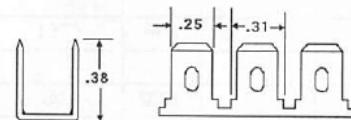
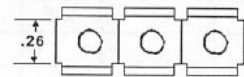
PART NO.	MATERIAL	FINISH	SCREW CLEARANCE	O.D.	MATERIAL THICKNESS	TYPE	
1139	Steel	Zinc	#4	1/4	.015	External Tooth Lockwasher	
1140			#6	5/16	.018		
1141			#8	3/8	.020		
1142			#10	13/32	.022		
1144			1/4	1/2	.026		
1143			3/8	11/16	.032		
1118			#2	3/16	.010		
1119			#3	7/32	.012		
1127			#4	1/4	.015		
1128			#6	9/32	.018		
1129			#8	11/32	.020		
1130			#10	3/8	.022		
1132			1/4	15/32	.026		
1145			3/8	1/2	.018		
1131			3/8	11/16	.032		
1146			15/32	19/32	.020		
1138			#2	1/4	1/32		Flat Washer
1149			#4	3/8			
1150			#6				
1151			#8				
1152	#10						
1147	1/4	9/16	3/64				
1148	1/4	5/8	1/32				
1115	Brass	Nickel	#6	7/16	5/64	Countersunk Washer	
1116			#8	17/32	7/64		
1117			#10	19/32			

SCREWS

Need a special part to fit a special panel?

Call HH Smith and let us design for you

**the part that fits.**



**N4490-04**

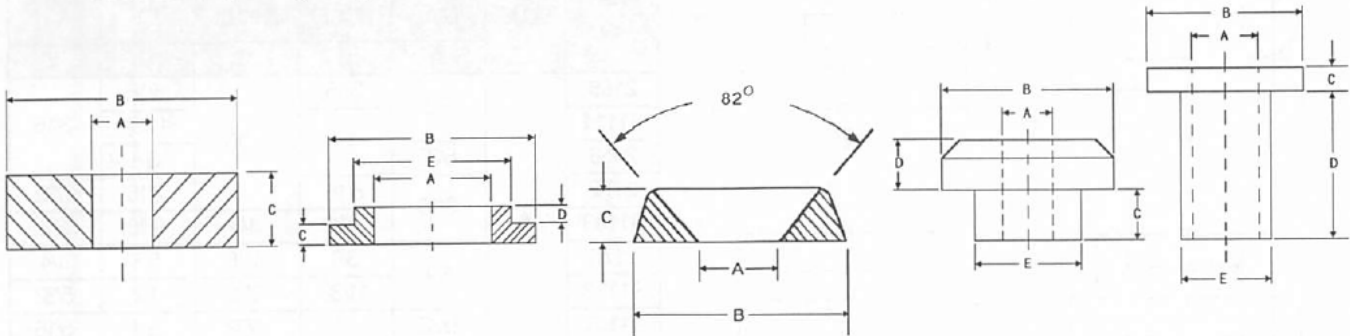
Multi Quick Disconnect Terminals can be made to order with up to twelve terminals on a strip.



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- ▶ Nominal dimensions are indicated. Inner diameter is clearance for screw size shown. Others are +/- 1/64."
- ▶ Alternative sizes, materials, or finishes may be obtained in quantity as special order.
- ▶ Nylon washers are Type 6/6, offered in natural milky white color.
- ▶ Fiber washers are commercial grade black galvanized fiber.



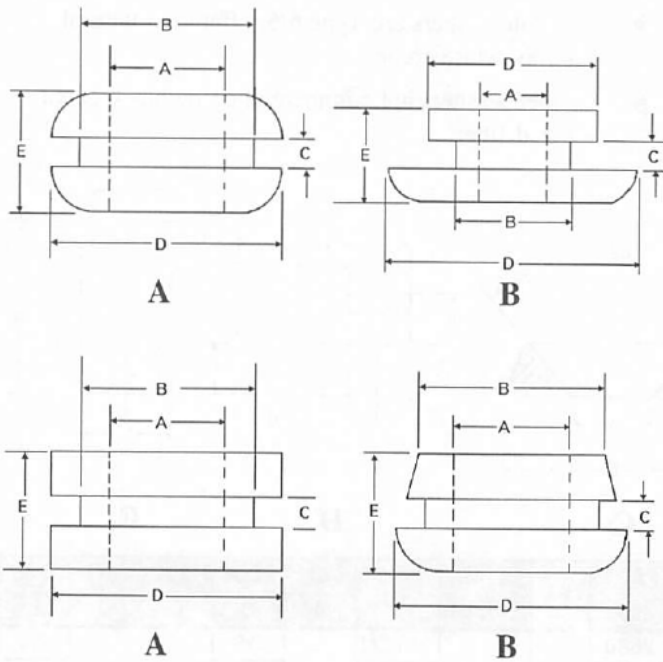
PART NO.	FIG.	SCREW CLEAR	MAT.	ID	OD	THNKS	HT.	DIA.	PART NO.	FIG.	SCREW CLEAR	MAT.	ID	OD	THNKS	HT.	DIA.		
				A	B	C	D	E					A	B	C	D	E		
2191	A	#2	FIBRE	3/32	1/4	1/32	1/32	-	2660	B	#6	NYLON	9/64	3/8	3/32	1/32	1/4		
2652			NYLON			1/4	1/16		1/16			2152		FIBRE			1/4	3/16	
2671		NYLON	1/8	9/32	3/64	3/64	2153		FIBRE		5/16	1/4							
2514		#4	FIBRE	1/4	1/16	1/16	2150		NYLON		3/8								
2161				1/4	1/16	1/16	2155		NYLON		11/64	3/8							
2160		#6	NYLON	9/64	1/4	3/64	3/64		2665		FIBRE	13/64	5/16						
2162				3/8	1/16	1/16	2666		NYLON		1/2	3/8							
2670		5/16	3/64	3/64	2156	FIBRE	1/4		1/2		3/8								
2515		#8	FIBRE	11/64	3/8	1/16	1/16		2154			NYLON	17/64	1/2					
2672				11/64	3/8	1/16	1/16		2664		FIBRE	1/4	1/2						
2673		#10	NYLON	13/64	5/8	1/16	1/16		2669		NYLON	3/8	1/2						
2163				13/64	5/8	1/16	1/16		2159		FIBRE	17/64		3/8					
2164		1/4	FIBRE	1/4	3/32	3/32	2158		NYLON		5/8	1/2							
2674				1/4	3/32	3/32	2157		FIBRE		3/4		1/2						
2518		5/16	NYLON	5/16	1/2	1/16	1/16		2668		NYLON	5/8	1/16						
2675				5/16	1/2	1/16	1/16		2667		FIBRE	3/4		1/16					
2676		3/8	FIBRE	3/8	3/4	1/16	1/16		2687		NYLON	9/64	7/16	3/32					
2166				3/8	5/8	1/16	1/16		2688		FIBRE	11/64	33/64	7/64			7/64		
2165		#10	NYLON	13/64	7/16	1/16	1/16		2689		NYLON	13/64	37/64	9/64			9/64		
2167				13/64	7/16	1/16	1/16		2690		FIBRE	15/64	39/64	5/32			5/32		
2677		3/8	FIBRE	3/8	5/8	1/16	1/16		2691		NYLON	1/4	43/64	3/16			3/16		
2679				3/8	5/8	1/16	1/16		2681		FIBRE	1/8	9/32	.040			.040	3/16	
2168		#10	NYLON	13/64	7/16	1/16	1/16		2682		NYLON	9/64	21/64	.050			.050	7/32	
2169				13/64	7/16	1/16	1/16		2683		FIBRE	11/64	3/8	.060			.060	1/4	
2517		#2	FIBRE	3/32	1/4	.055	.025		5/32		2684	NYLON	13/64	7/16			.060	.060	9/32
2651				3/32	1/4	.055	.025		5/32		2685	FIBRE	1/4	9/16			.060	.060	3/8
2171	#4	NYLON	1/8	17/64	1/16	1/32	3/16	2686	NYLON	3/8	3/4	.060	.060	1/2					
2151			1/8	17/64	1/16	1/32	3/16	2534	FIBRE	7/64	15/64	3/64	1/4	9/64					
2661	#6	FIBRE	9/64	1/4	1/16	1/32	3/16	2535	NYLON	9/64	19/64	3/64	1/4	11/64					
2662			9/64	1/4	1/16	1/32	3/16	2536	FIBRE	11/64	11/32	1/16	3/8	13/64					
2663	9/64	1/4	1/16	1/32	3/16	3/16	2537	NYLON	13/64	13/32	1/16	3/8	17/64						
									2538	FIBRE	1/4	17/64	13/64	1/16	3/8	5/16			

INSULATED WASHERS



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## GROMMETS



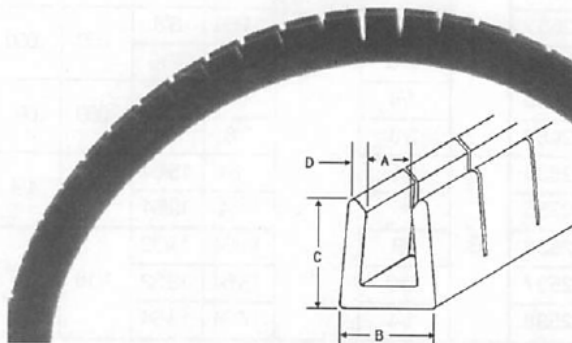
► Alternative sizes and shapes are available in quantity from factory. Call for details.

- Grommets are made from Black Buna-S Synthetic Rubber (SBR), approximately 60 durometer, or Black Polyvinyl Chloride (PVC).
- Prevents wire chafing through holes in panels from 0.03125 to 1.03125" as indicated in table.
- All parts indicated on this page are standard products, factory supported and distributor stocked.

PART NO.	ILLUS.	INSIDE DIA.	MNTG. HOLE	CHASSIS THKNS.	O.D.	THKNS.	
		A	B	C	D	E	
2185	A	1/8	3/16	1/16	5/16	3/16	
91114			1/4		11/32		
2058		5/32	3/8				
2172		3/16	5/16	7/16	7/32		
91103			7/16	1/8	9/16	3/8	
2170		1/4	3/8	1/16	5/8	1/4	
91122			11/32	1/32	1/2	5/32	
91102		9/32	3/8	5/32	5/8	5/16	
91123		B	5/16	1/2	1/4	11/16	7/16
91116					1/8	3/4	3/8
91106	3/16				5/8	1/2	
2174	A	3/8	7/16	1/16	19/32	15/64	
91117				1/8	9/16	3/8	
91107				3/32	5/8	5/16	
2175	C	3/8	1/2	1/16	41/64	1/4	
91100				3/32	3/4	1/2	
91111	B	11/16	9/64	7/8-1"	13/32		
91109	D	7/8	1/4	1-1/16			
2177	A	7/16	9/16	1/16	3/4	1/4	
2186					1/2	3/4	
2188					9/16	13/16	
2187				5/8	7/8	1-1/8	
2189				3/4	1/32	1"	5/32
91112				49/64	1-3/32	1/16	1-5/8

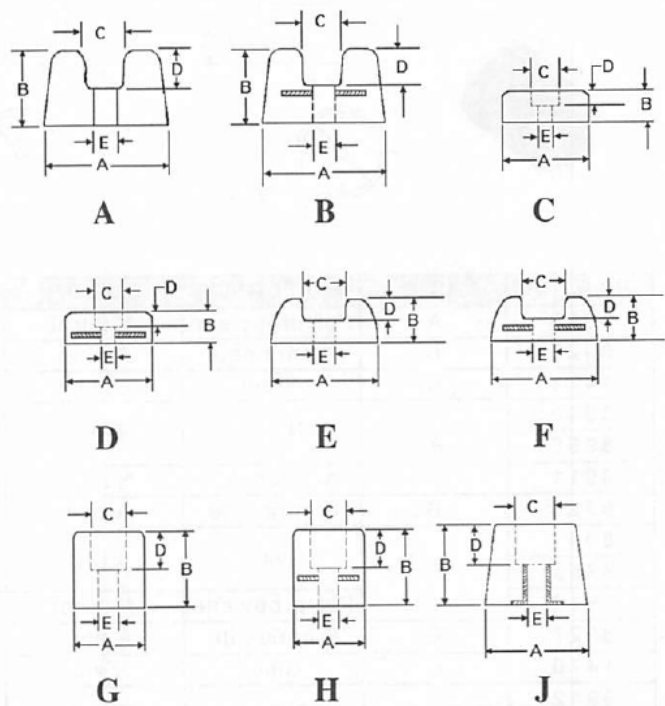
## CATERPILLAR GROMMETS

- HH Smith has added more sizes with lower tolerance to enable a tighter fit to a panel or chassis from.
- Insulates and prevents chafing wires.
- Made of Black Nylon, type 6/6



PART NO.	CHASSIS THICKNESS RANGE	DIMENSIONS				LENGTH
		I.D.	WIDTH	HEIGHT	WALL	
		A	B	C	D	
2691	.030 - .040	.040	.125	.190	.040	25'
2691-100	.030 - .040	.040	.125	.190	.040	100'
2692	.042 - .052	.052	.125	.190	.040	25'
2692-100	.042 - .052	.052	.125	.190	.040	100'
2695	.052 - .062	.062	.170	.200	.045	25'
2695-100	.052 - .062	.062	.170	.200	.045	100'
2693	.075 - .085	.085	.170	.200	.045	25'
2693-100	.075 - .085	.085	.170	.200	.045	100'
2696	.090 - .100	.100	.210	.220	.045	25'
2696-100	.090 - .100	.100	.210	.220	.045	100'
2694	.115 - .125	.125	.205	.220	.050	25'
2694-100	.115 - .125	.125	.205	.220	.050	100'

- ▶ Recessed Bumpers with a clearance hole for attachment offers convenient protection for electrical equipment.
- ▶ Rubber material is a Black Buna-S Synthetic Rubber (SBR), approximately 60 durometer.
- ▶ Vinyl bumpers are made of Polyvinyl Chloride (PVC), and are available in -103 Black or -113 Grey. Add color number as suffix to part number.
- ▶ Some styles of bumpers offer molded-in steel washers for support as indicated in table.
- ▶ Vinyl chassis feet have steel eyelets in hole.
- ▶ Alternative sizes and shapes are available in quantity from the factory.



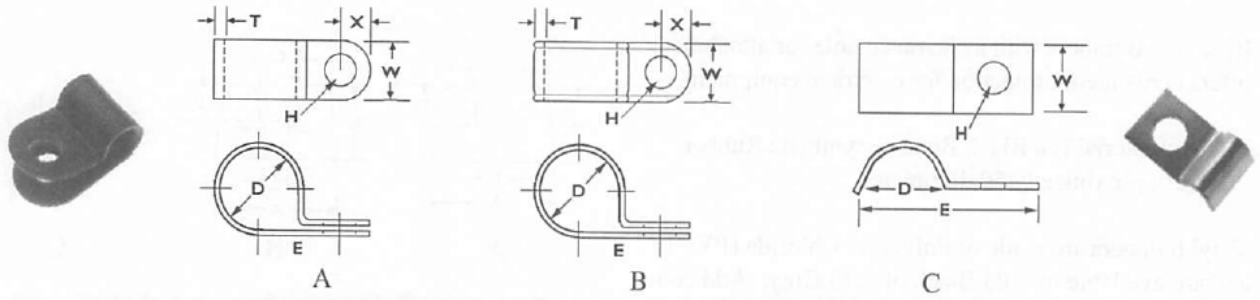
PART NO.	ILLUS.	MATERIALS & ACCESSORIES	SCREW CLR ID	O.D.	HEIGHT	RECESS DIA	RECESS DEPTH		
			E	A	B	C	DEPTH		
2192	A	Rubber	1/8	1/2	1/4	1/4	1/8		
2190	B	Rubber - Washer		5/32			1/8		
2455	A	Rubber		7/64			17/32	5/32	
2462	B	Rubber - Washer		3/16			9/16	3/16	
2181	J	Vinyl - Eyelet	5/32	5/8	3/8	7/32	3/16		
2184	A	Rubber	1/8		9/32	9/32	1/8		
2193	C	Rubber	3/16		5/16	1/4	3/16		
2136	D	Rubber - Washer	11/64		5/8	5/16	5/16		
2456	G	Rubber	5/32	11/16	1/4	11/32	1/8		
2139	H	Rubber - Washer			5/32	13/32	1/4	7/32	
2178	K	Vinyl - Eyelet			1/8	23/32	17/32	7/32	1/4
2457	A	Rubber			3/32	9/32	1/4	1/8	
2463	B	Rubber - Washer	1/8	3/4	3/8	9/32	3/16		
2458	A	Rubber			7/16	1/4	1/4		
2459	C	Rubber			5/32	9/16	3/8	5/16	
2464	D	Rubber - Washer			7/8	5/16	13/32	3/16	
2194	C	Rubber	3/16	15/16	3/8	3/8	3/16		
2182	J	Vinyl - Eyelet			5/32	5/8	5/16		
2465	H	Rubber - Washer			1/8	1"	1"	1/4	5/8
2179	J	Vinyl - Eyelet			5/32	1-1/16	7/16	15/32	7/32
2138	E	Rubber	1/8	1"	1"	1/4	5/16		
2135	F	Rubber - Washer					5/32	7/32	
2183	J	Vinyl - Eyelet					5/32	7/32	
2461	G	Rubber					1/8	7/32	
2137	H	Rubber - Washer	.190	1-1/16	7/16	15/32	7/32		
2180	J	Vinyl - Eyelet					7/32		

**CHASSIS FEET  
BUMPERS**



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# WIRE & CABLE CLAMPS



PART #	ILLUS.	MATERIAL	COLOR	DIA.	E	T	W	X	H	
8910	A	Polypropylene	Natural	1/8	.360	.060	1/2	7/32	13/64	
8925	B	Propionate	Amber		.328					
1471	D	Steel	Zinc		.625					-
8940	A	Nylon	Black	3/16	.360	.050	1/2	7/32	11/64	
8955					.343		3/8			
8911	B	Polypropylene	Natural		.390		.423			1/2
8926	B	Propionate	Amber	.423	.060	1/2	3/8	7/32	11/64	
8941	A	Nylon	Black	.378						
8956				.457						
8912	A	Polypropylene	Natural	.421	.060	1/2				
8927	B	Propionate	Amber	1/4	22/32	-	3/8	-	#8	
1470	C	Steel	Zinc		.437	.060	1/2	-	-	#8
8942	A	Nylon	Black		.409		3/8			
8957				.498	1/2					
8913	B	Polypropylene	Natural	.453	5/16	.060	1/2	7/32	11/64	
8928	B	Propionate	Amber	.474						
8943	A	Nylon	Black	.441						3/8
8958				.529	1/2					
8914	B	Polypropylene	Natural	3/8	.483	.060	1/2	7/32	11/64	
8929	B	Propionate	Amber							.500
8944	A	Nylon	Black							.471
8959				.560	1/2	1/2				
8915	A	Polypropylene	Natural	7/16	.533	.060	1/2	7/32	13/94	
8945										Nylon
8916	Polypropylene	Natural								
8931	B	Propionate	Amber	1/2	.562	.060	3/8	-	#8	
1472	C	Steel	Zinc							1
8946	A	Nylon	Black							.553
8961				.550	3/8	11/64				
8917	B	Polypropylene	Natural	9/16	.623	.060	1/2	7/32	13/64	
8932	B	Propionate	Amber							.625
8947	A	Nylon	Black							.603
8918				Polypropylene	Natural					
8933	B	Propionate	Amber	.610						
8948	A	Nylon	Black	11/16	.666	.060	1/2	7/32	13/64	
8919										Polypropylene
8934	B	Propionate	Amber							.625
8949	A	Nylon	Black	3/4	.783	.060	1/2	7/32	13/64	
8920										Polypropylene
8921	B	Propionate	Amber							.752
8936	B	Propionate	Amber	7/8	.845	.060	1/2	7/32	13/64	
8951										Nylon
8922	A	Polypropylene	Natural							1
8952				Nylon	Black					

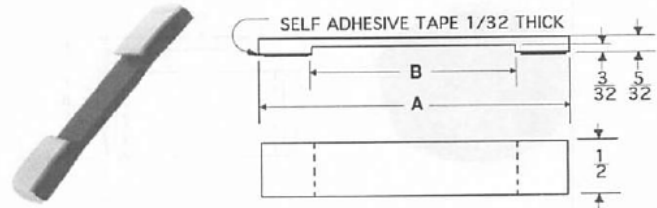
WIRE & CABLE CLAMPS



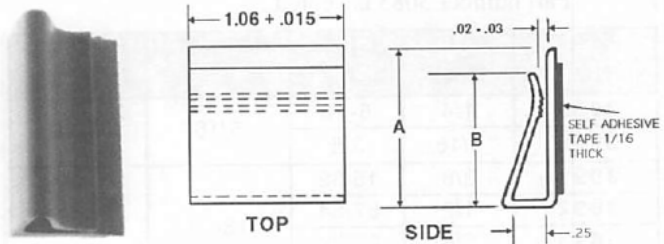
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- ▶ Special situations are served will with the clamps and clips shown here. Other styles or sizes may be obtained in quantity from factory.
- ▶ Standard flat cable clamps are made of black self-extinguishing PVC.
- ▶ Routing cable clamps are made of Noryl Type C, and offer a serrated gripper.
- ▶ Fahnestock slips are made of nickel plated spring brass, and designed for screw-on application as indicated in table.
- ▶ Type 539 Fahnestock clip has an additional hole for wire soldering.

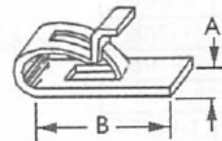
## Flat cable clamp



## Routing type wire clamp



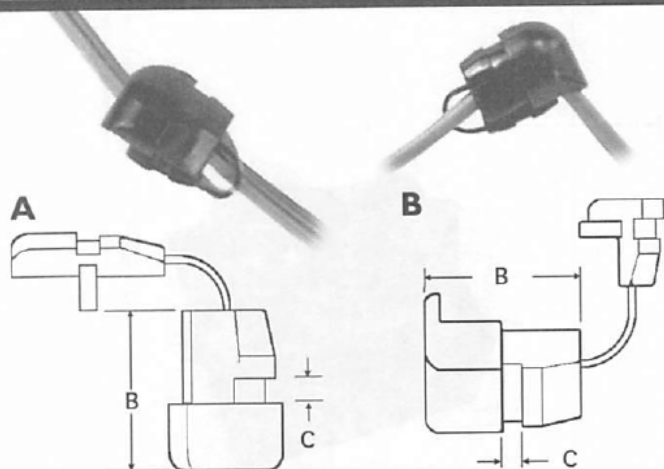
## Fahnestock Clips



PART NO.	STYLE	A	B	MOUNTING
9951	Flat	2	1	Self-adhesive
9952	Flat	3	2	Self-adhesive
9954	Routing	9/16	.41	Self-adhesive
9955	Routing	1-1/16	.88	Self-adhesive
539	Fahnestock	9/16	.41	#4 Hole
533	Fahnestock	1-1/16	.88	\$6 Hole

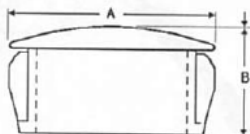
# WIRE STRAIN RELIEFS

- ▶ Wire strain relief clamps are made on black Nylon, typ 6/6, and are offered in right angle or straight-through styles.
- ▶ One piece, these easy to install reliefs absorb pull and twist stress on power cords. They fully insulate and permanently anchor the power cord.
- ▶ U.L. and CSA recognized components.



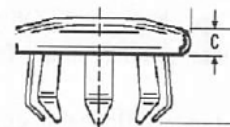
PART NO.	ILLUS.	UL & CSA STYLES	USE WITH WIRE TYPES	APPROX CABLE SIZES	DIMENSIONS			
					CHASSIS HOLE	ACROSS FLATS	CHASSIS C	LENGTH B
937	A	SR-2M-4	AWM	1/8-3/16 Dia.	3/8	21/64	1/16	13/32
938	A	SR-3P-4	SPT-1	.12X.22	7/16	25/64	1/16	13/32
939	A	SR-5N-4	SV,SVT,HPD	1/4X19/64 Dia.	1/2	29/64	1/16	7/16
822	A	SR-4K-1	SPT-2, HPN	.15x.40	1/2	15/32	3/32	1/2
823	A	SR-6N-4	SJ,SJT,SJO	.330-.360 Dia.	5/8	35/64	1/16	37/64
824	B	SR-14-1	SPT-2, HPN	.15x.40	1/2	29/64	3/32	11/16
825	B	SR-15-1	SV,SVT,HPD	1/4X19/64 Dia.	1/2	29/64	3/32	11/16
826	B	SR-17-2	S,ST,SJT	.360 - .430 Dia.	3/4	21/32	1/8	1-3/32

## HOLE PLUGS



- ▶ Hole plugs are black, type 6/6 Nylon.
- ▶ \*Part number 3083 is vented.

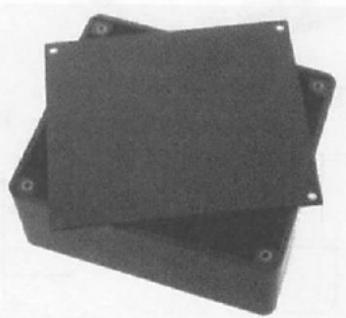
PART NO.	HOLE DIA.	DIA. A	HEIGHT B	MAX CHASSIS
3089	1/4	5-16	5/16	1/16
3090	5/16	3/8		
3091	3/8	15/32		
3092	1/2	67/64	13/32	1/8
3093	5/8	23/32		
3094	3/4	27/32		
3095	1	1-1/8	29/64	1/8
3083		1-13/64		
3096	1-1/8	1-7/32	29/64	1/8
3097	1-1/4	1-3/8		
3098	1-3/8	1-1/2		
3099	1-1/2	1-43/64		



- ▶ Hole plugs are nickel-plated steel.
- ▶ Prongs are adjustable to ensure a snug fit.
- ▶ \*Part number 656 is vented.

PART NO.	HOLE DIA.	No. of PRONGS	DIA.	LENGTH	HEIGHT
650	1/4	6	13/32	15/64	1/16
651	5/16		7/16	1/4	
652	3/8		1/2	15/64	
653	1/2	8	21/32	9/32	5/64
654	5/8		13/16	19/64	
655	3/4		59/64		
608	7/8	12	1-1/16	21/64	1/16
612	1		1-9/64		3/32
656	1	6	1-5/32	19/64	5/64
3084	1-1/8	12	1-5/16	11/32	3/32
3085	1-1/4		1-7/16		
3086	1-3/8		1-9/16	13/32	5/64
3087	1-1/2		1-41/64		

## INSTRUMENT CASES



- ▶ Cases are made from Thermosetting Black Phenolic with a high-gloss finish.
- ▶ Four threaded brass inserts enable tight cover closure.
- ▶ Covers are available in phenolic or in brushed and lacquered aluminum as indicated in table.

CASE PART NO.	PHENOLIC COVER NO.	ALUMINUM COVER NO.	DIMENSIONS			
			H	W	D	INSERT
2377	2378	-	5-7/8	3-1/8	2-1/4	*#4 Hole
2291	2292	-	5	4-1/4	1-3/4	2
2255	2256	2379	6-1/4	3-3/4	2	2
2257	2260	-	6-7/8	5-1/4	2-3/8	6-32
2289	2390	-	8-1/8	7-5/16	3-1/8	6-32

\* Accepts self-tapping screw

INTERNAL THREADED HANDLE

PART NO.	MAT.	FINISH	HT.	RADIUS	MOUNTING CENTERS	THREAD & DEPTH	
5/32 Diameter							
1633	Brass	Zinc	1	3/16	1-1/4	4-40 x 3/8	
1632		Chrome					
1634	Aluminum	Satin					
1635		Blk Anodized					
1637	Brass	Zinc			2		3
1636		Chrome					
1638	Aluminum	Satin	3	3			
1639		Blk Anodized					
1641	Brass	Zinc	1	3/16	2	4-40 x 3/8	
1640		Chrome					
1642	Aluminum	Satin					
1643		Blk Anodized					

1/4 Diameter									
1617	Brass	Zinc	1-1/2	1/4	2	8-32 x 9/16			
1616		Chrome							
1618	Aluminum	Satin							
1619		Blk Anodized							
1621	Brass	Zinc			3		3		
1620		Chrome							
1622	Aluminum	Satin						4	4
1623		Blk Anodized							
1625	Brass	Zinc			1-1/2		1/4		
1624		Chrome							
1626	Aluminum	Satin							
1627		Blk Anodized							
1629	Brass	Zinc	6	6					
1628		Chrome							
1630	Aluminum	Satin			6	6			
1631		Blk Anodized							

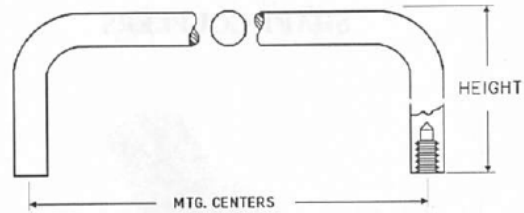
5/16 Diameter							
1602	Brass	Zinc	1-1/2	9/32	3	10-32 x 7/16	
1601				5/16			
2050		Chrome		4-1/4	9/32		4-9/16
2057							
1604		Zinc		1-3/4	9/32		6-7/16
2056							
1605		Chrome		5/16	9/32		6-7/16
2051							
1606		Zinc		5/16	9/32		6-7/16
2052							

EXTERNAL THREADED HANDLE

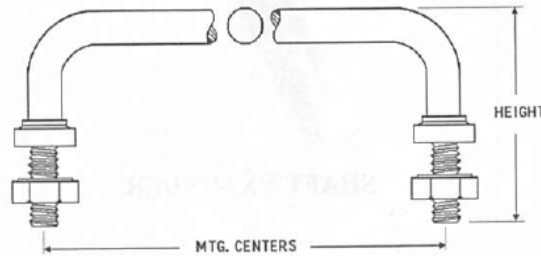
PART NO.	MAT.	FINISH	HT.	RADIUS	MOUNTING CENTERS	THREAD & DEPTH
1609	Brass	Chrome	2-1/8	5/16	3	5/16-18 x 21/32
1610		Black Zinc				
1611		Chrome				
1612		Black Zinc				
2053		Chrome	2-11/16	5/16	4-1/4	
1613		Black Zinc				
1614		Chrome				
1615		Black Zinc				

BRASS FERRULES

PART NO.	ILLUS.	HANDLE DIA.	SCREW CLEAR.	O.D.	HT.	C'BORE HEIGHT
1665	C	5/32	#4	1/4	1/8	3/64
1669		1/4	#8	3/8	3/16	1/16
1672	D	5/16	#10	3/4	5/16	3/32
1673	C			9/16	1/4	1/16



INTERNAL THREADED HANDLES



EXTERNAL THREADED HANDLES

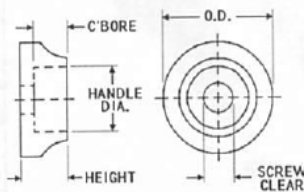


FIG. C FERRULE

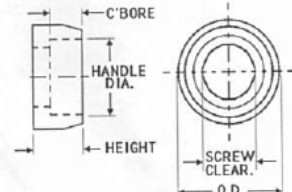
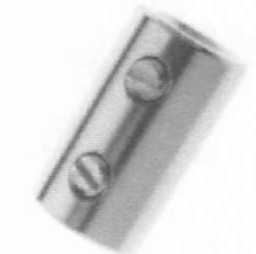


FIG. D FERRULE

HANDLES & FERRULES





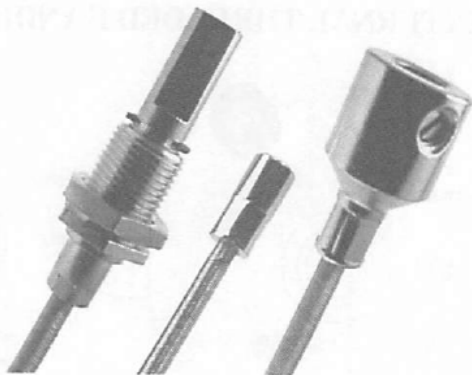
SHAFT COUPLERS



FLEXIBLE SHAFT COUPLING



SHAFT EXTENDER



FLEXIBLE SHAFTS

SHAFT COUPLERS

PART NO.	ID	ID	OD	LG	# SCREWS	E
	A	B	C	D		
<b>BRASS COUPLER -- NICKEL-PLATED</b>						
120	0.25	0.25	0.438	0.75	2	3/16
138	0.25	0.25	0.438	0.75	4	
131	0.25	0.375	0.5	0.75	2	
<b>MINI. COUPLER -- BRASS-NICKEL-PLATED</b>						
180	0.125	0.125	0.281	0.375	4	5/64
<b>INSULATED COUPLER -- PHENOLIC</b>						
140	0.25	0.25	0.438	0.75	2	3/16

FLEXIBLE SHAFT COUPLING

- ◆ Molded high temperature Nylon, with molded-in brass bushings. Supplied with 2 Socket-head set screws.
- ◆ Couples two 1/4" shafts.

SHAFT EXTENDERS

PART NO.	MATERIAL	DIMENSIONS				SCREW	
		SHAFT DIA	SHAFT LGTH.	BODY LGTH.	BODY DIA	TYPE	SIZE
189	Brass	1/8	3/8	1/4	9/32	Socket head	4-40
160	Brass	1/4	5/8	1/2	1/2	Slotted Screw	6-32
161	Phenolic		5/8				
150	Brass		1-1/4				
130	Phenolic		1-1/4				

FLEXIBLE SHAFTS

- ◆ Flexible shafts are Phosphor-bronze; non-rusting and nonmagnetic. Hubs and couplers are nickel plated brass.
- ◆ Fittings: Hub end fits into knob or coupler; end attached with set screw to shaft. Bearing types have coupler at shaft end bearing and shaft at panel end.
- ◆ For remote operation of variable capacitors, potentiometers, and other controls. Turns freely at shaft; bends 90° without backlash.

PART NO.	FIG.	LENGTH	FITTINGS
151	A	3	1/4" hubs
152		6	
153	B	2.375	1/4" couplers
154		5.375	
<b>Combination Shafts with Panel Bearing</b>			
165	C	4/1/16	1/4 Coupler - panel bearing & shaft assembly
166		7/1/16	

SHAFT ACCESSORIES

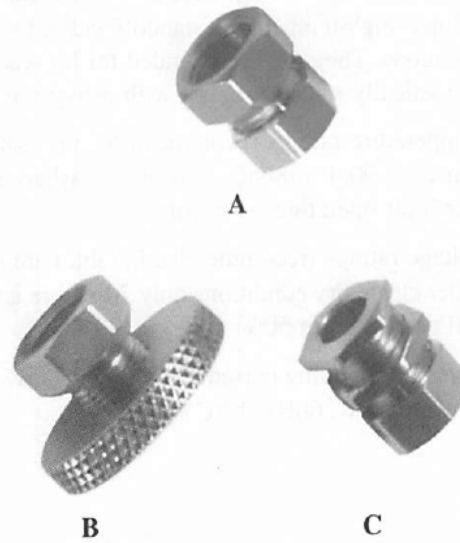


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◆ All shaft accessories shown on this page are machined from brass and nickel plated.

SHAFT LOCKS

PART NO.	FIG.	FOR SHAFT SIZE	DIMENSIONS				THREAD SIZE
			A	B	C	D	
181	A	1/4	.253	1/2	1/2	7/16	3/8-32
182	B	1/4	.253	1/2	1/2	1	
183	A	1/8	.128	9/16	11/32	5/16	1/4-32
Panel Mount							
114	C	1/4	.253	9/16	7/16	7/16	3/8-32



SHAFT LOCKS

PANEL BEARINGS

PART NO.	FOR SHAFT SIZE	DIMENSIONS				
		A I.D.	B HEX	C LGTH.	D BODY	E THD.
184	1/8" Mini.	.128	11/32	7/16	3/8	1/4-32
119	1/4"	.253	7/16	1/2	7/16	3/2-32

PANEL BEARINGS

PANEL BEARING ASSEMBLIES

PART NO.	SHAFT DIA.	TOTAL LG.	SHAFT LG.	BODY LG.	THD. SIZE
	A	B	C	D	E
1448	1/8	2	11/32	7/16	1/4-32
1449		4			
148	1/4	3	1/2	1/2	3/8-32
149		6			



PANEL BEARING ASSEMBLIES

BUSHING EXTENDERS

PART NO.	BODY LENGTH (A)	THREAD LENGTH (B)
2350	0.625	0.1875
2351	0.625	0.25
2352	0.625	0.375
2353	0.6875	0.375
2354	0.6875	0.5
2355	0.75	0.25

BUSHING EXTENDERS

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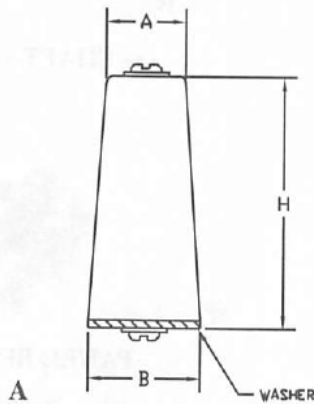
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# HIGH VOLTAGE INSULATORS

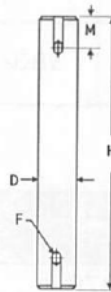
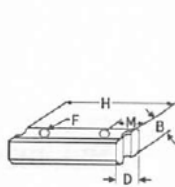
- ◆ HH Smith High Voltage Insulators are ideal for high-voltage, high-temperature standoff and/or feedthru applications. They are not intended for high-vacuum or hermetically sealed use, nor with heavy shear loads.
- ◆ Temperature ratings recommend Steatite safe operation to 1800°F (980°C). Cushion washers may further limit operating temperature.
- ◆ Voltage ratings (recommended in table) are specified under clean, dry conditions only. Moisture and/or dirt will de-rate up to 50%.
- ◆ Nominal operating current, limited by hardware size, shown for AC, 60Hz, 10°C rise.

- ◆ These insulators are made from Grade L-5 Steatite per MIL-I-10E. Hardware is nickel plated brass except for solder lugs which are tin plated, and cushion washers, which are "Champak," compressed paper or cork.

- ◆ Steatite Material Specifications:
  - ◆ Water absorption 0.05% maximum
  - ◆ 2600°C Softening temperature
  - ◆ Coefficient of Expansion 7.5 (In/in. per °C x 10<sup>-6</sup>)
  - ◆ Dielectric Strength 250 Volts per mil
  - ◆ .003 Power factor at 1MHz
  - ◆ Clear glaze finish over Creamy white colored steatite material.

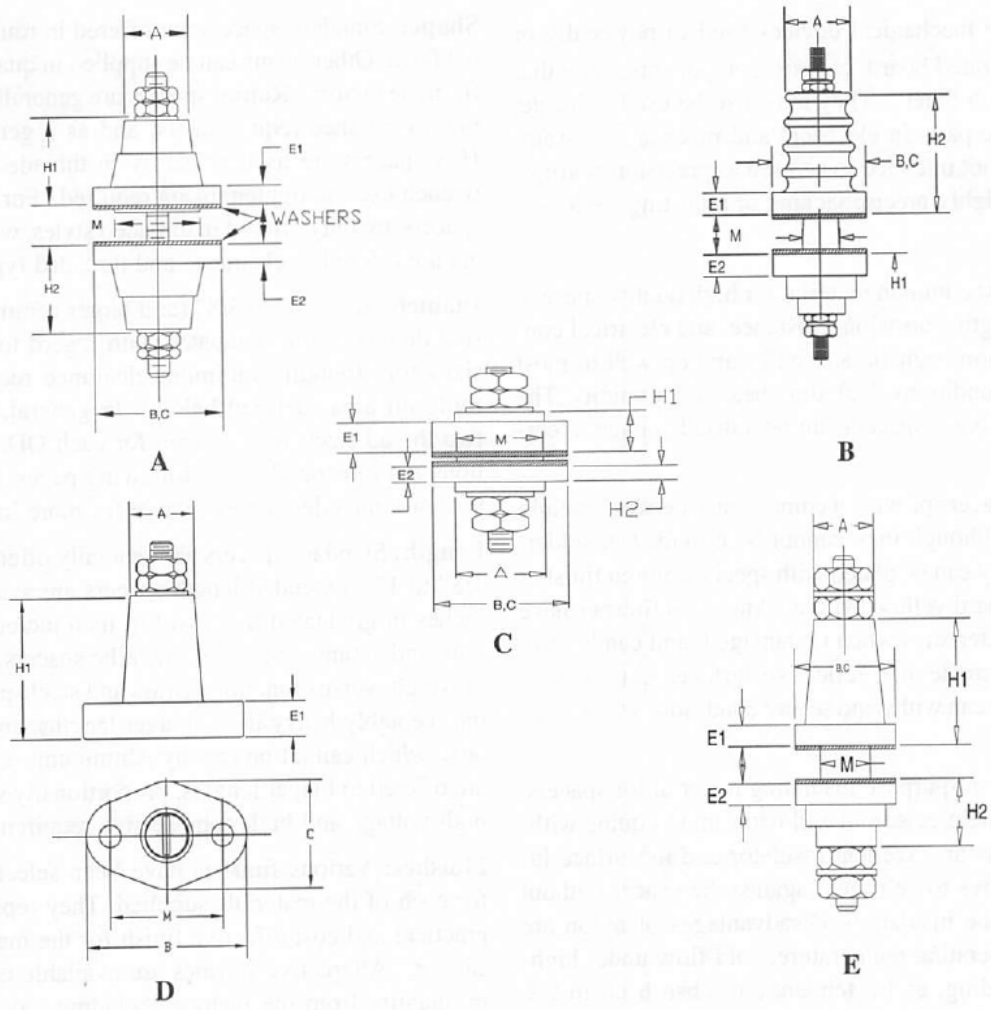


PART #	ILLUS.	VOLT RATING	MIN. DIA. "A"	MAX. DIA. "B"	HEIGHT "H"	SCREW SIZE	COMMENTS
9500	A	3 KV	7/16	5/8	21/32	6-32	Supplied with two screws, washers, and cushion washers.
9501		4 KV	1/2	3/4	1-1/32	8-32	
9502		5 KV	1/2	1	1-9/16	8-32	
9503		10 KV	5/8	1-1/8	2-1/16	10-32	
9504		15 KV	3/4	1-1/2	3-1/16	10-32	



PART #	ILLUS.	VOLT RATING	LENGTH "H"	WIDTH "D"	THICKNESS "B"	HOLE DIA. "F"	HOLD LOCATION "M"
9622	N	10 KV	2	1/2	3/8	1/8	3/8
9607	P		4	1" Diameter		1/4	3/4

HIGH VOLTAGE INSULATORS



- ◆ All insulators are supplied with hardware shown.
- ◆ Please see page 70 for details

PART NO.	FIG.	VOLT RATING	HEIGHT		HEIGHT		MIN. DIA. A	FLANG E WIDTH	FLANGE WIDTH C	MOUNTIN G M	SCREW THD SIZE	STUD LENGTH
			H1	H2	E1	E2						
9524	D	1 KV	5/8		3/32		13/64	1	7/32	11/16	6-32	13/64
9555AD	C	1 KV	1/4	5/32	3/16	3/32	1/2	3/4	3/4	1/2	6-32	1-1/4
9550AA	A	1 KV	1/2	1/2	1/8	1/8	3/8		3/4		6-32	2"
9544AB	E	2 KV	5/8	5/16	7/64	7/64		5/8	5/8	5/16		6-32
9522	D	3 KV	1		7/64	7/64	15/32	1-5/32	19/64	13/16	1/4	8-32
9542AA	E	3 KV	7/8	3/8	1/8	1/8	1/2	3/4	3/4	3/8	10-32	2-3/8
9551AB	A	3 KV	27/32		-		5/8	1-1/4	3/16	7/8		2-7/8
9540AB	E	5 KV	1-1/4		1/2		19/32	15/16		7/16		W2-7/8
9545	B	5 KV	1-3/8		11/16		5/8	1-1/4	1/4	1/2		3-1/2
9557	B	5 KV		11/16							2 3/8	
9552AA	A	5 KV	1-1/8		-		7/8	1-3/4	1/4	1 1/4	1/4-20	4-3/8
9548	B	8 KV	2		7/8		3/4	1-5/8	5/16	11/16	10-32	4-1/4
9546AA	E	10 KV	2-3/4		1		15/16		3/8	11/16		1/4-20
9547AA	E	15 KV	4-1/2		1-1/2		1-1/16	2-1/8	7/16	31/32		8

HIGH VOLTAGE INSULATORS



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**Spacers** are mechanical devices used to physically or electrically separate board, chassis, components, and other devices from each other. They may also be used to locate, hinge, and guide parts in electrical and mechanical assemblies. They are not intended to be used as precision bearings or shafts or as highly precise jacking or adjusting devices.

### Materials:

**Brass** is the most common material for high quality spacers. It provides strength, corrosion resistance, and electrical conductivity. It is nonmagnetic and will stand up well to most environmental conditions, including heat and humidity. The weight of larger brass spacers can be a disadvantage in certain situations.

**Aluminum:** Spacers provide a compromise between weight and strength. Although they cannot be provided in solderable finishes, they can be plated with special colored finishes besides the standard yellow irridite. Anodized finishes have insulating characteristics when undamaged, and can be provided in a black matte, non-reflective surface. Aluminum is nonmagnetic and can withstand severe conditions when properly finished.

**Nylon:** is a general-purpose insulating material for spacers. Molded threads are precise and will withstand torquing without stripping. It is an excellent insulator and its surface lubricity allows wires to be routed against the spacer without fear of chafing the insulation. Disadvantages of nylon are relatively low operating temperature, cold-flow under high-compressive loading, and a tendency to absorb up to 2% moisture in high humid ambients.

**Phenolic:** are made from paper-base, resin impregnated heat-cured materials. Machined threads within phenolic spacers are not as precise nor as strong as those in nylon. High torque should not be applied to these spacers. They are the insulating spacer of choice when higher temperatures are encountered that can be withstood by nylon, or where greater strength without cold-flow is required.

**Ceramic** spacers are a grade L-5 steatite material, glazed and fired at high temperature. They exhibit exceptional strength in compression and tension, but are quite weak in shear and torsion, as are all glass-type materials. Ceramic spacers will withstand very high operating temperatures and very high voltages without flashover. Due to the nature of the manufacturing processes, high tolerances cannot be met in dimensions or threading, so these spacers should not be considered as precise devices. Tightening torques on fasteners should be held to a minimum and no shear or torsional load should be applied to spacers in use.

**Alternate** materials such as Stainless Steel are available in quantity from the factory. Call for details.

**Shape:** Standard spacers are offered in round or hex external form. Other forms can be supplied in quantity as specials from the factory. **Round** spacers are generally used for minimum clearance requirements, and as a general use shape. **Hex** spacers are used primarily in threaded spacers where wrench use and tightening are required. For this reason, hex spacers are only offered in threaded styles, while round spacers are offered in clearance and threaded types.

**Diameters:** 3/16" to 3/8" (and larger ceramic types). Outside diameters are graduated with regard to internal thread sizes for strength, minimum clearance requirements, and footprint area (defined below). In general, a minimum of two thread sizes are provided for each OD. For specifications not illustrated in the following pages, contact the factory or your sales representative for more information.

**Length:** Standard spacers are generally offered in lengths of 1/8" to 1". Extended length spacers are available up to six inches in graduated half and full inch increments in aluminum and ceramic only. For metallic spacers, this is an issue of weight versus function. Brass and steel spacers tend to be unacceptably heavy in the longer lengths, and serve no purpose which cannot be met by Aluminum. Ceramic spacers are offered in longer lengths, proportionally sized in OD. for high-voltage and high-compressive requirements.

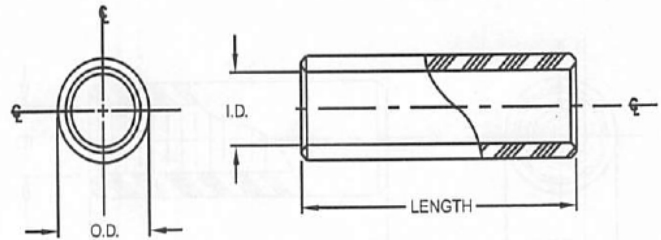
**Finishes:** Various finishes have been selected as standard for each of the materials supplied. They represent the most practical and cost-effective finish for the majority of applications. Alternative finishes are available on special order in quantity from the factory, including most MIL-spec requirements.

**Threading:** There are three possible ways to thread the inside of a spacer: (1) Straight through with continuous thread throughout. (2) Halfway from each end, meeting near the middle with no continuity of the thread throughout. (3) Part way in from each end, with no hole through the rest of the spacer. The method used on any style of spacer depends on the length and its ratio to the diameter of the tap. Excessively deep threading is costly and usually not necessary. Threads are only made continuous where practical. Please refer to **Thread Depth table** on page 75 for standard parameters. Special depths can be ordered in quantity from the factory.

**Mounting Footprint:** End finish techniques of outside chamfering and countersinking reduce the total surface area in contact with the mounting surface of the spacers, increasing pressure at this surface. If the area is too small, fastening pressure will cause the spacer to dig in to the surface, deforming and possibly cracking it. For that reason, most thread sizes are offered in two different OD spacers to allow a choice of pressure versus clearance requirements.



Length	O.D.	I.D.					
		#2	#4	#6	#8	#10	
.125	1/8	3/16	9000	9015			
		1/4		8700	8701	8702	
		5/16			9372A	9373A	9374A
		3/8				8732	9375A
.187	3/16	3/16	9001	9016			
		1/4		8703	8704	8705	
		5/16			9372B	9373B	9374B
		3/8				8735	9375B
.250	1/4	3/16	9002	9017			
		1/4		2340	2100	2105	
		5/16			9372C	9373C	9374C
		3/8				2115	9375C
.312	5/16	3/16	9003	9018			
		1/4		8706	8707	8708	
		5/16			9372D	9373D	9374D
		3/8				8738	9375D
.375	3/8	3/16	9004	9019			
		1/4		2341	2101	2106	
		5/16			9372E	9373E	9374E
		3/8				2116	9375E
.437	7/16	3/16	9005	9020			
		1/4		8709	8710	8711	
		5/16			9372F	9373F	9374F
		3/8				8741	9375F
.500	1/2	3/16	9006	9021			
		1/4		2342	2102	2107	
		5/16			9372G	9373G	9374G
		3/8				2117	9375G
.562	9/16	3/16	9007	9022			
		1/4		8712	8713	8714	
		5/16			9372H	9373H	9374H
		3/8				8744	9375H
.625	5/8	3/16	9008	9023			
		1/4		8715	8716	8717	
		5/16			9372J	9373J	9374J
		3/8				8747	9375J
.687	11/16	3/16	9009	9024			
		1/4		8718	8719	8720	
		5/16			9372K	9373K	9374K
		3/8				8750	9375K
.750	3/4	3/16	9010	9025			
		1/4		2343	2103	2108	
		5/16			9372L	9373L	9374L
		3/8				2118	9375L
.812	13/16	3/16	9011	9026			
		1/4		8721	8722	8723	
		5/16			9372M	9373M	9374M
		3/8				8753	9375M
.875	7/8	3/16	9012	9027			
		1/4		8724	8725	8726	
		5/16			9372N	9373N	9374N
		3/8				8756	9375N
.937	15/16	3/16	9013	9028			
		1/4		8727	8728	8729	
		5/16			9372P	9373P	9374P
		3/8				8759	9375P
1.000	1	3/16	9014	9029			
		1/4		2344	2104	2109	
		5/16			9372Q	9373Q	9374Q
		3/8				2119	9375Q



▶ Part numbers indicated in black squares are **Standard** supported parts. Part numbers indicated in white squares are Non-standard parts that may require minimums.

▶ Standard **Nickel plating** provides a hard, bright, non-oxidizing surface which will stand up to difficult ambient conditions.

Special order **Options** include:

- ▶ Alternative plating finishes such as zinc, silver or gold
- ▶ Odd sizes, taps, or threads, plus swage or other shapes.
- ▶ Metric spacers are also available by custom order. Call your sales representative for more information.
- ▶ HH Smith offers engineering services for special application parts or materials.

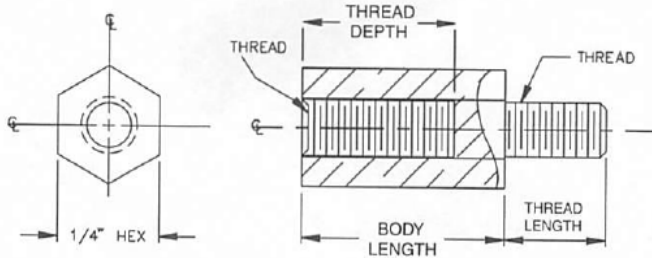
**BRASS ROUND SPACERS**







## BRASS MALE/FEMALE HEX STANDOFFS

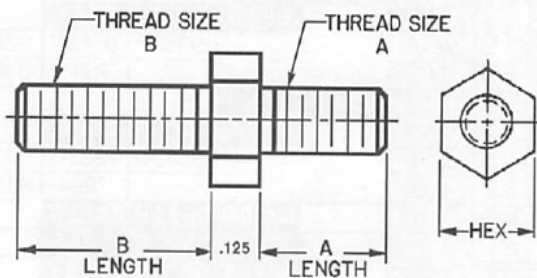
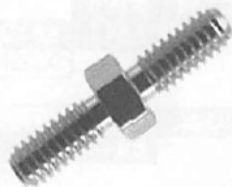


Thread Size	Body Length	Thread Depth	Thread Length
4-40	1/4 to 3/8	3/16	7/32
6-32	1/4 to 3/8	3/16	9/32
	1/2 to 3"	3/8	9/32
8-32	1/4 to 3/8	3/16	13/32
	1/2 to 3"	7/16	13/32

BODY LENGTH		4-40	6-32	8-32
.250	1/4	8216	8248	8280
.375	3/8	8217	8249	8281
.500	1/2	8218	8250	8282
.625	5/8	8219	8251	8283
.750	3/4	8220	8252	8284
.875	7/8	8221	8253	8285
1.000	1	8222	8254	8286
1.125	1-1/8	8223	8255	8287
1.250	1-1/4	8224	8256	8288
1.375	1-3/8	8225	8257	8289
1.500	1-1/2	8226	8258	8290
1.625	1-5/8	8227	8259	8291
1.750	1-3/4	8228	8260	8292
2.000	2	8229	8261	8293
2.500	2-1/2	8230	8262	8294
3.000	3	8231	8263	8295

- ▶ Hex shaped standoffs are ideal wherever wrench tightening may be required.
- ▶ Standard **Nickel plating** provides a hard, bright, non-oxidizing surface which will stand up to difficult ambient conditions.
- ▶ All part numbers shown here are standard, factory supported, distributor stocked parts. Alternative finish, size or thread can be custom manufactured upon request.

## BRASS MALE/MALE ADAPTERS



- ▶ Brass Male/Male Adapters serve as a quick and easy way to "make it fit." Other thread sizes or lengths can be manufactured in quantity at the factory.
- ▶ Standard finish is **Nickel plating**. Alternative plating finishes such as zinc are also available upon request.
- ▶ Features of all brass spacers include strength, corrosion resistance, and electrical conductivity. All brass parts are non-magnetic.
- ▶ HH Smith offers engineering services for special application parts or materials.

PART NO.	HEX	THREAD "A"		THEAD "B"	
		SIZE	LENGTH 'A'	SIZE	LENGTH 'B'
8300	1/4	4-40	3/16	4-40	3/16
8301				6-32	1/4
8302		8-32	3/8	8-32	3/8
8303				10-32	3/8
8304	5/16	10-32	3/8	3/8	
8305					
8306					
8307					

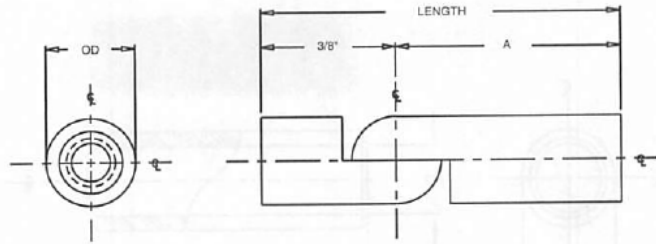
BRASS STANDOFFS & ADAPTERS



## BRASS SWIVEL STANDOFFS

FEMALE/FEMALE ROUND SWIVEL STANDOFFS  
(FIGURE 1)

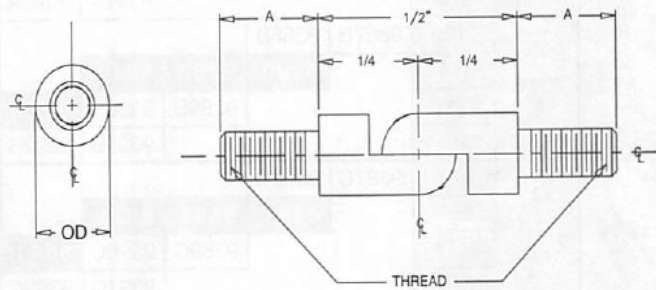
PART#	LENGTH	O.D.	THREAD	A
3021	3/4	3/16	4-40	3/8"
3022	1			5/8"
3023	3/4	1/4	6-32	3/8"
3024	1			5/8"
3025	3/4			3/8"
3026	1		8-32	5/8"



- ▶ HH Smith's offers durable swivel standoffs can be used as hinges or as certain right angle fasteners.
- ▶ **Nickel plated** finish. Alternative finishes available.
- ▶ All part numbers shown here are standard supported parts. Other sizes are available in quantity.

MALE/MALE ROUND STANDOFFS  
(FIGURE 2)

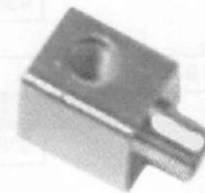
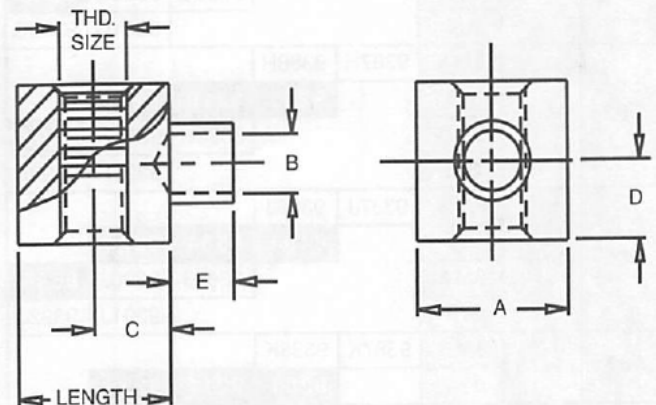
PART#	O.D.	THREAD	A
3027	3/16	4-40	1/4"
3028	1/4	6-32	5/16"
3029		8-32	



## BRASS CHASSIS FASTENERS

- ▶ Brass Chassis Fasteners are offered in standard **Nickel plating**. Alternative plating finishes such as zinc are also available upon request.
- ▶ Non-magnetic and non-corrosive, these fasteners will withstand most environmental conditions .
- ▶ HH Smith offers engineering services for special application parts or materials.
- ▶ All part numbers shown here are standard parts that are factory supported and distributor stocked.

PART NO.	LG.	DIM. A	DIM. B	DIM. C	DIM. D	DIM. E	BOARD THKNS.
4-40 Thread							
2040A						.075	.031
2040B	.25	.25	.125	.125	.125	.105	.062
2040C						.135	.094
2040D						.165	.125
6-32 Thread							
2039B						.105	.062
2039C	.38	.31	.19	.16	.22	.135	.094
2039D						.165	.125



HH Smith



77

To Check Inventory visit [www.hhsmith.com](http://www.hhsmith.com)  
Or call our Sales Department: 888-8 4 SMITH



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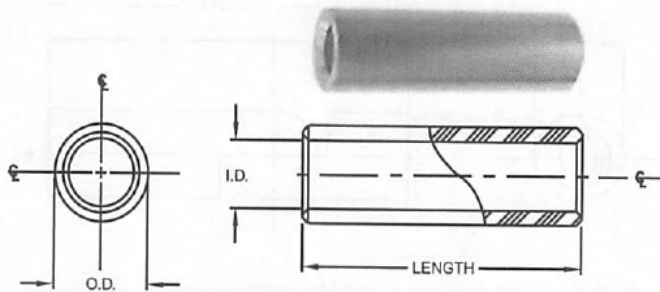
Angic Global Solutions

1-888-872-0690

<https://www.AngicGlobal.com> Sales@AngicGlobal.com

SWIVEL STANDOFFS  
CHASSIS FASTENERS

# ALUMINUM ROUND SPACERS



- ▶ Part numbers shown in black squares are **Standard** supported parts. Part numbers indicated in white squares are Non-standard and may require minimums.
- ▶ Standard **Yellow Iridite** finish. Alternative colors or finishes are also available in quantity, as are odd sizes such as metric or swage. Call for details.
- ▶ Aluminum spacers offer a light-weight alternative to standard brass counterparts.

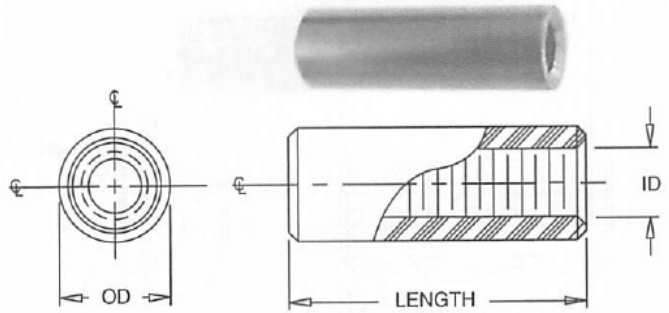
LENGTH	O.D.	I.D.					LENGTH	O.D.	I.D.						
		#2	#4	#6	#8	#10			#2	#4	#6	#8	#10		
.125	1/8	3/16	9387A	9388A			.687	11/16	5/16		9389K	9390K	9225		
		1/4		8480	8500	8520				3/8			9391K	9392K	
		5/16			9389A	9390A			8540	.750	3/4	3/16	9387L	9388L	
		3/8				9391A			9392A			1/4		8485	8505
3/16	9387B	9388B				5/16			9389L	9390L		8545			
.187	3/16	1/4		9200	9207	9214	.812	13/16	3/8			9391L	9392L		
		5/16			9389B	9390B			9221	3/16	9387M	9388M			
		3/8				9391B			9392B	1/4		9205	9212	9219	
		3/16	9387C	9388C						5/16			9389M	9390M	9226
.250	1/4	1/4		8481	8501	8521	.875	7/8	3/8			9391M	9392M		
		5/16			9389C	9390C			8541	3/16	9387N	9388N			
		3/8				9391C			9392C	1/4		8486	8506	8526	
		3/16	9387D	9388D						5/16			9389N	9390N	8546
.312	5/16	1/4		9201	9208	9215	.937	15/16	3/8			9391N	9392N		
		5/16			9389D	9390D			9222	3/16	9387P	9388P			
		3/8				9391D			9392D	1/4		9206	9213	9220	
		3/16	9387E	9388E						5/16			9389P	9390P	9227
.375	3/8	1/4		8482	8502	8522	1.000	1	3/8			9391P	9392P		
		5/16			9389E	9390E			8542	3/16	9387Q	9388Q			
		3/8				9391E			9392E	1/4		8487	8507	8527	
		3/16	9387F	9388F						5/16			9389Q	9390Q	8547
.437	7/16	1/4		9202	9209	9216	1.125	1-1/8	3/8			9391Q	9392Q		
		5/16			9389F	9390AF			9223	1/4		8480R	8500R	8520R	
		3/8				9391F			9392F	5/16			9389R	9390R	8540R
		3/16	9387G	9388G						1/4		8488	8508	8528	
.500	1/2	1/4		8483	8503	8523	1.250	1-1/4	5/16			9389S	9390S	8548	
		5/16			9389G	9390G			8543	1/4		8480T	8500T	8520T	
		3/8				9391G			9392G	5/16			9389T	9390T	8540T
		3/16	9387H	9388H						1/4		8489	8509	8529	
.562	9/16	1/4		9203	9210	9217	1.375	1-3/8	5/16				8540T		
		5/16			9389H	9390H			9224	1/4		8489	8509	8529	
		3/8				9391H			9392H	5/16			9389U	9390U	8549
		3/16	9387J	9388J						1/4		8480V	8500V	8520V	
.625	5/8	1/4		8484	8504	8524	1.625	1-5/8	5/16			9389V	9390V	8540V	
		5/16			9389J	9390J			8544	1/4		8490	8510	8530	
		3/8				9391J			9392J	5/16			9389W	9390W	8550
		3/16	9387K	9388K						1/4		8480X	8500X	8520X	
.687	11/16	1/4		9204	9211	9218	1.875	1-7/8	5/16			9389X	9390X	8540X	
		3/16	9387K	9388K						1/4		8491	8511	8531	
							2.000	2	5/16			9389Y	9390Y	8551	

ALUMINUM SPACERS



# ALUMINUM ROUND STANDOFFS

LENGTH		O.D.	THREAD				
			#2-56	#4-40	#6-32	#8-32	#10-32
.125	1/8	3/16	9394A	9395A			
		1/4		<b>8320</b>	<b>8340</b>	<b>8360</b>	
		5/16			9396A	9397A	8380
		3/8				9398A	9399A
.187	3/16	3/16	9394B	9395B			
		1/4		<b>9228</b>	<b>9235</b>	<b>9242</b>	
		5/16			9396B	9397B	9249
		3/8				9398B	9399B
.250	1/4	3/16	9394C	9395C			
		1/4		<b>8321</b>	<b>8341</b>	<b>8361</b>	
		5/16			9396C	9397C	8381
		3/8				9398C	9399C
.312	5/16	3/16	9394D	9395D			
		1/4		<b>9229</b>	<b>9236</b>	<b>9243</b>	
		5/16			9396D	9397D	9250
		3/8				9398D	9399D
.375	3/8	3/16	9394E	9395E			
		1/4		<b>8322</b>	<b>8342</b>	<b>8362</b>	
		5/16			9396E	9397E	8382
		3/8				9398E	9399E
.437	7/16	3/16	9394F	9395F			
		1/4		<b>9230</b>	<b>9237</b>	<b>9244</b>	
		5/16			9396F	9397F	9251
		3/8				9398F	9399F
.500	1/2	3/16	9394G	9395G			
		1/4		<b>8323</b>	<b>8343</b>	<b>8363</b>	
		5/16			9396G	9397G	8383
		3/8				9398G	9399G
.562	9/16	3/16	9394H	9395H			
		1/4		<b>9231</b>	<b>9238</b>	<b>9245</b>	
		5/16			9396H	9397H	9252
		3/8				9398H	9399H
.625	5/8	3/16	9394J	9395J			
		1/4		<b>8324</b>	<b>8344</b>	<b>8364</b>	
		5/16			9396J	9397J	8384
		3/8				9398J	9399J
.687	11/16	3/16	9394K	9395K			
		1/4		<b>9232</b>	<b>9239</b>	<b>9246</b>	
		5/16			9396K	9397K	9253
		3/8				9398K	9399K
.750	3/4	3/16	9394L	9395L			
		1/4		<b>8325</b>	<b>8345</b>	<b>8365</b>	
		5/16			9396L	9397L	8385
		3/8				9398L	9399L
.812	13/16	3/16	9394M	9395M			
		1/4		<b>9233</b>	<b>9240</b>	<b>9247</b>	
		5/16			9396M	9397M	9254
		3/8				9398M	9399M
.875	7/8	3/16	9394N	9395N			
		1/4		<b>8326</b>	<b>8346</b>	<b>8366</b>	
		5/16			9396N	9397N	8386
		3/8				9398N	9399N



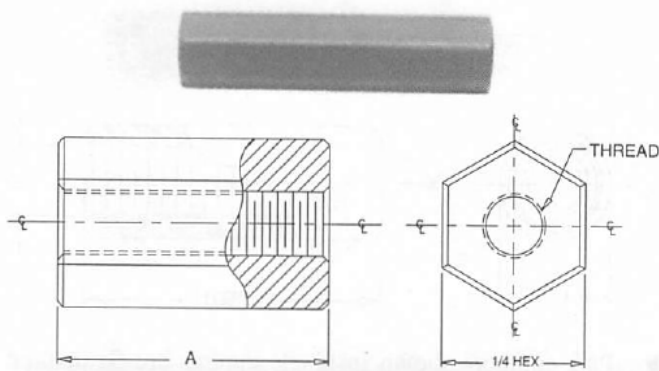
- ▶ Part numbers shown in black squares are **Standard** supported parts. Finished with Yellow Iridite.
- ▶ Please see Thread Depth Chart on Page #. For more information, refer to page #.

LENGTH		O.D.	THREAD				
			#2-56	#4-40	#6-32	#8-32	#10-32
.937	15/16	3/16	9394P	9395P			
		1/4		<b>9234</b>	<b>9241</b>	<b>9248</b>	
		5/16			9396P	9397P	9255
		3/8				9398P	9399P
1.000	1	3/16	9394Q	9395Q			
		1/4		<b>8327</b>	<b>8347</b>	<b>8367</b>	
		5/16			9396Q	9397Q	8387
		3/8				9398Q	9399Q
1.125	1-1/8	1/4		8320R	8340R	8360R	
		5/16			9396R	9397R	8380R
1.250	1-1/4	1/4		<b>8328</b>	<b>8348</b>	<b>8368</b>	
		5/16			9396S	9397S	8388
1.375	1-3/8	1/4		8320T	8340T	8360T	
		5/16			9396T	9397T	8380T
1.500	1-1/2	1/4		<b>8329</b>	<b>8349</b>	<b>8369</b>	
		5/16			9396U	9397U	8389
1.625	1-5/8	1/4		8320V	8340V	8360V	
		5/16			9396V	9397V	8380V
1.750	1-3/4	1/4		<b>8330</b>	<b>8350</b>	<b>8370</b>	
		5/16			9396W	9397W	8390
1.875	1-7/8	1/4		8330X	8340X	8360X	
		5/16			9396X	9397X	8380X
2.000	2	1/4		<b>8331</b>	<b>8351</b>	<b>8371</b>	
		5/16			9396Y	9397Y	8391
2.250	2-1/4			8320ZA	8340ZA	8360ZA	
2.500	2-1/2			<b>8332</b>	<b>8352</b>	<b>8372</b>	
2.750	2-3/4			8320ZC	8340ZC	8360ZC	
3.000	3			<b>8333</b>	<b>8353</b>	<b>8373</b>	
3.250	3-1/4			8320ZE	8340ZE	8360ZE	
3.500	3-1/2			<b>8334</b>	<b>8354</b>	<b>8374</b>	
3.750	3-3/4			8320ZG	8340ZG	8360ZG	
4.000	4			<b>8335</b>	<b>8355</b>	<b>8375</b>	
4.500	4-1/2			8320ZJ	8340ZJ	8360ZJ	
5.000	5			8320ZK	8340ZK	8360ZK	
5.500	5-1/2			8320ZL	8340ZL	8360ZL	
6.000	6			8320ZM	8340ZM	8360ZM	

ALUMINUM STANDOFFS



# ALUMINUM HEX STANDOFFS



- ▶ Aluminum with **Yellow irridite** finish.
- ▶ Hex shape for wrench tightening
- ▶ \*Please see page # for more information on aluminum spacers and finishes.

Maximum Thread Depth					
Thread Size	2 - 56	4 - 40	6 - 32	8 - 32	10 - 32
Thread Length Tapped Thru	0.625	1.000	1.000	1.000	1.000
Thread Length Tap each end	0.250	0.375	0.375	0.375	0.375

LENGTH	HEX	THREAD					LENGTH	HEX	THREAD						
		#2-56	#4-40	#6-32	#8-32	#10-32			#2-56	#4-40	#6-32	#8-32	#10-32		
.125	1/8	3/16	9401A	9402A			.750	3/4	1/4		8405	8425	8445		
		1/4		8400	8420	8440				5/16		9403L	9404L	8465	
		5/16			9403A	9404A			8460	3/8			9405L	9406L	
		3/8				9405A			9406A						
.187	3/16	3/16	9401B	9402B			.812	13/16	3/16	9401M	9402M				
		1/4		9284	9291	9298				1/4		9289	9296	9303	
		5/16			9403B	9404B			9035	5/16			9403M	9404M	9310
		3/8				9405B			9406B	3/8				9405M	9406M
.250	1/4	3/16	9401C	9402C			.875	7/8	3/16	9401N	9402N				
		1/4		8401	8421	8441				1/4		8406	8426	8446	
		5/16			9403C	9404C			8461	5/16			9403N	9404N	8466
		3/8				9405C			9406C	3/8				9405N	9406N
.312	5/16	3/16	9401D	9402D			.937	15/16	3/16	9401P	9402P				
		1/4		9285	9292	9299				1/4		9290	9297	9304	
		5/16			9403D	9404D			9306	5/16			9403P	9404P	9311
		3/8				9405D			9406D	3/8				9405P	9406P
.375	3/8	3/16	9401E	9402E			1.000	1	3/16	9401Q	9402Q				
		1/4		8402	8422	8442				1/4		8407	8427	8447	
		5/16			9403E	9404E			8462	5/16			9403Q	9404Q	8467
		3/8				9405E			9406E	3/8				9405Q	9406Q
.437	7/16	3/16	9401F	9402F			1.250	1-1/4	1/4		8408	8428	8448		
		1/4		9286	9293	9300				5/16			9403S	9404S	8468
		5/16			9403F	9404F			9307	1/4		8400T	8420T	8440T	
		3/8				9405F			9406F	5/16			9403T	9404T	8460T
.500	1/2	3/16	9401G	9402G			1.500	1-1/2	1/4		8409	8429	8449		
		1/4		8403	8423	8443				5/16			9403U	9404U	8469
		5/16			9403G	9404G			8463	1/4		8400V	8420V	8440V	
		3/8				9405G			9406G	5/16			9403V	9404V	8460V
.562	9/16	3/16	9401H	9402H			1.750	1-3/4	1/4		8410	8430	8450		
		1/4		9287	9294	9301				5/16			9403W	9404W	8470
		5/16			9403H	9404H			9308	1/4		8400X	8420X	8440X	
		3/8				9405H			9406H	5/16			9403X	9404X	8460X
.625	5/8	3/16	9401J	9402J			2.000	2	1/4		8411	8431	8451		
		1/4		8404	8424	8444				5/16			9403Y	9404Y	8471
		5/16			9403J	9404J			8464	1/4		8400ZA	8420ZA	8440ZA	
		3/8				9405J			9406J	1/4		8412	8432	8452	
.687	11/16	3/16	9401K	9402K			2.250	2-1/4	1/4		8400ZC	8420ZC	8440ZC		
		1/4		9288	9295	9302				1/4		8413	8433	8453	
		5/16			9403K	9404K			9309	1/4		8400ZE	8420ZE	8440ZE	
		3/8				9405K			9406K	1/4		8414	8434	8454	
.750	3/4	3/16	9401L	9402L			2.500	2-1/2	1/4		8400ZG	8420ZG	8440ZG		
		3/16	9401L	9402L					1/4		8415	8435	8455		

ALUMINUM HEX STANDOFFS

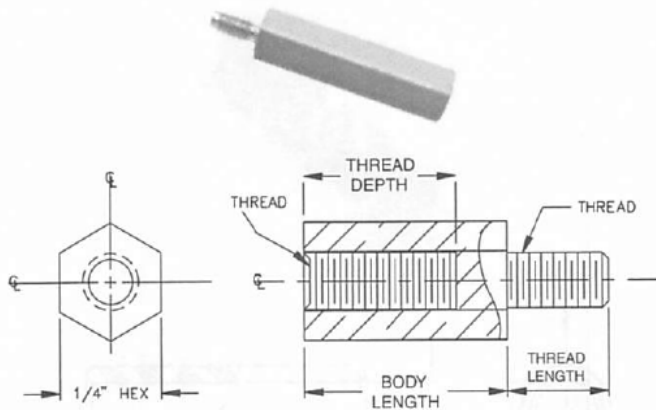


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## ALUMINUM MALE/FEMALE HEX STANDOFFS

BODY LENGTH		4-40	6-32	8-32
.250	1/4	8000C	8001C	8002C
.375	3/8	8000E	8001E	8002E
.500	1/2	8000G	8001G	8002G
.625	5/8	8000J	8001J	8002J
.750	3/4	8000L	8001L	8002L
.875	7/8	8000N	8001N	8002N
1.000	1	8000Q	8001Q	8002Q
1.125	1-1/8	8000R	8001R	8002R
1.250	1-1/4	8000S	8001S	8002S
1.375	1-3/8	8000T	8001T	8002T
1.500	1-1/2	8000U	8001U	8002U
1.625	1-5/8	8000V	8001V	8002V
1.750	1-3/4	8000W	8001W	8002W
2.000	2	8000Y	8001Y	8002Y
2.500	2-1/2	8000ZB	8001ZB	8002ZB
3.000	3	8000ZD	8001ZD	8002ZD

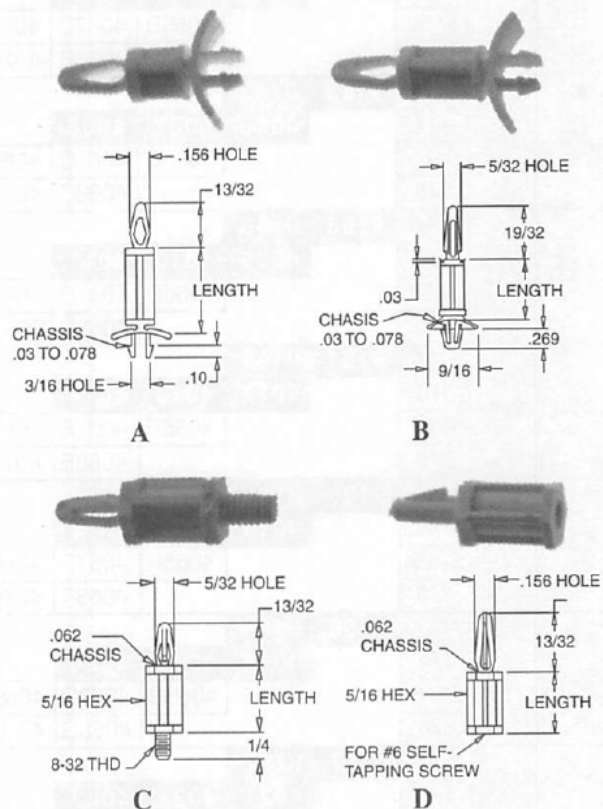


- ▶ Aluminum spacers offer a **Light-weight** alternative to standard brass counterparts. These spacers are non-magnetic, and can withstand severe conditions when properly finished.
- ▶ **Yellow Iridite** is the standard finish. Alternative colors or finishes are also available in quantity, as are odd sizes such as metric or swage. Call for details.
- ▶ All part numbers as indicated in table are **Standard**, factory supported parts.

Thread Specs for Male/Female Spacers			
Thread Size	Body Length	Thread Depth	Thread Length
4-40	1/4 to 3/8	3/16	7/32
6-32	1/4 to 3/8	3/16	9/32
	1/2 to 3"	3/8	9/32
8-32	1/4 to 3/8	3/16	13/32
	1/2 to 3"	7/16	13/32

## NYLON PC BOARD SUPPORTS

- ▶ Flame-retardant **Nylon UL** rated 94 V-0
- ▶ These supports are ideal to use when mounting to a P.C. board to a chassis or to another P.C. board. Completely **Insulated**, these supports are easily installed by hand and are releasable, making repairs easy.
- ▶ P.C. supports (figure A) and self-centering supports (figure B) mount in a 3/16" diameter hole in the chassis. Studded supports (figure C) and screw mounted supports (figure D) mount with the use of additional hardware.
- ▶ Supports are supplied in natural (white) finish.



LENGTH	FIG. A	FIG. B	FIG. C	FIG. D
3/16	4293	3900		
1/4	4294	3901	3920	3928
3/8	4295	3902	3921	3929
1/2	4296	3903	3922	3930
5/8	4297	3904	3923	3931
3/4	4298	3905	3924	3932
7/8	4299	3906	3925	3933
1-1/8			3926	3934
1-13/32			3927	3935

HEX STANDOFFS  
BOARD SUPPORTS

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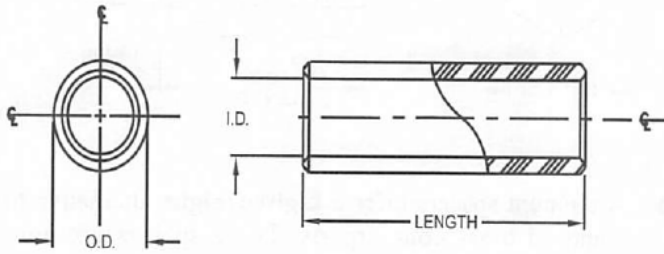
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# NYLON ROUND SPACERS



- ▶ Molded **Nylon**.
- ▶ An excellent **Insulator**, the nylon spacer's surface lubricity allows wires to be routed against spacer without fear of chafing the insulation.
- ▶ Natural (milky white) finish.
- ▶ Relatively low operating temperature(?),
- ▶ Part numbers shown in black squares are **Standard** supported parts. Part numbers indicated in white squares are Non-standard and may require minimums.
- ▶ Nylon spacers and standoffs can be manufactured in alternative dimensions per special order.

LENGTH	O.D.	HOLE CLEARANCE SIZE					LENGTH	O.D.	HOLE CLEARANCE SIZE							
		#2	#4	#6	#8	#10			#2	#4	#6	#8	#10			
.125	1/8	3/16	9160	9180			.562	9/16	5/16			4065H	4067H	4069H		
		1/4		4000	4001	4002							4068H	4070H		
		5/16			4065A	4067A			4069A	.625	5/8	3/16	9168	9188		
		3/8				4068A			4070A			1/4		4024	4025	4026
.187	3/16	3/16	9161	9181			.687	11/16	3/16	9169	9189					
		1/4		4003	4004	4005							4065J	4067J	4069J	
		5/16			4065B	4067B			4069B	5/16				4068J	4070J	
		3/8				4068B			4070B	3/8						
.250	1/4	3/16	9162	9182			.750	3/4	3/16	9170	9190					
		1/4		4006	4007	4008							4030	4031	4032	
		5/16			4065C	4067C			4069C	5/16				4065L	4067L	4069L
		3/8				4068C			4070C	3/8					4068L	4070L
.312	5/16	3/16	9163	9183			.812	13/16	3/16	9171	9191					
		1/4		4009	4010	4011							4033	4034	4035	
		5/16			4065D	4067D			4069D	5/16				4065M	4067M	4069M
		3/8				4068D			4070D	3/8					4068M	4070M
.375	3/8	3/16	9164	9184			.875	7/8	3/16	9172	9192					
		1/4		4012	4013	4014							4036	4037	4038	
		5/16			4065E	4067E			4069E	5/16				4065N	4067N	4069N
		3/8				4068E			4070E	3/8					4068N	4070N
.437	7/16	3/16	9165	9185			.937	15/16	3/16	9173	9193					
		1/4		4015	4016	4017							4039	4040	4041	
		5/16			4065F	4067F			4069F	5/16				4065P	4067P	4069P
		3/8				4068F			4070F	3/8					4068P	4070P
.500	1/2	3/16	9166	9186			1.000	1	3/16	9174	9194					
		1/4		4018	4019	4020							4042	4043	4044	
		5/16			4065G	4067G			4069G	5/16				4065Q	4067Q	4069Q
		3/8				4068G			4070G	3/8					4068Q	4070Q
.562	9/16	3/16	9167	9187					3/16							
		1/4		4021	4022	4023										

NYLON ROUND SPACERS



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# NYLON ROUND, HEX & MALE/FEMALE STANDOFFS

## ROUND THREADED

LENGTH	O.D.	#4-40	#6-32	#8-32	#10-32
.250	1/4	1/4	4050	4051	4052
		5/16			4071C
		3/8			4072C
.375	3/8	1/4	4053	4054	4055
		5/16			4071E
		3/8			4072E
.500	1/2	1/4	4056	4057	4058
		5/16			4071G
		3/8			4072G
.625	5/8	1/4	4050J	4051J	
		5/16			4071J
		3/8			4072J
.750	3/4	1/4	4059	4060	4061
		5/16			4071L
		3/8			4072L
.875	7/8	1/4	4050N	4051N	
		5/16			4071N
		3/8			4072N
1.000	1	1/4	4062	4063	4064
		5/16			4071Q
		3/8			4072Q

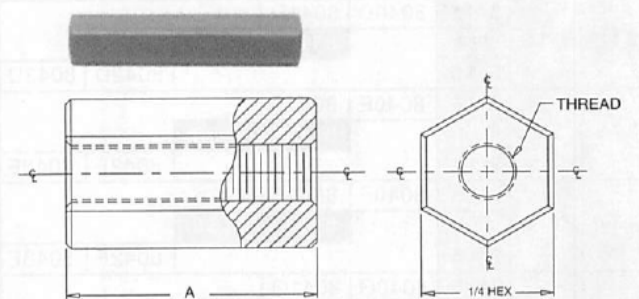
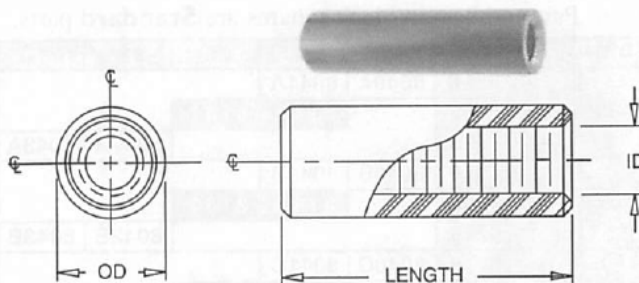
## HEX THREADED

LENGTH	O.D.	#4-40	#6-32	#8-32
.250	1/4	4300	4301	4302
.375	3/8	4303	4304	4305
.500	1/2	4306	4307	4308
.625	5/8	4300J	4301J	4073J
.750	3/4	4309	4310	4311
.875	7/8	4312	4313	4314
1.000	1	4315	4316	4317

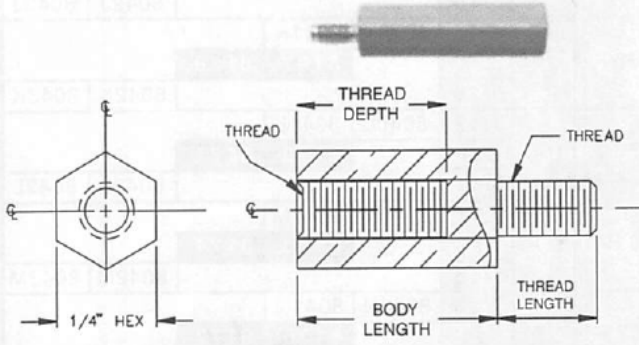
## HEX MALE / FEMALE

LENGTH	O.D.	#4-40	#6-32	#8-32
.250	1/4	4375	4376	4377
.375	3/8	4378	4379	4380
.500	1/2	4381	4382	4383
.625	5/8	4384	4385	4386
.750	3/4	4387	4388	4389
.875	7/8	4390	4391	4392
1.000	1	4393	4394	4395
1.125	1-1/8	4396	4397	4398
1.250	1-1/4	4399	4400	4401
1.375	1-3/8	4402	4403	4404
1.500	1-1/2	4405	4406	4407
1.625	1-5/8	4408	4409	4410
1.750	1-3/4	4411	4412	4413
2.000	2	4414	4415	4416

- ▶ An excellent insulator, the nylon spacer's surface lubricity allows wires to be routed against spacer without fear of chafing the insulation.
- ▶ Molded Nylon threads are precise and will withstand torque without stripping.
- ▶ Natural (milky white) finish.



Maximum Thread Depth					
Thread Size	2 - 56	4 - 40	6 - 32	8 - 32	10 - 32
Thread Length					
Tapped Thru	0.625	1.000	1.000	1.000	1.000
Thread Length					
Tap each end	0.250	0.375	0.375	0.375	0.375



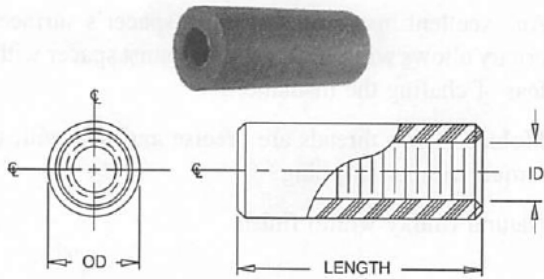
Thread Specs for Male/Female Spacers			
Thread Size	Body Length	Thread Depth	Thread Length
4-40	1/4 to 3/8	3/16	7/32
	1/2 to 3"	3/8	9/32
6-32	1/4 to 3/8	3/16	9/32
	1/2 to 3"	7/16	13/32

NYLON STANDOFFS



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# PHENOLIC SPACERS



Part numbers in black squares are **Standard** parts.

LENGTH	O.D.	#2	#4	#6	#8	#10
.125	1/8	3/16	8040A	8041A		
		1/4		8140	8141	
		5/16				8042A
.187	3/16	3/16	8040B	8041B		
		1/4		8143	8144	
		5/16				8042B
.250	1/4	3/16	8040C	8041C		
		1/4		8146	8147	
		5/16				8042C
.312	5/16	3/16	8040D	8041D		
		1/4		8149	8150	
		5/16				8042D
.375	3/8	3/16	8040E	8041E		
		1/4		8152	8153	
		5/16				8042E
.437	7/16	3/16	8040F	8041F		
		1/4		8155	8156	
		5/16				8042F
.500	1/2	3/16	8040G	8041G		
		1/4		8158	8159	
		5/16				8042G
.562	9/16	3/16	8040H	8041H		
		1/4		8161	8162	
		5/16				8042H
.625	5/8	3/16	8040J	8041J		
		1/4		8164	8165	
		5/16				8042J
.687	11/16	3/16	8040K	8041K		
		1/4		8167	8168	
		5/16				8042K
.750	3/4	3/16	8040L	8041L		
		1/4		8170	8171	
		5/16				8042L
.812	13/16	3/16	8040M	8041M		
		1/4		8173	8174	
		5/16				8042M
.875	7/8	3/16	8040N	8041N		
		1/4		8176	8177	
		5/16				8042N
.937	15/16	3/16	8040P	8041P		
		1/4		8179	8180	
		5/16				8042P
1.000	1	3/16	8040Q	8041Q		
		1/4		8182	8183	
		5/16				8042Q

- ▶ Machined from paper-base, resin impregnated, heat-cured materials with 130°C max. temperature rating.
- ▶ Standoffs are threaded as indicated in Thread Depth Table (at bottom of opposite page).
- ▶ Please also see page # for more information

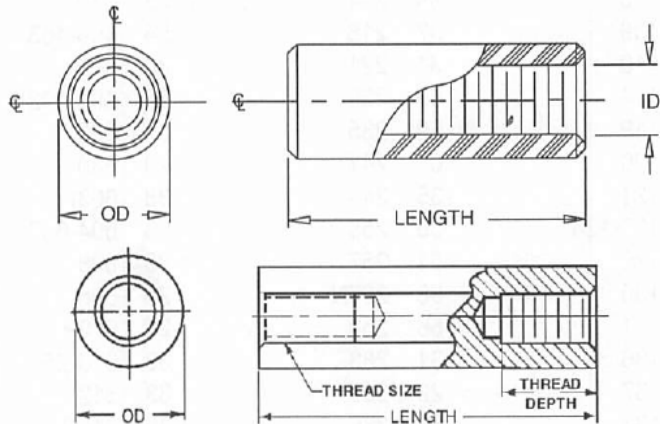
LENGTH	O.D.	4-40	6-32	8-32	10-32
.187	3/16	3/16	8045B		
		1/4	8658B	8659B	
		5/16			8046B
.250	1/4	3/16	8045C		
		1/4	8660	8661	
		5/16			8046C
.312	5/16	3/16	8045D		
		1/4	8663	8664	
		5/16			8046D
.375	3/8	3/16	8045E		
		1/4	8666	8667	
		5/16			8046E
.437	7/16	3/16	8045F		
		1/4	8669	8670	
		5/16			8046F
.500	1/2	3/16	8045G		
		1/4	8672	8673	
		5/16			8046G
.562	9/16	3/16	8045H		
		1/4	8675	8676	
		5/16			8046H
.625	5/8	3/16	8045J		
		1/4	8678	8679	
		5/16			8046J
.687	11/16	3/16	8045K		
		1/4	8681	8682	
		5/16			8046K
.750	3/4	3/16	8045L		
		1/4	8684	8685	
		5/16			8046L
.812	13/16	3/16	8045M		
		1/4	8687	8688	
		5/16			8046M
.875	7/8	3/16	8045N		
		1/4	8690	8691	
		5/16			8046N
.937	15/16	3/16	8045P		
		1/4	8693	8694	
		5/16			8046P
1.000	1	3/16	8045Q		
		1/4	8696	8697	
		5/16			8046Q
1.125	1-1/8	1/4	8658R	8659R	
1.250	1-1/4		8658S	8659S	
1.375	1-3/8		8658T	8659T	
1.500	1-1/2		8658U	8659U	
1.625	1-5/8		8658V	8659V	
1.750	1-3/4		8658W	8659W	
1.875	1-7/8		8658X	8659X	
2.000	2		8658Y	8659Y	

PHENOLIC SPACERS



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PART NO.	LENGTH	O.D.	THREAD		MIL NUMBER	
			SIZE	DEPTH		
2640	1/4	1/4	6-32	THRU	NL 523 W01 004	
2642	3/8	3/8		5/32		
2641	1/2	1/4		3/16		
2643		3/8		5/32		
2600		1/2		9/64		
2644	5/8	3/8		8-32		3/16
2601		1/2	8-32	3/16	NL 523 W02 005	
2602	3/4	3/8	6-32	1/4	NL 523W01 006	
2645		1/2	8-32		NL 523 W02 006	
2608	1	3/8	6-32	3/8	NL 523 W01 008	
2646		1/2	8-32		NL 523 W02 008	
2609		3/4	10-32		NL 523 W03 008	
2615	1-1/4	3/8	6-32	NL 523 W01 010		
2604		1/2	8-32	NL 523 W02 010		
2610		3/4	10-32	NL 523 W03 010		
2616	1	1/4-20	7/16	NL 523 W04 010		
2622	1-1/2	1/2	6-32	9/16	NL 523 W01 012	
2647		3/8	8-32	3/8	NL 523 W02 012	
2605		1/2	10-32	3/8	NL 523 W03 012	
2611		3/4	1/4-20	1/2	NL 523 W04 012	
2617	2	3/8	6-32	3/8	NL 523 W01 016	
2623		1/2	8-32	3/8	NL 523 W02 016	
2606		3/4	10-32	3/8	NL 523 W03 016	
2612		1	1/4-20	5/8	NL 523 W04 016	
2618	2-1/2	1/2	6-32	1/2	NL 523 W02 020	
2624		3/8	8-32	3/8	NL 523 W03 020	
2613		3/4	10-32	3/4	NL 523 W04 020	
2619	3	1/2	8-32	3/8	NL 523 W02 024	
2649		3/4	10-32	3/8	NL 523 W03 024	
2625		1	1/4-20	5/8	NL 523 W04 024	
2614	4	3/4	10-32	3/8	NL 523 W03 032	
2620		1	1/4-20	5/8	NL 523 W04 032	
2626	5	1	1/4-20	5/8	NL 523 W04 040	
2650		6	1	1/4-20	5/8	NL 523 W04 040
2621			1	1/4-20	5/8	NL 523 W04 048



- ▶ Ceramic spacers are Grade L-5 **Steatite**, glazed and fired at high temperature.
- ▶ Threaded from each end as indicated in table.
- ▶ The ideal **Insulator**, Steatite exhibits exceptional strength in compression and tension, but is weak in shear and torsion, as are all glass-type materials.
- ▶ Continuous safe operating **Temperature Rating** of 930°C (1700°F).
- ▶ Other size **Options** are available from factory in quantity, as are spacers with different tap sizes at each end for adaptation applications.

▶ The table below refers to Phenolic threaded standoffs as shown on opposite page

	Maximum Thread Depth				
Thread Size	2 - 56	4 - 40	6 - 32	8 - 32	10 - 32
Thread Length Tapped Thru	0.375	0.500	1.000	1.000	1.000
Thread Length Tap each end	0.250	0.375	0.375	0.375	0.375

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# NUMERIC INDEX

Part No.	Page	Part No.	Page	Part No.	Page	Part No.	Page	Part No.	Page
100	34	205	36	401-407	34	901	53	1326-1329	59
101	37	206	36	425	34	914	53	1332	14
102	34	207	25	426	33	928-930	53	1334-xx-	15
103	34	209	29	430	41	937-939	65	1335-xx-	15
105	39	210	21	432-436	34	1000-1002	58	1336-xx-	15
106	39	211	32	455	32	1003-1005	53	1342	16
107	41	212	32	459N	25	1006-1008	58	1344-xx-	16
108	39	214	32	459	25	1009	53	1349-xx-	16
109	37	218	54	460-463	34	1010	58	1350-1362	58
110	31	221	36	476	32	1039	53	1363-1368	59
114	69	229	38	490-492	38	1043-1052	53	1369-1383	58
119	69	235	38	533	65	1055	53	1398	59
120	68	241	40	539	65	1056-1058	58	1410-xx	54
121	35	244	38	603P	9	1059-1078	53	1411-xx	54
123-128	39	255	33	604-607	15	1084	53	1412-xx	54
129	54	257	25	608	66	1096	53	1413-xx	54
130	68	257N	25	608	66	1111	58	1414-xx	54
131	68	269	28	610P	10	1112	58	1415-xx	54
136	31	283	38	610-25	10	1115-1119	60	1416-xx	54
137	29	285	33	612	66	1120	59	1425-1430	58
138	68	286	36	615P	9	1127-1132	60	1448	69
139	35	295	32	622P	9	1139-1152	60	1449	69
140	68	300	18	623P	9	1156-1158	53	1458	36
143	35	301-10x	18	625P	9	1168	59	1459	36
145	34	302	17	627	15	1173-1178	58	1463	26
147	41	303	17	628	15	1179-1181	59	1464	26
148	69	310	18	629	14	1183-1199	58	1470-1472	64
149	69	313-319	17	647	15	1201	48	1477	28
150-154	68	321	41	648	15	1202	48	1480-1482	26
156	39	324	32	649	14	1203	50	1485-xx	54
157	37	325	41	650-656	66	1207	52	1486-xx	54
159	31	329	17	657-659	14	1211	50	1488-xx	54
160-166	68	331-10x	18	671	15	1214	50	1490	54
180	68	333	18	672-15	51	1233	50	1491	54
181-184	69	338	18	675	15	1235	52	1493	54
185	35	347	18	685P	9	1243-1245	59	1494-8	54
186	35	350	18	699	10	1246	48	1495-1497	54
187	37	351-10x	18	699-20	10	1247	50	1498	36
188	35	352	17	699-25	10	1248	59	1499	36
189	68	353	17	720	18	1249	59	1501-1507	40
191	35	360	18	728RB	19	1256	59	1508	36
192	34	361-10x	18	799	25	1258	59	1509	36
193	37	363	17	799N	25	1260	59	1510-xx-	14
195	37	364	17	813	53	1271-1273	58	1512	32
196	36	367	18	820-826	53	1275	25	1514	25
200	38	380	18	828-830	53	1275N	25	1516	20
201	38	381-10x	18	846-879	53	1280-101	52	1517	25
202	40	382-384	17	899	25	1283	52	1530-xx	12
203	38	388	32	899N	25	1284	52	1531-xx	12
204	32	389-10x	18	900	53	1313-1317	59	1532-xx	12



Part No.	Page	Part No.	Page	Part No.	Page	Part No.	Page	Part No.	Page
1580-xx	12	2056	67	2693-100	62	7917	74	8420T-X	80
1581-xx	12	2057	67	2694	62	7920	74	8420-8435	80
1584-xx	13	2058	62	2694-100	62	7952	75	8440T-ZG	80
1587-xx	13	2067-2069	35	2695	62	7955	75	8440-8455	80
1589-xx	13	2073-2075	35	2695-100	62	7958	75	8460T-X	80
1590-xx-	16	2076-1081	37	2696	62	7961	75	8460-8471	80
1591-xx-	16	2082-2084	35	2696-100	62	7964	75	8480R-X	78
1595-xx-	15	2100-2109	73	2802-2804	30	7967	75	8480-8491	78
1596-xx-	14	2115-2119	73	2809	30	7970	75	8500R-V	78
1597-xx-	16	2120-2129	74	2810	30	7973	75	8500-8511	78
1598	40	2135-2139	63	2810AA	30	7976	75	8520R-X	78
1601-1643	67	2150-2169	61	3002-3013	53	7979	75	8520-8531	78
1665	67	2170	62	3015	27	7982	75	8540R-X	78
1669	67	2171	61	3016BB	27	7985	75	8540-8551	78
1672	67	2172-2177	62	3016RB	27	7988	75	8658B	84
1673	67	2178-2190	63	3016RR	27	7991	75	8659B	84
1675	21	2191	61	3021-3029	77	7994	75	8658R-Y	84
1676	20	2192-2194	63	3068	19	8000C-ZD	81	8659R-Y	84
1679	21	2255-2257	66	3069RB	19	8001C-ZD	81	8660-8697	84
1682	22	2260	66	3080	19	8002C-ZD	81	8700-8729	73
1686	22	2289	66	3083-3099	66	8040A-Q	84	8732-8759	73
1687	22	2291	66	3501	40	8041A-Q	84	8760R-Y	74
1688	23	2292	66	3502	40	8042A-Q	84	8760-8789	74
1689	23	2320-2334	75	3920-3935	81	8043A-Q	84	8761R-Y	74
1696	20	2340-2344	73	4000-4044	82	8045B-Q	84	8762R-Y	74
1697	22	2350-2355	69	4050J	83	8046B-Q	84	8820R-Y	75
1698	23	2365A-C	59	4050N	83	8047B-Q	84	8820-8849	75
1749	21	2366-2368	59	4050	83	8140-8183	84	8821R-Y	75
1750	21	2370-2374	74	4051J	83	8216-8231	76	8822R-Y	75
1753AA	21	2375A-C	59	4051N	83	8248-8263	76	8910-8934	64
1770	20	2377-2379	66	4051-4064	83	8280-8295	76	8936	64
1791-xx	13	2390	66	4065A-Q	82	8300-8307	76	8940-8949	64
1807	29	2455-2465	63	4067A-Q	82	8320R-ZM	79	8951-8961	64
1808-1813	28	2500-2512	58	4068A-Q	82	8320-8329	79	9000-9029	73
1814-5	25	2514-2518	61	4069A-Q	82	8330X	79	9030-9059	74
1814	28	2520-2532	58	4070A-Q	82	8330-8335	79	9130-9159	75
1815	51	2534-2538	61	4071C-Q	83	8340R-ZM	79	9160-9194	82
1817	51	2554	59	4072C-Q	83	8340-8355	79	9200-9255	78
1828	29	2555	59	4073J	83	8360R-ZM	79	9284-9311	80
1831	51	2556	59	4293-4300	81	8360-8375	79	9321P	9
1835	29	2580-2592	58	4300J	83	8380R-X	79	9323P	9
1837-10x	30	2600-2629	85	4301	83	8380-8389	79	9325P	9
1864-xx-	15	2640-2650	85	4301J	83	8390A-Y	78	9327P	9
1865-xx-	14	2651-2652	61	4302-4317	83	8390	79	9351	33
1866-xx-	14	2660-2692	61	4375-4416	83	8391	79	9372A-Q	73
1867-xx-	14	2691	62	7902	74	8400	80	9373A-Q	73
1870	19	2691-100	62	7905	74	8400T-ZG	80	9374A-Q	73
2039B-D	77	2692	62	7908	74	8401	80	9375A-Q	73
2040A-D	77	2692-100	62	7911	74	8402ZA-ZG	80	9377A-G	74
2050-2053	67	2693	62	7914	74	8402-8415	80	9378A-G	74



# NUMERIC INDEX

Part No.	Page	Part No.	Page	Part No.	Page	Part No.	Page	Part No.	Page
9379A-G	74	91107	62	BNC9159 WHT	45	N4236	56	N4418	57
9380A-G	74	91109	62	BNC9250 WHT	45	N4237	56	N4419	57
9382A-Q	75	91111	62	BNC9259 WHT	45	N4240	56	N4423	57
9383A-Q	75	91112	62	BNC9350 WHT	45	N4241	56	N4424	57
9384A-Q	75	91114	62	BNC9359 WHT	45	N4242	56	N4425	57
9385A-Q	75	91116	62	H9100	47	N4245	56	N4426	57
9387A-Q	78	91117	62	H9101	47	N4250	56	N4429	57
9388A-Q	78	91122	62	H9102	47	N4251	56	N4430	57
9389A-Y	78	91123	62	H9103	47	N4254	56	N4430	57
9391A-Q	78	BNC5554	47	H9200	47	N4255	56	N4450	56
9392A-Q	78	BNC5654	47	H9201	47	N4256	56	N4454	56
9392Q	78	BNC6054	46	H9202	47	N4258	56	N4455	56
9394A-Q	79	BNC6059	46	H9203	47	N4262	56	N4456	56
9395A-Q	79	BNC6154QC	46	J755924	51	N4263	56	N4459	56
9396A-Y	79	BNC6154	46	J755937	51	N4265	56	N4460	56
9397A-Y	79	BNC6159QC	46	J755944	51	N4270	56	N4463	56
9398A-Q	79	BNC6159	46	J755976	51	N4271	56	N4466	56
9399A-Q	79	BNC6254	46	N132	49	N4273	56	N4467	56
9401A-Q	80	BNC6259	46	N2411	53	N4289	56	N4475	56
9402A-Q	80	BNC6619	46	N2422	53	N4301	55	N4482	56
9403A-Y	80	BNC6719B	47	N33	48	N4302	55	N4483	56
9404A-Y	80	BNC67191B	47	N3302	48	N4303	55	N668	52
9405A-Q	80	BNC67192B	47	N3308	48	N4304	55	NWAJ116	57
9406A-Q	80	BNC67193B	47	N33315	49	N4307	55	NWAJ332	57
9500-9504	70	BNC67194B	47	N33326	49	N4308	55	NWAU116	57
9522	71	BNC6919B	46	N33351	49	N4309	55	NWAU332	57
9524	71	BNC6954	46	N33415	49	N44BF	48	OP1010	11
9540AB	71	BNC6959	46	N341	50	N4401	57	OP1110	11
9542AA	71	BNC70F22	43	N34215	49	N4402	57	OP2010	11
9544AB	71	BNC70F12	43	N34215	50	N4403	57	PSL126312L	48
9545	71	BNC7050 D.C.	45	N38B	48	N4404	57	PSL126315L	48
9546AA	71	BNC 7057	44	N38C	48	N4405	57	PSL126318L	48
9547AA	71	BNC7059 D.C.	45	N4001	55	N4406	57	PSL126F315	48
9548	71	BNC7150 D.C.	45	N4102	55	N4407	57	PSL126F318	48
9550AA	71	BNC 7154	44	N4103	55	N4408	57	PSL126F612	48
9551AB	71	BNC7159 D.C.	45	N4106	55	N4409	57	PSL126F615	48
9552AA	71	BNC72F22	43	N4108	55	N4409-2	57	PSL126F618	48
9555AD	71	BNC72F12	43	N4109	55	N4409-5	57	PSL156F612	48
9557	71	BNC7250 D.C.	45	N4201	56	N4410	57	PSL156F615	48
9607	70	BNC 7254	44	N4202	56	N4410-2	57	PSL156F618	48
9622	70	BNC7259 D.C.	45	N4205	56	N4410-5	57	PSL176F612	48
9829P	9	BNC7350 D.C.	45	N4220	56	N4411	57	PSL176F615	48
9951	65	BNC 7354	44	N4221	56	N4411-1	57	PSL176F618	48
9952	65	BNC7359 D.C.	45	N4224	56	N4411-2	57	PSL176F612	48
9954	65	BNC74F12	43	N4225	56	N4411-2-1	57	PSL176F615	48
9955	65	BNC74F22	43	N4226	56	N4411-5	57	PSL176F618	48
91100	62	BNC7459	46	N4228	56	N4411-5-1	57		
91102	62	BNC9050 WHT	45	N4231	56	N4416	57		
91103	62	BNC9059 WHT	45	N4232	56	N4416-6	57		
91106	62	BNC9150 WHT	45	N4235	56	N4417	57		



**DECIMAL EQUIVALENTS  
OF PARTS OF AN INCH**

1/64	.015625
1/32	.03125
3/64	.046875
1/16	.0625
5/64	.078125
3/32	.09375
7/64	.109375
1/8	.125
9/64	.140625
5/32	.15625
11/64	.171875
3/16	.1875
13/64	.203125
7/32	.21875
15/64	.234375
1/4	.25
17/64	.265625
9/32	.28125
19/64	.296875
5/16	.3125
21/64	.328125
11/32	.34375
23/64	.359375
3/8	.375
25/64	.390625
13/32	.40625
27/64	.421875
7/16	.4375
29/64	.453125
15/32	.46875
31/64	.484375
1/2	.5
33/64	.515625
17/32	.53125
35/64	.546875
9/16	.5625
37/64	.578125
19/32	.59375
39/64	.609375
5/8	.625
41/64	.640625
21/32	.65625
43/64	.671875
11/16	.6875
45/64	.703125
23/32	.71875
47/64	.734375
3/4	.75
49/64	.765625
25/32	.78125
51/64	.796875
13/16	.8125
53/64	.828125
27/32	.84375
55/64	.859375
7/8	.875
57/64	.890625
29/32	.90625
59/64	.921875
15/16	.9375
61/64	.953125
31/32	.96875
63/64	.984375
1	1.

# TECHNICAL INFORMATION

## MACHINE SCREW SIZES & STUD HOLE TABLE

SCREW NO.	MAX DIAMETER	HOLE SIZE
# 2	.0860	.093
# 3	.0990	.100
# 4	.1120	.120
# 5	.1250	.130
# 6	.1380	.144
# 8	.1640	.169
# 10	.1900	.196
# 12	.2160	.220

### COPPER MEASURING CHART FOR USE WITH MICROMETER

18 Ga. 7/26	20 Ga. 7/28	21 Ga. 7/29	22 Ga. 7/30	23 Ga. 7/31	24 Ga. 7/32	25 Ga. 7/34
10/28	10/30	7/.0117	7/.0092	8/.0080	16/36	
16/30	16/32	10/31	7/.0096	10/33		
19/.0092	20/33	20/34	8/31	13/34		
41/34	26/34		10/32	20/36		
65/36	41/36		14/33			
20/31			16/34			
			26/36			

**Sizes:**

#26-.0159 #28-.0126 #30-.010 #32-.0079 #34-.0063 #36-.0050  
#27-.0142 #29-.0113 #31-.0089 #33-.0071 #35-.0056

ie; 7/26 means 7 strands of number 26 wire which makes 18 gauge wire.

### CONDUCTOR

AWG	Solid Diameter	STRANDED		Diameter Over Strand Conductor
		No. of Strands	Dia. of Strands	
30	.010	7	.004	.014
28	.012	7	.005	.016
26	.015	7	.006	.020
24	.020	7	.008	.025
24		16	.006	.025
22	.024	7	.010	.033
20	.032	10	.010	.041
18	.040	16	.010	.052
16	.050	19	.011	.065
14	.065	19	.014	.078

F°	C°	F°	C°
300	150	570	300
—	—	—	—
290	—	560	—
—	—	—	—
280	140	550	290
—	—	—	—
270	—	540	—
—	—	—	—
260	130	530	280
—	—	—	—
250	120	520	270
—	—	—	—
240	—	510	—
—	—	—	—
230	110	500	260
—	—	—	—
220	—	490	—
—	—	—	—
210	100	480	250
—	—	—	—
200	—	470	—
—	—	—	—
190	90	460	240
—	—	—	—
180	—	450	—
—	—	—	—
170	80	440	230
—	—	—	—
160	70	430	220
—	—	—	—
150	—	420	—
—	—	—	—
140	60	410	210
—	—	—	—
130	—	400	—
—	—	—	—
120	50	390	200
—	—	—	—
110	—	380	—
—	—	—	—
100	40	370	190
—	—	—	—
90	—	360	—
—	—	—	—
80	30	350	180
—	—	—	—
70	—	340	—
—	—	—	—
60	20	330	170
—	—	—	—
50	10	320	160
—	—	—	—
40	—	310	—
—	—	—	—
32	0	150	150

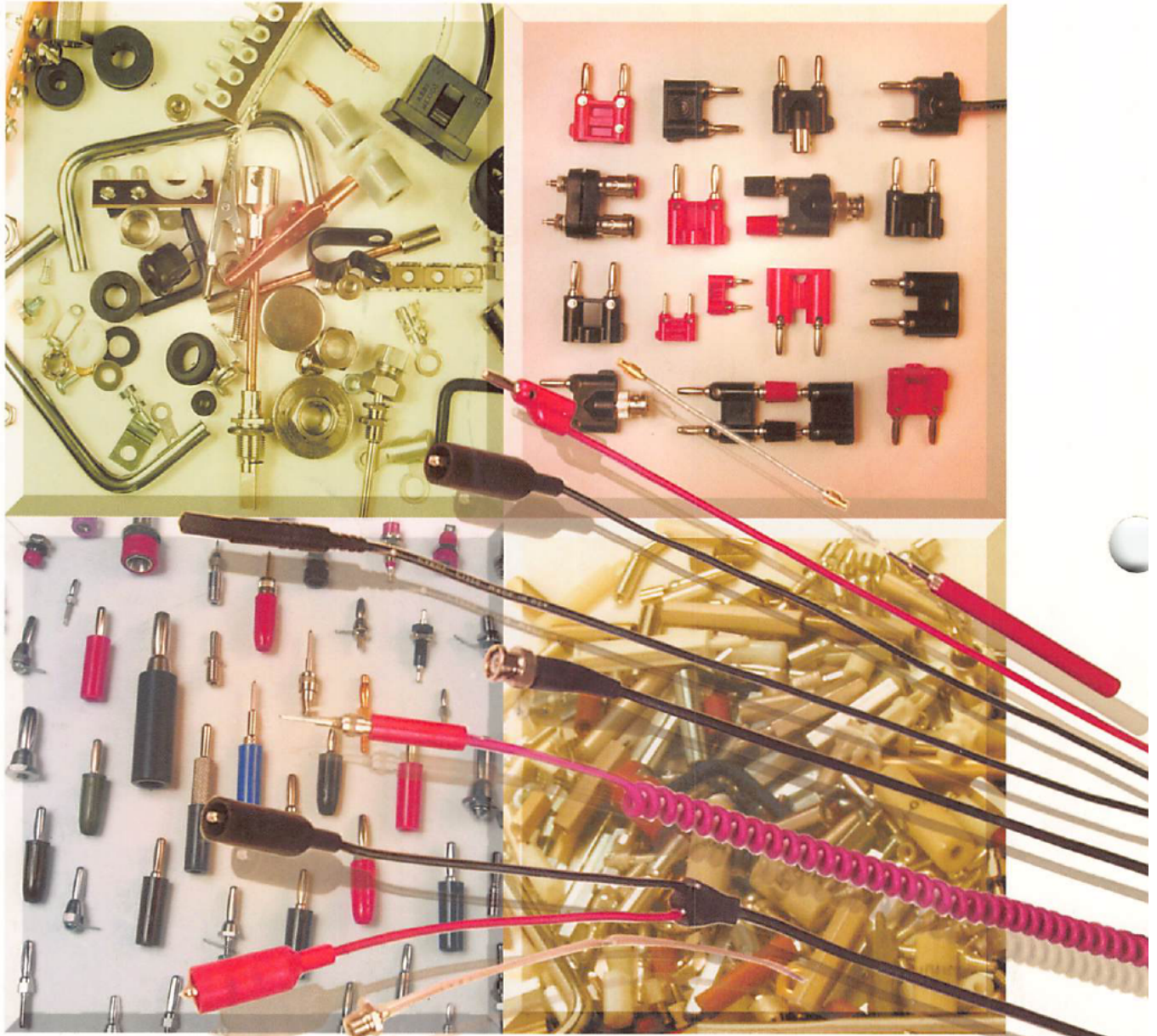


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