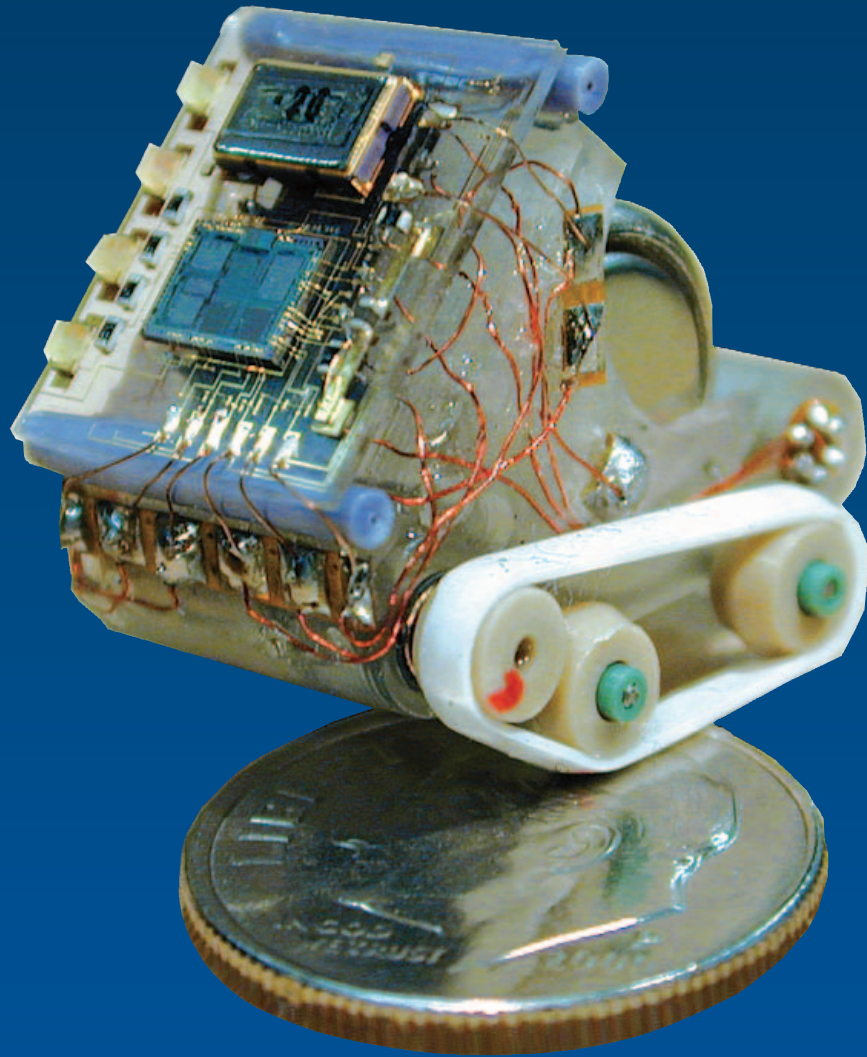




[Click Robot to Start](#)



**Engineering Findings Catalog 22**  
and Resource Manual



**Supplying quality Materials Components and  
Tools to Engineers, Scientists, Researchers, and  
Developers since 1963**

Please enjoy our Full Line catalog and Resource Manual.  
Below are links to various parts of our PDF Catalog.

The indexes are linked for your convenience

[Index](#)

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[Components Section](#)

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## Welcome to Catalog 22

Thanks for your interest in Small Parts. I appreciate your business over the past 38 years, and I am looking forward to this upcoming year with tremendous excitement.

This year, the Small Parts catalog has been completely reorganized in order to help you find the products you need, easier and faster. The index has been redesigned to help speed up your search for specific products. We've also added a ruled work sheet in the index section for you to record the pages you refer to most often. Catalog 22 has been divided into three major sections, Materials, Components, and Tools, allowing you to quickly locate the area of the catalog that you're interested in. Additionally, each of these sections has a mini-index at its beginning to further assist you. As always the Small Parts catalog is loaded with product details, specifications, and accurate product descriptions. We hope you find it both easy to use, and useful.

The tragic events of last year were intended to weaken America. Instead it has rekindled our national pride, and has brought out the best in Americans. As a company, we have the privilege of working with some of the brightest and most creative scientists, engineers, and researchers, and educators in our nation, and I can't wait to see what comes off America's collective drawing boards next year. I hope you share my enthusiasm as we show the world our nations greatness.

Good luck to you in your individual and corporate efforts this year, and may God bless America.

Sincerely,

A handwritten signature in blue ink, appearing to read 'P. E. Maffett', enclosed within a blue oval scribble.

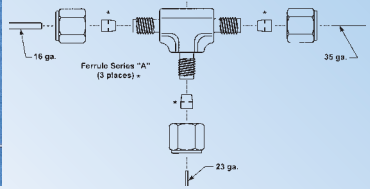
Phillip. E. Maffett  
President



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# HYPODERMIC TUBING ADAPTORS – FERRULES



Adapting Hypodermic Tubing for use with other sizes and types of tubing has never been easier than with our unique Ferrule-Compression Tube Fittings from Small Parts .....Pages 108 - 109

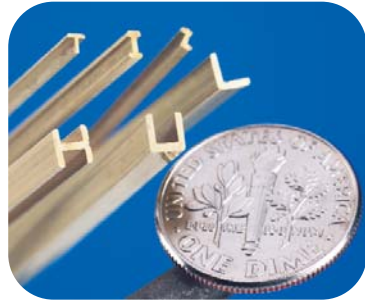


## POROUS PLASTICS

PTFE and Polyethylene forms provide controlled porosity for aeration and filtering applications.

See our expanded line of porous plastics on pages 80 and 131.

# New



## MINIATURE STRUCTURAL BRASS SHAPES

See pages 30, 43 & 43, 45

## MULTI-TOOLS

See page 365



PORTABLE VACU-VISE with swivel base Page 395

## TRIGGER RELEASE LOCK GRIP PLIERS

One handed, shock free release of clamping force See Page 374



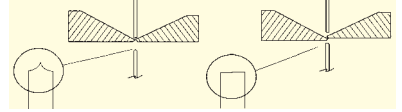
This **MINI-RATCHET SET** works in smaller, tighter spots than almost any ratcheting tool we have seen.

See it on page 369



Experience the **XURON** difference!

Page 376



- 1 In standard compression type cutters, the blade edges collide, resulting in a spiked cut and an eventual dulling of the tool.
- 2 This is a cross section view of the Xuron Micro-Shear®, flush cutter from the tip end. Note how the blades by-pass — this is a very important patented feature that results in a clean square cut with no spikes.



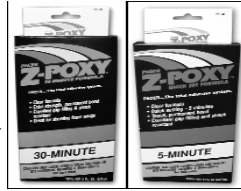
**CAST ACRYLIC**

See page 73

**Z-Poxy**

Clear-Fast Setting Epoxy

See page 255



# Products

**PB BAUMANN** 









Introduced in our Product Brochures

**SWISS TOOLS WITH**

A REPUTATION FOR SUPERIOR QUALITY

The parallel shape of the PB tip guarantees optimum transmission of force providing 50% higher torque without damage to the screw!



							
Conventional conical tip	Parallel PB tip with chamfered corners	Line contact	Surface contact - full use of screw slot	Torque Damaged Screw	Torque +50% Undamaged Screw	Protruding corners in countersunk screws	Fitted" shape of PB screwdriver tip

**SEE  
OUR NEW  
HYPODEMIC  
TUBING SIZES.....  
PAGES 90 - 94**

**BINOCULAR LOUPES**



Superior Optics with Titanium frames.  
See page 435

# Manufacturing Services

## We are uniquely able to fulfill your small parts manufacturing needs

We've been selling quality materials, tools, and mechanical components since 1963 when our first catalog was published. Over the years, hundreds of research scientists, engineers, inventors and hobbyists in many fields have come to depend on our ability to supply tubing, fasteners, metals and plastics in the quantities needed for their special projects.

Repeated requests for customized parts and components led to establishment of our Manufacturing Services division in 1987.

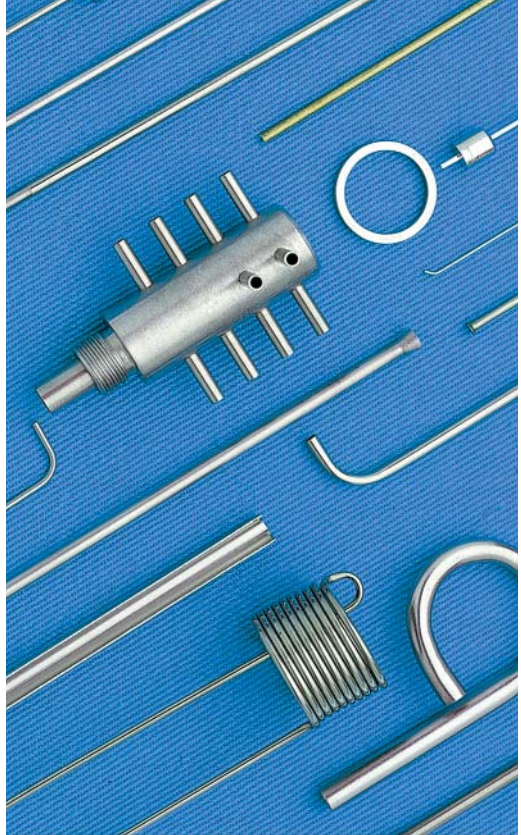
We now make products for a wide range of applications in the biomedical, pharmaceutical, and computer industries, and for all types of laboratory research and engineering development projects.

### SMALL DIAMETER SPECIALISTS

We can cut, bend, swage, flare, reduce or form small diameter tubing and wire — to your specifications — from 0.006" up to 1/4" diameter.

Plus, we can grind, cut, punch, mill, drill, tumble, grit blast, and perform ultrasonic cleaning on most types of metal and plastics.

Custom components are fabricated according to your blueprints, samples, or specifications.



Ask us to quote on your most demanding prototype needs, pilot-runs and production work.

*Call today for more information or to place an order!*

#### Phone

**800-339-2116 / 305-557-8004**

#### Fax

**800-423-9009 / 305-558-0509**



# CUSTOM OPERATIONS

## TUBE BENDING AND FABRICATION

### Hypodermic and Capillary

*Standard gauges of hypodermic tubing are always in stock –  
Stainless Steel Types 304 and 316.*

### Wire Forming and Fabrication

#### Precision Machining

#### Swaging - Flaring - Bevel Points

#### Brazing and Soldering

#### EDM Hole Drilling (from 0.006")

#### Notching and Slotting

#### Spherical or Pencil Point Welding



## QUALITY ASSURANCE

We use material testing processes and frequent in-progress inspections to build quality into every piece made.

Whether your tasks are small or large, for production or for prototype runs, we'll provide the quality you specify at a price that is practical to your requirements.



## MACHINING

### CENTERLESS GRINDING

### PLUNGE EDM

### CNC MILLING

### CNC TURNING

# HOW TO REACH US

## TELEPHONE

8:30 a.m. to 6:00 p.m. EST  
Monday through Friday

## SALES CUSTOMER SERVICE

**800-220-4242**

**305-557-8222**

Or send your order direct.  
Use fax, E-Mail or the secure order form  
at our web site

## FAX

**800-423-9009**

**305-558-0509**

## E-MAIL

**[parts@smallparts.com](mailto:parts@smallparts.com)**

## WEB

**[www.smallparts.com](http://www.smallparts.com)**

## MAILING ADDRESS

13980 NW 58th Court  
P.O. Box 4650  
Miami Lakes, FL 33014-0650

# OEM/Distributor Sales

The Larger  
side of **Small Parts**.

For the past 38 years Small Parts has been providing useful hard-to-find, and responsibly engineered products to your Research and Development engineers and scientists.

**DID YOU ALSO KNOW** that for the past 38 years Small Parts also supplies large production quantities of the same high quality materials, components, and tools, that you already use, at very competitive prices?

For the same dependable service, and attention to detail that you are accustomed to from Small Parts, call or e-mail us with your OEM requirements:

**888-445-9783**

**[oem@smallparts.com](mailto:oem@smallparts.com)**

## - Shipping Policy -

Orders are processed and shipped the same day, your choice of ground or two-day delivery services.

(Some exceptions apply. See our complete Terms and Conditions, page 10.)

## Get FREE Shipping!

We don't charge for shipping when your order exceeds \$300 and weighs under 10 pounds, as long as it is not subject to dimensional rates or hazard restrictions applied by shipper.

# HOW TO ORDER

Here at Small Parts, we offer different sizes, shapes and quantities on almost every item we sell. Here are some examples of how to order from us.

## MATERIALS SECTION:

In the materials section, almost everything is sold by length or area. The following chart is an example of an item sold by length.

### SQUARE ALUMINUM BAR-TYPE 6061-T6

Part #	Dimensions	-3	-6	-12	-24	-36
ZS6A-4	1/4"	--	--	1.65	2.80	3.50
ZS6A-6	3/8"	1.25	2.05	3.35	5.60	7.00

In this instance, the material is designated by the Part Number and is followed by a dash number suffix indicating the length. ZS6A-4-24 is a Square Aluminum Bar, 1/4" Square, 24" Long. The price for this piece is \$2.80. The dash in the column for the 3" and 6" piece indicates that this size is not offered in these lengths. The following chart is an example of an item sold by area.

### BRASS SHEET-TYPE C-260

Part #	Nominal Thickness	-A	-B	-C	-D	-E
SMB-062	1/16"	3" x 6"	3" x 12"	6" x 12"	12" x 12"	12" x 24"
		5.75	10.45	18.95	34.50	62.75

In this instance, the material is designated by the Part Number and is followed by a dash number suffix indicating the area. SMB-062-B is a Brass Sheet, 1/16" Thick, 3" Wide x 12" Long. The price for this piece is \$10.45.

For both of these examples, you would need to indicate how many pieces you want. For example, if you wanted 6 pieces, you would need to indicate that when you order. However, SMALL PARTS is now moving to package pricing. Here is an example.

### ROUND COPPER TUBE-TYPE C-122

Part #	Outside Diameter	Nominal Wall	Pkg. Of 1	Price PerPackage				
				Length 12"	Length 36"	Pkg. Of 6	Pkg. Of 1	Pkg. Of 3
TTRC-1	1/16"	.014	---	1.95	3.40	1.95	5.60	10.20

The basic Part Number here is TTRC-1. For 12" pieces, the Suffix "-12" would be added to the Part Number. To indicate the quantity, another suffix, either "-01", "-03" or "-06" would be added. The Part Number TTRC-1-36-03 indicates a Round Copper tube, 1/16" OD, .014 Wall, 36" Long, Package of three, or three pieces. The price for the package of three is \$5.60.

## COMPONENTS SECTION

Almost everything in this section is priced as each and offered in various quantity discounts. SMALL PARTS has not yet made the transition to package pricing in this section, so you would need to indicate the quantity desired. Here is an example.

### STAINLESS STEEL BALL TYPE 316

Part #	Diameter	Grade	Each	Price		
BNMX-6	3/8"	100	----	10	25	100
				6.20	13.25	42.40

The price in the chart represents the total price for the quantity ordered. For example, 100 pieces of BNMX-6 costs \$42.40. When ordering this part, you would need to order 100 pieces of Part Number BNMX-6 to receive 100 Balls. While we would enter an order for one package of 100 pieces for \$42.40, there is no part number suffix to indicate a package price. A dash in the Each column indicates this part is not offered in less than ten pieces.

## TOOL SECTION

Most items in this section are sold by each. If you require more than one of an item. Please indicate the total number of Parts required. If this Part is offered in quantity discounts, it should be ordered the same way as an item in the Component section.

## EASY ORDERING

### BY TELEPHONE

Monday to Friday, from 8:30 to 6:00 pm EST  
Toll Free: 1-800-220-4242  
Or: 1-305-557-8222

### BY FAX

24 hours a day, 7 days a week.  
FAX: 1-800-423-9009  
Or: 1-305-558-0509

### BY MAIL

SMALL PARTS, INC.  
P.O. Box 4650  
Miami Lakes, FL 33014-0650

### ONLINE SECURE ORDERING

Web Site: [www.smallparts.com](http://www.smallparts.com)  
E-Mail: [parts@smallparts.com](mailto:parts@smallparts.com)

## NO MINIMUM ORDER

**SMALL PARTS** is committed to supplying the quantities you need. There is no minimum order beyond the packaged quantities listed in our catalog.

## ORDER INFORMATION

All order processed Monday through Friday before 3pm EST will ship the same day. Orders received after 3pm EST on Friday will ship on the next business day.

## SHIPPING POLICY

Our standard shipping method is "Ground" within the continental United States. The cost is \$5.95 for Standard size packages weighing less than 10 lbs.

Two Business day delivery is available for an additional \$5.00. Ask your customer service representative about special shipping options such as priority overnight or Saturday delivery.

-Any order over 10 lbs. and /or over 60" in length will ship FOB Miami Lakes, FL. Actual shipping charges added to the invoice.

-If your order is subject to dimensional (DIM) rates from our shipper the actual shipping charges will be added to your invoice.

-When our catalog indicates FOB shipment for an item, the actual shipping charges will be applied to your invoice.

## Get FREE Shipping!

Any domestic order that exceeds \$200 and meets the following conditions, ships UPS Ground free:

- Weighs less than 10 pounds
- Is not subject to oversized rates as applied by our shipper
- Is not indicated in our catalog as FOB shipment

## HAZARDOUS MATERIALS

Standard shipping for hazardous materials is FOB ground, Miami Lakes, FL. A charge of \$20 for each hazardous line item ordered will be added to FOB shipping charges. Air shipment is available for some hazardous materials at an additional charge. Notify our customer service representative if air shipment is needed.

## SHIPMENTS TO ALASKA & HAWAII, & PUERTO RICO

### ALASKA, HAWAII AND PUERTO RICO

Shipments to Alaska and Hawaii by air service only for a fee of \$21.50 for 5lbs Actual shipping charges apply for shipments over 5 pounds or that have dimensional rates.

## INTERNATIONAL ORDERS

Orders may be placed 24 hours a day, 7 days a week utilizing our secure online ordering system at [www.smallparts.com](http://www.smallparts.com) or by fax at (305) 558-0509. We accept American Express, MasterCard and Visa. Orders are shipped complete. We do not ship backorders outside the continental United States. We will notify you if we happen to be out of stock of any item prior to shipping. Please provide a day-time phone number with country code.

Actual shipping charges apply to all packages shipped outside of the continental United States. We will gladly work with you to determine the most cost effective methods to ship your order.

## Customs and Import Duties

Small Parts, Inc. does not collect import duties or customs taxes and has no knowledge of what these charges may be. If you are responsible for these additional charges, you will be required to pay them

in order for your package to clear customs. For more information regarding your country's custom policies, contact your local customs office.

## BACKORDERS

We strive to maintain an adequate supply of the products we sell at all times. If for some reason we are out of stock at the time you order, we will backorder the item you requested and ship to you as soon as it becomes available. Your backordered item will ship free via USPS or ground service within the continental United States unless the item is oversized or identified as FOB Miami Lakes, FL in our catalog. If you have a need for faster shipment you may elect the service of your choice with the actual shipping fee applied.

If you prefer to have your order ship "only when complete" just let us know when you place your order and we will schedule your order for shipment when all items are available.

## PAYMENT TERMS

Major credit cards are accepted — American Express, MasterCard, VISA.

For customers with established credit, our terms are NET 10 Days after receipt of material. Thirty days after delivery, a 1.5% per month carrying charge, may be applied on the unpaid balance of your order.

If your credit is not yet approved, prepayment by check or money order in U.S. funds, or payment by credit card is required. As a policy we do not ship COD. Florida Customers must pay 6.5% sales Tax, unless a properly executed Florida Tax Exemption Certificate is in our possession.

## OVERPAYMENTS

If you overpay an invoice, a credit will be applied to your account. This credit can be used for future purchases, or refunded at your request.

## WE BACK UP WHAT WE SELL

We warrant that all parts sold conform to the specifications set forth in this catalog. We provide material for industrial applications only and specifically do not recommend that our products be used for implants. We do not represent that parts are suit-

able for particular use and, accordingly, advise you that THERE IS NO WARRANTY OF MARKETABILITY OR FITNESS FOR A PARTICULAR USE. In the event of a defect, we shall replace the part or refund the purchase price within 30 days of the return of the defective part to **SMALL PARTS, INC.** That is the sole extent of our liability.

## RETURNS/CANCELLATIONS

If we are in error regarding your order, correction will be made promptly and without charge. Customer returns may require a 25% restocking charge, and must be made within 30 days of receipt. A Return Authorization Number (RMA) must accompany any return. Our Customer Service Representative at **1-800-222-4242** will provide additional information.

Unfortunately, we cannot allow cancellations or returns of Special Orders, OEM or Special Manufacturing items since they have been purchased or modified per your instructions.

## SPECIAL ORDERS

*Looking for an item or size not in our catalog?* Contact our Purchasing Services Specialists at **1-888-455-9712** or Fax your specifications and requirements to **(305) 821-8930** for your special needs. Special terms and conditions may apply.

## OEM/DISTRIBUTOR SALES

For large quantity pricing, scheduled shipments, or custom kitting of production parts, please contact our OEM Sales Department at **1-888-455-9783**, or fax inquiries to **(305) 821-8930**.

## MANUFACTURING SERVICES

When you need a custom part or modification of a standard product, Manufacturing Services can help. For information and a quotation call **1-800-339-2116**, or fax your specifications and requirements to **1-800-423-0990**.

*Prices are subject to change without notice.*

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# ALUMINUM

Aluminum (Al) is one of the earth's most abundant metallic elements. With the exception of oxygen and silicon, it is perhaps the most widely distributed of all the elements. Obtained principally from bauxite, alumina (aluminum oxide) is a white metal with a slightly bluish coloration. Pure (99.9%) aluminum melts at 1220°F (660°C). Its density is .097 lbs / in<sup>3</sup> and has approximately two-thirds the thermal and electrical conductivity of copper, and it is nonmagnetic. Aluminum has a high strength-to-weight ratio, is resistant to tarnishing and corrosion, and has an attractive silvery appearance. Aluminum is an extremely versatile material, it may be cast or wrought, it is available in a variety of alloys and tempers, and it accepts many different kinds of surface finishes, including anodic treatments. Machinability is considered easy and it can be soldered and welded.

**1100** — This aluminum alloy contains a very small amount of copper and exhibits superior corrosion resistance, high thermal and electrical conductivity, excellent workability and is readily welded and brazed. Typical uses include chemical equipment, spun hollow ware, heat exchanger fins and general sheet metal use. Non-heat treatable.

**2011** — Alloyed with copper, this aluminum exhibits good machinability and mechanical properties. It has excellent free-cutting properties, and is used to produce screw machine products, and tube and hose components.

**2024** — Hardware, fittings and structural components made of these "aircraft alloys" are used extensively in the aircraft and transportation industries. Used where good strength to weight ratio is required, this high-strength Aluminum has excellent fatigue resistance and can be machined to a fine finish. It may be formed in the annealed condition and can be heat treated. It is rated only "fair" for welding, although spot welding and seam welding are commonly practiced.

**3003** — This Aluminum / Manganese alloy has been strain hardened and is widely used as a general purpose alloy for moderate strength applications requiring good workability. Responds well to many processes, including welding, forming, drawing and bending.

**5052** — An Aluminum / Manganese alloy, strain hardened and stabilized. It has moderate to high strength, and is non-heat treatable. Good welding characteristics and high resistance to corrosion in marine environments. A common sheet metal.

**6061** — This Aluminum / Silicon / Magnesium alloy has been solution heat treated and artificially aged. Machines well with excellent welding qualities. Resists stress cracking. Good formability with medium strength and high corrosion resistance. Used in many heavy-duty structures, particularly for transportation and marine applications.

**6063** — Alloyed with Magnesium and Silicon, this wrought Aluminum has been thermally treated and artificially aged. Machines well with excellent brazing and welding qualities, making it a popular choice for architectural extrusions and furniture applications. Resists stress cracking and has good formability with medium strength and high corrosion resistance.

## PROPERTIES

PROPERTY TESTED	TEST UNITS	2011-T3	2024-T4 / T351	3003-H14
Density	lb/in <sup>3</sup>	0.102	0.101	0.099
Melting Range	°F	1005-1190	935-1180	1190-1210
Tensile Strength-Ultimate	ksi*	55	68	22
Tensile Strength-Yield	ksi	43	47	21
Elongation-1/16" thick Specimen	% in 2in	-	20	8
Elongation-1/2" thick Specimen	% in 2in	15	19	16
Brinell Hardness	in./in. °F	95	120	40
Machinability	2011-T3=100	100	90	75-85

PROPERTY TESTED	TEST UNITS	5052-H32	6061-T6	6063-T5
Density	lb/in <sup>3</sup>	0.097	0.098	0.097
Melting Range	°F	1125-1200	1080-1205	1140-1210
Tensile Strength-Ultimate	ksi	33	45	27
Tensile Strength-Yield	ksi	28	40	21
Elongation-1/16" thick Specimen	% in 2in	11	12	12
Elongation-1/2" thick Specimen	% in 2in	-	17	-
Brinell Hardness	in./in. F	36	95	60
Machinability	2011-T3=100	75-85	70-80	75-85

\*ksi: kips per square inch = 1000s of pounds per square inch

**Note:** Typical Values "Not For Design Purposes"

# ALUMINUM — Rod



## ROD — Type 2024-T4 / 2024-T351 ASTM-B211

Order Example: **B-ZHSA-06-36** is 3/8" dia. × 36"

Part No.	Diameter	Temper	Price				
			-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZHSA-03</b>	3/16"	T4	—	—	—	<b>2.05</b>	<b>2.55</b>
<b>B-ZHSA-04</b>	1/4"	T4	—	—	<b>2.15</b>	<b>3.60</b>	<b>4.45</b>
<b>B-ZHSA-06</b>	3/8"	T4	<b>1.15</b>	<b>1.90</b>	<b>3.15</b>	<b>5.25</b>	<b>6.55</b>
<b>B-ZHSA-08</b>	1/2"	T4	<b>1.40</b>	<b>2.35</b>	<b>3.90</b>	<b>6.50</b>	<b>8.10</b>
<b>B-ZHSA-16</b>	1"	T351	<b>3.95</b>	<b>6.60</b>	<b>10.95</b>	<b>18.20</b>	<b>22.75</b>

## ROD — Type 6061-T6 ASTM-B211

Part No.	Diameter	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZRA-2</b>	1/8"	—	—	—	<b>1.35</b>	<b>1.80</b>
<b>B-ZRA-3</b>	3/16"	—	—	—	<b>1.60</b>	<b>2.20</b>
<b>B-ZRA-4</b>	1/4"	—	—	—	<b>1.85</b>	<b>2.50</b>
<b>B-ZRA-5</b>	5/16"	—	—	<b>1.25</b>	<b>2.15</b>	<b>2.85</b>
<b>B-ZRA-6</b>	3/8"	—	—	<b>1.55</b>	<b>2.80</b>	<b>3.80</b>
<b>B-ZRA-8</b>	1/2"	—	<b>1.35</b>	<b>2.40</b>	<b>4.35</b>	<b>5.95</b>
<b>B-ZRA-10</b>	5/8"	<b>1.25</b>	<b>2.00</b>	<b>3.65</b>	<b>6.55</b>	<b>8.95</b>
<b>B-ZRA-12</b>	3/4"	<b>1.40</b>	<b>2.55</b>	<b>4.65</b>	<b>8.45</b>	<b>11.50</b>
<b>B-ZRA-14</b>	7/8"	<b>1.75</b>	<b>3.20</b>	<b>5.75</b>	<b>10.45</b>	<b>14.25</b>
<b>B-ZRA-16</b>	1"	<b>2.20</b>	<b>4.00</b>	<b>7.25</b>	<b>13.25</b>	<b>17.95</b>
<b>B-ZRA-20</b>	1-1/4"	<b>2.65</b>	<b>5.30</b>	<b>9.00</b>	<b>18.00</b>	<b>27.00</b>
<b>B-ZRA-22</b>	1-3/8"	<b>3.40</b>	<b>6.80</b>	<b>11.25</b>	<b>22.50</b>	<b>33.75</b>
<b>B-ZRA-24</b>	1-1/2"	<b>3.85</b>	<b>7.70</b>	<b>12.50</b>	<b>25.00</b>	<b>37.50</b>
<b>B-ZRA-32</b>	2"	<b>6.45</b>	<b>12.90</b>	<b>22.20</b>	<b>44.40</b>	<b>66.60</b>

## ROD — Type 6061-T6 ASTM-B211

\*Prices are based on the length of each piece cut.

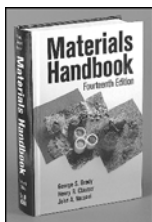
Part No.	Diameter	Price per Inch*	
		1-11	12+
<b>B-ZRA-40</b>	2-1/2"	<b>4.25</b>	<b>3.70</b>
<b>B-ZRA-48</b>	3"	<b>4.60</b>	<b>4.00</b>
<b>B-ZRA-56</b>	3-1/2"	<b>6.20</b>	<b>5.70</b>
<b>B-ZRA-64</b>	4"	<b>8.00</b>	<b>6.75</b>
<b>B-ZRA-80</b>	5"	<b>12.75</b>	<b>10.90</b>
<b>B-ZRA-96</b>	6"	<b>16.95</b>	<b>14.95</b>

## MATERIALS HANDBOOK

*A comprehensive resource for almost every type of known material*

"Brady's" one-volume encyclopedia contains over 13,000 concise entries, describing the primary characteristics of chemicals, metals, minerals, fuels, plastics, textiles, finishes, woods, pharmaceuticals, elastomers, ceramics, coatings, composites, industrial substances, foodstuffs, plant and animal products — almost anything that derives from natural elements. Descriptions include properties, production methods, applications and commercial designations, detailed in language that is scientifically specific. 14th Edition, 1997. Hard cover, 1136 pages. George S. Brady, Henry R. Clauser, John A. Vaccari. Published by McGraw-Hill.

**B-BCK-MH** ..... **89.50**



# ALUMINUM — Bar



## SQUARE — Type 2024-T4/2024-T351 ASTM-B211 Order Example: B-ZSA-6-36 is 3/8" dim. × 36"

Part No.	Dimensions	Temper	Price				
			-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
B-ZSA-4	1/4"	T4	—	1.60	2.85	5.25	7.10
B-ZSA-6	3/8"	T4	—	2.10	3.85	6.95	9.55
B-ZSA-8	1/2"	T4	2.15	3.85	7.00	12.75	17.35
B-ZSA-10	5/8"	T351	2.65	4.80	8.75	15.85	21.60
B-ZSA-12	3/4"	T351	3.45	6.25	11.40	20.75	28.25
B-ZSA-16	1"	T351	6.00	10.85	19.75	35.85	48.90

## SQUARE — Type 6061-T6 ASTM-B211

Part No.	Dimensions	Temper	Price				
			-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
B-ZS6A-4	1/4"	T6	—	—	1.65	2.80	3.50
B-ZS6A-6	3/8"	T6	1.25	2.05	3.35	5.60	7.00
B-ZS6A-8	1/2"	T6	1.80	3.05	5.05	8.40	10.50
B-ZS6A-10	5/8"	T6	3.05	5.05	8.40	14.00	17.50
B-ZS6A-12	3/4"	T6	3.65	6.05	10.10	16.80	21.00
B-ZS6A-16	1"	T6	6.50	10.80	18.00	30.00	37.50



## RECTANGULAR — Type 2024-T4/2024-T351 ASTM-B211

Part No.	Dimensions	Temper	Price				
			-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
B-FHSA-02/16	1/8" × 1"	T4	1.30	2.35	4.25	7.50	9.75
B-FHSA-02/32	1/8" × 2"	T4	2.55	4.60	8.15	14.25	16.75
B-FHSA-04/16	1/4" × 1"	T4	2.40	4.20	7.30	12.35	15.15
B-FHSA-06/16	3/8" × 1"	T4	3.35	6.00	10.65	18.65	21.95
B-FHSA-06/32	3/8" × 2"	T4	4.95	8.70	15.05	25.40	30.60
B-FHSA-08/16	1/2" × 1"	T351	3.75	6.75	11.95	20.95	24.70
B-FHSA-08/32	1/2" × 2"	T351	6.10	10.75	18.55	32.45	40.85
B-FHSA-16/32	1" × 2"	T351	12.10	21.35	36.90	64.55	78.65

## RECTANGULAR — Type 6061-T6 ASTM-B211

Part No.	Dimensions	Temper	Price				
			-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
B-ZRTA-2/8	1/8" × 1/2"	T6	—	—	1.25	2.25	3.05
B-ZRTA-2/12	1/8" × 3/4"	T6	—	—	1.75	2.95	4.00
B-ZRTA-2/16	1/8" × 1"	T6	—	—	1.95	3.15	4.25
B-ZRTA-3/8	3/16" × 1/2"	T6	—	—	1.75	3.20	4.35
B-ZRTA-3/12	3/16" × 3/4"	T6	—	—	2.00	3.35	4.60
B-ZRTA-3/16	3/16" × 1"	T6	—	—	2.25	3.60	4.90
B-ZRTA-4/8	1/4" × 1/2"	T6	—	1.20	2.15	4.10	5.25
B-ZRTA-4/12	1/4" × 3/4"	T6	—	1.30	2.25	4.20	5.55

## ALUMINUM — Bar (cont.)



### RECTANGULAR — Type 6061-T6 ASTM-B211

Order Example: **B-ZRTA-6/8-6** is 3/8" × 1/2" × 6"

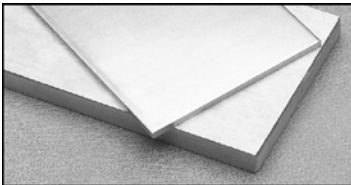
Part No.	Dimensions	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZRTA-4/16</b>	1/4" × 1"	—	<b>1.35</b>	<b>2.45</b>	<b>4.40</b>	<b>5.95</b>
<b>B-ZRTA-6/8</b>	3/8" × 1/2"	—	<b>2.15</b>	<b>3.30</b>	<b>5.50</b>	<b>7.75</b>
<b>B-ZRTA-6/12</b>	3/8" × 3/4"	<b>1.25</b>	<b>2.25</b>	<b>4.00</b>	<b>6.50</b>	<b>9.10</b>
<b>B-ZRTA-6/16</b>	3/8" × 1"	<b>1.40</b>	<b>2.60</b>	<b>4.50</b>	<b>7.20</b>	<b>9.80</b>
<b>B-ZRTA-8/12</b>	1/2" × 3/4"	<b>1.50</b>	<b>2.75</b>	<b>4.80</b>	<b>7.85</b>	<b>10.70</b>
<b>B-ZRTA-8/16</b>	1/2" × 1"	<b>1.75</b>	<b>3.20</b>	<b>5.70</b>	<b>9.30</b>	<b>12.90</b>



### HEXAGONAL — Type 6061-T6 ASTM-B211

Part No.	Dimension Across Flats	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZHA-4</b>	1/4"	—	—	<b>1.70</b>	<b>2.85</b>	<b>3.55</b>
<b>B-ZHA-6</b>	3/8"	—	<b>1.60</b>	<b>2.95</b>	<b>5.30</b>	<b>7.25</b>
<b>B-ZHA-8</b>	1/2"	<b>1.60</b>	<b>2.85</b>	<b>5.25</b>	<b>9.50</b>	<b>12.90</b>
<b>B-ZHA-10</b>	5/8"	<b>2.05</b>	<b>3.70</b>	<b>6.75</b>	<b>12.25</b>	<b>16.75</b>
<b>B-ZHA-12</b>	3/4"	<b>3.05</b>	<b>5.65</b>	<b>10.25</b>	<b>18.70</b>	<b>25.50</b>
<b>B-ZHA-16</b>	1"	<b>5.55</b>	<b>10.10</b>	<b>18.35</b>	<b>33.35</b>	<b>45.45</b>

## ALUMINUM — Sheet



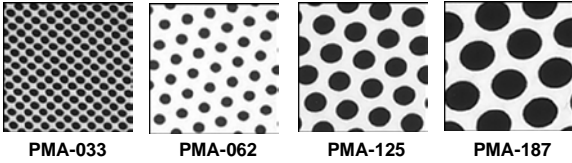
### SHEET\* — Type 5052-H32 & 6061-T6 ASTM-B209

Order Example: **B-SMA-190-C** is 3/16" × 6" × 12"

Part No.	Nominal Thickness	Type	Price				
			-A 3" × 6"	-B 3" × 12"	-C 6" × 12"	-D 12" × 12"	-E 12" × 24"
<b>B-SMA-032</b>	1/32"	5052-H32	<b>1.05</b>	<b>1.95</b>	<b>3.50</b>	<b>6.35</b>	<b>11.50</b>
<b>B-SMA-063</b>	1/16"	5052-H32	<b>1.40</b>	<b>2.55</b>	<b>4.65</b>	<b>8.55</b>	<b>15.35</b>
<b>B-SMA-090</b>	3/32"	5052-H32	<b>2.15</b>	<b>3.90</b>	<b>7.10</b>	<b>13.00</b>	<b>23.50</b>
<b>B-SMA-125</b>	1/8"	5052-H32	<b>2.65</b>	<b>4.80</b>	<b>8.75</b>	<b>16.00</b>	<b>28.85</b>
<b>B-SMA-190</b>	3/16"	6061-T6	<b>3.75</b>	<b>6.75</b>	<b>12.30</b>	<b>22.35</b>	<b>40.55</b>
<b>B-SMA-250</b>	1/4"	6061-T6	<b>4.95</b>	<b>9.05</b>	<b>16.45</b>	<b>30.10</b>	<b>54.25</b>
<b>B-SMA-312</b>	5/16"	6061-T6	<b>6.85</b>	<b>12.50</b>	<b>22.75</b>	<b>41.75</b>	<b>75.20</b>
<b>B-SMA-375</b>	3/8"	6061-T6	<b>8.25</b>	<b>15.05</b>	<b>27.40</b>	<b>50.25</b>	<b>90.55</b>

\*Nominal sizes. Dimensions may be reduced by up to 1/8", due to kerf (cutting) loss. If exact dimensions are critical to your project, please **call Purchasing Services — 1-888-455-9712**.

## ALUMINUM — Perforated Metal



Images illustrate perforation patterns, not precise sizes.

As a screening medium, Perforated Metal has many advantages... Its holes are accurate and uniform in size, shape and spacing... Its surface is smooth, firm, easily cleaned and sterilized.

Aluminum Type 3003-H14 has its own distinct advantages... lightweight, and can be easily shaped and painted. Supplied 12" wide in one and two foot lengths. Larger sizes are available. For a quotation **call Purchasing Services — 1-888-455-9712.**

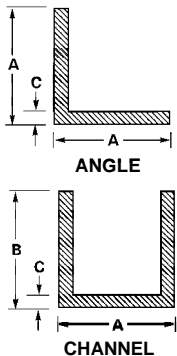
### ALUMINUM — Type 3003-H14

Order Example: **B-PMA-033-A** is 0.033" × 20 ga. × 12"

Part No.	Description	Holes Per Sq. In.	Thickness	Open Area %	Gauge	Price	
						12" x 12" -A	12" x 24" -B
<b>B-PMA-033</b>	0.033" Round Perforations on 0.050" Straight Centers	324	0.032"	28	20	<b>19.75</b>	<b>33.00</b>
<b>B-PMA-062</b>	1/16" Round Perforations on 1/8" Staggered Centers	75	0.032"	23	20	<b>15.75</b>	<b>26.25</b>
<b>B-PMA-125</b>	1/8" Round Perforations on 3/16" Staggered Centers	33	0.032"	40	20	<b>11.85</b>	<b>19.75</b>
<b>B-PMA-187</b>	3/16" Round Perforations on 1/4" Staggered Centers	18	0.032"	50	20	<b>11.95</b>	<b>19.95</b>

## ALUMINUM — Angles, Channels

Aluminum Angles and Channels offer the advantage of low weight, while providing strong structural support. Type 6063-T5 Aluminum is easy to work with, and has good finishing characteristics.



### ANGLES — Type 6063-T5 ASTM-B221

Order Example: **B-ARA2-16/16-12** is 1" × 1" × 1/8" × 12"

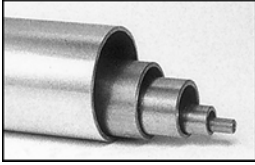
Part No.	Dimensions			Price			
	A	C	12"	24"	36"	*72"	
<b>B-ARA2-8/8</b>	1/2"	1/8"	<b>1.85</b>	<b>2.95</b>	<b>3.50</b>	<b>5.60</b>	
<b>B-ARA2-16/16</b>	1"	1/8"	<b>2.90</b>	<b>4.60</b>	<b>5.50</b>	<b>8.80</b>	
<b>B-ARA2-20/20</b>	1-1/4"	1/8"	<b>4.25</b>	<b>6.80</b>	<b>7.65</b>	<b>12.25</b>	
<b>B-ARA2-24/24</b>	1-1/2"	1/8"	<b>4.95</b>	<b>7.90</b>	<b>8.90</b>	<b>14.25</b>	
<b>B-ARA3-16/16</b>	1"	3/16"	<b>4.00</b>	<b>6.45</b>	<b>7.65</b>	<b>12.25</b>	
<b>B-ARA3-32/32</b>	2"	3/16"	<b>8.05</b>	<b>12.85</b>	<b>15.30</b>	<b>24.50</b>	
<b>B-ARA4-24/24</b>	1-1/2"	1/4"	<b>5.85</b>	<b>9.35</b>	<b>11.15</b>	<b>21.05</b>	
<b>B-ARA4-32/32</b>	2"	1/4"	<b>10.35</b>	<b>16.50</b>	<b>19.65</b>	<b>31.45</b>	

### CHANNELS — Type 6063-T5 ASTM-B221

Part No.	Dimensions			Price			
	A	B	C	12"	24"	36"	*72"
<b>B-ARC2-12/12</b>	3/4"	3/4"	1/8"	<b>2.70</b>	<b>4.25</b>	<b>4.80</b>	<b>7.75</b>
<b>B-ARC2-16/16</b>	1"	1"	1/8"	<b>3.75</b>	<b>5.95</b>	<b>6.70</b>	<b>10.75</b>

\* Special packaging charge over 60" length.

# ALUMINUM — Tubing



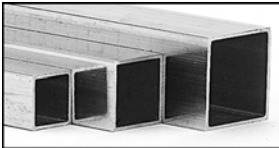
## SEAMLESS ROUND TUBING

Our Aluminum Tubing is produced from an Aluminum/Silicon/Magnesium alloy that has been solution heat treated and artificially aged. It machines well with excellent welding qualities, resists stress cracking, and has good formability with medium strength and high corrosion resistance. It is used in many heavy-duty structures, particularly for transportation and marine applications. Seamless.

**ROUND — Type 6061-T6 ASTM B210** Order Example: **B-LAT-35/6-12** is 3/8" O.D. × 0.035" × 12"

Part No.	Outside Diameter	Wall	Price				
			-6 6"	-12 12"	-24 24"	-36 36"	-72* 72"
B-LAT-35/4	1/4"	0.035"	1.35	2.25	3.75	4.65	7.75
B-LAT-49/4	1/4"	0.049"	1.50	2.45	4.10	5.10	8.50
B-LAT-35/5	5/16	0.035"	1.45	2.40	4.00	5.00	8.35
B-LAT-35/6	3/8"	0.035"	1.50	2.45	4.05	5.05	8.45
B-LAT-49/6	3/8"	0.049"	1.80	3.00	5.05	6.30	10.50
B-LAT-35/8	1/2"	0.035"	1.60	2.70	4.45	5.55	9.25
B-LAT-49/8	1/2"	0.049"	2.00	3.30	5.50	6.90	11.50
B-LAT-49/10	5/8"	0.049"	2.65	4.40	7.35	9.15	15.25
B-LAT-49/12	3/4"	0.049"	2.70	4.45	7.45	9.30	15.50
B-LAT-49/14	7/8"	0.049"	2.75	4.60	7.70	9.60	16.00
B-LAT-58/14	7/8"	0.058"	2.95	4.90	8.15	10.20	16.95
B-LAT-49/16	1"	0.049"	3.25	5.40	9.00	11.25	18.75
B-LAT-49/18	1-1/8"	0.049"	3.80	6.35	10.55	13.20	22.00
B-LAT-49/20	1-1/4"	0.049"	4.35	7.20	12.00	15.00	25.00
B-LAT-49/22	1-3/8"	0.049"	4.75	7.95	13.20	16.50	27.50
B-LAT-49/24	1-1/2"	0.049"	5.30	8.80	14.65	18.30	30.50
B-LAT-125/24	1-1/2"	0.125"	7.80	12.95	21.60	27.00	45.00
B-LAT-250/24	1-1/2"	0.250"	8.80	14.70	24.50	30.60	51.00
B-LAT-125/32	2"	0.125"	8.00	13.50	22.25	27.80	46.25
B-LAT-250/32	2"	0.250"	15.50	23.25	42.65	58.20	70.75
B-LAT-250/40	2-1/2"	0.250"	15.55	25.95	43.20	53.95	89.95
B-LAT-250/48	3"	0.250"	18.75	31.25	52.10	65.10	108.50

\*Special packaging charge over 60" length.

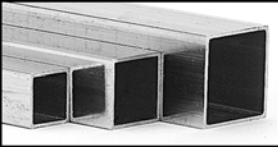


## SQUARE — Type 3003-H14 ASTM-B210

Order Example: **B-SAT-1-12-03** is 3/32" O.D. × 12", Pkg. of 3

Part No.	Outside Dimensions	Wall	Price Per Package					
			Length 12"			Length 36"		
			Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06	Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06
B-SAT-1	3/32"	0.014"	2.30	6.25	10.80	6.25	17.85	32.40
B-SAT-2	1/8"	0.014"	2.30	6.25	10.80	6.25	17.85	32.40
B-SAT-3	5/32"	0.014"	2.30	6.25	10.80	6.25	17.85	32.40
B-SAT-4	3/16"	0.014"	3.00	8.15	14.15	8.15	23.25	42.25
B-SAT-5	7/32"	0.014"	3.20	8.75	15.15	8.75	24.95	45.35
B-SAT-6	1/4"	0.014"	3.20	8.75	15.15	8.75	24.95	45.35

## ALUMINUM — Tubing (cont.)



### SQUARE TUBING — Type 6063-T5 ASTM B221

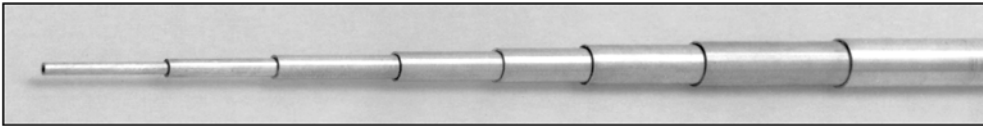
Offers heavy-wall strength for applications that require resistance to stress cracking and corrosion. Alloyed with Magnesium and Silicon, this type of Aluminum is widely used for structural and fabrication needs, and has good formability.

**SQUARE — Type 6063-T5 ASTM B221** Order Example: **B-LSAT-063/16-36** is 1" O.D. × 0.063" × 36"

Part No.	Outside Dimension	Wall	Price				
			-6 6"	-12 12"	-24 24"	-36 36"	-72* 72"
<b>B-LSAT-063/08</b>	1/2"	0.063"	—	<b>1.50</b>	<b>2.45</b>	<b>3.55</b>	<b>5.75</b>
<b>B-LSAT-063/12</b>	3/4"	0.063"	<b>1.35</b>	<b>2.10</b>	<b>3.65</b>	<b>5.10</b>	<b>8.50</b>
<b>B-LSAT-063/16</b>	1"	0.063"	<b>1.60</b>	<b>2.50</b>	<b>4.35</b>	<b>6.15</b>	<b>10.25</b>
<b>B-LSAT-125/12</b>	3/4"	0.125"	<b>3.00</b>	<b>3.00</b>	<b>5.45</b>	<b>9.90</b>	<b>13.50</b>
<b>B-LSAT-125/16</b>	1"	0.125"	<b>2.80</b>	<b>4.45</b>	<b>7.80</b>	<b>11.15</b>	<b>18.50</b>
<b>B-LSAT-125/20</b>	1-1/4"	0.125"	<b>3.65</b>	<b>5.85</b>	<b>10.25</b>	<b>14.55</b>	<b>24.25</b>
<b>B-LSAT-125/24</b>	1-1/2"	0.125"	<b>3.90</b>	<b>6.25</b>	<b>10.85</b>	<b>15.45</b>	<b>25.75</b>
<b>B-LSAT-125/32</b>	2"	0.125"	<b>5.50</b>	<b>8.80</b>	<b>15.35</b>	<b>21.95</b>	<b>36.50</b>

\* Special packaging charge for over 60" lengths.

## ALUMINUM — Telescoping Tubing



### ROUND — Seamless Type 3003-H14 ASTM B210

Order Example: **B-TTRA-3-12-03** is 1/8" O.D. × 12", Pkg. of 3

Part No.	Outside Diameter	Nominal Wall	Pkg. of 1 -01	Price Per Package				
				Length 12" Pkg. of 3 -03	Pkg. of 6 -06	Length 36" Pkg. of 3 -03	Pkg. of 6 -06	
<b>B-TTRA-1</b>	1/16"	0.014"	—	<b>1.80</b>	<b>3.00</b>	<b>1.80</b>	<b>4.70</b>	<b>7.80</b>
<b>B-TTRA-2</b>	3/32"	0.014"	—	<b>2.20</b>	<b>3.35</b>	<b>2.20</b>	<b>2.20</b>	<b>10.00</b>
<b>B-TTRA-3</b>	1/8"	0.014"	—	<b>2.20</b>	<b>3.35</b>	<b>2.20</b>	<b>6.00</b>	<b>10.00</b>
<b>B-TTRA-4</b>	5/32"	0.014"	—	<b>2.70</b>	<b>4.10</b>	<b>2.70</b>	<b>7.35</b>	<b>12.25</b>
<b>B-TTRA-5</b>	3/16"	0.014"	—	<b>2.95</b>	<b>4.45</b>	<b>2.95</b>	<b>8.05</b>	<b>13.40</b>
<b>B-TTRA-6</b>	7/32"	0.014"	—	<b>3.20</b>	<b>4.85</b>	<b>3.20</b>	<b>8.70</b>	<b>14.50</b>
<b>B-TTRA-7</b>	1/4"	0.014"	<b>1.30</b>	<b>3.45</b>	<b>5.20</b>	<b>3.45</b>	<b>9.35</b>	<b>15.60</b>
<b>B-TTRA-8</b>	9/32"	0.014"	<b>1.35</b>	<b>3.65</b>	<b>5.60</b>	<b>3.65</b>	<b>10.95</b>	<b>18.20</b>

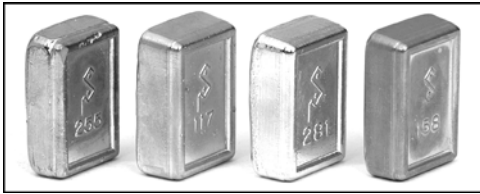
### ASSORTMENTS

<b>B-TTRA-100</b>	12" piece. One each B-TTRA-1 through B-TTRA-8 — 8 pieces	<b>7.65</b>
<b>B-TTRA-100A</b>	36" piece. One each B-TTRA-1 through B-TTRA-8 — 8 pieces	<b>22.15</b>

**Telescoping Tubing works better when tubing ends are deburred.  
See Deburring Tools starting on page 392**



## BISMUTH ALLOYS — Ingots, Low Melting Alloys



Hobbyists have dreamed up dozens of uses for these alloys, from making table top figures to increasing the weight of a model steam locomotive.

These fusible metals can be melted under hot water and all four types can be recovered and used over and over again. No special furnaces are needed. We use the melting pot MEP-20 listed below.

### BISMUTH ALLOYS

These amazing Bismuth Alloys start melting at 117°F (47°C) and solidify at room temperature, expanding slightly in the process of cooling. So dependable are the melting points of all Bismuth Alloys that they have been used in fire doors and sprinkler heads.

*Thin wall metal tubing can be successfully bent without the usual distortion when filled with a low melting alloy. The tube then bends as if it were a solid bar, and the alloy can be melted out in hot water and collected for re-use. See Tubing Benders on page 392.*

Other applications include: using dies made of Bismuth Alloys for wax patterns to reproduce fine detail and surface finish; using the Alloys as solder when high heat is undesirable; measurement of inaccessible cubic contents; and for holding delicate work in position for initial preparation for machining.

### BISMUTH ALLOYS INGOTS

Order Example: **B-LMA-117-4** is 1/4 Lb. of 117°F Low Melting Alloy

Part No.	Melting Temperature	Brinell Hardness	Weight		
			-2 1/8 Lb.	-4 1/4 Lb.	-16 1 Lb.
<b>B-LMA-117</b>	117°F (47°C)	12	<b>40.00</b>	<b>72.50</b>	<b>220.00</b>
<b>B-LMA-158</b>	158°F (70°C)	9.2	<b>5.75</b>	<b>19.75</b>	
<b>B-LMA-255</b>	255°F (124°C)	10.2	<b>6.50</b>	<b>20.80</b>	
<b>B-LMA-281</b>	281°F (138°C)	22	<b>9.50</b>	<b>30.40</b>	

Alloy Information	LMA-117	LMA-158	LMA-255	LMA-281
Weight Lb/in <sup>3</sup>	0.32	0.339	0.38	0.315
Composition %				
Bismuth	44.7	50.0	55.5	58.0
Lead	22.6	26.7	44.5	-
Tin	8.3	13.3	-	42.0
Cadium	5.3	10.0	-	-
Indium	19.1	-	-	-
Growth/Shrinkage				
Time after casting:	(Inches per Inch)			
6 Min.	+0.002	+0.027	-0.011	+0.007
30 Min.	.0000	+0.045	-0.010	+0.006
1 Hour	-0.001	+0.051	-0.008	+0.006
5 Hours	-0.002	+0.051	.0000	+0.005
24 Hours	-0.002	+0.051	+0.008	+0.005
21 Days	-0.002	+0.057	+0.022	+0.005

## BISMUTH ALLOYS MELTING POT



Versatile and easy to use, this Melting Pot requires a minimum of adjustments.

The symmetrical reflective housing allows for quick melting with low current requirement. The flow control valve adjusts easily and you can rotate the valve rod through 360 degrees for quick reseating. We use this melting pot at SMALL PARTS INC., to melt LMA ingots for use in bending hypodermic tubing.

The high capacity pot will hold 20 pounds of lead; and there is a 4" clearance below the spout. Melting Pots have a stable temperature range of approximately 450°F (232°C) at the low setting, to 900°F (482°C) at the high setting. Approximate dimensions: 9-1/2"H x 9"D x 6-1/2"W. Holds 20 oz. liquid. 120 volt./ 700 watts. Weight: 4.5 lbs.

*Note: When in use, we recommend keeping a minimum of 1" of melting material to protect the heating coil.*

**B-MEP-20** ..... **125.00**

# BRASS

Brass is an excellent metal for cold working and is easily shaped. It is rust proof, corrosion resistant, and polishes to a rich golden color. Brass is easily soldered and brazed and accepts plating readily. The typical composition is 70% Copper and 30% Zinc. Increasing Zinc content increases strength and ductility, while also producing a more "golden" color variation.

**C260** — Known as "cartridge brass", C260 has a high zinc content (nominally 70% Copper and 30% Zinc), giving it the optimum combination of strength and ductility, while maintaining the high formability of copper. It has excellent cold workability and is used extensively in the automotive industry, and in the manufacture of plumbing goods, builder's hardware, and ammunition components.

**C330** — Primarily used for tubing, low-leaded (0.5% Pb) Brass C330 combines good machinability and excellent cold workability. It is fabricated by forming and bending, machining, piercing and punching.

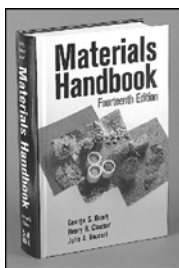
**C360** — The accepted standard for screw machine work, "leaded" Brass C360 has a high zinc content (up to 37%) and a small inclusion of lead that imparts a "free-cutting" quality to this alloy. It finishes well and is easily plated, soldered and brazed.

## PROPERTIES

ALLOY		C260	C330	C360
Name		Cartridge Brass	Low Lead Tube Brass	Free Cutting Brass
Melting Point	°F	1750	1720	1650
Tensile Strength-Ultimate	ksi*	62	54	58
Tensile Strength-Yield	ksi	52	-	45
Elongation-1 thick specimen	% in 2in	25	-	25
Rockwell Hardness	B scale	70	53	78
Machinability	C360=100	30	60	100

\*ksi: kips per square inch = 1000s of pounds per square inch

**Note:** Typical Values "Not For Design Purposes"



## MATERIALS HANDBOOK

**A comprehensive resource for almost every type of known material**

"Brady's" one-volume encyclopedia contains over 13,000 concise entries, describing the primary characteristics of chemicals, metals, minerals, fuels, plastics, textiles, finishes, woods, pharmaceuticals, elastomers, ceramics, coatings, composites, industrial substances, foodstuffs, plant and animal products — almost anything that derives from natural elements.

Descriptions include properties, production methods, applications and commercial designations, detailed in language that is scientifically specific, but easily understood by almost any reader. Alphabetically organized and thoroughly indexed.

A favorite at Small Parts, this valuable reference is recommended for engineers, executives, purchasing and manufacturing managers, production supervisors, and students — anyone requiring a comprehensive resource with reliable, up-to-date information. Fourteenth Edition, 1997. George S. Brady, Henry R. Clauser, John A. Vaccari. Published by McGraw-Hill. Hard cover, 1136 pages.

**B-BCK-MH** ..... **89.50**

## BRASS — Rod



### ROD — Type C360 ASTM-B16

Order Example: **B-ZRB-8-24** is 1/2" dia. x 24"

Part No.	Diameter	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZRB-1</b>	1/16"	—	—	—	<b>1.80</b>	<b>2.25</b>
<b>B-ZRB-2</b>	1/8"	—	—	—	<b>1.60</b>	<b>2.00</b>
<b>B-ZRB-3</b>	3/16"	—	—	<b>1.50</b>	<b>2.70</b>	<b>3.70</b>
<b>B-ZRB-4</b>	1/4"	—	—	<b>1.55</b>	<b>2.95</b>	<b>4.20</b>
<b>B-ZRB-5</b>	5/16"	—	<b>1.25</b>	<b>2.20</b>	<b>4.00</b>	<b>5.45</b>
<b>B-ZRB-6</b>	3/8"	—	<b>1.60</b>	<b>2.85</b>	<b>5.15</b>	<b>7.00</b>
<b>B-ZRB-8</b>	1/2"	<b>1.50</b>	<b>2.65</b>	<b>4.85</b>	<b>8.75</b>	<b>11.95</b>
<b>B-ZRB-10</b>	5/8"	<b>1.95</b>	<b>3.50</b>	<b>6.35</b>	<b>11.50</b>	<b>15.65</b>
<b>B-ZRB-12</b>	3/4"	<b>3.55</b>	<b>5.90</b>	<b>9.85</b>	<b>16.40</b>	<b>22.35</b>
<b>B-ZRB-14</b>	7/8"	<b>4.35</b>	<b>7.25</b>	<b>12.00</b>	<b>20.05</b>	<b>27.30</b>
<b>B-ZRB-16</b>	1"	<b>4.95</b>	<b>8.25</b>	<b>13.70</b>	<b>22.80</b>	<b>31.05</b>
<b>B-ZRB-20</b>	1-1/4"	<b>8.65</b>	<b>14.40</b>	<b>24.00</b>	—	—
<b>B-ZRB-24</b>	1-1/2"	<b>12.45</b>	<b>20.70</b>	<b>34.45</b>	—	—
<b>B-ZRB-32</b>	1"	<b>18.15</b>	<b>30.20</b>	<b>50.35</b>	—	—

### ROD — Type C360 ASTM-B16

Part No.	Diameter	Price per Inch*	
		1-11	12+
<b>B-ZRB-40</b>	2-1/2"	<b>9.00</b>	<b>7.50</b>
<b>B-ZRB-48</b>	3"	<b>12.35</b>	<b>10.30</b>

\* Prices are based on the length of each piece cut.

## BRASS — Bar



### SQUARE — Type C360 ASTM-B16

Order Example: **B-ZSB-4-3** is 1/4" x 1/4" x 3"

Part No.	Dimensions	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZSB-2</b>	1/8"	—	—	<b>1.55</b>	<b>2.80</b>	<b>3.80</b>
<b>B-ZSB-3</b>	3/16"	—	—	<b>2.05</b>	<b>3.70</b>	<b>5.00</b>
<b>B-ZSB-4</b>	1/4"	—	<b>1.45</b>	<b>2.65</b>	<b>4.80</b>	<b>6.55</b>
<b>B-ZSB-5</b>	5/16"	<b>1.25</b>	<b>2.15</b>	<b>3.90</b>	<b>7.05</b>	<b>9.60</b>
<b>B-ZSB-6</b>	3/8"	<b>1.80</b>	<b>3.25</b>	<b>5.85</b>	<b>10.65</b>	<b>14.50</b>
<b>B-ZSB-8</b>	1/2"	<b>2.45</b>	<b>4.45</b>	<b>8.10</b>	<b>14.70</b>	<b>20.00</b>
<b>B-ZSB-10</b>	5/8"	<b>3.70</b>	<b>6.70</b>	<b>12.15</b>	<b>22.10</b>	<b>30.10</b>
<b>B-ZSB-12</b>	3/4"	<b>5.20</b>	<b>9.45</b>	<b>17.15</b>	<b>31.20</b>	<b>42.50</b>
<b>B-ZSB-14</b>	7/8"	<b>6.60</b>	<b>11.95</b>	<b>21.75</b>	<b>39.50</b>	<b>53.95</b>
<b>B-ZSB-16</b>	1"	<b>7.80</b>	<b>14.15</b>	<b>25.75</b>	<b>46.80</b>	<b>63.80</b>

## BRASS — Bar (cont.)



### RECTANGULAR — Type C360 ASTM-B16

Order Example: **B-ZRTB-2/4-12** is 1/8" × 1/4" × 12"

Part No.	Dimensions	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
B-ZRTB-1/8	1/16" × 1/2"	—	1.60	2.55	4.10	5.55
B-ZRTB-1/12	1/16" × 3/4"	—	1.70	2.80	4.65	6.40
B-ZRTB-1/16	1/16" × 1"	1.60	2.40	4.00	6.05	8.20
B-ZRTB-2/4	1/8" × 1/4"	—	1.75	2.95	4.85	6.60
B-ZRTB-2/6	1/8" × 3/8"	—	1.50	2.25	3.30	4.50
B-ZRTB-2/8	1/8" × 1/2"	—	1.60	2.50	3.65	4.95
B-ZRTB-2/12	1/8" × 3/4"	1.60	2.40	4.00	6.05	7.95
B-ZRTB-2/16	1/8" × 1"	2.10	2.95	4.95	6.95	9.50
B-ZRTB-2/32	1/8" × 2"	4.60	6.90	11.50	16.85	22.95
B-ZRTB-3/8	3/16" × 1/2"	1.60	2.25	3.75	5.50	7.50
B-ZRTB-3/12	3/16" × 3/4"	2.05	3.10	5.00	7.30	9.95
B-ZRTB-3/16	3/16" × 1"	2.75	4.05	6.75	9.90	13.50
B-ZRTB-3/32	3/16" × 2"	5.75	8.65	14.25	20.90	28.50
B-ZRTB-4/8	1/4" × 1/2"	1.85	2.75	4.50	6.55	8.95
B-ZRTB-4/12	1/4" × 3/4"	2.80	4.25	7.00	10.25	13.95
B-ZRTB-4/16	1/4" × 1"	3.60	5.40	9.00	13.15	17.95
B-ZRTB-4/32	1/4" × 2"	7.40	11.15	18.50	27.10	36.95
B-ZRTB-6/8	3/8" × 1/2"	3.00	4.50	7.50	10.95	14.95
B-ZRTB-6/12	3/8" × 3/4"	4.45	6.60	11.00	16.10	21.95
B-ZRTB-6/16	3/8" × 1"	6.00	9.00	15.00	21.95	29.95
B-ZRTB-6/32	3/8" × 2"	10.00	15.00	25.00	39.50	53.90
B-ZRTB-8/12	1/2" × 3/4"	6.00	9.00	15.00	21.95	29.95
B-ZRTB-8/16	1/2" × 1"	7.50	11.25	18.75	27.50	37.50
B-ZRTB-8/32	1/2" × 2"	13.60	20.40	34.00	49.85	68.00



### HEXAGONAL — Type C360 ASTM-B16

Order Example: **B-ZHB-5-3** is 5/16" × 3"

Part No.	Dimension Across Flats	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
B-ZHB-3	3/16"	—	1.45	2.40	3.95	5.40
B-ZHB-4	1/4"	—	1.90	3.15	5.25	7.15
B-ZHB-5	5/16"	1.50	2.45	4.10	6.80	9.30
B-ZHB-6	3/8"	1.70	2.85	4.75	7.90	10.75
B-ZHB-8	1/2"	2.30	3.85	6.40	10.65	14.50
B-ZHB-10	5/8"	3.90	6.50	10.80	17.95	25.55
B-ZHB-12	3/4"	5.15	8.60	14.25	23.80	32.45
B-ZHB-14	7/8"	7.55	12.50	20.95	34.95	47.65
B-ZHB-16	1"	10.00	16.75	27.85	46.40	63.30

## BRASS — Discs



Brass Discs are useful wherever pre-cut, circular pieces of metal are needed. As base pieces, tubing ends, cams, gear blanks, spool ends, flywheels, hand wheels or eccentrics they may be machined, drilled, hard or soft soldered and readily plated. We suggest you stock a number of thicknesses and diameters as a time saver.

*Note: Smaller sizes are stamped, not cut, and will have rounded /curved edges. If machined pieces are required, please call **Manufacturing Services at 1-800-339-2116***

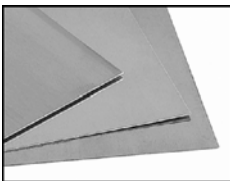
### BRASS DISCS — Type C260 ASTM-B16

Order Example: **B-BD-2-12** is 1/8"Thick × 3/4"Dia.

Part No.	Thickness	Diameter	Price	
			Each	10
<b>B-BD-1/2-12</b>	1/32"	3/4"	<b>1.70</b>	<b>13.50</b>
<b>B-BD-1/2-16</b>	1/32"	1"	<b>2.05</b>	<b>16.50</b>
<b>B-BD-1/2-32</b>	1/32"	2"	<b>3.05</b>	<b>24.50</b>
<b>B-BD-1/2-64</b>	1/32"	4"	<b>6.90</b>	<b>57.50</b>
<b>B-BD-1/2-96</b>	1/32"	6"	<b>13.95</b>	<b>116.00</b>
<b>B-BD-1-12</b>	1/16"	3/4"	<b>2.25</b>	<b>18.00</b>
<b>B-BD-1-16</b>	1/16"	1"	<b>2.65</b>	<b>21.50</b>
<b>B-BD-1-32</b>	1/16"	2"	<b>4.00</b>	<b>32.50</b>
<b>B-BD-1-64</b>	1/16"	4"	<b>8.50</b>	<b>68.00</b>
<b>B-BD-1-96</b>	1/16"	6"	<b>17.95</b>	<b>149.50</b>
<b>B-BD-2-12</b>	1/8"	3/4"	<b>3.35</b>	<b>28.00</b>
<b>B-BD-2-16</b>	1/8"	1"	<b>4.75</b>	<b>38.00</b>
<b>B-BD-2-32</b>	1/8"	2"	<b>5.50</b>	<b>44.00</b>
<b>B-BD-2-64</b>	1/8"	4"	<b>11.60</b>	<b>93.00</b>
<b>B-BD-2-96</b>	1/8"	6"	<b>20.10</b>	<b>161.00</b>
<b>B-BD-4-12*</b>	1/4"	3/4"	<b>4.95</b>	<b>41.00</b>
<b>B-BD-4-16*</b>	1/4"	1"	<b>6.35</b>	<b>53.50</b>
<b>B-BD-4-32*</b>	1/4"	2"	<b>9.05</b>	<b>75.50</b>

\* Type C360

## BRASS — Sheet



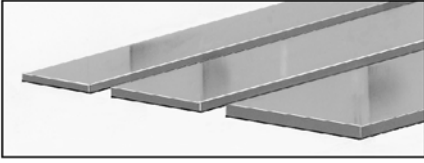
### SHEET\* — Half Hard, Type C260 ASTM-B36

Order Example: **B-SMB-020-B** is 0.020"×3"×12"

Part No.	Nominal Thickness	Price				
		-A 3" × 6"	-B 3" × 12"	-C 6" × 12"	-D 12" × 12"	-E 12" × 24"
<b>B-SMB-020</b>	0.020"	<b>1.80</b>	<b>3.25</b>	<b>5.95</b>	<b>10.75</b>	<b>19.60</b>
<b>B-SMB-032</b>	1/32"	<b>2.55</b>	<b>4.60</b>	<b>8.40</b>	<b>15.25</b>	<b>27.75</b>
<b>B-SMB-062</b>	1/16"	<b>5.75</b>	<b>10.45</b>	<b>18.95</b>	<b>34.50</b>	<b>62.75</b>
<b>B-SMB-093</b>	3/32"	<b>8.15</b>	<b>14.85</b>	<b>26.95</b>	<b>48.95</b>	<b>89.10</b>
<b>B-SMB-125</b>	1/8"	<b>11.00</b>	<b>20.05</b>	<b>36.45</b>	<b>66.25</b>	<b>120.50</b>
<b>B-SMB-187</b>	3/16"	<b>13.35</b>	<b>24.30</b>	<b>44.20</b>	<b>80.35</b>	<b>146.05</b>
<b>B-SMB-250</b>	1/4"	<b>15.70</b>	<b>28.50</b>	<b>51.90</b>	<b>94.30</b>	<b>171.50</b>

\* Nominal sizes. Length and Width dimensions may be reduced by up to 1/8", due to kerf (cutting) loss. If exact dimensions are critical to your project, please call **Purchasing Services — 1-888-455-9712**.

## BRASS — Strips



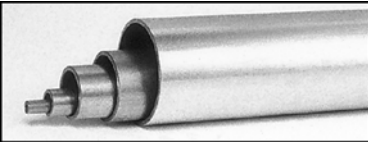
General purpose Brass Strips are half hard, type C260. Rolled, not extruded, slit-edge strips are very ductile and are excellent for forming and bending. Nominal composition: 70% copper, 30% zinc.

### STRIPS — Half Hard, Type C260 ASTM-B36

Order Example: **B-RTB-16/4-03** is 0.016" × 1/4" × 12", Pkg. of 3

Part No.	Dimensions	Length	Price Per Package		
			Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06
<b>B-RTB-16/4</b>	0.016" × 1/4"	12"	—	<b>1.85</b>	<b>3.05</b>
<b>B-RTB-16/8</b>	0.016" × 1/2"	12"	—	<b>2.05</b>	<b>3.40</b>
<b>B-RTB-16/16</b>	0.016" × 1"	12"	<b>1.15</b>	<b>2.85</b>	<b>4.75</b>
<b>B-RTB-16/32</b>	0.016" × 2"	12"	<b>2.05</b>	<b>5.05</b>	<b>8.45</b>
<b>B-RTB-25/4</b>	0.025" × 1/4"	12"	—	<b>2.25</b>	<b>3.75</b>
<b>B-RTB-25/8</b>	0.025" × 1/2"	12"	—	<b>2.05</b>	<b>3.40</b>
<b>B-RTB-25/16</b>	0.025" × 1"	12"	<b>1.65</b>	<b>4.05</b>	<b>6.75</b>
<b>B-RTB-25/32</b>	0.025" × 2"	12"	<b>3.10</b>	<b>7.70</b>	<b>12.80</b>
<b>B-RTB-32/4</b>	0.032" × 1/4"	12"	<b>1.05</b>	<b>2.45</b>	<b>4.05</b>
<b>B-RTB-32/8</b>	0.032" × 1/2"	12"	<b>1.10</b>	<b>2.65</b>	<b>4.40</b>
<b>B-RTB-32/16</b>	0.032" × 1"	12"	<b>1.80</b>	<b>4.45</b>	<b>7.45</b>
<b>B-RTB-32/32</b>	0.032" × 2"	12"	<b>3.40</b>	<b>8.50</b>	<b>14.15</b>

## BRASS — Tubing



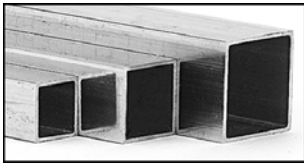
### ROUND — Hard Temper, Type C330 ASTM-B135

Order Example: **B-LBT-5-24** is 5/16" O.D. × 24"

Part No.	Outside Diameter		Nominal Wall	Price				
	Size	Tolerance		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-LBT-2*</b>	1/8"	±0.002"	0.028"	<b>1.50</b>	<b>2.30</b>	<b>4.00</b>	<b>6.55</b>	<b>8.55</b>
<b>B-LBT-3</b>	3/16"	±0.002"	0.049"	<b>1.50</b>	<b>2.45</b>	<b>4.40</b>	<b>7.05</b>	<b>9.00</b>
<b>B-LBT-4</b>	1/4"	±0.002"	0.049"	<b>1.60</b>	<b>2.75</b>	<b>4.95</b>	<b>7.85</b>	<b>10.05</b>
<b>B-LBT-5</b>	5/16"	±0.002"	0.065"	<b>2.25</b>	<b>3.80</b>	<b>6.70</b>	<b>10.75</b>	<b>13.80</b>
<b>B-LBT-6</b>	3/8"	±0.002"	0.049"	<b>2.30</b>	<b>4.05</b>	<b>7.25</b>	<b>11.50</b>	<b>14.50</b>
<b>B-LBT-8</b>	1/2"	±0.002"	0.065"	<b>2.80</b>	<b>4.85</b>	<b>8.55</b>	<b>13.65</b>	<b>17.60</b>
<b>B-LBT-12</b>	3/4"	±0.0025"	0.065"	<b>3.85</b>	<b>6.35</b>	<b>10.75</b>	<b>17.65</b>	<b>22.10</b>
<b>B-LBT-16</b>	1"	±0.0025"	0.065"	<b>5.45</b>	<b>9.10</b>	<b>15.15</b>	<b>25.20</b>	<b>31.50</b>
<b>B-LBT-24</b>	1-1/2"	±0.003"	0.065"	<b>6.90</b>	<b>11.50</b>	<b>19.50</b>	<b>31.95</b>	<b>39.95</b>
<b>B-LBT-32</b>	2"	±0.003"	0.065"	<b>9.65</b>	<b>16.05</b>	<b>27.00</b>	<b>44.50</b>	<b>55.65</b>
<b>B-LBT-40</b>	2-1/2"	±0.003"	0.065"	<b>11.05</b>	<b>18.45</b>	<b>31.00</b>	<b>51.10</b>	<b>63.90</b>
<b>B-LBT-48</b>	3"	±0.004"	0.065"	<b>13.00</b>	<b>21.65</b>	<b>36.50</b>	<b>60.20</b>	<b>75.25</b>

\*C260

## BRASS — Tubing (cont.)



### SQUARE — Heavy Wall, Type C260 ASTM-B135

Order Example: **B-SBT-28/10-03** is 1/4" × 36", Pkg. of 3

Part No.	Outside Dimension	Nominal		Price Per Package		
		Wall	Length	Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06
<b>B-SBT-28/4</b>	1/4"	0.028"	36"	<b>9.75</b>	<b>24.30</b>	<b>40.50</b>
<b>B-SBT-28/5</b>	5/16"	0.028"	36"	<b>10.80</b>	<b>27.00</b>	<b>45.00</b>
<b>B-SBT-28/6</b>	3/8"	0.028"	36"	<b>12.85</b>	<b>32.05</b>	<b>53.40</b>
<b>B-SBT-28/7</b>	7/16"	0.028"	36"	<b>13.95</b>	<b>34.85</b>	<b>58.05</b>
<b>B-SBT-28/8</b>	1/2"	0.028"	36"	<b>17.35</b>	<b>43.40</b>	<b>72.30</b>
<b>B-SBT-28/9</b>	9/16"	0.028"	36"	<b>18.50</b>	<b>46.20</b>	<b>76.95</b>
<b>B-SBT-28/10</b>	5/8"	0.028"	36"	<b>21.60</b>	<b>54.00</b>	<b>90.00</b>
<b>B-SBT-28/11</b>	11/16"	0.028"	36"	<b>22.70</b>	<b>56.70</b>	<b>94.50</b>
<b>B-SBT-28/12</b>	3/4"	0.028"	36"	<b>26.75</b>	<b>66.80</b>	<b>111.30</b>
<b>B-SBT-62/16</b>	1"	0.062"	36"	<b>23.40</b>	<b>58.25</b>	<b>132.00</b>
<b>B-SBT-62/32</b>	2"	0.062"	36"	<b>55.00</b>	<b>89.85</b>	<b>211.20</b>

### ASSORTMENTS

<b>B-SBT-100</b>	36" piece. One B-SBT-28/4 through B-SBT-28/8 — 5 pieces	<b>58.25</b>
<b>B-SBT-150</b>	36" piece. One B-SBT-28/9 through B-SBT-28/12 — 4 pieces	<b>80.60</b>
<b>B-SBT-200</b>	36" piece. One B-SBT-28/4 through B-SBT-28/12 — 9 pieces	<b>138.85</b>



### RECTANGULAR — Type C260 ASTM-B135

Order Example: **B-RCTB-2-12** is 3/32" × 3/16" × 12"

Part No.	Outside Dimensions	Nominal Wall	Price	
			-12 12" Length	-36 36" Length
<b>B-RCTB-1</b>	3/32" × 3/16"	0.014"	<b>2.05</b>	<b>6.15</b>
<b>B-RCTB-2</b>	1/8" × 1/4"	0.014"	<b>2.45</b>	<b>7.35</b>
<b>B-RCTB-3</b>	5/32" × 5/16"	0.014"	<b>2.55</b>	<b>7.65</b>
<b>B-RCTB-4</b>	3/16" × 3/8"	0.014"	<b>2.65</b>	<b>7.95</b>
<b>B-RCTB-5</b>	0.220" × 0.340"	0.010"	<b>3.35</b>	<b>10.05</b>
<b>B-RCTB-6</b>	0.310" × 0.410"	0.010"	<b>3.75</b>	<b>11.25</b>

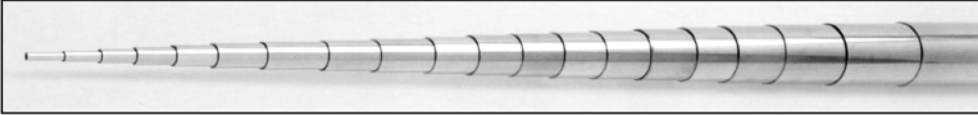
### ASSORTMENTS

<b>B-RCTB-100</b>	12" piece. One B-RCTB-1 through B-RCTB-6 — 6 pieces	<b>15.15</b>
<b>B-RCTB-150</b>	36" piece. One B-RCTB-1 through B-RCTB-6 — 6 pieces	<b>45.40</b>

### RECTANGULAR — Heavy Wall, Type C260 ASTM-B135

Part No.	Outside Dimensions	O.D. Tolerance	Nominal Wall	Price	
				-12 12" Length	-36 36" Length
<b>B-RCTB-16</b>	1" × 2"	±0.006"	0.062"	<b>20.25</b>	<b>60.75</b>
<b>B-RCTB-24</b>	1-1/2" × 3"	±0.007"	0.062"	<b>32.40</b>	<b>97.20</b>
<b>B-RCTB-32</b>	2" × 3"	±0.007"	0.125"	<b>65.70</b>	<b>197.10</b>

## BRASS — Telescoping Tubing



### SEAMLESS — 1/2 to 3/4 Hard Brass

Precision seamless drawn brass Telescoping Tubing is the answer to many problems in the development of experimental models and prototypes. Telescoping Tubing can be easily soldered and brazed, and flared to accept fittings. Advantageous when a reduction in size, weight or flow is desired. *Each telescopes into the next larger size. General purpose 1/2 to 3/4 hard brass. Approximate composition: 65-70% copper and 30-35% zinc.*

**ROUND — Type C260 ASTM-B135** Order Example: **B-TTRB-1-12-03** is 1/16" O.D. × 12", Pkg. of 3

Part No.	O.D. Tol. ±0.002"	Nominal Wall Tol. ±0.001"	Price Per Package					
			12" Length			36" Length		
			Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06	Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06
B-TTRB-1	1/16"	0.014"	—	2.35	4.05	2.35	6.70	12.15
B-TTRB-2	3/32"	0.014"	—	2.35	4.05	2.35	6.70	12.15
B-TTRB-3	1/8"	0.014"	—	2.55	4.40	2.55	7.25	13.20
B-TTRB-4	5/32"	0.014"	—	2.70	4.75	2.70	7.80	14.20
B-TTRB-5	3/16"	0.014"	—	2.95	5.05	2.95	8.35	15.20
B-TTRB-6	7/32"	0.014"	1.25	3.30	5.75	3.30	9.50	17.25
B-TTRB-7	1/4"	0.014"	1.40	3.75	6.40	3.75	10.60	19.25
B-TTRB-8	9/32"	0.014"	1.60	4.30	7.45	4.30	12.25	22.25
B-TTRB-9	5/16"	0.014"	1.80	4.85	8.45	4.85	13.95	25.30
B-TTRB-10	11/32"	0.014"	2.05	5.50	9.45	5.50	15.60	28.35
B-TTRB-11	3/8"	0.014"	2.15	5.85	10.15	5.85	16.70	30.35
B-TTRB-12	13/32"	0.014"	2.30	6.25	10.80	6.25	17.85	32.40
B-TTRB-13	7/16"	0.014"	2.30	6.25	10.80	6.25	17.85	32.40
B-TTRB-14	15/32"	0.014"	2.65	7.25	12.50	7.25	20.65	37.50
B-TTRB-15	1/2"	0.014"	2.90	7.85	13.50	7.85	22.30	40.50
B-TTRB-16	17/32"	0.014"	3.10	8.40	14.50	8.40	23.95	43.50
B-TTRB-17	9/16"	0.014"	3.30	8.95	15.50	8.95	25.50	46.35
B-TTRB-18	19/32"	0.014"	3.50	9.55	16.50	9.55	27.25	55.50
B-TTRB-19	5/8"	0.014"	3.75	10.05	17.55	10.05	28.95	52.65
B-TTRB-20	21/32"	0.014"	4.05	10.95	18.90	10.95	31.20	56.70

### ASSORTMENTS

<b>B-TTRB-100</b>	12" piece. One B-TTRB-1 through B-TTRB-15 — 15 pieces	24.70
<b>B-TTRB-150</b>	12" piece. One B-TTRB-1 through B-TTRB-20 — 20 pieces	42.40
<b>B-TTRB-100A</b>	36" piece. One B-TTRB-1 through B-TTRB-15 — 15 pieces	68.05
<b>B-TTRB-150A</b>	36" piece. One B-TTRB-1 through B-TTRB-20 — 20 pieces	116.55

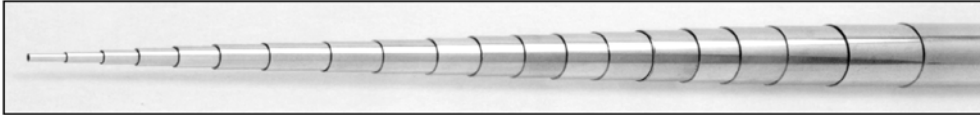
### ROUND — Heavy Wall, Type C260 ASTM-B135

Order Example: **B-TTRB-6H-12-03** is 3/16" O.D. × 12", Pkg. of 3

Part No.	O. D. Tol. ±0.002"	Wall Tol. ±0.001"	Price Per Package					
			12" Length			36" Length		
			Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06	Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06
B-TTRB-2H	1/8"	0.029"	1.80	4.50	7.50	4.50	12.15	21.90
B-TTRB-3H	3/16"	0.029"	1.95	4.90	8.10	4.90	13.25	23.85
B-TTRB-4H	1/4"	0.029"	2.75	6.85	11.40	6.85	18.50	33.30
B-TTRB-5H	5/16"	0.029"	3.25	8.10	13.50	8.10	21.90	39.45
B-TTRB-6H	3/8"	0.029"	3.70	9.30	15.45	9.30	25.10	45.20
B-TTRB-7H	7/16"	0.029"	4.55	11.35	18.90	11.35	30.65	55.20
B-TTRB-8H	1/2"	0.029"	5.05	12.60	21.00	12.60	34.05	61.30



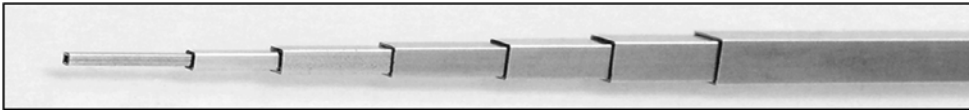
## BRASS — Telescoping Tubing (cont.)



### ROUND — Heavy Wall, Type C260 ASTM-B135

Order Example: **B-TTRB-10H-36-03** is 5/8" O.D. × 36", Pkg. of 3

Part No.	O. D. Tol. ±0.002"	Wall Tol. ±0.001"	Price Per Package					
			Pkg. of 1 -01	12" Length Pkg. of 3 -03	Pkg. of 6 -06	Pkg. of 1 -01	36" Length Pkg. of 3 -03	Pkg. of 6 -06
<b>B-TTRB-9H</b>	9/16"	0.029"	<b>5.50</b>	<b>13.80</b>	<b>22.95</b>	<b>13.80</b>	<b>37.30</b>	<b>67.15</b>
<b>B-TTRB-10H</b>	5/8"	0.029"	<b>6.15</b>	<b>15.40</b>	<b>25.65</b>	<b>15.40</b>	<b>41.60</b>	<b>74.90</b>
<b>B-TTRB-11H</b>	11/16"	0.029"	<b>7.15</b>	<b>17.85</b>	<b>29.70</b>	<b>17.85</b>	<b>48.20</b>	<b>86.75</b>
<b>B-TTRB-12H</b>	3/4"	0.029"	<b>7.65</b>	<b>19.10</b>	<b>31.80</b>	<b>19.10</b>	<b>51.60</b>	<b>92.90</b>
<b>B-TTRB-13H</b>	13/16"	0.029"	<b>8.10</b>	<b>20.25</b>	<b>33.75</b>	<b>20.25</b>	<b>54.70</b>	<b>98.45</b>
<b>B-TTRB-14H</b>	7/8"	0.029"	<b>8.60</b>	<b>21.50</b>	<b>35.85</b>	<b>21.50</b>	<b>58.05</b>	<b>104.50</b>
<b>B-TTRB-15H</b>	15/16"	0.029"	<b>9.35</b>	<b>23.40</b>	<b>39.00</b>	<b>23.40</b>	<b>63.20</b>	<b>113.75</b>
<b>B-TTRB-16H</b>	1"	0.029"	<b>10.80</b>	<b>27.00</b>	<b>45.00</b>	<b>27.00</b>	<b>72.90</b>	<b>131.25</b>



### SQUARE — Type C260 ASTM-B135

Order Example: **B-TTSB-3-36-06** is 5/32" O.D. × 36", Pkg. of 6

Part No.	O. D. Tol. ±0.002"	Wall Tol. ±0.001"	Price Per Package					
			Pkg. of 1 -01	12" Length Pkg. of 3 -03	Pkg. of 6 -06	Pkg. of 1 -01	36" Length Pkg. of 3 -03	Pkg. of 6 -06
<b>B-TTSB-0</b>	1/16"	0.014"	<b>1.20</b>	<b>3.25</b>	<b>5.60</b>	<b>3.25</b>	<b>9.20</b>	<b>16.70</b>
<b>B-TTSB-1</b>	3/32"	0.014"	<b>1.35</b>	<b>3.60</b>	<b>10.42</b>	<b>3.60</b>	<b>10.25</b>	<b>18.65</b>
<b>B-TTSB-2</b>	1/8"	0.014"	<b>1.40</b>	<b>3.80</b>	<b>6.55</b>	<b>3.80</b>	<b>10.80</b>	<b>19.60</b>
<b>B-TTSB-3</b>	5/32"	0.014"	<b>1.60</b>	<b>4.30</b>	<b>7.45</b>	<b>4.30</b>	<b>12.30</b>	<b>22.35</b>
<b>B-TTSB-4</b>	3/16"	0.014"	<b>1.85</b>	<b>5.00</b>	<b>8.70</b>	<b>5.00</b>	<b>14.35</b>	<b>26.10</b>
<b>B-TTSB-5</b>	7/32"	0.014"	<b>2.00</b>	<b>5.40</b>	<b>9.35</b>	<b>5.40</b>	<b>15.40</b>	<b>28.00</b>
<b>B-TTSB-6</b>	1/4"	0.014"	<b>2.25</b>	<b>6.10</b>	<b>10.55</b>	<b>6.10</b>	<b>17.45</b>	<b>31.75</b>

### ASSORTMENTS

<b>B-TTSB-100</b>	12" piece. One B-TTSB-0 through B-TTSB-6 — 7 pieces	<b>11.65</b>
<b>B-TTSB-100A</b>	36" piece. One B-TTSB-0 through B-TTSB-6 — 7 pieces	<b>31.45</b>



### HEXAGONAL — Type C260 ASTM-B135

Order Example: **B-TTHB-3-12-06** is 1/8" O.D. × 12", Pkg. of 6

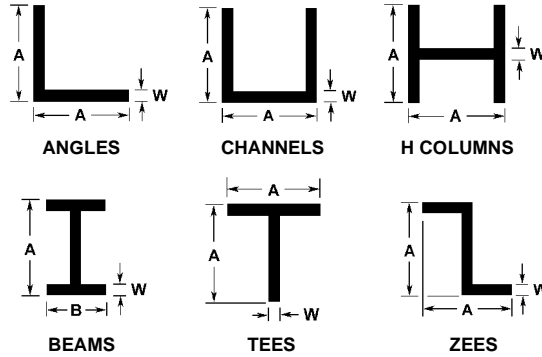
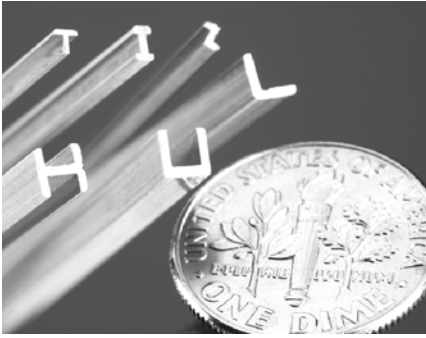
Part No.	Dimension Across Flats	Wall	Length	Price Per Package		
				Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06
<b>B-TTHB-2</b>	3/32"	0.014"	12"	<b>1.15</b>	<b>2.90</b>	<b>5.30</b>
<b>B-TTHB-3</b>	1/8"	0.014"	12"	<b>1.25</b>	<b>3.35</b>	<b>6.10</b>
<b>B-TTHB-4</b>	5/32"	0.014"	12"	<b>1.40</b>	<b>3.80</b>	<b>6.90</b>
<b>B-TTHB-5</b>	3/16"	0.014"	12"	<b>1.55</b>	<b>4.25</b>	<b>7.70</b>

### ASSORTMENT

<b>B-TTHB-100</b>	12" piece. One B-TTHB-2 through B-TTHB-5 — 4 pieces	<b>5.35</b>
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# BRASS — Miniature Shapes, Precision Milled



## PRECISION MILLED MINIATURE SHAPES

The engineering world is continually moving towards miniaturization. In response to this, we offer a broad selection of miniature structural shapes in a variety of profiles and materials. Each shape is milled from 1/2 - 3/4 hard C260 Brass ready for use in your miniature application.

**ANGLES — C260, Precision Milled** Order Example: **B-BAM-020-12-03** is 1/8" O.D. × 12", Pkg. of 3

Part No.	A	W	Price Per Package					
			12" Length			*36" Length		
			Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06	Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06
<b>B-BAM-005</b>	1/32"	0.010"	<b>2.40</b>	<b>6.50</b>	<b>11.25</b>	<b>6.50</b>	<b>18.60</b>	<b>33.75</b>
<b>B-BAM-010</b>	1/16"	0.014"	<b>2.55</b>	<b>6.95</b>	<b>12.00</b>	<b>6.95</b>	<b>19.80</b>	<b>36.00</b>
<b>B-BAM-015</b>	3/32"	0.018"	<b>2.70</b>	<b>7.40</b>	<b>12.75</b>	<b>7.40</b>	<b>21.00</b>	<b>38.25</b>
<b>B-BAM-020</b>	1/8"	0.022"	<b>2.70</b>	<b>7.40</b>	<b>13.30</b>	<b>7.40</b>	<b>21.00</b>	<b>38.25</b>
<b>B-BAM-025</b>	5/32"	0.024"	<b>4.45</b>	<b>12.15</b>	<b>21.00</b>	<b>12.15</b>	<b>34.65</b>	<b>63.00</b>
<b>B-BAM-030</b>	3/16"	0.026"	<b>4.60</b>	<b>12.55</b>	<b>21.75</b>	<b>12.55</b>	<b>35.85</b>	<b>65.25</b>
<b>B-BAM-035</b>	7/32"	0.028"	<b>4.80</b>	<b>13.00</b>	<b>22.50</b>	<b>13.00</b>	<b>37.20</b>	<b>67.50</b>
<b>B-BAM-040</b>	1/4"	0.030"	<b>4.95</b>	<b>13.45</b>	<b>23.25</b>	<b>13.45</b>	<b>38.40</b>	<b>69.75</b>

## CHANNELS — C260, Precision Milled

Part No.	A	W	Price Per Package					
			12" Length			*36" Length		
			Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06	Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06
<b>B-BCM-005</b>	1/32"	0.008"	<b>2.40</b>	<b>6.55</b>	<b>11.25</b>	<b>6.55</b>	<b>18.60</b>	<b>33.75</b>
<b>B-BCM-010</b>	1/16"	0.013"	<b>2.55</b>	<b>6.95</b>	<b>12.00</b>	<b>6.95</b>	<b>19.80</b>	<b>36.00</b>
<b>B-BCM-015</b>	3/32"	0.018"	<b>2.75</b>	<b>7.40</b>	<b>12.75</b>	<b>7.40</b>	<b>21.00</b>	<b>38.25</b>
<b>B-BCM-020</b>	1/8"	0.022"	<b>2.75</b>	<b>7.40</b>	<b>12.75</b>	<b>7.40</b>	<b>21.00</b>	<b>38.25</b>
<b>B-BCM-025</b>	5/32"	0.024"	<b>3.20</b>	<b>8.65</b>	<b>15.00</b>	<b>8.65</b>	<b>24.75</b>	<b>45.00</b>
<b>B-BCM-030</b>	3/16"	0.026"	<b>4.00</b>	<b>10.85</b>	<b>18.75</b>	<b>10.85</b>	<b>30.90</b>	<b>56.25</b>
<b>B-BCM-035</b>	7/32"	0.028"	<b>5.60</b>	<b>15.20</b>	<b>26.25</b>	<b>15.20</b>	<b>43.35</b>	<b>78.75</b>
<b>B-BCM-040</b>	1/4"	0.030"	<b>5.75</b>	<b>15.60</b>	<b>27.00</b>	<b>15.60</b>	<b>44.55</b>	<b>81.00</b>

## H COLUMNS — C260, Precision Milled

Part No.	A	W	Price Per Package					
			12" Length			*36" Length		
			Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06	Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06
<b>B-BHC-005</b>	1/32"	0.008"	<b>2.80</b>	<b>7.55</b>	<b>13.05</b>	<b>7.55</b>	<b>21.50</b>	<b>39.15</b>
<b>B-BHC-010</b>	1/16"	0.013"	<b>2.80</b>	<b>7.55</b>	<b>13.05</b>	<b>7.55</b>	<b>21.50</b>	<b>39.15</b>
<b>B-BHC-015</b>	3/32"	0.018"	<b>2.90</b>	<b>7.85</b>	<b>13.50</b>	<b>7.85</b>	<b>22.30</b>	<b>40.50</b>
<b>B-BHC-020</b>	1/8"	0.022"	<b>2.90</b>	<b>7.85</b>	<b>13.50</b>	<b>7.85</b>	<b>22.30</b>	<b>40.50</b>
<b>B-BHC-025</b>	5/32"	0.024"	<b>3.80</b>	<b>10.40</b>	<b>18.00</b>	<b>10.40</b>	<b>29.70</b>	<b>54.00</b>
<b>B-BHC-030</b>	3/16"	0.026"	<b>4.95</b>	<b>13.50</b>	<b>23.40</b>	<b>13.50</b>	<b>38.60</b>	<b>70.20</b>
<b>B-BHC-035</b>	7/32"	0.028"	<b>7.60</b>	<b>20.75</b>	<b>36.00</b>	<b>20.75</b>	<b>59.40</b>	<b>108.00</b>
<b>B-BHC-040</b>	1/4"	0.030"	<b>7.95</b>	<b>21.70</b>	<b>37.50</b>	<b>21.70</b>	<b>61.90</b>	<b>112.50</b>

\* ± 1"

Note: Due to the delicate nature of these products, additional shipping charges may apply. Ground Shipping requires special packaging to insure safe delivery.

## BRASS — Miniature Shapes, Precision Milled (cont.)

### BEAMS — C260, Precision Milled

Order Example: **B-BIB-020-12-03** is 1/8" O.D. × 12", Pkg. of 3

Part No.	A	B	W	Price Per Package					
				Length 12"			*Length 36"		
				Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06	Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06
<b>B-BIB-005</b>	1/16"	1/32"	0.014"	<b>2.40</b>	<b>6.55</b>	<b>11.25</b>	<b>6.55</b>	<b>18.60</b>	<b>33.75</b>
<b>B-BIB-020</b>	1/8"	1/16"	0.020"	<b>2.80</b>	<b>7.55</b>	<b>13.05</b>	<b>7.55</b>	<b>21.60</b>	<b>39.15</b>
<b>B-BIB-030</b>	3/16"	3/32"	0.026"	<b>3.35</b>	<b>9.15</b>	<b>15.75</b>	<b>9.15</b>	<b>25.95</b>	<b>47.25</b>

### TEES — C260, Precision Milled

Part No.	A	B	W	Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06	Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06
<b>B-BTE-005</b>	1/32"		0.010"	<b>2.80</b>	<b>7.55</b>	<b>13.05</b>	<b>7.55</b>	<b>21.50</b>	<b>39.15</b>
<b>B-BTE-010</b>	1/16"		0.014"	<b>2.80</b>	<b>7.55</b>	<b>13.05</b>	<b>7.55</b>	<b>21.50</b>	<b>39.15</b>
<b>B-BTE-015</b>	3/32"		0.018"	<b>3.80</b>	<b>10.40</b>	<b>18.00</b>	<b>10.40</b>	<b>29.70</b>	<b>54.00</b>
<b>B-BTE-020</b>	1/8"		0.022"	<b>4.00</b>	<b>10.85</b>	<b>18.75</b>	<b>10.85</b>	<b>30.95</b>	<b>56.25</b>

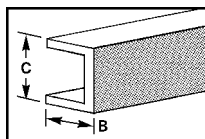
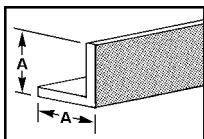
### ZEES — C260, Precision Milled

Part No.	A	B	W	Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06	Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06
<b>B-BZE-005</b>	1/32"		0.010"	<b>2.80</b>	<b>7.55</b>	<b>13.05</b>	<b>7.55</b>	<b>21.50</b>	<b>39.15</b>
<b>B-BZE-010</b>	1/16"		0.014"	<b>2.80</b>	<b>7.55</b>	<b>13.05</b>	<b>7.55</b>	<b>21.50</b>	<b>39.15</b>
<b>B-BZE-015</b>	3/32"		0.018"	<b>3.65</b>	<b>9.95</b>	<b>17.25</b>	<b>9.95</b>	<b>28.45</b>	<b>51.75</b>
<b>B-BZE-020</b>	1/8"		0.022"	<b>4.60</b>	<b>12.55</b>	<b>21.75</b>	<b>12.55</b>	<b>35.90</b>	<b>21.75</b>

\* ± 1"

Note: Due to the delicate nature of these products, additional shipping charges may apply.  
Ground Shipping requires special packaging to insure safe delivery.

## BRASS — Miniature Shapes, Roll Formed



### ROLL FORMED MINIATURE SHAPES

C260 Roll formed Brass Channels and Angles with standard 1/64" wall.

### ANGLES — C260, Roll Formed

Order Example: **B-BAA-2-12-03** is 1/8" O.D. × 12", Pkg. of 3

Part No.	Dimensions A	Pkg. of 1 -01	Price Per Package			Price Per Package		
			Length 12"			Length 36"		
			Pkg. of 3 -03	Pkg. of 6 -06	Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06	
<b>B-BAA-2</b>	1/8"	<b>1.15</b>	<b>2.90</b>	<b>4.85</b>	<b>4.30</b>	<b>10.70</b>	<b>17.85</b>	
<b>B-BAA-2-1/2</b>	5/32"	<b>1.25</b>	<b>3.15</b>	<b>5.20</b>	<b>4.50</b>	<b>11.25</b>	<b>18.75</b>	
<b>B-BAA-3</b>	3/16"	<b>1.10</b>	<b>2.70</b>	<b>4.45</b>	<b>3.75</b>	<b>9.30</b>	<b>15.50</b>	
<b>B-BAA-3-1/2</b>	7/32"	<b>1.25</b>	<b>3.15</b>	<b>5.20</b>	<b>4.55</b>	<b>11.40</b>	<b>19.00</b>	
<b>B-BAA-4</b>	1/4"	<b>1.35</b>	<b>3.35</b>	<b>5.55</b>	<b>4.00</b>	<b>10.05</b>	<b>16.75</b>	

### CHANNELS — C260, Roll Formed

Part No.	Dimensions A B		Pkg. of 1 -01	Price Per Package			Price Per Package		
				Length 12"			Length 36"		
			Pkg. of 3 -03	Pkg. of 6 -06	Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06		
<b>B-BCC-2</b>	1/8"	1/8"	<b>1.80</b>	<b>4.45</b>	<b>7.40</b>	<b>5.35</b>	<b>13.35</b>	<b>22.20</b>	
<b>B-BCC-2-1/2</b>	1/8"	5/32"	<b>1.65</b>	<b>4.20</b>	<b>6.95</b>	<b>5.00</b>	<b>12.50</b>	<b>20.80</b>	
<b>B-BCC-3</b>	1/8"	3/16"	<b>1.40</b>	<b>3.50</b>	<b>5.85</b>	<b>4.20</b>	<b>10.50</b>	<b>17.50</b>	
<b>B-BCC-3-1/2</b>	1/8"	7/32"	<b>1.40</b>	<b>3.50</b>	<b>5.85</b>	<b>4.20</b>	<b>10.50</b>	<b>17.50</b>	
<b>B-BCC-4</b>	1/8"	1/4"	<b>1.75</b>	<b>4.30</b>	<b>7.25</b>	<b>5.25</b>	<b>12.90</b>	<b>21.75</b>	

Note: Due to the delicate nature of these products, additional shipping charges may apply.  
Ground Shipping requires special packaging to insure safe delivery.

## BRONZE

Bronze is a Copper alloy with tin as the principal alloying material rather than zinc. The color range of bronzes go from a reddish color where the copper contents exceeds 90% to orange-yellow (typical) below 90%. When polished, bronze develops a beautiful golden finish. A typical 80-20 bronze would have an approximate density of 0.315 lb/in<sup>3</sup> and have a melting point of approx. 1868°F (1020°C). Ductility decreases rapidly with the increase of tin in the alloy mix. Phosphor bronze has a tin content of 1.25-10%, and possesses excellent cold-working and mechanical properties. Architectural or art bronze typically contains 97% copper, 2% tin and 1% zinc.

**C385 ARCHITECTURAL BRONZE** — Used primarily for its superior corrosion resistance in salt solutions. Because bronze oxidizes less than copper, it is used extensively in the marine industry. Composed of 55-59% copper, 2.5-3.5% lead, and the balance in zinc. C385 Bronze machines well and can be mirror polished to a rich, golden color.

**C544 PHOSPHOR BRONZE** — A free-cutting alloy that machines easily and can be readily heat-formed, forged, polished, silver soldered and or brazed.

**C932 (SAE 660) BEARING BRONZE** — Readily machinable with consistent density. Continuous cast.

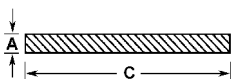
### PROPERTIES

ALLOY		C385	C544	C932 (SAE 660)
Name		Architectural Bronze	Phosphor Bronze	Bearing Bronze
Melting Point	°F	1690	1700	1790
Tensile Strength-Ultimate	ksi*	60	75	44
Tensile Strength-Yield	ksi	20	63	24
Elongation-1" thick specimen	% in 2in	30	15	18
Rockwell Hardness	B scale	-	83	70
Machinability	C360=100	90	80	70

\*ksi: kips per square inch = 1000s of pounds per square inch.

Note: Typical Values "Not For Design Purposes"

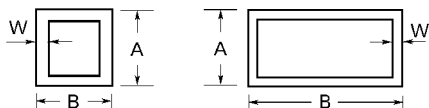
## BRONZE — Bar



### RECTANGULAR — Type C385 ASTM-B455

Part No.	Dimensions A × C	Price Each	
		-12 Length 12"	-36 Length 36"
<b>B-RTBR-2/8</b>	1/8" × 1/2"	<b>2.25</b>	<b>6.50</b>
<b>B-RTBR-2/16</b>	1/8" × 1"	<b>3.80</b>	<b>11.35</b>
<b>B-RTBR-2/32</b>	1/8" × 2"	<b>8.15</b>	<b>24.40</b>
<b>B-RTBR-4/8</b>	1/4" × 1/2"	<b>4.05</b>	<b>12.15</b>
<b>B-RTBR-4/16</b>	1/4" × 1"	<b>7.85</b>	<b>23.55</b>
<b>B-RTBR-4/32</b>	1/4" × 2"	<b>15.95</b>	<b>47.90</b>
<b>B-RTBR-4/64</b>	1/4" × 4"	<b>29.90</b>	<b>89.65</b>

## BRONZE — Tubing



### SQUARE AND RECTANGULAR TUBING

Selected to meet requirements for ornamental applications and other types of metal work, architectural Bronze Square and Rectangular Tubing is formed with sharp outside corners for precise exterior fit.

#### SQUARE — C385

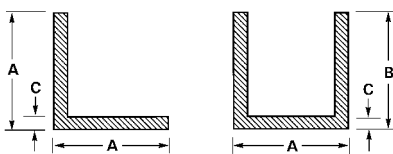
Order Example: **B-ABR-3216R-24** is Rectangular 2" × 1" × 24"

Part No.	Outside Dimensions		Wall W	-12 12"	Price	
	A	B			-24 24"	-36 36"
<b>B-ABR-08S</b>	1/2"	1/2"	0.093"	<b>8.65</b>	<b>14.45</b>	<b>18.05</b>
<b>B-ABR-16S</b>	1"	1"	0.093"	<b>18.35</b>	<b>30.60</b>	<b>38.25</b>
<b>B-ABR-24S</b>	1-1/2"	1-1/2"	0.100"	<b>25.35</b>	<b>40.50</b>	<b>47.50</b>

#### RECTANGULAR — C385

Part No.	Outside Dimensions		Wall W	-12 12"	Price	
	A	B			-24 24"	-36 36"
<b>B-ABR-2412R</b>	3/4"	1-1/2"	0.100"	<b>26.25</b>	<b>43.80</b>	<b>54.75</b>
<b>B-ABR-3216R</b>	1"	2"	0.100"	<b>26.25</b>	<b>43.80</b>	<b>54.75</b>

## BRONZE — Shapes



Used extensively in the marine industry, Type C385 Bronze has superior corrosion resistance in salt solutions. Composed of 55-59% copper, 2.5-3.5% lead, and the balance in zinc, it machines well and can be polished to a rich golden color.

#### ANGLES — Type C385 ASTM-B445 Order Example: **B-BRA-24/4-36** is 1-1/2 × 1-1/2 × 1/4 , 36" long

Part No.	Dimensions in Inches A × A × C	Price Each	
		-12 12"	-36 36"
<b>B-BRA-8/1</b>	1/2 × 1/2 × 1/16	<b>7.45</b>	<b>20.25</b>
<b>B-BRA-8/2</b>	1/2 × 1/2 × 1/8	<b>4.25</b>	<b>9.50</b>
<b>B-BRA-12/2</b>	3/4 × 3/4 × 1/8	<b>5.50</b>	<b>14.65</b>
<b>B-BRA-16/2</b>	1 × 1 × 1/8	<b>8.00</b>	<b>21.00</b>
<b>B-BRA-32/2</b>	2 × 2 × 1/8	<b>15.05</b>	<b>41.10</b>
<b>B-BRA-16/3</b>	1 × 1 × 3/16	<b>10.60</b>	<b>28.95</b>
<b>B-BRA-24/3</b>	1-1/2 × 1-1/2 × 3/16	<b>16.35</b>	<b>44.60</b>
<b>B-BRA-16/4</b>	1 × 1 × 1/4	<b>13.60</b>	<b>37.10</b>
<b>B-BRA-24/4</b>	1-1/2 × 1-1/2 × 1/4	<b>21.40</b>	<b>58.30</b>
<b>B-BRA-40/4</b>	2-1/2 × 2-1/2 × 1/4	<b>26.95</b>	<b>100.65</b>

#### CHANNELS — Type C385 ASTM-B445

Part No.	Dimensions in Inches A × B × C	Price Each	
		-12 12"	-36 36"
<b>B-BRC-8/8</b>	1/2 × 1/2 × 3/32	<b>5.15</b>	<b>12.25</b>
<b>B-BRC-16/12</b>	1 × 3/4 × 1/8	<b>8.85</b>	<b>23.85</b>
<b>B-BRC-24/8</b>	1-1/2 × 1/2 × 1/8	<b>8.85</b>	<b>23.85</b>

## BRONZE, CAST — Rod

Continuous Cast Bronze Rod is consistent in density and a excellent product for bearings, sleeves and products exposed to salt air and outdoor elements. Although not as hard as aluminum bronze, this alloy is readily machinable. Primary composition: 83% Copper; 6.5-7.5% Tin; 6-8% Lead; 2-4% Zinc; 0.20% Iron. Other sizes are available. Please call **Purchasing Services — 1-888-455-9712**.



### ROD — C932 (SAE 660)

Part No.	Diameter	Price Each		
		-3 3"	-6 6"	-12 12"
<b>B-ZRCB-8</b>	1/2"	<b>3.25</b>	<b>6.45</b>	<b>10.10</b>
<b>B-ZRCB-12</b>	3/4"	<b>3.70</b>	<b>7.40</b>	<b>12.85</b>
<b>B-ZRCB-16</b>	1"	<b>9.75</b>	<b>16.25</b>	<b>22.50</b>
<b>B-ZRCB-24</b>	1-1/2"	<b>12.85</b>	<b>25.70</b>	<b>44.75</b>
<b>B-ZRCB-32</b>	2"	<b>31.15</b>	<b>62.30</b>	<b>103.85</b>
<b>B-ZRCB-48</b>	3"	<b>55.80</b>	<b>111.50</b>	<b>185.95</b>

## BRONZE, PHOSPHOR — Rod

This C544 alloy is a "free-cutting" Phosphor Bronze with just about 10% less machinability than our "free-cutting" brass. It machines easily and is a fine material for sleeve and thrust bearings, pinions, gears and many products manufactured on a screw machine. While it can be readily heat formed, forged, polished, silver soldered and/or brazed, it is not recommended for electric welding. Composition: 88% Copper; 3.5-4.5% Lead; 3.5-4.5% Tin; 1.5-4.5% Zinc; 0.10% Iron; 0.01-0.50% Phosphorous.



### ROD — Type C544 ASTM-B139

Order Example: **B-ZRPH-3-6** is 3/16" dia. x 6"

Part No.	Diameter	Price Each				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZRPH-2</b>	1/8"	—	<b>1.15</b>	<b>1.90</b>	<b>3.15</b>	<b>4.25</b>
<b>B-ZRPH-2-1/2</b>	5/32"	<b>1.25</b>	<b>2.05</b>	<b>3.45</b>	<b>5.75</b>	<b>7.80</b>
<b>B-ZRPH-3</b>	3/16"	<b>2.20</b>	<b>3.65</b>	<b>6.15</b>	<b>10.20</b>	<b>13.90</b>
<b>B-ZRPH-4</b>	1/4"	<b>3.25</b>	<b>5.45</b>	<b>9.10</b>	<b>15.15</b>	<b>20.65</b>
<b>B-ZRPH-5</b>	5/16"	<b>3.55</b>	<b>5.95</b>	<b>9.90</b>	<b>16.45</b>	<b>22.45</b>
<b>B-ZRPH-6</b>	3/8"	<b>3.75</b>	<b>6.20</b>	<b>10.35</b>	<b>17.20</b>	<b>23.45</b>
<b>B-ZRPH-8</b>	1/2"	<b>4.75</b>	<b>7.95</b>	<b>13.25</b>	<b>22.05</b>	<b>38.05</b>
<b>B-ZRPH-10</b>	5/8"	<b>8.00</b>	<b>13.35</b>	<b>22.25</b>	<b>37.10</b>	<b>50.55</b>
<b>B-ZRPH-12</b>	3/4"	<b>10.50</b>	<b>17.55</b>	<b>29.25</b>	<b>48.75</b>	<b>66.50</b>
<b>B-ZRPH-16</b>	1"	<b>14.75</b>	<b>25.50</b>	<b>40.95</b>	<b>68.25</b>	<b>93.10</b>

# COPPER

Probably the first metal to be smelted from its ore, Copper derives its usefulness from a combination of desirable properties. It resists corrosion, provides outstanding electrical and thermal conductivity, and has good ductility with an attractive appearance. While its strength-to-weight ratio is relatively low, Copper is considered a heavy metal, with a density of .323 lbs/in<sup>3</sup>. The pure element is salmon pink, melts at 1981°F (1083°C), and polishes to a bright metallic luster. Used in alloyed form since at least 3500 BC, it is nonmagnetic, combines well with other metals, and is easy to fabricate and join. Copper and its alloys tend to work harden, and can be hot or cold worked for increased strength.

**C101** — Oxygen-Free, High Conductivity Copper is produced by direct conversion of selected refined cathodes and casting under carefully controlled conditions to prevent any contamination of the pure oxygen-free metal during processing. The method of producing O.F.H.C. Copper insures extra high grade of metal with a copper content of 99.99%. With so small a content of extraneous elements, the inherent properties of elemental copper are brought forth to a high degree. Characteristics are high ductility, high electrical and thermal conductivity, high impact strength, good creep resistance, ease of welding, and low volatility under high vacuum. C101 Copper conforms to ASTM B187 for bar, and ASTM B152 for plate.

**C110** — This 99.9% commercially pure Copper can be bent, riveted, drilled, soldered, brazed and welded to most any design requirement. Commonly used for electrical connections and ground straps.

**C122** — Easily brazed or plated, this 99.9% commercially pure Copper may require some annealing for bending or shaping.

**BERYLLIUM COPPER C172** — With greater tensile strength and hardness than other copper alloys, Beryllium Copper C172 has good electrical and thermal conductivity, is quite ductile, and resists both fatigue and relaxation under stress. Atmospheric performance is good, and it resists corrosion even in contact with seawater or under other high-salt conditions. With a melting point of 1800°F (980°C), it endures elevated temperatures well. For long-term operations a maximum of 400°F (240°C) is recommended. A good material for providing electrical contacts, or for custom fabrication purposes. 97.7% Copper; 1.9% Beryllium; 0.2% Silicon; 0.2% Aluminum.

## PROPERTIES

Alloy		C101	C110	C122	C172
Name		Oxygen-Free	Copper	Copper	Beryllium Copper
Melting Point	°F	1981	1981	1981	1800
Tensile Strength-Ultimate	ksi*	55	48	32	92
Tensile Strength-Yield	ksi	50	44	10	82
Elongation-1" thick specimen	% in 2in	10	16	45	15
Machinability	C-360=100	20	20	20	20

ksi: kips per square inch = 1000s of pounds per square inch.

**Note:** Typical Values "Not For Design Purposes"

## COPPER — Rod



### ROD — C101, Oxygen-Free ASTM B187

Order Example: **B-ZOFC-02-06** is 1/8" dia. × 6" long

Part No.	Diameter	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZOFC-02</b>	1/8"	—	<b>1.20</b>	<b>2.00</b>	<b>3.30</b>	<b>4.10</b>
<b>B-ZOFC-03</b>	3/16"	—	<b>2.90</b>	<b>4.80</b>	<b>8.00</b>	<b>10.00</b>
<b>B-ZOFC-04</b>	1/4"	<b>1.90</b>	<b>3.20</b>	<b>5.30</b>	<b>8.80</b>	<b>11.00</b>
<b>B-ZOFC-05</b>	5/16"	<b>2.75</b>	<b>4.60</b>	<b>7.70</b>	<b>12.80</b>	<b>16.00</b>
<b>B-ZOFC-06</b>	3/8"	<b>3.80</b>	<b>6.35</b>	<b>10.55</b>	<b>17.60</b>	<b>22.00</b>
<b>B-ZOFC-08</b>	1/2"	<b>5.60</b>	<b>9.30</b>	<b>15.50</b>	<b>25.80</b>	<b>32.30</b>

Continued →

## COPPER — Rod (cont.)

### ROD — C101, Oxygen-Free ASTM B187 (cont.)

Part No.	Diameter	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZOFC-10</b>	5/8"	9.15	15.25	25.45	42.40	53.00
<b>B-ZOFC-12</b>	3/4"	12.40	20.65	34.45	57.40	71.75
<b>B-ZOFC-14</b>	7/8	13.85	23.05	38.40	64.00	80.00
<b>B-ZOFC-16</b>	1"	16.60	27.65	46.10	76.80	96.00

### ROD — C110 ASTM-B187

Order Example: **B-ZRC-2-12** is 1/8" dia. × 12"

Part No.	Diameter	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZRC-2</b>	1/8"	—	—	1.35	2.50	3.05
<b>B-ZRC-3</b>	3/16"	—	—	1.55	2.75	3.60
<b>B-ZRC-4</b>	1/4"	—	1.40	2.55	4.60	6.25
<b>B-ZRC-5</b>	5/16"	—	1.95	3.50	6.35	8.65
<b>B-ZRC-6</b>	3/8"	1.65	2.95	5.35	9.75	13.30
<b>B-ZRC-8</b>	1/2"	2.55	4.65	8.50	15.40	21.00
<b>B-ZRC-10</b>	5/8"	3.90	7.05	12.85	23.35	31.85
<b>B-ZRC-12</b>	3/4"	5.05	9.25	16.75	30.45	41.55
<b>B-ZRC-14</b>	7/8	7.45	13.50	24.50	44.50	60.75
<b>B-ZRC-16</b>	1"	8.40	15.25	27.75	50.50	68.90

## COPPER — Bar



### SQUARE — C110 ASTM-B187

Part No.	Dimensions	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZSC-4</b>	1/4"	1.55	2.60	4.30	7.30	8.95
<b>B-ZSC-6</b>	3/8"	3.60	5.95	9.95	16.60	20.75
<b>B-ZSC-8</b>	1/2"	5.10	8.60	14.05	23.85	29.25

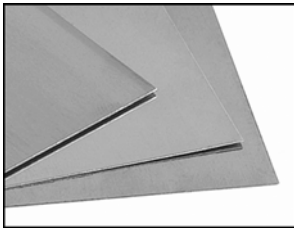


### RECTANGULAR — C110 ASTM-B187

Part No.	Dimensions	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZRTC-2/8</b>	1/8" × 1/2"	1.65	2.75	4.55	7.60	9.50
<b>B-ZRTC-2/16</b>	1/8" × 1"	2.40	3.95	6.65	11.00	13.75
<b>B-ZRTC-2/32</b>	1/8" × 2"	4.50	7.50	12.50	20.90	26.15
<b>B-ZRTC-3/8</b>	3/16" × 1/2"	2.10	3.45	5.75	9.60	12.00
<b>B-ZRTC-3/16</b>	3/16" × 1"	4.95	8.19	13.65	22.75	28.50
<b>B-ZRTC-3/32</b>	3/16" × 2"	8.50	14.10	23.50	39.25	49.05
<b>B-ZRTC-4/8</b>	1/4" × 1/2"	1.80	3.35	6.50	12.30	17.95
<b>B-ZRTC-4/16</b>	1/4" × 1"	4.40	7.35	12.20	20.35	25.40
<b>B-ZRTC-4/32</b>	1/4" × 2"	9.65	16.05	26.75	44.60	55.75
<b>B-ZRTC-4/64</b>	1/4" × 4"	7.90	15.70	29.95	57.25	81.80



## COPPER — Sheet



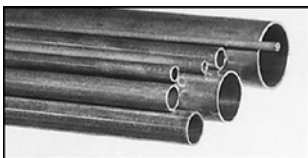
### SHEET\* — C110 ASTM-B152

Order Example: **B-SMC-187-C** is 3/16" × 6" × 12"

Part No.	Nominal Thickness	Price				
		-A 3" × 6"	-B 3" × 12"	-C 6" × 12"	-D 12" × 12"	-E 12" × 24"
<b>B-SMC-021</b>	0.021"	<b>1.90</b>	<b>3.45</b>	<b>6.30</b>	<b>11.45</b>	<b>19.10</b>
<b>B-SMC-032</b>	1/32"	<b>3.35</b>	<b>6.10</b>	<b>11.10</b>	<b>20.45</b>	<b>36.75</b>
<b>B-SMC-065</b>	1/16"	<b>6.50</b>	<b>11.80</b>	<b>21.45</b>	<b>39.50</b>	<b>70.95</b>
<b>B-SMC-093</b>	3/32"	<b>8.95</b>	<b>16.25</b>	<b>29.50</b>	<b>53.60</b>	<b>97.45</b>
<b>B-SMC-125</b>	1/8"	<b>9.10</b>	<b>16.50</b>	<b>30.10</b>	<b>54.70</b>	<b>99.45</b>
<b>B-SMC-187</b>	3/16"	<b>15.15</b>	<b>27.50</b>	<b>50.15</b>	<b>92.15</b>	<b>165.70</b>
<b>B-SMC-250</b>	1/4"	<b>20.05</b>	<b>36.40</b>	<b>66.20</b>	<b>121.55</b>	<b>218.75</b>

\*Nominal sizes. Length and Width dimensions may be reduced by up to 1/8", due to kerf (cutting) loss. If exact dimensions are critical to your project, please **call Purchasing Services — 1-888-455-9712**.

## COPPER — Tubing



### SEAMLESS, HARD

This C122 Copper Tubing is cold drawn and work hardened. Easily brazed or plated, this hard tubing provides the heat transfer and corrosion resistant qualities often required in model work. Additional annealing may be required for bending or shaping. Chemical composition: copper-99.9% minimum.

### ROUND — C122 Seamless, Hard ASTM-B75

Order Example: **B-HTC-16-12** is 1" O.D. × 12"

Part No.	Outside Diameter	Nominal Wall	Price			
			-6 6"	-12 12"	-24 24"	-36 36"
<b>B-HTC-2</b>	1/8"	0.035"	—	<b>1.40</b>	<b>2.35</b>	<b>2.90</b>
<b>B-HTC-3</b>	3/16"	0.035"	—	<b>1.85</b>	<b>3.05</b>	<b>3.85</b>
<b>B-HTC-4</b>	1/4"	0.035"	<b>1.40</b>	<b>2.30</b>	<b>3.90</b>	<b>4.80</b>
<b>B-HTC-5</b>	5/16"	0.035"	<b>2.25</b>	<b>3.75</b>	<b>5.45</b>	<b>6.80</b>
<b>B-HTC-6</b>	3/8"	0.035"	<b>2.00</b>	<b>3.35</b>	<b>5.55</b>	<b>6.95</b>
<b>B-HTC-8</b>	1/2"	0.035"	<b>3.35</b>	<b>5.60</b>	<b>9.20</b>	<b>11.50</b>
<b>B-HTC-12</b>	3/4"	0.035"	<b>4.60</b>	<b>7.65</b>	<b>12.20</b>	<b>15.25</b>
<b>B-HTC-16</b>	1"	0.065"	<b>8.65</b>	<b>14.40</b>	<b>24.00</b>	<b>30.00</b>
<b>B-HTC-24</b>	1-1/2"	0.065"	<b>19.80</b>	<b>32.95</b>	<b>54.90</b>	<b>68.65</b>

## COPPER — Telescoping Tubing

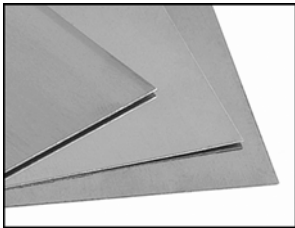


### ROUND — C122 Seamless, Half Hard ASTM-B75

Order Example: **B-TTRC-3-36-06** is 1/8" O.D. × 36", Pkg. of 6

Part No.	Outside Diameter	Nominal Wall	Pkg. of 1 -01	Length 12"		Price Per Package		
				Pkg. of 3 -03	Pkg. of 6 -06	Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06
<b>B-TTRC-1</b>	1/16"	0.014"	—	<b>1.95</b>	<b>3.40</b>	<b>1.95</b>	<b>5.60</b>	<b>10.20</b>
<b>B-TTRC-2</b>	3/32"	0.014"	—	<b>2.35</b>	<b>4.05</b>	<b>2.35</b>	<b>6.70</b>	<b>12.15</b>
<b>B-TTRC-3</b>	1/8"	0.014"	—	<b>2.75</b>	<b>4.75</b>	<b>2.75</b>	<b>7.80</b>	<b>14.20</b>
<b>B-TTRC-4</b>	5/32"	0.014"	—	<b>2.75</b>	<b>4.75</b>	<b>2.75</b>	<b>7.80</b>	<b>14.20</b>

## COPPER, BERYLLIUM — Sheets



With greater tensile strength and hardness than other copper alloys, half hard temper Beryllium Copper C172 has good electrical and thermal conductivity, is quite ductile, and resists both fatigue and relaxation under stress. Atmospheric performance is good, and it resists corrosion even in contact with seawater or under other high-salt conditions. With a melting point of 1800°F (980°C), it endures elevated temperatures well. Extended exposure to high temperature should be limited to a maximum of 400°F (240°C).

We supply Beryllium Copper Sheets in nominal 8" widths. Good material for providing electrical contacts, or for custom fabrication purposes.

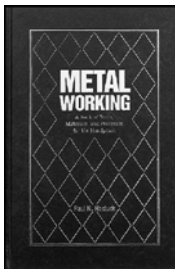
**NOTE:** Processing of Beryllium Copper C172 by dust or fume producing operation (grinding, buffing, heating, welding, etc.) may result in potential for exposure to airborne metal particulates or fumes.

### BERYLLIUM COPPER — C172 ASTM-B196 Order Example: **B-BCS-010H-12** is 0.010" × 8" × 12"

Part No.	Thickness	Nominal Width	Price Each	
			-6 6"	-12 12"
<b>B-BCS-005H</b>	0.005"	8"	<b>11.60</b>	<b>19.30</b>
<b>B-BCS-006H</b>	0.006"	8"	<b>13.65</b>	<b>22.75</b>
<b>B-BCS-010H</b>	0.010"	8"	<b>19.20</b>	<b>31.95</b>
<b>B-BCS-016H</b>	0.016"	8"	<b>27.90</b>	<b>46.50</b>

## METAL WORKING

### Tools, Material, and Processes



This 1907 edition of Metalworking covers almost anything you would want to do to a chunk of metal! Topics include everything from foundry work to surfacing and polishing metals, with lots of information about tools; machining; materials; equipment; metal treatments and processing; making jewelry; building furnaces, engines and boilers; and even making your own microscope! Very thorough, with 2,206 illustrations. Written by Paul Hasluck, 760 pages.

**B-REF-MET** ..... **29.95**

# IRON

Cast Iron is a somewhat generic term that represents a large group of cast ferrous metals, distinguished by a much higher carbon content than that found in the steel family. Primarily iron alloyed with carbon (usually in the 2-5% range), Cast Iron contains Silicon as another critical alloying element, usually from 1 to 3%. Low cost, and with a wide range of properties, Cast Irons have excellent casting characteristics, a lower melting point than steel, and are commercially produced in six basic types: grey, white, ductile, malleable, compacted graphite, and high alloy. Density is .25 lbs/in<sup>3</sup>.

This high quality product has been "continuous cast" and offers superior and consistent density and hardness. Good machinability. We can supply cast iron with almost any specifications you require. **Call Purchasing Services — 1-888-455-9712.**

## IRON, CAST — Rod



### ROUND — Class 40, Grey ASTM-A48

Part No.	Diameter	Pounds Per Inch	Price		
			-3 3"	-6 6"	-12 12"
B-ZRCI-16	1"	.25	2.95	5.65	9.50
B-ZRCI-20	1-1/4"	.38	4.25	8.10	13.55
B-ZRCI-24	1-1/2"	.53	5.75	10.95	18.35
B-ZRCI-32	2"	.90	8.50	16.75	28.50
B-ZRCI-48	3"	2.01	22.75	43.00	75.75
B-ZRCI-64	4"	3.54	28.95	55.00	97.25
B-ZRCI-80	5"	5.50	43.75	84.00	151.50
B-ZRCI-96	6"	7.89	62.50	119.50	213.00

## IRON, CAST — Bar



### SQUARE — Class 40, Grey ASTM-A48

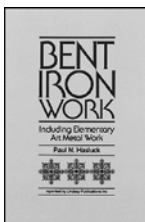
Part No.	Dimensions	Pounds Per Inch	Price		
			-3 3"	-6 6"	-12 12"
B-ZSCI-20	1-1/4"	.42	7.50	14.95	25.70
B-ZSCI-48	3"	2.35	25.50	49.95	87.50

### BENT IRON WORK

#### *Including Elementary Art Metal Work*

Learn the "light blacksmithing" art of bending and working strap iron. No heat needed for these projects, just an anvil, hammers, pliers and other sturdy tools. First published in 1903, this handbook uses 269 illustrations and clear language to show you how to create everything from simple ornaments and framework to elaborate floor lamps, screens and grills. Soft cover, 160 pages by Paul N. Hasluck.

**B-REF-BFE** ..... **9.95**



## LEAD

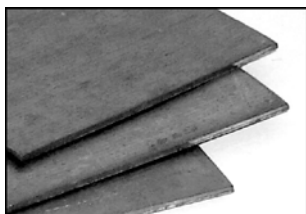
Soft, malleable and ductile, this bluish-gray metallic element is very dense, with a density rating of .409 lbs./in<sup>3</sup>. Surprisingly, however, only a small percentage of its applications are based primarily on its density. Its melting point is quite low at 621°F (327°C); it is useful for generating electric current in electrochemical applications; and it can be readily and inexpensively fabricated into many useful forms.

Besides its use in containers and pipes for corrosives, common applications include use in soldering materials, radiation shielding and paint.

### LEAD WARNING

*Lead is toxic and poses a health hazard. Inhalation of dust and fumes should be avoided. Lead should not be used in contact with food or drink products. This product contains a chemical known in the State of California to cause cancer and birth defects (or other reproductive harm).*

## LEAD — Sheets and Bricks



This material is widely used for protective shielding in electronic equipment. It shields X-Rays and other electrical frequencies, both high and low. With its density of .409 lbs./in<sup>3</sup>, pure Lead also has exceptional acoustical deadening qualities. This material is Class QQL—Grade B X-Ray quality which is 99% pure. Melting range is 620° to 625°F (326° to 329°C).

### LEAD SHEETS\*

Part No.	Nominal Thickness	Weight Sq. Ft.	-A 3" × 6"	Price -C 6" × 12"	-D 12" × 12"	Per Linear Foot × 12" Over 1 Feet*
<b>B-LXR-40</b>	0.040"	2-1/2 lbs.	<b>2.65</b>	<b>8.75</b>	<b>14.65</b>	<b>13.20</b>
<b>B-LXR-62</b>	0.062"	4 lbs.	<b>4.60</b>	<b>15.25</b>	<b>25.50</b>	<b>22.95</b>

\*Exhibits slight curvature.

### LEAD BRICKS

Use Lead Bricks as ballast, counterweights, and for radiation shielding to protect personnel and equipment. Bricks may be stacked to match shield thickness to specific requirements. Place bricks around containers, tanks and any source of dangerous radiation. Weight: 27 lbs. each. Shipped FOB Miami Lakes, FL.

**B-LXBR-8** Lead Brick 2" × 4" × 8" ..... **32.10**

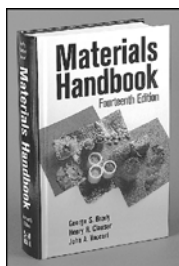
## MATERIALS HANDBOOK

***A comprehensive resource for almost every type of known material***

"Brady's" one-volume encyclopedia contains over 13,000 concise entries, describing the primary characteristics of chemicals, metals, minerals, fuels, plastics, textiles, finishes, woods, pharmaceuticals, elastomers, ceramics, coatings, composites, industrial substances, foodstuffs, plant and animal products — almost anything that derives from natural elements. Descriptions include properties, production methods, applications and commercial designations, detailed in language that is scientifically specific, but easily understood by almost any reader. Alphabetically organized and thoroughly indexed.

A favorite at Small Parts, this valuable reference is recommended for engineers, executives, purchasing and manufacturing managers, production supervisors, and students — anyone requiring a comprehensive resource with reliable, up-to-date information. Fourteenth Edition, 1997. George S. Brady, Henry R. Clauser, John A. Vaccari. Published by McGraw-Hill. Hard cover, 1136 pages.

**B-BCK-MH** ..... **89.50**



# STAINLESS STEEL

A large and widely used family of Iron-Chromium alloys. Stainless Steels are alloys of iron and carbon that contain between 12% and 30% Cr, plus other alloying elements. The chromium, which helps develop a passive surface oxide film, provides corrosion resistance in stainless steels. Stainless steels are wrought or cast and consist of several families that are named for their metallurgical structure. Stainless steels are fabricated and welded by all common processes and are used for their corrosion resistance, high-temperature strength, scaling resistance, and low-temperature toughness. These properties account for their extremely wide use in practically every industry. Density is .29 lbs./in<sup>3</sup> for 300 Series

Most stainless steel products in this catalog are of Type 300 series. Formability is unusually good, and cold working results in increased strength. These alloys are non-magnetic in the annealed condition, although some may become slightly magnetic after cold working. They can be hardened only by cold working, and not by heat treatment. Stainless Steel 18-8 denotes 18% chromium and 8% nickel. This generic designation Stainless Steel 18-8 includes **Types 301, 302, 303, 304, and 305.**

**TYPE 301** — This type is considered part of the 18-8 series with lower nickel content. Work hardening (or strain hardening) will strengthen the material and make it slightly magnetic. Type 301 is the most work hardenable of the low nickel austenitic stainless steels and is used extensively in sheet form for structural applications.

**TYPE 302** — Considered to be the general purpose alloy of the 300 Series of Stainless Steels. Work hardening also induces slight magnetism. This 18-8 alloy is the bench mark from which the rest of the 300 series is derived. Slight additions or deletions of elements such as carbon, nitrogen, molybdenum and sulphur determine their machinability, weldability, physical properties and end use attributes. These low nickel alloys are an important group of metals used in cryogenic applications because of their toughness at extremely low temperature.

**TYPE 303** — A free-machining alloy with a sulphur content that enhances its machinability. Typical applications include bolts, bushings, nuts, shafts, and parts produced on automatic screw machines. Good corrosion resistance in atmospheric and chemical exposures.

**TYPE 304** — The most widely used austenitic stainless, this low carbon alloy is a good choice when exposure to fluctuating atmospheric conditions, electrical fields, chemicals, and other corrosives are of concern. A general purpose Stainless Steel, it is used extensively for storage of liquified gases, in hospital, laboratory and food processing equipment, and for transportation and waste-water treatment applications.

**TYPE 316** — A slightly higher nickel and molybdenum content produces superior corrosion resistance. Welding characteristics are very good. Widely used in marine environments and in applications that require exposure to acetic acid compounds, and other chemical corrodents.

**TYPE 316L** — Low carbon version of 316 series for welding applications.

**TYPE 440C** — This high-carbon chromium steel can be heat-treated to the highest hardness of any of the corrosion resistant stainless steels, and performs well against wear and abrasion. Primarily used for tooling, bearings, bushings, valve parts, and other components, its high hardening properties are also valued in the cutlery industry. Moderately magnetic.

**TYPE PH 17-7** - Semi austenitic precipitation hardening stainless steel is similar in composition to the standard 18-8 variety but has lower nickel content. This material exhibits good corrosion resistance and excellent fatigue properties, retaining its load bearing ability with little or no relaxation up to 850°F ( 454°C).

**TYPE PH 15-7** - Semi austenitic precipitation hardening stainless steel that provides high strength and hardness, good corrosion resistance and minimum distortion during heat treatment. It is easily formed in the annealed condition and is ideal for retaining rings and springs.

## PROPERTIES

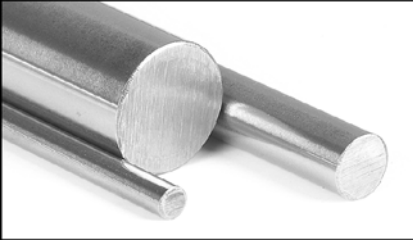
PROPERTY TESTED	TEST UNITS	302	303	304	316	316L	440C
Density	lb/in <sup>3</sup>	0.29	0.29	0.29	0.29	0.29	0.28
Tensile Strength-Ultimate	ksi*	90	90	85	85	85	110
Tensile Strength-Yield	ksi	40	35	35	35	35	65
Elongation	% in 2in	55	50	55	60	60	30
Brinell Hardness	-	150	160	150	150	150	58-62**
Machinability	Bessemer Screw Stock B1112	40%	70%	45%	45%	45%	40%

\* kips per square inch = 1000s of pounds per square inch.

\*\* Rockwell C

**Note:** Typical Values "Not For Design Purposes"

## STAINLESS STEEL — Rod, Precision Centerless Ground



### STAINLESS STEEL TYPE 303

#### *Tight Tolerance — Superior Finish*

Precision Centerless Ground Bar is highly-finished Stainless Steel Type 303, finely ground to the tightest tolerance.

Sold in convenient lengths.

### PRECISION CENTERLESS GROUND ROD — Type 303 ASTM-A582

Diameter tolerance: +0.0000", -0.0005".

Order Example: **B-CGSX-4-12** is 1/4" dia × 12"

Part No.	Shaft Diameter	Price per Length			
		-6 6"	-12 12"	-24 24"	-36 36"
<b>B-CGSX-1</b>	1/16"	<b>1.25</b>	<b>1.95</b>	<b>3.25</b>	<b>4.10</b>
<b>B-CGSX-1-1/2</b>	3/32"	<b>1.40</b>	<b>2.30</b>	<b>3.85</b>	<b>4.80</b>
<b>B-CGSX-2</b>	1/8"	<b>1.90</b>	<b>3.20</b>	<b>5.30</b>	<b>6.60</b>
<b>B-CGSX-2-1/2</b>	5/32"	<b>2.20</b>	<b>3.60</b>	<b>6.00</b>	<b>7.50</b>
<b>B-CGSX-3</b>	3/16"	<b>2.45</b>	<b>4.05</b>	<b>6.75</b>	<b>8.45</b>
<b>B-CGSX-3-1/2</b>	7/32"	<b>2.95</b>	<b>4.90</b>	<b>8.15</b>	<b>10.15</b>
<b>B-CGSX-4</b>	1/4"	<b>3.40</b>	<b>5.70</b>	<b>9.50</b>	<b>11.85</b>
<b>B-CGSX-5</b>	5/16"	<b>4.40</b>	<b>7.30</b>	<b>12.20</b>	<b>15.25</b>
<b>B-CGSX-6</b>	3/8"	<b>6.20</b>	<b>10.35</b>	<b>17.30</b>	<b>21.60</b>
<b>B-CGSX-8</b>	1/2"	<b>11.30</b>	<b>18.85</b>	<b>31.40</b>	<b>39.25</b>
<b>B-CGSX-10</b>	5/8"	<b>14.15</b>	<b>23.55</b>	<b>39.30</b>	<b>49.10</b>
<b>B-CGSX-12</b>	3/4"	<b>18.25</b>	<b>30.45</b>	<b>50.70</b>	<b>63.40</b>
<b>B-CGSX-16</b>	1"	<b>27.75</b>	<b>46.25</b>	<b>77.10</b>	<b>96.35</b>

### METRIC

### PRECISION CENTERLESS GROUND ROD — Type 303

Diameter tolerance: +0.0000 mm, -0.0127 mm.

Order Example: **B-MCGSX-04-12** is 4mm dia. × 12"

Part No.	Shaft Diameter	Price per Length			
		-6 6"	-12 12"	-24 24"	-36 36"
<b>B-MCGSX-04</b>	4 mm	<b>2.90</b>	<b>4.80</b>	<b>7.95</b>	<b>9.95</b>
<b>B-MCGSX-05</b>	5 mm	<b>3.70</b>	<b>6.15</b>	<b>10.25</b>	<b>12.85</b>
<b>B-MCGSX-06</b>	6 mm	<b>4.55</b>	<b>7.55</b>	<b>12.55</b>	<b>15.70</b>
<b>B-MCGSX-07</b>	7 mm	<b>4.65</b>	<b>7.75</b>	<b>12.90</b>	<b>16.10</b>
<b>B-MCGSX-08</b>	8 mm	<b>5.95</b>	<b>9.95</b>	<b>16.65</b>	<b>20.80</b>
<b>B-MCGSX-10</b>	10 mm	<b>7.95</b>	<b>13.25</b>	<b>22.10</b>	<b>27.60</b>
<b>B-MCGSX-12</b>	12 mm	<b>10.10</b>	<b>16.80</b>	<b>28.00</b>	<b>35.00</b>

**We can cut Precision Centerless Ground Rod to your specification.  
Call Purchasing Services — 1-888-455-9712.**

## STAINLESS STEEL — Rod



### ROD — Type 303 ASTM-A582 — Mill Finish

Order Example: **B-ZRX-3-24** is 3/16" dia × 24"

Part No.	Diameter	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
B-ZRX-1	1/16"	—	—	1.35	2.30	2.70
B-ZRX-1-1/2	3/32"	—	—	1.45	2.45	3.05
B-ZRX-2	1/8"	—	—	1.40	2.35	2.95
B-ZRX-2-1/2	5/32"	—	1.15	1.85	3.10	3.85
B-ZRX-3	3/16"	—	1.35	2.25	3.75	4.65
B-ZRX-3-1/2	7/32"	—	1.45	2.45	4.10	5.10
B-ZRX-4	1/4"	—	1.65	2.75	4.60	5.75
B-ZRX-5	5/16"	—	2.60	4.30	7.20	8.95
B-ZRX-6	3/8"	1.85	3.15	5.25	8.60	10.75
B-ZRX-8	1/2"	2.25	3.75	6.25	10.40	12.95
B-ZRX-10	5/8"	4.25	6.95	11.65	19.40	24.25
B-ZRX-12	3/4"	5.25	8.75	14.65	24.35	30.45
B-ZRX-14	7/8"	6.30	10.50	17.50	29.20	36.45
B-ZRX-16	1"	9.05	15.15	25.25	41.95	52.50
B-ZRX-24	1-1/2"	11.55	23.05	36.85	—	—
B-ZRX-32	2"	20.50	41.00	65.55	—	—
B-ZRX-48	3"	47.70	95.35	152.50	—	—

### ROD — Type 316 ASTM-A276

Order Example: **B-ZRXX-3-24** is 3/16" × 24"

Part No.	Diameter	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
B-ZRXX-1	1/16"	—	1.15	1.95	3.20	4.00
B-ZRXX-1-1/2	3/32"	—	1.25	2.05	3.60	4.50
B-ZRXX-2	1/8"	—	1.10	1.80	3.00	3.75
B-ZRXX-3	3/16"	—	1.30	1.60	3.50	4.00
B-ZRXX-4	1/4"	—	1.70	1.95	3.85	5.25
B-ZRXX-5	5/16"	—	2.25	2.95	5.30	7.10
B-ZRXX-6	3/8"	2.20	3.35	5.20	9.30	12.30
B-ZRXX-8	1/2"	3.40	5.25	8.10	14.55	19.65
B-ZRXX-12	3/4"	5.45	8.95	14.95	26.95	37.00
B-ZRXX-14	7/8"	6.95	11.50	19.10	34.50	47.50
B-ZRXX-16	1"	9.10	15.10	25.20	45.20	62.90
B-ZRXX-24	1-1/2"	16.00	26.70	42.75	—	—
B-ZRXX-32	2"	28.50	47.50	75.95	—	—

If exact dimensions are critical to your project,  
please call Purchasing Services — 1-888-455-9712.

## STAINLESS STEEL — Rod (cont.)



### ROD — Type 440C, High Hardening ASTM-A276

Order Example: B-ZR4X-16-24 is 1" × 24"

Part No.	Diameter	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
B-ZR4X-04	1/4"	1.25	1.85	3.05	5.10	6.30
B-ZR4X-08	1/2"	3.05	5.10	8.50	14.25	17.75
B-ZR4X-16	1"	9.00	14.95	14.95	42.50	52.00

## STAINLESS STEEL — Bar



### SQUARE — Type 303 ASTM-A582

Order Example: B-ZSX-5-24 is 5/16" × 24"

Part No.	Dimensions	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
B-ZSX-2	1/8"	—	1.45	2.40	4.00	5.00
B-ZSX-3	3/16"	1.25	2.05	3.40	5.60	7.00
B-ZSX-4	1/4"	2.20	3.60	6.00	10.00	12.50
B-ZSX-5	5/16"	2.85	4.75	7.95	13.20	16.50
B-ZSX-6	3/8"	3.10	5.20	8.60	14.40	18.00
B-ZSX-8	1/2"	5.75	9.50	15.95	26.60	33.25
B-ZSX-10	5/8"	7.55	12.60	21.00	35.05	43.80
B-ZSX-12	3/4"	9.20	15.30	25.50	42.50	53.10
B-ZSX-16	1"	15.85	16.50	44.05	76.50	91.80

### SQUARE — Type 316 ASTM-A276

Order Example: B-ZSXX-8-24 is 1/2" × 24"

Part No.	Dimensions	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
B-ZSXX-2	1/8"	—	2.00	3.35	5.60	7.00
B-ZSXX-4	1/4"	2.40	4.05	6.75	11.20	13.95
B-ZSXX-6	3/8"	3.50	6.75	11.25	19.95	25.75
B-ZSXX-8	1/2"	6.50	10.80	18.00	30.00	37.50
B-ZSXX-12	3/4"	6.95	13.40	24.35	43.20	62.60
B-ZSXX-16	1"	21.95	36.65	61.10	101.80	127.25

Additional sizes available by Special Order.  
Call Purchasing Services — 1-888-455-9712.



## STAINLESS STEEL — Bar



### RECTANGULAR — Type 303 ASTM-A582-88

Order Example: **B-ZRTX-4/8-12** is 1/4" × 1/2" × 12"

Part No.	Dimensions	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZRTX-2/4</b>	1/8" × 1/4"	<b>2.25</b>	<b>4.20</b>	<b>7.85</b>	<b>13.40</b>	<b>16.75</b>
<b>B-ZRTX-2/6</b>	1/8" × 3/8"	<b>3.30</b>	<b>6.20</b>	<b>11.55</b>	<b>19.80</b>	<b>24.75</b>
<b>B-ZRTX-2/8</b>	1/8" × 1/2"	<b>4.40</b>	<b>8.25</b>	<b>15.40</b>	<b>26.40</b>	<b>33.00</b>
<b>B-ZRTX-2/16</b>	1/8" × 1"	<b>5.25</b>	<b>9.60</b>	<b>18.45</b>	<b>31.35</b>	<b>41.80</b>
<b>B-ZRTX-4/8</b>	1/4" × 1/2"	<b>7.00</b>	<b>13.10</b>	<b>24.40</b>	<b>41.85</b>	<b>52.30</b>
<b>B-ZRTX-4/12</b>	1/4" × 3/4"	<b>10.05</b>	<b>18.85</b>	<b>35.10</b>	<b>60.20</b>	<b>75.25</b>
<b>B-ZRTX4/16</b>	1/4" × 1"	<b>11.15</b>	<b>20.90</b>	<b>38.95</b>	<b>66.80</b>	<b>83.50</b>
<b>B-ZRTX-4/32</b>	1/4" × 2"	<b>18.90</b>	<b>34.60</b>	<b>66.70</b>	<b>113.25</b>	<b>151.00</b>
<b>B-ZRTX-6/8</b>	3/8" × 1/2"	<b>7.55</b>	<b>13.80</b>	<b>26.55</b>	<b>45.10</b>	<b>60.15</b>
<b>B-ZRTX-6/12</b>	3/8" × 3/4"	<b>11.80</b>	<b>22.05</b>	<b>41.65</b>	<b>70.55</b>	<b>88.20</b>
<b>B-ZRTX-6/16</b>	3/8" × 1"	<b>15.60</b>	<b>29.20</b>	<b>54.55</b>	<b>93.45</b>	<b>116.80</b>
<b>B-ZRTX-6/24</b>	3/8" × 1-1/2"	<b>15.95</b>	<b>23.95</b>	<b>55.90</b>	<b>95.80</b>	<b>119.75</b>
<b>B-ZRTX-6/32</b>	3/8" × 2"	<b>26.80</b>	<b>49.15</b>	<b>94.70</b>	<b>160.75</b>	<b>214.35</b>
<b>B-ZRTX-8/16</b>	1/2" × 1"	<b>15.40</b>	<b>28.90</b>	<b>53.95</b>	<b>92.45</b>	<b>115.60</b>
<b>B-ZRTX-8/24</b>	1/2" × 1-1/2"	<b>24.20</b>	<b>45.40</b>	<b>84.70</b>	<b>145.25</b>	<b>181.50</b>
<b>B-ZRTX-8/32</b>	1/2" × 2"	<b>28.70</b>	<b>53.80</b>	<b>100.35</b>	<b>171.70</b>	<b>215.05</b>

### RECTANGULAR — Type 440C, High Hardening ASTM-A276

Part No.	Dimensions	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZRT4X-06/16</b>	3/8" × 1"	<b>9.25</b>	<b>15.50</b>	<b>25.80</b>	<b>43.00</b>	<b>53.75</b>
<b>B-ZRT4X-08/16</b>	1/2" × 1"	<b>10.75</b>	<b>18.00</b>	<b>30.00</b>	<b>50.00</b>	<b>62.55</b>
<b>B-ZRT4X-08/32</b>	1/2" × 2"	<b>18.75</b>	<b>31.25</b>	<b>52.00</b>	<b>86.75</b>	<b>108.40</b>
<b>B-ZRT4X-12/24</b>	3/4" × 1-1/2"	<b>20.75</b>	<b>34.50</b>	<b>57.50</b>	<b>95.90</b>	<b>119.90</b>



### HEXAGONAL — Type 303 ASTM-A582/A473

Order Example: **B-ZHX-3-12** is 3/16" × 12"

Part No.	Dimensions	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZHX-2</b>	1/8"	—	<b>1.45</b>	<b>2.40</b>	<b>4.00</b>	<b>5.00</b>
<b>B-ZHX-3</b>	3/16"	—	<b>2.30</b>	<b>3.85</b>	<b>6.40</b>	<b>8.00</b>
<b>B-ZHX-4</b>	1/4"	<b>1.55</b>	<b>2.60</b>	<b>4.30</b>	<b>7.20</b>	<b>9.00</b>
<b>B-ZHX-5</b>	5/16"	<b>2.15</b>	<b>3.55</b>	<b>5.95</b>	<b>9.90</b>	<b>12.35</b>
<b>B-ZHX-6</b>	3/8"	<b>2.50</b>	<b>4.15</b>	<b>6.95</b>	<b>11.55</b>	<b>14.45</b>
<b>B-ZHX-8</b>	1/2"	<b>4.55</b>	<b>7.55</b>	<b>12.60</b>	<b>21.00</b>	<b>26.25</b>
<b>B-ZHX-10</b>	5/8"	<b>5.50</b>	<b>9.20</b>	<b>15.35</b>	<b>25.55</b>	<b>31.95</b>
<b>B-ZHX-12</b>	3/4"	<b>8.45</b>	<b>14.10</b>	<b>23.45</b>	<b>39.10</b>	<b>48.90</b>
<b>B-ZHX-16</b>	1"	<b>14.85</b>	<b>24.70</b>	<b>41.20</b>	<b>68.65</b>	<b>85.80</b>

## STAINLESS STEEL — Bar (cont.)



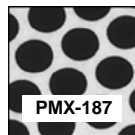
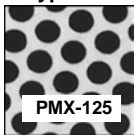
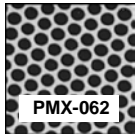
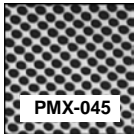
### HEXAGONAL — Type 316 ASTM-A276

Order Example: **B-ZHXX-8-12** is 1/2" × 12"

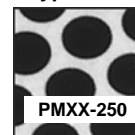
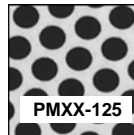
Part No.	Dimension Across Flats	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZHXX-4</b>	1/4"	<b>1.75</b>	<b>2.95</b>	<b>4.90</b>	<b>8.15</b>	<b>10.15</b>
<b>B-ZHXX-6</b>	3/8"	<b>3.75</b>	<b>6.25</b>	<b>10.45</b>	<b>17.40</b>	<b>21.75</b>
<b>B-ZHXX-8</b>	1/2"	<b>6.70</b>	<b>11.15</b>	<b>18.55</b>	<b>30.95</b>	<b>38.65</b>
<b>B-ZHXX-12</b>	3/4"	<b>13.50</b>	<b>22.35</b>	<b>37.20</b>	<b>62.00</b>	<b>77.50</b>
<b>B-ZHXX-16</b>	1"	<b>24.25</b>	<b>40.35</b>	<b>67.25</b>	<b>112.15</b>	<b>140.15</b>

## STAINLESS STEEL — Perforated Metal

### Stainless Steel Type 304



### Stainless Steel Type 316



Images illustrate perforation patterns, not precise sizes.

As a screening medium, Perforated Metal has many advantages... Its holes are accurate and uniform in size, shape and spacing...Its surface is smooth, firm, easily cleaned and sterilized.

In general use, perforated Stainless Steel is not only decorative, but is strong and corrosion resistant for shielding, ventilating and acoustical work of many kinds. Stainless Steel Type 304 requires very little maintenance.

Supplied 12" wide in one and two foot lengths. Larger sizes are available. For a quotation **call Purchasing Services — 1-888-455-9712.**

### STAINLESS STEEL TYPE 304

Order Example: **B-PMX-045-A** is a 12" × 12" piece

Part No.	Description	Holes Per Sq. In.	Thickness	Open Area %	Gauge	Price	
						-A 12" x 12"	-B 12" x 24"
<b>B-PMX-045</b>	0.045" Round Perforations on 0.066" Straight Center	225	0.0187"	36	26	<b>25.45</b>	<b>42.40</b>
<b>B-PMX-062</b>	1/16" Round Perforations on 3/32" Staggered Centers	132	0.0312"	41	22	<b>30.25</b>	<b>50.40</b>
<b>B-PMX-125</b>	1/8" Round Perforations on 3/16" Staggered Centers	33	0.0312"	40	22	<b>30.40</b>	<b>50.60</b>
<b>B-PMX-187</b>	3/16" Round Perforations on 1/4" Staggered Centers	18	0.0312"	50	22	<b>29.50</b>	<b>49.25</b>

### STAINLESS STEEL TYPE 316

Part No.	Description	Holes Per Sq. In.	Thickness	Open Area %	Gauge	Price	
						-A 12" x 12"	-B 12" x 24"
<b>B-PMXX-125</b>	1/8" Round Perforations on 3/16" Staggered Centers	33	0.0781"	40	14	<b>72.45</b>	<b>115.95</b>
<b>B-PMXX-250</b>	1/4" Round Perforations on 3/8" Staggered Centers	8	0.0781"	42	14	<b>67.50</b>	<b>107.85</b>

## STAINLESS STEEL — Tubing



### STAINLESS STEEL TYPE 304 — Annealed

A general purpose tubing with industrial finish.

### ROUND TUBING — Annealed, Seamless

### SQUARE TUBING — Annealed, Welded

#### ROUND — Annealed, Seamless - ASTM A-269

Order Example: **B-GPTX-22/2-24** is 1/8" O.D. x 24"

Part No.	Nominal Dimensions				Price			
	Outside Diameter		Wall	Tolerance	-6 6"	-12 12"	-24 24"	-36 36"
	Size	Tolerance	Thickness					
<b>B-GPTX-22/2</b>	1/8"	± .003"	.020"	15%	<b>2.90</b>	<b>4.80</b>	<b>8.00</b>	<b>10.95</b>
<b>B-GPTX-35/3</b>	3/16"	± .004"	.035"	15%	<b>3.75</b>	<b>6.20</b>	<b>9.90</b>	<b>13.50</b>
<b>B-GPTX-35/4</b>	1/4"	± .004"	.035"	15%	<b>4.35</b>	<b>7.20</b>	<b>12.00</b>	<b>14.95</b>
<b>B-GPTX-35/5</b>	5/16"	± .004"	.035"	15%	<b>5.30</b>	<b>8.80</b>	<b>14.05</b>	<b>17.95</b>
<b>B-GPTX-35/6</b>	3/8"	± .004"	.035"	15%	<b>5.40</b>	<b>9.00</b>	<b>14.95</b>	<b>18.65</b>
<b>B-GPTX-35/8</b>	1/2"	± .004"	.035"	15%	<b>5.40</b>	<b>9.00</b>	<b>14.95</b>	<b>18.65</b>
<b>B-GPTX-35/10</b>	5/8"	± .005"	.035"	10%	<b>6.95</b>	<b>11.55</b>	<b>18.50</b>	<b>25.00</b>
<b>B-GPTX-35/12</b>	3/4"	± .005"	.035"	10%	<b>7.05</b>	<b>11.70</b>	<b>18.70</b>	<b>25.25</b>
<b>B-GPTX-49/16</b>	1"	± .005"	.049"	10%	<b>7.40</b>	<b>12.35</b>	<b>19.75</b>	<b>26.65</b>

## METRIC

#### ROUND — Annealed, Seamless

Part No.	O.D.	Nominal Wall Thickness	Price			
			-6 6"	-12 12"	-24 24"	-36 36"
<b>B-MGPTX-02</b>	2.0 mm	0.25 mm	<b>12.00</b>	<b>21.00</b>	<b>36.00</b>	<b>45.00</b>
<b>B-MGPTX-03</b>	3.0 mm	0.50 mm	<b>13.80</b>	<b>24.15</b>	<b>41.40</b>	<b>51.75</b>
<b>B-MGPTX-04</b>	4.0 mm	0.50 mm	<b>9.00</b>	<b>15.75</b>	<b>27.00</b>	<b>33.75</b>
<b>B-MGPTX-06</b>	6.0 mm	1.00 mm	<b>13.20</b>	<b>23.10</b>	<b>39.60</b>	<b>49.50</b>
<b>B-MGPTX-08</b>	8.0 mm	1.00 mm	<b>11.00</b>	<b>19.25</b>	<b>33.00</b>	<b>41.25</b>
<b>B-MGPTX-10</b>	10.0 mm	1.00 mm	<b>13.80</b>	<b>24.15</b>	<b>41.40</b>	<b>51.75</b>
<b>B-MGPTX-12</b>	12.0 mm	1.00 mm	<b>18.00</b>	<b>31.50</b>	<b>54.00</b>	<b>67.50</b>

#### SQUARE — Annealed, Welded

Part No.	Dimensions	Nominal Wall Thickness	Price			
			-6 6"	-12 12"	-24 24"	-36 36"
<b>B-GPSX-62/8</b>	1/2" x 1/2"	1/16"	<b>6.55</b>	<b>10.95</b>	<b>18.20</b>	<b>22.75</b>
<b>B-GPSX-62/12</b>	3/4" x 3/4"	1/16"	<b>6.90</b>	<b>11.55</b>	<b>19.20</b>	<b>24.00</b>
<b>B-GPSX-62/16</b>	1" x 1"	1/16"	<b>8.95</b>	<b>14.90</b>	<b>24.80</b>	<b>31.00</b>

See Tubing Cutters starting on page 391

# STEEL

**CARBON STEEL** — The predominant elements in Carbon Steels are Iron and Carbon, of which Carbon content ranges from a few hundredths to just over 1%. (Low Carbon Steel — up to 0.30%; Medium Carbon Steel — up to 0.70%; High Carbon Steel — up to 1.3%.) Carbon Steel in its various forms represents more than three-quarters of steel production. Carbon Steel is generally fine grain, fully-killed (deoxidized) basic steel with no alloying agent. It may be classified as hot rolled or cold drawn, (cold rolled when referring to sheets) and is produced as bar, sheet, wire, tubing and structural shapes. Density is .28 lbs/in<sup>3</sup>.

**CHROM-MOLY 4130** — Steel Alloy 4130 is a high strength steel with Chromium and Molybdenum. It is specified when strong, lightweight structural integrity is required. Frequently used in the aircraft industry, for race cars, motorcycles, bicycles, and for industrial equipment, this high-strength steel is easily fabricated and has excellent weldability. It can be subjected to mild hardening and nitriding for additional wear and abrasion resistance.

**COLD ROLLED TYPE C1018** — A high quality, low carbon, smooth finished mild steel has good machining characteristics. It is easy to weld, braze and solder, making it a great material for models or prototypes.

**COLD ROLLED TYPE C1008 / C1010** — This is a moderately stiff, half-hard temper cold rolled strip suitable for limited bending. Strips of this temper may be bent in the longitudinal direction. The minimum bending radius is the material thickness. Often used for decorative artwork as in grills, screens and gates. Its round edge gives a fine, finished appearance with no further work.

**SPRING STEEL SAE 1095** — Spring Steel is blue tempered and hardened to meet the most exacting requirements. Carbon content is in the range of 0.90 to 1.05%. Rockwell hardness - C 48/51. This material has the highest elastic limit and fatigue values of commonly used spring steel. Recommended for coiled and flat mechanical springs such as: ignition vibrator springs, springs for timing devices, springs for the electrical and electronic fields, steel tapes and rules.

**TOOL STEEL D2** — Characterized by superior wear and abrasion resistance, air-hardening D-2 Tool Steel has high carbon and chromium content, and is decarburization-free. This tough tool steel can be heat treated to achieve maximum performance. Due to its low sulphur content, it is not free-machining. Used primarily as a die material, it also holds a very sharp edge, giving it wide acceptance for use in cutlery and industrial trimmer blades.

**TOOL STEEL SAE 0-1** — This ground tool steel is an oil hardenable steel alloy recommended for dies, punches, gauges and tools. It should be used where a greater degree of accuracy is desired in hardening. Its precise diameter and smooth finish make it excellent for use as steel shafting. Also referred to as "Silver Steel" in England.

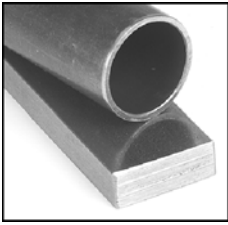
## PROPERTIES

PROPERTY TESTED	TEST UNITS	1018	4130	1095
Density	lb/in <sup>3</sup>	.28	.28	.28
Tensile Strength-Ultimate	ksi*	63	97	160
Tensile Strength-Yield	ksi	53	63	98
Elongation	% in 2in	15	25	14
Brinell Hardness	-	126	197	321
Machinability	1212=100	70	70	—

\*ksi: kips per square inch = 1000s of pounds per square inch.

**Note:** Typical Values "Not For Design Purposes"

## STEEL ALLOY, CHROM-MOLY— Bar and Tubing



### CHROM-MOLY TYPE 4130

#### *Lightweight, High Strength*

Alloy Steel 4130 is a high strength steel with Chromium and Molybdenum. It is specified when strong, lightweight structural integrity is required and is frequently used in the aircraft industry, for race cars, motorcycles, bicycles, and for industrial equipment. This high-strength steel is easily fabricated and has excellent weldability. It can be subjected to mild hardening and nitriding for additional wear and abrasion resistance. Tubing is seamless.

### RECTANGULAR BAR — Type 4130 MIL-S 6758

Order Example **B-ZRCM-0816-3** is 1/2" × 1" × 3"

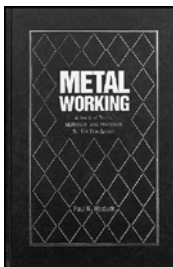
Part No.	Dimensions	Price				
		3"	6"	12"	24"	36"
<b>B-ZRCM-0316</b>	3/16" × 1"	<b>2.40</b>	<b>4.20</b>	<b>7.20</b>	<b>12.00</b>	<b>15.75</b>
<b>B-ZRCM-0416</b>	1/4" × 1"	<b>1.75</b>	<b>3.00</b>	<b>5.10</b>	<b>8.45</b>	<b>10.90</b>
<b>B-ZRCM-0616</b>	3/8" × 1"	<b>2.50</b>	<b>4.40</b>	<b>7.50</b>	<b>12.45</b>	<b>15.70</b>
<b>B-ZRCM-0816</b>	1/2" × 1"	<b>4.10</b>	<b>7.15</b>	<b>12.25</b>	<b>20.35</b>	<b>30.80</b>

### ROUND TUBING — Type 4130 Seamless, MIL-T 6736

Part No.	O.D.	Wall	Price				
			3"	6"	12"	24"	36"
<b>B-CMT-035/03</b>	3/16"	0.035"	<b>1.95</b>	<b>3.05</b>	<b>4.95</b>	<b>8.95</b>	<b>11.50</b>
<b>B-CMT-035/04</b>	1/4"	0.035"	<b>1.60</b>	<b>2.75</b>	<b>4.55</b>	<b>7.65</b>	<b>9.30</b>
<b>B-CMT-035/05</b>	5/16"	0.035"	<b>1.60</b>	<b>2.75</b>	<b>4.55</b>	<b>7.65</b>	<b>9.30</b>
<b>B-CMT-035/06</b>	3/8"	0.035"	<b>1.55</b>	<b>2.65</b>	<b>4.45</b>	<b>7.50</b>	<b>9.15</b>
<b>B-CMT-065/06</b>	3/8"	0.065"	<b>1.50</b>	<b>2.55</b>	<b>4.15</b>	<b>6.85</b>	<b>8.50</b>
<b>B-CMT-035/08</b>	1/2"	0.035"	<b>1.55</b>	<b>2.65</b>	<b>4.45</b>	<b>7.50</b>	<b>9.15</b>
<b>B-CMT-065/08</b>	1/2"	0.065"	<b>1.95</b>	<b>3.05</b>	<b>5.10</b>	<b>8.55</b>	<b>10.65</b>
<b>B-CMT-035/12</b>	3/4"	0.035"	<b>1.55</b>	<b>2.65</b>	<b>4.45</b>	<b>7.50</b>	<b>9.15</b>
<b>B-CMT-065/12</b>	3/4"	0.065"	<b>2.05</b>	<b>3.15</b>	<b>5.15</b>	<b>8.65</b>	<b>10.95</b>
<b>B-CMT-120/12</b>	3/4"	0.120"	<b>2.25</b>	<b>4.00</b>	<b>6.95</b>	<b>11.45</b>	<b>14.25</b>
<b>B-CMT-035/16</b>	1"	0.035"	<b>1.80</b>	<b>2.95</b>	<b>4.95</b>	<b>8.65</b>	<b>11.95</b>
<b>B-CMT-065/16</b>	1"	0.065"	<b>2.15</b>	<b>3.25</b>	<b>5.45</b>	<b>10.00</b>	<b>12.50</b>
<b>B-CMT-120/16</b>	1"	0.120"	<b>2.25</b>	<b>4.00</b>	<b>6.95</b>	<b>11.45</b>	<b>14.25</b>
<b>B-CMT-035/24</b>	1-1/2"	0.035"	<b>2.25</b>	<b>3.85</b>	<b>6.75</b>	<b>10.65</b>	<b>14.50</b>
<b>B-CMT-065/24</b>	1-1/2"	0.065"	<b>2.25</b>	<b>4.00</b>	<b>6.95</b>	<b>11.45</b>	<b>14.25</b>
<b>B-CMT-120/24</b>	1-1/2"	0.120"	<b>3.40</b>	<b>6.00</b>	<b>10.50</b>	<b>17.25</b>	<b>21.95</b>

## METAL WORKING

### *Tools, Material, and Processes*



This 1907 edition of Metalworking covers almost anything you would want to do to a chunk of metal! Topics include everything from foundry work to surfacing and polishing metals, with lots of information about tools; machining; materials; equipment; metal treatments and processing; making jewelry; building furnaces, engines and boilers; and even making your own microscope! Very thorough, with 2,206 illustrations. Written by Paul Hasluck, 760 pages.

**B-REF-MET** ..... **29.95**

## STEEL, COLD ROLLED — Rod



### ROD — Type C1018

Order Example: **B-ZRS-12-6** is 3/4" dia. x 6"

Part No.	Diameter	Price			
		-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZRS-2</b>	1/8"	—	—	—	<b>1.55</b>
<b>B-ZRS-3</b>	3/16"	—	—	—	<b>1.90</b>
<b>B-ZRS-4</b>	1/4"	—	—	<b>1.55</b>	<b>2.25</b>
<b>B-ZRS-5</b>	5/16"	—	<b>1.25</b>	<b>2.20</b>	<b>3.10</b>
<b>B-ZRS-6</b>	3/8"	—	<b>1.50</b>	<b>2.80</b>	<b>3.95</b>
<b>B-ZRS-8</b>	1/2"	<b>1.35</b>	<b>2.25</b>	<b>4.25</b>	<b>6.00</b>
<b>B-ZRS-10</b>	5/8"	<b>1.80</b>	<b>3.30</b>	<b>6.30</b>	<b>9.00</b>
<b>B-ZRS-12</b>	3/4"	<b>2.75</b>	<b>5.10</b>	<b>9.60</b>	<b>13.65</b>
<b>B-ZRS-14</b>	7/8"	<b>3.15</b>	<b>5.90</b>	<b>11.20</b>	<b>15.95</b>
<b>B-ZRS-16</b>	1"	<b>4.15</b>	<b>7.85</b>	<b>15.00</b>	<b>21.45</b>
<b>B-ZRS-20</b>	1-1/4"	<b>6.95</b>	<b>11.55</b>	<b>19.25</b>	<b>24.00</b>
<b>B-ZRS-22</b>	1-3/8"	<b>9.75</b>	<b>16.20</b>	<b>26.95</b>	<b>33.75</b>
<b>B-ZRS-24</b>	1-1/2"	<b>9.95</b>	<b>16.50</b>	<b>27.50</b>	<b>34.50</b>
<b>B-ZRS-28</b>	1-3/4"	<b>10.75</b>	<b>17.95</b>	<b>29.90</b>	<b>37.50</b>
<b>B-ZRS-32</b>	2"	<b>20.10</b>	<b>33.45</b>	<b>55.70</b>	<b>69.65</b>

### ROD — Type C1018

Order Example: **B-ZRS-40-2** is 2-1/2" dia. x 2"

Part No.	Diameter	Pounds Per Inch	Price per Inch *	
			1-11	12+
<b>B-ZRS-40</b>	2-1/2"	1.40	<b>3.85</b>	<b>3.00</b>
<b>B-ZRS-48</b>	3"	2.00	<b>6.45</b>	<b>5.35</b>

\* Prices are based on the length of each piece cut.

## STEEL, COLD ROLLED — Bar



### SQUARE — Type C1018

Order Example: **B-ZSS-5-12** is 5/16" x 12"

Part No.	Dimensions	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZSS-2</b>	1/8"	—	—	—	<b>1.35</b>	<b>1.75</b>
<b>B-ZSS-3</b>	3/16"	—	—	—	<b>1.75</b>	<b>2.35</b>
<b>B-ZSS-4</b>	1/4"	—	—	<b>1.35</b>	<b>2.40</b>	<b>3.30</b>
<b>B-ZSS-5</b>	5/16"	—	—	<b>1.95</b>	<b>3.55</b>	<b>4.80</b>
<b>B-ZSS-6</b>	3/8"	—	<b>1.50</b>	<b>2.55</b>	<b>4.60</b>	<b>6.25</b>
<b>B-ZSS-8</b>	1/2"	—	<b>2.05</b>	<b>3.75</b>	<b>6.80</b>	<b>9.30</b>
<b>B-ZSS-12</b>	3/4"	<b>2.10</b>	<b>3.75</b>	<b>6.85</b>	<b>12.50</b>	<b>17.05</b>
<b>B-ZSS-16</b>	1"	<b>3.20</b>	<b>5.75</b>	<b>10.50</b>	<b>19.05</b>	<b>25.95</b>

See Keystock on page 263.

## STEEL, COLD ROLLED — Bar (cont.)



### RECTANGULAR — Type C1018

Order Example: B-ZRTS-2/16-36 is 1/8" × 1" × 36"

Part No.	Dimensions	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
B-ZRTS-1/8*	1/16" × 1/2"	—	1.95	3.50	6.30	8.60
B-ZRTS-1/12	1/16" × 3/4"	—	2.75	4.95	9.05	12.30
B-ZRTS-1/16	1/16" × 1"	—	3.70	5.95	10.35	14.10
B-ZRTS-2/4	1/8" × 1/4"	—	—	1.50	1.90	2.60
B-ZRTS-2/8	1/8" × 1/2"	—	—	1.55	2.05	2.75
B-ZRTS-2/12	1/8" × 3/4"	—	—	1.70	3.05	4.15
B-ZRTS-2/16	1/8" × 1"	—	1.65	2.60	4.25	5.05
B-ZRTS-2/32	1/8" × 2"	1.50	2.10	3.40	5.35	6.50
B-ZRTS-2/64	1/8" × 4"	3.15	4.95	7.95	12.70	15.50
B-ZRTS-3/8	3/16" × 1/2"	—	—	1.65	2.60	3.15
B-ZRTS-3/12	3/16" × 3/4"	—	1.50	2.25	3.55	4.25
B-ZRTS-3/16	3/16" × 1"	1.35	2.20	3.65	6.10	7.65
B-ZRTS-3/32	3/16" × 2"	2.55	4.25	7.10	11.75	14.75
B-ZRTS-4/8	1/4" × 1/2"	—	1.60	2.60	4.35	5.45
B-ZRTS-4/12	1/4" × 3/4"	—	1.75	2.90	4.80	6.00
B-ZRTS-4/16	1/4" × 1"	—	2.35	3.75	6.00	7.20
B-ZRTS-4/24	1/4" × 1-1/2"	1.75	2.90	4.80	8.00	10.00
B-ZRTS-4/32	1/4" × 2"	2.40	4.10	6.85	11.45	14.30
B-ZRTS-4/64	1/4" × 4"	4.65	7.80	12.90	21.60	27.00
B-ZRTS-4/96	1/4" × 6"	6.05	10.10	16.80	28.00	35.00
B-ZRTS-6/8	3/8" × 1/2"	—	1.65	2.80	4.65	5.80
B-ZRTS-6/12	3/8" × 3/4"	1.45	2.30	3.70	5.90	7.10
B-ZRTS-6/16	3/8" × 1"	1.75	2.85	4.50	7.20	8.65
B-ZRTS-6/24	3/8" × 1-1/2"	2.95	4.70	7.50	11.95	14.40
B-ZRTS-6/32	3/8" × 2"	3.00	4.80	7.65	12.30	14.75
B-ZRTS-6/64	3/8" × 4"	5.95	9.50	15.20	24.35	29.20

\* Type C1020

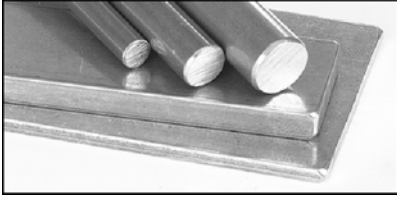


### HEXAGONAL — Type C1018

Order Example: B-ZHS-4-12 is 1/4" × 12"

Part No.	Dimension Across Flats	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
B-ZHS-3	3/16"	—	—	1.25	1.85	2.50
B-ZHS-4	1/4"	—	—	1.55	2.55	3.50
B-ZHS-5	5/16"	—	1.30	2.30	4.20	5.70
B-ZHS-6	3/8"	—	1.75	3.20	5.80	7.95
B-ZHS-8	1/2"	—	2.05	3.95	7.45	8.95
B-ZHS-10	5/8"	—	2.65	4.45	7.55	9.65
B-ZHS-12	3/4"	1.95	3.45	6.25	11.40	15.55
B-ZHS-16	1"	2.90	5.25	9.50	17.35	23.65

# STEEL, GROUND TOOL — Rod and Bar



## GROUND TOOL STEEL SAE 0-1

Oil hardenable steel alloy recommended for dies, punches, gauges and tools. It should be used where a greater degree of accuracy is desired in hardening. Its precise diameter and smooth finish make it excellent for use as steel shafting. Also referred to as "Silver Steel" in England.

### Heat Treatment:

For cross sections smaller than 1/4" heat to 1450°-1475°F (788°-802°C) and hold until heated through. For larger sections, preheat to 1200°F (649°C), then raise to 1450°-1500°F (788°-815°C) hardening temperature, hold half an hour per inch of cross section. **Quench in oil** at 125°-150°F (52°-65°C) and TEMPER IMMEDIATELY.

## ROD — SAE 0-1

Diameter Tolerance:  $\pm 0.0005''$

Part No.	Diameter	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
B-CGDR-1	1/16"	—	—	1.50	2.50	3.75
B-CGDR-1-1/2	3/32"	—	—	1.80	3.45	4.85
B-CGDR-2	1/8"	—	1.25	2.10	4.05	5.75
B-CGDR-2-1/2	5/32"	—	1.60	2.65	4.95	7.05
B-CGDR-3	3/16"	1.45	2.05	3.35	6.35	9.10
B-CGDR-3-1/2	7/32"	1.50	2.15	3.60	6.80	9.70
B-CGDR-4	1/4"	1.55	2.35	3.95	7.55	10.75
B-CGDR-5	5/16"	2.20	4.00	8.55	14.25	18.80
B-CGDR-6	3/8"	2.50	4.90	8.05	15.45	22.05
B-CGDR-7	7/16"	3.45	6.60	11.05	20.95	30.00
B-CGDR-8	1/2"	3.95	7.45	12.45	23.75	33.90
B-CGDR-10	5/8"	5.80	11.05	18.35	35.00	50.10
B-CGDR-12	3/4"	7.75	14.80	24.65	46.95	67.10
B-CGDR-16	1"	12.60	24.15	40.15	76.65	—
B-CGDR-24	1-1/2"	24.85	47.50	79.00	150.65	—
B-CGDR-32	2"	45.90	87.70	145.90	—	—

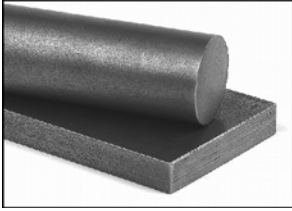
## RECTANGULAR BAR — SAE 0-1 — Starrett®

Tol.: Thickness  $\pm 0.001''$ , Width  $+0.005''$ ,  $-0.000''$

Part No.	Dimensions	Price		
		-6 6"	-12 12"	-18 18"
B-CGFS-1/8	1/16" x 1/2"	3.15	5.75	7.45
B-CGFS-1/16	1/16" x 1"	3.95	7.15	9.25
B-CGFS-1/32	1/16" x 2"	6.50	12.10	15.45
B-CGFS-15/8	3/32" x 1/2"	4.35	8.05	10.35
B-CGFS-15/16	3/32" x 1"	5.45	10.35	12.65
B-CGFS-15/32	3/32" x 2"	7.45	13.75	17.75
B-CGFS-2/8	1/8" x 1/2"	4.55	8.65	10.95
B-CGFS-2/16	1/8" x 1"	5.75	10.95	13.80
B-CGFS-2/32	1/8" x 2"	7.80	14.35	18.50
B-CGFS-3/8	3/16" x 1/2"	6.90	13.25	16.75
B-CGFS-3/16	3/16" x 1"	7.40	14.50	17.75
B-CGFS-3/32	3/16" x 2"	10.95	20.65	26.25
B-CGFS-4/8	1/4" x 1/2"	6.75	12.65	16.05
B-CGFS-4/16	1/4" x 1"	8.65	16.10	20.75
B-CGFS-4/32	1/4" x 2"	13.25	25.25	32.00



## STEEL, D-2 TOOL — Rod and Bar



### DE-CARB-FREE, "OVERSIZED"

Characterized by superior wear and abrasion resistance, air-hardening D-2 Tool Steel has high carbon and chromium content, is decarburized (de-carb-free), and is supplied "oversized" with a wide tolerance range. This tough tool steel can be heat treated to achieve maximum performance. Due to its low sulphur content, it is not free-machining.

Used primarily as a die material, it also holds a very sharp edge, giving it wide acceptance for use in cutlery and industrial trimmer blades. As-quenched, its surface hardness is approximately Rockwell C: 61-64.

Order Example: **B-SD2-16-12** is Square 1" × 12"  
Tolerance: +0.005" to +0.020"

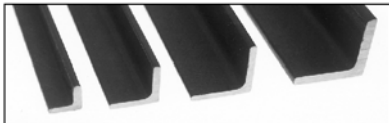
### ROD / SQUARE BAR — AISI D-2

Part No.	Dimension	Profile	Price				
			-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-RD2-08</b>	1/2"	Round	<b>1.45</b>	<b>2.35</b>	<b>3.95</b>	<b>6.50</b>	<b>8.15</b>
<b>B-RD2-12</b>	3/4"	Round	<b>3.50</b>	<b>5.80</b>	<b>9.70</b>	<b>16.15</b>	<b>20.15</b>
<b>B-RD2-16</b>	1"	Round	<b>5.35</b>	<b>8.90</b>	<b>14.85</b>	<b>24.75</b>	<b>30.90</b>
<b>B-SD2-16</b>	1"	Square	<b>16.10</b>	<b>26.80</b>	<b>44.70</b>	<b>74.50</b>	<b>93.10</b>

### RECTANGULAR BAR — AISI D-2 Tolerances: Width +0.015" to +0.065" Thickness +0.015" to +0.035"

Part No.	Dimensions	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-FD2-0408</b>	1/4" × 1/2"	<b>4.45</b>	<b>7.45</b>	<b>12.40</b>	<b>20.65</b>	<b>25.80</b>
<b>B-FD2-0416</b>	1/4" × 1"	<b>6.70</b>	<b>11.15</b>	<b>18.60</b>	<b>30.95</b>	<b>38.70</b>
<b>B-FD2-0432</b>	1/4" × 2"	<b>9.50</b>	<b>15.85</b>	<b>26.45</b>	<b>44.05</b>	<b>55.05</b>
<b>B-FD2-0816</b>	1/2" × 1"	<b>8.95</b>	<b>14.85</b>	<b>24.75</b>	<b>41.25</b>	<b>51.55</b>
<b>B-FD2-0832</b>	1/2" × 2"	<b>14.35</b>	<b>23.90</b>	<b>39.85</b>	<b>66.35</b>	<b>82.95</b>

## STEEL, HOT ROLLED — Angles



Hot-Rolled Steel is relatively soft as compared to cold rolled products. It is widely used for framing and general structural purposes to provide strength and stability.

Longer lengths are available. **Call Purchasing Services — 1-888-455-9712.**

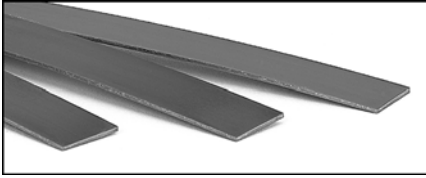
### HOT ROLLED STEEL — ASTM-A36

Order Example: **B-RA2-12/12-12** is 3/4" × 3/4" × 12"

Part No.	Dimensions	Price		
		-12 12"	-24 24"	-36 36"
<b>B-RA2-8/8</b>	1/2" × 1/2" × 1/8"	<b>1.30</b>	<b>2.30</b>	<b>3.10</b>
<b>B-RA2-12/12</b>	3/4" × 3/4" × 1/8"	<b>1.70</b>	<b>3.10</b>	<b>4.20</b>
<b>B-RA2-16/16</b>	1" × 1" × 1/8"	<b>1.85</b>	<b>3.40</b>	<b>4.60</b>
<b>B-RA3-20/20</b>	1-1/4" × 1-1/4" × 3/16"	<b>2.60</b>	<b>4.95</b>	<b>6.20</b>
<b>B-RA3-24/24</b>	1-1/2" × 1-1/2" × 3/16"	<b>3.40</b>	<b>6.60</b>	<b>8.50</b>

**If exact dimensions are critical to your project,  
please call Purchasing Services — 1-888-455-9712.**

## STEEL, SPRING



Spring Steel is blue tempered and hardened. Carbon content is in the range of 0.90 to 1.05%. Rockwell hardness - C 48/51. This material has the highest elastic limit and fatigue values of commonly used spring steel. Recommended for coiled and flat mechanical springs such as: ignition vibrator springs, springs for timing devices, springs for the electrical and electronic fields, steel tapes and rules. **Sold in packs of 10.**

### SPRING STEEL — SAE 1095

Order Example: **B-FSS-10/6-12** is 1 pkg. of 10 – 0.010" × 3/8" × 12"

Part No.	Width	Thickness	Price Per Pack of 10		
			-6 6"	-12 12"	-24 24"
<b>B-FSS-05/4</b>	1/4"	0.005"	<b>4.15</b>	<b>6.75</b>	<b>10.80</b>
<b>B-FSS-05/8</b>	1/2"	0.005"	<b>7.30</b>	<b>11.85</b>	<b>18.95</b>
<b>B-FSS-07/4</b>	1/4"	0.007"	<b>4.75</b>	<b>7.75</b>	<b>12.35</b>
<b>B-FSS-07/8</b>	1/2"	0.007"	<b>8.55</b>	<b>13.85</b>	<b>22.15</b>
<b>B-FSS-10/4</b>	1/4"	0.010"	<b>4.15</b>	<b>6.50</b>	<b>10.80</b>
<b>B-FSS-10/6</b>	3/8"	0.010"	<b>4.25</b>	<b>6.90</b>	<b>11.05</b>
<b>B-FSS-10/8</b>	1/2"	0.010"	<b>7.40</b>	<b>11.85</b>	<b>18.95</b>
<b>B-FSS-15/4</b>	1/4"	0.015"	<b>4.70</b>	<b>6.95</b>	<b>11.50</b>
<b>B-FSS-15/6</b>	3/8"	0.015"	<b>5.25</b>	<b>8.50</b>	<b>13.60</b>
<b>B-FSS-15/8</b>	1/2"	0.015"	<b>8.00</b>	<b>12.35</b>	<b>19.10</b>
<b>B-FSS-20/4</b>	1/4"	0.020"	<b>8.15</b>	<b>13.25</b>	<b>21.15</b>
<b>B-FSS-20/6</b>	3/8"	0.020"	<b>6.15</b>	<b>9.95</b>	<b>15.95</b>
<b>B-FSS-20/8</b>	1/2"	0.020"	<b>8.25</b>	<b>13.35</b>	<b>21.40</b>
<b>B-FSS-25/4</b>	1/4"	0.025"	<b>8.25</b>	<b>13.50</b>	<b>21.30</b>
<b>B-FSS-25/8</b>	1/2"	0.025"	<b>10.20</b>	<b>16.55</b>	<b>26.50</b>
<b>B-FSS-32/4</b>	1/4"	0.032"	<b>8.30</b>	<b>13.25</b>	<b>22.50</b>
<b>B-FSS-32/8</b>	1/2"	0.032"	<b>12.50</b>	<b>20.30</b>	<b>32.50</b>



### STEEL FLAT SPRINGS

Carefully blued and hardened for uniform action. They are available in a variety of sizes and thicknesses and therefore varying stiffness.

[See page 173](#)



### HARDENING, TEMPERING AND HEAT TREATMENT

A clear, concise examination of the structure of steels and the effects of hardening, tempering and heat treatment. Includes solid fuel, gas and electric furnaces, case hardening and other practical information. This softcover book from England is fully illustrated, including color temperature charts.

**B-WPS-01** ..... **12.50**

# TITANIUM

Titanium and its alloys have attractive engineering properties. They are about 40% lighter than Steel and 60% heavier than Aluminum with a density of .163 lbs./in<sup>3</sup>. The combination of moderate weight and high strength gives Titanium alloys the highest strength to weight ratios of any structural metal.

Titanium is used in diverse applications — from aircraft parts to surgical implants, and as hardware for marine and chemical equipment — wherever high strength to weight ratios, high temperature stability and good corrosion resistance to salt water and chemicals is required.

Titanium and its alloys have flat stress strain curves, and when properly machined, can produce an excellent surface finish due to its unique chip formation characteristics. For best results, sharpen tools frequently; use proper tool angles and adequate coolants, directed closely to the point of contact. Slow speeds and heavy feeds are recommended.

Commercially Pure (CP) Grade 2 is 99% Titanium, alloyed with minimal contents (0.20% or less of each) of iron, oxygen, carbon, nitrogen, hydrogen, and less than 0.4% residual elements.

## PROPERTIES

PROPERTY TESTED	TEST UNITS	CP2
Tensile Strength–Ultimate	ksi*	50
Tensile Strength–Ultimate	ksi	50
Tensile Strength–Yield	ksi	40
Elongation	% in 2in	28
Hardness	Rockwell B	98
Modulus of elasticity	ksi	15
Melting Point	°F	3029

\* kips per square inch = 1000s of pounds per square inch.

**Note:** Typical Values "Not For Design Purposes"

## TITANIUM — Rod and Bar



### ROD — ASTM-B348, CP 2

Order Example: **B-ZRTT-04-12** is 1/4" dia. × 12"

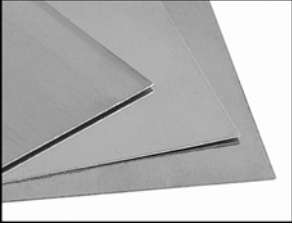
Part No.	Diameter	Price			
		-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZRTT-02</b>	1/8"	<b>3.15</b>	<b>5.75</b>	<b>10.50</b>	<b>14.10</b>
<b>B-ZRTT-03</b>	3/16"	<b>3.15</b>	<b>5.75</b>	<b>10.50</b>	<b>14.10</b>
<b>B-ZRTT-04</b>	1/4"	<b>7.50</b>	<b>10.80</b>	<b>19.65</b>	<b>26.75</b>
<b>B-ZRTT-06</b>	3/8"	<b>13.75</b>	<b>22.95</b>	<b>34.45</b>	<b>43.05</b>
<b>B-ZRTT-08</b>	1/2"	<b>15.55</b>	<b>28.80</b>	<b>43.20</b>	<b>53.95</b>



### SQUARE BAR — ASTM-B348, CP 2

Part No.	Dimension	Price			
		-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZSTT-06</b>	3/8"	<b>10.85</b>	<b>19.65</b>	<b>35.75</b>	<b>48.75</b>
<b>B-ZSTT-08</b>	1/2"	<b>17.05</b>	<b>30.95</b>	<b>56.35</b>	<b>76.85</b>

## TITANIUM — Sheet



### SHEET\* — ASTM-B265, CP2

Order Example: **B-SMTI-035-B** is 0.035" × 3" × 12"

Part No.	Nominal Thickness	Price				
		-A 3" × 6"	-B 3" × 12"	-C 6" × 12"	-D 12" × 12"	-E 12" × 24"
<b>B-SMTI-035</b>	0.035"	<b>6.60</b>	<b>11.55</b>	<b>21.10</b>	<b>36.95</b>	<b>66.00</b>
<b>B-SMTI-063</b>	0.063"	<b>12.00</b>	<b>21.00</b>	<b>38.40</b>	<b>67.20</b>	<b>120.00</b>
<b>B-SMTI-093</b>	0.093"	<b>15.40</b>	<b>28.20</b>	<b>49.30</b>	<b>88.00</b>	<b>154.90</b>

\*Nominal sizes. Length and Width dimensions may be reduced by up to 1/8", due to kerf (cutting) loss. If exact dimensions are critical to your project, please **call Purchasing Services — 1-888-455-9712**.

## TITANIUM — Tubing

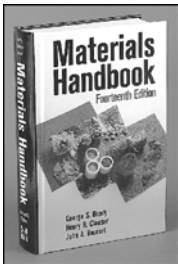


### ROUND — Seamless, CP2

Part No.	O.D.	Wall	Price			
			-6 6"	-12 12"	-24 24"	-36 36"
<b>B-TT-02/016</b>	1/8"	0.016"	<b>41.25</b>	<b>66.00</b>	<b>115.50</b>	<b>165.00</b>
<b>B-TT-04/035</b>	1/4"	0.035"	<b>31.25</b>	<b>50.00</b>	<b>87.50</b>	<b>125.00</b>
<b>B-TT-05/035</b>	5/16"	0.035"	<b>36.25</b>	<b>58.00</b>	<b>101.50</b>	<b>145.00</b>
<b>B-TT-06/035</b>	3/8"	0.035"	<b>33.75</b>	<b>54.00</b>	<b>94.50</b>	<b>135.00</b>
<b>B-TT-08/035</b>	1/2"	0.035"	<b>35.00</b>	<b>56.00</b>	<b>98.00</b>	<b>140.00</b>

## MATERIALS HANDBOOK

***A comprehensive resource for almost every type of known material***



"Brady's" one-volume encyclopedia contains over 13,000 concise entries, describing the primary characteristics of chemicals, metals, minerals, fuels, plastics, textiles, finishes, woods, pharmaceuticals, elastomers, ceramics, coatings, composites, industrial substances, foodstuffs, plant and animal products — almost anything that derives from natural elements. Descriptions include properties, production methods, applications and commercial designations, detailed in language that is scientifically specific, but easily understood by almost any reader. Alphabetically organized and thoroughly indexed. Fourteenth Edition, 1997. George S. Brady, Henry R. Clauser, John A. Vaccari. Published by McGraw-Hill. Hard cover, 1136 pages.

**B-BCK-MH . . . . . 89.50**

# PLASTICS

There are two basic types of plastics, Thermoplastics and Thermosets. These resins may be amorphous (having no crystalline structure) or crystalline (having a uniform molecular structure with solid geometric crystal formations). Thermoplastics soften when heated and harden when cooled, a process that occurs no matter how many times it is repeated, due to little or no cross bonding between molecules. Thermosets have strong intermolecular bonding. Once a shape is set under heat and pressure, reheating will not soften thermoset plastics.

**| Note:** This information is provided for reference and comparison purposes only.

**ABS (Acrylonitrile, Butadiene, Styrene)** — Low water absorption, performs well in acids and alkalis. This thermoplastic is subject to attack by solvents such as esters, ketones, aldehydes, chlorinated hydrocarbons. Solvent bonds and thermoforms quite well. Maximum use temperature: 160° to 200°F (71° to 93°C).

**ACETAL (Polyoxymethylenes [POM])** — Highly crystalline thermoplastics available as homopolymers or copolymers. Among the strongest and stiffest thermoplastics with excellent solvent resistance, exceptional fatigue life and dimensional stability, Acetals such as **Delrin®** and **Celcon®** offer very good abrasion resistance and a hard surface. Machineability is equal to or better than free machining brass in normal milling, turning, threading and tapping operations. Maximum use temperature: 190° to 212°F (88° to 100°C).

**ACRYLIC (Polymethyl methacrylate [PMMA])** — Hard, rigid thermoplastics such as **Lucite®** are noted for optical clarity, particularly in cast sheet or molded form. Light transmission is approximately 92%. Outstanding resistance to long-term sunlight exposure; low water absorption; good electrical resistivity. Standard grades are considered somewhat brittle. Maximum use temperature: 130° to 230°F (54° to 110°C).

**BUNA-N (NBR Rubber)** — A copolymer of acrylonitrile and butadiene, this nitrile elastomer has outstanding resistance to oils and fuels at normal and elevated temperatures. Good compatibility with aliphatic solvents and dilute alkalis. Does poorly with strong acids. Very good compression set properties and good resistance to gas permeation. Maximum elongation: approximately 500%. Temperature range: -75° to 300°F (-59° to 149°C).

**FLUOROPOLYMERS** — High performance linear polymers such as **Teflon®** are characterized by high crystallinity and molecular weight. Naturally opaque-white with a waxy feel, they have excellent frictional properties and range from flexible to semi-rigid. High dielectric strength, low fatigue and creep properties. Commonly called Teflon, PTFE (polytetrafluoroethylene) is the most widely used fluoropolymer. It offers excellent non-stick qualities and chemical resistance, and is available in solid profiles, coatings, and tubing. Considered inert, it is used extensively in the medical device industry. Maximum use temperature: 550°F (288°C).

**LATEX RUBBER** — Naturally derived from rubber trees, this colloidal emulsion is vulcanized and takes on the consistency of rubber. Yellow/amber colored Latex is characterized by excellent elasticity and good elastic memory. Tubing, strips and sheets may be sterilized by EtO, gamma or steam. Some individuals are allergic to latex. Maximum elongation: approximately 750%. Temperature range: -65°F to 180°F (-53° to 82°C).

**NEOPRENE (Chloroprene)** — The first commercial synthetic rubber developed. Mechanical, chemical, and structural properties similar to natural rubber. Excellent UV and water resistance with very good abrasion resistance. Good resistance to aromatic and nonaromatic fuels and alkalis, fair acid resistance. Fair to poor solvent resistance. Incompatible with synthetic lubricants. Very good compression set and flex cracking characteristics. Maximum elongation: approximately 500%. Temperature range: -65° to 300°F (-53° to 149°C).

**NYLON (Polyamide)** — Many formulations; both crystalline and amorphous properties can be obtained. Nylon family members are identified by the number of carbon atoms in the monomers. Nylons resist nonpolar solvents, including aromatic hydrocarbons; they are softened by and absorb polar materials such as alcohols, glycols, water. Nylon 6/6 (hexamethylene diamine adipic acid) is considered general purpose and along with Nylon 6 (polycaprolactam) is the most widely used due to qualities of high strength, impact and abrasion resistance, high temperature tolerance, and cost-effectiveness. Maximum continuous temperature: 220°F (104°C).

**PHENOLIC (Pheno-formaldehyde resin)** — Phenolic Plastic is a hard, dense material made by applying heat and pressure to layers of paper or fabric impregnated with a synthetic resin. Our grade LE (Linen Electrical) is filled with fine weave linen which facilitates precision machinability and excellent dimensional stability. Low absorption and excellent electrical properties make this material a good choice for insulation purposes. Maximum operating temperature (continuous) 257°F (125°C).

**POLYCARBONATE** — Linear, low-crystalline, transparent, high molecular weight thermoplastics such as **Lexan®**. Considered one of the toughest of all plastics, Polycarbonate is very hard, has good strength and rigidity, resists creep, and has good electrical resistivity. Over 30 times the impact resistance of safety glass, with 90% light transmission. Generally unaffected by grease, oils and acids. Negligible moisture absorption, but poor solvent resistance. In a stressed condition it will craze or crack with exposure to some chemicals. Maximum use temperature: 250°F (121°C).

## PLASTICS (cont.)

**POLYESTER** — Characterized by low moisture absorption, good dielectric strength, and good temperature resistance, Thermoplastic polyesters are typically sensitive to alkalis, aromatics and strong bases. Among the best known thermoplastic Polyesters are PET (polyethylene terephthalate), PBT (polybutylene terephthalate) and PEN (polyethylene naphthalate). A higher order exists with aromatic polyesters, known as "liquid crystals", which exhibit high temperature resistance to about 500°F (260°C). Polyesters made from thermoset resins undergo polymerization during cure. Maximum use temperature for thermoplastics: 175° to 275°F (79° to 135°C).

**POLYETHERETHERKETONE (PEEK)** — A linear, semi-crystalline, wholly aromatic thermoplastic with outstanding thermal stability in high-temperature environments, low moisture absorption, and good resistance to a wide range of chemicals (organic, inorganic solvents, aqueous reagents). Mechanical properties include high flexural modulus, resistance to abrasion, radiation, sunlight and weathering. Maximum use temperature: 480°F (249°C).

**POLYETHYLENE (PE)** — A lightweight, durable, semi-crystalline thermoplastic made in varying densities with accompanying changes in properties. Low density PE has relatively low strength and hardness, but is more flexible than high density PE, which has significantly higher strength, hardness, abrasion and chemical resistance. Not recommended for continuous use with hydrocarbons, some alcohols, and oxidizing acids; resists phenols, ketones, esters, ethers, bases, salts, organic and inorganic acids; good electrical properties. Maximum use temperature: 140°F (60°C).

**POLYIMIDE** — An aromatic pseudo-thermoplastic used primarily for its high temperature performance. Resists weak acids, organic solvents, esters, ethers, alcohols and most hydraulic fluids. Attacked by bases such as strong alkali and aqueous ammonia. Resists radiation and high rubbing velocities. Maximum use temperature: 500°F (260°C).

**POLYPROPYLENE (PP)** — A low density polyolefin with outstanding resistance to flex and stress cracking; excellent chemical resistance to most substances, including nonoxidizing inorganics, detergents, low-boiling hydrocarbons, alcohols; excellent electrical properties; good thermal stability and resistance to heat; lightweight. It has the highest flexural modulus of the polyolefins, with the disadvantage of poor impact strength at low temperatures. Resists chemical attack and staining, and is unaffected by aqueous solutions of inorganic salts or mineral acids and bases, even at high temperatures. Maximum use temperature: 225°F (107°C).

**POLYSTYRENE (PS)** — Commonly used for consumer products, general purpose grades of this low-cost thermoplastic are characterized by high dielectric strength, clarity and rigidity. Used as a building block component for other plastics, including ABS and SAN, Polystyrenes are known for poor impact resistance and are subject to creep. It is routinely modified with rubber (butadiene) to increase impact resistance. Maximum use temperature: 160°F (71°C).

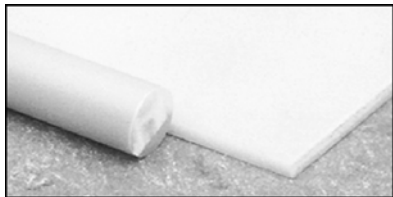
**POLYURETHANE (PUR)** — A broad family of plastics available as thermoplastic or thermoset, used when a combination of toughness, flex resistance, weatherability and low temperature properties are needed. Thermoplastic urethanes (TPU) include two basic types, ester or ethers. Esters are tougher, but hydrolyze and degrade in water. Other TPU's are based on polycaprolactone, and have better resistance to hydrolysis. Thermoset urethanes are generally a two-part system comprised of a resin and hardener; varying formulations achieves desired physical properties. When components are mixed they react and cure, taking a permanent set. Maximum use temperature: 190°F (88°C).

**PVC (Polyvinylchloride)** — Versatile and widely used, this thermoplastic has many formulations, including rigid PVC, flexible plasticized PVC, plastisols and organosols made via emulsion processes. Most PVC is used in building and construction industries for pipe, siding, and window glazing. Its major limitation is lack of heat resistance. It has good resistance to alcohols, mild acids, bases and salts, but is attacked by halogenated hydrocarbons, phenols, ketones, esters and ethers. Maximum use temperature: 150° to 175°F (65° to 79°C).

**SILICONE** — Resilient, stretchable, and resistant to extreme temperatures as well as compression set, this odorless, tasteless and inert "rubber" resists UV, ozone, moisture and temperature. It has good electrical properties, contains no sulphur or other acid producing chemicals, so it does not cause staining, corrosion or deterioration of other materials it contacts. Considered inert, it is widely applied in the medical device industry. Maximum elongation: approximately 300%. Temperature range: -180° to 500°F (-118° to 260°C).

**VITON (Vinylidene fluoride-hexafluoropropylene tetrafluoroethylene)** — A synthetic rubber elastomer made by DuPont® Chemicals. Viton withstands high temperatures and has excellent compatibility with aromatic, halogenated, and aliphatic solvents and aromatic fuels. Good oxidation resistance, very good compression set and water resistance. Excellent performance with acids, but poor with alkalis. Maximum elongation: approximately 250%. Temperature range: -10° to 600°F (-23° to 149°C).

## ABS — Rod and Sheet



General purpose grade ABS combines heat stability, chemical resistance and surface hardness of Acrylonitrile with the toughness and impact resistance of Butadiene and the rigidity and machineability of Styrene...to give you **ABS** with easy formability and high gloss. Good for vacuum forming, with a normal forming temperature at 295°F (146°C) — Rockwell Hardness R-105. Color: Natural (Beige). Other grades: flame retardant, high heat, low gloss, medium impact and others are available by special order. Please **call Purchasing Services — 1-888-455-9712**.

### ROD

Order Example: **B-ZAR-12-24** is 3/4" dia. × 24"

Part No.	Diameter	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZAR-4</b>	1/4"	—	—	<b>1.35</b>	<b>2.25</b>	<b>2.65</b>
<b>B-ZAR-6</b>	3/8"	—	<b>1.85</b>	<b>3.05</b>	<b>5.65</b>	<b>6.35</b>
<b>B-ZAR-8</b>	1/2"	<b>1.90</b>	<b>3.00</b>	<b>4.25</b>	<b>7.25</b>	<b>11.25</b>
<b>B-ZAR-12</b>	3/4"	<b>2.50</b>	<b>4.50</b>	<b>8.00</b>	<b>15.25</b>	<b>20.90</b>
<b>B-ZAR-16</b>	1"	<b>3.75</b>	<b>6.50</b>	<b>12.00</b>	<b>22.15</b>	<b>30.20</b>

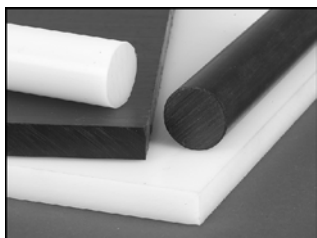
### SHEET\* — Untextured on both sides

Order Example: **B-SAB-0125-B** is 1/8" Thick × 6" × 12"

Part No.	Thickness	Price		
		-B 6" × 12"	-C 12" × 12"	-D 12" × 24"
<b>B-SAB-0125</b>	1/8"	<b>9.00</b>	<b>15.00</b>	<b>25.00</b>
<b>B-SAB-0187</b>	3/16"	<b>9.35</b>	<b>17.00</b>	<b>30.90</b>
<b>B-SAB-0250</b>	1/4"	<b>13.10</b>	<b>23.75</b>	<b>43.20</b>
<b>B-SAB-0375</b>	3/8"	<b>18.35</b>	<b>33.35</b>	<b>60.60</b>
<b>B-SAB-0500</b>	1/2"	<b>22.15</b>	<b>40.25</b>	<b>73.15</b>
<b>B-SAB-0750</b>	3/4"	<b>29.20</b>	<b>53.05</b>	<b>96.50</b>
<b>B-SAB-1000</b>	1"	<b>45.90</b>	<b>83.45</b>	<b>151.75</b>

\*Nominal sizes. Length and Width dimensions may be reduced by up to 1/8", due to kerf (cutting) loss. If exact dimensions are critical to your project, please **call Purchasing Services — 1-888-455-9712**.

## ACETAL (Delrin®) — Rod and Sheet



Commonly referred to as **Delrin®**, Acetal is a useful replacement for metal in many applications such as gears, pulleys, impellers, etc. Easily machined with all standard machine tools. Its machinability is equal to or better than free machining brass in the normal operations of milling and turning to threading and tapping. This Acetal Resin offers a high degree of dimensional stability, toughness, impact strength, low coefficient of friction and fair chemical resistance.

**Note:** Delrin may cause allergic reaction. Use of gloves and a dust mask is recommended when handling or machining.

See page 460.

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### ROD — Natural (Pale Cream)

Order Example: **B-ZRD-2-24** is 1/8" dia. × 24"

Part No.	Diameter	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZRD-2</b>	1/8"	—	—	<b>1.70</b>	<b>2.85</b>	<b>3.55</b>
<b>B-ZRD-3</b>	3/16"	—	—	<b>1.75</b>	<b>2.95</b>	<b>2.90</b>
<b>B-ZRD-4</b>	1/4"	—	—	<b>1.45</b>	<b>2.45</b>	<b>3.00</b>
<b>B-ZRD-5</b>	5/16"	—	—	<b>1.75</b>	<b>2.85</b>	<b>3.55</b>
<b>B-ZRD-6</b>	3/8"	—	<b>1.45</b>	<b>2.35</b>	<b>3.95</b>	<b>4.90</b>
<b>B-ZRD-8</b>	1/2"	—	<b>1.85</b>	<b>3.15</b>	<b>5.20</b>	<b>6.50</b>

Visit [www.smallparts.com](http://www.smallparts.com) E-mail [parts@smallparts.com](mailto:parts@smallparts.com)

## ACETAL (Delrin®) — Rod and Sheet (cont.)

### ROD — Natural (Pale Cream) (cont.)

Order Example: **B-ZRD-12-24** is 3/4" dia. × 24"

Part No.	Diameter	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZRD-12</b>	3/4"	<b>2.55</b>	<b>4.25</b>	<b>7.05</b>	<b>11.70</b>	<b>14.60</b>
<b>B-ZRD-16</b>	1"	<b>4.40</b>	<b>7.30</b>	<b>12.20</b>	<b>20.30</b>	<b>25.40</b>
<b>B-ZRD-24</b>	1-1/2"	<b>6.75</b>	<b>12.35</b>	<b>22.45</b>	<b>40.75</b>	<b>55.65</b>
<b>B-ZRD-32</b>	2"	<b>10.35</b>	<b>18.80</b>	<b>34.15</b>	<b>62.10</b>	<b>84.75</b>
<b>B-ZRD-48</b>	3"	<b>22.50</b>	<b>40.95</b>	<b>74.50</b>	<b>135.40</b>	<b>184.65</b>

### ROD — Black

Part No.	Diameter	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZRBD-2</b>	1/8"	—	—	<b>1.80</b>	<b>3.00</b>	<b>3.75</b>
<b>B-ZRBD-3</b>	3/16"	—	—	<b>1.50</b>	<b>2.45</b>	<b>3.05</b>
<b>B-ZRBD-4</b>	1/4"	—	—	<b>1.50</b>	<b>2.55</b>	<b>3.15</b>
<b>B-ZRBD-5</b>	5/16"	—	—	<b>1.80</b>	<b>3.00</b>	<b>3.75</b>
<b>B-ZRBD-6</b>	3/8"	—	<b>1.50</b>	<b>2.50</b>	<b>4.15</b>	<b>5.15</b>
<b>B-ZRBD-8</b>	1/2"	—	<b>2.00</b>	<b>3.30</b>	<b>5.45</b>	<b>6.85</b>
<b>B-ZRBD-12</b>	3/4"	<b>2.65</b>	<b>4.45</b>	<b>7.35</b>	<b>12.25</b>	<b>15.35</b>
<b>B-ZRBD-16</b>	1"	<b>4.60</b>	<b>7.70</b>	<b>12.80</b>	<b>21.35</b>	<b>26.70</b>
<b>B-ZRBD-24</b>	1-1/2"	<b>10.15</b>	<b>16.85</b>	<b>28.05</b>	<b>46.75</b>	<b>58.45</b>
<b>B-ZRBD-32</b>	2"	<b>15.40</b>	<b>25.65</b>	<b>42.70</b>	<b>71.20</b>	<b>89.00</b>
<b>B-ZRBD-48</b>	3"	<b>33.50</b>	<b>55.85</b>	<b>93.05</b>	<b>155.10</b>	<b>193.90</b>

### SHEET\* — Natural (Pale Cream)

Order Example: **B-SDE-0125-B** is 1/8" Thick × 6" × 6"

Part No.	Thickness	Price		
		-B 6" × 6"	-C 12" × 12"	-D 12" × 24"
<b>B-SDE-0125</b>	1/8"	<b>11.90</b>	<b>19.80</b>	<b>31.85</b>
<b>B-SDE-0187</b>	3/16"	<b>19.75</b>	<b>32.90</b>	<b>54.85</b>
<b>B-SDE-0250</b>	1/4"	<b>23.65</b>	<b>39.40</b>	<b>63.15</b>
<b>B-SDE-0312</b>	5/16"	<b>30.35</b>	<b>50.55</b>	<b>84.30</b>
<b>B-SDE-0375</b>	3/8"	<b>40.15</b>	<b>66.90</b>	<b>106.75</b>
<b>B-SDE-0500</b>	1/2"	<b>46.50</b>	<b>77.60</b>	<b>124.15</b>
<b>B-SDE-0750</b>	3/4"	<b>68.40</b>	<b>113.95</b>	<b>181.90</b>
<b>B-SDE-1000</b>	1"	<b>78.30</b>	<b>130.50</b>	<b>208.80</b>

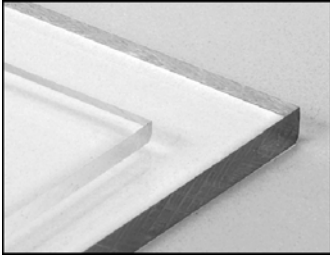
### SHEET\* — Black

Part No.	Thickness	Price		
		-B 6" × 6"	-C 12" × 12"	-D 12" × 24"
<b>B-SBDE-0125</b>	1/8"	<b>15.85</b>	<b>26.35</b>	<b>43.95</b>
<b>B-SBDE-0187</b>	3/16"	<b>23.40</b>	<b>39.00</b>	<b>65.00</b>
<b>B-SBDE-0250</b>	1/4"	<b>25.20</b>	<b>42.00</b>	<b>69.95</b>
<b>B-SBDE-0312</b>	5/16"	<b>31.60</b>	<b>52.65</b>	<b>87.75</b>
<b>B-SBDE-0375</b>	3/8"	<b>41.95</b>	<b>68.15</b>	<b>110.45</b>
<b>B-SBDE-0500</b>	1/2"	<b>47.75</b>	<b>78.95</b>	<b>127.15</b>
<b>B-SBDE-0750</b>	3/4"	<b>69.95</b>	<b>115.55</b>	<b>189.95</b>
<b>B-SBDE-1000</b>	1"	<b>79.95</b>	<b>133.50</b>	<b>219.95</b>

\*Nominal sizes. Length and Width dimensions may be reduced by up to 1/8", due to kerf (cutting) loss. If exact dimensions are critical to your project, please **call Purchasing Services — 1-888-455-9712**.



## ACRYLIC — Sheets, Lucite®



### LUCITE®

More abrasion resistant than uncoated acrylics, Lucite® S-A-R Super-Abrasion-Resistant Sheet remains haze-free even after years of service. Shatter and impact resistant, Lucite is only half the weight of glass in comparable thicknesses.

A good option for designs requiring lightweight, less expensive support structures, this coated acrylic is unaffected by most non-abrasive cleaners, including ammonia and strong detergents. However, the edges of Lucite S-A-R are uncoated and should be sealed with rubber gasket or by other means when used in applications involving exposure to chemicals.

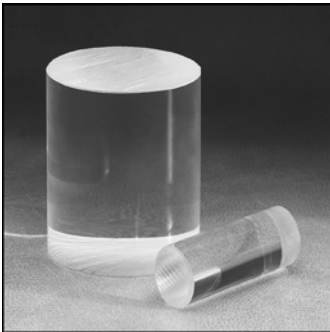
### SHEET\*

Order Example: **B-LAS-2-C** is 1/8" Thick × 12" × 12"

Part No.	Thickness	Thickness Tolerance	Price Each	
			-C 12" × 12"	-D 12" × 24"
<b>B-LAS-2</b>	1/8"	±1/32"	<b>11.45</b>	<b>20.85</b>
<b>B-LAS-4</b>	1/4"	±1/32"	<b>19.35</b>	<b>35.20</b>
<b>B-LAS-6</b>	3/8"	±1/32"	<b>31.75</b>	<b>57.70</b>

\*Nominal sizes. Length and Width dimensions may be reduced by up to 1/8", due to kerf (cutting) loss. If exact dimensions are critical to your project, please **call Purchasing Services — 1-888-455-9712**.

## ACRYLIC, CAST — Rod



Cast Acrylic rivals glass in transparency (92% light transmission) and exhibits outstanding weatherability. The casting process produces profiles with superior optical properties compared to molded or extruded products. Physical properties are also superior with less process induced stress (resistance to cracking/crazing). Cast Acrylic is approximately 1/2 the weight of glass and fabricates similar to wood. Post machining polishing can produce crystal clear components.

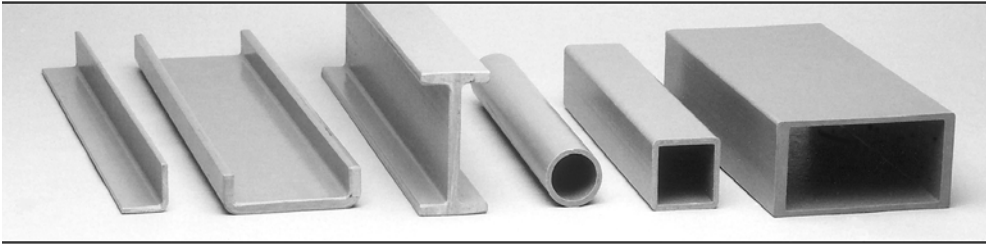
Applications include displays, models, electrical/electronic parts, special lighting applications and industrial fixturing.

### ROD

Order Example: **B-ZCAR-08-24** is 1/2" dia. × 24"

Part No.	Diameter	Price Each				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZCAR-04</b>	1/4"	<b>1.35</b>	<b>2.25</b>	<b>3.75</b>	<b>6.20</b>	<b>10.35</b>
<b>B-ZCAR-06</b>	3/8"	<b>1.30</b>	<b>2.20</b>	<b>3.65</b>	<b>6.10</b>	<b>10.15</b>
<b>B-ZCAR-08</b>	1/2"	<b>1.20</b>	<b>2.00</b>	<b>3.35</b>	<b>5.60</b>	<b>9.35</b>
<b>B-ZCAR-12</b>	3/4"	<b>1.45</b>	<b>2.40</b>	<b>4.00</b>	<b>6.65</b>	<b>11.05</b>
<b>B-ZCAR-16</b>	1"	<b>1.90</b>	<b>3.15</b>	<b>5.25</b>	<b>8.75</b>	<b>14.55</b>
<b>B-ZCAR-24</b>	1-1/2"	<b>3.30</b>	<b>5.45</b>	<b>9.10</b>	<b>15.15</b>	<b>25.20</b>
<b>B-ZCAR-32</b>	2"	<b>5.85</b>	<b>9.75</b>	<b>16.30</b>	<b>27.10</b>	<b>45.20</b>
<b>B-ZCAR-48</b>	3"	<b>16.20</b>	<b>27.00</b>	<b>45.00</b>	<b>75.00</b>	<b>125.00</b>

# FIBERGLASS — Pultrusions

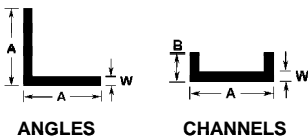


Our profiles are manufactured from isophthalic polyester resin and glass mat into a pultruded composite form.

EXTREN® - Series 525 profiles have a synthetic resin rich veil that contains a UV inhibitor and corrosion resistant surface. Flammability is rated as self-extinguishing. These profiles are non-magnetic and exhibit good electrical and thermal insulation properties that are transparent to radio waves and EMI/RFI transmissions.

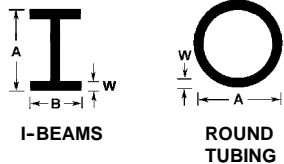
EXTREN® is 30% lighter and has 86% of the yield strength of aluminum. It is pound for pound stronger than aluminum in the lengthwise direction of the profile. Temperatures above 150°F (65°C) are not recommended. These profiles can be easily fabricated with carpentry or metal working tools. Fasten with screws, bolts, and rivets, or join with adhesives.

Order Example: **B-FGA-16-30** is a 1" × 1" × 1/8" angle × 30"



## ANGLES

Part No.	Dimensions			Price	
	A	B	W	30"	* 60"
<b>B-FGA-16</b>	1"	-	1/8"	<b>7.35</b>	<b>12.25</b>
<b>B-FGA-24</b>	1-1/2"	-	3/16"	<b>12.20</b>	<b>20.30</b>
<b>B-FGA-32</b>	2"	-	1/4"	<b>20.10</b>	<b>33.45</b>



## CHANNELS

<b>B-FGC-48</b>	3"	7/8"	1/4"	<b>31.75</b>	<b>52.95</b>
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## I-BEAMS

<b>B-FGI-48</b>	3"	1-1/2"	1/4"	<b>31.40</b>	<b>52.30</b>
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## TUBING — Round

<b>B-FGT-16</b>	1"	-	1/8"	<b>9.85</b>	<b>16.40</b>
<b>B-FGT-20</b>	1-1/4"	-	1/8"	<b>12.05</b>	<b>20.10</b>

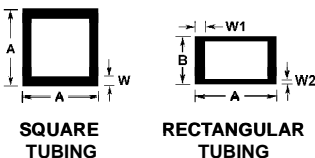
## TUBING — Square

<b>B-FGST-16</b>	1"	-	1/8"	<b>11.30</b>	<b>18.80</b>
<b>B-FGST-24</b>	1-1/2"	-	1/8"	<b>16.90</b>	<b>28.15</b>

## TUBING — Rectangular

<b>B-FGRT-64/32</b>	4"	2"	w1=1/4" w2=1/8"	<b>42.25</b>	<b>70.45</b>
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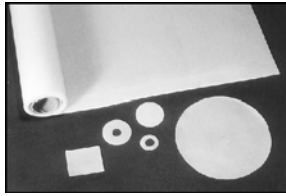
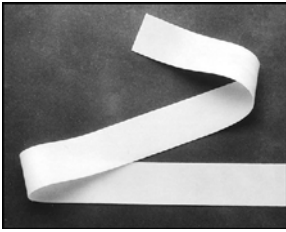
\* Special packaging charge for 60" lengths.



**Fiberglass Pultrusions can be fasten with screws, bolts, and rivets, or join with adhesives.**

**See our full selection of Fasteners starting on page 175**

## LATEX — Sheeting and Strips



This amazing product has a tensile strength of 4,000 psi, and an ultimate elongation factor of 750%. Latex Sheeting can be easily cut with scissors when special shapes are needed. This rubber cuts cleanly, without creeping. For precise discs or washers try an Arch Punch (see page 388). Lightweight, smooth, amber-colored, non-slip, stretchy Latex Rubber is tear-resistant and makes excellent tourniquets and surgical strapping. Streamers of it have even been used as fishing lures and kite tails. Latex Tubing is available on page 104.

*Caution should be used since some individuals are allergic to Latex.*

### Physical Properties

Chemical resistance to acid-alkali good to fair. Alcohol well tolerated. Exposure to petroleum products NOT recommended. Flame resistance poor. Safe temp. range: -65° to 180°F (-54° to 82°C). Durometer Hardness: 35-45 (Shore A). Specific Gravity: 0.935.

### LATEX SHEETING

Order Example: **B-LRS-10-A** is Latex Sheeting 0.010" thick, 12" × 15"

Part No.	Thickness	Tolerance	Price/Yd.	
			-A 12" × 15"	-B 24" × 15"
<b>B-LRS-6</b>	0.006"	±0.002"	<b>1.75</b>	<b>3.00</b>
<b>B-LRS-10</b>	0.010"	±0.002"	<b>2.15</b>	<b>3.90</b>
<b>B-LRS-25</b>	0.025"	±0.003"	<b>3.00</b>	<b>5.20</b>
<b>B-LRS-50</b>	0.050"	±0.008"	<b>8.15</b>	<b>14.55</b>

### LATEX STRIPS

**B-LTRS-16** Box of Ten 1" × 18" × 0.025" Thick ..... **5.00**

## NYLON, MOLYBDENUM FILLED — Rod



This excellent combination of wearing resistant qualities of virgin Nylon 6/6 with the antifriction capability of molybdenum disulfide creates a superior bearing and bushing material. Useful wherever lubrication is undesirable, when the part is located in a position that is difficult to service.

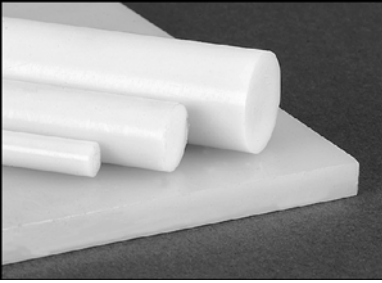
Nylon Molybdenum disulfide resists common solvents, hydrocarbons, esters, ketones, alkalis and dilute acids. Not resistant to phenol, formic acid or concentrated mineral acids. Tested for moisture absorption using ASTM D-570 specifications: 1.2-2.5% when saturated over a 24-hour period; 7.5-8.5% maximum saturation.

### ROD — Nylon 6/6

Order Example: **B-ZRNY-4-36** is 1/4" dia. × 36"

Part No.	Nominal Diameter	Price			
		-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZRNY-3</b>	3/16"	—	<b>1.30</b>	<b>2.35</b>	<b>3.20</b>
<b>B-ZRNY-4</b>	1/4"	—	<b>1.40</b>	<b>2.55</b>	<b>3.45</b>
<b>B-ZRNY-5</b>	5/16"	—	<b>1.60</b>	<b>2.85</b>	<b>3.90</b>
<b>B-ZRNY-6</b>	3/8"	—	<b>2.00</b>	<b>3.60</b>	<b>4.90</b>
<b>B-ZRNY-8</b>	1/2"	<b>1.85</b>	<b>3.35</b>	<b>6.10</b>	<b>8.30</b>
<b>B-ZRNY-10</b>	5/8"	<b>2.95</b>	<b>5.30</b>	<b>9.70</b>	<b>13.20</b>
<b>B-ZRNY-12</b>	3/4"	<b>4.10</b>	<b>7.45</b>	<b>13.50</b>	<b>18.40</b>
<b>B-ZRNY-16</b>	1"	<b>6.90</b>	<b>12.55</b>	<b>22.85</b>	<b>31.15</b>
<b>B-ZRNY-24</b>	1-1/2"	<b>13.70</b>	<b>24.85</b>	<b>45.25</b>	<b>61.65</b>

## NYLON — Rod and Sheet



### NYLON 6/6

Rods and Sheet are typically used as material for insulators, shaft bearings and bushings, wear strips, hinges, gears, and general fixturing. Heat deflection temperature at 264 psi: 200°F (93°C). Color: Natural.

A tough general purpose plastic with outstanding resistance to organic chemicals, acids and alkalis, Nylon 6/6 wears well against other surfaces and has a low coefficient of friction. It is readily machinable and may be milled, turned and cut with conventional machine tools. It does exhibit some dimensional swelling in wet applications, (up to 10%) which should be taken into account with its use.

### ROD — Nylon 6/6

Part No.	Diameter	Price Each		
		-12 12"	-24 24"	-36 36"
B-ZRN-01	1/16"	—	—	<b>1.90</b>
B-ZRN-02	1/8"	—	—	<b>2.05</b>
B-ZRN-03	3/16"	—	—	<b>2.05</b>
B-ZRN-04	1/4"	—	<b>1.45</b>	<b>1.80</b>
B-ZRN-05	5/16"	—	<b>1.65</b>	<b>2.05</b>
B-ZRN-06	3/8"	—	<b>2.15</b>	<b>2.65</b>
B-ZRN-08	1/2"	<b>1.80</b>	<b>2.95</b>	<b>3.70</b>
B-ZRN-12	3/4"	<b>4.50</b>	<b>7.55</b>	<b>9.40</b>
B-ZRN-16	1"	<b>5.65</b>	<b>9.40</b>	<b>11.75</b>
B-ZRN-24	1-1/2"	<b>10.55</b>	<b>17.60</b>	<b>22.00</b>
B-ZRN-32	2"	<b>17.30</b>	<b>28.80</b>	<b>36.00</b>
B-ZRN-48	3"	<b>44.80</b>	<b>74.35</b>	<b>93.35</b>

### SHEET\* — Nylon 6/6

Part No.	Nominal Thickness	Price Each		
		-B 6" × 12"	-C 12" × 12"	-D 12" × 24"
B-SRN-0062	1/16"	<b>3.30</b>	<b>6.00</b>	<b>10.90</b>
B-SRN-0093	3/32"	<b>5.85</b>	<b>10.55</b>	<b>19.20</b>
B-SRN-0125	1/8"	<b>5.75</b>	<b>10.45</b>	<b>19.00</b>
B-SRN-0187	3/16"	<b>10.95</b>	<b>19.85</b>	<b>36.10</b>
B-SRN-0250	1/4"	<b>9.90</b>	<b>17.95</b>	<b>32.70</b>
B-SRN-0312	5/16"	<b>16.80</b>	<b>30.55</b>	<b>55.55</b>
B-SRN-0375	3/8"	<b>20.50</b>	<b>37.20</b>	<b>67.65</b>
B-SRN-0500	1/2"	<b>24.65</b>	<b>44.85</b>	<b>81.50</b>
B-SRN-0625	5/8"	<b>31.75</b>	<b>57.60</b>	<b>104.70</b>
B-SRN-0750	3/4"	<b>37.60</b>	<b>68.35</b>	<b>124.25</b>
B-SRN-1000	1"	<b>49.60</b>	<b>90.25</b>	<b>164.10</b>

\*Nominal sizes. Length and Width dimensions may be reduced by up to 1/8", due to kerf (cutting) loss. If exact dimensions are critical to your project, please **call Purchasing Services — 1-888-455-9712**.

## PEEK — Rod

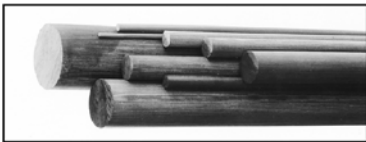
Valued for its ability to withstand high temperatures, outstanding chemical resistance (organic, inorganic solvents, aqueous reagents), and good mechanical strength, PEEK (Polyetheretherketone) is a highly crystalline thermoplastic that maintains its properties under an extreme range of conditions.

Used extensively in medical applications, chemical processing and electronics industries, this material offers good wear resistance, low moisture absorption, and excellent hydrolysis resistance. Repeated sterilization by all known methods have no effect on PEEK devices. Color: Putty.

### ROD — Polyetheretherketone

Part No.	Diameter	Price Each		
		-3 -3"	-6 -6"	-12 -12"
<b>B-ZRPK-02</b>	1/8"	<b>5.25</b>	<b>8.75</b>	<b>14.60</b>
<b>B-ZRPK-04</b>	1/4"	<b>3.60</b>	<b>5.95</b>	<b>9.90</b>
<b>B-ZRPK-06</b>	3/8"	<b>6.25</b>	<b>10.35</b>	<b>10.35</b>
<b>B-ZRPK-08</b>	1/2"	<b>11.20</b>	<b>18.60</b>	<b>31.05</b>
<b>B-ZRPK-12</b>	3/4"	<b>19.10</b>	<b>31.80</b>	<b>53.95</b>

## PHENOLIC, LINEN FILLED — Rod and Sheet



Our grade LE (Linen Electrical) is filled with fine weave linen which facilitates precision machinability and excellent dimensional stability. Low absorption and excellent electrical properties make this material a good choice for insulation purposes. Maximum operating temperature (continuous): 257°F (125°C). O.D. Tolerance: ±.001". Density: 0.048 lbs./in<sup>3</sup>. Dielectric Strength (volt/mil Cond. A) 625. Rod and sheet meet Mil. Specs. Mil-P-24768/13 Type FBE.

### ROD — Grade LE

Order Example: **B-FLRP-6-12** is 3/8" dia. × 12"

Part No.	Diameter	Price Each			
		-6 6"	-12 12"	-24 24"	-36 36"
<b>B-FLRP-1</b>	1/16"	<b>2.30</b>	<b>3.85</b>	<b>6.40</b>	<b>8.00</b>
<b>B-FLRP-2</b>	1/8"	<b>2.10</b>	<b>3.50</b>	<b>5.80</b>	<b>7.25</b>
<b>B-FLRP-3</b>	3/16"	<b>2.15</b>	<b>3.60</b>	<b>5.95</b>	<b>7.45</b>
<b>B-FLRP-4</b>	1/4"	<b>2.75</b>	<b>4.55</b>	<b>7.60</b>	<b>9.50</b>
<b>B-FLRP-6</b>	3/8"	<b>3.75</b>	<b>6.20</b>	<b>10.95</b>	<b>12.95</b>
<b>B-FLRP-8</b>	1/2"	<b>5.80</b>	<b>9.70</b>	<b>16.15</b>	<b>20.20</b>
<b>B-FLRP-12</b>	3/4"	<b>9.75</b>	<b>16.25</b>	<b>27.05</b>	<b>33.80</b>
<b>B-FLRP-16</b>	1"	<b>16.50</b>	<b>27.50</b>	<b>45.80</b>	<b>57.30</b>

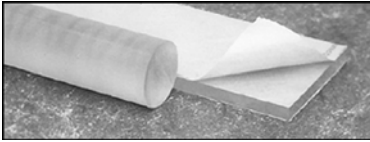
### SHEET\* — Grade LE

Sheets provide the best electrical and mechanical properties combined. Excellent moisture resistance along with superior machineability for use as terminal strips, panels and for high humidity applications.

Part No.	Nominal Thickness	Price Each		
		-B 6" × 12"	-C 12" × 12"	-D 12" × 24"
<b>B-FLSP-0125</b>	1/8"	<b>11.00</b>	<b>19.95</b>	<b>36.35</b>
<b>B-FLSP-0250</b>	1/4"	<b>20.90</b>	<b>37.95</b>	<b>68.95</b>
<b>B-FLSP-0375</b>	3/8"	<b>31.05</b>	<b>51.50</b>	<b>86.30</b>
<b>B-FLSP-0500</b>	1/2"	<b>40.95</b>	<b>65.00</b>	<b>113.65</b>

\*Nominal sizes. Length and Width dimensions may be reduced by up to 1/8", due to kerf (cutting) loss. If exact dimensions are critical to your project, please **call Purchasing Services — 1-888-455-9712**.

## POLYCARBONATE (Lexan®), Rod and Sheet



Commonly referred to as **Lexan®**, Polycarbonate is a thermoplastic used in many applications that require high impact strength, a large temperature service range, excellent electrical properties, and dimensional stability. Polycarbonate Sheet is smooth and clear. Normal forming temperature of Polycarbonate is 375°F (190°C).

### ROD — Translucent

Order Example: **B-ZPR-12-24** is 3/4" dia. × 24"

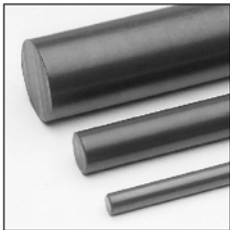
Part No.	Diameter	Price				
		-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZPR-4</b>	1/4"	—	<b>1.55</b>	<b>2.60</b>	<b>4.35</b>	<b>5.45</b>
<b>B-ZPR-5</b>	5/16"	—	<b>1.95</b>	<b>3.25</b>	<b>5.45</b>	<b>6.80</b>
<b>B-ZPR-6</b>	3/8"	<b>1.25</b>	<b>2.00</b>	<b>3.75</b>	<b>7.50</b>	<b>8.35</b>
<b>B-ZPR-8</b>	1/2"	<b>1.65</b>	<b>2.70</b>	<b>4.90</b>	<b>8.95</b>	<b>12.20</b>
<b>B-ZPR-12</b>	3/4"	<b>3.35</b>	<b>5.55</b>	<b>10.10</b>	<b>18.35</b>	<b>25.00</b>
<b>B-ZPR-16</b>	1"	<b>4.50</b>	<b>7.45</b>	<b>13.50</b>	<b>24.60</b>	<b>33.50</b>

### SHEET\* — Clear, finished on both sides

Part No.	Thickness	Price		
		-B 6" × 12"	-C 12" × 12"	-D 12" × 24"
<b>B-SPC-0062</b>	1/16"	—	<b>6.45</b>	<b>10.75</b>
<b>B-SPC-0093</b>	3/32"	—	<b>7.50</b>	<b>12.50</b>
<b>B-SPC-0125</b>	1/8"	—	<b>7.50</b>	<b>12.50</b>
<b>B-SPC-0187</b>	3/16"	—	<b>10.75</b>	<b>17.85</b>
<b>B-SPC-0250</b>	1/4"	<b>8.50</b>	<b>14.10</b>	<b>23.45</b>
<b>B-SPC-0375</b>	3/8"	<b>15.20</b>	<b>25.75</b>	<b>42.20</b>
<b>B-SPC-0500</b>	1/2"	<b>20.15</b>	<b>33.60</b>	<b>55.95</b>

\*Nominal sizes. Length and Width dimensions may be reduced by up to 1/8", due to kerf (cutting) loss. If exact dimensions are critical to your project, please **call Purchasing Services — 1-888-455-9712**.

## POLYIMIDE — Rod



Polyimide provides excellent electrical and thermal insulation, as well as maximum physical strength, elongation and toughness. Moreover, it can be machined with ordinary machine tools. Polyimide is superior to metals, and ceramics in many ways. It resists wear and fights creep. It weighs less than metal and has no glass transition point. In addition to its maximum continuous temperature rating of 500°F (260°C), Polyimide offers good mechanical strength, good radiation and wear resistance, excellent dimensional stability and low coefficient of friction

Use Polyimide Rod to create spacers, soldering fixtures, valve seats, rotary seal rings, bushings, flanged bushings, thrust washers/discs, locknut inserts, insulators, thermal and electrical insulators. etc.

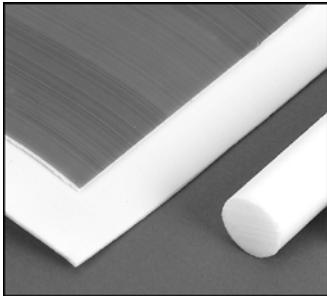
Physical Properties	Method	Temp	Value/Units
Tensile Strength, . . . . .	ASTM ..	73°F ..	13,500 psi
(Ultimate) . . . . .	D-638 ..	500°F ..	7,000 psi
Elongation, . . . . .	ASTM ..	73°F ..	7.5 %
(Ultimate) . . . . .	D-638 ..	500°F ..	8.0 %
Flexural modulus . . . . .	ASTM ..	73°F ..	650 10 <sup>3</sup> psi

### ROD — Polyimide

Available in full inch lengths only. \* Prices are based on the length of each piece cut.

Part No.	Diameter	Diameter Tolerance	Price per Inch*	
			1-11	12+
<b>B-PLR-04</b>	1/4"	+0.010" / -0.00"	<b>22.95</b>	<b>18.50</b>
<b>B-PLR-08</b>	1/2"	+0.010" / -0.00"	<b>35.10</b>	<b>28.10</b>
<b>B-PLR-12</b>	3/4"	+0.010" / -0.00"	<b>36.50</b>	<b>29.20</b>
<b>B-PLR-16</b>	1"	+0.010" / -0.00"	<b>43.45</b>	<b>34.75</b>
<b>B-PLR-24</b>	1-1/2"	+0.010" / -0.00"	<b>58.30</b>	<b>46.65</b>
<b>B-PLR-32</b>	2"	+0.010" / -0.00"	<b>100.85</b>	<b>80.75</b>

## PTFE (Teflon®) — Rod and Sheet



PTFE ([Polytetrafluoroethylene] Teflon®) has established itself as a tough, durable polymer, possessing a unique combination of electrical, chemical, mechanical and thermal properties unmatched by any other single substance. Maximum operating temperature 350° to 400°F (176° to 204°C). This material should not be heated to temperatures above 752°F (400°C).

PTFE Sheet is available in a series of nine thicknesses from 0.005" to 0.500". In addition, three of these thicknesses (0.015", 0.030" and 0.060") are also available in sheets which are etched on one side to make them bondable to other materials with most general purpose epoxies. Our stock sizes are cut from rolls and the material may be slightly curved, but it can easily be flattened by applying pressure to the whole surface.

®E.I. DuPont

### ROD — PTFE

Order Example: **B-ZRT-12-12** is 3/4" dia. × 12"

Part No.	Nominal Diameter	Actual Diameter	Approx. Weight/Ft.	Price				
				-3 3"	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-ZRT-2</b>	1/8"	0.128"	0.012 lb.	—	<b>1.25</b>	<b>2.05</b>	<b>3.45</b>	<b>4.30</b>
<b>B-ZRT-3</b>	3/16"	0.190"	0.026 lb.	—	<b>1.50</b>	<b>2.50</b>	<b>4.15</b>	<b>5.20</b>
<b>B-ZRT-4</b>	1/4"	0.254"	0.047 lb.	<b>1.45</b>	<b>1.90</b>	<b>3.60</b>	<b>6.00</b>	<b>7.50</b>
<b>B-ZRT-5</b>	5/16"	0.315"	0.060 lb.	<b>1.80</b>	<b>3.30</b>	<b>4.50</b>	<b>8.05</b>	<b>11.40</b>
<b>B-ZRT-6</b>	3/8"	0.378"	0.104 lb.	<b>2.40</b>	<b>3.30</b>	<b>5.50</b>	<b>9.75</b>	<b>13.70</b>
<b>B-ZRT-8</b>	1/2"	0.505"	0.187 lb.	<b>2.75</b>	<b>4.50</b>	<b>5.95</b>	<b>11.50</b>	<b>17.70</b>
<b>B-ZRT-12</b>	3/4"	0.755"	0.414 lb.	<b>3.50</b>	<b>6.75</b>	<b>12.50</b>	<b>23.95</b>	<b>34.10</b>
<b>B-ZRT-16</b>	1"	1.006"	0.734 lb.	<b>5.75</b>	<b>10.95</b>	<b>20.85</b>	<b>39.75</b>	<b>56.80</b>
<b>B-ZRT-24</b>	1-1/2"	1.508"	1.649 lb.	<b>12.50</b>	<b>24.00</b>	<b>45.95</b>	<b>87.50</b>	<b>124.95</b>
<b>B-ZRT-32</b>	2"	2.009"	2.929 lb.	<b>19.50</b>	<b>37.50</b>	<b>71.30</b>	<b>136.50</b>	<b>194.30</b>

### SHEET — PTFE

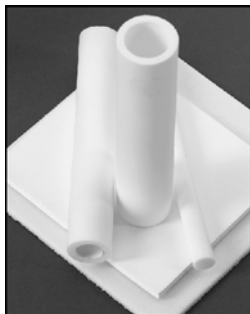
Order Example: **B-VT-30-B** is 0.030" × 6" × 12"

Part No.	Thickness	Price			
		-A 6" × 6"	-B 6" × 12"	-C 12" × 12"	-D Linear Ft.
<b>B-VT-5</b>	0.005"	<b>1.25</b>	<b>2.00</b>	<b>3.00</b>	<b>2.80</b>
<b>B-VT-15</b>	0.015"	<b>2.65</b>	<b>4.45</b>	<b>7.40</b>	<b>7.05</b>
<b>B-VT-30</b>	0.030"	<b>5.00</b>	<b>8.35</b>	<b>13.90</b>	<b>12.50</b>
<b>B-VT-60</b>	0.060"	<b>10.00</b>	<b>16.50</b>	<b>27.80</b>	<b>25.00</b>
<b>B-VT-125</b>	0.125"	<b>19.85</b>	<b>33.10</b>	<b>55.15</b>	<b>49.50</b>
<b>B-VT-187</b>	0.187"	<b>26.15</b>	<b>43.60</b>	<b>72.60</b>	<b>65.35</b>
<b>B-VT-250</b>	0.250"	<b>33.20</b>	<b>55.35</b>	<b>92.25</b>	<b>83.05</b>
<b>B-VT-375</b>	0.375"	<b>44.95</b>	<b>74.90</b>	<b>124.80</b>	<b>112.35</b>
<b>B-VT-500</b>	0.500"	<b>57.15</b>	<b>95.25</b>	<b>158.75</b>	<b>142.95</b>

### SHEET — PTFE, Bondable - Etched on One Side

Part No.	Thickness	Price			
		-A 6" × 6"	-B 6" × 12"	-C 12" × 12"	-D Linear Ft.
<b>B-VTE-15</b>	0.015"	<b>3.60</b>	<b>6.00</b>	<b>10.00</b>	<b>9.50</b>
<b>B-VTE-30</b>	0.030"	<b>6.10</b>	<b>10.15</b>	<b>16.90</b>	<b>16.05</b>
<b>B-VTE-60</b>	0.060"	<b>10.15</b>	<b>16.95</b>	<b>28.25</b>	<b>26.75</b>

## POROUS PLASTICS — PTFE, Polyethylene and Polypropylene



### POROUS PTFE, POLYETHYLENE AND POLYPROPYLENE

*Easily fabricated, chemically resistant, with controlled porosity*

Highly resilient, lightweight, and resistant to a broad spectrum of chemicals and reagents. The omni-directional, inter-connecting, open-celled pore structure of Porous Plastics can perform as a surface or depth filter; provide wicking of solutions by capillary action; venting or diffusing by controlled flow of gases; or act as a sterile barrier via controlled porosity and inherent tortuous path properties. Also used in aeration, foaming, agitation /sparging operations, and can be modified using conventional machining methods and in some cases hand tools.

**Porous PTFE Sheet** (Polytetrafluoroethylene) is the most hydrophobic of our line. Used as a caustic and a solvent filtration media, it offers exceptional chemical resistance, is very inert, and maintains its useful mechanical properties at temperatures of -100° to 500°F (-73° to 260°C). Softening point: 531°F (277°C).

**Porous Polyethylene** resists concentrated acids, alkalis, and numerous organic solvents. It can be used in continuous service at temperatures up to 180°F, (82°C) and intermittently at 240°F (116°C). If not stressed it is stable at 212°F (100°C). Softening point: 266°F (130°C).

- **Rods** allow for flexibility in fabrication. A cross sectional area can be obtained and parts can be created or customized using conventional machining tools, by press fitting, or by mechanical bonding.
- **Tubes** have a broad range of uses in gas and liquid applications. Sizes fit readily accessible Schedule 40 PVC fittings.
- **Sheet** is offered in standard hydrophobic composition, or with hydrophilic treatment, which allows parts to wick aqueous solutions and enhances flow in low pressure or gravity feed conditions.

**Porous Polypropylene Sheet** is steam sterilizable (autoclavable) and will withstand higher temperatures than polyethylene while exhibiting similar chemical resistance properties. Operating temperature ranges from 195-295°F (90-145°C) dependant on part geometry and stress on material.

### POROUS PTFE — Sheet <sup>1</sup>

Part No.	Thickness	Average Pore Size	Size	Price Each
<b>B-PPTS-06030</b>	1/16"	25μ	4-3/8" × 4-3/8"	<b>38.40</b>
<b>B-PPTS-12530</b>	1/8"	30μ	4-3/8" × 4-3/8"	<b>64.95</b>
<b>B-PPTS-25030</b>	1/4"	30μ	4-3/8" × 4-3/8"	<b>129.75</b>

<sup>1</sup> Exhibits slight curvature.

### POROUS POLYETHYLENE — Rod

Part No.	Diameter	Average Pore Size	Size	Price
<b>B-ZRWP-02</b>	1/8"	20μ	12"	<b>17.30</b>
<b>B-ZRWP-04</b>	1/4"	20μ	12"	<b>18.55</b>
<b>B-ZRWP-08</b>	1/2"	20μ	12"	<b>21.00</b>
<b>B-ZRPE-4120</b>	1/4"	120μ	12"	<b>18.55</b>
<b>B-ZRPE-8120</b>	1/2"	120μ	12"	<b>21.00</b>
<b>B-ZRPE-4250</b>	1/4"	250μ	12"	<b>18.55</b>
<b>B-ZRPE-8250</b>	1/2"	250μ	12"	<b>21.00</b>

### POROUS POLYETHYLENE— Tubes (Fits Schedule 40 PVC Fittings)

Part No.	SCH 40	Average		Average Pore Size	Price				
		O.D.	Wall		-3"	-6"	-12"	-24"	-36"
<b>B-TPE10-08</b>	1/2"	.840	.080"	10-20μ	<b>7.90</b>	<b>13.15</b>	<b>21.90</b>	<b>36.45</b>	<b>45.55</b>
<b>B-TPE10-16</b>	1"	1.29"	.125"	10-20μ	<b>8.85</b>	<b>14.75</b>	<b>24.60</b>	<b>40.95</b>	<b>51.20</b>
<b>B-TPE20-08</b>	1/2"	.840"	.080"	20-40μ	<b>7.90</b>	<b>13.15</b>	<b>21.90</b>	<b>36.45</b>	<b>45.55</b>
<b>B-TPE20-16</b>	1"	1.29"	.125"	20-40μ	<b>8.85</b>	<b>14.75</b>	<b>24.60</b>	<b>40.95</b>	<b>51.20</b>
<b>B-TPE80-08</b>	1/2"	.840"	.080"	80-120μ	<b>7.90</b>	<b>13.15</b>	<b>21.90</b>	<b>36.45</b>	<b>45.55</b>
<b>B-TPE80-16</b>	1"	1.29"	.125"	80-120μ	<b>8.85</b>	<b>14.75</b>	<b>24.60</b>	<b>40.95</b>	<b>51.20</b>



## POROUS PLASTICS — PTFE, Polyethylene and Polypropylene (cont.)

### POROUS POLYETHYLENE — Sheet

Part No.	Thickness	Average Pore Size	Size	Price Each
<b>B-SPE-040/10</b>	.040"	10-20μ	9-1/2" × 9-1/2"	<b>10.50</b>
<b>B-SPE-080/10</b>	.080"	10-20μ	9-1/2" × 9-1/2"	<b>13.15</b>
<b>B-SPE-125/10</b>	.125"	10-20μ	9-1/2" × 9-1/2"	<b>18.25</b>
<b>B-SPE-187/10</b>	.187"	10-20μ	9-1/2" × 9-1/2"	<b>24.50</b>
<b>B-SPE-040/20</b>	.040"	20-40μ	9-1/2" × 9-1/2"	<b>10.50</b>
<b>B-SPE-080/20</b>	.080"	20-40μ	9-1/2" × 9-1/2"	<b>13.15</b>
<b>B-SPE-125/20</b>	.125"	20-40μ	9-1/2" × 9-1/2"	<b>18.25</b>
<b>B-SPE-250/20</b>	.250"	20-40μ	9-1/2" × 9-1/2"	<b>29.75</b>
<b>B-SPE-080/80</b>	.080"	80-120μ	9-1/2" × 9-1/2"	<b>13.15</b>
<b>B-SPE-125/80</b>	.125"	80-120μ	9-1/2" × 9-1/2"	<b>18.25</b>
<b>B-SPE-250/80</b>	.250"	80-120μ	9-1/2" × 9-1/2"	<b>29.75</b>
<b>B-SPE-125/D</b>	.125"	<i>N/A - See Note and Chart</i>	9-1/2" × 9-1/2"	<b>24.05</b>
<b>B-SPE-250/D</b>	.250"	<i>N/A - See Note and Chart</i>	9-1/2" × 9-1/2"	<b>29.75</b>

**NOTE:** (B-SPS-125/D and B-SPS-250/D only) — This porous plastic is used for air conveying and fluidization applications, and it is not specified by pore size. Its primary use is in "fluidizing" solid particles, and is used extensively in powder coating operations, and in moving granular/powdered food stuffs. It exhibits very uniform air flow across the media's surface. Applications utilizing a hopper typically shape the material into a cone for desired results. Larger sheets available. **Call Purchasing Services toll free — 1-888-455-9712.**

#### TYPICAL AIR PERMEABILITIES — (B-SPE-125/D and B-SPE-250/D only)

IMPERIAL		METRIC	
Pressure Differential Inches Water Gauge	Permeability ft <sup>3</sup> / min / ft <sup>2</sup>	Pressure Differential mbar	Permeability m <sup>3</sup> / min / m <sup>2</sup>
2	6	5	2.00
4	10	10	3.00
8	25	20	7.75

### POROUS POLYETHYLENE — Sheet, Hydrophilic

Part No.	Thickness	Average Pore Size	Size	Price Each
<b>B-PEH-060</b>	1/16"	15-45μ	10" × 10"	<b>14.00</b>
<b>B-PEH-060/50</b>	1/16"	50-90μ	10" × 10"	<b>12.65</b>
<b>B-PEH-060/90</b>	1/16"	90-130μ	10" × 10"	<b>12.65</b>
<b>B-PEH-250/90</b>	1/4"	90-130μ	10" × 10"	<b>29.45</b>

### POROUS POLYPROPYLENE — Sheet

Part No.	Thickness	Average Pore Size	Size	Price Each
<b>B-SPP-080/20</b>	.080"	20-40μ	9-1/2" × 9-1/2"	<b>13.15</b>
<b>B-SPP-125/20</b>	.125"	20-40μ	9-1/2" × 9-1/2"	<b>18.25</b>
<b>B-SPP-187/20</b>	.187"	20-40μ	9-1/2" × 9-1/2"	<b>29.75</b>
<b>B-SPP-080/80</b>	.080"	80-120μ	9-1/2" × 9-1/2"	<b>13.15</b>
<b>B-SPP-125/80</b>	.125"	80-120μ	9-1/2" × 9-1/2"	<b>18.25</b>
<b>B-SPP-187/80</b>	.187"	80-120μ	9-1/2" × 9-1/2"	<b>24.50</b>

## RUBBER — Casting Material



**“Thin Pour” Reprubber**



**“Quick Setting Putty” Reprubber**

### REPRORUBBER<sup>®</sup>

#### **Quick, accurate reproductions with zero shrinkage**

Use this metrology-grade casting material when your test and measurement applications require precise duplication of internal and external dimensions and surface finish. Forms are permanent — no leaching, oozing or outgassing. Reprorubber readily takes impressions of metals, plastics, wood, marble, rubber, paper or cardboard items, ceramic and glass, and other materials. Other uses include fixturing, where semi-rigid structure is desired; making joints where flexibility is required, creating prototypes of rubber-type components such as gaskets, washers, etc. Or use it as a mask for high temperature plasma spray of metallic coatings. Withstands temperatures to 600°F (315°C). Non-toxic.

**“Thin Pour” Reprubber** pours into the object to be cast, filling out tiny details with exact replication. Excellent for checking parts with optical comparators, it cures quickly with zero shrinkage and works much faster than room-temperature vulcanizing Silicones. When a thin pour completely fills the cavity without voids, a detailed casting can be produced in about 20 minutes, (mix, work, and set) and no release agent is needed. Replicas are easy to remove, even if there are undercuts or grooves. Cross sectioning of the form can be done with a knife or razor. Tear strength: 44 lbs. psi. Shore A-2 Durometer: 30 (at 15 minutes). Final Color: Light Green.

**“Quick Setting Putty” Reprubber** works even faster than Thin Pour — about 14 minutes from mix to set! Made especially for external impressions, it can also be used for internal forms and needs no release agent. Final Color: Blue. Tear strength: 44 lbs. psi. Shore A-2 Durometer: 50.

<b>B-REP-130TP</b>	Thin Pour — 130 ml	<b>48.60</b>
<b>B-REP-380TP</b>	Thin Pour — 380 ml	<b>120.60</b>
<b>B-REP-200QP</b>	Quick Setting Putty — 220 ml	<b>60.60</b>
<b>B-REP-520QP</b>	Quick Setting Putty — 520 ml	<b>130.80</b>



### STATIC MIXING / DISPENSING SYSTEM Repro-Mix — Metrology Grade

#### **Reusable and rugged — No manual mixing!**

Quickly and accurately produce Reprorubber replicas with the Repro-Mix gun-style Mixing/Dispensing System. The helix mixer guarantees complete blending of base and catalyst. Low cost, disposable Helix Mixing Nozzle Tips attach and detach easily for multiple applications.

#### **Each system contains:**

- Dispensing Gun
- 10 Dual Barrel Cartridges (50ml)
- 20 each Helix Mixing Nozzle Tips, Caps, Plugs
- Complete instructions

<b>B-REP-100G</b>	Mixing Dispensing System	<b>83.40</b>
<b>B-REP-CART</b>	Replacement Pack — 10 Dual Barrel Cartridges, 20 Caps, 20 Plugs	<b>21.20</b>
<b>B-REP-20NZ</b>	20 Helix Mixing Nozzle Tips	<b>21.60</b>

## RUBBER, SILICONE RTV — Molding Kit



### SILASTIC<sup>®</sup> — Silicone Rubber Molding Kit

These Room Temperature Vulcanizing (RTV) platinum cure Silicone Rubber Molding Kits are designed for use in flexible potting, encapsulating and mold making. They are Food Grade compliant pursuant to 21CFR 177.26.00. Linear shrinkage is considered "Nil" at 0.1% after 7 days. They have the highest rating for replication of intricate detail, and pattern complexity. Useful temperature range is -67 to 392°F (-55 to 200°C).

Kit includes 1 lb. silicone rubber and 1 oz. curing agent.

<b>B-SRM-1100 Type L</b> .....	<b>38.00</b>
<b>B-SRM-1100E Type E</b> .....	<b>38.00</b>

#### CASTING MATERIAL:

This is the most important factor. Chose the product that is best for the casting material.

Material	E	L
Polyesters	Good	Fair
Polyurethane	Good	Excellent
Epoxies	Poor	Fair
Low-Melt metals	Fair	Poor
Flowmolded Vinyls	Poor	Poor

#### Properties

RTV Type	Viscosity (Poise)	Hardness (Durometer: Shore A)	Psi Tensile Strength	Elongation (%)	Working Time (Hours)	Cure Time (Hours)	Tear Strength Die B, ppi	Color
<b>E</b>	600	33	800	400	2	24	100	White*
<b>L</b>	925	35	550	550	2-1/2	24	65	Green

\*Easily Pigmented

## RULON<sup>®</sup> J — Rod



**Need a non-metallic, low friction bearing with low wear in a special size, and in small quantity?**

Rulon-J Rod is made from an all-polymeric, PTFE compound that offers low coefficient of friction (0.05 to 0.20 depending upon temperature and load), and a hardness of 60 on Shore D Scale with 0% water absorption. The material was expressly developed to run against soft materials such as Brass, Type 316 Stainless Steel, Aluminum, Zinc and plastics, and other materials which are worn rapidly by existing filled PTFE compounds. Check chemical resistance before using in a harsh acid/alkali environment.

**NOTE:** Not recommended for use with Nitric Acid or Ammonium Hydroxide. Should not be used with Sodium or Potassium Hydroxide above room temperature.

#### ROD

Order Example: **B-ZRR-04-12** is 1/4" dia. × 12"

Part No.	Nominal Diameter	Price		
		-3 3"	-6 6"	-12 12"
<b>B-ZRR-04</b>	1/4"	<b>5.05</b>	<b>8.40</b>	<b>14.00</b>
<b>B-ZRR-06</b>	3/8"	<b>8.05</b>	<b>13.40</b>	<b>22.35</b>
<b>B-ZRR-08</b>	1/2"	<b>12.30</b>	<b>20.50</b>	<b>34.20</b>
<b>B-ZRR-12</b>	3/4"	<b>28.85</b>	<b>48.05</b>	<b>80.10</b>
<b>B-ZRR-16</b>	1"	<b>51.05</b>	<b>85.05</b>	<b>141.75</b>

## URETHANE AND PHENOLIC — Rigid Foam Board



### BALSA-FOAM®

*Easy to cut, saw, and create intricate surface details*

Balsa-Foam is a dense, rigid closed cell foam material used for 3-D model making, and is used in some marine applications. It is often used by designers for actual patterns in casting molds, fiberglass molds and vacuum forming molds. Use hand tools to saw, chisel, file and carve details into your creation.

**URETHANE FOAM** has memory characteristics and will “rebound” and resist “denting”. It is not flame retardant and should be painted and glued with water based non solvent finishes. Maximum useful operating temp. is 225°F (107°C).

**PHENOLIC FOAM** has no memory characteristics and will hold an impression and can be “denting”. It is flame retardant and self extinguishing. Accepts all water based and most solvent based glues and paint finishes. Useful operating temp. is 375°F (191°C).

#### BALSA-FOAM® I — 7 lbs. / ft<sup>3</sup>

The softest, easiest-to-work Balsa-Foam offers speed and economy. It is ideal for quick form studies and concept models. Smooth texture, and excellent detail, but low durability without protective coating.

#### BALSA-FOAM® II — 12 lbs. / ft<sup>3</sup>

Still very easy to work, but much more durable than Balsa-Foam I. The 12-lb. density is hard enough for many vacuum form mold applications.

#### BALSA-FOAM® III — 20 lbs. / ft<sup>3</sup>

The hardest Balsa-Foam is the best choice when maximum durability of the model is important.

**NOTE:** Balsa-Foam is incompatible with open flames, chlorinated solvents, most acids and bases, ketones and most aromatic hydrocarbons. Prolonged contact with metals will cause corrosion. If your work generates air-borne particles, please use a dust mask. See page 460.

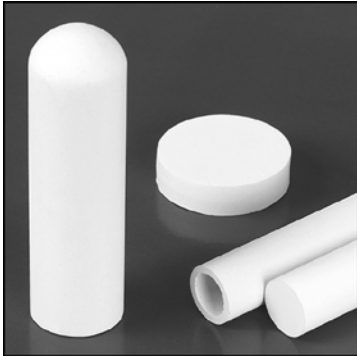
Order Example: **B-BF07-1209** is Urethane, Type I, 12" × 9" × 1"

### BALSA-FOAM® — Rigid Foam Board

Part No.	Material	Type	Density		Size	Price
			Lbs/Cubic Feet			
<b>B-BF07-0906</b>	Urethane*	I	7		9" × 6" × 1/2"	<b>3.95</b>
<b>B-BF07-1209</b>	Urethane*	I	7		12" × 9" × 1"	<b>7.25</b>
<b>B-BF07-1292</b>	Urethane*	I	7		12" × 9" × 2-1/2"	<b>18.75</b>
<b>B-BF07-1204</b>	Urethane*	I	7		12" × 4-1/2" × 5"	<b>16.75</b>
<b>B-BF07-2418</b>	Urethane*	I	7		24" × 18" × 5"	<b>77.95</b>
<b>B-BF12-0906</b>	Urethane*	II	12		9" × 6" × 1/2"	<b>5.75</b>
<b>B-BF12-1209</b>	Urethane*	II	12		12" × 9" × 1"	<b>9.95</b>
<b>B-BF12-1292</b>	Urethane*	II	12		12" × 9" × 2-1/2"	<b>20.95</b>
<b>B-BF12-1204</b>	Urethane*	II	12		12" × 4-1/2" × 5"	<b>20.95</b>
<b>B-BF12-2418</b>	Urethane*	II	12		24" × 18" × 5"	<b>125.95</b>
<b>B-PBF07-0906</b>	Phenolic	I	7		9" × 6" × 1/2"	<b>4.75</b>
<b>B-PBF07-1209</b>	Phenolic	I	7		12" × 9" × 1"	<b>7.55</b>
<b>B-PBF07-1292</b>	Phenolic	I	7		12" × 9" × 2-1/2"	<b>19.35</b>
<b>B-PBF07-1204</b>	Phenolic	I	7		12" × 4-1/2" × 5"	<b>17.10</b>
<b>B-PBF07-2418</b>	Phenolic	I	7		24" × 18" × 5"	<b>80.00</b>
<b>B-PBF12-0906</b>	Phenolic	II	12		9" × 6" × 1/2"	<b>6.45</b>
<b>B-PBF12-1209</b>	Phenolic	II	12		12" × 9" × 1"	<b>10.95</b>
<b>B-PBF12-1292</b>	Phenolic	II	12		12" × 9" × 2-1/2"	<b>22.25</b>
<b>B-PBF12-1204</b>	Phenolic	II	12		12" × 4-1/2" × 5"	<b>22.70</b>
<b>B-PBF12-2418</b>	Phenolic	II	12		24" × 18" × 5"	<b>127.15</b>
<b>B-PBF20-0906</b>	Phenolic	III	20		9" × 6" × 1/2"	<b>8.10</b>
<b>B-PBF20-1209</b>	Phenolic	III	20		12" × 9" × 1"	<b>13.25</b>
<b>B-PBF20-1292</b>	Phenolic	III	20		12" × 9" × 2-1/2"	<b>31.80</b>
<b>B-PBF20-1204</b>	Phenolic	III	20		12" × 4-1/2" × 5"	<b>33.40</b>
<b>B-PBF20-2418</b>	Phenolic	III	20		24" × 18" × 5"	<b>193.30</b>

\*Available while supplies last.

## CERAMIC, POROUS — Rod, Cylinders, Cups and Disks



**Physically robust, chemically inert, rigid, and resistant to high temperatures and corrosion**

Hydrophilic Porous Ceramics meet demanding pressure and high temperature conditions with consistent pore structures and uniform hydraulic conductivity. The open pore structure provides a convoluted path of interconnecting networked channels, allowing complete flow throughout the material for migrating liquids and/or gases.

Their naturally wettable and durable properties are valued in long-term applications and where capillarity and flow characteristics must remain constant. Used in filtration, diffusion, aeration, venting, and muffling applications, as well as for measuring and sampling processes, Porous Ceramics exhibit excellent strength, with low electrical and thermal conductivity, plus corrosion resistance and high wear at elevated temperatures and pressures.

They are generally inert, reusable and cleanable, and will not oxidize or leak below their bubbling pressure. Non-shedding and environmentally safe, they can be cleaned conventionally or in a burnout oven, and sterilized with straight heat, steam or gas (Ethylene Oxide). For machining guidelines give us a call.

### SPECIFICATIONS

Air Entry Value (1 Bar = 14.7 psi)	Pore Size/Void Volume	Bubbling Pressure	Composition / Color	Hardness
1/2 Bar	6μ / 50%	7-9 psi	High Fired Alumina / Pure White	Hard
1 Bar Standard	2.1μ / 38%	20-30 psi	Moderately Fired, Largely Talc / Ivory White	Tough
1 Bar High Flow	2.5μ / 45%	19-28 psi	High Fired Alumina / Pure White	Hard
2 Bar	1.2μ / 34%	35-45 psi	Moderately Fired Ceramic / Creamy White	Moderately Hard
3 Bar	0.8μ / 34%	47-70 psi	Moderately Fired Ceramic / Tannish White	Moderately Hard
5 Bar	0.5μ / 31%	80 psi	Fired Ceramic / Brownish White	Very Hard
15 Bar	0.16μ / 32%	220 psi	Fired Ceramic / Pinkish Tan	Moderately Hard

### ROD

Part No.	Diameter	Length	Air Entry Value	Pore Size	Price Each
<b>B-ZPC-0860</b>	1/2" O.D.	2"	1/2 Bar	6μ	<b>13.25</b>
<b>B-ZPC-1660</b>	1" O.D.	2"	1/2 Bar	6μ	<b>26.00</b>
<b>B-ZPC-0825</b>	1/2" O.D.	2"	1 Bar High Flow	2.5μ	<b>13.25</b>
<b>B-ZPC-1625</b>	1" O.D.	2"	1 Bar High Flow	2.5μ	<b>26.00</b>

### CYLINDERS

<b>B-PCT-0821</b>	1/2" O.D. × 3/8" I.D.	11"	1 Bar Standard	2.1μ	<b>34.00</b>
<b>B-PCT-1625</b>	1" O.D. × 3/4" I.D.	12"	1 Bar High Flow	2.5μ	<b>43.60</b>

### ROUND BOTTOM, STRAIGHT WALL CUP

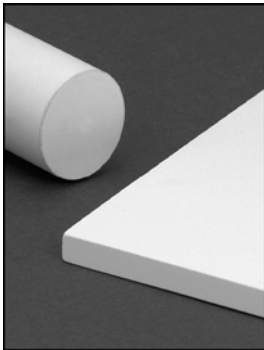
<b>B-PCC-1221</b>	3/8" O.D. × 1/4" I.D.	1-1/8"	1 Bar Standard	2.1μ	<b>10.65</b>
<b>B-PCC-1212</b>	3/8" O.D. × 1/4" I.D.	1-1/8"	2 Bar	1.2μ	<b>14.80</b>
<b>B-PCC-1208</b>	3/8" O.D. × 1/4" I.D.	1-1/8"	3 Bar	0.8μ	<b>15.60</b>
<b>B-PCC-1205</b>	3/8" O.D. × 1/4" I.D.	1-1/8"	5 Bar	0.5μ	<b>13.35</b>

### DISKS

Part No.	Diameter	Thickness	Air Entry Value	Pore Size	Price Each
<b>B-PCD-18060</b>	1-1/8" O.D.	0.281"	1/2 Bar	6μ	<b>13.20</b>
<b>B-PCD-18250</b>	1-1/8" O.D.	0.281"	1 Bar High Flow	2.5μ	<b>10.80</b>
<b>B-PCD-18080</b>	1-1/8" O.D.	0.281"	3 Bar	0.8μ	<b>9.20</b>
<b>B-PCD-18050</b>	1-1/8" O.D.	0.281"	5 Bar	0.5μ	<b>12.40</b>
<b>B-PCD-18016</b>	1-1/8" O.D.	0.281"	15 Bar	0.16μ	<b>13.20</b>

Other sizes available. **Call Purchasing Services — 1-888-455-9712.**

## CERAMIC — Rods and Plates



### MACHINABLE RODS AND PLATES — Bisque Alumina

High hardness and capacity for close dimensional tolerances make Ceramic Rods and Plates suitable for forming abrasion resistant components that stand up to corrosion and thermal extremes. Widely used as electrical insulators, and in chemical and aerospace applications, parts made of Bisque Alumina Ceramics are readily fabricated using conventional cutting tools; however carbide tools last longer. Parts can be easily prototyped or mass produced and after machining, further fired to achieve ultimate properties if required.

Bisque Alumina is an Aluminum Oxide fired to approximately 2475°F (1357°C). It can be used in its bisque form or in a fully fired state. When fully fired to approximately 3100°F (1704°C) it becomes a dense, hard material and both electrical and mechanical properties increase. When fully fired, Bisque Alumina shrinks between 15% and 18%.

#### RODS — Bisque Alumina

Part No.	Diameter	Rod Weight	Price Each Length 12"
<b>B-MCR-0250</b>	1/4"	2 oz.	<b>41.00</b>
<b>B-MCR-0375</b>	3/8"	3 oz.	<b>27.80</b>
<b>B-MCR-0500</b>	1/2"	7 oz.	<b>42.00</b>
<b>B-MCR-0750</b>	3/4"	9 oz.	<b>67.05</b>
<b>B-MCR-1000</b>	1"	14 oz.	<b>90.70</b>
<b>B-MCR-2000</b>	2"	28 oz.	<b>138.60</b>

#### PLATES, 6" × 6" — Bisque Alumina

Part No.	Thickness	Plate Weight	Price Each 6" × 6"
<b>B-MCP-250</b>	1/4"	16 oz.	<b>91.15</b>
<b>B-MCP-500</b>	3/8"	32 oz.	<b>113.65</b>

## CERAMIC — Cements



### AIR SETTING CERAMIC CEMENT

This air setting ceramic cement is inorganic and contains sodium silicate binders. Sodium Silicate is a water soluble salt commonly known as "soluble glass". It cures by loss of moisture through water evaporation. Cure may be accelerated by low temperature oven drying. It is characterized for good bonding strength with most metals, ceramics and glass surfaces. It is best utilized as a thin coating or for sealing applications where coating thickness is less than 1/4". It has good thermal shock resistance, thermally conductive, and is electrically insulating. Working time (or pot life) is virtually unlimited if not exposed to air, making this material best suited for automated dispensing equipment. Due to its inorganic composition, this cement is very stable, will not outgas or cause skin irritations. Maximum service temperature: 1800°F (982°C).

#### Applications:

This material is specified throughout the automotive, appliance and assembly industries for bonding, insulating and encapsulating applications. Upon curing it resembles a durable ceramic and is used to replace sealing wax, bolts, nuts and screws because of its ability to readily adhere to practically any clean non plastic surface.

**B-CCMT-P1** Air Setting Cement — One Quart — Color: Off-white. . . . . **48.20**



### CHEMICAL SETTING CERAMIC CEMENT

This chemical setting material is a phosphate bonded potting cement with a zircon base. Excellent volume stability of these cements qualify them as ideal materials for potting thick sections since they cure chemically from the inside. Suited for applications with ceramics, glass and metal and will not corrode most metal alloys due to their neutral PH. Primarily used where high electrical insulation and thermal conductivity is desired. Working time (pot life) after powder is mixed with water is approx. 30 minutes at 70°F (21°C). This cement hardens with an internal chemical setting action after 18 - 24 hours at ambient temperature. Maximum service temperature: 2600°F (1427°C).

#### Applications:

Encapsulation of resistors, heating elements, high intensity lamps, thermocouples and insulators.

**B-CCMT-08** Chemical Setting Cement — One Quart — Color: Off-white. . . . . **79.00**

## CERAMIC — Heat Shielding Compound

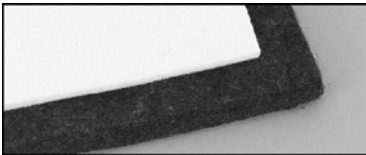


This clay-like substance contains "Space Age" ceramic fiber (containing no asbestos) that will not burn, deform or swell with the application of heat. Easy to apply and remove, this product holds all parts securely during brazing or soldering. It also effectively shields adjacent areas from heat. This product can be reconstituted by adding water and USED OVER AND OVER AGAIN.

Heat Shielding Compound is conveniently packaged in resealable polypropylene jars with screw-on caps.

**B-SO-FH6** 4 fluid oz. jar —6 oz. compound . . . . . **16.75**  
**B-SO-FH12** 8 fluid oz. jar —12 oz. compound . . . . . **33.15**

## FELT — Wool



Felt is used in many applications, including sound absorption, vibration deadening, filtration, cushioning, thermal insulation, wicking, gaskets and washers. Type SAE F-5 Felt (white) has a minimum wool content of 95%, and is suggested for use where a firm, resilient felt is required. Type SAE F-13 is a gray combination of 75% wool and 25% fiber, recommended when abrasion and wear are not factors of special importance.

### FELT — Wool, Pressed

Part No.	Type	Color	Thickness	Weight oz/sq ft	Price			
					-A 3" × 6"	-B 6" × 12"	-C 12" × 12"	-D 12" × 24"
<b>B-FELT-5/2</b>	SAE F-5	White	1/8"	2.66	<b>9.05</b>	<b>30.05</b>	<b>50.10</b>	<b>83.50</b>
<b>B-FELT-5/4</b>	SAE F-5	White	1/4"	5.33	<b>7.75</b>	<b>25.85</b>	<b>43.05</b>	<b>71.75</b>
<b>B-FELT-5/6</b>	SAE F-5	White	3/8"	8.00	<b>6.25</b>	<b>20.80</b>	<b>34.70</b>	<b>57.80</b>
<b>B-FELT-13/2</b>	SAE F-13	Gray	1/8"	1.88	<b>3.05</b>	<b>10.10</b>	<b>16.80</b>	<b>28.00</b>
<b>B-FELT-13/4</b>	SAE F-13	Gray	1/4"	3.79	<b>3.70</b>	<b>12.25</b>	<b>20.50</b>	<b>34.05</b>
<b>B-FELT-13/6</b>	SAE F-13	Gray	3/8"	5.67	<b>4.85</b>	<b>16.10</b>	<b>26.85</b>	<b>44.70</b>

## FISH PAPER — Insulating Cotton Rag

Useful for insulating and wrapping small electrical items. Dark gray Fish Paper is made of cotton rag, and is processed similarly to vulcanized fiber.

Thickness vs. Dielectric	Volts per mil
0.005" . . . . .	200
Over 0.005" to 0.015" . . . . .	300
Over 0.015" to 0.040" . . . . .	250

### FISH PAPER

Part No.	Thickness	Tensile Strength (lbs. per square inch)		Price Each 18" × 21"
		Crosswise	Lengthwise	
<b>B-FSHP-05</b>	0.005"	6,000	8,000	<b>3.35</b>
<b>B-FSHP-10</b>	0.010"	6,000	8,000	<b>4.35</b>
<b>B-FSHP-20</b>	0.020"	6,000	8,000	<b>8.60</b>
<b>B-FSHP-30</b>	0.030"	6,000	8,000	<b>11.85</b>

## CLEANERS AND COLORING MATERIALS — Metals



### BIRCHWOOD CASEY

A selection of chemicals and cleaners that enable the metal worker to safely color metals with ease. No heat or special tools are required. Will not harm the metal or change the part dimension.

#### SUPER BLUE

Double-strength concentrate for a deep blue-black finish. Penetrates instantly. Colors all ferrous metals except stainless steel.

**B-YCL-SB** Bottle - 3 fl. oz. . . . . Each **7.30**

#### ALUMINUM BLACK

For use on aluminum and aluminum alloys. Color varies from pewter to deep black depending on alloy treated.

**B-YCL-AB** Bottle - 3 fl. oz. . . . . Each **8.05**

#### BRASS BLACK

For use on brass and copper. The color is black.

**B-YCL-BB** Bottle - 3 fl. oz. . . . . Each **8.05**

#### PLUM BROWN

Produces a rich brown color on iron and steel.

**B-YCL-PB** Bottle - 5 fl. oz. . . . . Each **9.05**

#### CLEANER - DEGREASER

Liquid degreaser and preblue conditioner removes dirt, grease, oil, silicon, and wax quickly and easily. Safe, no harmful fumes, non-flammable and an effective way to clean metal.

**B-YCL-CD** Bottle - 3 fl. oz. . . . . **4.85**

#### BLUE AND RUST REMOVER

A reliable cold chemical that removes old blue and rust easily and quickly. Recommended for use before recoloring. A great rust remover for tools, gauges, etc. Will not harm base metals.

**B-YCL-R** Bottle - 3 fl. oz. . . . . Each **4.85**

#### LAYOUT FLUID - RED OR BLUE

Apply to any metal surface for sharp, clear scribe lines. Stands up under coolants when machining. Supplied in 4 oz. screw-cap bottles.

**B-YCL-BLUE** Bottle - 4 fl. oz. . . . . Each **5.75**

**B-YCL-RED** Bottle - 4 fl. oz. . . . . Each **5.75**



### VAPOR CORROSION INHIBITORS — Foam Pad

Cortec® VCI Emitters are anti-rust agents that protect your valuable investment through the slow release of a protective vapor into the interior of any enclosed and nonventilated housing. If the enclosure is opened, the protective vapor will quickly reform once the container is closed. No surface preparation is ever required. It's easy to handle and apply, and very economical. Metals protected are: stainless steels, carbon steels, aluminum, copper, brass and solder.

® Cortec Corporation

These pads provide up to 24 months of corrosion protection over a 1.0 cubic foot area for ferrous and nonferrous metals. It can be used inside of electrical panels, tool and spare parts boxes, computer equipment, switch cabinets and marine, aerospace and military instruments, etc. CONTAINS NO SILICONS, PHOSPHATES, HEAVY METALS OR NITRITES. Each nontoxic pad has a self-adhesive backing and measures 3" x 1.2" x 0.25".

**B-CIF-1** Package of 5 pads . . . . . **21.00**



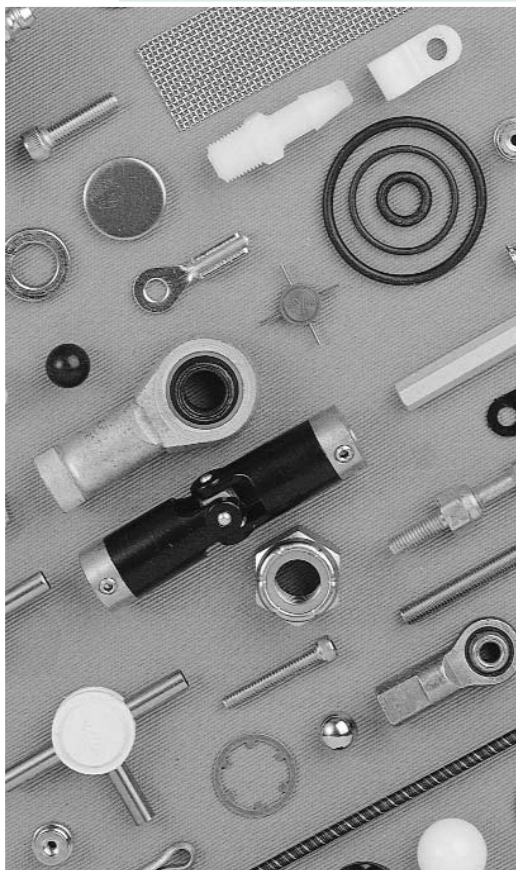
### PICKLING COMPOUND

Pickling is a process for cleaning and removing surface oxidation, scale, and incrustation from metals. Such build-ups frequently occur in soldering, brazing or welding applications. To produce smooth, clean surfaces, mix this granular, dry acid compound with water and immerse the metal item or work piece in the pickling solution. A 10 oz. container makes a one quart solution. The 2-1/2 pound container makes a gallon. Use Copper Tongs to avoid "poisoning" the pickling solution, [page NO TAG](#).

Part No.	Description	Application	Size	Price Each
<b>B-SO-PC140</b>	SPAREX No. 1	Steel, Iron	2-1/2 lb.	<b>6.00</b>
<b>B-SO-PC210</b>	SPAREX No. 2	Gold, Silver, Copper based alloys	10 oz.	<b>3.10</b>
<b>B-SO-PC240</b>	SPAREX No. 2	Gold, Silver, Copper based alloys	2-1/2 lb.	<b>6.00</b>



# COMPONENTS



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## TUBING — Hypodermic, Stainless Steel Type 304



This hard-tempered, small-bore tubing is used to create plumbing circuits for gases and liquids. It is widely used in the medical, mechanical, electronic, chemical and aeronautical fields. Commonly called "seamless" because of its cosmetic appearance, Hypodermic Tubing Type 304 is actually welded and drawn. Full hard, but can be annealed in an inert atmosphere. The annealing point is 1950°F (1065°C). The dimensional tolerance is uniform over the piece length.

All tubing is I.D. and O.D. deburred and air purged (except B-HTX-35). Hypodermic Tubing gauges are based on the Birmingham Gage, also known as Stub's Iron Wire Gage. Bright finish.

### STAINLESS STEEL TYPE 304 — Regular Wall

Order Example: **B-HTX-33-24** is 33 ga. x 24"

Part No.	Relative Visual Diameter	Gauge	Dimensions in Inches			Tolerances in Inches		Suffix					
			O.D.	I.D.	Wall <sup>1</sup>	O.D.	I.D.	-6 6"	-12 12"	-24 24"	-36 36"		
B-HTX-35	————	35	.0058	.0025	.0016	±.00025	±.0005	<b>18.00</b>	<b>27.25</b>	<b>45.50</b>	—		
B-HTX-33	————	33	.008	.004	.002	±.0005 −.0000	+.001 −.0005	<b>4.50</b>	<b>7.50</b>	<b>12.50</b>	—		
B-HTX-32	————	32	.009	.004	.0025			<b>3.55</b>	<b>5.90</b>	<b>9.85</b>	—		
B-HTX-31	————	31	.010	.005	.0025			<b>2.85</b>	<b>4.40</b>	<b>6.70</b>	—		
B-HTX-30	————	30	.012	.006	.003			<b>2.05</b>	<b>3.45</b>	<b>5.70</b>	<b>7.10</b>		
B-HTX-29	————	29	.013	.007	.003			<b>1.70</b>	<b>3.05</b>	<b>5.05</b>	<b>6.30</b>		
B-HTX-28	————	28	.014	.007	.0035			<b>1.70</b>	<b>2.85</b>	<b>4.75</b>	<b>5.95</b>		
B-HTX-27	————	27	.016	.008	.004			<b>1.70</b>	<b>2.85</b>	<b>4.75</b>	<b>5.95</b>		
B-HTX-26	————	26	.018	.010	.004			<b>1.55</b>	<b>2.60</b>	<b>4.35</b>	<b>5.40</b>		
B-HTX-25	————	25	.020	.010	.005			<b>1.55</b>	<b>2.60</b>	<b>4.35</b>	<b>5.40</b>		
B-HTX-24	————	24	.022	.012	.005			<b>1.55</b>	<b>2.60</b>	<b>4.35</b>	<b>5.40</b>		
B-HTX-23	————	23	.025	.013	.006	±.0005 ±.0015	±.0015	<b>1.75</b>	<b>2.90</b>	<b>4.85</b>	<b>6.05</b>		
B-HTX-22	————	22	.028	.016	.006			<b>1.75</b>	<b>2.90</b>	<b>4.85</b>	<b>6.05</b>		
B-HTX-21-1/2	————	21-1/2	.030	.023	.0035			<b>2.15</b>	<b>3.60</b>	<b>5.95</b>	<b>7.45</b>		
B-HTX-21	————	21	.032	.020	.006			<b>1.75</b>	<b>2.90</b>	<b>4.85</b>	<b>6.05</b>		
B-HTX-20	————	20	.0355	.023	.006			<b>1.90</b>	<b>3.15</b>	<b>5.25</b>	<b>6.55</b>		
B-HTX-19	————	19	.042	.027	.0075			±.0005	±.0015	<b>1.95</b>	<b>3.25</b>	<b>5.40</b>	<b>6.75</b>
B-HTX-18	————	18	.050	.033	.0085					<b>2.15</b>	<b>3.60</b>	<b>5.95</b>	<b>7.45</b>
B-HTX-051*	————	N/S	.051	.038	.0065					<b>2.40</b>	<b>3.95</b>	<b>6.60</b>	<b>8.25</b>
B-HTX-17	————	17	.058	.042	.008					<b>2.20</b>	<b>3.65</b>	<b>6.10</b>	<b>7.60</b>
B-HTX-16	————	16	.065	.047	.009					<b>2.25</b>	<b>3.70</b>	<b>6.15</b>	<b>7.65</b>
B-HTX-15	————	15	.072	.054	.009	<b>2.30</b>	<b>3.75</b>			<b>6.20</b>	<b>7.75</b>		
B-HTX-14	————	14	.083	.063	.010	±.001	±.002			<b>2.35</b>	<b>3.90</b>	<b>6.50</b>	<b>8.10</b>
B-HTX-13-1/2	————	13-1/2	.089	.071	.009					<b>2.45</b>	<b>4.05</b>	<b>6.75</b>	<b>8.45</b>
B-HTX-13	————	13	.095	.071	.012					<b>2.45</b>	<b>4.10</b>	<b>6.80</b>	<b>8.50</b>
B-HTX-12-1/2	————	12-1/2	.100	.082	.009					<b>2.60</b>	<b>4.30</b>	<b>7.15</b>	<b>8.95</b>
B-HTX-12	————	12	.109	.085	.012			<b>2.65</b>	<b>4.45</b>	<b>7.40</b>	<b>9.25</b>		
B-HTX-11-1/2	————	11-1/2	.115	.095	.010			<b>2.75</b>	<b>4.55</b>	<b>7.60</b>	<b>9.50</b>		
B-HTX-11	————	11	.120	.094	.013			<b>2.75</b>	<b>4.65</b>	<b>7.70</b>	<b>9.60</b>		
B-HTX-10	————	10	.134	.106	.014			<b>2.80</b>	<b>4.70</b>	<b>7.80</b>	<b>9.75</b>		

<sup>1</sup> Nominal wall thickness. For reference only.

\* Not a standard gauge.

## TUBING — Hypodermic, Stainless Steel Type 304 (cont.)

### STAINLESS STEEL TYPE 304 — Regular Wall (cont.)

Order Example: **B-HTX-9-24** is 9 ga. x 24"

Part No.	Relative Visual Diameter	Gauge	Dimensions in Inches			Tolerances in Inches		Suffix			
			O.D.	I.D.	Wall <sup>1</sup>	O.D.	I.D.	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-HTX-143*</b>	█	N/S	.143	.114	.0145	±.001	±.003	<b>3.05</b>	<b>5.05</b>	<b>8.40</b>	<b>10.50</b>
<b>B-HTX-9</b>	█	9	.148	.118	.015			<b>2.90</b>	<b>4.80</b>	<b>8.00</b>	<b>10.00</b>
<b>B-HTX-8</b>	█	8	.165	.135	.015			<b>2.90</b>	<b>4.80</b>	<b>8.00</b>	<b>10.00</b>
<b>B-HTX-175*</b>	█	N/S	.175	.145	.015			<b>3.20</b>	<b>5.30</b>	<b>8.80</b>	<b>11.00</b>
<b>B-HTX-7</b>	█	7	.180	.150	.015			<b>3.05</b>	<b>5.05</b>	<b>8.35</b>	<b>10.45</b>
<b>B-HTX-6-1/2</b>	█	6-1/2	.188	.168	.010			<b>3.05</b>	<b>5.05</b>	<b>8.40</b>	<b>10.50</b>
<b>B-HTX-6</b>	█	6	.203	.173	.015			<b>3.25</b>	<b>5.30</b>	<b>8.75</b>	<b>10.95</b>
<b>B-HTX-216*</b>	█	N/S	.216	.178	.019			<b>3.20</b>	<b>5.30</b>	<b>8.80</b>	<b>11.00</b>
<b>B-HTX-5</b>	█	5	.220	.189	.0155			<b>3.35</b>	<b>5.55</b>	<b>9.20</b>	<b>11.50</b>
<b>B-HTX-4</b>	█	4	.238	.198	.020			<b>3.35</b>	<b>5.55</b>	<b>9.20</b>	<b>11.50</b>
<b>B-HTX-246*</b>	█	N/S	.246	.210	.018			<b>3.35</b>	<b>5.55</b>	<b>9.20</b>	<b>11.50</b>

<sup>1</sup>Nominal wall thickness. For reference only.

\*Not a standard gauge.

### ASSORTMENTS

#### Stainless Steel Type 304 — Regular Wall

Part No.	24" Lengths	No. of Pieces	Price Each
<b>B-HTX-100</b>	One length each size B-HTX-21 through B-HTX-33	14	<b>74.55</b>
<b>B-HTX-200</b>	One length each size B-HTX-4 through B-HTX-20	25	<b>166.75</b>
<b>B-HTX-300</b>	One length each size B-HTX-10 through B-HTX-30	26	<b>137.85</b>

### STAINLESS STEEL TYPE 304 — Heavy Wall

Order Example: **B-HTX-16-6HW** is 16 ga. x 6"

Part No.	Gauge	Dimensions in Inches			Tolerances in Inches		Suffix			
		O.D.	I.D.	Wall <sup>1</sup>	O.D.	I.D.	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-HTX-22HW</b>	22	.028	.011	.0085	±.0005	±.0015	<b>4.65</b>	<b>7.80</b>	<b>12.95</b>	<b>16.25</b>
<b>B-HTX-21HW</b>	21	.032	.016	.008			<b>4.65</b>	<b>7.80</b>	<b>12.95</b>	<b>16.25</b>
<b>B-HTX-20HW</b>	20	.036	.018	.009			<b>4.65</b>	<b>7.80</b>	<b>12.95</b>	<b>16.25</b>
<b>B-HTX-19HW</b>	19	.042	.022	.010			<b>4.65</b>	<b>7.80</b>	<b>12.95</b>	<b>16.25</b>
<b>B-HTX-18HW</b>	18	.050	.030	.010			<b>4.80</b>	<b>7.90</b>	<b>13.15</b>	<b>16.50</b>
<b>B-HTX-17HW</b>	17	.059	.039	.010			<b>4.95</b>	<b>8.20</b>	<b>13.65</b>	<b>17.10</b>
<b>B-HTX-16HW</b>	16	.065	.033	.016			<b>5.85</b>	<b>9.75</b>	<b>16.20</b>	<b>20.25</b>
<b>B-HTX-14HW</b>	14	.083	.049	.017			<b>6.15</b>	<b>10.20</b>	<b>17.00</b>	<b>21.25</b>
<b>B-HTX-13HW</b>	13	.095	.063	.016			<b>6.25</b>	<b>10.30</b>	<b>17.25</b>	<b>21.65</b>
<b>B-HTX-106HW*</b>	N/S	.106	.075	.0155			<b>6.80</b>	<b>11.30</b>	<b>18.80</b>	<b>23.50</b>
<b>B-HTX-12HW</b>	12	.109	.077	.016			<b>6.35</b>	<b>10.55</b>	<b>17.60</b>	<b>22.00</b>
<b>B-HTX-11HW</b>	11	.120	.087	.0165			<b>6.75</b>	<b>11.30</b>	<b>18.80</b>	<b>23.50</b>
<b>B-HTX-10-1/2HW</b>	10-1/2	.125	.092	.0165	<b>6.75</b>	<b>11.30</b>	<b>18.80</b>	<b>23.50</b>		

<sup>1</sup> Nominal wall thickness. For reference only.

\* Not a standard gauge.

## TUBING — Hypodermic, Stainless Steel Type 304 (cont.)

**STAINLESS STEEL TYPE 304 — Extra Thin Wall** Order Example: **B-HTX-19-36XTW** is 19 ga. x 36"

Part No.	Gauge	Dimensions in Inches			Tolerances in Inches		Suffix Price per Length			
		O.D.	I.D.	Wall <sup>1</sup>	O.D.	I.D.	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-HTX-25XTW</b>	25	.020	.014	.003	+.0005 -.0000	+.001 -.0005	<b>3.25</b>	<b>5.25</b>	<b>8.25</b>	<b>10.50</b>
<b>B-HTX-23XTW</b>	23	.025	.020	.0025			<b>3.10</b>	<b>4.85</b>	<b>7.95</b>	<b>10.00</b>
<b>B-HTX-21XTW</b>	21	.032	.025	.0035	±.0005		<b>2.85</b>	<b>4.70</b>	<b>7.80</b>	<b>9.75</b>
<b>B-HTX-19XTW</b>	19	.042	.035	.0035			<b>2.85</b>	<b>4.70</b>	<b>7.80</b>	<b>9.75</b>
<b>B-HTX-18XTW</b>	18	.050	.042	.004			<b>3.30</b>	<b>5.50</b>	<b>9.15</b>	<b>11.45</b>
<b>B-HTX-17XTW</b>	17	.058	.050	.004			<b>3.30</b>	<b>5.50</b>	<b>9.15</b>	<b>11.45</b>
<b>B-HTX-16XTW</b>	16	.065	.056	.0045			±.001		<b>3.40</b>	<b>5.65</b>
<b>B-HTX-14XTW</b>	14	.083	.072	.0055	<b>3.40</b>	<b>5.65</b>			<b>9.40</b>	<b>11.75</b>
<b>B-HTX-13XTW</b>	13	.095	.085	.005	<b>3.40</b>	<b>5.65</b>			<b>9.40</b>	<b>11.75</b>
<b>B-HTX-9XTW</b>	9	.148	.135	.0065		±.002	<b>3.55</b>	<b>5.90</b>	<b>9.80</b>	<b>12.25</b>

**STAINLESS STEEL TYPE 304 — Thin Wall** Order Example: **B-HTX-23-12TW** is 23 ga. x 12"

Part No.	Gauge	Dimensions in Inches			Tolerances in Inches		Suffix Price per Length			
		O.D.	I.D.	Wall <sup>1</sup>	O.D.	I.D.	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-HTX-28TW</b>	28	.014	.010	.002	±.0005	±.001	<b>2.45</b>	<b>4.05</b>	<b>6.70</b>	<b>8.35</b>
<b>B-HTX-27TW</b>	27	.016	.012	.002			<b>2.45</b>	<b>4.05</b>	<b>6.70</b>	<b>8.35</b>
<b>B-HTX-25TW</b>	25	.020	.012	.004	+.0005 -.0000	+.001 -.0005	<b>1.45</b>	<b>2.40</b>	<b>4.05</b>	<b>4.95</b>
<b>B-HTX-24TW</b>	24	.022	.014	.004			<b>1.45</b>	<b>2.40</b>	<b>4.05</b>	<b>4.95</b>
<b>B-HTX-23TW</b>	23	.025	.017	.004			<b>1.45</b>	<b>2.40</b>	<b>4.05</b>	<b>4.95</b>
<b>B-HTX-22TW</b>	22	.028	.020	.004			<b>1.45</b>	<b>2.40</b>	<b>4.05</b>	<b>4.95</b>
<b>B-HTX-21TW</b>	21	.032	.023	.0045	+.0005 -.001		<b>1.55</b>	<b>2.40</b>	<b>4.15</b>	<b>5.00</b>
<b>B-HTX-20TW</b>	20	.0355	.026	.0045			<b>1.70</b>	<b>2.80</b>	<b>4.80</b>	<b>5.80</b>
<b>B-HTX-19TW</b>	19	.042	.032	.005	±.0005	+.0015 -.0005	<b>1.75</b>	<b>2.85</b>	<b>4.85</b>	<b>5.85</b>
<b>B-HTX-18TW</b>	18	.050	.038	.006			<b>1.85</b>	<b>3.15</b>	<b>5.20</b>	<b>6.50</b>
<b>B-HTX-17TW</b>	17	.058	.047	.0055	±.0005		<b>1.95</b>	<b>3.25</b>	<b>5.40</b>	<b>6.75</b>
<b>B-HTX-16TW</b>	16	.065	.053	.006			<b>1.95</b>	<b>3.25</b>	<b>5.40</b>	<b>6.75</b>
<b>B-HTX-15TW</b>	15	.072	.060	.006			<b>1.95</b>	<b>3.25</b>	<b>5.40</b>	<b>6.75</b>
<b>B-HTX-14TW</b>	14	.083	.067	.008			<b>2.00</b>	<b>4.05</b>	<b>6.70</b>	<b>8.35</b>
<b>B-HTX-13TW</b>	13	.095	.077	.009			<b>2.90</b>	<b>4.70</b>	<b>7.80</b>	<b>9.75</b>
<b>B-HTX-12TW</b>	12	.109	.091	.009	±.001	+.0015 -.0005	<b>2.90</b>	<b>4.70</b>	<b>7.80</b>	<b>9.75</b>
<b>B-HTX-11TW</b>	11	.120	.100	.010			<b>2.90</b>	<b>4.70</b>	<b>7.80</b>	<b>9.75</b>
<b>B-HTX-10TW</b>	10	.134	.114	.010			<b>2.90</b>	<b>4.70</b>	<b>7.80</b>	<b>9.75</b>
<b>B-HTX-9TW</b>	9	.148	.128	.010			<b>3.30</b>	<b>5.50</b>	<b>9.15</b>	<b>11.45</b>
<b>B-HTX-8TW</b>	8	.165	.145	.010	±.002		<b>3.30</b>	<b>5.50</b>	<b>9.15</b>	<b>11.45</b>
<b>B-HTX-7TW</b>	7	.180	.160	.010			<b>3.35</b>	<b>5.55</b>	<b>9.20</b>	<b>11.50</b>
<b>B-HTX-6TW</b>	6	.203	.183	.010			<b>3.40</b>	<b>5.65</b>	<b>9.45</b>	<b>11.80</b>

<sup>1</sup> Nominal wall thickness. For reference only.

### ASSORTMENTS

#### Stainless Steel Type 304 — Thin Wall

Part No.	24" Lengths	No. of Pieces	Price Each
<b>B-HTX-400TW</b>	One length each size B-HTX-6TW through B-HTX-28TW	22	<b>125.70</b>

**Fusible Metals (low melting alloys) can be used to help prevent distortion when bending Hypodermic Tubing. See page 33.**

## TUBING — Hypodermic, Stainless Steel Type 316

Our Stainless Steel Type 316 Hypodermic Tubing is molybdenum bearing austenitic steel containing a higher percentage of nickel and a smaller percentage of chromium compared to Type 304. The higher corrosion resistance of Type 316 Stainless vs Type 304 Stainless is particularly useful when working with phosphoric and acetic acids.

### STAINLESS STEEL TYPE 316 — Regular Wall

Order Example: **B-HTXX-27-12** is 27 ga. x 12"

Part No.	Relative Visual Diameter	Gauge	Dimensions in Inches			Tolerances in Inches		Suffix							
			O.D.	I.D.	Wall <sup>1</sup>	O.D.	I.D.	Price per Length							
							6"	12"	24"	36"					
<b>B-HTXX-30</b>		30	.012	.006	.003	+ .0005 - .0000	+.001 -.0005	<b>2.95</b>	<b>4.95</b>	<b>8.20</b>	<b>10.25</b>				
<b>B-HTXX-29</b>		29	.013	.007	.003			<b>2.95</b>	<b>4.95</b>	<b>8.20</b>	<b>10.25</b>				
<b>B-HTXX-28</b>		28	.014	.007	.0035			<b>2.95</b>	<b>4.95</b>	<b>8.20</b>	<b>10.25</b>				
<b>B-HTXX-27</b>		27	.016	.008	.004			<b>2.50</b>	<b>4.55</b>	<b>7.50</b>	<b>10.20</b>				
<b>B-HTXX-26</b>		26	.018	.010	.004			<b>2.05</b>	<b>3.75</b>	<b>6.15</b>	<b>8.45</b>				
<b>B-HTXX-25</b>		25	.020	.010	.005			<b>2.05</b>	<b>3.75</b>	<b>6.15</b>	<b>8.45</b>				
<b>B-HTXX-24</b>		24	.022	.012	.005			<b>2.05</b>	<b>3.75</b>	<b>6.15</b>	<b>8.45</b>				
<b>B-HTXX-23</b>		23	.025	.013	.006			<b>2.25</b>	<b>4.10</b>	<b>6.75</b>	<b>9.25</b>				
<b>B-HTXX-22</b>		22	.028	.016	.006			<b>2.25</b>	<b>4.10</b>	<b>6.75</b>	<b>9.25</b>				
<b>B-HTXX-21</b>		21	.032	.020	.006			<b>2.25</b>	<b>4.10</b>	<b>6.75</b>	<b>9.25</b>				
<b>B-HTXX-20</b>		20	.0355	.023	.006		+ .0015	<b>2.70</b>	<b>4.90</b>	<b>8.05</b>	<b>11.05</b>				
<b>B-HTXX-19</b>		19	.042	.027	.0075		<b>2.70</b>	<b>4.90</b>	<b>8.05</b>	<b>11.05</b>					
<b>B-HTXX-18-1/2</b>		18-1/2	.046	.033	.0065	± .0005	± .0015	<b>3.60</b>	<b>6.55</b>	<b>10.75</b>	<b>14.75</b>				
<b>B-HTXX-18</b>		18	.050	.033	.0085			<b>3.15</b>	<b>5.75</b>	<b>9.45</b>	<b>12.95</b>				
<b>B-HTXX-17</b>		17	.058	.042	.008			<b>3.15</b>	<b>5.75</b>	<b>9.45</b>	<b>12.95</b>				
<b>B-HTXX-063*</b>		N/S	.063	.021	.021			<b>3.15</b>	<b>5.75</b>	<b>9.45</b>	<b>12.95</b>				
<b>B-HTXX-16</b>		16	.065	.047	.009			<b>3.15</b>	<b>5.75</b>	<b>9.45</b>	<b>12.95</b>				
<b>B-HTXX-15</b>		15	.072	.054	.009			<b>3.15</b>	<b>5.75</b>	<b>9.45</b>	<b>12.95</b>				
<b>B-HTXX-14</b>		14	.083	.063	.010				± .002	<b>3.60</b>	<b>6.55</b>	<b>10.75</b>	<b>14.75</b>		
<b>B-HTXX-13</b>		13	.095	.071	.012					<b>3.60</b>	<b>6.55</b>	<b>10.75</b>	<b>14.75</b>		
<b>B-HTXX-12</b>		12	.109	.085	.012			± .001	± .003	<b>4.05</b>	<b>7.40</b>	<b>12.15</b>	<b>16.65</b>		
<b>B-HTXX-11</b>		11	.120	.094	.013					<b>4.40</b>	<b>8.00</b>	<b>13.10</b>	<b>18.00</b>		
<b>B-HTXX-10</b>		10	.134	.106	.014	<b>4.40</b>	<b>8.00</b>			<b>13.10</b>	<b>18.00</b>				
<b>B-HTXX-9</b>		9	.148	.118	.015	<b>4.50</b>	<b>8.20</b>			<b>13.45</b>	<b>18.45</b>				
<b>B-HTXX-8</b>		8	.165	.135	.015	<b>4.65</b>	<b>8.45</b>			<b>13.85</b>	<b>19.00</b>				
<b>B-HTXX-7</b>		7	.180	.150	.015	<b>4.95</b>	<b>9.00</b>			<b>14.75</b>	<b>20.25</b>				
<b>B-HTXX-6</b>		6	.203	.173	.015	<b>4.95</b>	<b>9.00</b>			<b>14.75</b>	<b>20.25</b>				

<sup>1</sup> Nominal wall thickness. For reference only.

\* Not a standard gauge.

### ASSORTMENTS

#### Stainless Steel Type 316 — Regular Wall

Part No.	24" Lengths	No. of Pieces	Price Each
<b>B-HTXX-600</b>	One length each size B-HTXX-18 through B-HTXX-30	14	<b>109.65</b>
<b>B-HTXX-700</b>	One length each size B-HTXX-6 through B-HTXX-17	13	<b>157.75</b>

**See page 392 for Tubing Benders.**

## TUBING — Hypodermic, Stainless Steel Type 316 (cont.)

### STAINLESS STEEL TYPE 316 — Thin Wall

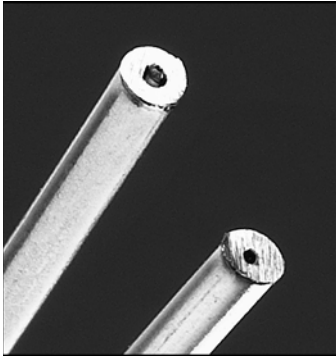
Order Example: **B-HTXX-15-24TW** is 15 ga. x 24"

Part No.	Gauge	Dimensions in Inches			Tolerances in Inches		Suffix			
		O.D.	I.D.	Wall $\frac{1}{2}$	O.D.	I.D.	-6 6"	-12 12"	-24 24"	-36 36"
<b>B-HTXX-28TW</b>	28	.014	.010	.002	±.0005	+.001 -.000	<b>4.35</b>	<b>7.20</b>	<b>11.95</b>	<b>14.95</b>
<b>B-HTXX-27TW</b>	27	.016	.012	.002			<b>3.20</b>	<b>5.30</b>	<b>8.85</b>	<b>11.05</b>
<b>B-HTXX-26TW</b>	26	.018	.012	.003	+.0005 -.0000	+.001 -.0005	<b>3.20</b>	<b>5.30</b>	<b>8.85</b>	<b>11.05</b>
<b>B-HTXX-25TW</b>	25	.020	.012	.004			<b>3.20</b>	<b>5.30</b>	<b>8.85</b>	<b>11.05</b>
<b>B-HTXX-24TW</b>	24	.022	.014	.004	+.0005 -.0000	+.0005 -.001	<b>3.20</b>	<b>5.30</b>	<b>8.85</b>	<b>11.05</b>
<b>B-HTXX-23TW</b>	23	.025	.017	.004			<b>3.20</b>	<b>5.30</b>	<b>8.85</b>	<b>11.05</b>
<b>B-HTXX-22TW</b>	22	.028	.020	.004	±.0005	+.0005 -.001	<b>3.20</b>	<b>5.30</b>	<b>8.85</b>	<b>11.05</b>
<b>B-HTXX-21TW</b>	21	.032	.023	.0045			<b>3.85</b>	<b>6.35</b>	<b>10.60</b>	<b>13.25</b>
<b>B-HTXX-20TW</b>	20	.0355	.026	.0045	±.0005	+.0005 -.0005	<b>3.85</b>	<b>6.35</b>	<b>10.60</b>	<b>13.25</b>
<b>B-HTXX-19TW</b>	19	.042	.032	.005			<b>3.85</b>	<b>6.35</b>	<b>10.60</b>	<b>13.25</b>
<b>B-HTXX-18TW</b>	18	.050	.038	.006	±.0005	+.0015 -.0005	<b>4.15</b>	<b>6.95</b>	<b>11.50</b>	<b>14.40</b>
<b>B-HTXX-16TW</b>	16	.065	.053	.006			<b>4.50</b>	<b>7.50</b>	<b>12.45</b>	<b>15.55</b>
<b>B-HTXX-15TW</b>	15	.072	.060	.006	±.001	±.002	<b>4.50</b>	<b>7.50</b>	<b>12.45</b>	<b>15.55</b>
<b>B-HTXX-14TW</b>	14	.083	.067	.008			<b>5.10</b>	<b>8.50</b>	<b>14.15</b>	<b>17.70</b>
<b>B-HTXX-12TW</b>	12	.109	.091	.009	±.001	±.002	<b>5.50</b>	<b>9.15</b>	<b>15.25</b>	<b>19.05</b>
<b>B-HTXX-10TW</b>	10	.134	.114	.010			<b>5.65</b>	<b>9.35</b>	<b>15.60</b>	<b>19.50</b>
<b>B-HTXX-9TW</b>	9	.148	.128	.010	±.001	±.002	<b>5.70</b>	<b>9.50</b>	<b>15.80</b>	<b>21.25</b>
<b>B-HTXX-8TW</b>	8	.165	.145	.010			<b>6.80</b>	<b>11.30</b>	<b>18.80</b>	<b>23.50</b>
<b>B-HTXX-7TW</b>	7	.180	.160	.010	±.001	±.002	<b>7.25</b>	<b>12.05</b>	<b>20.10</b>	<b>25.10</b>
<b>B-HTXX-6TW</b>	6	.203	.183	.010			<b>7.60</b>	<b>12.60</b>	<b>21.00</b>	<b>26.25</b>



**See our full line of Hypodermic Tubing Adaptors —  
Ferrules, Compression and Pipe Fittings  
for mechanical fastening and liquid / gas adaptations  
starting on page 108.**

## TUBING — Capillary, Stainless Steel and Nickel



### ANNEALED CAPILLARY TUBING

Capillary Tubing provides a heavy wall and relatively small inside diameter frequently required for transmission of pressure changes over great distances by means of gas or liquid, especially in the instrument and control fields and other high pressure applications.

Tolerance: O.D. +0.002" / -0.000", I.D. ±0.001"

**Stainless Steel Type 316 — Straight** is seamless, annealed soft temper tubing. It is a good choice for parts and assemblies that require high corrosion resistance and must also withstand temperatures up to 1600°F (871°C). It is available in 12", 24" and 36" lengths.

**Stainless Steel Type 316—Coiled** is the same tubing as above, but is supplied in coiled lengths of 10, 50 and 100 feet.

**Nickel 200 Grade A — Coiled** is an annealed and commercially pure (99%) wrought nickel. It maintains much of its strength at high temperatures and stays tough and ductile at low temperatures with excellent resistance to many corrosive environments.

### STAINLESS STEEL TYPE 316 — Straight Order Example: B-CTSX-6220-12 is 0.0625" O.D. × 12"

Part No.	Dimensions in Inches			Hydrostatic Pressure Ratings	Price		
	O.D.	I.D.	Wall <sup>1</sup>		-12 12"	-24 24"	-36 36"
B-CTSX-6205	.0625	.005	.0287	11,442 psi	7.25	11.60	15.55
B-CTSX-6210	.0625	.010	.0262	11,155 psi	7.25	11.60	15.55
B-CTSX-6215	.0625	.015	.02375	10,684 psi	7.05	11.30	15.20
B-CTSX-6220	.0625	.020	.0212	10,041 psi	6.95	11.15	15.10
B-CTSX-6230	.0625	.030	.0162	8,292 psi	5.85	9.35	12.25

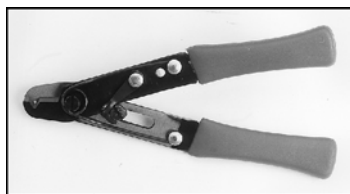
### STAINLESS STEEL TYPE 316 — Coiled

Part No.	Dimensions in Inches			Hydrostatic Pressure Ratings	Price			
	O.D.	I.D.	Wall <sup>1</sup>		-5 5 ft.	-10 10 ft.	-50 50 ft.	-100 100 ft.
B-CTX-6210	.0625	.010	.0262	11,155 psi	19.25	31.95	130.50	226.00
B-CTX-6220	.0625	.020	.0212	10,041 psi	16.75	27.95	120.00	216.00
B-CTX-6230	.0625	.030	.0162	8,292 psi	19.25	31.95	130.50	226.00

### NICKEL 200 — Grade A 99% Pure, Coiled

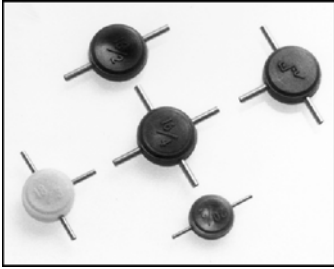
Part No.	Dimensions in Inches			Hydrostatic Pressure Ratings	Price		
	O.D.	I.D.	Wall <sup>1</sup>		-5 5 ft.	-10 10 ft.	-50 50 ft.
B-CTNI-3220	.032	.020	.006	4,396 psi	24.45	40.65	169.25
B-CTNI-6220	.0625	.020	.0212	7,140 psi	28.10	46.80	195.00

<sup>1</sup> Nominal wall thickness. For reference only.



See Capillary Tubing Cutter on page 391

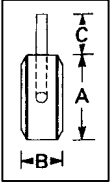
# TUBING CONNECTORS — Hypodermic Sizes



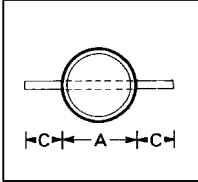
## TUBING CONNECTORS

Leak tight from vacuum to 30 psi, our autoclaveable Tubing Connectors, Reducers and Manifolds always present stainless steel surfaces to the working fluid. Simple and inexpensive, the proprietary design gives you a high quality connection that will not leak and provides consistent performance and reusability without breakage. The Stainless Steel Type 304 tubing is mounted in a Stainless Steel Type 303 body that withstands temperature ranges of -70° to 275°F (-57° to 135°C). The color coded polypropylene casing is clearly embossed with tubing gauge for easy identification.

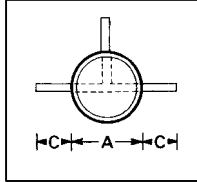
We offer a comprehensive selection to fit instrumentation sized flexible plastic tubing with inside diameters of 1/32", 3/64", 1/16", 3/32", 9/64" and 13/64".



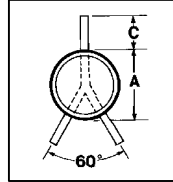
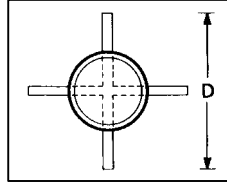
1/2 = Two Way



1/3 = Three Way



1/4 = Four Way



Three Way 60° "Y"

## CONNECTORS

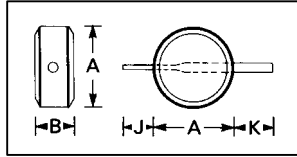
Part No.	Color	Gauge	Tube O.D. / I.D.	Dimensions in Inches				Price	
				A	B	C	D	Each	10
B-TC-20/2	Blue	20	.0355/.023	3/8	.140	3/16	3/4	4.10	36.15
B-TC-20/3	Blue	20	.0355/.023	3/8	.140	3/16	3/4	4.50	40.45
B-TC-20/4	Blue	20	.0355/.023	3/8	.140	3/16	3/4	5.00	44.80
B-TC-18/2	Yellow	18	.050/.033	7/16	.170	7/32	7/8	3.80	34.00
B-TC-18/3	Yellow	18	.050/.033	7/16	.170	7/32	7/8	4.20	37.75
B-TC-18/4	Yellow	18	.050/.033	7/16	.170	7/32	7/8	4.65	41.55
B-TC-16/2	Green	16	.065/.047	1/2	.190	1/4	1	4.10	36.15
B-TC-16/3	Green	16	.065/.047	1/2	.190	1/4	1	4.50	40.45
B-TC-16/4	Green	16	.065/.047	1/2	.190	1/4	1	5.00	44.80
B-TC-13/2	Red	13	.095/.071	9/16	.250	3/8	1-5/16	4.15	37.25
B-TC-13/3	Red	13	.095/.071	9/16	.250	3/8	1-5/16	4.65	41.55
B-TC-13/4	Red	13	.095/.071	9/16	.250	3/8	1-5/16	5.15	45.85
B-TC-9/2	Orange	9	.148/.118	5/8	.300	1/2	1-5/8	4.25	37.75
B-TC-9/3	Orange	9	.148/.118	5/8	.300	1/2	1-5/8	4.75	42.10
B-TC-9/4	Orange	9	.148/.118	5/8	.300	1/2	1-5/8	5.25	46.40
B-TC-6/2	White	6	.203/.173	3/4	.360	9/16	1-7/8	4.25	38.30
B-TC-6/3	White	6	.203/.173	3/4	.360	9/16	1-7/8	4.75	42.60
B-TC-6/4	White	6	.203/.173	3/4	.360	9/16	1-7/8	5.25	46.95

## 60° "Y" CONNECTOR

Part No.	Color	Gauge	Tube O.D. / I.D.	Dimensions in Inches				Price	
				A	B	C	D	Each	10
B-TCY-27	Stainless	27	.016/.008	3/16	3/32	3/16	9/16	19.00	160.00
B-TCY-25	Stainless	25	.020/.010	3/16	3/32	3/16	9/16	18.00	150.00
B-TCY-23	Stainless	23	.025/.013	1/4	3/32	9/32	13/16	15.00	120.00
B-TCY-22	Stainless	22	.028/.016	1/4	3/32	9/32	13/16	15.00	120.00
B-TCY-20	Blue	20	.035/.023	3/8	.140	3/16	3/4	7.40	66.65
B-TCY-18	Stainless	18	.050/.033	3/8	.140	3/16	3/4	7.40	66.65

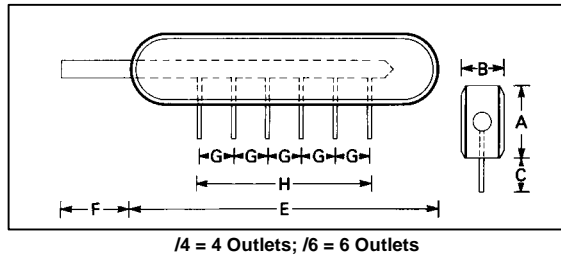
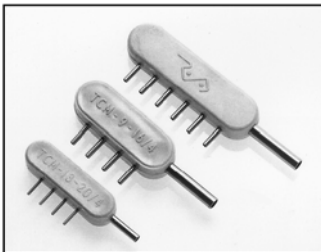


# TUBING CONNECTORS — Reducers and Manifolds



## REDUCERS

Part No.	Gauge	Inlet		Outlet		Dimensions in Inches				Price	
		Gauge	O.D./I.D.	Gauge	O.D./I.D.	A	B	J	K	Each	10
<b>B-TCR-16/20</b>	16	.065/.047	20	.0355/.023	1/2	.190	3/16	1/4	<b>5.85</b>	<b>53.10</b>	
<b>B-TCR-16/18</b>	16	.065/.047	18	.050/.033	1/2	.190	1/4	1/4	<b>5.35</b>	<b>48.65</b>	
<b>B-TCR-13/20</b>	13	.095/.071	20	.0355/.023	9/16	.250	7/32	11/32	<b>5.75</b>	<b>52.05</b>	
<b>B-TCR-13/18</b>	13	.095/.071	18	.050/.033	9/16	.250	1/4	3/8	<b>5.25</b>	<b>47.50</b>	
<b>B-TCR-13/16</b>	13	.095/.071	16	.065/.047	9/16	.250	1/4	3/8	<b>5.25</b>	<b>47.50</b>	
<b>B-TCR-9/20</b>	9	.148/.118	20	.0355/.023	5/8	.300	3/16	1/2	<b>5.75</b>	<b>52.05</b>	
<b>B-TCR-9/18</b>	9	.148/.118	18	.050/.033	5/8	.300	1/4	1/2	<b>5.30</b>	<b>48.10</b>	
<b>B-TCR-9/16</b>	9	.148/.118	16	.065/.047	5/8	.300	3/16	1/2	<b>5.25</b>	<b>47.50</b>	
<b>B-TCR-9/13</b>	9	.148/.118	13	.095/.071	5/8	.300	3/8	1/2	<b>5.25</b>	<b>47.50</b>	
<b>B-TCR-6/18</b>	6	.203/.173	18	.050/.033	3/4	.360	1/4	1/2	<b>5.60</b>	<b>50.90</b>	
<b>B-TCR-6/16</b>	6	.203/.173	16	.065/.047	3/4	.360	1/4	9/16	<b>5.50</b>	<b>49.80</b>	
<b>B-TCR-6/13</b>	6	.203/.173	13	.095/.071	3/4	.360	3/8	9/16	<b>5.35</b>	<b>48.65</b>	
<b>B-TCR-6/9</b>	6	.203/.173	9	.148/.118	3/4	.360	1/2	9/16	<b>5.35</b>	<b>48.65</b>	

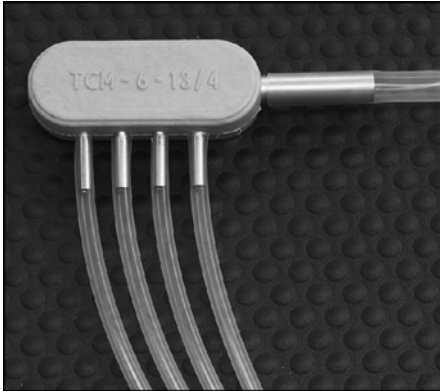


## MANIFOLDS

Part No.	Gauge	Inlet		Outlet		Dimensions in Inches							Price	
		Gauge	O.D./I.D.	Gauge	O.D./I.D.	A	B	C	E	F	G	H	Each	10
<b>B-TCM-13-20/4</b>	13	.095/.071	(4)-20	.0355/.023	3/8	5/16	15/64	1-3/8	3/8	3/16	19/32	<b>9.05</b>	<b>82.15</b>	
<b>B-TCM-13-20/6</b>	13	.095/.071	(6)-20	.0355/.023	3/8	19/64	15/64	1-11/16	3/8	3/16	31/32	<b>10.85</b>	<b>98.60</b>	
<b>B-TCM-9-18/4</b>	9	.148/.118	(4)-18	.050/.033	27/64	5/16	1/4	1-15/32	9/16	3/16	5/8	<b>8.70</b>	<b>78.90</b>	
<b>B-TCM-9-18/6</b>	9	.148/.118	(6)-18	.050/.033	7/16	5/16	1/4	1-7/8	1/2	3/16	31/32	<b>10.45</b>	<b>94.65</b>	
<b>B-TCM-9-16/4</b>	9	.148/.118	(4)-16	.065/.047	1/2	11/32	9/32	1-27/64	11/16	1/4	13/16	<b>8.70</b>	<b>78.90</b>	
<b>B-TCM-9-16/6</b>	9	.148/.118	(6)-16	.065/.047	1/2	5/16	9/32	1-7/8	11/16	1/4	1-5/16	<b>10.45</b>	<b>94.65</b>	
<b>B-TCM-6-13/4</b>	6	.203/.173	(4)-13	.095/.071	9/16	27/64	11/32	1-23/32	5/8	1/4	27/32	<b>8.90</b>	<b>81.05</b>	
<b>B-TCM-6-13/6</b>	6	.203/.173	(6)-13	.095/.071	5/8	13/32	3/8	2-5/64	11/16	1/4	1-11/32	<b>10.70</b>	<b>97.25</b>	

**Call Manufacturing Services 1-800-339-2116  
for modification or other special requirements.**

# TUBING — PTFE, Lightweight Spaghetti



## PTFE (Polytetrafluoroethylene)

### Lightweight Spaghetti

PTFE (Polytetrafluoroethylene) is lightweight, semi-flexible fluoropolymer that is used for a variety of laboratory applications. Heat resistant to 500°F (260°C) continuous. Highly valued for its toughness and insulating qualities, as well as high dielectric strength over a wide range of frequencies.

Non-absorbent to water and unaffected by acids and alkalis. Should not be heated to temperatures above 752°F (400°C). Available in a convenient range of sizes from 30 gauge (0.012" I.D.) to 0 gauge (0.330" I.D.). Color: Natural.

#### Physical Properties

Hardness	55 Shore D
Tensile Strength, psi (73) °F	2,500 - 4,000
Elongation % (73) °F	200-400
Continuous Use Temperature °F	500
Heat Deflection Temp. 66 psi °F	252
Specific Gravity	2.11 - 2.19
Melting Point °F	635 to 650

## PTFE — Thin Wall

Order Example: **B-STT-19-50** is 19 gauge tubing, 50 feet

Part No.	Nominal Gauge	Dimensions in Inches				Price		
		Nominal	Inside Diameter Min/Max.	Nominal	Wall Thickness Tolerance	-10 10 ft.	-50 50 ft.	-100 100 ft.
<b>B-STT-30</b>	30	0.012	0.010/0.015	0.006	±0.002	<b>2.00</b>	<b>8.50</b>	<b>13.95</b>
<b>B-STT-28</b>	28	0.015	0.013/0.018	0.006		<b>2.15</b>	<b>9.05</b>	<b>14.60</b>
<b>B-STT-26</b>	26	0.018	0.016/0.022	0.006		<b>2.50</b>	<b>10.25</b>	<b>17.10</b>
<b>B-STT-24</b>	24	0.022	0.020/0.027	0.006		<b>2.25</b>	<b>9.85</b>	<b>15.85</b>
<b>B-STT-22</b>	22	0.028	0.026/0.032	0.006		<b>2.45</b>	<b>10.60</b>	<b>16.85</b>
<b>B-STT-20</b>	20	0.034	0.032/0.040	0.006		<b>3.10</b>	<b>12.95</b>	<b>21.50</b>
<b>B-STT-19</b>	19	0.038	0.036/0.044	0.006		<b>3.35</b>	<b>13.90</b>	<b>23.15</b>
<b>B-STT-18</b>	18	0.042	0.040/0.049	0.006		<b>3.50</b>	<b>14.50</b>	<b>24.00</b>
<b>B-STT-17</b>	17	0.047	0.045/0.054	0.006		<b>3.50</b>	<b>14.50</b>	<b>24.15</b>
<b>B-STT-16</b>	16	0.053	0.051/0.061	0.006		<b>3.75</b>	<b>15.65</b>	<b>25.95</b>
<b>B-STT-15</b>	15	0.059	0.057/0.067	0.006		<b>4.00</b>	<b>16.85</b>	<b>27.85</b>
<b>B-STT-14</b>	14	0.066	0.064/0.074	0.008		<b>4.35</b>	<b>18.25</b>	<b>30.25</b>
<b>B-STT-13</b>	13	0.076	0.072/0.082	0.008		<b>5.00</b>	<b>20.95</b>	<b>34.95</b>
<b>B-STT-12</b>	12	0.085	0.081/0.091	0.008		<b>5.60</b>	<b>23.25</b>	<b>38.75</b>
<b>B-STT-11</b>	11	0.095	0.091/0.101	0.008		<b>5.90</b>	<b>24.50</b>	<b>40.65</b>
<b>B-STT-10</b>	10	0.106	0.102/0.112	0.008	<b>6.80</b>	<b>28.35</b>	<b>47.25</b>	
<b>B-STT-9</b>	9	0.118	0.114/0.124	0.008	<b>7.35</b>	<b>30.60</b>	<b>51.00</b>	
<b>B-STT-8</b>	8	0.133	0.129/0.141	0.008	<b>8.95</b>	<b>37.05</b>	<b>61.75</b>	
<b>B-STT-7</b>	7	0.148	0.144/0.158	0.008	<b>10.00</b>	<b>41.75</b>	<b>69.75</b>	
<b>B-STT-6</b>	6	0.166	0.162/0.178	0.010	±0.003	<b>12.75</b>	<b>53.00</b>	<b>88.40</b>
<b>B-STT-5</b>	5	0.186	0.182/0.195	0.010		<b>14.25</b>	<b>59.25</b>	<b>98.75</b>
<b>B-STT-4</b>	4	0.208	0.204/0.218	0.010		<b>15.75</b>	<b>65.50</b>	<b>108.95</b>
<b>B-STT-3</b>	3	0.234	0.229/0.244	0.010		<b>17.85</b>	<b>74.25</b>	<b>123.95</b>
<b>B-STT-2</b>	2	0.263	0.258/0.273	0.010		<b>19.95</b>	<b>82.65</b>	<b>137.75</b>
<b>B-STT-1</b>	1	0.294	0.289/0.305	0.010		<b>22.15</b>	<b>92.25</b>	<b>153.80</b>
<b>B-STT-0</b>	0	0.330	0.325/0.342	0.012		<b>24.90</b>	<b>103.75</b>	<b>172.80</b>

Use with Small Parts Connectors, Reducers and Manifolds on previous pages.

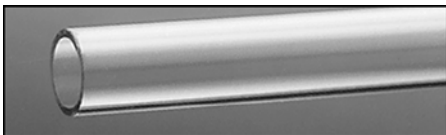
## TUBING — PTFE, Lightweight Spaghetti (cont.)

### PTFE — Standard Wall

Order Example: **B-SWTT-12-100** is 12 gauge standard wall tubing, 100 feet

Part No.	Nominal Gauge	Dimensions in Inches				Tolerance	Price		
		Nominal	Inside Diameter Min./Max.	Nominal	Wall Thickness		-10 10 ft.	-50 50 ft.	-100 100 ft.
<b>B-SWTT-30</b>	30	0.012	0.010/0.015	0.009	±0.002	<b>2.20</b>	<b>9.10</b>	<b>15.15</b>	
<b>B-SWTT-28</b>	28	0.015	0.013/0.018	0.009		<b>1.80</b>	<b>7.50</b>	<b>12.50</b>	
<b>B-SWTT-26</b>	26	0.018	0.016/0.021	0.009		<b>2.25</b>	<b>9.25</b>	<b>15.40</b>	
<b>B-SWTT-24</b>	24	0.022	0.020/0.026	0.012		<b>2.95</b>	<b>11.75</b>	<b>18.75</b>	
<b>B-SWTT-22</b>	22	0.028	0.026/0.032	0.012		<b>3.50</b>	<b>14.05</b>	<b>23.40</b>	
<b>B-SWTT-20</b>	20	0.034	0.032/0.038	0.016	±0.003	<b>4.50</b>	<b>16.75</b>	<b>27.95</b>	
<b>B-SWTT-19</b>	19	0.038	0.036/0.042	0.016		<b>5.05</b>	<b>20.05</b>	<b>32.50</b>	
<b>B-SWTT-18</b>	18	0.042	0.040/0.046	0.016		<b>5.45</b>	<b>22.65</b>	<b>37.00</b>	
<b>B-SWTT-17</b>	17	0.047	0.045/0.052	0.016		<b>6.25</b>	<b>25.00</b>	<b>41.65</b>	
<b>B-SWTT-16</b>	16	0.053	0.051/0.058	0.016		<b>6.75</b>	<b>27.10</b>	<b>45.15</b>	
<b>B-SWTT-15</b>	15	0.059	0.057/0.065	0.016	±0.004	<b>7.25</b>	<b>29.50</b>	<b>49.10</b>	
<b>B-SWTT-14</b>	14	0.066	0.064/0.072	0.016		<b>8.00</b>	<b>32.00</b>	<b>52.95</b>	
<b>B-SWTT-13</b>	13	0.076	0.072/0.081	0.016		<b>8.75</b>	<b>35.00</b>	<b>58.15</b>	
<b>B-SWTT-12</b>	12	0.085	0.081/0.091	0.016		<b>9.75</b>	<b>38.50</b>	<b>64.10</b>	
<b>B-SWTT-11</b>	11	0.095	0.091/0.101	0.016		<b>10.50</b>	<b>42.20</b>	<b>70.35</b>	
<b>B-SWTT-10</b>	10	0.106	0.102/0.112	0.016	±0.004	<b>11.95</b>	<b>49.35</b>	<b>82.25</b>	
<b>B-SWTT-9</b>	9	0.118	0.114/0.124	0.020		<b>13.50</b>	<b>53.75</b>	<b>86.00</b>	
<b>B-SWTT-8</b>	8	0.133	0.129/0.139	0.020		<b>14.95</b>	<b>60.00</b>	<b>99.40</b>	
<b>B-SWTT-7</b>	7	0.148	0.144/0.155	0.020		<b>16.00</b>	<b>63.25</b>	<b>105.35</b>	
<b>B-SWTT-6</b>	6	0.166	0.162/0.174	0.020		<b>16.75</b>	<b>69.85</b>	<b>116.40</b>	
<b>B-SWTT-5</b>	5	0.186	0.182/0.195	0.020	±0.004	<b>18.40</b>	<b>76.65</b>	<b>127.75</b>	
<b>B-SWTT-4</b>	4	0.208	0.204/0.218	0.020		<b>20.80</b>	<b>86.65</b>	<b>144.40</b>	
<b>B-SWTT-3</b>	3	0.234	0.229/0.244	0.020		<b>23.45</b>	<b>97.65</b>	<b>162.75</b>	
<b>B-SWTT-2</b>	2	0.263	0.258/0.273	0.020		<b>25.50</b>	<b>105.90</b>	<b>176.50</b>	
<b>B-SWTT-1</b>	1	0.294	0.289/0.305	.020		<b>29.25</b>	<b>122.00</b>	<b>203.35</b>	
<b>B-SWTT-0</b>	0	0.330	0.325/0.342	.020		<b>32.75</b>	<b>136.40</b>	<b>227.35</b>	

## TUBING — Glass, Pyrex®



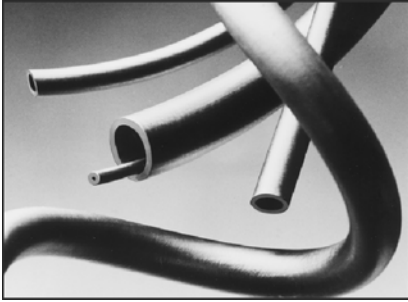
Low coefficient of expansion and great mechanical strength are hallmarks of PYREX® glass tubes. Softening point is 1510°F (821°C) and working (forming) point is 2885°F (1585°C). Sizes up to 1/2" can be bent after heating with a bunsen burner. See page 391 for Glass Tubing Cutter.

### METRIC

#### ROUND

Part No.	Outside Dimensions		Thickness	Wall		Price	
	Diameter	Tolerance		Tolerance		6"	12"
<b>B-YF-WGF</b>	4.0mm	± 0.3mm	0.8mm	± 0.1mm	<b>1.00</b>	<b>1.25</b>	
<b>B-YF-WG3</b>	5.0mm	± 0.3mm	0.8mm	± 0.1mm	<b>1.15</b>	<b>1.50</b>	
<b>B-YF-WG4</b>	6.0mm	± 0.3mm	1.0mm	± 0.1mm	<b>1.40</b>	<b>1.75</b>	
<b>B-YF-WG5</b>	8.0mm	± 0.3mm	1.0mm	± 0.1mm	<b>1.65</b>	<b>1.95</b>	
<b>B-YF-WG6</b>	9.0mm	± 0.3mm	1.0mm	± 0.1mm	<b>2.00</b>	<b>2.15</b>	
<b>B-YF-WG8</b>	13.0mm	± 0.3mm	1.2mm	± 0.1mm	<b>2.15</b>	<b>2.40</b>	

## TUBING — Viton® , Flexible



A high performance synthetic rubber with excellent temperature resistance, -10° to 400°F (-23° to 204°C) continuously. Viton® offers the widest range of fluid and chemical resistance of any commercial rubber. Excellent resistance to oils, fuels, lubricants and most mineral acids. Applications include fuel and oil lines, cable jacketing, solvents, chemical lines, hot lubrication, seals O-Rings, and peristaltic pumps. Standard barbed fittings are recommended for most applications (see pages 119-122). Durometer reading: 75A.

### Physical Properties

Hardness, Shore A ±5	75A	Brittle Temperature	-30°F (-34°C)
Specific Gravity	1.81	Max. Operating Temp.	400°F (204°C)
Tensile Strength, psi	1600	(Unlimited Exposure)	
Elongation at Break, %	150		

® E.I. DuPont

### Technical Data - Viton®

Elastomeric Viton® performs with exceptional chemical resistance at elevated temperatures. In certain applications, it has withstood continuous service temperatures of as much as 600°F (315°C) for 48 hours and 500°F (260°C) for 1000 hours while maintaining its good mechanical properties. Care should be taken, however, at these elevated temperatures where pressure should be very minimal. Tests should be performed to determine application suitability. Please use extreme care with regard to burning Viton. When burned, it gives off highly carcinogenic hydrogen fluoride. Simply handling just-burned Viton can also be dangerous.

### VITON

Order Example: **B-206010-25** is 1/8" I.D. × 1/4" O.D. × 25 feet

Part No.	Dimensions in Inches			Price Per Foot		
	I.D.	O.D.	Wall	1-9 ft.	10-24 ft.	25+ ft.
<b>B-206000</b>	1/32	3/32	1/32	<b>5.95</b>	<b>4.95</b>	<b>3.95</b>
<b>B-206005</b>	1/16	1/8	1/32	<b>6.30</b>	<b>5.25</b>	<b>3.15</b>
<b>B-206010</b>	1/8	1/4	1/16	<b>6.90</b>	<b>5.75</b>	<b>4.55</b>
<b>B-206015</b>	3/16	5/16	1/16	<b>8.55</b>	<b>7.10</b>	<b>5.65</b>
<b>B-206020</b>	1/4	3/8	1/16	<b>11.20</b>	<b>9.35</b>	<b>7.45</b>
<b>B-206025</b>	3/8	1/2	1/16	<b>16.55</b>	<b>13.80</b>	<b>11.00</b>
<b>B-206030</b>	1/2	5/8	1/16	<b>20.75</b>	<b>17.30</b>	<b>13.80</b>

## TUBING — Polyurethane, Flexible



Ether-based Polyurethane Tubing is clear, flexible, resilient, resistant to weathering, tearing, impact, radiation and abrasion. Excellent resistance to oils, greases and fuels. Wide temperature range: -60° to 220°F (-51° to 104°C). Can be heat sealed, fabricated or bonded. Contains no plasticizer which can migrate and cause contamination or tube hardening. Much more resistant to pressure and vacuum applications than corresponding sizes of PVC or rubber. Polyurethane's good tensile strength, together with its high elastic memory allows the tubing to fit barbed connections without clamps in low pressure applications and to withstand prolonged or frequent flexing. Standard barbed fittings are recommended for most applications (see pages 119-122). Durometer reading: 80A.

### Physical Properties

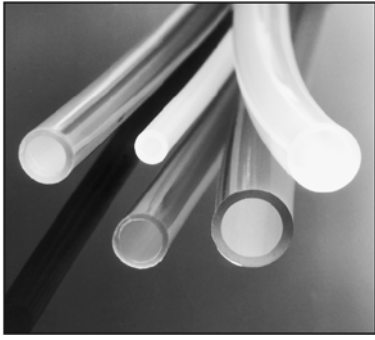
Hardness, Shore A ±5	85	Elongation at Break, %	500
Specific Gravity	1.12	Brittle Temperature	-90°F
Tensile Strength, psi	4500	Max. Operating Temp.	178°F

### POLYURETHANE

Order Example: **B-207000-10** is 1/16" I.D. × 1/8" O.D. × 10 feet

Part No.	Dimensions in Inches			Price		
	I.D.	O.D.	Wall	-10 10 ft.	-25 25 ft.	-100 100 ft.
<b>B-207000</b>	1/16	1/8	1/32	<b>4.15</b>	<b>8.85</b>	<b>20.95</b>
<b>B-207005</b>	1/8	1/4	1/16	<b>12.00</b>	<b>20.00</b>	<b>50.00</b>
<b>B-207010</b>	3/16	5/16	1/16	<b>15.75</b>	<b>26.25</b>	<b>65.55</b>
<b>B-207015</b>	1/4	3/8	1/16	<b>20.15</b>	<b>33.50</b>	<b>83.75</b>
<b>B-207020</b>	3/8	1/2	1/16	<b>25.60</b>	<b>44.95</b>	<b>113.35</b>
<b>B-207025</b>	1/2	5/8	1/16	<b>35.25</b>	<b>61.50</b>	<b>139.95</b>

## TUBING — Nylon, Semi-Flexible



Lightweight with excellent bend radius and pressure rating, Nylon resists crushing, abrasion and cracking and has excellent resistance to flexural fatigue, tube vibration and movement. Nylon will not embrittle or swell because of water (very low moisture absorption, 1.9% maximum). Nylon is not dependent on moisture for flexibility; therefore life expectancy is greatly increased with embrittlement eliminated. Nylon is resistant to solvents, alkalis, oils, greases, petroleum products, fungus and molds. Generally good resistance to dilute mineral and organic acids but in-plant tests are suggested. Standard O.D. compression or push-to-connect fittings are recommended for most applications. Durometer reading: 63.

### Physical Properties

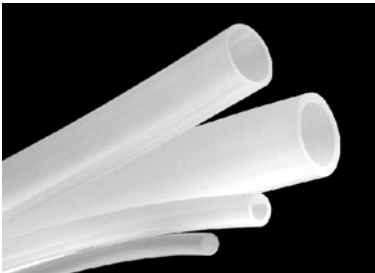
Hardness, Shore D $\pm 5$ .....	63	Elongation at Break, % .....	300
Specific Gravity .....	1.06	Brittle Temperature .....	-90°F
Tensile Strength, psi .....	7143	Max. Operating Temp. ....	212°F

### NYLON 12

Order Example: **B-208010-100** is 0.170" I.D. x 1/4" O.D. x 100 feet

Part No.	I.D.	Dimensions in Inches			Working psi at 70°F	Color	Price		
		O.D.	Wall	Bend Radius			-10 10 ft.	-25 25 ft.	-100 100 ft.
<b>B-208000</b>	0.058	1/8	0.033	5/16	725	Red	<b>6.10</b>	<b>10.10</b>	<b>25.25</b>
<b>B-208005</b>	0.117	3/16	0.033	3/8	455	Yellow	<b>8.85</b>	<b>14.75</b>	<b>36.85</b>
<b>B-208010</b>	0.170	1/4	0.040	1/2	375	Green	<b>13.20</b>	<b>21.95</b>	<b>54.95</b>
<b>B-208015</b>	0.250	3/8	0.062	1	400	Natural	<b>27.40</b>	<b>45.75</b>	<b>113.95</b>
<b>B-208020</b>	0.375	1/2	0.062	1-1/2	285	Blue	<b>39.60</b>	<b>65.95</b>	<b>164.95</b>

## TUBING — Polyethylene, Semi-Flexible



Polyethylene tubing is semi-flexible, lightweight and durable; made from 100% virgin grade raw materials, formulated to resist stress cracking; chemically inert; forms a good barrier to gases, vapors, moisture. Applications include food and beverage industry, airline industry, instrumentation, hospitals and laboratories, large machine OEM, fluid lines, wire jacketing, chemical lines and spacers. Color: Transparent White. Durometer reading: 50.

### Physical Properties

Hardness, Shore D $\pm 5$ .....	50	Elongation at Break, % .....	600
Specific Gravity .....	0.921	Brittle Temperature .....	-76°F
Tensile Strength, psi .....	2250	Max. Operating Temp. ....	140°F

### POLYETHYLENE

Order Example: **B-209005-25** is 3/16" I.D. x 5/16" O.D. x 25 feet

Part No.	I.D.	Dimensions in Inches			Working psi at 70°F	Price		
		O.D.	Wall	Bend Radius		-10 10 ft.	-25 25 ft.	-100 100 ft.
<b>B-209000</b>	1/8	1/4	1/16	1/16	180	<b>2.95</b>	<b>4.90</b>	<b>13.85</b>
<b>B-209005</b>	3/16	5/16	1/16	1/16	140	<b>3.85</b>	<b>6.45</b>	<b>17.05</b>
<b>B-209010</b>	1/4	3/8	1/16	1/16	120	<b>4.65</b>	<b>7.75</b>	<b>19.25</b>
<b>B-209015</b>	3/8	1/2	1/16	1/16	90	<b>6.50</b>	<b>10.75</b>	<b>29.00</b>
<b>B-209020</b>	1/2	5/8	1/16	1/16	70	<b>8.35</b>	<b>13.95</b>	<b>36.00</b>

See our Tube Fittings starting on page 119.

## TUBING — Silicone Rubber, Flexible



Silicone rubber is able to resist extreme temperature variances, from -150° to 500°F (-101° to 260°C), and has natural translucent color for visual flow. Resists U.V. ozone gases, moisture and temperature. Resilient, stretchable and resistant to compression set and is odorless, tasteless and inert.

### Technical Data

Silicone is extremely resistant to ozone and corona concentration over long time periods. The outstanding property of silicone is its great resistance to temperature extremes. This, in addition to good electrical properties, along with the ability to self-extinguish typically within 3-8 seconds, make silicone an excellent choice for appliance and computer applications. Contains no sulphur or other acid producing chemicals so it does not cause staining, corrosion or deterioration of other materials it contacts. Standard barbed fittings and lined hose clamps are recommended for most applications. Durometer reading: 50A.

### Physical Properties

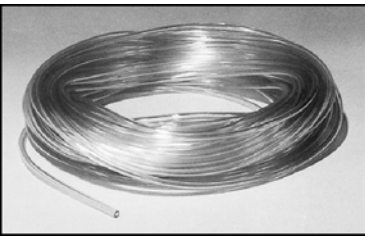
Hardness, Shore A ± 5	50A	Elongation at Break, %	375	Brittle Temperature	-100°F (-73°C)
Specific Gravity	1.14	Tensile Strength, psi	1100	Max. Operating Temperature	500°F (296°C)

## SILICONE RUBBER

Order Example: **B-210010-25** is 3/16" I.D. × 5/16" O.D. × 25 feet

Part No.	I.D.	Dimensions in Inches		Wall	Price		
		O.D.			-10 10 ft.	-25 25 ft.	-100 100 ft.
<b>B-210000</b>	1/16	3/16	1/16	<b>28.45</b>	<b>46.40</b>	<b>118.05</b>	
<b>B-210005</b>	1/8	1/4	1/16	<b>24.25</b>	<b>40.05</b>	<b>89.60</b>	
<b>B-210010</b>	3/16	5/16	1/16	<b>29.00</b>	<b>47.45</b>	<b>123.35</b>	
<b>B-210015</b>	1/4	3/8	1/16	<b>30.40</b>	<b>50.60</b>	<b>131.75</b>	
<b>B-210020</b>	3/8	1/2	1/16	<b>36.20</b>	<b>60.10</b>	<b>152.85</b>	
<b>B-210025</b>	1/2	5/8	1/16	<b>41.75</b>	<b>69.60</b>	<b>174.95</b>	

## TUBING — Polyvinylchloride (PVC), Flexible



### CLEAR PVC TUBING

A general purpose, clear, flexible PVC plastic tubing for transmission of fluids, gases, and some solids. Especially useful when light weight is necessary and rough handling could be encountered. Superior resistance to strong oxidizing and reducing acids, gasoline, oils in general, alcohol, and hydrocarbons. Durometer reading: 68A.

### Physical Properties\*

Hardness, Shore A ±5	68A	Elongation at Break, %	400
Specific Gravity	1.20	Brittle Temperature	-40°F (-40°C)
Tensile Strength, psi	2000	Max. Operating Temp.	175°F (79°C)

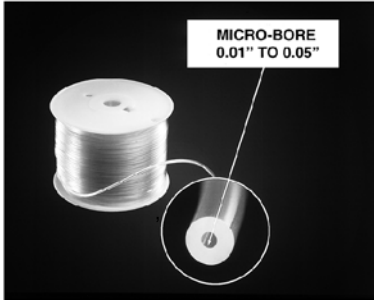
## POLYVINYLCHLORIDE — Clear

Order Example: **B-CFT-24-100** is 1/8" I.D. × 1/4" O.D. × 100 feet

Part No.	I.D.	Dimensions in Inches		Wall	Price		
		O.D.			-10 10 ft.	-25 25 ft.	-100 100 ft.
<b>B-CFT-16</b>	1/16	1/8	1/32	<b>1.40</b>	<b>2.95</b>	<b>9.75</b>	
<b>B-CFT-20</b>	3/32	5/32	1/32	<b>2.65</b>	<b>5.55</b>	<b>18.50</b>	
<b>B-CFT-24</b>	1/8	1/4	1/16	<b>3.05</b>	<b>6.40</b>	<b>21.25</b>	
<b>B-CFT-35</b>	3/16	5/16	1/16	<b>4.05</b>	<b>8.40</b>	<b>28.00</b>	
<b>B-CFT-47</b>	1/4	7/16	3/32	<b>7.95</b>	<b>16.55</b>	<b>55.15</b>	
<b>B-CFT-58</b>	5/16	1/2	3/32	<b>8.65</b>	<b>18.05</b>	<b>60.20</b>	
<b>B-CFT-69</b>	3/8	9/16	3/32	<b>10.85</b>	<b>22.65</b>	<b>75.35</b>	
<b>B-CFT-812</b>	1/2	3/4	1/8	<b>17.15</b>	<b>65.70</b>	<b>118.90</b>	

\* Values listed are typical and meant only as a guide to aid in design. Field testing is needed to find actual values for the application.

## TUBING — Polyvinylchloride (PVC), Micro-Bore, Flexible



Even in these micro-bore sizes, Tygon® tubing is stiff enough to allow easy handling but tough enough to resist puncturing. It is used in catheters for intravenous and arterial infusion as well as in a variety of other medical applications. It is nontoxic, blood compatible, and autoclavable. U.S.P. Class VI compliant.

® Norton Co.

### Physical Properties

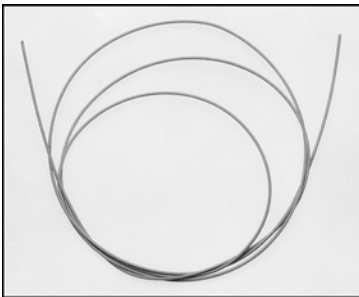
Hardness, Shore A	80	Elongation at Break, %	320
Dielectric Strength	584 V/mil	Brittle Temperature	-25°F (-31°C)
Tensile Strength, psi	2700	Max. Operating Temp.	185°F (85°C)

## POLYVINYLCHLORIDE (PVC)

Order Example: **B-TGY-010-10** is 0.010" I.D. x 0.030" O.D. x 10 feet

Part No.	I.D.	Dimensions in Inches			Price	
		O.D.	Wall	-10 10 Ft.	-25 25 Ft.	-100 100 Ft.
<b>B-TGY-010</b>	0.010	0.030	0.010	<b>5.50</b>	<b>10.95</b>	<b>33.00</b>
<b>B-TGY-020</b>	0.020	0.060	0.020	<b>5.95</b>	<b>11.90</b>	<b>35.50</b>
<b>B-TGY-030</b>	0.030	0.090	0.030	<b>6.45</b>	<b>12.85</b>	<b>38.50</b>
<b>B-TGY-040</b>	0.040	0.070	0.015	<b>6.85</b>	<b>13.70</b>	<b>41.00</b>
<b>B-TGY-050</b>	0.050	0.090	0.020	<b>7.30</b>	<b>14.55</b>	<b>43.50</b>

## TUBING — PEEK (Polyetheretherketone), Semi-Flexible



PEEK Tubing is manufactured from a unique, high temperature engineering thermoplastic that is suitable for a wide range of demanding applications. Designed to withstand high pressure and temperature levels, PEEK Tubing resists even the harshest environmental conditions. Semi-flexible PEEK Tubing is insoluble in virtually all organic and inorganic solvents as well as being dielectrically strong. It can be cut to length, accepts pressure fittings, and readily stands up to shocks, abrasions and impacts.

### Physical Properties

Density	0.0477 lbs/in	Tensile Strength (73°F)	13,300 psi	Compressive Strength	17,100 psi
Rockwell Hardness	M99	Flexural Strength (73°F)	24,700 psi	Melting Point	633°F (334°C)
Dielectric Strength	500 V/mil	Shear Strength	13,800 psi	Max. Continuous Use Temp.	482°F (286°C)

## POLYETHERETHERKETONE

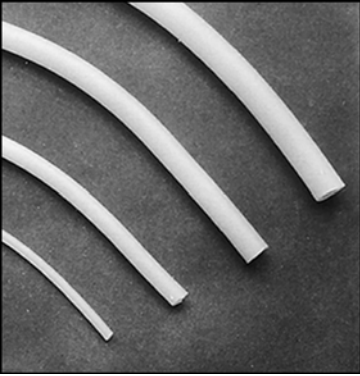
Order Example: **B-PKT-006-25** is 0.006" I.D. x 0.062" O.D. x 25 feet

Part No.	I.D.	Dimensions in Inches				Price		
		I.D. Tol.	O.D.	O.D. Tol.	Wall	-3 3 Ft.	-10 10 Ft.	-25 25 Ft.
<b>B-PKT-006</b>	0.006	±.001	0.062	±0.001	0.028	<b>9.85</b>	<b>27.30</b>	<b>56.85</b>
<b>B-PKT-010</b>	0.010	±.002	0.062	±0.003	0.026	<b>7.75</b>	<b>20.45</b>	<b>40.80</b>
<b>B-PKT-020</b>	0.020	±.002	0.062	±0.001	0.021	<b>7.85</b>	<b>21.75</b>	<b>45.15</b>
<b>B-PKT-030</b>	0.030	±.002	0.062	±0.003	0.016	<b>8.90</b>	<b>24.75</b>	<b>51.50</b>
<b>B-PKT-040</b>	0.040	±.003	0.062	±0.001	0.011	<b>8.90</b>	<b>24.75</b>	<b>51.50</b>
<b>B-PKT-062077</b>	0.062	±.002	0.077	±0.002	0.075	<b>13.65</b>	<b>37.95</b>	<b>78.95</b>
<b>B-PKT-062125</b>	0.062	±.004	0.125	±0.008	0.032	<b>20.25</b>	<b>56.25</b>	<b>117.25</b>
<b>B-PKT-093</b>	0.093	±.005	0.125	±0.005	0.016	<b>21.50</b>	<b>59.50</b>	<b>123.95</b>

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## TUBING — Latex



Usually found in medical applications, this Latex tubing also proves useful in a wide variety of other applications. The material withstands repeated sterilization by steam, ETO or gamma radiation and its natural translucency (natural amber) provides a semi-transparent view of the fluid flow. Smooth I.D. and O.D.'s are created by unique dipping process that removes any die lines and seams. The material has excellent elasticity and memory after repeated stretching and pulsating.

For orders greater than ten feet, tubing is supplied in at least ten foot lengths, (but not more than twenty feet, as feasible).

*Caution should be used since some individuals are allergic to Latex.*

### Physical Properties

Hardness, Shore A±	35 ± 5	Tensile Strength, psi	3,500 min.
Specific Gravity	0.95	Elongation @ Break	750% min.
Modulus psi at 100%	120 max.		

## LATEX TUBING

Part No.	I.D.	O.D.	Thickness	Wall		
				-5 5 ft.	Price -10 10 ft.	-25 25 ft.
<b>B-LTR-2</b>	1/16"	1/8"	1/32"	<b>4.15</b>	<b>5.90</b>	<b>11.75</b>
<b>B-LTR-4</b>	1/8"	1/4"	1/16"	<b>5.40</b>	<b>7.70</b>	<b>15.50</b>
<b>B-LTR-5</b>	3/16"	5/16"	1/16"	<b>5.60</b>	<b>8.00</b>	<b>16.00</b>
<b>B-LTR-6</b>	1/4"	3/8"	1/16"	<b>6.45</b>	<b>9.20</b>	<b>18.50</b>



## SINGLE-EDGE RAZOR BLADES — Stainless Steel

*Dryfilm Coated Industrial quality blades for critical cuts*

Often used in pathology labs, medical device manufacturing, and in film and food industries, these Stainless Steel blades cut cleanly, are highly corrosion resistant, and are coated with DuPont Dryfilm®, the active ingredient of which is PTFE (Polytetrafluoroethylene).

This coating adds high lubricity and non-stick qualities and enhances the metal's natural resistance to chemicals and other sources of corrosion. Aluminum backing. Individually packaged 0.009" blades have protective paper for safe handling and storage.

Part No.	10 pcs.	25 pcs.	50 pcs.	100 pcs.
<b>B-RBSS</b>	<b>3.00</b>	<b>5.75</b>	<b>9.50</b>	<b>18.95</b>

## SINGLE-EDGE BLADE HOLDER

Contoured to fit the hand, this holder has a locking blade for safety. Comes with five carbon steel single-edge blades that store in the handle. Use with Stainless Steel blades above.

<b>B-RB-RK5</b>	Blade Holder — Color: Putty	Length: 6"	<b>2.00</b>
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**See Arch Punches and Accessories on page 388**



# TUBING, HEAT SHRINK — FEP

## FEP (FLUORINATED ETHYLENE-PROPYLENE) — Heat Shrink Ratio 1.3:1

The amazing nature of this heat shrinkable FEP (Fluorinated Ethylene-Propylene) Tubing suggests countless possibilities for its application and use. This remarkable product will shrink rapidly over inserted objects upon exposure to moderate heat. Soldered joints, parts, components and fittings of plastic, metal or wood that could not previously be protected because of the high temperature required for shrinkage can now have a transparent surface of Teflon with a continuous service temperature of 400°F (204°C).

Shrinkage will occur completely at exposure to 350°F (177°C) with partial shrinkage beginning as low as 200°F (93°C). Suggested for connecting metal, glass or plastic tubes of similar or dissimilar diameters in low pressure applications. FEP's chemical resistance and dielectric properties are equal to PTFE (Polytetrafluoroethylene). Shrink ratio is 1.3:1. See page 418 for a Heat Gun.



Heat Shrink Teflon Tubing



Encapsulated Component After Heat Application

### Physical Properties

Tensile Strength, psi (73)°F	...	3,000-4,000
Elongation, % (73)°F	.....	300
Continuous Use Temperature °F	.....	400
Heat Deflection Temp. 66 psi °F	.....	158
Specific Gravity	.....	2.12-2.17
Melting Point °F	.....	487-540

## FEP — Heat Shrink Ratio 1.3:1

Order Example: **B-SMT-24-12** is FEP tubing 24 gauge x 12"

Part No.	Nominal Gauge	Min. Expanded I.D.	Dimensions in Inches			-12 12"	Suffix -24 Price 24"	-48 48"
			Max. I.D.	Recovered Dimensions Wall	Wall Tol. ±			
<b>B-SMT-24</b>	24	0.031	0.027	0.008	0.002	<b>1.25</b>	<b>2.05</b>	<b>3.30</b>
<b>B-SMT-22</b>	22	0.036	0.032	0.008		<b>1.30</b>	<b>2.15</b>	<b>3.45</b>
<b>B-SMT-20</b>	20	0.045	0.039	0.008		<b>1.35</b>	<b>2.25</b>	<b>3.60</b>
<b>B-SMT-18</b>	18	0.060	0.049	0.008		<b>1.45</b>	<b>2.40</b>	<b>3.80</b>
<b>B-SMT-16</b>	16	0.075	0.061	0.009		<b>1.45</b>	<b>2.40</b>	<b>3.80</b>
<b>B-SMT-14</b>	14	0.092	0.072	0.009		<b>1.50</b>	<b>2.45</b>	<b>3.90</b>
<b>B-SMT-12</b>	12	0.115	0.089	0.009	0.003	<b>1.50</b>	<b>2.50</b>	<b>4.00</b>
<b>B-SMT-10</b>	10	0.141	0.114	0.010		<b>1.60</b>	<b>2.70</b>	<b>4.30</b>
<b>B-SMT-9</b>	9	0.158	0.124	0.010	0.004	<b>2.35</b>	<b>3.85</b>	<b>6.20</b>
<b>B-SMT-8</b>	8	0.180	0.143	0.010		<b>2.45</b>	<b>4.05</b>	<b>6.50</b>
<b>B-SMT-7</b>	7	0.197	0.158	0.011		<b>2.90</b>	<b>4.80</b>	<b>7.70</b>
<b>B-SMT-6</b>	6	0.225	0.180	0.011		<b>3.05</b>	<b>5.05</b>	<b>8.05</b>
<b>B-SMT-5</b>	5	0.248	0.198	0.011		<b>3.20</b>	<b>5.30</b>	<b>8.45</b>
<b>B-SMT-4</b>	4	0.290	0.226	0.011		<b>3.35</b>	<b>5.60</b>	<b>8.95</b>
<b>B-SMT-3</b>	3	0.310	0.249	0.011	0.012	<b>3.90</b>	<b>6.50</b>	<b>9.95</b>
<b>B-SMT-2</b>	2	0.365	0.280	0.012		<b>4.20</b>	<b>6.95</b>	<b>10.10</b>
<b>B-SMT-1</b>	1	0.400	0.311	0.012		<b>4.45</b>	<b>7.45</b>	<b>11.90</b>
<b>B-SMT-0</b>	0	0.440	0.349	0.012		<b>4.95</b>	<b>8.25</b>	<b>13.20</b>

## ASSORTMENTS (Sizes Not Marked)

Part No.	Tubing Length	Description	No. of Pieces	Price Each
<b>B-SMT-K1</b>	6"	Four tubing lengths of each gauge size B-SMT-24 through B-SMT-9	36	<b>19.95</b>
<b>B-SMT-K2</b>	6"	Four tubing lengths of each gauge size B-SMT-8 through B-SMT-0	36	<b>61.95</b>
<b>B-SMT-K3</b>	12"	Two tubing lengths of each gauge size B-SMT-24 through B-SMT-9	18	<b>24.65</b>
<b>B-SMT-K4</b>	12"	Two tubing lengths of each gauge size B-SMT-8 through B-SMT-0	18	<b>58.45</b>

# TUBING, HEAT SHRINK — PTFE (Teflon®)

## PTFE (Polytetrafluoroethylene) — Heat Shrink Ratio 2:1 and 4:1

Our PTFE Heat Shrink 2:1 and 4:1 Tubing has a liberal and safe shrink range of 650°F ±25°F or 343°C ±10°C. PTFE (Polytetrafluoroethylene) goes into the “gel” state (amorphous to crystalline) at approximately 625°F (330°C). PTFE begins to shrink at 650°F (343°C). The mandrel or part to be covered by the Heat shrink tubing must be able to withstand this temperature range. Color: Clear.

### PTFE — Heat Shrink Ratio 2:1 Order Example: B-SM2T-10-12 is 2:1 Shrink Tubing 10 gauge × 12”

Part No.	Nominal Gauge	Expanded Min. I.D.	Dimension in Inches Recovered Dimensions			-12	Suffix -24	-48
			Max. I.D.	Wall	Wall Tol. ±	12”	Price 24”	48”
B-SM2T-30	30	0.034	0.015	0.006		2.00	3.30	5.50
B-SM2T-28	28	0.038	0.018	0.006		1.95	3.20	5.30
B-SM2T-26	26	0.046	0.022	0.006		1.90	3.15	5.20
B-SM2T-24	24	0.050	0.025	0.006		1.90	3.15	5.20
B-SM2T-22	22	0.055	0.031	0.006		1.95	3.25	5.40
B-SM2T-20	20	0.060	0.038	0.006		2.00	3.35	5.60
B-SM2T-18	18	0.076	0.046	0.006		2.15	3.60	5.95
B-SM2T-16	16	0.093	0.057	0.006		2.25	3.70	6.15
B-SM2T-14	14	0.120	0.072	0.008	0.002	2.30	3.80	6.30
B-SM2T-12	12	0.150	0.089	0.008		2.55	4.25	7.05
B-SM2T-10	10	0.191	0.110	0.008		3.00	4.95	8.30
B-SM2T-09	9	0.205	0.122	0.008		3.90	6.50	10.85
B-SM2T-08	8	0.240	0.139	0.008		5.10	8.45	14.05
B-SM2T-07	7	0.270	0.154	0.008		5.40	9.00	14.95
B-SM2T-06	6	0.302	0.172	0.010		5.85	9.75	16.25
B-SM2T-05	5	0.320	0.192	0.010		6.45	10.70	17.85
B-SM2T-04	4	0.370	0.214	0.010		6.95	11.60	19.35
B-SM2T-03	3	0.390	0.241	0.010	0.003	7.60	12.70	21.10
B-SM2T-02	2	0.430	0.270	0.010		8.30	13.85	23.05
B-SM2T-01	1	0.450	0.301	0.010		9.05	15.05	25.05
B-SM2T-00	0	0.470	0.347	0.012		10.05	16.75	27.95

### PTFE— Heat Shrink Ratio 4:1

Order Example: B-SM4T-5/16-12 is 0.312 I.D. × 12”

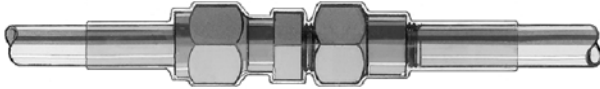
Part No.	Min. Expanded I.D.	Dimensions in Inches Recovered Dimensions			-12	Suffix -24	-48
		Max. I.D.	Wall	Wall Tol. ±	12”	Price 24”	48”
B-SM4T-5/64	0.078	0.025	0.009	0.002	4.10	6.80	11.35
B-SM4T-1/8	0.125	0.037	0.010	0.002	2.80	4.70	7.80
B-SM4T-3/16	0.187	0.050	0.012	0.003	2.95	4.90	8.15
B-SM4T-1/4	0.250	0.063	0.012	0.003	3.65	6.10	10.15
B-SM4T-5/16	0.312	0.078	0.012	0.003	4.00	6.70	11.15
B-SM4T-3/8	0.375	0.096	0.012	0.003	4.55	7.60	12.15
B-SM4T-7/16	0.438	0.112	0.012	0.003	6.10	10.20	16.30
B-SM4T-1/2	0.500	0.144	0.015	0.004	7.00	11.70	19.45
B-SM4T-9/16	0.562	0.155	0.015	0.004	8.70	14.50	24.15
B-SM4T-5/8	0.625	0.178	0.015	0.004	9.50	15.80	26.30
B-SM4T-11/16	0.687	0.198	0.015	0.004	10.75	17.90	29.80
B-SM4T-3/4	0.750	0.224	0.015	0.004	11.55	19.30	32.15

Heat Gun for Heat Shrink Tubing- See page 418.

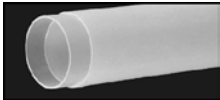
## TUBING, HEAT SHRINK — PTFE / FEP



Heat Shrink Teflon Tubing



Encapsulated Component After Heat Application



PTFE begins to shrink at 650°F (343°C). The mandrel or part to be covered by the Heat shrink tubing must be able to withstand this temperature range. [See page 418](#) for a Heat Gun.

### PTFE / FEP — Shrink / Melt

Constructed of an outer layer of heat shrink PTFE (Polytetrafluoroethylene) and an inner layer of FEP (Fluorinated Ethylene-Propylene), the outer tubing shrinks while the inner layer melts when heat is applied. The shrink tubing allows for a tight fit around the part while the near-solid encapsulation can withstand moisture and the severe stresses of pull or vibration.

### PTFE / FEP — Heat Shrink Ratio 2:1

Order Example: **B-SMDT-130-6** is Shrink/Melt tubing 0.130" I.D. × 6"

Part No.	As Supplied I.D. Min.	Dimensions in Inches		Suffix			
		Recovered Dimension After Shrinking I.D. Will Shrink To At Least	Wall Thickness (Nominal)	-6 6"	-12 12"	-24 24"	-48 48"
<b>B-SMDT-036</b>	0.036	0.000	0.023	<b>1.95</b>	<b>3.25</b>	<b>5.50</b>	<b>8.95</b>
<b>B-SMDT-060</b>	0.060	0.000	0.028	<b>2.75</b>	<b>4.55</b>	<b>7.60</b>	<b>12.75</b>
<b>B-SMDT-130</b>	0.130	0.000	0.032	<b>3.50</b>	<b>5.85</b>	<b>9.75</b>	<b>16.25</b>
<b>B-SMDT-160</b>	0.160	0.000	0.032	<b>4.10</b>	<b>6.90</b>	<b>11.50</b>	<b>19.05</b>
<b>B-SMDT-190</b>	0.190	0.062	0.035	<b>6.20</b>	<b>10.35</b>	<b>17.25</b>	<b>28.75</b>
<b>B-SMDT-250</b>	0.250	0.125	0.035	<b>6.60</b>	<b>11.25</b>	<b>18.75</b>	<b>31.00</b>
<b>B-SMDT-350</b>	0.350	0.190	0.035	<b>9.35</b>	<b>15.65</b>	<b>26.05</b>	<b>43.45</b>
<b>B-SMDT-450</b>	0.450	0.312	0.055	<b>15.75</b>	<b>26.25</b>	<b>43.75</b>	<b>73.00</b>
<b>B-SMDT-700</b>	0.700	0.440	0.055	<b>22.25</b>	<b>37.00</b>	<b>61.65</b>	<b>102.75</b>

## TUBING, HEAT SHRINK — Polyolefin

### POLYOLEFIN — Heat Shrink Ratio 2:1

Altera™ MT5000 is a flexible, cross-linked heat-shrinkable polyolefin tubing that provides excellent electrical insulation and good abrasion resistance. MT5000 has a 2:1 shrink ratio, a full recovery temperature of 230°F (110°C) and a continuous operating temperature range of -94° to 221°F (-70° to 105°C). It may be sterilized by gamma radiation or ethylene oxide with no significant changes in properties. [See page 418](#) for a Heat Gun.  
Color: Natural.

™ Raychem Corporation

**POLYOLEFIN — Heat Shrink Ratio 2:1** Order Example: **B-RCT50-4-12** is Shrink tubing 1/4" I.D. × 12"

Part No.	As Supplied I.D. Min.	Dimensions in Inches		Suffix			
		Recovered Dimension After Shrinking I.D. Max.	Wall Thickness	-6 6"	-12 12"	-24 24"	-48 48"
<b>B-RCT50-2</b>	1/8	0.062	0.020±0.003	<b>2.15</b>	<b>3.50</b>	<b>6.25</b>	<b>9.85</b>
<b>B-RCT50-3</b>	3/16	0.093	0.020±0.003	<b>2.30</b>	<b>3.75</b>	<b>6.75</b>	<b>10.70</b>

# HYPODERMIC TUBING ADAPTORS — Ferrules

## ADAPTING HYPODERMIC TUBING — Graphite / Polyimide Composite Ferrules

Adapting Hypodermic Tubing for use with other sizes and types of tubing has never been easier than with our unique Ferrule-Compression Tube Fittings. The key component in this system is a proprietary ferrule, molded from a Graphite / Polyimide composite. These ferrules combined with our line of Parker Instrumentation 316 Stainless Steel Compression Fittings (Swagelok® Type) provide an innovative solution to the adaptation of Hypodermic Tubing into circuits. Our tube fitting adapter system accommodates a wide range of tubing sizes from 35 gauge (.006") up to 4 gauge (.238"). The maximum operating temperature is 572°F (300°C) and the maximum operating pressure is 100psi. Higher pressures are attainable depending on operating temperatures. The compression ferrule and fitting size varies depending on the gauge selected.

### FERRULE SELECTION GUIDE

Series	Fits Hypodermic Tubing	Use Compression Fitting
A	Gauges 35 to 16	1/16"
B	Gauges 15 to 11	1/8"
C	Gauges 10 to 4	1/4"

**NOTE:** Select a Reducing Union when spanning two ranges. **Example:** Adapting Gauge 33 to Gauge 9 would require FCXX-TU4-1 Reducing Union with appropriate Ferrules for gauge 33 and 9. See page 110.

### FERRULES Series "A" — Fits 1/16" Compression Fittings- See Page 110

Part No.	Gauge	Fits Tubing O.D.	Visual Reference		Each	Price
			Ferrule	Tubing		
<b>B-FP-1/35</b>	35	.006"			<b>5.75</b>	<b>50.00</b>
	33	.008"				
	32	.009"				
<b>B-FP-1/32</b>	31	.010"			<b>5.75</b>	<b>50.00</b>
	30	.012"				
	29	.013"				
<b>B-FP-1/29</b>	28	.014"			<b>4.20</b>	<b>36.00</b>
	27	.016"				
<b>B-FP-1/26</b>	26	.018"			<b>4.20</b>	<b>36.00</b>
	25	.020"				
<b>B-FP-1/24</b>	24	.022"			<b>4.20</b>	<b>36.00</b>
	23	.025"				
<b>B-FP-1/20</b>	22	.028"			<b>4.20</b>	<b>36.00</b>
	21	.032"				
<b>B-FP-1/19</b>	20	.035"			<b>4.20</b>	<b>36.00</b>
	19	.042"				
<b>B-FP-1/18</b>	18	.050"			<b>4.20</b>	<b>36.00</b>
	17	.058"				
<b>B-FP-1/17</b>	16	.065"			<b>4.20</b>	<b>36.00</b>

### FERRULES, Series "B" — Fits 1/8" Compression Fittings- See Page 110

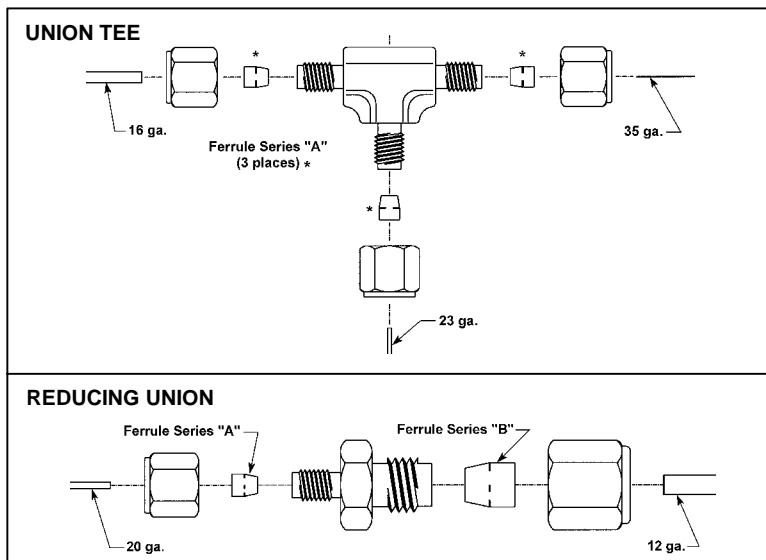
Part No.	Gauge	Fits Tubing O.D.	Visual Reference		Each	Price
			Ferrule	Tubing		
<b>B-FP-2/15</b>	15	.072"			<b>4.20</b>	<b>36.00</b>
<b>B-FP-2/14</b>	14	.083"			<b>4.20</b>	<b>36.00</b>
<b>B-FP-2/13</b>	13-1/2	.089"			<b>4.20</b>	<b>36.00</b>
	13	.095"				
<b>B-FP-2/12</b>	12-1/2	.100"			<b>4.20</b>	<b>36.00</b>
	12	.109"				
<b>B-FP-2/11</b>	11-1/2	.115"			<b>4.20</b>	<b>36.00</b>
	11	.120"				

# HYPODERMIC TUBING ADAPTORS — Ferrules (cont.)

## FERRULES Series “C” — Fits 1/4” Compression Fittings-See Page 110

Part No.	Gauge	FitsTubing O.D.	Visual Reference		Each	Price
			Ferrule	Tubing		
B-FP-4/10	10	.134"			4.20	36.00
B-FP-4/09	9	.148"			4.20	36.00
B-FP-4/08	8	.165"			4.20	36.00
B-FP-4/07	7	.180"			4.20	36.00
B-FP-4/06-5	6-1/2	.188"			4.20	36.00
B-FP-4/06	6	.203"			4.20	36.00
B-FP-4/05	5	.220"			4.20	36.00
B-FP-4/04	4	.238"			4.20	36.00

### TYPICAL APPLICATIONS

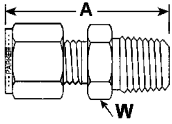


# COMPRESSION FITTINGS — Stainless Steel Type 316

## COMPRESSION FITTINGS — Stainless Steel Type 316

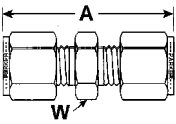
Parker Instrumentation Compression Tube Fittings are manufactured from heat code traceable Stainless Steel Type 316. They provide leak free connections for instrumentation power and process applications. The single ferrule design simplifies installation and reduces the potential for leaks by having fewer components. These fittings seal equally well on thin wall and heavy wall tubing. They are compatible with all stainless steel tubing materials and work well with hard plastic tubing including Peek, Polypropylene, Rigid Nylons and most Polyethylene tubes. These fittings are not recommended for soft tubing.

We carry the most common 1/16", 1/8" and 1/4" sizes. Other sizes and configurations are available by special order. Stainless Steel Ferrules are provided with each fitting. Individual ferrule replacements are available in three different sizes.



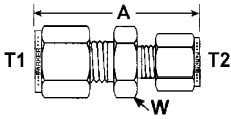
### NPT MALE CONNECTOR

Part No.	Tube O.D.	NPT Thread	A	W	Price Each
<b>B-FCXX-MC1-2</b>	1/16"	1/8"	1.03"	7/16"	<b>13.90</b>
<b>B-FCXX-MC2-2</b>	1/8"	1/8"	1.20"	7/16"	<b>9.10</b>
<b>B-FCXX-MC4-2</b>	1/4"	1/8"	1.29"	1/2"	<b>8.40</b>



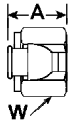
### UNION

Part No.	Tube O.D.	A	W	Price Each
<b>B-FCXX-TU1-1</b>	1/16"	0.99"	5/16"	<b>19.20</b>
<b>B-FCXX-TU2-2</b>	1/8"	1.39"	7/16"	<b>13.55</b>
<b>B-FCXX-TU4-4</b>	1/4"	1.62"	1/2"	<b>13.05</b>



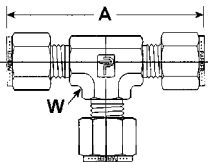
### REDUCING UNION

Part No.	Tube O.D. T1 - T2	A	W	Price Each
<b>B-FCXX-RU2-1</b>	1/8" — 1/16"	1.21"	7/16"	<b>18.50</b>
<b>B-FCXX-RU4-1</b>	1/4" — 1/16"	1.38"	1/2"	<b>15.50</b>
<b>B-FCXX-RU4-2</b>	1/4" — 1/8"	1.52"	1/2"	<b>14.25</b>



### PLUG — For plugging open ended tube fittings

Part No.	Tube O.D.	A	W	Price Each
<b>B-FCXX-P1</b>	1/16"	0.31"	5/16"	<b>13.75</b>
<b>B-FCXX-P2</b>	1/8"	0.47"	7/16"	<b>8.45</b>
<b>B-FCXX-P4</b>	1/4"	0.50"	9/16"	<b>6.70</b>



### UNION TEE

Part No.	Tube O.D.	A	W	Price Each
<b>B-FCXX-UT1</b>	1/16"	1.42"	3/8"	<b>48.20</b>
<b>B-FCXX-UT2</b>	1/8"	1.76"	3/8"	<b>29.75</b>
<b>B-FCXX-UT4</b>	1/4"	2.12"	1/2"	<b>27.75</b>



### FERRULE — Individual Replacement

Part No.	Tube O.D.	Price Each
<b>B-FCXX-F1</b>	1/16"	<b>4.70</b>
<b>B-FCXX-F2</b>	1/8"	<b>2.95</b>
<b>B-FCXX-F4</b>	1/4"	<b>2.45</b>

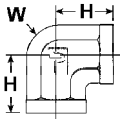
Graphite/Polyimide Composite Ferrules are available, ranging from 35 gauge to 4 gauge. See pages 109-110.

# PIPE FITTINGS — Stainless Steel Type 316

## PIPE FITTINGS — Stainless Steel Type 316

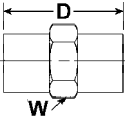
Parker Instrumentation Pipe Fittings are precision machined from close grain 316 Stainless Steel forgings for elbows and tees, and from bar stock for straight connectors. Designed to be used for process control and instrumentation connections between pipe sizes and tube sizes. Other sizes and materials are available by special order.

Call Purchasing Services toll free — 1-888-455-9712.



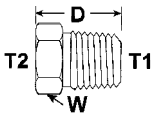
### FEMALE ELBOW

Part No.	NPT Thread		H	W	Price Each
	Female				
<b>B-PFXX-FE2-2</b>	1/8"		0.66"	9/16"	<b>21.15</b>
<b>B-PFXX-FE4-4</b>	1/4"		0.88"	3/4"	<b>24.50</b>



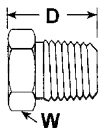
### FEMALE HEX COUPLING

Part No.	NPT Thread Female		D	W	Price Each
	Female				
<b>B-PFXX-FHC2-2</b>	1/8"		0.75"	5/8"	<b>9.95</b>
<b>B-PFXX-FHC4-4</b>	1/4"		1.13"	3/4"	<b>13.05</b>



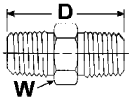
### REDUCING BUSHING

Part No.	NPT Thread		D	W	Price Each
	Male T1	Female T2			
<b>B-PFXX-RB2-1</b>	1/8"	1/16"	0.63"	7/16"	<b>6.20</b>
<b>B-PFXX-RB4-2</b>	1/4"	1/8"	0.86"	5/8"	<b>7.45</b>



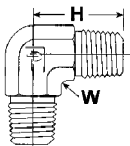
### HEX HEAD PLUG

Part No.	NPT Thread		D	W	Price Each
	Male				
<b>B-PFXX-PH2</b>	1/8"		0.56"	7/16"	<b>5.25</b>
<b>B-PFXX-PH4</b>	1/4"		0.75"	9/16"	<b>6.30</b>



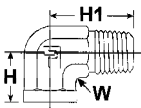
### MALE HEX NIPPLE

Part No.	NPT Thread		D	W	Price Each
	Male				
<b>B-PFXX-MHN2-2</b>	1/8"		1.06"	7/16"	<b>6.15</b>
<b>B-PFXX-MHN4-4</b>	1/4"		1.45"	5/8"	<b>8.45</b>



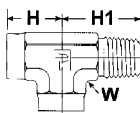
### MALE ELBOW

Part No.	NPT Thread		H	W	Price Each
	Male				
<b>B-PFXX-ME2-2</b>	1/8"		0.76"	7/16	<b>17.65</b>
<b>B-PFXX-ME4-4</b>	1/4"		1.09"	9/16	<b>18.50</b>



### STREET ELBOW

Part No.	NPT Thread			H / H1	W	Price Each
	Male	Female				
<b>B-PFXX-SE2-2</b>	1/8"	1/8"		0.66" / 0.78"	9/16"	<b>21.70</b>
<b>B-PFXX-SE4-4</b>	1/4"	1/4"		0.88" / 1.09"	3/4"	<b>24.50</b>



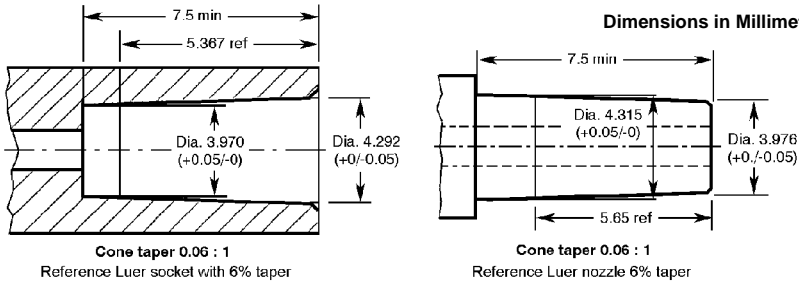
### STREET TEE

Part No.	NPT Thread			H / H1	W	Price Each
	Male	Female				
<b>B-PFXX-ST2-2</b>	1/8"	1/8"		0.66" / 0.78"	9/16"	<b>31.25</b>
<b>B-PFXX-ST4-4</b>	1/4"	1/4"		0.88" / 1.09"	3/4"	<b>33.10</b>

# LUER CONNECTORS — Stainless Steel Type 316

The concept for these adapters was developed by a German instrument maker whose name, Luer, still defines this unique design. The Luer taper allows the rapid connection of medical devices and tubing in a mechanically secure and leakproof (liquid) manner. However, the mated parts disconnect easily and when desired.

Used on most hypodermic needles, Type 316 Stainless Steel Luer Connectors are truly superior fittings suited for the most demanding medical and laboratory applications. The barbed fitting can be used with many types of tubing, such as Teflon, Polyethylene, Nylon, etc. Luer blanks give you the added option of customizing the fitting to meet your specific mounting requirements. Outside diameters of barbs have a tolerance of  $\pm 0.005''$ .



## MALE LUER

Features a standard Luer taper at one end and a barbed tubing mount on the other.

Part No.	Fits Tubing Size	Barb O.D.	Price	
			Each	10
<b>B-LXM-15</b>	3/32"	0.105"	<b>11.40</b>	<b>95.00</b>
<b>B-LXM-20</b>	1/8"	0.145"	<b>11.40</b>	<b>95.00</b>
<b>B-LXM-30</b>	3/16"	0.205"	<b>10.10</b>	<b>84.00</b>
<b>B-LXM-40</b>	1/4"	0.260"	<b>12.95</b>	<b>102.80</b>



## FEMALE LUER

Is a non-barbed fitting with the standard internal Luer taper. The through-hole is 0.060". For custom modifications, **call Special Manufacturing Services at 1-800-339-2116.**

Part No.	Can be Modified to Fit Hypodermic Tubing	Price	
		Each	10
<b>B-LXBK-1</b>	Gauges 4 to 33	<b>10.25</b>	<b>82.00</b>

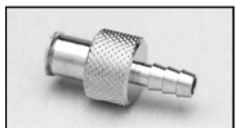
## LUER LOCK

Fittings are threaded for a more secure connection and added leverage for seal disconnect.



## MALE LUER LOCK

Part No.	Fits Tubing Size	Barb O.D.	Price	
			Each	10
<b>B-LXML-15</b>	3/32"	0.105"	<b>11.85</b>	<b>94.50</b>
<b>B-LXML-20</b>	1/8"	0.145"	<b>12.45</b>	<b>99.50</b>
<b>B-LXML-30</b>	3/16"	0.205"	<b>13.05</b>	<b>104.50</b>
<b>B-LXML-40</b>	1/4"	0.260"	<b>13.55</b>	<b>109.00</b>



## FEMALE LUER LOCK

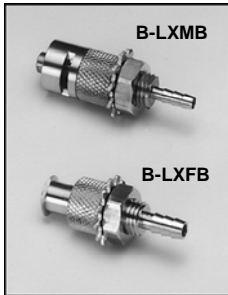
Part No.	Fits Tubing Size	Barb O.D.	Price	
			Each	10
<b>B-LXFL-15</b>	3/32"	0.105"	<b>12.15</b>	<b>101.00</b>
<b>B-LXFL-20</b>	1/8"	0.145"	<b>9.25</b>	<b>74.00</b>
<b>B-LXFL-30</b>	3/16"	0.205"	<b>9.60</b>	<b>77.00</b>
<b>B-LXFL-40</b>	1/4"	0.260"	<b>9.95</b>	<b>80.50</b>



## LUER CONNECTORS — Stainless Steel Type 316 (cont.)

### LUER TO BULKHEAD ADAPTER

Allows the rigid and secure attachment of the male or female Luer fitting to equipment panels and bulkheads. Each fitting includes a stainless steel lockwasher and a 1/4-32 panel nut.



#### MALE LUER LOCK — Bulkhead

Part No.	Fits Tubing Size	Thread Size	Barb O.D.	Each	Price 10
<b>B-LXMB-15</b>	3/32"	1/4-32	0.105"	<b>31.20</b>	<b>249.50</b>
<b>B-LXMB-20</b>	1/8"	1/4-32	0.145"	<b>32.30</b>	<b>258.50</b>

#### FEMALE LUER LOCK — Bulkhead

Part No.	Fits Tubing Size	Thread Size	Barb O.D.	Each	Price 10
<b>B-LXFB-15</b>	3/32"	1/4-32	0.105"	<b>30.55</b>	<b>244.50</b>
<b>B-LXFB-20</b>	1/8"	1/4-32	0.145"	<b>39.85</b>	<b>332.00</b>

### DOUBLE LUER LOCKS

Lend versatility to a Luer Connector-based fluid transfer system. They also can be used as extensions.



#### FEMALE DOUBLE LUER LOCK

Part No.	Fits	Each	Price 10
<b>B-LXFL-FF</b>	2 Male Luer Locks	<b>12.25</b>	<b>102.00</b>



#### MALE DOUBLE LUER LOCK

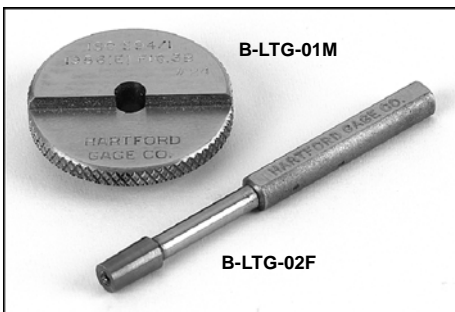
Part No.	Fits	Each	Price 10
<b>B-LXML-MM</b>	2 Female Luer Locks	<b>12.60</b>	<b>105.00</b>



#### MALE/FEMALE DOUBLE LUER LOCK

Part No.	Fits	Each	Price 10
<b>B-LXL-MF</b>	1 Male & 1 Female Luer Lock	<b>12.05</b>	<b>96.50</b>

## LUER TAPER GAGES



### ISO 594/1 1986E

Male and Female Luer Taper Gages are manufactured in accordance with the latest ISO 594/1 1986E standards, and are delivered with unique serial numbers and certification of calibration, for use in prototype or production quality control.

**Male Luer Taper Gage** tests semi-rigid male fittings. It is made from ground, hardened Stainless Steel Type 440.

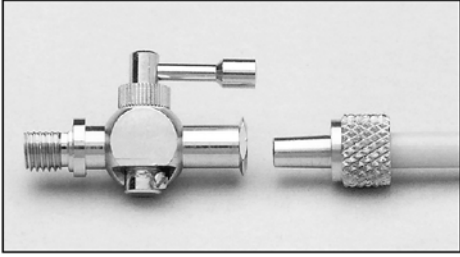
**Female Luer Taper Gage** is suitable for testing female fittings in both semi-rigid and rigid materials. The contact area is made from Tungsten Carbide.

Other test and measurement gages for Luer compliance with ISO, ANSI/HIMA MD70.1 are available.

**Call Purchasing Services toll free — 1-888-455-9712.**

**B-LTG-01M** Male Luer Taper Gage . . . . **715.00**  
**B-LTG-02F** Female Luer Taper Gage . . **695.00**

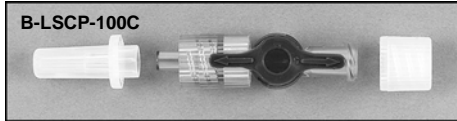
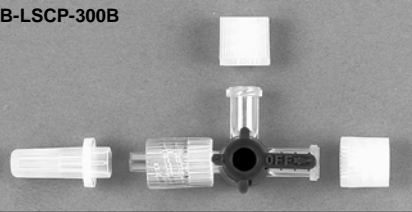
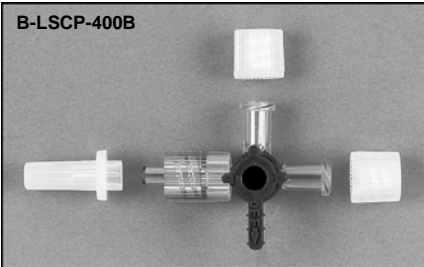
## LUER STOPCOCK — Stainless Steel Type 304



Made from Stainless Steel Type 304. Luer Stopcocks, in conjunction with other connectors, allow the user to build a piping system that makes control of liquids an effortless task. The threaded end has a 0.085" through-hole. Thread size: 1/4-20. Total Fitting Length: 1.170".

**B-LXSK-1** ..... **79.80**

## DISPOSABLE STOPCOCKS — Polycarbonate / Polyethylene



### Polycarbonate / Polyethylene

**Get 1-Way, 3-Way or 4-Way flow control — Nonsterile**

Disposable Stopcocks with Luer Connections feature male and female Luer lock construction. They can be used to regulate flow or as on/off valves in gas or liquid circuits. Rated to 75 psi, these Stopcocks have a Polycarbonate body and a handle/stem made of Polyethylene. Can be gas sterilized.

Handles rotate 90 degrees on the 1-Way Stopcocks; 180 degrees on the 3-Way Stopcocks; and 360 degrees on the 4-Way Stopcocks. Each unit comes with a Polyethylene cap for each opening.

Part No.	Description	Price			
		Each	10	25	100
<b>B-LSCP-100C</b>	1-Way	<b>2.35</b>	<b>21.25</b>	<b>40.15</b>	<b>133.80</b>
<b>B-LSCP-300B</b>	3-Way	<b>2.35</b>	<b>21.25</b>	<b>40.15</b>	<b>133.80</b>
<b>B-LSCP-400B</b>	4-Way	<b>2.35</b>	<b>21.25</b>	<b>40.15</b>	<b>133.80</b>

## INJECTION SITE



### MALE LUER LOCK — Polyisoprene / Polycarbonate

**Easy access to fluid or gas circuits — Nonsterile**

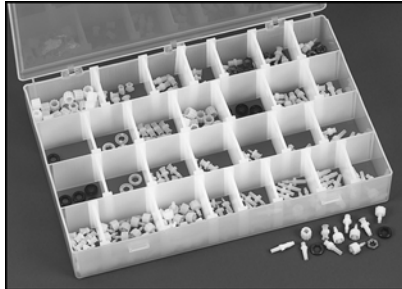
Male Luer Lock Injection Sites provide easy access to fluid or gas circuits, and are latex free. They screw on to any component that has a female Luer taper, and can be punctured with hypodermic needles of 20 gauge and smaller. Polyisoprene injection point with Polycarbonate body. See Needleless Valves, [page116](#).

Part No.	Each	Price		
		10	25	100
<b>B-211-MLL</b>	—	<b>5.70</b>	<b>11.85</b>	<b>39.40</b>

# LUER CONNECTOR KIT — Nylon

**Our Nylon Luer Connector Kit keeps you stocked with quick-disconnect fittings in the sizes you frequently need!**

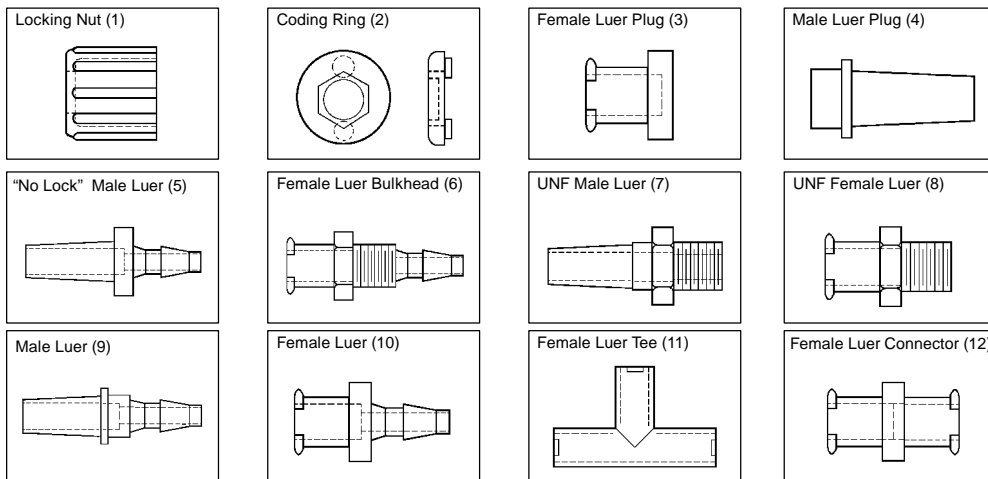
This kit contains 315 fittings for use with small diameter flexible tubing, and includes plenty of three-way Female Luer Tees for multiple connections, plus Coding Rings in various colors. Use in applications involving liquids, pneumatic controls, fluid dispensers, automatic equipment and some medical systems. Not recommended for high pressure applications.



## LUER CONNECTOR KIT — 335 Pieces

25 1/16" ID Male Luers	10 5/32" ID Female Luers
25 3/32" ID Male Luers	10 10-32 UNF Female Luers
25 1/8" ID Male Luers	10 1/4-28 UNF Female Luers
10 1/16" ID "No Lock" Male Luers	10 10-32 UNF Male Luers
10 3/32" ID "No Lock" Male Luers	10 1/4-28 UNF Male Luers
10 1/8" ID "No Lock" Male Luers	10 Female Luer Plugs
10 5/32" ID "No Lock" Male Luers	10 Male Luer Plugs
50 Locking Nuts	10 Coding Rings "w/Legs" (assorted colors)
10 1/16" ID Female Luer Bulkheads	10 Coding Rings (assorted colors)
10 3/32" ID Female Luer Bulkheads	10 Female Luer Connectors
10 1/8" ID Female Luer Bulkheads	10 Female Luer Tees
10 1/16" ID Female Luers	
10 3/32" ID Female Luers	
10 1/8" ID Female Luers	

**B-TCNY-L1 ..... 81.45**



## LUER CONNECTORS — Kit Replacement

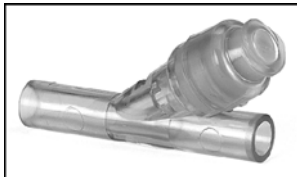
Part No.	Fits Tubing		Description (Illustration)	Price		
	Size			10	25	100
<b>B-1005006</b>	1/16"		Male Luer w/Locking Nut (9 +1)	<b>4.25</b>	<b>8.00</b>	<b>23.90</b>
<b>B-1005009</b>	3/32"		Male Luer w/Locking Nut (9 +1)	<b>4.25</b>	<b>8.00</b>	<b>23.90</b>
<b>B-1005012</b>	1/8"		Male Luer w/Locking Nut (9 +1)	<b>4.25</b>	<b>8.00</b>	<b>23.90</b>
<b>B-1005016</b>	1/16"		Male Luer (9)	<b>2.05</b>	<b>3.85</b>	<b>11.55</b>
<b>B-1005019</b>	3/32"		Male Luer (9)	<b>2.05</b>	<b>3.85</b>	<b>11.55</b>
<b>B-1005022</b>	1/8"		Male Luer (9)	<b>2.05</b>	<b>3.85</b>	<b>11.55</b>
<b>B-1005026</b>	1/16"		"No Lock" Male Luer (5)	<b>2.05</b>	<b>3.85</b>	<b>11.55</b>
<b>B-1005029</b>	3/32"		"No Lock" Male Luer (5)	<b>2.05</b>	<b>3.85</b>	<b>11.55</b>
<b>B-1005032</b>	1/8"		"No Lock" Male Luer (5)	<b>2.05</b>	<b>3.85</b>	<b>11.55</b>
<b>B-1005036</b>	5/32"		"No Lock" Male Luer (5)	<b>2.05</b>	<b>3.85</b>	<b>11.55</b>
<b>B-1005042</b>	10-32 UNF		Male Luer (7)	<b>4.10</b>	<b>7.70</b>	<b>23.10</b>
<b>B-1005048</b>	1/4-28 UNF		Male Luer (7)	<b>4.10</b>	<b>7.70</b>	<b>23.10</b>
<b>B-1005050</b>	-		Male Luer Plug (4)	<b>2.35</b>	<b>4.40</b>	<b>13.20</b>
<b>B-1005060</b>	-		Male Luer Plug w/Locking Nut (4 +1)	<b>2.35</b>	<b>4.40</b>	<b>13.20</b>

## LUER CONNECTORS — Nylon

### LUER CONNECTORS — Kit Replacement

Part No.	Size	Description (Illustration)	Price		
			10	25	100
<b>B-1005106</b>	1/16"	Female Luer (10)	<b>2.05</b>	<b>3.85</b>	<b>11.55</b>
<b>B-1005109</b>	3/32"	Female Luer (10)	<b>2.05</b>	<b>3.85</b>	<b>11.55</b>
<b>B-1005112</b>	1/8"	Female Luer (10)	<b>2.05</b>	<b>3.85</b>	<b>11.55</b>
<b>B-1005116</b>	5/32"	Female Luer (10)	<b>2.05</b>	<b>3.85</b>	<b>11.55</b>
<b>B-1005120</b>	-	Female Luer Connector (12)	<b>4.10</b>	<b>7.70</b>	<b>23.10</b>
<b>B-1005125</b>	-	Female Luer Tee (11)	<b>5.35</b>	<b>10.00</b>	<b>30.00</b>
<b>B-1005126</b>	1/16"	Female Luer Bulkhead (6)	<b>4.10</b>	<b>7.70</b>	<b>23.10</b>
<b>B-1005129</b>	3/32"	Female Luer Bulkhead (6)	<b>4.10</b>	<b>7.70</b>	<b>23.10</b>
<b>B-1005132</b>	1/8"	Female Luer Bulkhead (6)	<b>4.10</b>	<b>7.70</b>	<b>23.10</b>
<b>B-1005142</b>	10-32 UNF	Female Luer (8)	<b>4.10</b>	<b>7.70</b>	<b>23.10</b>
<b>B-1005148</b>	1/4-28 UNF	Female Luer (8)	<b>4.10</b>	<b>7.70</b>	<b>23.10</b>
<b>B-1005150</b>	-	Female Luer Plug (3)	<b>2.05</b>	<b>3.85</b>	<b>11.55</b>
<b>B-1005160</b>	-	Locking Nut (1)	<b>2.45</b>	<b>4.60</b>	<b>13.80</b>

## NEEDLELESS VALVES — Luer Access



**B-245600**



**B-245000**



**B-247600**



**B-247021**

### Syringe Tip Activated — Nonsterile

Designed to fill, hold and release controlled amounts of fluid or gases on demand, Needleless Valves require only a standard male Luer for actuation — no needles are needed to access the circuit. Once actuated, the valve opens for two-way flow. When the male Luer is removed, the component seals automatically.

Highly reliable and virtually jam-proof, as well as leak-proof, Needleless Valves are typically used in the laboratory where gas or fluid circuits require access. In medical uses, they are substituted for needle ports in fluid delivery systems.

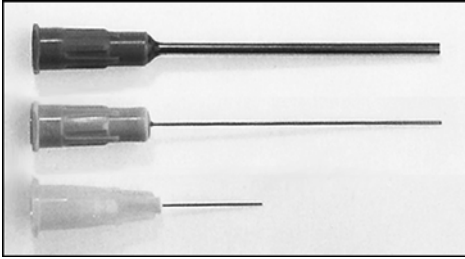
**Standard Luer Access Valves** are offered in T-Port and Tube End styles. T-Port Valve bodies are made of Polycarbonate. Tube Ends are made of Polypropylene. Both have Silicone stems.

**Swabbable Luer Access Valves** provide a hermetic seal between the syringe Luer tip and valve, helping to protect against bacteria growth on internal valve sections. A relatively new design, these valves are easy to swab, clean or disinfect because the contact surface area of the syringe tip is flush with the entry point. They offer high flow, a positive seal up to 60 psi, low priming volume, and minimal back flow upon syringe removal. Both the Threaded Valve and the Y-Port Valve are constructed of clear Polycarbonate with Silicone stems.

### NEEDLELESS VALVES — Polycarbonate / Polypropylene / Silicone MIL-S 6758

Part No.	Description	O.D.	I.D.	Each	Price		
					10	25	100
<b>B-245000</b>	Swabbable Threaded Valve	Luer	Luer	<b>3.00</b>	<b>22.50</b>	<b>46.95</b>	<b>150.00</b>
<b>B-245600</b>	Swabbable Y-Port	1/4"	5/32"	<b>3.00</b>	<b>22.50</b>	<b>46.95</b>	<b>150.00</b>
<b>B-247021</b>	Tube End	5/16"	-	<b>—</b>	<b>5.00</b>	<b>10.00</b>	<b>35.00</b>
<b>B-247600</b>	T-Port	1/4"	5/32"	<b>1.85</b>	<b>15.00</b>	<b>31.25</b>	<b>95.70</b>

## NEEDLES — Luer Hub, Fluid Dispensing

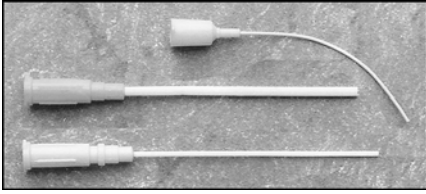


### STAINLESS STEEL W/PLASTIC HUB — Blunt

Stainless Steel Needles with plastic hubs are disposable and can be used for precise dispensing of all fluids, epoxies, solvents, fluxes, oils, pastes, etc. Needles are blunt and burr-free. Fully compatible with luer lock Syringes, [page 118](#) and luer taper cap on Squeeze Bottles. [See page 118.](#)

Part No.	Gauge	Needle Length	Dimensions in Inches		10	Price	
			O.D.	I.D.		25	100
B-NE-301PL	30	1/2	0.012	0.006	<b>2.95</b>	<b>6.25</b>	<b>21.25</b>
B-NE-271PL	27	1/2	0.016	0.008	<b>3.90</b>	<b>8.30</b>	<b>28.25</b>
B-NE-272PL	27	1	0.016	0.008	<b>4.15</b>	<b>8.75</b>	<b>29.85</b>
B-NE-273PL	27	1-1/2	0.016	0.008	<b>4.40</b>	<b>9.40</b>	<b>31.85</b>
B-NE-261PL	26	1/2	0.018	0.010	<b>3.90</b>	<b>8.30</b>	<b>28.25</b>
B-NE-262PL	26	1	0.018	0.010	<b>4.15</b>	<b>8.75</b>	<b>29.85</b>
B-NE-263PL	26	1-1/2	0.018	0.010	<b>4.40</b>	<b>9.40</b>	<b>31.85</b>
B-NE-251PL	25	1/2	0.020	0.010	<b>3.90</b>	<b>8.30</b>	<b>28.25</b>
B-NE-252PL	25	1	0.020	0.010	<b>4.15</b>	<b>8.75</b>	<b>29.85</b>
B-NE-253PL	25	1-1/2	0.020	0.010	<b>4.40</b>	<b>9.40</b>	<b>31.85</b>
B-NE-231PL	23	1/2	0.025	0.013	<b>3.90</b>	<b>8.30</b>	<b>28.65</b>
B-NE-232PL	23	1	0.025	0.013	<b>4.15</b>	<b>8.75</b>	<b>29.85</b>
B-NE-233PL	23	1-1/2	0.025	0.013	<b>4.40</b>	<b>9.40</b>	<b>31.85</b>
B-NE-221PL	22	1/2	0.028	0.016	<b>3.90</b>	<b>8.30</b>	<b>28.25</b>
B-NE-222PL	22	1	0.028	0.016	<b>4.15</b>	<b>8.75</b>	<b>29.85</b>
B-NE-223PL	22	1-1/2	0.028	0.016	<b>4.40</b>	<b>9.40</b>	<b>31.85</b>
B-NE-211PL	21	1/2	0.032	0.020	<b>3.90</b>	<b>8.30</b>	<b>28.25</b>
B-NE-212PL	21	1	0.032	0.020	<b>4.15</b>	<b>8.75</b>	<b>29.85</b>
B-NE-213PL	21	1-1/2	0.032	0.020	<b>4.40</b>	<b>9.40</b>	<b>31.85</b>
B-NE-201PL	20	1/2	0.0355	0.023	<b>3.90</b>	<b>8.30</b>	<b>28.25</b>
B-NE-202PL	20	1	0.0355	0.023	<b>4.15</b>	<b>8.75</b>	<b>29.85</b>
B-NE-203PL	20	1-1/2	0.0355	0.023	<b>4.40</b>	<b>9.40</b>	<b>31.85</b>
B-NE-191PL	19	1/2	0.042	0.027	<b>3.90</b>	<b>8.30</b>	<b>28.25</b>
B-NE-192PL	19	1	0.042	0.027	<b>4.15</b>	<b>8.75</b>	<b>29.85</b>
B-NE-193PL	19	1-1/2	0.042	0.027	<b>4.40</b>	<b>9.40</b>	<b>31.85</b>
B-NE-181PL	18	1/2	0.050	0.033	<b>3.90</b>	<b>8.30</b>	<b>28.25</b>
B-NE-182PL	18	1	0.050	0.033	<b>4.15</b>	<b>8.75</b>	<b>29.85</b>
B-NE-183PL	18	1-1/2	0.050	0.033	<b>4.40</b>	<b>9.40</b>	<b>31.85</b>
B-NE-161PL	16	1/2	0.065	0.047	<b>4.15</b>	<b>8.75</b>	<b>29.85</b>
B-NE-162PL	16	1	0.065	0.047	<b>4.20</b>	<b>8.85</b>	<b>30.05</b>
B-NE-163PL	16	1-1/2	0.065	0.047	<b>4.50</b>	<b>9.50</b>	<b>32.35</b>
B-NE-151PL	15	1/2	0.072	0.054	<b>5.10</b>	<b>10.85</b>	<b>36.90</b>
B-NE-152PL	15	1	0.072	0.054	<b>5.50</b>	<b>11.75</b>	<b>39.85</b>
B-NE-153PL	15	1-1/2	0.072	0.054	<b>5.85</b>	<b>12.45</b>	<b>42.35</b>
B-NE-141PL	14	1/2	0.083	0.063	<b>5.50</b>	<b>11.75</b>	<b>39.85</b>
B-NE-142PL	14	1	0.083	0.063	<b>6.10</b>	<b>13.00</b>	<b>44.15</b>
B-NE-143PL	14	1-1/2	0.083	0.063	<b>6.20</b>	<b>13.20</b>	<b>44.85</b>

## NEEDLES — Luer Hub, Fluid Dispensing (cont.)

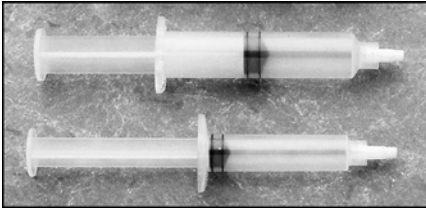


### TEFLON NEEDLES — Plastic Hub

For dispensation of material into hard to get areas, flexible Teflon Needles are most convenient. They also allow dispensing of cyanoacrylates and other high bonding materials without premature curing which causes clogs. Teflon needles will not scratch or mar highly sensitive surfaces. The plastic Luer lock hub enables full compatibility with luer lock syringes and squeeze bottles. Body is molded plastic. Needle length is 2".

Part No.	Gauge	Dimensions in Inches		Each	Price	
		O.D.	I.D.		5	10
<b>B-NE-024</b>	24	0.025-0.029	0.019-0.021	<b>2.00</b>	<b>15.75</b>	<b>26.25</b>
<b>B-NE-020</b>	20	0.045-0.048	0.033-0.036	<b>2.00</b>	<b>15.75</b>	<b>26.25</b>
<b>B-NE-014</b>	14	0.083-0.086	0.067-0.071	<b>2.00</b>	<b>15.75</b>	<b>26.25</b>

## SYRINGES — Disposable



### HEAVY DUTY SYRINGES — Luer Lock

Heavy Duty Syringes are excellent for potting, encapsulating and sealing of miniature and subminiature components. Resistant to highly reactive compounds and solvents, they permit proper discharge of material without flooding, starving or dripping. Threads allow use of luer lock hub needle to assure needle stability. Not graduated. For Taper Tip Syringes, see [page 448](#).

Part No.	Body Material	Plunger Tip	Capacity	Each	Price	
					5	10
<b>B-SYR-01</b>	Polypropylene	Neoprene	1 cc	<b>1.60</b>	<b>6.60</b>	<b>10.95</b>
<b>B-SYR-05</b>	Polypropylene	Neoprene	5 cc	<b>1.35</b>	<b>5.50</b>	<b>10.05</b>
<b>B-SYR-10</b>	Polypropylene	Neoprene	10 cc	<b>1.35</b>	<b>5.55</b>	<b>11.00</b>
<b>B-SYR-20</b>	Polypropylene	Thermoplastic	20 cc	<b>2.25</b>	<b>9.40</b>	<b>18.80</b>
<b>B-SYR-30</b>	Polypropylene	Neoprene	30 cc	<b>2.70</b>	<b>11.25</b>	<b>22.50</b>
<b>B-SYR-50</b>	Polypropylene	Thermoplastic	50 cc	<b>3.75</b>	<b>15.50</b>	<b>30.95</b>

## BOTTLES — Squeeze, Polyethylene



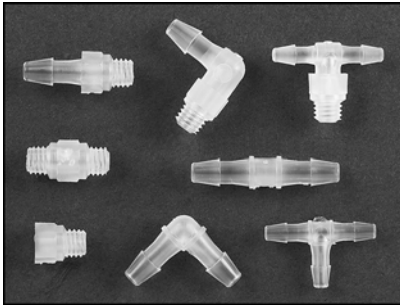
### POLYETHYLENE SQUEEZE BOTTLES

Get "one drop at a time" dispensing of fluxes, inks, solvents, oils, etc. with durable Polyethylene Squeeze Bottles. Furnished with 18 mm screw-on cap with luer taper for use with needles. Compatible with the Stainless Steel Needles [on page 117](#).

Part No.	Capacity	Each	Price	
			5	10
<b>B-SQB-01</b>	1 oz.	<b>2.40</b>	<b>9.95</b>	<b>16.55</b>
<b>B-SQB-02</b>	2 oz.	<b>2.50</b>	<b>10.35</b>	<b>17.25</b>

See Luer Taper Tips on [page 448](#).

# TUBE FITTINGS — Polypropylene



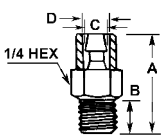
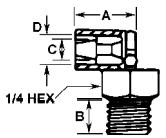
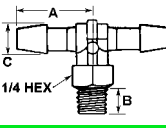
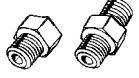
For instrumentation sized plastic tubing with 1/16", 3/32" and 1/8" I.D. Other sizes available on request.

The threaded fittings shown feature a tapered 10-32 thread that requires no gasket for a reliable seal. Fittings will seal even in slightly off-sized holes. The tapered thread also allows the fittings to be directionally oriented without the use of gaskets.

**Shrouded barbs help eliminate breakage and can replace expensive fittings.** The shroud completely supports the tubing, reducing stress placed on the fragile hose barb. The result is a leak-tight connection that offers excellent performance and reusability. Solves the problem of breakage without the need for expensive metal instrumentation tube fittings.

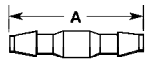
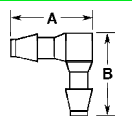
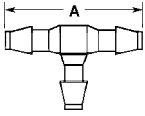
**Shrouded barb fittings are indicated by an asterisk (\*) in the chart.**

## TUBE FITTINGS — Polypropylene

Part No.	Tube I.D.	Dimensions in Inches				Each	Price		
		A	B**	C	D		10	25	
<b>STRAIGHT</b>									
	<b>B-1002501*</b>	1/16	.542	.172	.095	.208	<b>1.00</b>	<b>6.70</b>	<b>13.90</b>
	<b>B-1002502</b>	3/32	.640	.172	.141	—	<b>1.00</b>	<b>6.70</b>	<b>13.90</b>
	<b>B-1002503</b>	1/8	.737	.172	.188	—	<b>1.00</b>	<b>6.70</b>	<b>13.90</b>
<b>ELBOW</b>									
	<b>B-1002601*</b>	1/16	.252	.172	.095	.208	<b>1.95</b>	<b>15.95</b>	<b>33.20</b>
	<b>B-1002602</b>	3/32	.375	.172	.141	—	<b>1.95</b>	<b>15.95</b>	<b>33.20</b>
	<b>B-1002603</b>	1/8	.500	.172	.188	—	<b>1.95</b>	<b>15.95</b>	<b>33.20</b>
<b>TEE</b>									
	<b>B-1002701*</b>	1/16	.252	.172	.095	.208	<b>1.95</b>	<b>15.95</b>	<b>33.20</b>
	<b>B-1002702</b>	3/32	.375	.172	.141	—	<b>1.95</b>	<b>15.95</b>	<b>33.20</b>
	<b>B-1002703</b>	1/8	.500	.172	.188	—	<b>1.95</b>	<b>15.95</b>	<b>33.20</b>
<b>PLUG AND NIPPLE</b>									
	<b>B-1003179</b>	10-32 Plug					<b>1.00</b>	<b>6.70</b>	<b>13.90</b>
	<b>B-1003279</b>	10-32 x 10-32 Nipple					<b>1.95</b>	<b>15.95</b>	<b>33.20</b>

\*Shrouded barbs

\*\*Tapered 10-32 thread

Part No.	Tube I.D.	Dimensions in Inches			Description	Each	Price	
		A	B				10	25
<b>STRAIGHT</b>								
	<b>B-1002802</b>	3/32	3/4	-	Hose Barb	<b>1.20</b>	<b>9.85</b>	<b>20.45</b>
	<b>B-1002803</b>	1/8	1	-	Hose Barb	<b>1.20</b>	<b>9.85</b>	<b>20.45</b>
<b>ELBOW</b>								
	<b>B-1002901</b>	1/16	7/16	7/16	Hose Barb	<b>1.35</b>	<b>11.05</b>	<b>23.05</b>
	<b>B-1002902</b>	3/32	9/16	9/16	Hose Barb	<b>1.35</b>	<b>11.05</b>	<b>23.05</b>
	<b>B-1002903</b>	1/8	5/8	5/8	Hose Barb	<b>1.35</b>	<b>11.05</b>	<b>23.05</b>
<b>TEE</b>								
	<b>B-1003001</b>	1/16	1/2	1/4	Hose Barb	<b>1.25</b>	<b>10.50</b>	<b>21.90</b>
	<b>B-1003002</b>	3/32	3/4	1/2	Hose Barb	<b>1.25</b>	<b>10.50</b>	<b>21.90</b>
	<b>B-1003003</b>	1/8	1	5/8	Hose Barb	<b>1.25</b>	<b>10.50</b>	<b>21.90</b>

# TUBE FITTINGS ASSORTMENTS — Nylon



TCNY-K1

## TUBE FITTINGS ASSORTMENT - 90 Pieces

### 1/16" Inside Diameter

- |   |                                      |
|---|--------------------------------------|
| 10 1/16" ID, 10-32 Barbed Fittings      | 10 1/16" x 1/16" ID Connectors       |
| 10 1/16" ID, 1/8-27 NPT Barbed Fittings | 10 10-32 Plugs                       |
| 10 1/16" ID, 1/8-27 NPT Branched Tees   | 10 1/8-27 NPT Plugs                  |
| 10 1/16" ID Tees                        | 10 1/8" OD Locking Sleeves           |
| 10 1/16" ID Elbows                      | 25 Feet 1/16" ID Polyurethane Tubing |

**B-TCNY-K1** ..... 35.95



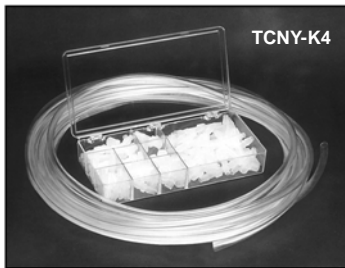
TCNY-K2

## TUBE FITTINGS ASSORTMENT - 120 Pieces

### 1/8" Inside Diameter

- |  |                                     |
|--|-------------------------------------|
| 10 1/8" ID, 10-32 Barbed Fittings      | 10 1/8" ID, 10-32 Elbows            |
| 10 1/8" ID, 1/4-28 UNF Barbed Fittings | 10 10-32 Plugs                      |
| 10 1/8" ID, 1/8-27 NPT Barbed Fittings | 10 1/8-27 NPT Plugs                 |
| 10 1/8" ID Tees                        | 10 1/8-27 NPT, 10-32 Reducers       |
| 10 1/8" ID, 10-32 Branched Tees        | 10 1/4" OD Locking Sleeves          |
| 10 1/8" ID, 1/8" ID Connectors         | 25 Feet 1/8" ID Polyurethane Tubing |
| 10 1/8" ID Elbows                      |                                     |

**B-TCNY-K2** ..... 55.55



TCNY-K4

## TUBE FITTINGS ASSORTMENT - 80 Pieces

### 1/4" Inside Diameter

- |  |                                     |
|--|-------------------------------------|
| 10 1/4" ID, 1/4-28 UNF Barbed Fittings | 10 1/4" ID, 1/8-27 NPT Elbows       |
| 10 1/4" ID, 1/8-27 NPT Barbed Fittings | 10 1/8-27 NPT Plugs                 |
| 10 1/4" ID, 1/4" Connectors            | 10 3/8" OD Locking Sleeves          |
| 10 1/4" ID Tees                        | 25 Feet 1/4" ID Polyurethane Tubing |
| 10 1/4" ID Elbows                      |                                     |

**B-TCNY-K4** ..... 61.45



TCNY-K5

## TUBE FITTINGS ASSORTMENT - 250 Pieces

### 1/16", 1/8", 1/4" Inside Diameters

- |   |                                       |
|---|---------------------------------------|
| 10 1/4" ID, 1/4-28 UNF Barbed Fittings  | 10 1/16" ID Elbows                    |
| 10 1/4" ID, 1/8-27 NPT Barbed Fittings  | 10 1/16" ID, 1/8" ID Connectors       |
| 10 1/4" ID Connectors                   | 10 10-32 Plugs                        |
| 10 1/4" ID Tees                         | 10 1/8-27 NPT Plugs                   |
| 10 1/4" ID Elbows                       | 10 1/8" OD Locking Sleeves            |
| 10 1/8" ID, 1/8-27 NPT Barbed Fittings  | 10 1/4" OD Locking Sleeves            |
| 10 1/8" ID, 1/4-28 UNF Barbed Fittings  | 10 3/8" OD Locking Sleeves            |
| 10 1/8" ID, 10-32 Barbed Fittings       | 10 1/4" ID, 1/8-27 NPT Elbows         |
| 10 1/8" ID Tees                         | 10 1/8" ID, 10-32, Branched Tees      |
| 10 1/8" ID Elbows                       | 10 1/16" ID, 1/8-27 NPT Branched Tees |
| 10 1/16" ID, 10-32 Barbed Fittings      | 10 1/8" ID, 10-32 Elbows              |
| 10 1/16" ID, 1/8-27 NPT Barbed Fittings | 25 Feet 1/16" ID Polyurethane Tubing  |
| 10 1/16" ID Tees                        | 25 Feet 1/8" ID Polyurethane Tubing   |
| 10 1/16" x 1/16" ID Connectors          | 25 Feet 1/4" ID Polyurethane Tubing   |

**B-TCNY-K5** ..... 98.50



TCNY-K15

## TUBE FITTINGS ASSORTMENT - 170 Pieces

### 1/16", 1/8" Inside Diameters

- |   |                                       |
|---|---------------------------------------|
| 10 1/16", 10-32 Barbed Fittings         | 10 1/8" ID, 10-32 Branched Tees       |
| 10 1/8" ID, 10-32 Barbed Fittings       | 10 1/16" ID, 1/8-27 NPT Branched Tees |
| 10 1/16" ID, 1/8-27 NPT Barbed Fittings | 10 10-32 Plugs                        |
| 10 1/8" ID, 1/8-27 NPT Barbed Fittings  | 10 1/8-27 NPT Plugs                   |
| 10 1/16" x 1/8" ID Connectors           | 10 1/8-27 x 10-32 Reducers            |
| 10 1/16" x 1/16" ID Connectors          | 10 1/8" OD Locking Sleeves            |
| 10 1/8" x 1/8" ID Connectors            | 10 1/4" OD Locking Sleeves            |
| 10 1/16" ID Tees                        | 25 Feet 1/16" ID Polyurethane Tubing  |
| 10 1/8" ID Tees                         | 25 Feet 1/8" ID Polyurethane Tubing   |
| 10 1/8" ID, 10-32 Elbows                |                                       |

**B-TCNY-K15** ..... 56.50



## TUBE FITTINGS ASSORTMENTS — Nylon (cont.)



TCNY-A1

### TUBE FITTINGS ASSORTMENT - 210 Pieces

1/16", 3/32", 1/8", 5/32", 3/16", 1/4" Inside Diameters

- |   |                                       |
|---|---------------------------------------|
| 10 1/16" ID, 10-32 Barbed Fittings      | 10 1/8" 1/8" ID Connectors            |
| 10 3/32" ID, 10-32 Barbed Fittings      | 10 1/16" x 3/32" ID Connectors        |
| 10 1/8" ID, 10-32 Barbed Fittings       | 10 1/16" x 1/8" ID Connectors         |
| 10 5/32" ID, 1/8-27 NPT Barbed Fittings | 10 3/32" x 1/8" ID Connectors         |
| 10 3/16" ID, 1/8-27 NPT Barbed Fittings | 10 1/8-27 NPT x 10-32 Reducers        |
| 10 1/4" ID, 1/8-27 NPT Barbed Fittings  | 10 10-32 Plugs                        |
| 10 1/16" ID Tees                        | 10 1/8-27 NPT Plugs                   |
| 10 3/32" ID Tees                        | 10 1/8" ID, 10-32 Elbows              |
| 10 1/8" ID Tees                         | 10 1/8" ID, 10-32 Branched Tees       |
| 10 1/16" x 1/16" ID Connectors          | 10 1/16" ID, 1/8-27 NPT Branched Tees |
| 10 3/32" x 3/32" ID Connectors          |                                       |

**B-TCNY-A1** ..... **51.95**



TCNY-A2

### TUBE FITTINGS ASSORTMENT - 280 Pieces

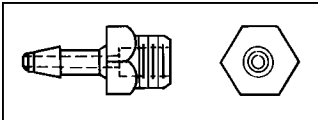
1/16", 3/32", 1/8", 5/32", 3/16", 1/4" Inside Diameters

- |   |                                       |
|---|---------------------------------------|
| 10 1/16" ID, 10-32 Barbed Fittings      | 10 3/8" OD Locking Sleeves            |
| 10 3/32" ID, 10-32 Barbed Fittings      | 10 1/16" ID, 1/8-27 NPT Branched Tees |
| 10 1/8" ID, 10-32 Barbed Fittings       | 10 1/8" ID Tees                       |
| 10 1/8" ID, 10-32 Elbows                | 10 1/8" ID, 10-32 Branched Tees       |
| 10 1/16" ID, 1/8-27 NPT Barbed Fittings | 10 1/16" x 1/16" ID Connectors        |
| 10 3/32" ID, 1/8-27 NPT Barbed Fittings | 10 3/32" x 3/32" ID Connectors        |
| 10 1/8" ID, 1/8-27 NPT Barbed Fittings  | 10 1/8" x 1/8" ID Connectors          |
| 10 5/32" ID, 1/8-27 NPT Barbed Fittings | 10 1/16" x 3/32" ID Connectors        |
| 10 3/16" ID, 1/8-27 NPT Barbed Fittings | 10 1/16" x 1/8" ID Connectors         |
| 10 1/4" ID, 1/8-27 NPT Barbed Fittings  | 10 3/32" x 1/8" ID Connectors         |
| 10 1/4" ID, 1/8-27 NPT Elbows           | 10 1/8-27 NPT x 10-32 Reducers        |
| 10 1/16" ID Tees                        | 10 1/8-27 NPT x 1/4-28 UNF Reducers   |
| 10 3/32" ID Tees                        | 10 10-32 Plugs                        |
| 10 1/8" OD Locking Sleeves              | 10 1/8-27 NPT Plugs                   |
| 10 1/4" OD Locking Sleeves              |                                       |

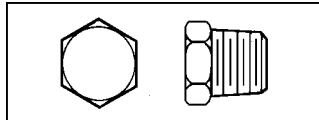
**B-TCNY-A2** ..... **69.50**

## NYLON TUBE FITTINGS — Replacements

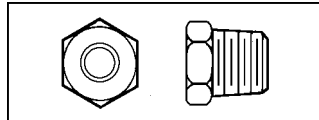
Tube Fittings are for use with Polyurethane and other soft plastic tubing. No special tools or ferrules are required. A sharp barb makes a leak-proof seal.



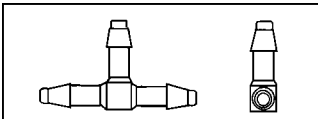
BARBED



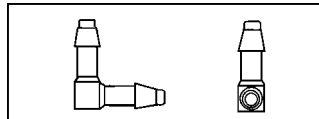
PLUG



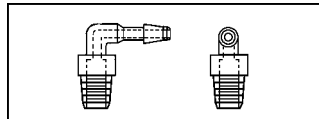
REDUCER



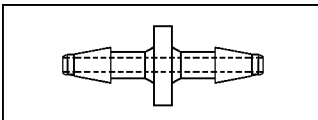
BARBED TEE



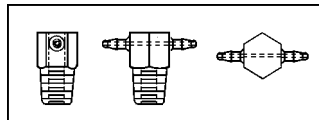
ELBOW



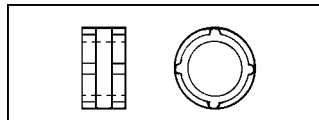
BARBED ELBOW



BARBED CONNECTOR



BRANCHED TEE



LOCKING SLEEVE

See next page for Replacement Fittings

## NYLON TUBE FITTINGS — Replacements (cont.)

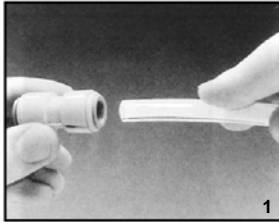
### TUBE FITTINGS — Replacements for Fitting Assortments

Part No.	Description	Tubing I.D. (O.D.)	Thread External	Price		
				10	25	100
B-1004110	Barbed	1/16"	10-32	2.10	4.25	13.60
B-1004115	Barbed	3/32"	10-32	2.10	4.25	13.60
B-1004120	Barbed	1/8"	10-32	2.10	4.25	13.60
B-1004125	Barbed	1/8"	1/4-28 UNF	2.85	5.75	18.40
B-1004130	Barbed	1/4"	1/4-28 UNF	2.85	5.75	18.40
B-1004135	Barbed	1/16"	1/8-27 NPT	3.05	6.15	19.65
B-1004140	Barbed	3/32"	1/8-27 NPT	3.05	6.15	19.65
B-1004145	Barbed	1/8"	1/8-27 NPT	3.05	6.15	19.65
B-1004150	Barbed	5/32"	1/8-27 NPT	3.05	6.15	19.65
B-1004155	Barbed	3/16"	1/8-27 NPT	3.20	6.50	20.80
B-1004160	Barbed	1/4"	1/8-27 NPT	3.25	6.60	21.10
B-1004200	Branched Tee	1/16"	1/8-27 NPT	4.15	8.35	26.75
B-1004210	Branched Tee	1/8"	1/8-27 NPT	4.30	8.65	27.70
B-1004220	Branched Tee	1/8"	10-32	4.50	9.10	29.15
B-1004230	Barbed Elbow	1/8"	10-32	4.50	9.10	29.15
B-1004240	Barbed Elbow	1/4"	1/8-27 NPT	5.10	10.25	32.80
B-1004250	Plugs	-	10-32	2.10	4.25	13.60
B-1004260*	Plugs	-	1/8-27 NPT	2.50	5.05	16.10
B-1004270	Reducers*	-	1/8-27 NPT	4.10	8.25	26.40
B-1004280	Reducers*	-	1/8-27 NPT	4.10	8.25	26.40
B-1004300	Locking Sleeve	(1/8")	-	1.10	2.25	7.00
B-1004310	Locking Sleeve	(1/4")	-	1.25	2.55	8.15
B-1004320	Locking Sleeve	(3/8")	-	1.35	2.75	8.80
B-1004400	Barbed Connector	1/16" x 1/16"	-	2.65	5.35	17.15
B-1004410	Barbed Connector	1/16" x 3/32"	-	2.65	5.35	17.15
B-1004420	Barbed Connector	1/16" x 1/8"	-	2.65	5.35	17.15
B-1004430	Barbed Connector	3/32" x 3/32"	-	2.65	5.35	17.15
B-1004440	Barbed Connector	3/32" x 1/8"	-	2.65	5.35	17.15
B-1004450	Barbed Connector	1/8" x 1/8"	-	2.65	5.35	17.15
B-1004470	Barbed Connector	1/4" x 1/4"	-	3.40	6.85	21.95
B-1004500	Elbows	1/16"	-	3.25	6.55	20.95
B-1004510	Elbows	1/8"	-	3.40	6.85	21.95
B-1004520	Elbows	1/4"	-	4.55	9.15	29.30
B-1004600	Barbed Tees	1/16"	-	3.25	6.55	20.95
B-1004610	Barbed Tees	3/32"	-	3.25	6.55	20.95
B-1004620	Barbed Tees	1/8"	-	3.40	6.85	21.95
B-1004630	Barbed Tees	1/4"	-	4.55	9.15	29.30

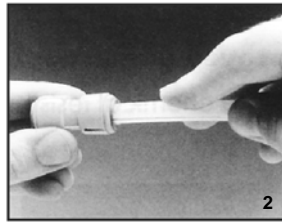
\* B-1004270 Internal Thread: 10-32  
 B-1004280 Internal Thread: 1/4-28 UNF

**We have state-of-the-art machine shop capabilities and  
 will be pleased to quote on your specific project.  
 Call Manufacturing Services at 1-800-339-2116.**

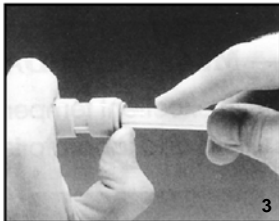
# TUBE CONNECTORS — “Push-to-Connect”, Celcon®



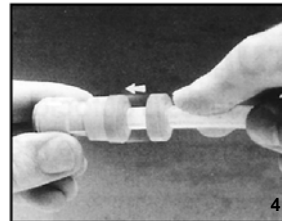
1  
Cut tubing cleanly at 90° angle and push into collet



2  
Installation complete and secure



3  
Push in collet and pull tubing to disconnect



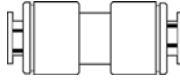
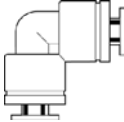
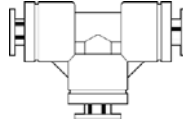

4  
Shows collet cover which snaps over collet either before installation or slides into place after installation.

This full line of innovative O.D. fittings is based on the push-to-connect principle. The key point is its easy installation. Simply push the tubing into the fitting and installation is complete. These fittings are made for semi-rigid tubing (Nylon—page 101 and Polyethylene—page 101) and hard wall tubing. Connections are leakproof and have no flow restrictions. Fittings have a working pressure up to 150 psi and a full vacuum rating. The body is made of Celcon® Acetal Copolymer with FDA approved Nitrile rubber “O-Rings”. Each fitting comes with collet covers to prevent accidental disconnection.

### Physical Properties

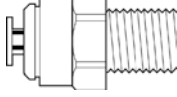
Working Pressure	Up to 150 psi
Body	Celcon
Collet Cover	Celcon
Working Temperature (Air)	-14°F to +167°F
Working Temperature (Water)	Up to 140°F
O-Ring	Nitrile Rubber
Vacuum Rating	Full
Collet	Celcon with S/S teeth

## TUBE CONNECTORS

	Part No.	Tube O.D.	Each	Price	
				10	25
<b>UNION CONNECTOR</b> 	B-213000	5/32"	3.00	24.00	48.00
	B-213005	3/16"	3.25	26.00	52.00
	B-213010	1/4"	3.60	28.80	57.60
	B-213015	5/16"	3.85	30.80	61.60
	B-213020	3/8"	4.85	38.80	77.60
	B-213025	1/2"	5.60	44.80	89.60
<b>UNION ELBOW</b> 	B-214000	5/32"	3.40	27.20	54.40
	B-214005	3/16"	3.40	27.20	54.40
	B-214010	1/4"	4.10	32.80	65.60
	B-214015	5/16"	4.75	38.00	76.00
	B-214020	3/8"	6.05	48.40	96.80
	B-214025	1/2"	7.20	57.60	115.20
<b>UNION TEE</b> 	B-215000	5/32"	4.60	36.80	73.60
	B-215005	3/16"	4.70	37.60	75.20
	B-215010	1/4"	5.15	41.20	82.40
	B-215015	5/16"	5.30	42.45	84.85
	B-215020	3/8"	6.35	50.80	101.60
	B-215025	1/2"	7.70	61.60	123.20
				Price	
				10	25
<b>REDUCING UNION CONNECTOR</b> 	B-216000	5/16" × 5/32"	4.00	32.00	64.00
	B-216005	1/4" × 3/16"	4.00	32.00	64.00
	B-216010	5/16" × 3/16"	4.00	32.00	64.00
	B-216015	5/16" × 1/4"	4.00	32.00	64.00
	B-216020	3/8" × 3/16"	4.85	38.80	77.60
	B-216025	3/8" × 1/4"	4.90	39.20	78.40
	B-216030	3/8" × 5/16"	4.95	39.65	79.25
	B-216035	1/2" × 3/8"	6.50	52.00	104.00

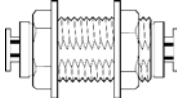
## TUBE CONNECTORS — “Push-to-Connect”, Celcon® (cont.)

### MALE ADAPTER



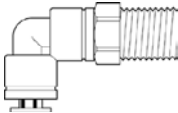
Part No.	Tubing O.D. x NPT	Each	Price	
			10	25
<b>B-213050</b>	5/32" x 1/8"	<b>2.25</b>	<b>18.00</b>	<b>36.00</b>
<b>B-213055</b>	5/32" x 1/4"	<b>2.60</b>	<b>20.80</b>	<b>41.60</b>
<b>B-213060</b>	3/16" x 1/8"	<b>2.35</b>	<b>18.80</b>	<b>37.60</b>
<b>B-213065</b>	1/4" x 1/8"	<b>2.60</b>	<b>20.80</b>	<b>41.60</b>
<b>B-213070</b>	1/4" x 1/4"	<b>2.75</b>	<b>22.00</b>	<b>44.00</b>

### BULKHEAD UNION



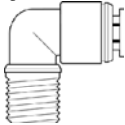
Part No.	Tubing O.D.	Each	Price	
			10	25
<b>B-214050</b>	5/32"	<b>5.05</b>	<b>40.40</b>	<b>80.80</b>
<b>B-214055</b>	3/16"	<b>5.85</b>	<b>46.80</b>	<b>93.60</b>
<b>B-214060</b>	1/4"	<b>6.20</b>	<b>49.55</b>	<b>99.15</b>

### SWIVEL MALE ELBOW



Part No.	Tubing O.D. x NPT	Each	Price	
			10	25
<b>B-215050</b>	5/32" x 1/8"	<b>4.80</b>	<b>38.40</b>	<b>76.80</b>
<b>B-215055</b>	5/32" x 1/4"	<b>4.80</b>	<b>38.40</b>	<b>76.80</b>
<b>B-215060</b>	3/16" x 1/8"	<b>4.80</b>	<b>38.40</b>	<b>76.80</b>

### MALE ELBOW



Part No.	Tubing O.D. x NPT	Each	Price	
			10	25
<b>B-216050</b>	1/4" x 1/8"	<b>3.65</b>	<b>29.20</b>	<b>58.40</b>
<b>B-216055</b>	1/4" x 1/4"	<b>4.10</b>	<b>32.75</b>	<b>65.55</b>
<b>B-216060</b>	1/4" x 3/8"	<b>4.85</b>	<b>38.80</b>	<b>77.60</b>

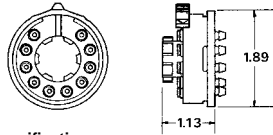
## CONNECTORS — Quick Coupling



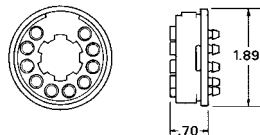
### TEN TUBE QUICK COUPLING

Furnished with Male and Female Coupling Bodies. The Ten Tube Quick Coupling is the most reliable, easy operating multiple tube connection available for plastic tubing. Connect or disconnect in one simple motion.

MALE COUPLING BODY



FEMALE COUPLING BODY



#### Specifications

Working Pressure: ..... Vacuum to 100 psi, 6.9 Bar  
 Operating Temp.: ..... -40°F to 180°F (-40°C to 82°C)  
 Materials: ..... Fitting Inserts: Delrin® (Acetal) Seals: Buna-N. Color: Black

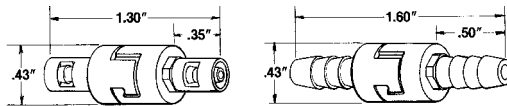
Part No.	Tube I.D.	Price	
		1	5
<b>B-212101</b>	1/16"	<b>56.85</b>	<b>236.80</b>
<b>B-212102</b>	1/8"	<b>45.30</b>	<b>188.00</b>

# CONNECTORS — Quick Connect / Disconnect Coupling



## SUBMINIATURE COUPLINGS

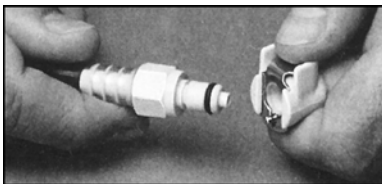
Excellent for quick tubing maintenance and assembly. Reliable Subminiature Couplings seal with a simple 90° turn. Replaceable O-rings eliminate leaks. Rated for vacuum or pressure to 100 psi.



TYPE A: 1/16" In-Line Coupling    TYPE B: 1/8" In-Line Coupling

### SUBMINIATURE — Acetal

Part No.	Tube I.D.	Type	Connector Description	Each	Price 10	25
<b>B-1003310</b>	1/16"	(A)	Hose Barb	<b>5.40</b>	<b>44.80</b>	<b>93.30</b>
<b>B-1003312</b>	1/8"	(B)	Hose Barb	<b>5.05</b>	<b>41.85</b>	<b>87.20</b>

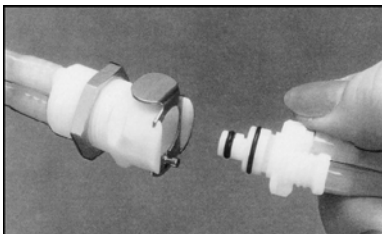


## MINIATURE COUPLINGS

Lightweight, strong and economical Miniature Couplings are an excellent choice for general pressure and vacuum functions where general chemical compatibility is required. Recommended for pneumatic, gas and liquid applications including those using deionized water. Excellent for cooling lines, general ink handling and vacuum applications.

### MINIATURE — Acetal

Part No.	Tube I.D.	Connector Description	Each	Price 10	25
<b>B-1003313</b>	3/16"	Hose Barb	<b>10.70</b>	<b>89.10</b>	<b>185.65</b>
<b>B-1003314</b>	1/4"	Hose Barb	<b>14.05</b>	<b>116.85</b>	<b>243.45</b>
<b>B-1003315</b>	5/16"	Hose Barb	<b>14.05</b>	<b>116.85</b>	<b>243.45</b>
<b>B-1003316</b>	3/8"	Hose Barb	<b>14.05</b>	<b>116.85</b>	<b>243.45</b>



## TWIN TUBE QUICK DISCONNECT COUPLINGS

Twin Tube Quick Disconnect Couplings provide one easy, quick disconnect for two individual lines maintaining each line of flow separately. The twin tube coupling is designed for panel mount applications. Recommended for low pressure pneumatic control circuits, biomedical applications, miniature cylinder activation, various control circuits and fluid cooling applications.

#### Specifications:

Working Pressure: ..... Vacuum to 120 psi, 8.3 Bar  
 Operating Temp.: ..... -40° to 180° F (Acetal)  
 Materials: ..... Bodies & Inserts: Acetal. Springs & Latch: Stainless Steel.  
 Seals: Buna-N, others available

COUPLING INSERTS Hose Barb	COUPLING BODIES Hose Barb

Panel Opening 1/2" Dia.  
 Maximum Thickness 1/2"  
 Panel Nuts 5/8" Hex

### TWIN TUBE — Acetal

Part No.	Tube I.D.	Insert Length (A)	Coupling Body Length (B)	Each	Price 5
<b>B-212016</b>	1/16"	1.15"	1.73"	<b>27.85</b>	<b>111.25</b>
<b>B-212018</b>	1/8"	1.28"	1.73"	<b>25.95</b>	<b>103.60</b>

## CONNECTORS — Quick Connect / Disconnect



**SINGLE SHUT-OFF CONNECTORS**



**DOUBLE SHUT-OFF CONNECTORS**

### QUICK CONNECTORS — Brass, Shut-Off

Smaller than your thumb, but when it comes to capacity, our miniature Quick Connectors beat many other couplers. Hand-operated Quick Connectors are great for use with small air tools, dental equipment, test equipment and in automation. Depending on your needs, you can choose Single or Double Shut-Off models for many applications, including glue dispensing operations, in air-conditioning systems, with leak detection devices, glass cutting machinery, robotics, manifolds and lubrication equipment.

All units available in Stainless Steel. **Call Purchasing Services toll free - 1-888-455-9712.**

**Single Shut-Off** — The female side of the coupler has a shut-off check valve to prevent fluid leakage when disconnected.

**Double Shut-Off** — Valves in both coupler and plug help to minimize fluid loss when connecting or disconnecting fluid lines, and prevent loss of fluid once disconnected. The valve in the plug is activated by a pin in the coupler when both are connected. When disconnected, the valves in both coupler and plug are shut, thus eliminating leakage from either end.

**Connector Specifications:** Coupler and Plug sold together as one  
 Coupler Body: ..... Brass  
 Sleeve: ..... Brass  
 Springs, Balls, Locking Ring: Stainless Steel Type 301  
 Temp. Range: °F: -40 to +250  
 Valve: ..... Brass  
 Seals: ..... Buna-N  
 Max. Rated Pressure: 1000 psi

### BRASS — Single Shut-Off

Part No.	Connection	Coupler		Plug Length	Each	Price	
		Length	Diameter			10	25
<b>B-217000*</b>	10/32" Thread	1.430"	0.39"	0.67"	<b>9.85</b>	<b>82.20</b>	<b>171.25</b>
<b>B-217005</b>	1/8" Barb	2.000"	0.39"	0.95"	<b>9.10</b>	<b>75.60</b>	<b>157.50</b>
<b>B-217010</b>	5/32" Barb	2.000"	0.39"	0.95"	<b>9.35</b>	<b>78.00</b>	<b>162.50</b>
<b>B-217015</b>	3/16" Barb	2.550"	0.63"	1.26"	<b>9.65</b>	<b>80.40</b>	<b>167.50</b>
<b>B-217020</b>	1/4" Barb	2.550"	0.63"	1.26"	<b>9.80</b>	<b>81.60</b>	<b>170.00</b>
<b>B-217025</b>	5/16" Barb	2.550"	0.63"	1.26"	<b>10.10</b>	<b>84.00</b>	<b>175.00</b>
<b>B-217030</b>	3/8" Barb	2.585"	0.63"	1.26"	<b>10.25</b>	<b>85.20</b>	<b>177.50</b>

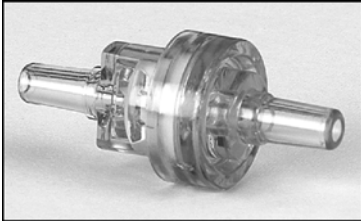
### BRASS — Double Shut-Off \*\*

Part No.	Connection	Coupler		Plug Length	Each	Price	
		Length	Diameter			10	25
<b>B-217000-DS*</b>	10/32" Thread	1.830"	0.39"	1.10"	<b>24.60</b>	<b>204.75</b>	<b>426.50</b>
<b>B-217005-DS</b>	1/8" Barb	2.500"	0.39"	1.44"	<b>24.80</b>	<b>206.40</b>	<b>430.00</b>
<b>B-217010-DS</b>	5/32" Barb	2.500"	0.39"	1.97"	<b>24.80</b>	<b>206.40</b>	<b>430.00</b>
<b>B-217015-DS</b>	3/16" Barb	3.250"	0.63"	1.97"	<b>23.00</b>	<b>191.55</b>	<b>399.00</b>
<b>B-217020-DS</b>	1/4" Barb	3.250"	0.63"	1.97"	<b>23.00</b>	<b>191.55</b>	<b>399.00</b>
<b>B-217025-DS</b>	5/16" Barb	3.250"	0.63"	1.97"	<b>23.00</b>	<b>191.55</b>	<b>399.00</b>
<b>B-217030-DS</b>	3/8" Barb	3.250"	0.63"	1.97"	<b>23.85</b>	<b>198.80</b>	<b>416.00</b>

\* These subminiature sizes have male threads on both coupler and plug.

\*\* Balls are made of Stainless Steel Type 420

## CHECK VALVE — 1/8" Tubing



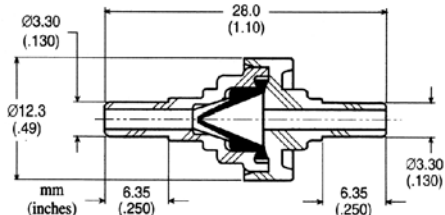
### SUPRAVALVE® — Nonsterile

**Purges air in less than 3 seconds!**

The SUPRAVALVE is a functional, one-way Check Valve assembly that provides virtually immediate free-flow in the forward direction and minimum backflow leakage. It was designed for medical product applications where a reliable valve is needed to prevent solution backflow at very low pressure differential.

Major advantages of the SUPRAVALVE are the purging of air in less than three seconds . . . a rate three to four times faster than other valves; air entrapment is minimized; the assembly is 100% airflow tested for free-flow, checking and pressure integrity. The SUPRAVALVE is compatible with standard 1/8" (0.32mm) I.D. tubing.

There are two types of Check Valves available. B-211040 consists of blue-tint polycarbonate housing and silicone duckbill. It is suitable for gamma irradiation and EtO sterilization methods, withstands continuous service temperatures up to 212°F (100°C), and is resistant to isopropyl alcohol. B-211000 consists of a clear acrylic housing and a silicone duckbill. It is sterilizable by EtO or gamma irradiation (up to 5 megarads) and withstands continuous service temperatures to 140°F (60°C).



©Vernay

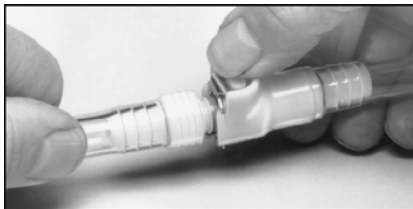
#### COMPARISON CHART

Design Area	Regular Disk Valves	SUPRAVALVE®
Static position	Normally open	<b>Normally closed</b>
Backflow at 8" H <sub>2</sub> O - Differential pressure	Some	<b>None</b>
Reopening H <sub>2</sub> O - Differential pressure	Unpredictable	<b>Less than 1.0</b>
Position sensitive	Yes	<b>No</b>
Clearance time seconds average	15 seconds	<b>Less than 3.0</b>
Fluid path	Indirect	<b>Direct</b>
Air entrapment	Likely	<b>Unlikely</b>

## CHECK VALVES

Part No.	Material	Each	10	Price		
				25	100	1000
<b>B-211000</b>	Acrylic	<b>3.85</b>	<b>23.50</b>	<b>46.25</b>	<b>125.00</b>	<b>890.00</b>
<b>B-211040</b>	Polycarbonate	<b>4.50</b>	<b>27.00</b>	<b>53.75</b>	<b>175.00</b>	<b>1,187.50</b>

## SHUT-OFF VALVE



This unique Shut-Off Valve provides quick, positive on/off control of flow through flexible plastic tubing (see pages 100-102 for tubing). Its single-piece design assures maximum laminar flow through even the smallest tube sizes, and the valve itself is small enough for use in very compact spaces. When the valve is in the closed position, an orange band is clearly visible, to prevent operator error. Shut-Off Valves can be used for either pressure or vacuum applications.

#### Physical Properties

Working Pressure	120 psi
Maximum Operating Temperature	180°F (82°C)
Bodies	Delrin® (Acetal)
Springs and Latches	Stainless Steel
Seals	Buna-N

## SHUT-OFF VALVE — Acetal

Part No.	Nominal Flow Diameter	Tube I.D.	Overall Length	Price	
				1	5
<b>B-212000</b>	1/8"	1/8"	2-1/2"	<b>14.75</b>	<b>61.20</b>
<b>B-212004</b>	1/4"	1/4"	3-1/8"	<b>16.15</b>	<b>67.20</b>
<b>B-212006</b>	1/4"	3/8"	3-1/8"	<b>18.95</b>	<b>78.80</b>

**NEW!**

## FLOW CONTROL — Pinch Valve



**FRONT VIEW**



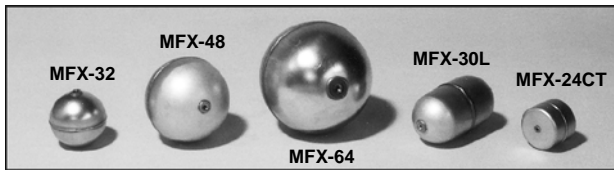
**SIDE VIEW**

### Return to previous settings with accuracy

Fine adjustments to fluid flow are easy to achieve and they are repeatable with the Flow Control Pinch Valve. Non-destructive, leak proof valves easily mount on existing tube lines, so fluid contact with the valve is eliminated. No fittings, cutting or removal of existing tubing is needed for installation. Easy-to-read metered scale on valve body lets you calibrate with needle valve style adjustability, from 0 to full flow. Three sizes to accommodate all types and sizes of flexible tubing diameters from as small as 5/32" up to 1/2". (Shore 70A durometer and softer). Made of high quality Delrin acetal homopolymer for strength and durability.

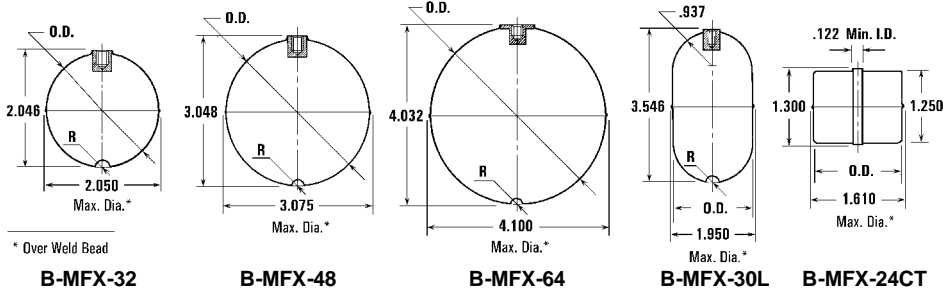
- B-FPV-04** Fits tube OD 5/32", 3/16", 7/32", 1/4" ..... **8.75**
- B-FPV-06** Fits tube OD 5/16", 11/32", 3/8" ..... **10.60**
- B-FPV-08** Fits tube OD 7/16", 1/2" ..... **13.60**

## FLOATS — Stainless Steel



These useful little Floats are of Stainless Steel Type 304, with a Thread Spud in Type 303.

Used in many applications where liquid levels are a controlling factor. Seams are fusion welded.



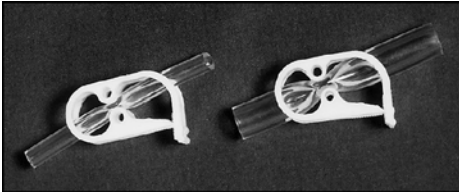
### STAINLESS STEEL

Part No.	Nominal O.D. (In Inches)	Displacement (cu in.)	Weight (oz.)	Spherical Radius (R)	Pressure Collapse (psi. min.)	Thread×Depth (In Inches)	Price Each
<b>B-MFX-32</b>	2	4.2	1.25	0.125"	1000	10-32 × .281	<b>12.10</b>
<b>B-MFX-48</b>	3	14.1	2.70	0.125"	500	8-32 × .218	<b>20.30</b>
<b>B-MFX-64*</b>	4	33.5	5.55	0.125"	500	1/4-20 × .250	<b>28.30</b>
<b>B-MFX-24CT**</b>	1-1/2 × 1-1/4	2.3	0.52	—	375	—	<b>17.75</b>
<b>B-MFX-30L</b>	1-7/8 × 3-1/2	7.9	1.87	0.125"	500	8-32 × .359	<b>21.10</b>

\* B-MFX-64: Weight is not fixed to wall of float. \*\*B-MFX-24CT: Centered tube hole has no thread; Hole Diameter is 0.122".



## FLOW CONTROL — Ratcheting Tube Clamps



Easy one-hand, finger-controlled clamp reduces flow evenly through 12 positions\* to complete closure. Three sizes for tubing up to 3/4" O.D. Recommended for use with rubber, polyurethane, PVC and Vitor® tubing; not usable with Nylon, Teflon or Polyethylene tubing.

### TUBE CLAMP — Natural Acetal Copolymer

Part No.	Capacity	Each	Price		
			10	25	100
<b>B-DC-1-4*</b>	Up to 1/4"	—	<b>3.75</b>	<b>7.50</b>	<b>27.85</b>
<b>B-DC-2-8</b>	1/4" to 1/2"	—	<b>5.55</b>	<b>12.50</b>	<b>44.40</b>
<b>B-DC-8-12</b>	1/2" to 3/4"	<b>1.25</b>	<b>10.25</b>	<b>22.85</b>	<b>82.00</b>

\*B-DC-1-4 has only one position.

## WORM GEAR CLAMPS — Stainless Steel



Band, housing and screw . . . all components of these Worm Gear Clamps are made of Stainless Steel Type 18-8, for good corrosion resistance, unlike commonly available clamps where only the band is stainless steel. The set screw (made of 400 series Stainless Steel) with its slotted hex head may be easily tightened or loosened with the most convenient tool at hand — screw driver, nutdriver or socket wrench. The shoulder on the screw prevents binding between the tool and band as the clamp is being set.

This range of sizes will give you banding for hose diameters from 1/4" through 6-1/2". Larger diameters may be accommodated by using 2 or more clamps in series.

### STAINLESS STEEL 18-8

Part No.	Range of Adjustment		Clamp Width	Each	Price		
	Minimum	Maximum			10	25	100
<b>B-CHX-4</b>	1/4"	5/8"	5/16"	<b>1.55</b>	<b>12.95</b>	<b>27.00</b>	<b>90.00</b>
<b>B-CHX-5</b>	5/16"	7/8"	5/16"	<b>1.55</b>	<b>12.95</b>	<b>27.00</b>	<b>90.00</b>
<b>B-CHX-8</b>	9/16"	1-1/16"	1/2"	<b>2.00</b>	<b>16.75</b>	<b>34.95</b>	<b>116.45</b>
<b>B-CHX-12</b>	11/16"	1-1/4"	1/2"	<b>2.05</b>	<b>16.95</b>	<b>35.15</b>	<b>117.10</b>
<b>B-CHX-16</b>	3/4"	1-1/2"	1/2"	<b>2.10</b>	<b>17.25</b>	<b>35.95</b>	<b>119.75</b>
<b>B-CHX-20</b>	13/16"	1-3/4"	1/2"	<b>2.15</b>	<b>17.55</b>	<b>36.50</b>	<b>121.60</b>
<b>B-CHX-32</b>	1-9/16"	2-1/2"	1/2"	<b>2.20</b>	<b>17.95</b>	<b>37.40</b>	<b>124.70</b>
<b>B-CHX-48</b>	2-9/16"	3-1/2"	1/2"	<b>2.90</b>	<b>24.15</b>	<b>50.25</b>	<b>167.55</b>
<b>B-CHX-64</b>	3-9/16"	4-1/2"	1/2"	<b>3.45</b>	<b>28.80</b>	<b>59.95</b>	<b>199.75</b>
<b>B-CHX-80</b>	4-9/16"	5-1/2"	1/2"	<b>4.35</b>	<b>36.45</b>	<b>75.95</b>	<b>253.10</b>
<b>B-CHX-96</b>	5-1/4"	6-1/2"	1/2"	<b>5.65</b>	<b>47.00</b>	<b>97.90</b>	<b>326.25</b>

### ASSORTMENTS

<b>B-CHX-150</b>	Contains two clamps of each size B-CHX-4 through B-CHX-20-12 pieces . . . . .	<b>26.65</b>
<b>B-CHX-200</b>	Contains two clamps of each size B-CHX-8 through B-CHX-48-12 pieces . . . . .	<b>24.15</b>
<b>B-CHX-300</b>	Contains two clamps of each size B-CHX-4 through B-CHX-96-22 pieces . . . . .	<b>53.90</b>

## HOSE CLAMPS — Plastic, “Snapper” Type



Quick ratchet closure allows application after connection of the hose. A lateral effort easily disengages the clamp and it can be reused. Clamp remains in place and does not travel hose perimeter when tightening.

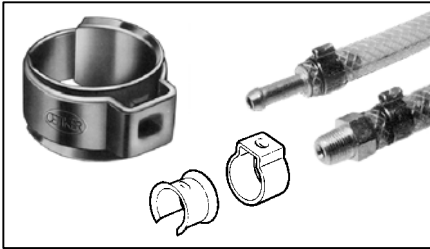
Made of natural acetal copolymer, it is nonconductive, will not electrolytically corrode, does not rust and is stable in a wide variety of chemicals including salts, bases, alcohols, ethers, detergents, gasoline, oils and greases.

### HOSE CLAMPS — Plastic

\*End use testing recommended

Part No.	Diameter		Nominal Tube O.D.*		Price		
	Minimum	Maximum			10	25	100
B-CHN-4	0.228"	0.256"	1/4"	4.30	8.90	29.55	
B-CHN-5	0.307"	0.342"	5/16"	4.40	9.10	30.25	
B-CHN-6	0.351"	0.394"	3/8"	4.75	9.85	32.85	
B-CHN-7	0.404"	0.452"	7/16"	4.75	9.85	32.85	
B-CHN-8	0.449"	0.511"	1/2"	4.85	10.05	33.50	
B-CHN-10	0.569"	0.650"	5/8"	5.00	10.40	34.60	
B-CHN-12	0.746"	0.842"	3/4"	5.30	11.05	36.75	
B-CHN-16	0.985"	1.135"	1"	6.35	13.20	44.00	
B-CHN-20	1.218"	1.405"	1-1/4"	7.55	15.75	52.50	
B-CHN-24	1.472"	1.724"	1-1/2"	9.75	20.25	67.40	
B-CHN-28	1.730"	2.010"	2"	13.95	29.05	96.80	
B-CHN-36	2.259"	2.582"	2-1/2"	21.25	44.30	147.70	

## CLAMPS — Oetiker® 1-Ear Type Stainless Steel



### 1-EAR CLAMPS — Oetiker®

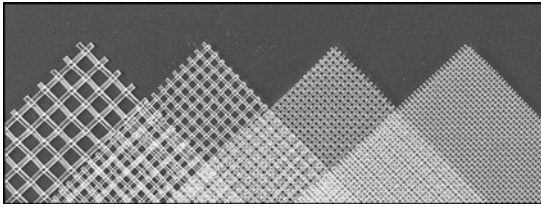
These special 1-Ear Clamps provide a strong grip for small diameter tubing, and are especially useful where clamping a second ear is impractical. We provide an insert with the clamp to prevent the tubing from being pinched when closing the ear. Their unique double dimple feature aligns sleeve with clamp and forces them to compress evenly. The clamp material is Type 304 Stainless Steel with Type 302 Stainless Steel insert. Zinc plated or Type 316 Stainless Steel clamps are available on special order.

### STAINLESS STEEL

Part No.	Inches		Inner Width of Ear	Dimensions in Millimeters			Each	Price	
	Closed	Open		Closed	—	Open		Width	10
B-OCI-114	0.098	0.114	1.4	2.5	2.9	5.5	2.45	19.55	39.05
B-OCI-145	0.114	0.145	2.5	2.9	3.7	5.5	2.45	19.55	39.05
B-OCI-185	0.145	0.185	3.2	3.7	4.7	5.5	2.45	19.55	39.05
B-OCI-224	0.185	0.224	3.2	4.7	5.7	5.5	2.45	19.55	39.05
B-OCI-244	0.204	0.244	3.2	5.2	6.2	5.5	2.35	18.85	37.65
B-OCI-255	0.220	0.255	3.0	5.6	6.5	6.4	2.35	18.85	37.65
B-OCI-295	0.248	0.295	4.0	6.3	7.5	6.4	2.35	18.85	37.65
B-OCI-322	0.275	0.322	4.0	7.0	8.2	6.4	2.35	18.85	37.65
B-OCI-374	0.315	0.374	5.0	8.0	9.5	7.4	2.25	18.15	36.30
B-OCI-543	0.472	0.543	6.5	12.0	13.6	8.2	2.25	18.15	36.30

See Clamp Pincers on page 379

# NYLON — Screening



## NYLON SCREEN CLOTH — 6/6

Exceptionally strong and suited for countless sifting, straining, and filtration applications where the unusual qualities of nylon are advantageous. Provided in the small sizes so useful in laboratory or shop. Can be gamma and Eto sterilized. Yellows at 212°F (100°C). Autoclaving not recommended. Softening temperature: 437° to 455°F (225° to 235°C).

\*Nylon 6 - Softening temperature: 338°-365°F (170° - 185°C).

The standard roll width of 40" is also available and is sold by the linear foot. **Call Purchasing Services toll free — 1-888-455-9712.**

### NYLON 6/6

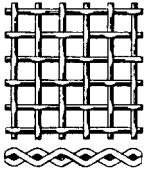
Order Example: **B-CMN-30-A** is 30 micron opening 3" x 6" piece

Part No.	Mesh Opening Microns	Mesh Opening Inches	Thread Diameter Microns	Mesh Count Inch	Open Area %	Suffix			
						-A 3"×6"	-B Price/Per Piece 6"×12"	-C 12"×12"	-D 12"×24"
B-CMN-2000*	2000	0.0787	750	9.1	53	1.55	5.05	8.35	13.90
B-CMN-1000*	1000	0.0394	500	17.0	45	1.30	4.20	6.95	11.65
B-CMN-500*	500	0.0197	300	31.0	37.5	1.15	3.65	6.05	10.05
B-CMN-425*	425	0.0167	200	41.0	46	1.35	4.50	7.50	12.50
B-CMN-350*	350	0.0138	230	43.0	35	1.30	3.95	6.60	10.95
B-CMN-300*	300	0.0118	140	55.0	45	1.35	4.50	7.45	12.40
B-CMN-250*	250	0.0098	160	60.0	34	1.30	4.20	6.95	11.65
B-CMN-210*	210	0.0083	140	70.0	33	1.30	4.20	6.95	11.65
B-CMN-185	185	0.0073	120	80.0	37	1.55	5.20	8.25	14.35
B-CMN-165	165	0.0065	83	102.0	44	1.55	5.20	8.25	14.35
B-CMN-149	149	0.0059	94	104.0	38	1.60	5.25	8.35	14.50
B-CMN-136	136	0.0054	47	139.0	55	1.70	5.60	9.30	15.50
B-CMN-125	125	0.0049	80	123.0	37	1.50	4.85	8.05	13.45
B-CMN-112	112	0.0044	47	160.0	54	1.80	5.90	9.85	16.40
B-CMN-105	105	0.0041	70	145.0	36	1.95	6.40	10.65	17.75
B-CMN-90	90	0.0035	60	198.0	48	2.30	7.70	12.75	21.25
B-CMN-85	85	0.0033	70	164.0	30	2.65	8.75	14.60	24.30
B-CMN-74	74	0.0029	50	206.0	35	2.50	8.10	13.50	22.50
B-CMN-62	62	0.0024	43	242.0	35	2.55	8.55	14.40	24.10
B-CMN-53	53	0.0021	35	289.0	36	2.80	9.25	15.40	25.65
B-CMN-48	48	0.0019	37	297.0	31	3.00	10.00	16.65	27.75
B-CMN-40	40	0.0016	35	330.0	26	3.15	10.45	17.70	29.50
B-CMN-35	35	0.0014	30	390.0	27	3.45	11.35	18.90	31.50
B-CMN-30	30	0.0012	35	390.0	21	4.20	13.65	22.75	37.85
B-CMN-20	20	0.0008	28	470.0	14	4.65	15.55	25.90	43.10
B-CMN-12	12	0.0005	28	546.0	5	5.50	18.35	30.60	50.95
B-CMN-10	10	0.0004	28	483.0	2	5.30	17.50	29.25	48.70
B-CMN-5	5	0.0002	37/2 × 28	419 × 343	1	6.20	20.65	34.40	57.30

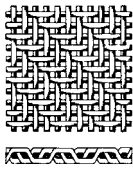
### ASSORTMENTS

B-CMN-1A	3" x 6" piece. One each B-CMN-2000 through B-CMN-40 — 23 pieces	39.10
B-CMN-1B	3" x 6" piece. One each B-CMN-90 through B-CMN-5 — 13 pieces	43.40
B-CMN-2A	6" x 12" piece. One each B-CMN-2000 through B-CMN-40 — 23 pieces	121.60
B-CMN-2B	6" x 12" piece. One B-CMN-90 through B-CMN-5 — 13 pieces	144.45

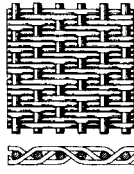
# STAINLESS STEEL — Screening



PLAIN



TWILLED



TWILLED DUTCH

## STAINLESS STEEL SQUARE WEAVE

Basic to all filtering is the ability of the media to withhold or pass particles of a desired size in the flow path. The very fine wire mesh of our standard Stainless Steel Screening has many natural characteristics to recommend it for calendering, filtering and processing: uniformity of hole size; excellent strength to weight ratio; a large percentage of open area; superior resistance to corrosion, abrasion, vibration and temperature variations; long life; and easy cleaning. Stainless Steel Screening may also be used for electrical shielding, structural fabrication, screening, and as ventilation guards.

## PLAIN WEAVE

Single strands of Stainless Steel wire with equal diameters are woven wire over wire in both directions, producing a highly stable pattern of square openings. Selected mesh sizes of this standard wire cloth are available in both Type 304 and Type 316 Stainless Steel. Other sizes available by special order.

### STAINLESS STEEL TYPE 304

Order Example: **B-CX-10-B** is #10 mesh—6" × 12"

PartNo.	Mesh #	Wire Diameter	Width of Opening		% Open Area	-A	-B	-C
			Inches	Millimeters		3" × 6"	6" × 12"	12" × 24"
<b>B-CX-6</b>	6	0.0350"	0.1310	3.350	62	<b>2.40</b>	<b>7.90</b>	<b>30.15</b>
<b>B-CX-10</b>	10	0.0250"	0.0750	1.905	56	<b>2.50</b>	<b>8.40</b>	<b>32.00</b>
<b>B-CX-16</b>	16	0.0180"	0.0450	1.143	51	<b>2.60</b>	<b>8.95</b>	<b>34.35</b>
<b>B-CX-20</b>	20	0.0160"	0.0340	0.864	46	<b>2.60</b>	<b>8.95</b>	<b>34.35</b>
<b>B-CX-30</b>	30	0.0120"	0.0210	0.533	41	<b>2.85</b>	<b>9.80</b>	<b>37.55</b>
<b>B-CX-40</b>	40	0.0100"	0.0150	0.381	36	<b>2.85</b>	<b>9.80</b>	<b>37.55</b>
<b>B-CX-60</b>	60	0.0075"	0.0090	0.229	31	<b>2.85</b>	<b>9.80</b>	<b>37.55</b>
<b>B-CX-80</b>	80	0.0055"	0.0070	0.178	31	<b>2.95</b>	<b>10.25</b>	<b>39.50</b>
<b>B-CX-100</b>	100	0.0045"	0.0055	0.140	30	<b>2.95</b>	<b>10.25</b>	<b>39.40</b>
<b>B-CX-150</b>	150	0.0026"	0.0041	0.104	34	<b>3.10</b>	<b>10.70</b>	<b>41.30</b>
<b>B-CX-200</b>	200	0.0023"	0.0029	0.074	29	<b>3.20</b>	<b>11.20</b>	<b>43.15</b>

### STAINLESS STEEL TYPE 316

PartNo.	Mesh #	Wire Diameter	Width of Opening		% Open Area	-A	-B	-C
			Inches	Millimeters		3" × 6"	6" × 12"	12" × 24"
<b>B-CXX-20</b>	20	0.0160"	0.0340	0.862	46	<b>4.00</b>	<b>12.75</b>	<b>40.80</b>
<b>B-CXX-60</b>	60	0.0075"	0.0090	0.229	31	<b>3.05</b>	<b>9.65</b>	<b>30.90</b>
<b>B-CXX-80</b>	80	0.0055"	0.0070	0.178	31	<b>3.85</b>	<b>12.25</b>	<b>39.20</b>
<b>B-CXX-100</b>	100	0.0045"	0.0055	0.140	30	<b>2.95</b>	<b>9.40</b>	<b>29.95</b>

## TWILLED WEAVE

Wires of similar gauge woven "over two, under two" are alternated progressively by one wire at a time. This Twilled Square pattern provides excellent filtration. Other sizes available by special order.

### STAINLESS STEEL TYPE 304

Part No.	Mesh #	Wire Diameter	Width of Opening		% Open Area	-A	-B	-C
			Inches	Microns		3" × 3"	6" × 6"	6" × 12"
<b>B-CX-325</b>	325	0.0014"	0.0017	43	30	<b>3.70</b>	<b>12.30</b>	<b>20.50</b>
<b>B-CX-400</b>	400	0.0012"	0.0015	38	36	<b>7.30</b>	<b>24.25</b>	<b>40.00</b>

## TWILLED DUTCH WEAVE

Wires of dissimilar gauge are also woven "over two, under two" in this Twilled Dutch pattern using a weave of heavy wire and fine wire to achieve excellent strength with superior filtration. Other sizes available.

### STAINLESS STEEL TYPE 304

Part No.	Mesh #	Thickness	Particle Retention		-A	-B	-C
			Inches	Microns	3" × 3"	6" × 6"	6" × 12"
<b>B-CX-2300</b>	325 × 2300	0.0015"	0.0002	8	<b>15.85</b>	<b>52.80</b>	<b>88.00</b>

## POLYESTER — Screening

### POLYESTER SCREEN CLOTH — Resists Organic Solvents, Acids

Unaffected by most solvents, Polyester PETP (Polyester, Polyethylene terephthalate) has good resistance to strong acids at room temperature and resists weak acids and alkalis even at high temperatures; strong alkalis can weaken it. UV resistance is good, but it tends toward a slight loss of tensile strength with prolonged exposure to sunlight. Lacks good hydrolysis resistance but retention of properties after gamma radiation exposure is good. Deformation under low stress is low, but it can deform under high stress. Softening point: 428° to 464°F (220° to 240°C). Melting temperature: 482° to 500°F (250° to 260°C). Also available in 40" roll width and sold by the linear foot. **Call Purchasing Services — 1-888-455-9712.**

#### POLYESTER

Order Example: **B-CMY-250-B** is 250 micron opening — 6" × 12"

Part No.	Mesh Opening		Thread Diameter Microns	Mesh Count Inch	Open Area %	-A	-B Price/Per Piece		-C	-D
	Microns	Inches				3" × 6"	6" × 12"	12" × 12"	12" × 24"	
<b>B-CMY-1000</b>	1000	0.0394	320	19.3	57.5	<b>1.25</b>	<b>3.90</b>	<b>6.85</b>	<b>9.75</b>	
<b>B-CMY-500</b>	500	0.0197	220	36	48	<b>1.35</b>	<b>4.25</b>	<b>7.35</b>	<b>10.50</b>	
<b>B-CMY-350</b>	350	0.0138	250	43	34	<b>1.40</b>	<b>4.40</b>	<b>7.70</b>	<b>11.00</b>	
<b>B-CMY-250</b>	250	0.0098	152	62	39.0	<b>1.45</b>	<b>4.60</b>	<b>8.05</b>	<b>11.50</b>	
<b>B-CMY-200</b>	200	0.0079	104	84	43.0	<b>1.50</b>	<b>4.80</b>	<b>8.40</b>	<b>12.00</b>	
<b>B-CMY-150</b>	150	0.0059	96	102	37	<b>1.85</b>	<b>5.80</b>	<b>10.15</b>	<b>14.50</b>	
<b>B-CMY-120</b>	120	0.0049	88	122	33.5	<b>1.95</b>	<b>6.20</b>	<b>10.85</b>	<b>15.50</b>	
<b>B-CMY-105</b>	105	0.0041	42	175	52	<b>2.00</b>	<b>4.20</b>	<b>7.35</b>	<b>10.50</b>	
<b>B-CMY-95</b>	95	0.0037	40	188	49	<b>2.25</b>	<b>7.20</b>	<b>12.60</b>	<b>18.00</b>	
<b>B-CMY-73</b>	73	0.0029	43	227	40	<b>2.65</b>	<b>8.40</b>	<b>14.70</b>	<b>21.00</b>	
<b>B-CMY-54</b>	54	0.0021	56	229	24	<b>3.25</b>	<b>10.40</b>	<b>18.20</b>	<b>26.00</b>	
<b>B-CMY-33</b>	33	0.0013	40	351	20.5	<b>3.65</b>	<b>11.60</b>	<b>20.30</b>	<b>29.00</b>	
<b>B-CMY-27</b>	27	0.0011	42	371	15.5	<b>3.75</b>	<b>12.00</b>	<b>21.00</b>	<b>30.00</b>	
<b>B-CMY-20</b>	20	0.0008	37	450	12.5	<b>4.90</b>	<b>15.60</b>	<b>27.30</b>	<b>39.00</b>	
<b>B-CMY-05</b>	5	0.0002	34	686 × 445	1	<b>7.25</b>	<b>23.20</b>	<b>40.60</b>	<b>58.00</b>	

#### ASSORTMENTS

**B-CMY-5A** 3" × 6" piece. One B-CMY-1000 through B-CMY-05 — 15 pieces ..... **37.90**  
**B-CMY-6A** 6" × 12" piece. One B-CMY-1000 through B-CMY-05 — 15 pieces ..... **118.60**

## POLYPROPYLENE — Screening

### POLYPROPYLENE SCREEN CLOTH

Offering great strength and stability, Polypropylene has the lowest specific gravity (0.91) of any synthetic. Highly resistant to acids and alkalis as well as other chemicals. Polypropylene Screen Cloth has a melting temperature of 320° to 340°F (160° to 171°C). The standard roll width of 54" is also available and is sold by the linear foot. **Call Purchasing Services — 1-888-455-9712.**

#### POLYPROPYLENE

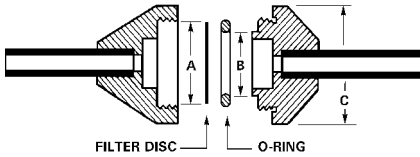
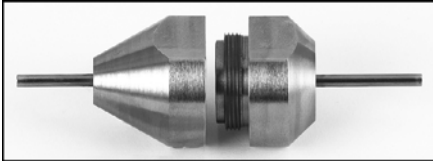
Order Example: **B-CMP-250-B** is 250 micron opening — 6" × 12"

Part No.	Mesh Opening		Thread Diameter Microns	Mesh Count Inch	Open Area %	-A	-B Price/Per Piece		-C	-D
	Microns	Inches				3" × 6"	6" × 12"	12" × 12"	12" × 24"	
<b>B-CMP-1000</b>	1000	0.0394	500	17.3	44.5	<b>1.60</b>	<b>4.55</b>	<b>7.60</b>	<b>12.65</b>	
<b>B-CMP-500</b>	500	0.0197	300	31.0	35.5	<b>1.65</b>	<b>4.70</b>	<b>7.50</b>	<b>11.95</b>	
<b>B-CMP-250</b>	250	0.0098	200	56.0	28.9	<b>1.75</b>	<b>4.75</b>	<b>7.60</b>	<b>12.20</b>	
<b>B-CMP-149</b>	149	0.0059	106	100.0	34.2	<b>1.80</b>	<b>4.90</b>	<b>7.90</b>	<b>12.60</b>	
<b>B-CMP-125</b>	125	0.0049	100	110.0	30.0	<b>1.90</b>	<b>5.30</b>	<b>8.40</b>	<b>13.45</b>	
<b>B-CMP-105</b>	105	0.0041	100	120.0	24.8	<b>2.05</b>	<b>5.85</b>	<b>9.35</b>	<b>14.95</b>	
<b>B-CMP-74</b>	74	0.0029	85	157.0	21.0	<b>2.10</b>	<b>5.95</b>	<b>9.50</b>	<b>15.10</b>	

#### ASSORTMENTS

**B-CMP-3A** 3" × 6" piece. One B-CMP-1000 through B-CMP-74 — 7 pieces ..... **11.60**  
**B-CMP-4A** 6" × 12" piece. One B-CMP-1000 through B-CMP-74 — 7 pieces ..... **32.40**

## FILTER HOLDER — In-line, For Hypodermic Tubing



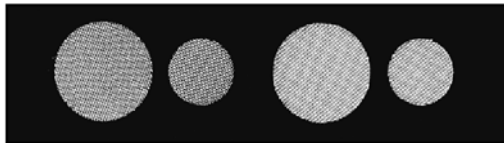
Good chemical resistance, plus the ability to withstand high heat and extreme pressure, make our In-Line Filter Holders a versatile alternative to disposable plastic versions that have fixed creens. Reusable and not easily damaged, these Stainless Steel models provide maximum usage of the exposed filter area. The filters can be easily removed for cleaning or can be replaced with different materials, depending on your needs. They are leak tight to 50 psi, autoclaveable, and available in a variety of sizes. Each unit comes with the appropriately sized Viton O-ring. Additional O-rings are available. [See page 145](#). This proprietary design works with our Hypodermic Tubing Connectors, Manifolds and Reducers, [starting on page 96](#).

Tubing is Stainless Steel Type 304. Filter body is Stainless Steel Type 303. For Stainless Steel filter material in various weaves, [see below, and page 132](#).

### IN-LINE FILTER HOLDERS — Stainless Steel Type 303

Part No.	Tube Gauge	O.D. / I.D.	Dimensions in Inches			Filter Area Square Inch	Price Each
			A	B	C		
<b>B-202000</b>	20	0.035/0.023	1/2	3/8	11/16	0.049	<b>48.95</b>
<b>B-202005</b>	18	0.049/0.033	1/2	3/8	11/16	0.049	<b>48.95</b>
<b>B-202010</b>	16	0.065/0.047	1/2	3/8	11/16	0.049	<b>48.95</b>
<b>B-202015</b>	13	0.095/0.071	3/4	5/8	1	0.150	<b>45.60</b>
<b>B-202020</b>	9	0.148/0.118	3/4	5/8	1	0.150	<b>45.60</b>
<b>B-202025</b>	6	0.203/0.173	3/4	5/8	1	0.150	<b>45.60</b>

## FILTERS — For In-Line Filter Holders



### STAINLESS STEEL TYPE 304 — Wire Cloth

Very fine wire mesh has many natural characteristics that are beneficial for calendaring, filtering and processing: uniformity of hole size, excellent strength to weight ratio and a large percentage of open area, superior resistance to corrosion, abrasion, vibration and temperature variations. Also, it is durable and easy to clean.

**Be sure to specify filter size when ordering.**

1/2" Diameter -A     3/4" Diameter -B

### STAINLESS STEEL TYPE 304

Order Example: **B-203010-A** is 100 mesh, 1/2" diameter

Part No.	Mesh #	Mesh Opening	% Open Area	Weave	Price		
					10	25	100
<b>B-203004</b>	40	0.0150"	36.0	Plain Square	<b>5.35</b>	<b>12.15</b>	<b>40.50</b>
<b>B-203006</b>	60	0.0092"	30.5	Plain Square	<b>5.35</b>	<b>12.15</b>	<b>40.50</b>
<b>B-203008</b>	80	0.0070"	31.4	Plain Square	<b>5.35</b>	<b>12.15</b>	<b>40.50</b>
<b>B-203010</b>	100	0.0055"	30.3	Plain Square	<b>5.35</b>	<b>12.15</b>	<b>40.50</b>
<b>B-203015</b>	150	0.0041"	37.4	Plain Square	<b>6.65</b>	<b>15.15</b>	<b>50.50</b>
<b>B-203020</b>	200	0.0029"	33.6	Plain Square	<b>7.65</b>	<b>17.35</b>	<b>57.80</b>
<b>B-203025</b>	325	0.0017"	30.0	Twilled Square	<b>8.10</b>	<b>18.35</b>	<b>61.20</b>
<b>B-203030</b>	400	0.0015"	36.0	Twilled Square	<b>9.25</b>	<b>21.05</b>	<b>70.15</b>

### ASSORTMENTS

(Add A or B for Filter size)

<b>B-203035</b> Contains 5 each of the above Filters .....	<b>26.75</b>
<b>B-203040</b> Contains 10 each of the above Filters .....	<b>50.65</b>

## FILTERS — For In-Line Filter Holders (cont.)

### NYLON AND POLYPROPYLENE SCREEN CLOTH FILTERS — Monofilament

**Nylon Screen Cloth** is exceptionally strong and well suited for countless sifting, straining, and filtration applications where the unusual qualities of nylon are advantageous.

**Polypropylene Woven Screen Cloth** offers great strength and stability and is highly resistant to acids and alkalis as well as other chemicals. **! Be sure to specify Filter size when ordering:** 1/2" Diameter -A, 3/4" Diameter -B

#### NYLON MONOFILAMENT

Order Example: **B-204015-B** is 125 $\mu$  mesh opening 3/4" diameter filter

Part No.	Mesh Opening		Open Area %	10	Price	
	Microns	Inches			25	100
<b>B-204000</b>	250	0.0098	34	<b>3.25</b>	<b>7.40</b>	<b>24.65</b>
<b>B-204005</b>	210	0.0083	33	<b>3.25</b>	<b>7.40</b>	<b>24.65</b>
<b>B-204010</b>	149	0.0059	38	<b>3.25</b>	<b>7.40</b>	<b>24.65</b>
<b>B-204015</b>	125	0.0049	37	<b>3.25</b>	<b>7.40</b>	<b>24.65</b>
<b>B-204020</b>	105	0.0041	36	<b>3.25</b>	<b>7.40</b>	<b>24.65</b>
<b>B-204025</b>	90	0.0037	47	<b>3.25</b>	<b>7.40</b>	<b>24.65</b>
<b>B-204030</b>	74	0.0029	35	<b>3.25</b>	<b>7.40</b>	<b>24.65</b>
<b>B-204035</b>	62	0.0024	35	<b>3.25</b>	<b>7.40</b>	<b>24.65</b>
<b>B-204040</b>	53	0.0021	36	<b>3.25</b>	<b>7.40</b>	<b>24.65</b>
<b>B-204045</b>	48	0.0019	31	<b>3.75</b>	<b>8.45</b>	<b>28.10</b>
<b>B-204050</b>	35	0.0014	27	<b>3.75</b>	<b>8.45</b>	<b>28.10</b>
<b>B-204055</b>	30	0.0012	21	<b>3.75</b>	<b>8.45</b>	<b>28.10</b>
<b>B-204060</b>	20	0.0008	14	<b>3.75</b>	<b>8.45</b>	<b>28.10</b>
<b>B-204065</b>	10	0.0004	2	<b>4.20</b>	<b>8.70</b>	<b>28.95</b>
<b>B-204070</b>	5	0.0002	1	<b>4.25</b>	<b>8.85</b>	<b>29.50</b>

#### ASSORTMENTS — (Add -A or -B for Filter size)

**B-204080** Contains 5 each of the above Nylon Filters-75 pcs. . . . . **29.85**  
**B-204085** Contains 10 each of the above Nylon Filters-150 pcs. . . . . **53.55**

#### POLYPROPYLENE MONOFILAMENT

Part No.	Mesh Opening		Open Area %	10	Price	
	Microns	Inches			25	100
<b>B-205000</b>	250	0.0098	28.9	<b>3.25</b>	<b>7.70</b>	<b>27.45</b>
<b>B-205005</b>	149	0.0059	34.25	<b>3.35</b>	<b>7.85</b>	<b>27.65</b>
<b>B-205010</b>	125	0.0049	30	<b>3.50</b>	<b>7.95</b>	<b>27.95</b>
<b>B-205015</b>	105	0.0041	24.8	<b>3.65</b>	<b>8.10</b>	<b>28.15</b>
<b>B-205020</b>	74	0.0029	21	<b>3.75</b>	<b>8.25</b>	<b>28.50</b>

#### ASSORTMENTS — (Add -A or -B for Filter size)

**B-205030** Contains 5 each of the above Polypropylene Filters -25 pcs. . . . . **10.75**  
**B-205035** Contains 10 each of the above Polypropylene Filters-50 pcs. . . . . **18.65**

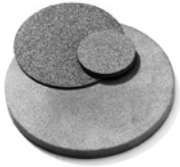
## FILTER DISCS — Stainless Steel

### SQUARE WEAVE WIRE CLOTH — Stainless Steel 304

For column filtering and supportive operations, use our clean-cut discs of Stainless Steel Wire Cloth. Available in 1" diameters, in square weave meshes 40, 80,100, 200 and 325. Other disc diameters available upon request.

Part No.	Mesh #	Wire Diameter	Disc Diameter	10		
				25	100	100
<b>B-CXD-40</b>	40	0.0100"	1"	<b>3.20</b>	<b>6.60</b>	<b>22.00</b>
<b>B-CXD-80</b>	80	0.0055"	1"	<b>3.20</b>	<b>6.60</b>	<b>22.00</b>
<b>B-CXD-100</b>	100	0.0045"	1"	<b>3.20</b>	<b>6.60</b>	<b>22.00</b>
<b>B-CXD-200</b>	200	0.0021"	1"	<b>3.20</b>	<b>6.60</b>	<b>22.00</b>
<b>B-CXD-325</b>	325	0.0014"	1"	<b>6.05</b>	<b>12.60</b>	<b>42.00</b>

# POROUS MATERIALS — Sintered Stainless Steel Type 316L



## SINTERED METAL FILTERS — Stainless Steel Type 316L

### Diameters fit our In-Line Filter Holders

Similar to a metallic sponge, Porous Sintered Metal Filters consist of highly uniform, interconnected networks of pores with tortuous paths that trap solid particles in gas or liquid flow streams. Excellent depth filters with superior mechanical strength, they are sized to fit Stainless Steel In-Line Filter Holders (page 134).

Stainless Steel Type 316L withstands temperatures up to 500°F (260°C) in oxidizing and 750°F (399°C) in reducing environments. Steam autoclavable filters can be cleaned by other methods, such as ultrasonic baths or reverse flow flushing. If your application requires even greater resistance to corrosion, temperature, wear, and vibration, we can obtain other nickel-based alloys. **Call Manufacturing Services: 1-800-339-2116.**

**| Be Sure to Specify Filter Diameter when ordering: 1/2" -A 3/4" -B**

## SINTERED METAL FILTERS — Stainless Steel Type 316L

Part No.	Mean Pore Size Grade		% Open Area	O.D.	Tolerances		Price	
	Microns	Inches			Thickness	10	25	100
<b>B-PXX-002</b>	0.2	0.00001	22	+/- 5%	1/16" +/-5%	<b>15.00</b>	<b>31.25</b>	<b>100.00</b>
<b>B-PXX-005</b>	0.5	0.00002	27	+/- 5%	1/16" +/-5%	<b>15.00</b>	<b>31.25</b>	<b>100.00</b>
<b>B-PXX-010</b>	1.0	0.00004	30	+/- 5%	1/16" +/-5%	<b>15.00</b>	<b>31.25</b>	<b>100.00</b>
<b>B-PXX-020</b>	2.0	0.00008	36	+/- 5%	1/16" +/-5%	<b>15.00</b>	<b>31.25</b>	<b>100.00</b>
<b>B-PXX-050</b>	5.0	0.00020	39	+/- 5%	1/16" +/-5%	<b>15.00</b>	<b>31.25</b>	<b>100.00</b>
<b>B-PXX-100</b>	10.0	0.00040	43	+/- 5%	1/16" +/-5%	<b>15.00</b>	<b>31.25</b>	<b>100.00</b>
<b>B-PXX-400</b>	40.0	0.00160	50	+/- 5%	1/16" +/-5%	<b>15.00</b>	<b>31.25</b>	<b>100.00</b>

## ASSORTMENTS (Add -A or -B for Filter size)

<b>B-PXX-K1</b>	Contains 5 each of the above seven Filter sizes-35 pcs. ....	<b>40.00</b>
<b>B-PXX-K2</b>	Contains 10 each of the above seven Filter sizes-70 pcs. ....	<b>75.00</b>

## SINTERED METAL FLOW RESTRICTORS — Stainless Steel Type 316L / Type 303

Replace orifices, capillary tubes and micrometering valves in highly accurate flow control applications using Porous Sintered Metal Flow Restrictors. Calibrated to within +/-7.5% of the specified flow mean, accuracy is guaranteed and reproducible within 1% when tested at the calibrated pressure. Clog-resistant Flow Restrictors provide stable, smooth laminar gas flow for clean, dry gases such as N<sub>2</sub>, H<sub>2</sub>, O<sub>2</sub>, Ar, Air and He.



**Encapsulated Flow Restrictors** can be mounted in tubes, fittings and housings by press fit installation into precision reamed holes. Constructed of Stainless Steel Type 316L, Restrictors are sinterbonded to the Type 303 hardware sleeve to provide bond strength greater than 10,000 PSIG. Our test kits provide a variety of flow rates, for low-flow or high-flow applications. Flow rates are as tested with N<sub>2</sub> at 30 PSIG to atmosphere.



**Flow Restrictor / Fittings Assemblies** offer fast installation, and superb corrosion resistance. A porous disc is sinterbonded into a compression tube union fitting for direct connection to tubing or pipe. Discs and fittings are made entirely of Stainless Steel Type 316L. Fittings are Stainless Steel Type 316.

## ENCAPSULATED FLOW RESTRICTORS — Stainless Steel Type 316L / Type 303 Sleeve

Part No.	Description	Sleeve O.D.	Mating Hardware Bore Tolerance	Flow Rates SCCM (One Each)	Pieces in Kit	Price
						Each
<b>B-PXFE-02L</b>	Low Flow	1/8"	0.1243 / 0.1247"	1, 10, 25, 50, 100, 250	6	<b>50.00</b>
<b>B-PXFE-04L</b>	Low Flow	1/4"	0.2506 / 0.2510"	1, 10, 25, 50, 100, 250	6	<b>50.00</b>
<b>B-PXFE-04H</b>	High Flow	1/4"	0.2506 / 0.2510"	500, 1000, 2500 5000, 10000, 25000	6	<b>50.00</b>

## FLOW RESTRICTOR / FITTINGS ASSEMBLIES — Stainless Steel Type 316L/Type 316 Fitting

Part No.	Description	Fittings	Flow Rates SCCM (One Each)	Pieces in Kit	Price
					Each
<b>B-PXFA-01L</b>	Low Flow	1/16" Tube Union	10, 50, 100, 500	4	<b>100.00</b>
<b>B-PXFA-02L</b>	Low Flow	1/8" Tube Union	10, 50, 100, 500	4	<b>100.00</b>
<b>B-PXFA-04L</b>	Low Flow	1/4" Tube Union	10, 50, 100, 500	4	<b>100.00</b>
<b>B-PXFA-04H</b>	High Flow	1/4" Tube Union	1000, 5000, 10000, 25000	4	<b>100.00</b>



# POROUS CERAMICS



## HYDROPHILIC CERAMIC

*Physically robust, chemically inert, rigid, and resistant to high temperatures and corrosion*

Hydrophilic Porous Ceramics meet demanding pressure and high temperature conditions with consistent pore structures and uniform hydraulic conductivity. The open pore structure provides a convoluted path of interconnecting networked channels, allowing complete flow throughout the material for migrating liquids and/or gases. Their naturally wettable and durable properties are valued in long-term applications and where capillarity and flow characteristics must remain constant.

Used in filtration, diffusion, aeration, venting, and muffling applications, as well as for measuring and sampling processes, Porous Ceramics exhibit excellent strength, with low electrical and thermal conductivity, plus corrosion resistance and high wear at elevated temperatures and pressures.

They are generally inert, reusable and cleanable, and will not oxidize or leak below their bubbling pressure. Non-shedding and environmentally safe, they can be cleaned conventionally or in a burnout oven, and sterilized with straight heat, steam or gas (Ethylene Oxide). For machining guidelines give us a call.

### SPECIFICATIONS

Air Entry Value (1 Bar = 14.7 psi)	Pore Size/Void Volume	Bubbling Pressure	Composition / Color	Hardness
1/2 Bar	6 $\mu$ / 50%	7-9 psi	High Fired Alumina / Pure White	Hard
1 Bar Standard	2.1 $\mu$ / 38%	20-30 psi	Moderately Fired, Largely Talc / Ivory White	Tough
1 Bar High Flow	2.5 $\mu$ / 45%	19-28 psi	High Fired Alumina / Pure White	Hard
2 Bar	1.2 $\mu$ / 34%	35-45 psi	Moderately Fired Ceramic / Creamy White	Moderately Hard
3 Bar	0.8 $\mu$ / 34%	47-70 psi	Moderately Fired Ceramic / Tannish White	Moderately Hard
5 Bar	0.5 $\mu$ / 31%	80 psi	Fired Ceramic / Brownish White	Very Hard
15 Bar	0.16 $\mu$ / 32%	220 psi	Fired Ceramic / Pinkish Tan	Moderately Hard

### ROD

Part No.	Diameter	Length	Air Entry Value	Pore Size	Price Each
<b>B-ZPC-0860</b>	1/2" O.D.	2"	1/2 Bar	6 $\mu$	<b>13.25</b>
<b>B-ZPC-1660</b>	1" O.D.	2"	1/2 Bar	6 $\mu$	<b>26.00</b>
<b>B-ZPC-0825</b>	1/2" O.D.	2"	1 Bar High Flow	2.5 $\mu$	<b>13.25</b>
<b>B-ZPC-1625</b>	1" O.D.	2"	1 Bar High Flow	2.5 $\mu$	<b>26.00</b>

### CYLINDERS

<b>B-PCT-0821</b>	1/2" O.D. $\times$ 3/8" I.D.	11"	1 Bar Standard	2.1 $\mu$	<b>34.00</b>
<b>B-PCT-1625</b>	1" O.D. $\times$ 3/4" I.D.	12"	1 Bar High Flow	2.5 $\mu$	<b>43.60</b>

### ROUND BOTTOM, STRAIGHT WALL CUP

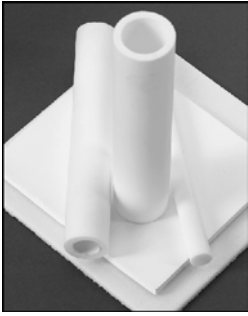
<b>B-PCC-1221</b>	3/8" O.D. $\times$ 1/4" I.D.	1-1/8"	1 Bar Standard	2.1 $\mu$	<b>10.65</b>
<b>B-PCC-1212</b>	3/8" O.D. $\times$ 1/4" I.D.	1-1/8"	2 Bar	1.2 $\mu$	<b>14.80</b>
<b>B-PCC-1208</b>	3/8" O.D. $\times$ 1/4" I.D.	1-1/8"	3 Bar	0.8 $\mu$	<b>15.60</b>
<b>B-PCC-1205</b>	3/8" O.D. $\times$ 1/4" I.D.	1-1/8"	5 Bar	0.5 $\mu$	<b>13.35</b>

### DISKS

Part No.	Diameter	Thickness	Air Entry Value	Pore Size	Price Each
<b>B-PCD-18060</b>	1-1/8" O.D.	0.281"	1/2 Bar	6 $\mu$	<b>13.20</b>
<b>B-PCD-18250</b>	1-1/8" O.D.	0.281"	1 Bar High Flow	2.5 $\mu$	<b>10.80</b>
<b>B-PCD-18080</b>	1-1/8" O.D.	0.281"	3 Bar	0.8 $\mu$	<b>9.20</b>
<b>B-PCD-18050</b>	1-1/8" O.D.	0.281"	5 Bar	0.5 $\mu$	<b>12.40</b>
<b>B-PCD-18016</b>	1-1/8" O.D.	0.281"	15 Bar	0.16 $\mu$	<b>13.20</b>

Other sizes available. *Call Purchasing Services — 1-888-455-9712.*

## POROUS PLASTICS — PTFE, Polyethylene and Polypropylene



### POROUS PTFE, POLYETHYLENE AND POLYPROPYLENE

*Easily fabricated, chemically resistant, with controlled porosity*

Highly resilient, lightweight, and resistant to a broad spectrum of chemicals and reagents. The omni-directional, inter-connecting, open-celled pore structure of Porous Plastics can perform as a surface or depth filter; provide wicking of solutions by capillary action; venting or diffusing by controlled flow of gases; or act as a sterile barrier via controlled porosity and inherent tortuous path properties. Also used in aeration, foaming, agitation /sparging operations, and can be modified using conventional machining methods and in some cases hand tools.

**Porous PTFE Sheet** (Polytetrafluoroethylene) is the most hydrophobic of our line. Used as a caustic and a solvent filtration media, it offers exceptional chemical resistance, is very inert, and maintains its useful mechanical properties at temperatures of -100° to 500°F (-73° to 260°C). Softening point: 531°F (277°C).

**Porous Polyethylene** resists concentrated acids, alkalies, and numerous organic solvents. It can be used in continuous service at temperatures up to 180°F, (82°C) and intermittently at 240°F (116°C). If not stressed it is stable at 212°F (100°C). Softening point: 266°F (130°C).

- **Rods** allow for flexibility in fabrication. A cross sectional area can be obtained and parts can be created or customized using conventional machining tools, by press fitting, or by mechanical bonding.

- **Tubes** have a broad range of uses in gas and liquid applications. Sizes fit readily accessible Schedule 40 PVC fittings.

- **Sheet** is offered in standard hydrophobic composition, or with hydrophilic treatment, which allows parts to wick aqueous solutions and enhances flow in low pressure or gravity feed conditions.

**Porous Polypropylene Sheet** is steam sterilizable (autoclavable) and will withstand higher temperatures than polyethylene while exhibiting similar chemical resistance properties. Operating temperature ranges from 195-295°F (90-145°C) dependant on part geometry and stress on material.

### POROUS PTFE — Sheet <sup>1</sup>

Part No.	Thickness	Average Pore Size	Size	Price Each
<b>B-PPTS-06030</b>	1/16"	25μ	4-3/8" × 4-3/8"	<b>38.40</b>
<b>B-PPTS-12530</b>	1/8"	30μ	4-3/8" × 4-3/8"	<b>64.95</b>
<b>B-PPTS-25030</b>	1/4"	30μ	4-3/8" × 4-3/8"	<b>129.75</b>

<sup>1</sup> Exhibits slight curvature.

### POROUS POLYETHYLENE — Rod

Part No.	Diameter	Average Pore Size	Size	Price
<b>B-ZRWP-02</b>	1/8"	20μ	12"	<b>17.30</b>
<b>B-ZRWP-04</b>	1/4"	20μ	12"	<b>18.55</b>
<b>B-ZRWP-08</b>	1/2"	20μ	12"	<b>21.00</b>
<b>B-ZRPE-4120</b>	1/4"	120μ	12"	<b>18.55</b>
<b>B-ZRPE-8120</b>	1/2"	120μ	12"	<b>21.00</b>
<b>B-ZRPE-4250</b>	1/4"	250μ	12"	<b>18.55</b>
<b>B-ZRPE-8250</b>	1/2"	250μ	12"	<b>21.00</b>

### POROUS POLYETHYLENE— Tubes (Fits Schedule 40 PVC Fittings)

Part No.	SCH 40	Average		Average Pore Size	Price				
		O.D.	Wall		-3"	-6"	-12"	-24"	-36"
<b>B-TPE10-08</b>	1/2	.840	.080"	10-20μ	<b>7.90</b>	<b>13.15</b>	<b>21.90</b>	<b>36.45</b>	<b>45.55</b>
<b>B-TPE10-16</b>	1"	1.29"	.125"	10-20μ	<b>8.85</b>	<b>14.75</b>	<b>24.60</b>	<b>40.95</b>	<b>51.20</b>
<b>B-TPE20-08</b>	1/2"	.840"	.080"	20-40μ	<b>7.90</b>	<b>13.15</b>	<b>21.90</b>	<b>36.45</b>	<b>45.55</b>
<b>B-TPE20-16</b>	1"	1.29"	.125"	20-40μ	<b>8.85</b>	<b>14.75</b>	<b>24.60</b>	<b>40.95</b>	<b>51.20</b>
<b>B-TPE80-08</b>	1/2"	.840"	.080"	80-120μ	<b>7.90</b>	<b>13.15</b>	<b>21.90</b>	<b>36.45</b>	<b>45.55</b>
<b>B-TPE80-16</b>	1"	1.29"	.125"	80-120μ	<b>8.85</b>	<b>14.75</b>	<b>24.60</b>	<b>40.95</b>	<b>51.20</b>

## POROUS PLASTICS — PTFE, Polyethylene and Polypropylene (cont.)

### POROUS POLYETHYLENE — Sheet

Part No.	Thickness	Average Pore Size	Size	Price Each
<b>B-SPE-040/10</b>	.040"	10-20 $\mu$	9-1/2" $\times$ 9-1/2"	<b>10.50</b>
<b>B-SPE-080/10</b>	.080"	10-20 $\mu$	9-1/2" $\times$ 9-1/2"	<b>13.15</b>
<b>B-SPE-125/10</b>	.125"	10-20 $\mu$	9-1/2" $\times$ 9-1/2"	<b>18.25</b>
<b>B-SPE-187/10</b>	.187"	10-20 $\mu$	9-1/2" $\times$ 9-1/2"	<b>24.50</b>
<b>B-SPE-040/20</b>	.040"	20-40 $\mu$	9-1/2" $\times$ 9-1/2"	<b>10.50</b>
<b>B-SPE-080/20</b>	.080"	20-40 $\mu$	9-1/2" $\times$ 9-1/2"	<b>13.15</b>
<b>B-SPE-125/20</b>	.125"	20-40 $\mu$	9-1/2" $\times$ 9-1/2"	<b>18.25</b>
<b>B-SPE-250/20</b>	.250"	20-40 $\mu$	9-1/2" $\times$ 9-1/2"	<b>29.75</b>
<b>B-SPE-080/80</b>	.080"	80-120 $\mu$	9-1/2" $\times$ 9-1/2"	<b>13.15</b>
<b>B-SPE-125/80</b>	.125"	80-120 $\mu$	9-1/2" $\times$ 9-1/2"	<b>18.25</b>
<b>B-SPE-250/80</b>	.250"	80-120 $\mu$	9-1/2" $\times$ 9-1/2"	<b>29.75</b>
<b>B-SPE-125/D</b>	.125"	<i>N/A - See Note and Chart</i>	9-1/2" $\times$ 9-1/2"	<b>24.05</b>
<b>B-SPE-250/D</b>	.250"	<i>N/A - See Note and Chart</i>	9-1/2" $\times$ 9-1/2"	<b>29.75</b>

**NOTE:** (B-SPE-125/D and B-SPE-250/D only) — This porous plastic is used for air conveying and fluidization applications, and it is not specified by pore size. Its primary use is in "fluidizing" solid particles, and is used extensively in powder coating operations, and in moving granular/powdered food stuffs. It exhibits very uniform air flow across the media's surface. Applications utilizing a hopper typically shape the material into a cone for desired results. Larger sheets available. **Call Purchasing Services toll free — 1-888-455-9712.**

#### TYPICAL AIR PERMEABILITIES — (B-SPE-125/D and B-SPE-250/D only)

IMPERIAL		METRIC	
Pressure Differential Inches Water Gauge	Permeability ft <sup>3</sup> / min / ft <sup>2</sup>	Pressure Differential mbar	Permeability m <sup>3</sup> / min / m <sup>2</sup>
2	6	5	2.00
4	10	10	3.00
8	25	20	7.75

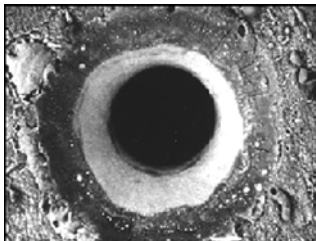
### POROUS POLYETHYLENE — Sheet, Hydrophilic

Part No.	Thickness	Average Pore Size	Size	Price Each
<b>B-PEH-060</b>	1/16"	15-45 $\mu$	10" $\times$ 10"	<b>14.00</b>
<b>B-PEH-060/50</b>	1/16"	50-90 $\mu$	10" $\times$ 10"	<b>12.65</b>
<b>B-PEH-060/90</b>	1/16"	90-130 $\mu$	10" $\times$ 10"	<b>12.65</b>
<b>B-PEH-250/90</b>	1/4"	90-130 $\mu$	10" $\times$ 10"	<b>29.45</b>

### POROUS POLYPROPYLENE — Sheet

Part No.	Thickness	Average Pore Size	Size	Price Each
<b>B-SPP-080/20</b>	.080"	20-40 $\mu$	9-1/2" $\times$ 9-1/2"	<b>13.15</b>
<b>B-SPP-125/20</b>	.125"	20-40 $\mu$	9-1/2" $\times$ 9-1/2"	<b>18.25</b>
<b>B-SPP-187/20</b>	.187"	20-40 $\mu$	9-1/2" $\times$ 9-1/2"	<b>29.75</b>
<b>B-SPP-080/80</b>	.080"	80-120 $\mu$	9-1/2" $\times$ 9-1/2"	<b>13.15</b>
<b>B-SPP-125/80</b>	.125"	80-120 $\mu$	9-1/2" $\times$ 9-1/2"	<b>18.25</b>
<b>B-SPP-187/80</b>	.187"	80-120 $\mu$	9-1/2" $\times$ 9-1/2"	<b>24.50</b>

## ORIFICES — Laser Drilled



30 Micron Hole 0.00118" Electron Microscope Photo

### LASER DRILLED ORIFICES— Stainless Steel 18-8

Now you can order micro-drilled orifices without the downtime involved in getting your custom order filled. Available in kits, prefabricated Laser Drilled Orifices have a cost-effective, prefit design and a broad range of apertures that allows quick changes to suit the needs of the application.

Made of Stainless Steel 18-8, Laser Drilled Orifices work with precision under a wide range of conditions and environments. They have been specified in high purity gas separation and flow calibration applications, and are frequently used in the fields of optics, aerospace, medicine and electronics.

Diameters and thicknesses shown are standard in the optical industry and are specifically applied as spatial filters for laser beams. For non-standard mounting purposes, use silver soldering or epoxies to position Orifices. Each aperture comes mounted in a plastic case for microscopic viewing. Sold in kits or individually, each Orifice is optically measured under a microscope.

**Standard Orifice Kit** contains five apertures, each 0.002" thick. Packaged in plastic cases, with these sizes: 400μ; 500μ; 600μ; 800μ; 1,000μ.

**Small Orifice Kit** contains five apertures, each 0.002" thick, sizes: 10μ; 25μ; 50μ; 100μ; and 200μ. Packaged in plastic cases.

**Precision Optical Filter Kit** contains one piece each of 10μ; 25μ; and 50μ; each 0.0005" thick.

*For individual orifices, please call Purchasing Services toll free — 1-888-455-9712.*

### ORIFICES — Aperture Kits

Part No.	Description	Pieces in Kit	Tolerance	Diameter	Thickness	Price Each
<b>B-SOK-20</b>	Standard Orifice Kit	5	±10%	0.375"	0.002"	<b>59.95</b>
<b>B-SOK-40</b>	Small Orifice Kit	5	±10%	0.375"	0.002"	<b>99.95</b>
<b>B-SOK-03</b>	Precision Optical Filter	3	±10%	0.375"	0.0005"	<b>79.95</b>



### ALL-PURPOSE TORCH KIT — Cordless

#### For light Brazing and Soldering

This all-purpose torch kit is used for many light brazing and soldering applications. The cordless Butane powered torch refills in 20 seconds using any standard butane lighter fuel.

The blow torch heats up to 2370°F (1300°C) and can be used continuously for up to 45 minutes. The soldering iron, hot knife and hot blower attachments heat up to 850°F (455°C) and can be used continuously for up to 90 minutes. Packaged in a sturdy plastic storage case.

Kit contains a Soldering Tool and four tips: a 3/32" iron-plated Soldering Tip; Blow Torch Tip; Hot Blower Tip; and a Hot Knife Tip. Plus a flint igniter, safety stand and cleaning sponge.

**B-BST-1000** Butane Kit . . . . . **67.00**

#### REPLACEMENT TIPS



Soldering Tip  
**B-BST-ST . 12.00**



Blow Torch Tip  
**B-BST-BTT . 12.00**



Hot Blower Tip  
**B-BST-HBT 12.00**



Hot Knife Tip  
**B-BST-HKT 12.00**

[See more Torches starting on page 412](#)

# O-RINGS — Buna-N



## O-RING ASSORTMENT KIT — Buna-N

A selection of 382 O-Rings in thirty sizes, from 1/8" to 1-3/4" inside diameter, individually sized for easy identification. Durometer reading: 70A. See below for a complete list of sizes. Neatly packed in a hard plastic case.

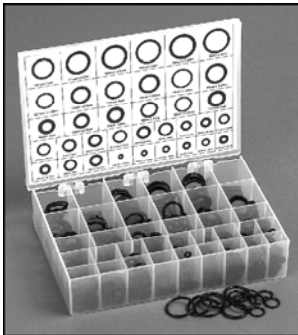
**B-ORBK-500** ..... **29.95**

### KIT CONTAINS:

(Dimensions in Inches)

Part No.	I.D.	O.D.	Width	Qty.	Part No.	I.D.	O.D.	Width	Qty.
B-ORB-006	1/8	1/4	1/16	20	B-ORB-211	13/16	1-1/16	1/8	10
B-ORB-007	5/32	9/32	1/16	20	B-ORB-212	7/8	1-1/8	1/8	10
B-ORB-008	3/16	5/16	1/16	20	B-ORB-213	15/16	1-3/16	1/8	10
B-ORB-009	7/32	11/32	1/16	20	B-ORB-214	1	1-1/4	1/8	10
B-ORB-010	1/4	3/8	1/16	20	B-ORB-215	1-1/16	1-5/16	1/8	10
B-ORB-011	5/16	7/16	1/16	20	B-ORB-216	1-1/8	1-3/8	1/8	10
B-ORB-012	3/8	1/2	1/16	20	B-ORB-217	1-3/16	1-7/16	1/8	10
B-ORB-110	3/8	9/16	3/32	13	B-ORB-218	1-1/4	1-1/2	1/8	10
B-ORB-111	7/16	5/8	3/32	13	B-ORB-219	1-5/16	1-9/16	1/8	10
B-ORB-112	1/2	11/16	3/32	13	B-ORB-220	1-3/8	1-5/8	1/8	10
B-ORB-113	9/16	3/4	3/32	13	B-ORB-221	1-7/16	1-11/16	1/8	10
B-ORB-114	5/8	13/16	3/32	13	B-ORB-222	1-1/2	1-3/4	1/8	10
B-ORB-115	11/16	7/8	3/32	13	B-ORB-325	1-1/2	1-7/8	3/16	7
B-ORB-116	3/4	15/16	3/32	13	B-ORB-326	1-5/8	2	3/16	7
B-ORB-210	3/4	1	1/8	10	B-ORB-327	1-3/4	2-1/8	3/16	7

### METRIC



## O-RING ASSORTMENT KIT — Buna-N

**B-ORBK-500M** ..... **35.00**

### KIT CONTAINS:

(Dimensions in Millimeters)

Part No.	I.D.	Width	Qty.	Part No.	I.D.	Width	Qty.
B-MORB-15-05	5	1.5	20	B-MORB-20-19	19	2	10
B-MORB-15-13	13	1.5	15	B-MORB-20-20	20	2	10
B-MORB-15-16	16	1.5	10	B-MORB-24-043	4.3	2.4	15
B-MORB-16-022	2.2	1.6	20	B-MORB-24-053	5.3	2.4	15
B-MORB-16-031	3.1	1.6	20	B-MORB-24-056	5.6	2.4	15
B-MORB-16-041	4.1	1.6	20	B-MORB-24-076	7.6	2.4	15
B-MORB-16-071	7.1	1.6	20	B-MORB-24-083	8.3	2.4	15
B-MORB-16-091	9.1	1.6	15	B-MORB-24-086	8.6	2.4	15
B-MORB-16-101	10.1	1.6	15	B-MORB-25-10	10	2.5	10
B-MORB-16-131	13.1	1.6	15	B-MORB-25-13	13	2.5	10
B-MORB-20-04	4	2	20	B-MORB-25-14	14	2.5	10
B-MORB-20-06	6	2	20	B-MORB-25-15	15	2.5	10
B-MORB-20-08	8	2	15	B-MORB-25-17	17	2.5	10
B-MORB-20-09	9	2	15	B-MORB-25-18	18	2.5	10
B-MORB-20-10	10	2	15	B-MORB-25-19	19	2.5	10
B-MORB-20-12	12	2	15	B-MORB-30-09	9	3	10
B-MORB-20-14	14	2	10	B-MORB-30-10	10	3	10
B-MORB-20-16	16	2	10	B-MORB-30-11	11	3	10

## O-RINGS — Buna-N



**O-Rings of Buna-N** — a firm, rugged, flexible, Nitrile Elastomer — closely approximate the perfect hydraulic seal. For installation, simply stretch them over large diameters, or fold them for insertion into small diameters. No adhesives, no special tools necessary. Temperature range -20° to 400°F (-29° to 204°C) with limited serviceability up to 600°F (315°C). Durometer reading: 70A. Color: Black.

### BUNA-N

Part No.	Nominal Size (in Inches)			Actual Size (in Inches)				10	Price		
	I.D.	O.D.	Width	I.D.	±	Width	±		25	100	
<b>B-ORB-001</b>	1/32	3/32	1/32	0.029	0.004	0.070	0.003	—	<b>1.00</b>	<b>2.50</b>	
<b>B-ORB-002</b>	3/64	9/64	3/64	0.042	0.004	0.070	0.003	—	<b>1.00</b>	<b>2.50</b>	
<b>B-ORB-003</b>	1/16	3/16	1/16	0.056	0.004	0.070	0.003	—	<b>1.00</b>	<b>2.50</b>	
<b>B-ORB-004</b>	5/64	13/64	1/16	0.070	0.005	0.070	0.003	—	<b>1.00</b>	<b>2.50</b>	
<b>B-ORB-005</b>	3/32	7/32	1/16	0.101	0.005	0.070	0.003	—	<b>1.00</b>	<b>2.50</b>	
<b>B-ORB-006</b>	1/8	1/4	1/16	0.114	0.005	0.070	0.003	—	<b>1.00</b>	<b>2.50</b>	
<b>B-ORB-007</b>	5/32	9/32	1/16	0.145	0.005	0.070	0.003	—	<b>1.00</b>	<b>2.50</b>	
<b>B-ORB-008</b>	3/16	5/16	1/16	0.176	0.005	0.070	0.003	—	<b>1.00</b>	<b>2.50</b>	
<b>B-ORB-009</b>	7/32	11/32	1/16	0.208	0.005	0.070	0.003	—	<b>1.00</b>	<b>2.50</b>	
<b>B-ORB-010</b>	1/4	3/8	1/16	0.239	0.005	0.070	0.003	—	<b>1.05</b>	<b>3.00</b>	
<b>B-ORB-011</b>	5/16	7/16	1/16	0.301	0.005	0.070	0.003	—	<b>1.05</b>	<b>3.00</b>	
<b>B-ORB-012</b>	3/8	1/2	1/16	0.364	0.005	0.070	0.003	—	<b>1.05</b>	<b>3.00</b>	
<b>B-ORB-013</b>	7/16	9/16	1/16	0.426	0.005	0.070	0.003	—	<b>1.10</b>	<b>3.30</b>	
<b>B-ORB-014</b>	1/2	5/8	1/16	0.489	0.005	0.070	0.003	—	<b>1.10</b>	<b>3.30</b>	
<b>B-ORB-015</b>	9/16	11/16	1/16	0.551	0.007	0.070	0.003	—	<b>1.20</b>	<b>3.75</b>	
<b>B-ORB-016</b>	5/8	3/4	1/16	0.614	0.009	0.070	0.003	—	<b>1.30</b>	<b>3.90</b>	
<b>B-ORB-017</b>	11/16	13/16	1/16	0.676	0.009	0.070	0.003	—	<b>1.35</b>	<b>4.20</b>	
<b>B-ORB-018</b>	3/4	7/8	1/16	0.739	0.009	0.070	0.003	—	<b>1.35</b>	<b>4.50</b>	
<b>B-ORB-019</b>	13/16	15/16	1/16	0.801	0.009	0.070	0.003	—	<b>1.60</b>	<b>5.25</b>	
<b>B-ORB-020</b>	7/8	1	1/16	0.864	0.009	0.070	0.003	—	<b>1.60</b>	<b>5.25</b>	
<b>B-ORB-021</b>	15/16	1-1/16	1/16	0.926	0.009	0.070	0.003	—	<b>1.65</b>	<b>5.40</b>	
<b>B-ORB-022</b>	1	1-1/8	1/16	0.989	0.010	0.070	0.003	—	<b>1.80</b>	<b>6.00</b>	
<b>B-ORB-023</b>	1-1/16	1-3/16	1/16	1.051	0.010	0.070	0.003	—	<b>2.00</b>	<b>6.60</b>	
<b>B-ORB-024</b>	1-1/8	1-1/4	1/16	1.114	0.010	0.070	0.003	—	<b>2.00</b>	<b>6.60</b>	
<b>B-ORB-025</b>	1-3/16	1-5/16	1/16	1.176	0.011	0.070	0.003	<b>1.05</b>	<b>2.15</b>	<b>7.20</b>	
<b>B-ORB-026</b>	1-1/4	1-3/8	1/16	1.239	0.011	0.070	0.003	<b>1.20</b>	<b>2.45</b>	<b>8.10</b>	
<b>B-ORB-027</b>	1-5/16	1-7/16	1/16	1.301	0.011	0.070	0.003	<b>1.20</b>	<b>2.50</b>	<b>8.25</b>	
<b>B-ORB-028</b>	1-3/8	1-1/2	1/16	1.364	0.013	0.070	0.003	<b>1.25</b>	<b>2.60</b>	<b>8.70</b>	
<b>B-ORB-029</b>	1-1/2	1-5/8	1/16	1.489	0.013	0.070	0.003	<b>1.30</b>	<b>2.70</b>	<b>9.00</b>	
<b>B-ORB-030</b>	1-5/8	1-3/4	1/16	1.614	0.013	0.070	0.003	<b>1.55</b>	<b>3.25</b>	<b>10.80</b>	
<b>B-ORB-109</b>	5/16	1/2	3/32	0.299	0.005	0.103	0.003	—	<b>1.05</b>	<b>3.00</b>	
<b>B-ORB-110</b>	3/8	9/16	3/32	0.362	0.005	0.103	0.003	—	<b>1.05</b>	<b>3.00</b>	
<b>B-ORB-111</b>	7/16	5/8	3/32	0.424	0.005	0.103	0.003	—	<b>1.15</b>	<b>3.60</b>	
<b>B-ORB-112</b>	1/2	11/16	3/32	0.487	0.005	0.103	0.003	—	<b>1.20</b>	<b>3.75</b>	
<b>B-ORB-113</b>	9/16	3/4	3/32	0.549	0.007	0.103	0.003	—	<b>1.20</b>	<b>3.75</b>	
<b>B-ORB-114</b>	5/8	13/16	3/32	0.612	0.009	0.103	0.003	—	<b>1.25</b>	<b>3.80</b>	
<b>B-ORB-115</b>	11/16	7/8	3/32	0.674	0.009	0.103	0.003	—	<b>1.30</b>	<b>4.20</b>	
<b>B-ORB-116</b>	3/4	15/16	3/32	0.737	0.009	0.103	0.003	—	<b>1.35</b>	<b>4.50</b>	
<b>B-ORB-117</b>	13/16	1	3/32	0.799	0.010	0.103	0.003	—	<b>1.40</b>	<b>4.60</b>	
<b>B-ORB-118</b>	7/8	1-1/16	3/32	0.862	0.010	0.103	0.003	—	<b>1.50</b>	<b>4.80</b>	
<b>B-ORB-119</b>	15/16	1-1/8	3/32	0.924	0.010	0.103	0.003	—	<b>1.65</b>	<b>5.40</b>	
<b>B-ORB-121</b>	1-1/16	1-1/4	3/32	1.049	0.010	0.103	0.003	—	<b>1.85</b>	<b>6.15</b>	
<b>B-ORB-123</b>	1-3/16	1-3/8	3/32	1.174	0.012	0.103	0.003	—	<b>2.00</b>	<b>6.60</b>	

Continued →

## O-RINGS — Buna-N (cont.)

### BUNA-N

Part No.	Nominal Size (in Inches)			Actual Size (in Inches)				Price		
	I.D.	O.D.	Width	I.D.	±	Width	±	10	25	100
B-ORB-125	1-5/16	1-1/2	3/32	1.299	0.012	0.103	0.003	1.15	2.35	7.80
B-ORB-206	1/2	3/4	1/8	0.484	0.005	0.139	0.004	—	1.95	6.50
B-ORB-208	5/8	7/8	1/8	0.609	0.009	0.139	0.004	—	2.00	6.60
B-ORB-210	3/4	1	1/8	0.734	0.010	0.139	0.004	1.00	2.05	6.65
B-ORB-211	13/16	1-1/16	1/8	0.796	0.010	0.139	0.004	1.00	2.05	6.70
B-ORB-212	7/8	1-1/8	1/8	0.859	0.010	0.139	0.004	1.05	2.20	6.95
B-ORB-213	15/16	1-3/16	1/8	0.921	0.010	0.139	0.004	1.05	2.20	7.00
B-ORB-214	1	1-1/4	1/8	0.984	0.010	0.139	0.004	1.05	2.20	7.10
B-ORB-215	1-1/16	1-5/16	1/8	1.046	0.010	0.139	0.004	1.10	2.25	7.15
B-ORB-216	1-1/8	1-3/8	1/8	1.109	0.012	0.139	0.004	1.20	2.50	8.25
B-ORB-217	1-3/16	1-7/16	1/8	1.171	0.012	0.139	0.004	1.30	2.70	9.00
B-ORB-218	1-1/4	1-1/2	1/8	1.234	0.012	0.139	0.004	1.40	2.85	9.35
B-ORB-219	1-5/16	1-9/16	1/8	1.296	0.012	0.139	0.004	1.45	3.00	9.95
B-ORB-220	1-3/8	1-5/8	1/8	1.359	0.012	0.139	0.004	1.55	3.15	10.45
B-ORB-221	1-7/16	1-11/16	1/8	1.421	0.012	0.139	0.004	1.60	3.30	10.90
B-ORB-222	1-1/2	1-3/4	1/8	1.484	0.015	0.139	0.004	1.75	3.60	12.00
B-ORB-224	1-3/4	2	1/8	1.734	0.015	0.139	0.004	2.10	4.35	14.40
B-ORB-226	2	2-1/4	1/8	1.984	0.018	0.139	0.004	2.30	4.80	16.00
B-ORB-228	2-1/4	2-1/2	1/8	2.234	0.020	0.139	0.004	2.45	5.05	16.75
B-ORB-230	2-1/2	2-3/4	1/8	2.484	0.020	0.139	0.004	2.55	5.25	17.45
B-ORB-232	2-3/4	3	1/8	2.734	0.024	0.139	0.004	3.25	6.70	22.95
B-ORB-234	3	3-1/4	1/8	2.984	0.024	0.139	0.004	3.45	7.10	23.65
B-ORB-325	1-1/2	1-7/8	3/16	1.475	0.015	0.210	0.005	2.15	4.45	14.75
B-ORB-326	1-5/8	2	3/16	1.600	0.015	0.210	0.005	2.20	4.50	14.85
B-ORB-327	1-3/4	2-1/8	3/16	1.725	0.015	0.210	0.005	2.75	5.70	18.90
B-ORB-329	2	2-3/8	3/16	1.975	0.018	0.210	0.005	3.35	7.00	23.35
B-ORB-333	2-1/2	2-7/8	3/16	2.475	0.020	0.210	0.005	3.55	7.35	24.50
B-ORB-337	3	3-3/8	3/16	2.975	0.024	0.210	0.005	4.10	8.55	28.40
B-ORB-341	3-1/2	3-7/8	3/16	3.475	0.024	0.210	0.005	4.75	9.90	32.95
B-ORB-345	4	4-3/8	3/16	3.975	0.024	0.210	0.005	5.65	11.75	39.15

### ASSORTMENTS

B-ORB-1000	25 rings of each size B-ORB-001 through B-ORB-030 — 750 pcs.	41.25
B-ORB-1500	25 rings of each size B-ORB-109 through B-ORB-125 — 350 pcs.	18.30
B-ORB-2000	10 rings of each size B-ORB-206 through B-ORB-234 — 210 pcs.	31.15
B-ORB-2500	10 rings of each size B-ORB-326 through B-ORB-345 — 80 pcs.	18.70
B-ORB-3000	All above B-ORB-1000 through B-ORB-2500 — 1,390 pcs.	116.35

### METRIC

Part No.	Dimensions in Millimeters			Price		
	I.D.	Width		10	25	100
B-MORB-15-05	5	1.5	-	1.60	5.25	
B-MORB-15-13	13	1.5	1.00	2.10	7.25	
B-MORB-15-16	16	1.5	1.30	2.65	8.85	
B-MORB-16-022	2.2	1.6	-	1.50	5.00	
B-MORB-16-031	3.1	1.6	-	1.55	5.15	
B-MORB-16-041	4.1	1.6	-	1.65	5.40	
B-MORB-16-071	7.1	1.6	-	1.90	6.30	
B-MORB-16-091	9.1	1.6	-	2.00	6.70	

## O-RINGS — Buna-N (cont.)

### METRIC

Part No.	Dimensions in Millimeters		Price		
	I.D.	Width	10	25	100
B-MORB-16-101	10.1	1.6	1.00	2.05	6.85
B-MORB-16-131	13.1	1.6	1.10	2.30	7.60
B-MORB-20-04	4	2	-	1.50	4.95
B-MORB-20-06	6	2	-	1.65	5.40
B-MORB-20-08	8	2	-	1.95	6.45
B-MORB-20-09	9	2	1.05	2.15	7.15
B-MORB-20-10	10	2	1.15	2.35	7.85
B-MORB-20-12	12	2	1.25	2.55	8.45
B-MORB-20-14	14	2	1.40	2.85	9.45
B-MORB-20-16	16	2	1.40	2.90	9.65
B-MORB-20-19	19	2	1.50	3.10	10.30
B-MORB-20-20	20	2	1.60	3.30	11.00
B-MORB-24-043	4.3	2.4	-	1.65	5.40
B-MORB-24-053	5.3	2.4	-	1.70	5.70
B-MORB-24-056	5.6	2.4	-	1.70	5.70
B-MORB-24-076	7.6	2.4	-	2.00	6.70
B-MORB-24-083	8.3	2.4	1.05	2.20	7.30
B-MORB-24-086	8.6	2.4	1.05	2.20	7.30
B-MORB-25-10	10	2.5	1.20	2.50	8.30
B-MORB-25-13	13	2.5	1.40	2.85	9.45
B-MORB-25-14	14	2.5	1.45	2.95	9.85
B-MORB-25-15	15	2.5	1.50	3.15	10.45
B-MORB-25-17	17	2.5	1.55	3.25	10.75
B-MORB-25-18	18	2.5	1.60	3.30	11.00
B-MORB-25-19	19	2.5	1.65	3.45	11.35
B-MORB-30-09	9	3.0	1.25	2.55	8.40
B-MORB-30-10	10	3.0	1.25	2.60	8.65
B-MORB-30-11	11	3.0	1.30	2.65	8.85

## O-RING KITS — Buna-N



### O-RING SPLICING KIT — Buna-N

Everything you need for on-the-spot standard or unusual diameter O-Ring construction. The kit contains seven feet of Buna-N Cord in each of four sizes: 3/32", 1/8", 3/16" and 1/4"; a tube of special rapid-set adhesive; and a splicing jig. There is even a razor blade, so there's no delay in finishing that first splice. Compact plastic hinged-lid box. Additional stocks of cord and adhesive are available.

<b>B-ORBK-100</b>	O-Ring Splicing Kit .....	<b>39.05</b>
<b>B-ORBK-ADS</b>	Adhesive .....	<b>3.85</b>

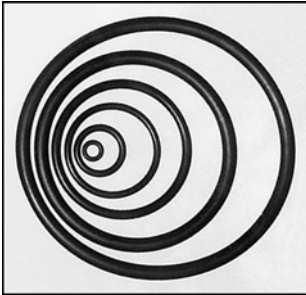
### O-RING SPLICING KIT REFILLS

\*This size is not part of the O-Ring Splicing Kit

Part No.	Nominal Size	Actual Diameter	Price per Foot
B-ORBK-1*	1/16"	0.070"	0.85
B-ORBK-1-1/2	3/32"	0.103"	0.80
B-ORBK-2	1/8"	0.139"	0.90
B-ORBK-3	3/16"	0.210"	1.00
B-ORBK-4	1/4"	0.275"	1.05



## O-RINGS — Viton®



A general purpose Viton® (Fluorocarbon Elastomer) compound suitable for applications requiring resistance to high temperatures and compression set. Outstanding resistance to blended aromatic fuels and straight aromatics as well as halogenated hydrocarbons. Good resistance to strong acids and steam. Temperature range -20° to 400°F (-29° to 204°C) with limited serviceability up to 600°F (315°C). Great care should be taken in regard to burning Viton. When burned it gives off highly carcinogenic hydrogen fluoride. Merely handling just-burned Viton® can be dangerous. Durometer reading: 75A. Color: Black.

### VITON®

Part No.	Nominal Size (In Inches)			Actual Size (in Inches)				Price		
	I.D.	O.D.	Width	I.D.	±	Width	±	5	10	25
<b>B-ORV-001</b>	1/32	3/32	1/32	0.029	0.004	0.040	0.003	<b>1.00</b>	<b>1.70</b>	<b>3.50</b>
<b>B-ORV-002</b>	3/64	9/64	3/64	0.042	0.004	0.050	0.003	<b>1.00</b>	<b>1.70</b>	<b>3.50</b>
<b>B-ORV-003</b>	1/16	3/16	1/16	0.056	0.004	0.060	0.003	<b>1.00</b>	<b>1.70</b>	<b>3.50</b>
<b>B-ORV-004</b>	5/64	13/64	1/16	0.070	0.005	0.070	0.003	<b>1.00</b>	<b>1.70</b>	<b>3.50</b>
<b>B-ORV-005</b>	3/32	7/32	1/16	0.101	0.005	0.070	0.003	<b>1.00</b>	<b>1.70</b>	<b>3.50</b>
<b>B-ORV-006</b>	1/8	1/4	1/16	0.114	0.005	0.070	0.003	<b>1.00</b>	<b>1.70</b>	<b>3.50</b>
<b>B-ORV-007</b>	5/32	9/32	1/16	0.145	0.005	0.070	0.003	<b>1.00</b>	<b>1.70</b>	<b>3.50</b>
<b>B-ORV-008</b>	3/16	5/16	1/16	0.176	0.005	0.070	0.003	<b>1.00</b>	<b>1.70</b>	<b>3.50</b>
<b>B-ORV-009</b>	7/32	11/32	1/16	0.208	0.005	0.070	0.003	<b>1.00</b>	<b>1.70</b>	<b>3.50</b>
<b>B-ORV-010</b>	1/4	3/8	1/16	0.239	0.005	0.070	0.003	<b>1.00</b>	<b>1.70</b>	<b>3.50</b>
<b>B-ORV-011</b>	5/16	7/16	1/16	0.301	0.005	0.070	0.003	<b>1.10</b>	<b>1.80</b>	<b>3.70</b>
<b>B-ORV-012</b>	3/8	1/2	1/16	0.364	0.005	0.070	0.003	<b>1.25</b>	<b>2.05</b>	<b>4.25</b>
<b>B-ORV-013</b>	7/16	9/16	1/16	0.426	0.005	0.070	0.003	<b>1.35</b>	<b>2.20</b>	<b>4.60</b>
<b>B-ORV-014</b>	1/2	5/8	1/16	0.489	0.005	0.070	0.003	<b>1.40</b>	<b>2.25</b>	<b>4.70</b>
<b>B-ORV-015</b>	9/16	11/16	1/16	0.551	0.005	0.070	0.003	<b>1.45</b>	<b>2.40</b>	<b>4.95</b>
<b>B-ORV-016</b>	5/8	3/4	1/16	0.614	0.005	0.070	0.003	<b>1.55</b>	<b>2.55</b>	<b>5.30</b>
<b>B-ORV-017</b>	11/16	13/16	1/16	0.676	0.005	0.070	0.003	<b>1.55</b>	<b>2.60</b>	<b>5.35</b>
<b>B-ORV-018</b>	3/4	7/8	1/16	0.739	0.005	0.070	0.003	<b>1.60</b>	<b>2.65</b>	<b>5.45</b>
<b>B-ORV-019</b>	13/16	15/16	1/16	0.801	0.006	0.070	0.003	<b>1.70</b>	<b>2.85</b>	<b>5.95</b>
<b>B-ORV-020</b>	7/8	1	1/16	0.864	0.006	0.070	0.003	<b>1.80</b>	<b>3.00</b>	<b>6.25</b>
<b>B-ORV-110</b>	3/8	9/16	3/32	0.362	0.005	0.103	0.003	<b>1.65</b>	<b>2.75</b>	<b>5.70</b>
<b>B-ORV-111</b>	7/16	5/8	3/32	0.424	0.005	0.103	0.003	<b>1.75</b>	<b>2.90</b>	<b>5.95</b>
<b>B-ORV-112</b>	1/2	11/16	3/32	0.487	0.005	0.103	0.003	<b>1.95</b>	<b>3.25</b>	<b>6.75</b>
<b>B-ORV-113</b>	9/16	3/4	3/32	0.549	0.005	0.103	0.003	<b>2.00</b>	<b>3.30</b>	<b>6.85</b>
<b>B-ORV-114</b>	5/8	13/16	3/32	0.612	0.005	0.103	0.003	<b>2.05</b>	<b>3.35</b>	<b>6.95</b>
<b>B-ORV-212</b>	7/8	1-1/8	1/8	0.859	0.006	0.139	0.004	<b>3.85</b>	<b>6.40</b>	<b>13.30</b>
<b>B-ORV-214</b>	1	1-1/4	1/8	0.984	0.006	0.139	0.004	<b>4.65</b>	<b>7.75</b>	<b>16.15</b>
<b>B-ORV-216</b>	1-1/8	1-3/8	1/8	1.109	0.006	0.139	0.004	<b>5.10</b>	<b>8.50</b>	<b>17.65</b>
<b>B-ORV-218</b>	1-1/4	1-1/2	1/8	1.234	0.006	0.139	0.004	<b>5.55</b>	<b>9.20</b>	<b>19.15</b>
<b>B-ORV-222</b>	1-1/2	1-3/4	1/8	1.484	0.006	0.139	0.004	<b>6.95</b>	<b>11.55</b>	<b>24.00</b>
<b>B-ORV-226</b>	2	2-1/4	1/8	1.984	0.010	0.139	0.004	<b>8.10</b>	<b>13.45</b>	<b>28.00</b>

### ASSORTMENTS

<b>B-ORV-1000</b>	Contains 50 O-Rings. Five each of B-ORV-001 through B-ORV-010	<b>9.00</b>
<b>B-ORV-1500</b>	Contains 50 O-Rings. Five each of B-ORV-011 through B-ORV-020	<b>13.30</b>
<b>B-ORV-2000</b>	Contains 55 O-Rings. Five each of B-ORV-110 through B-ORV-226	<b>39.25</b>
<b>B-ORV-3000</b>	Contains 155 O-Rings. Five each of B-ORV-001 through B-ORV-226	<b>71.70</b>

## O-RINGS — Silicone Rubber



The wide temperature range of silicone rubber makes it useful in many applications. Temperature range: -100° to 500°F (-73° to 260°C). Excellent resistance to compression set, good electrical properties, good resistance to weathering. Moderately resistant to high aniline point oils and should not be used with low aniline point oils. Durometer reading: 70A. Color: Burnt Orange.

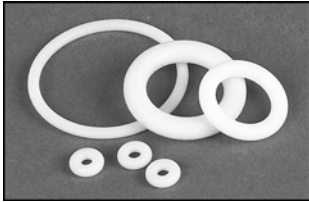
### SILICONE RUBBER

Part No.	Nominal Size (in Inches)			Actual Size (in Inches)				Price		
	I.D.	O.D.	Width	I.D.	±	Width	±	5	10	25
B-ORS-001	1/32	3/32	1/32	0.029	0.004	0.040	0.003	1.95	3.25	6.80
B-ORS-002	3/64	9/64	3/64	0.042	0.004	0.050	0.003	1.80	3.00	6.25
B-ORS-003	1/16	3/16	1/16	0.056	0.004	0.060	0.003	1.70	2.85	5.85
B-ORS-004	5/64	13/64	1/16	0.070	0.005	0.070	0.003	1.45	2.40	4.95
B-ORS-005	3/32	7/32	1/16	0.101	0.005	0.070	0.003	1.35	2.20	4.60
B-ORS-006	1/8	1/4	1/16	0.114	0.005	0.070	0.003	1.25	2.05	4.25
B-ORS-007	5/32	9/32	1/16	0.145	0.005	0.070	0.003	1.25	2.10	4.30
B-ORS-008	3/16	5/16	1/16	0.176	0.005	0.070	0.003	1.25	2.10	4.35
B-ORS-009	7/32	11/32	1/16	0.208	0.005	0.070	0.003	1.30	2.15	4.45
B-ORS-010	1/4	3/8	1/16	0.239	0.005	0.070	0.003	1.35	2.20	4.50
B-ORS-011	5/16	7/16	1/16	0.301	0.005	0.070	0.003	1.35	2.20	4.55
B-ORS-012	3/8	1/2	1/16	0.364	0.005	0.070	0.003	1.35	2.25	4.60
B-ORS-013	7/16	9/16	1/16	0.426	0.005	0.070	0.003	1.40	2.30	4.75
B-ORS-014	1/2	5/8	1/16	0.489	0.005	0.070	0.003	1.45	2.40	4.95
B-ORS-015	9/16	11/16	1/16	0.551	0.005	0.070	0.003	1.45	2.40	5.00
B-ORS-016	5/8	3/4	1/16	0.614	0.005	0.070	0.003	1.50	2.45	5.05
B-ORS-017	11/16	13/16	1/16	0.676	0.005	0.070	0.003	1.50	2.45	5.10
B-ORS-018	3/4	7/8	1/16	0.739	0.005	0.070	0.003	1.50	2.50	5.20
B-ORS-019	13/16	15/16	1/16	0.801	0.006	0.070	0.003	1.55	2.55	5.30
B-ORS-020	7/8	1	1/16	0.864	0.006	0.070	0.003	1.95	3.25	6.80
B-ORS-022	1	1-1/8	1/16	0.989	0.006	0.070	0.003	2.40	3.95	8.15
B-ORS-024	1-1/8	1-1/4	1/16	1.114	0.006	0.070	0.003	2.70	4.50	9.35
B-ORS-028	1-3/8	1-1/2	1/16	1.364	0.006	0.070	0.003	3.35	5.60	11.65
B-ORS-110	3/8	9/16	3/32	0.362	0.005	0.103	0.003	1.50	2.45	5.05
B-ORS-111	7/16	5/8	3/32	0.424	0.005	0.103	0.003	1.50	2.50	5.15
B-ORS-112	1/2	11/16	3/32	0.487	0.005	0.103	0.003	1.55	2.55	5.25
B-ORS-113	9/16	3/4	3/32	0.549	0.005	0.103	0.003	1.55	2.55	5.30
B-ORS-114	5/8	13/16	3/32	0.612	0.005	0.103	0.003	1.60	2.60	5.35
B-ORS-116	3/4	15/16	3/32	0.737	0.005	0.103	0.003	1.60	2.60	5.40
B-ORS-117	13/16	1	3/32	0.799	0.006	0.103	0.003	1.95	3.25	6.80
B-ORS-212	7/8	1-1/8	1/8	0.859	0.006	0.139	0.004	2.65	4.35	9.00
B-ORS-214	1	1-1/4	1/8	0.984	0.006	0.139	0.004	3.10	5.15	10.75
B-ORS-216	1-1/8	1-3/8	1/8	1.109	0.006	0.139	0.004	3.45	5.75	11.95
B-ORS-218	1-1/4	1-1/2	1/8	1.234	0.006	0.139	0.004	3.70	6.15	12.75
B-ORS-222	1-1/2	1-3/4	1/8	1.484	0.006	0.139	0.004	4.35	7.25	15.10
B-ORS-226	2	2-1/4	1/8	1.984	0.010	0.139	0.004	5.85	9.70	20.15

### ASSORTMENT

<b>B-ORS-1000</b>	Contains 5 rings of each size B-ORS-001 through B-ORS-028-115 pcs. ....	<b>40.45</b>
<b>B-ORS-1500</b>	Contains 5 rings of each size B-ORS-110 through B-ORS-117-35 pcs. ....	<b>13.85</b>
<b>B-ORS-2000</b>	Contains 5 rings of each size B-ORS-212 through B-ORS-226-30 pcs. ....	<b>20.80</b>
<b>B-ORS-3000</b>	Contains 5 rings of each size B-ORS-001 through B-ORS-226-180 pcs. ....	<b>65.20</b>

## O-RINGS — PTFE (Teflon)



Completely seamless and uniform, PTFE (Polytetrafluoroethylene) O-Rings outperform seals made from most other plastics. This is mainly due to their outstanding endurance of temperature ranges from -325° F to 400° F (-195° C to 204° C) and known resistance to highly corrosive gases and chemicals, even with long-term exposure. When installing, care should be taken to avoid nicking or gouging by stretching over threads or sharp shoulders. Provide corner breaks or radii if possible, or use tools to lead rings over sharp areas. Color: White. Durometer: 70D.

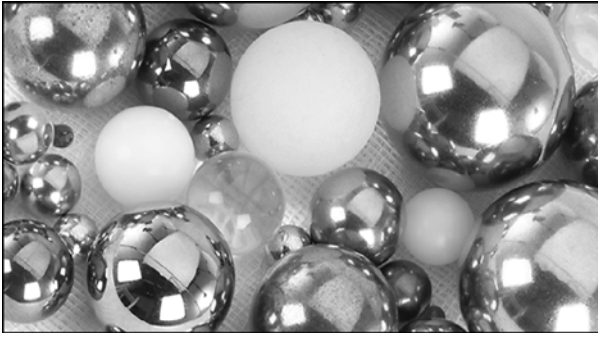
### PTFE

Part No.	Nominal Size (In Inches)			Actual Size (in Inches)				Price		
	I.D.	O.D.	Width	I.D.	±	Width	±	5	10	25
<b>B-ORT-003</b>	1/16	3/16	1/16	0.056	0.004	0.060	0.003	<b>4.20</b>	<b>7.00</b>	<b>14.50</b>
<b>B-ORT-004</b>	5/64	13/64	1/16	0.070	0.005	0.070	0.003	<b>3.80</b>	<b>6.35</b>	<b>13.20</b>
<b>B-ORT-005</b>	3/32	7/32	1/16	0.101	0.005	0.070	0.003	<b>3.90</b>	<b>6.50</b>	<b>13.50</b>
<b>B-ORT-006</b>	1/8	1/4	1/16	0.114	0.005	0.070	0.003	<b>2.40</b>	<b>4.00</b>	<b>8.25</b>
<b>B-ORT-007</b>	5/32	9/32	1/16	0.145	0.005	0.070	0.003	<b>2.50</b>	<b>4.15</b>	<b>8.60</b>
<b>B-ORT-008</b>	3/16	5/16	1/16	0.176	0.005	0.070	0.003	<b>2.85</b>	<b>4.70</b>	<b>9.75</b>
<b>B-ORT-009</b>	7/32	11/32	1/16	0.208	0.005	0.070	0.003	<b>2.85</b>	<b>4.75</b>	<b>9.80</b>
<b>B-ORT-010</b>	1/4	3/8	1/16	0.239	0.005	0.070	0.003	<b>2.90</b>	<b>4.80</b>	<b>9.95</b>
<b>B-ORT-011</b>	5/16	7/16	1/16	0.301	0.005	0.070	0.003	<b>2.90</b>	<b>4.85</b>	<b>10.00</b>
<b>B-ORT-012</b>	3/8	1/2	1/16	0.364	0.005	0.070	0.003	<b>2.95</b>	<b>4.90</b>	<b>10.10</b>
<b>B-ORT-013</b>	7/16	9/16	1/16	0.426	0.005	0.070	0.003	<b>3.00</b>	<b>4.95</b>	<b>10.25</b>
<b>B-ORT-014</b>	1/2	5/8	1/16	0.489	0.005	0.070	0.003	<b>3.05</b>	<b>5.05</b>	<b>10.50</b>
<b>B-ORT-015</b>	9/16	11/16	1/16	0.551	0.005	0.070	0.003	<b>3.15</b>	<b>5.20</b>	<b>10.85</b>
<b>B-ORT-016</b>	5/8	3/4	1/16	0.614	0.005	0.070	0.003	<b>3.20</b>	<b>5.25</b>	<b>10.90</b>
<b>B-ORT-017</b>	11/16	13/16	1/16	0.676	0.005	0.070	0.003	<b>3.90</b>	<b>6.50</b>	<b>13.50</b>
<b>B-ORT-018</b>	3/4	7/8	1/16	0.739	0.005	0.070	0.003	<b>4.00</b>	<b>6.65</b>	<b>13.85</b>
<b>B-ORT-019</b>	13/16	15/16	1/16	0.801	0.006	0.070	0.003	<b>4.10</b>	<b>6.80</b>	<b>14.15</b>
<b>B-ORT-020</b>	7/8	1	1/16	0.864	0.006	0.070	0.003	<b>5.55</b>	<b>9.20</b>	<b>19.10</b>
<b>B-ORT-022</b>	1	1-1/8	1/16	0.989	0.006	0.070	0.003	<b>5.70</b>	<b>9.50</b>	<b>19.75</b>
<b>B-ORT-024</b>	1-1/8	1-1/4	1/16	1.114	0.006	0.070	0.003	<b>6.35</b>	<b>10.55</b>	<b>22.00</b>
<b>B-ORT-028</b>	1-3/8	1-1/2	1/16	1.364	0.006	0.070	0.003	<b>6.65</b>	<b>11.05</b>	<b>23.00</b>
<b>B-ORT-110</b>	3/8	9/16	3/32	0.362	0.005	0.103	0.003	<b>3.25</b>	<b>5.40</b>	<b>11.25</b>
<b>B-ORT-111</b>	7/16	5/8	3/32	0.424	0.005	0.103	0.003	<b>3.30</b>	<b>5.50</b>	<b>11.40</b>
<b>B-ORT-112</b>	1/2	11/16	3/32	0.487	0.005	0.103	0.003	<b>3.40</b>	<b>5.65</b>	<b>11.75</b>
<b>B-ORT-113</b>	9/16	3/4	3/32	0.549	0.005	0.103	0.003	<b>3.50</b>	<b>5.80</b>	<b>12.05</b>
<b>B-ORT-114</b>	5/8	13/16	3/32	0.612	0.005	0.103	0.003	<b>3.90</b>	<b>6.50</b>	<b>13.50</b>
<b>B-ORT-115</b>	11/16	7/8	3/32	0.674	0.005	0.103	0.003	<b>4.20</b>	<b>6.95</b>	<b>14.45</b>
<b>B-ORT-119</b>	15/16	1-1/8	3/32	0.924	0.006	0.103	0.003	<b>6.50</b>	<b>10.80</b>	<b>22.50</b>
<b>B-ORT-121</b>	1-1/16	1-1/4	3/32	1.149	0.006	0.103	0.003	<b>7.50</b>	<b>12.50</b>	<b>26.00</b>
<b>B-ORT-206</b>	1/2	3/4	1/8	0.484	0.005	0.103	0.004	<b>4.75</b>	<b>7.90</b>	<b>16.40</b>
<b>B-ORT-210</b>	3/4	1	1/8	0.734	0.006	0.139	0.004	<b>4.80</b>	<b>8.00</b>	<b>16.65</b>
<b>B-ORT-212</b>	7/8	1-1/8	1/8	0.859	0.006	0.139	0.004	<b>5.45</b>	<b>9.05</b>	<b>18.80</b>
<b>B-ORT-214</b>	1	1-1/4	1/8	0.984	0.006	0.139	0.004	<b>6.05</b>	<b>10.10</b>	<b>21.00</b>
<b>B-ORT-216</b>	1-1/8	1-3/8	1/8	1.109	0.006	0.139	0.004	<b>6.65</b>	<b>11.05</b>	<b>23.00</b>
<b>B-ORT-218</b>	1-1/4	1-1/2	1/8	1.234	0.006	0.139	0.004	<b>7.80</b>	<b>13.00</b>	<b>27.05</b>

### ASSORTMENTS

<b>B-ORT-1000</b>	Contains 105 O-Rings. Five each of B-ORT-003 through B-ORT-028	<b>71.90</b>
<b>B-ORT-1500</b>	Contains 40 O-Rings. Five each of B-ORT-110 through B-ORT-121	<b>32.00</b>
<b>B-ORT-2000</b>	Contains 30 O-Rings. Five each of B-ORT-206 through B-ORT-218	<b>31.95</b>
<b>B-ORT-2500</b>	Contains 175 O-Rings. Five each of B-ORT-003 through B-ORT-218	<b>135.75</b>

## BALLS



We supply balls in a variety of sizes and materials for experimental and laboratory work. All spheres are of high grade virgin material held to precision commercial tolerances. Sphericity is a diameter tolerance measurement that refers to the difference between the largest diameter and the smallest diameter measurable on a single ball. Grade expresses the guaranteed sphericity in millionths of an inch. For example, a 200 grade metal ball is spherically accurate within 200 millionths (0.0002") of an inch; a Grade I plastic ball within 500 millionths (0.0005") of an inch.

## BALLS — Metal

### STAINLESS STEEL TYPE 316

Type 316 Stainless Steel Balls are particularly suitable for applications where severe corrosive conditions exist. Excellent brazing and welding qualities. Nonmagnetic.

**Grade:** 100. **Sphericity:** 0.0001". **Specific Gravity:** 7.972. **Rockwell C:** 25-39.

### STAINLESS STEEL TYPE 316

Part No.	Diameter	Grade	Each	Price		
				10	25	100
B-BNMX-1	1/16"	100	—	1.55	3.25	10.75
B-BNMX-1-1/2	3/32"	100	—	1.20	2.45	8.05
B-BNMX-2	1/8"	100	—	1.05	2.15	7.15
B-BNMX-2-1/2	5/32"	100	—	1.25	2.50	8.25
B-BNMX-3	3/16"	100	—	1.50	3.15	10.50
B-BNMX-4	1/4"	100	—	2.20	4.60	15.25
B-BNMX-5	5/16"	100	—	4.10	8.50	28.25
B-BNMX-6	3/8"	100	—	6.20	13.25	42.40
B-BNMX-8	1/2"	100	1.35	10.50	23.65	85.05
B-BNMX-10	5/8"	100	3.05	24.20	48.35	145.00
B-BNMX-12	3/4"	100	5.55	44.25	88.35	265.00
B-BNMX-16	1"	100	9.00	72.50	142.75	525.00

### ASSORTMENTS

**B-BNMX-100** Ten each size: 1/16", 3/32", 1/8", 3/16", 1/4", 5/16", 3/8", 1/2", 3/4" — 90 pcs. . . . . **71.45**

**B-BNMX-200** Ten each size: 1/4", 3/8", 1/2"; and five each size: 3/4", 1" — 40 pcs. . . . . **85.40**

### METRIC

**Grade:** 100. **Sphericity:** 0.0025 mm. **Specific Gravity:** 7.972. **Rockwell C:** 25-39.

### STAINLESS STEEL TYPE 316

Part No.	Diameter		10	Price	
	Millimeters	Inches		25	100
B-BNMX-1M	1 mm	0.0394"	1.50	3.05	9.50
B-BNMX-2M	2 mm	0.0788"	1.35	2.75	8.50
B-BNMX-3M	3 mm	0.1182"	1.20	2.35	7.25
B-BNMX-4M	4 mm	0.1576"	1.45	2.85	9.10

## BALLS — Metal (cont.)

### STAINLESS STEEL TYPE 302

Stainless Steel Balls Type 302 have good corrosion resistance, low magnetic permeability, excellent for use in handling foodstuffs, sterilizing solutions, oxidizing solutions, oils, most organic acids, etc.

**Grade:** 100. **Sphericity:** 0.0001". **Specific Gravity:** 7.916. **Rockwell C:** 25-39 Non-annealed.

### STAINLESS STEEL TYPE 302

Part No.	Diameter	Grade*	Each	Price		
				10	25	100
<b>B-BX-1</b>	1/16"	100	—	—	<b>1.60</b>	<b>5.25</b>
<b>B-BX-1-1/2</b>	3/32"	100	—	—	<b>1.65</b>	<b>5.35</b>
<b>B-BX-2</b>	1/8"	100	—	—	<b>1.70</b>	<b>5.45</b>
<b>B-BX-2-1/2</b>	5/32"	100	—	—	<b>1.90</b>	<b>6.25</b>
<b>B-BX-3</b>	3/16"	100	—	<b>1.10</b>	<b>2.30</b>	<b>7.65</b>
<b>B-BX-3-1/2</b>	7/32"	100	—	<b>1.45</b>	<b>3.00</b>	<b>9.95</b>
<b>B-BX-4</b>	1/4"	100	—	<b>1.55</b>	<b>3.25</b>	<b>10.75</b>
<b>B-BX-4-1/2</b>	9/32"	100	—	<b>2.10</b>	<b>4.30</b>	<b>14.25</b>
<b>B-BX-5</b>	5/16"	100	—	<b>3.25</b>	<b>6.75</b>	<b>22.50</b>
<b>B-BX-5-1/2</b>	11/32"	100	—	<b>4.00</b>	<b>8.25</b>	<b>27.50</b>
<b>B-BX-6</b>	3/8"	100	—	<b>6.95</b>	<b>14.40</b>	<b>48.00</b>
<b>B-BX-7</b>	7/16"	100	—	<b>7.05</b>	<b>14.70</b>	<b>49.00</b>
<b>B-BX-8</b>	1/2"	100	<b>1.25</b>	<b>10.40</b>	<b>21.60</b>	<b>72.00</b>
<b>B-BX-9</b>	9/16"	100	<b>1.90</b>	<b>15.85</b>	<b>33.00</b>	<b>110.00</b>
<b>B-BX-10</b>	5/8"	100	<b>3.45</b>	<b>28.55</b>	<b>59.50</b>	<b>165.00</b>
<b>B-BX-11</b>	11/16"	100	<b>3.40</b>	<b>28.10</b>	<b>58.50</b>	<b>195.00</b>
<b>B-BX-12</b>	3/4"	100	<b>3.90</b>	<b>32.40</b>	<b>67.50</b>	<b>225.00</b>
<b>B-BX-14</b>	7/8"	100	<b>7.20</b>	<b>59.75</b>	<b>124.50</b>	<b>415.00</b>
<b>B-BX-16</b>	1"	100	<b>13.25</b>	<b>106.00</b>	<b>225.25</b>	<b>720.00</b>

\*Higher grade finishes are available on special order.

### ASSORTMENTS

**B-BX-100** Ten each size: 1/16", 3/32", 1/8", 3/16", 1/4", 5/16", 3/8", 1/2", 3/4" — 90 pcs. . . . . **58.00**  
**B-BX-200** Ten each size: 1/4", 3/8", 1/2"; and five each size: 3/4", 1" — 40 pcs. . . . . **97.05**

### METRIC

**Grade:** 100. **Sphericity:** 0.0025 mm. **Specific Gravity:** 7.916. **Rockwell C:** 25-39.

### STAINLESS STEEL TYPE 302

Part No.	Diameter		10	Price	
	Millimeters	Inches		25	100
<b>B-BX-1M</b>	1 mm	0.0394"	<b>1.60</b>	<b>2.95</b>	<b>8.00</b>
<b>B-BX-2M</b>	2 mm	0.0788"	<b>1.55</b>	<b>2.85</b>	<b>7.95</b>
<b>B-BX-3M</b>	3 mm	0.1182"	<b>1.45</b>	<b>2.60</b>	<b>7.50</b>



**Need a different size or grade?**

**Call Purchasing Services Toll Free — 1-888-455-9712**

## BALLS — Metal (cont.)

### STAINLESS STEEL TYPE 440C

Made of high-carbon chromium steel, corrosion resisting, hardened steel balls perform well in high wear and abrasion applications. Primarily used for bearings and valve parts, balls are moderately magnetic.

**Grade:** 100. **Sphericity:** 0.0001". **Specific Gravity:** 7.75. **Rockwell C:** 58-65.

### STAINLESS STEEL TYPE 440C

Part No.	Diameter	Grade	Each	10	Price	
					25	100
B-B4X-1	1/16"	100	—	—	1.80	5.95
B-B4X-1-1/2	3/32"	100	—	—	1.65	5.45
B-B4X-2	1/8"	100	—	—	1.15	3.75
B-B4X-2-1/2	5/32"	100	—	—	1.45	4.75
B-B4X-3	3/16"	100	—	—	1.60	5.25
B-B4X-4	1/4"	100	—	1.20	2.50	8.25
B-B4X-5	5/16"	100	—	2.25	4.65	15.50
B-B4X-6	3/8"	100	—	3.30	6.85	22.75
B-B4X-8	1/2"	100	—	7.55	15.75	52.50
B-B4X-10	5/8"	100	2.00	16.60	34.60	115.25
B-B4X-12	3/4"	100	3.55	20.55	42.75	142.50
B-B4X-16	1"	100	9.05	71.30	148.50	495.00

### ASSORTMENTS

**B-B4X-100** Ten each size: 1/16", 3/32", 1/8", 3/16", 1/4", 5/16", 3/8", 1/2", 3/4" — 90 pcs. . . . . **39.75**

**B-B4X-200** Ten each size: 1/4", 3/8", 1/2"; and five each size: 3/4", 1" — 40 pcs. . . . . **61.45**

### METRIC

**Grade:** See Chart. **Sphericity:** 0.0006mm. **Specific Gravity:** 7.75. **Rockwell C:** 58-65.

### STAINLESS STEEL TYPE 440C

Part No.	Diameter		Grade	10	Price	
					25	100
B-B4X-01M	1mm	(0.0394")	24	1.00	2.10	5.90
B-B4X-02M	2mm	(0.0788")	24	1.05	2.15	6.30
B-B4X-03M	3mm	(0.1182")	24	1.15	2.25	6.70
B-B4X-04M	4mm	(0.1576")	24	1.40	3.15	10.05
B-B4X-05M	5mm	(0.1969")	25	1.60	3.60	11.55
B-B4X-06M	6mm	(0.2362")	25	1.70	3.85	12.35



**Synthetic Ruby and Sapphire Balls on page 154**

## BALLS — Metal (cont.)

### ALUMINUM

Recommended for applications where light weight and resistance to certain corrosions are required. Aluminum Balls are generally resistant to acetic acid, acetone, carbonic acid and petroleum products. Not recommended for most alkalies, chlorides and oxides. Type of aluminum may or may not change depending upon availability.  
**Grade and Hardness:** See chart below. **Specific Gravity:** 2017T = 2.79. 1100H = 2.71.

### ALUMINUM

Part No.	Diameter	Grade	Alloy	Brinell Hardness	Each	Price		
						10	25	100
<b>B-BA-1</b>	1/16"	200	2017-T4	105	—	<b>12.85</b>	<b>25.70</b>	<b>85.60</b>
<b>B-BA-1-1/2</b>	3/32"	2000	1100-H16	38	—	<b>4.30</b>	<b>8.05</b>	<b>26.75</b>
<b>B-BA-2</b>	1/8"	2000	1100-H16	38	—	<b>8.55</b>	<b>17.15</b>	<b>53.50</b>
<b>B-BA-3</b>	3/16"	200	2017-T4	105	—	<b>15.10</b>	<b>31.55</b>	<b>101.65</b>
<b>B-BA-4</b>	1/4"	2000	1100-H16	38	—	<b>3.30</b>	<b>7.15</b>	<b>24.50</b>
<b>B-BA-5</b>	5/16	1000	1100-H16	38	—	<b>3.50</b>	<b>7.45</b>	<b>26.75</b>
<b>B-BA-6</b>	3/8"	200	2017-T4	105	<b>4.00</b>	<b>36.95</b>	<b>85.05</b>	<b>306.05</b>
<b>B-BA-8</b>	1/2"	200	2017-T4	105	<b>6.75</b>	<b>57.60</b>	<b>120.00</b>	<b>425.00</b>
<b>B-BA-12</b>	3/4"	200	2017-T4	105	<b>17.70</b>	<b>153.75</b>	<b>345.95</b>	—
<b>B-BA-16</b>	1"	1000	2017-T4	105	<b>18.50</b>	<b>166.50</b>	<b>358.75</b>	—

### BRASS — C-260

If you don't need the corrosive resistance of bronze, then brass is a less expensive alternative.

**Grade and Sphericity:** See chart below. **Specific Gravity:** 8.57. **Rockwell B:** 75-87.

### BRASS — C-260

Part No.	Diameter	Grade	Sphericity	Each	Price		
					10	25	100
<b>B-BBR-020</b>	.020"	200	0.0002"	—	<b>1.40</b>	<b>2.85</b>	<b>9.50</b>
<b>B-BBR-0</b>	1/32"	200		—	<b>1.30</b>	<b>2.65</b>	<b>8.75</b>
<b>B-BBR-1</b>	1/16"	200		—	<b>1.35</b>	<b>2.70</b>	<b>9.00</b>
<b>B-BBR-1-1/2</b>	3/32"	200		—	<b>1.15</b>	<b>2.40</b>	<b>7.95</b>
<b>B-BBR-2</b>	1/8"	200		—	—	<b>1.35</b>	<b>4.50</b>
<b>B-BBR-2-1/2</b>	5/32"	200		—	—	<b>1.60</b>	<b>5.25</b>
<b>B-BBR-3</b>	3/16"	200		—	—	<b>1.65</b>	<b>5.50</b>
<b>B-BBR-4</b>	1/4"	200		—	<b>1.80</b>	<b>3.75</b>	<b>12.35</b>
<b>B-BBR-5</b>	5/16"	200		—	<b>3.25</b>	<b>6.75</b>	<b>22.50</b>
<b>B-BBR-6</b>	3/8"	200		—	<b>4.35</b>	<b>9.00</b>	<b>29.95</b>
<b>B-BBR-8</b>	1/2"	200		—	<b>7.20</b>	<b>15.00</b>	<b>49.95</b>
<b>B-BBR-10</b>	5/8"	200		—	<b>1.75</b>	<b>14.40</b>	<b>30.00</b>
<b>B-BBR-12</b>	3/4"	500		0.0005"	<b>3.45</b>	<b>28.80</b>	<b>60.00</b>
<b>B-BBR-16*</b>	1"	500	<b>6.85</b>		<b>56.90</b>	<b>118.50</b>	

\* C-270. **Specific Gravity:** 8.47.

### ASSORTMENTS

**B-BBR-100** Ten each size: 1/16", 3/32", 1/8", 3/16", 1/4", 5/16", 3/8", 1/2", 3/4" — 90 pcs. . . . **50.30**

### METRIC

**Grade:** 200. **Sphericity:** 0.0050 mm. **Specific Gravity:** 8.57. **Rockwell B:** 75-87.  
 Higher grade finishes are available on special order.

### BRASS — C-260

Part No.	Diameter		10	Price	
	Millimeters	Inches		25	100
<b>B-BBR-1M</b>	1 mm	0.0394"	<b>1.90</b>	<b>3.90</b>	<b>13.00</b>
<b>B-BBR-2M</b>	2 mm	0.0788"	<b>2.10</b>	<b>4.35</b>	<b>14.50</b>
<b>B-BBR-3M</b>	3 mm	0.1182"	<b>2.35</b>	<b>4.90</b>	<b>16.25</b>
<b>B-BBR-4M</b>	4 mm	0.1576"	<b>2.55</b>	<b>5.25</b>	<b>17.50</b>

Visit [www.smallparts.com](http://www.smallparts.com) E-mail [parts@smallparts.com](mailto:parts@smallparts.com)

## BALLS — Metal (cont.)

### BRONZE — C-220

Bronze Balls are extremely tough with good corrosion resistance. Excellent for valve applications.  
**Grade:** 200. **Sphericity:** 0.0002". **Specific Gravity:** 8.42. **Rockwell B:** 75-98.

### BRONZE— C-220

Part No.	Diameter	Grade	Each	Price		
				10	25	100
<b>B-BB-1</b>	1/16"	200	<b>3.40</b>	<b>28.10</b>	<b>58.50</b>	<b>195.00</b>
<b>B-BB-1-1/2</b>	3/32"	200	<b>2.15</b>	<b>17.65</b>	<b>36.80</b>	<b>122.65</b>
<b>B-BB-2</b>	1/8"	200	<b>1.35</b>	<b>10.90</b>	<b>22.70</b>	<b>75.65</b>
<b>B-BB-3</b>	3/16"	200	<b>2.20</b>	<b>18.30</b>	<b>38.10</b>	<b>126.95</b>
<b>B-BB-5</b>	5/16"	200	<b>2.35</b>	<b>19.50</b>	<b>40.65</b>	<b>135.45</b>
<b>B-BB-6</b>	3/8"	200	<b>2.90</b>	<b>23.90</b>	<b>49.75</b>	<b>165.80</b>
<b>B-BB-12</b>	3/4"	200	<b>5.55</b>	<b>46.45</b>	<b>96.80</b>	<b>322.60</b>

### CHROME STEEL

High hardness, excellent wear resistance, used in precision bearings and accurate valve applications.  
**Grade:** 25. **Sphericity:** 0.000025". **Specific Gravity:** 7.833. **Rockwell C:** 60-67.

### CHROME STEEL — 52100 AISI

Part No.	Diameter	Grade	Each	Price		
				10	25	100
<b>B-BS-00</b>	1/64"	25	—	<b>6.80</b>	<b>14.20</b>	<b>47.25</b>
<b>B-BS-0</b>	1/32"	25	—	—	<b>1.80</b>	<b>6.00</b>
<b>B-BS-1</b>	1/16"	25	—	—	<b>1.60</b>	<b>5.30</b>
<b>B-BS-1-1/2</b>	3/32"	25	—	—	<b>1.20</b>	<b>3.95</b>
<b>B-BS-2</b>	1/8"	25	—	—	<b>1.00</b>	<b>2.95</b>
<b>B-BS-2-1/2</b>	5/32"	25	—	—	<b>1.00</b>	<b>3.15</b>
<b>B-BS-3</b>	3/16"	25	—	—	<b>1.00</b>	<b>3.30</b>
<b>B-BS-3-1/2</b>	7/32"	25	—	—	<b>1.05</b>	<b>3.50</b>
<b>B-BS-4</b>	1/4"	25	—	—	<b>1.20</b>	<b>3.95</b>
<b>B-BS-4-1/2</b>	9/32"	25	—	—	<b>1.65</b>	<b>5.50</b>
<b>B-BS-5</b>	5/16"	25	—	—	<b>1.75</b>	<b>5.75</b>
<b>B-BS-5-1/2</b>	11/32"	25	—	<b>1.15</b>	<b>2.40</b>	<b>8.00</b>
<b>B-BS-6</b>	3/8"	25	—	<b>1.30</b>	<b>2.70</b>	<b>9.00</b>
<b>B-BS-7</b>	7/16"	25	—	<b>1.70</b>	<b>3.45</b>	<b>11.50</b>
<b>B-BS-8</b>	1/2"	25	—	<b>2.15</b>	<b>4.45</b>	<b>14.75</b>
<b>B-BS-10</b>	5/8"	25	—	<b>4.00</b>	<b>8.25</b>	<b>27.50</b>
<b>B-BS-12</b>	3/4"	25	<b>1.00</b>	<b>7.55</b>	<b>15.75</b>	<b>52.50</b>
<b>B-BS-16</b>	1"	25	<b>2.00</b>	<b>16.55</b>	<b>34.50</b>	<b>115.00</b>

### ASSORTMENTS

**B-BS-100** 25 each size. B-BS-1 through B-BS-5, 10 each size U-BS-6,8,12 — 180 pcs. . . . . **23.00**  
**B-BS-200** 25 each size. B-BS-4, 10 each size B-BS-6,8,12, 5 each size B-BS-16 — 60 pcs. . . . . **22.85**

### METRIC

**Grade:** 25. **Sphericity:** 0.0006 mm. **Specific Gravity:** 7.833. **Rockwell C:** 60-67.

### CHROME STEEL — 52100 AISI

Part No.	Diameter		10	Price	
	Millimeters	Inches		25	100
<b>B-BS-1M</b>	1 mm	0.0394"	<b>1.00</b>	<b>2.10</b>	<b>6.90</b>
<b>B-BS-2M</b>	2 mm	0.0788"	<b>1.40</b>	<b>2.90</b>	<b>9.65</b>
<b>B-BS-3M</b>	3 mm	0.1182"	<b>1.50</b>	<b>3.05</b>	<b>10.15</b>



## BALLS — Metal (cont.)

### TUNGSTEN CARBIDE

Extreme hardness and wear resistance make these balls an excellent choice for bearings, ball screws, valves and flowmeters. Can also be used for coining and as pivots, detents and tips for gauges and tracers. Tungsten Carbide Balls are used for ballizing, hole sizing, gauging and checking.

**Grade:** 25. **Sphericity:** 0.000025". **Specific Gravity:** 14.95. **Rockwell A:** 91.5.

### TUNGSTEN CARBIDE

Part No.	Diameter	Each	Price	
			10	25
<b>B-BTC-1</b>	1/16"	<b>3.25</b>	<b>26.75</b>	<b>53.50</b>
<b>B-BTC-1-1/2</b>	3/32"	<b>3.35</b>	<b>27.95</b>	<b>55.90</b>
<b>B-BTC-2</b>	1/8"	<b>3.45</b>	<b>28.50</b>	<b>57.00</b>
<b>B-BTC-3</b>	3/16"	<b>3.90</b>	<b>32.50</b>	<b>65.00</b>
<b>B-BTC-4</b>	1/4"	<b>5.45</b>	<b>45.50</b>	<b>91.00</b>
<b>B-BTC-6</b>	3/8"	<b>10.15</b>	<b>84.40</b>	—
<b>B-BTC-8</b>	1/2"	<b>16.80</b>	<b>140.00</b>	—

### ASSORTMENTS

**B-BTC-100** Two each size: 1/16", 3/32", 1/8", 3/16", 1/4", 3/8", 1/2" — 14 pcs. . . . . **86.30**

### METRIC

**Grade:** 25. **Sphericity:** 0.0006 mm. **Specific Gravity:** 14.95. **Rockwell A:** 91.5.

### TUNGSTEN CARBIDE

Part No.	Diameter		Each	Price	
	Millimeters	Inches		10	25
<b>B-BTC-1M</b>	1 mm	0.0394"	<b>2.00</b>	<b>16.50</b>	<b>33.00</b>
<b>B-BTC-2M</b>	2 mm	0.0788"	<b>2.40</b>	<b>19.95</b>	<b>39.90</b>
<b>B-BTC-3M</b>	3 mm	0.1182"	<b>2.60</b>	<b>21.50</b>	<b>43.00</b>

## BALL BURNISHING

Ball Burnishing, or "ballizing" is used to create dimensionally precise holes that also have smooth, high-density surfaces.

In this process a bore can be formed, sized, finished and deburred — all in one operation — by refining the molecular structure of the hole surface. This is accomplished by using high pressure to force an oversized ball through an undersized hole. Seizing, galling and distortion of both workpiece and ball are prevented by applying lubricant.

Ballizing produces smooth surfaces in various type of holes, and may be used for finishing surfaces in elbows, bends, and interrupted segments. Ballizing is also used for coining or staking parts together, and for expanding or changing wall thickness. Traditional ball burnishing methods include use of an arbor press or other mechanical means for manual ballizing. Automatic recirculation machines have been developed to achieve high speed production. They are controlled either with air or hydraulically.

Ballizing is normally performed with precision formed balls made from very hard metals, typically Tungsten Carbide or Chrome Steel. It has been used effectively on both hard and soft metals.

## BALLS — Synthetic

### ALUMINUM OXIDE

The material characteristics of Aluminum Oxide Balls are comparable to Synthetic Ruby and Sapphire Balls. However, the polycrystalline structure leads to a slightly reduced density and increased stability during changes in temperature. Aluminum Oxide Balls are well suited to abrasive operational conditions. Their excellent biocompatibility has made them a standard component for endoprosthesis joints. They are off-white in color. Larger sizes are available by special order. **Call Purchasing Services — 1-888-455-9712.**

**Grade:** 10. **Sphericity:** 0.00001. **Specific Gravity:** 3.95.

### ALUMINUM OXIDE

Part No.	Diameter	Grade	Each	Price	
				10	25
<b>B-BAO-00</b>	1/64"	10	<b>5.95</b>	<b>49.50</b>	<b>103.15</b>
<b>B-BAO-0</b>	1/32"	10	<b>2.95</b>	<b>24.60</b>	<b>51.25</b>
<b>B-BAO-1</b>	1/16"	10	<b>2.95</b>	<b>24.60</b>	<b>51.25</b>
<b>B-BAO-1-1/2</b>	3/32"	10	<b>2.95</b>	<b>24.60</b>	<b>51.25</b>
<b>B-BAO-2</b>	1/8"	10	<b>2.95</b>	<b>24.60</b>	<b>51.25</b>
<b>B-BAO-4</b>	1/4"	10	<b>3.40</b>	<b>28.35</b>	<b>59.00</b>
<b>B-BAO-8</b>	1/2"	10	<b>7.20</b>	<b>60.00</b>	<b>125.00</b>

Should you require a ceramic ball with unusually high fracture toughness and flexural strength, coupled with a near-to-steel low modulus of elasticity, zirconium oxide balls are available. **Call Purchasing Services — 1-888-455-9712.**

### RUBY

Characteristics such as extreme hardness, wear resistance, non-corrosiveness and chemical inertness make Synthetic Ruby Balls suitable for anti-friction bearings, contact points, ball and valve seats, linear slides, gyroscopes and probe points. They also provide high mechanical strength, high thermal conductivity, high temperature stability along with low weight, low porosity and low dielectric loss.

**Grade:** 25. **Sphericity:** 0.000025". **Specific Gravity:** 3.98.

### RUBY

Part No.	Diameter	Grade	Each	Price	
				10	25
<b>B-BRB-00</b>	1/64"	25	<b>3.45</b>	<b>28.40</b>	<b>59.10</b>
<b>B-BRB-0</b>	1/32"	25	<b>3.45</b>	<b>28.40</b>	<b>59.10</b>
<b>B-BRB-1</b>	1/16"	25	<b>4.00</b>	<b>33.45</b>	<b>69.65</b>
<b>B-BRB-1-1/2</b>	3/32"	25	<b>4.00</b>	<b>33.45</b>	<b>69.65</b>
<b>B-BRB-2</b>	1/8"	25	<b>4.00</b>	<b>33.45</b>	<b>69.65</b>

### SAPPHIRE

Like ruby, sapphire is an ultra-hard, mono-crystalline, chemically inert material. However, Synthetic Sapphire Balls are transparent. They have excellent optical properties, including a high refractive index of 1.76. In fact, half-spheres of this material are used as scratch-proof lenses for opto-coupling devices or flow cells in analytical detectors.

**Grade:** 25. **Sphericity:** 0.000025". **Specific Gravity:** 3.98.

### SAPPHIRE

Part No.	Diameter	Grade	Each	Price	
				10	25
<b>B-BSP-00</b>	1/64"	25	<b>3.45</b>	<b>28.40</b>	<b>59.10</b>
<b>B-BSP-0</b>	1/32"	25	<b>3.45</b>	<b>28.40</b>	<b>59.10</b>
<b>B-BSP-1</b>	1/16"	25	<b>4.00</b>	<b>33.45</b>	<b>69.65</b>
<b>B-BSP-1-1/2</b>	3/32"	25	<b>4.00</b>	<b>33.45</b>	<b>69.65</b>
<b>B-BSP-2</b>	1/8"	25	<b>4.00</b>	<b>33.45</b>	<b>69.65</b>

## BALLS — Plastic

### ACRYLIC — Polished

Good resistance to weather and sunlight, good abrasion resistance. Acrylic Balls are used in check-valves, visual flow equipment and many laboratory and experimental applications. Water-clear transparent. Polished.

Grade 2. Sphericity: 0.001". Specific Gravity: 1.17.

### ACRYLIC — Methyl Methacrylate

Part No.	Diameter	Each	Price		
			10	25	100
B-BL-2	1/8"	—	—	1.20	4.00
B-BL-3	3/16"	—	—	1.55	5.10
B-BL-4	1/4"	—	—	1.80	5.95
B-BL-5	5/16"	—	1.15	2.35	7.80
B-BL-6	3/8"	—	1.75	3.60	12.00
B-BL-8	1/2"	—	3.25	6.70	22.25
B-BL-12	3/4"	1.00	7.15	14.90	49.60
B-BL-16	1"	2.35	18.95	39.50	131.60

### ASSORTMENTS

**B-BL-100** Twenty-five each size: 1/8", 3/16", 1/4", 5/16", 3/8", 1/2", 3/4" — 175 pcs. . . . . **35.00**  
**B-BL-200** Twenty-five each size: 1/4", 3/8", 1/2"; and ten each size: 3/4", 1" — 95 pcs. . . . . **40.50**

### NYLON 6/6

Extremely tough, resistant to alkalis, weak acids and most organic solvents. Very low water absorption. Nylon Balls are useful in check valves and blood transfusion equipment or any application where abrasion or wear is a factor. Non-polished. Grade: 2. Sphericity: 0.001". Specific Gravity: 1.14.

### NYLON 6/6

Part No	Diameter	Each	Price		
			10	25	100
B-BN-1-1/2	3/32"	—	—	1.35	4.50
B-BN-2	1/8"	—	—	1.55	5.10
B-BN-3	3/16"	—	1.10	2.30	7.60
B-BN-4	1/4"	—	1.35	2.75	9.05
B-BN-5	5/16"	—	1.95	4.00	13.30
B-BN-6	3/8"	—	2.55	5.25	17.50
B-BN-8	1/2"	—	4.60	9.55	31.80
B-BN-12	3/4"	1.15	9.45	19.65	65.40
B-BN-16	1"	2.05	17.05	35.50	118.20

### ASSORTMENTS

**B-BN-150** Ten each size: 3/32", 1/8", 3/16", 1/4", 5/16", 3/8", 1/2", 3/4" — 80 pcs. . . . . **26.05**  
**B-BN-200** Ten each size: 1/4", 3/8", 1/2"; and five each size: 3/4", 1" — 40 pcs. . . . . **24.95**

### POLYPROPYLENE

Very resistant to most acids and alkalis, Polypropylene Balls are useful for vapor and evaporation shields in electrolytic solutions. Because their Specific Gravity is less than water, they are excellent for liquid level float applications. Non-polished. Grade: 2. Sphericity: 0.001". Specific Gravity: 0.91.

### POLYPROPYLENE

Part No.	Diameter	Each	Price		
			10	25	100
B-BPP-2	1/8"	—	—	1.10	3.55
B-BPP-4	1/4"	—	—	1.80	5.85
B-BPP-6	3/8"	—	1.10	2.25	7.50
B-BPP-8	1/2"	—	1.35	2.75	9.05
B-BPP-12	3/4"	—	2.95	6.10	20.3
B-BPP-16	1"	—	4.70	9.70	32.20

### ASSORTMENTS

**B-BPP-100** Twenty-five each size: 1/8", 1/4", 3/8", 1/2", 3/4", 1" — 150 pcs. . . . . **21.35**

Visit [www.smallparts.com](http://www.smallparts.com) E-mail [parts@smallparts.com](mailto:parts@smallparts.com)

## BALLS — Plastic (cont.)

### ACETAL (DELTRIN®)— Polished

Acetal (Delrin®) Balls have all the great mechanical properties of the fine quality acetal resins they are made from, including high intensity strength, rigidity, outstanding resistance to abrasion and most solvents. As an acetal homopolymer, Delrin® has the highest fatigue endurance of any unfilled commercial thermoplastic. Used in ball bearing and check valve applications. Opaque White.

Grade: 1. Sphericity: 0.0005". Specific Gravity: 1.4.

### ACETAL (DELTRIN®)

©E.I. DuPont

Part No.	Diameter	Each	Price		
			10	25	100
B-BDLR-1	1/16"	—	1.50	3.10	10.20
B-BDLR-1-1/2	3/32"	—	—	1.80	6.00
B-BDLR-2	1/8"	—	—	1.45	4.70
B-BDLR-3	3/16"	—	1.10	2.30	7.65
B-BDLR-4	1/4"	—	1.45	3.00	9.90
B-BDLR-5	5/16"	—	1.85	3.80	12.55
B-BDLR-6	3/8"	—	2.25	4.65	15.40
B-BDLR-8	1/2"	—	4.75	9.85	32.80
B-BDLR-12	3/4"	1.20	9.90	20.60	68.70
B-BDLR-16	1"	2.20	10.05	37.60	125.30

### ASSORTMENTS

**B-BDLR-100** Ten each size: 1/16", 3/32", 1/8", 3/16", 1/4", 5/16", 3/8", 1/2", 3/4" — 90 pcs. . . . . **27.80**

**B-BDLR-200** Ten each size: 1/4", 3/8", 1/2"; and five each size: 3/4", 1" — 40 pcs. . . . . **25.80**

### PTFE (TEFLON®)

Not affected by any known acids or alkalies, opaque PTFE (Polytetrafluoroethylene) Balls do not absorb water and can withstand temperatures to 550°F (288°C). Useful in many laboratory procedures. Non-polished.

Grade: 2. Sphericity: 0.001". Specific Gravity: 2.3.

### PTFE(TEFLON®)

©E.I. DUPONT

Part No.	Diameter	Each	Price		
			10	25	100
B-BT-1-1/2	3/32"	—	1.60	3.25	10.75
B-BT-2	1/8"	—	1.75	3.60	11.95
B-BT-3	3/16"	—	2.15	4.45	14.75
B-BT-4	1/4"	—	2.35	4.90	16.25
B-BT-5	5/16"	—	4.20	8.70	28.95
B-BT-6	3/8"	—	4.75	9.85	32.75
B-BT-8	1/2"	1.10	9.00	18.75	62.50
B-BT-12	3/4"	3.35	27.70	57.65	192.15
B-BT-16	1"	5.20	43.20	89.95	299.70

### ASSORTMENTS

**B-BT-150** Ten each size: 3/32", 1/8", 3/16", 1/4", 5/16", 3/8", 1/2", 3/4" — 80 pcs. . . . . **54.25**



**For a specific material not shown,  
call Purchasing Services Toll Free — 1-888-455-9712**

## BALLS — Elastomeric

### VITON

Viton® (Fluorel) is a premium synthetic for applications requiring rubber-like resiliency and superior resistance to chemicals and industrial fluids. This high performance elastomeric also offers excellent continuous service temperature resistance, -5° to 450°F (-15° to 232°C). Viton Balls will maintain good mechanical properties even when used in contact with hydraulic oils, processing oils, lubricating oils, gasoline solvents, diesel fuel, and hot air. Please use extreme care with regard to burning Viton. When burned, it gives off highly carcinogenic hydrogen fluoride. The mere handling of just-burned Viton can also be dangerous. Color: Black.

**Specific Gravity:** 1.81 - 1.87. **Shore A:** 75.

### VITON

Part No.	Diameter	Price		
		10	25	100
<b>B-BV-03</b>	3/16"	<b>4.45</b>	<b>9.30</b>	<b>30.10</b>
<b>B-BV-04</b>	1/4"	<b>4.85</b>	<b>9.70</b>	<b>31.05</b>
<b>B-BV-05</b>	5/16"	<b>7.40</b>	<b>14.75</b>	<b>47.20</b>
<b>B-BV-06</b>	3/8"	<b>11.65</b>	<b>23.30</b>	<b>74.60</b>

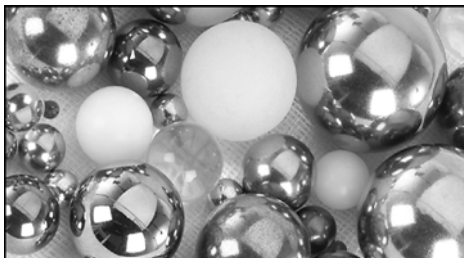
### BUNA-N

Firm, rugged, and flexible, Buna-N (Nitrile) is a synthetic rubber compound (butadiene and acrylonitrile). It is inherently resistant to petroleum based products and is dependable over a temperature range of -25° to 275°F (-32° to 135°C), which covers most industrial applications. Poor resistance to the swelling action of oxygenated solvents such as acetone, methyl ethyl ketone and other ketones. Good resistance to acids and bases except those having strong oxidizing effects. Color: Black.

**Specific Gravity:** 1.18 - 1.24. **Shore A:** 75.

### BUNA-N

Part No.	Diameter	Price		
		10	25	100
<b>B-BBN-03</b>	3/16"	<b>2.90</b>	<b>5.80</b>	<b>19.10</b>
<b>B-BBN-04</b>	1/4"	<b>2.65</b>	<b>5.25</b>	<b>17.40</b>
<b>B-BBN-05</b>	5/16"	<b>3.45</b>	<b>6.85</b>	<b>22.40</b>
<b>B-BBN-06</b>	3/8"	<b>4.65</b>	<b>9.25</b>	<b>29.90</b>



### BALLS

We supply balls in a variety of sizes and materials for experimental and laboratory work. All spheres are of high grade virgin material held to precision commercial tolerances.

**Sphericity** is a diameter tolerance measurement that refers to the difference between the largest diameter and the smallest diameter measurable on a single ball.

**Grade** expresses the guaranteed sphericity in millionths of an inch.

**For example**, a 200 grade metal ball is spherically accurate within 200 millionths (0.0002") of an inch; a Grade I plastic ball within 500 millionths (0.0005") of an inch.

**Balls — Starts on page 148**

## WIRE — Aluminum

### ALUMINUM TYPE 1100 — Straight, Work Hardened

This non-heat treatable Alloy Type 1100 Aluminum, is used for heat exchanger fins, decorative parts and trims. We provide this alloy in light weight wire form for general purpose use. They are easily soldered and brazed. These hard-to-find small diameter wires come in 12" and 36" straight lengths.

#### ALUMINUM — Type 1100

Order Example: **B-ZWA-1-36-03** is 0.062" dia. × 12", package of 3

Part No.	Diameter	Price Per Package 12" Length			Price Per Package 36" Length		
		Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06	Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06
<b>B-ZWA-0-12</b>	0.032"	<b>1.75</b>	<b>4.75</b>	<b>8.40</b>	—	—	—
<b>B-ZWA-1-36</b>	0.062"	—	—	—	<b>2.00</b>	<b>5.35</b>	<b>9.50</b>
<b>B-ZWA-1-1/2-36</b>	0.094"	—	—	—	<b>1.30</b>	<b>3.50</b>	<b>6.25</b>

## WIRE — Brass

### BRASS TYPE C260 — Straight

Greater strength and stiffness than Copper Wire, this type C260 brass wire is still malleable and easy to shape. Exhibits good corrosion resistance, and can be easily soldered, brazed and plated. This wire is available in nine hard-to-find small diameters, and comes in 36" straight lengths.

#### BRASS — Type C260

Order Example: **B-BW-045-03** is 0.045" dia. × 36", package of 3

Part No.	Diameter	Pkg. of 1 -01	Price Per Package	
Part No.	Diameter	Pkg. of 1 -01	Pkg. of 3 -03	Pkg. of 6 -06
<b>B-BW-012</b>	0.012"	<b>2.30</b>	<b>6.15</b>	<b>10.95</b>
<b>B-BW-016</b>	0.016"	<b>2.50</b>	<b>6.75</b>	<b>12.00</b>
<b>B-BW-020</b>	0.020"	<b>1.55</b>	<b>4.15</b>	<b>7.35</b>
<b>B-BW-025</b>	0.025"	<b>1.85</b>	<b>4.95</b>	<b>8.75</b>
<b>B-BW-032</b>	0.032"	<b>1.55</b>	<b>4.15</b>	<b>7.35</b>
<b>B-BW-040</b>	0.040"	<b>1.65</b>	<b>4.45</b>	<b>7.90</b>
<b>B-BW-045</b>	0.045"	<b>1.55</b>	<b>4.15</b>	<b>7.35</b>
<b>B-BW-050</b>	0.050"	<b>1.65</b>	<b>4.45</b>	<b>7.90</b>
<b>B-BW-055</b>	0.055"	<b>1.75</b>	<b>4.75</b>	<b>8.40</b>

## WIRE — Copper

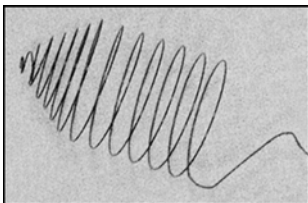
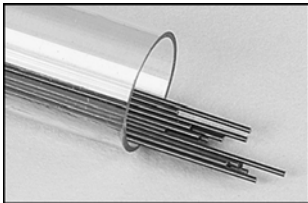
### COPPER ANNEALED TYPE C110 ASTM B-3

This soft temper annealed Copper wire is often used in coppersmithing, art studios and laboratories for bundling, tying, electrical winding, and for free standing shapes. In addition, this wire is used in the sport fishing world as rigging wire, since it is very malleable and corrosion resistant. Easily soldered or brazed. Available in 1-pound spools.

#### COPPER — Annealed Type C110 ASTM B-3

Part No.	Diameter	Diameter Tolerance	Feet Per Lb.	Price Each
<b>B-CAW-012</b>	0.012"	±0.002"	2062	<b>27.25</b>
<b>B-CAW-015</b>	0.015"	±0.002"	1294	<b>26.25</b>
<b>B-CAW-020</b>	0.020"	±0.002"	813	<b>23.65</b>
<b>B-CAW-032</b>	0.032"	±0.002"	322	<b>23.15</b>

## WIRE — Nitinol



*Nitinol alloys have the intriguing ability to recover a pre-set shape even after drastic distortion.*

### Super Flexibility

Nitinol gets its name from its elemental composition and the discovery team who first recognized the potential of this powerful alloy (Nickel / Titanium / Naval Ordnance Laboratory).

Nitinol alloys have the intriguing ability to recover a preset shape, even after drastic distortion. Composition is typically 55%-56% Nickel and 44%-45% Titanium, but slight adjustments of this ratio can significantly impact the properties of the material. There are two primary but overlapping categories of Nitinol. The first, known as "SuperElastic", is characterized by extraordinary kink resistance and flexibility. The second category, "Shape Memory" alloys, is valued for the Nitinol's capacity to recover a pre-set shape when heated above its transformation temperature.

Our Nitinol Wire is a SuperElastic alloy which can be strained at least eight to ten times more than ordinary spring steel without permanent deformation. It can be rather severely compressed, bent or otherwise distorted, but snaps back to its preset or "trained shape" with considerable force that can be used as work. This impressive "memory" takes advantage of stress-induced martensitic transformation.

This wire's annealed temper has a programmed straight shape, but due to its flexible properties, it can be spooled without effecting a permanent set. A new memory is imparted by restraining the material in exactly the shape required and heating to a temperature above 932°F (500°C) for a minimum of five minutes. The shape will be set upon cooling and will exhibit the same flexibility and resistance to deformation as the original wire. And it can be repeatedly retrained to achieve new shapes.

Some examples of products that use Nitinol alloys: mechanical switching devices and electronically controlled valves; robotic actuators; prosthetics; other medical instruments and implants, including stents that recover a preset diameter when body temperature is reached, keeping vessels open; eyeglass frames that, when bent, return to their preset form in hot water; shower protection devices that shut down water flow when scalding temperature is reached, allowing flow to resume when an acceptable temperature is restored.

**Specifications:** 56% Nickel, 44% Titanium. Straight annealed temper. Natural Oxide finish.

### NITINOL — Type 1

Order Example: **B-NW-005-12** is 0.005" dia. × 12"

Part No.	Diameter	Price	
		-12 12"	-36 36"
<b>B-NW-005</b>	0.005"	<b>4.10</b>	<b>6.80</b>
<b>B-NW-006</b>	0.006"	<b>4.45</b>	<b>7.40</b>
<b>B-NW-009</b>	0.009"	<b>4.85</b>	<b>8.05</b>
<b>B-NW-011</b>	0.011"	<b>5.55</b>	<b>9.20</b>
<b>B-NW-013</b>	0.013"	<b>6.10</b>	<b>10.10</b>
<b>B-NW-015</b>	0.015"	<b>6.60</b>	<b>10.95</b>
<b>B-NW-019</b>	0.019"	<b>7.45</b>	<b>12.40</b>

Other lengths are available. Please **call Purchasing Services toll free — 1-888-455-9712.**

**We have state-of-the-art machine shop capabilities and will be pleased to quote on your specific project. Call Manufacturing Services at 1-800-339-2116.**

## WIRE, MUSIC — Spring Steel, Straightened



Straightened, hardened Spring Steel Music Wire is provided in two lengths, 18" and 36". Tensile strength is at least 220,000 psi. This material can only be cut by a cutting wheel or carbide jawed cutters. Store in protective oil. Packages of ten.

### STEEL — ASTM A228

Order Example: **B-SMW-020-18** is 1 Pkg. of Ten 0.020" dia. x 18"

Part No.	Diameter	Tolerances	-18	-36
			Ten 18" Lengths Price Per Package	Ten 36" Lengths Price Per Package
<b>B-SMW-005</b>	0.005"	± 0.0003"	<b>6.50</b>	<b>10.85</b>
<b>B-SMW-007</b>	0.007"	± 0.0003"	<b>6.20</b>	<b>10.25</b>
<b>B-SMW-009</b>	0.009"	± 0.0003"	<b>5.45</b>	<b>9.10</b>
<b>B-SMW-012</b>	0.012"	± 0.0003"	<b>5.25</b>	<b>8.70</b>
<b>B-SMW-015</b>	0.015" (1/64")	± 0.0003"	<b>3.35</b>	<b>5.55</b>
<b>B-SMW-020</b>	0.020"	± 0.0003"	<b>2.05</b>	<b>3.40</b>
<b>B-SMW-025</b>	0.025"	± 0.0005"	<b>2.25</b>	<b>3.95</b>
<b>B-SMW-032</b>	0.032" (1/32")	± 0.0005"	<b>3.45</b>	<b>5.75</b>
<b>B-SMW-039</b>	0.039"	± 0.0005"	<b>3.75</b>	<b>6.65</b>
<b>B-SMW-047</b>	0.047"	± 0.0005"	<b>4.25</b>	<b>7.05</b>
<b>B-SMW-055</b>	0.055"	± 0.0005"	<b>4.65</b>	<b>7.75</b>
<b>B-SMW-062</b>	0.062" (1/16")	± 0.0005"	<b>3.50</b>	<b>8.65</b>
<b>B-SMW-078</b>	0.078"	± 0.0005"	<b>4.45</b>	<b>7.45</b>
<b>B-SMW-093</b>	0.093" (3/32")	± 0.0005"	<b>6.75</b>	<b>11.20</b>
<b>B-SMW-125</b>	0.125" (1/8")	± 0.0005"	<b>9.25</b>	<b>15.45</b>
<b>B-SMW-156</b>	0.156" (5/32")	± 0.0005"	<b>11.65</b>	<b>19.45</b>
<b>B-SMW-188</b>	0.188" (3/16")	± 0.0005"	<b>16.40</b>	<b>27.35</b>
<b>B-SMW-219</b>	0.219" (7/32")	± 0.001"	<b>22.10</b>	<b>36.80</b>
<b>B-SMW-250</b>	0.250" (1/4")	± 0.001"	<b>27.35</b>	<b>45.60</b>

### ASSORTMENTS

<b>B-SMW-3600</b>	36" piece. One B-SMW-005 through B-SMW-125 — 15 pieces	<b>10.75</b>
<b>B-SMW-5000</b>	36" piece. One B-SMW-156 through B-SMW-250 — 4 pieces	<b>11.65</b>



### MUSIC WIRE SHEAR — Xuron

Self-adjusting clamping fixture holds the material being cut perpendicular to the cutter jaws, increasing the precision of the cut as well as the cutting capacity. Cuts music wire to 0.060".

**B-XMS-2193F** Measures: 2.15" x 5.45" ..... **28.00**

### ADJUSTABLE JAW CUT NIPPERS — Starrett®

These Nippers have a powerful compound leverage of 25:1 for cutting through music wire — a process that will damage most other jaw types. Jaw tips are made with tungsten carbide for extra-long life. The jaws are detachable and may be reground and adjusted. Length - 5". Cuts up to 3/32".

**B-AJCN-1** Cut Nipper ..... **145.00**

**B-AJCN-JTC** Replacement Jaws ..... **60.65**





## WIRE — Tungsten

Tungsten Wire has excellent strength at high temperature and exceptional resistance to corrosion with good electrical and heat conducting properties. Its melting point is 6150°F (3400°C), the highest of any metal. Tungsten also has the highest modulus of elasticity of all metals. Tungsten Wire is straight, 30" or 60" long.

Chemically, tungsten is relatively inert. Pure tungsten metal in the form of wire, rod and sheet is important in the electric lamp and electrical industries. Industrial applications include electrodes for inert gas welding and electrical discharge machining.

### TUNGSTEN

Order Example: **B-TW-005-30** is 0.005" dia. × 30"

Part No.	Diameter	Fits Inside Hypodermic Tubing Gauge	Price	
			-30 30"	-60* 60"
<b>B-TW-005</b>	0.005"	30	<b>2.30</b>	<b>3.85</b>
<b>B-TW-006</b>	0.006"	29, 28	<b>2.30</b>	<b>3.85</b>
<b>B-TW-009</b>	0.009"	26, 25	<b>2.60</b>	<b>4.35</b>
<b>B-TW-011</b>	0.011"	24	<b>3.55</b>	<b>5.90</b>
<b>B-TW-015</b>	0.015"	22	<b>4.30</b>	<b>7.20</b>
<b>B-TW-019</b>	0.019"	21	<b>6.40</b>	<b>10.65</b>
<b>B-TW-022</b>	0.022"	21½, 20	<b>5.45</b>	<b>9.05</b>
<b>B-TW-026</b>	0.026"	19	<b>6.00</b>	<b>10.00</b>
<b>B-TW-032</b>	0.032"	18	<b>8.30</b>	<b>13.80</b>
<b>B-TW-041</b>	0.041"	17	<b>12.15</b>	<b>20.20</b>
<b>B-TW-046</b>	0.046"	16	<b>14.85</b>	<b>24.70</b>
<b>B-TW-053</b>	0.053"	15	<b>18.75</b>	<b>31.20</b>
<b>B-TW-062</b>	0.062"	14	<b>23.35</b>	<b>38.95</b>

\* Special packaging charge for 60" lengths.

## WIRE — Stainless Steel Type 304, Annealed



Stainless Steel Wire in its most pliable form, available in eleven diameters. Highly malleable and non-magnetic with high corrosion resistance, this annealed wire can be used as safety wire in some applications. Type 304 is formulated similar to commercial quality stainless steel, but has been refined by melting or remelting in a vacuum, a process that segregates the melt from oxygen, nitrogen and other ambient gases, resulting in a cleaner, higher-quality, more pure stainless steel.

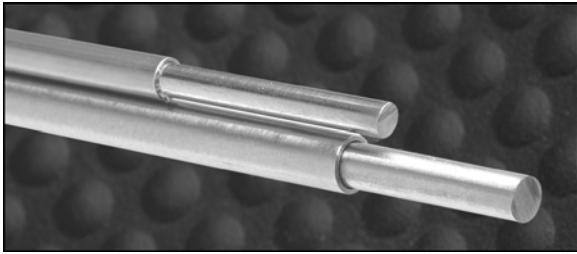
### STAINLESS STEEL TYPE 304

Order Example: **B-SAW-010-25** is 0.010" dia. × 25' spool

Part No.	Diameter	Tolerance	Fits Inside Hypodermic Tubing Gauge	Price	
				-25 25' Spool	-100 100' Spool
<b>B-SAW-005</b>	0.005"	±0.0002"	30	<b>14.00</b>	<b>48.00</b>
<b>B-SAW-007</b>	0.007"	±0.0002"	27	<b>14.00</b>	<b>48.00</b>
<b>B-SAW-010</b>	0.010"	±0.0003"	-	<b>15.00</b>	<b>50.00</b>
<b>B-SAW-011</b>	0.011"	±0.0003"	24	<b>15.00</b>	<b>50.00</b>
<b>B-SAW-012</b>	0.012"	±0.0003"	23	<b>17.00</b>	<b>56.00</b>
<b>B-SAW-013</b>	0.013"	±0.0004"	-	<b>18.00</b>	<b>57.00</b>
<b>B-SAW-014</b>	0.014"	±0.0004"	-	<b>20.00</b>	<b>58.00</b>
<b>B-SAW-015</b>	0.015"	±0.0004"	22	<b>22.00</b>	<b>60.00</b>
<b>B-SAW-025</b>	0.025"	±0.0005"	-	<b>25.00</b>	<b>68.00</b>
<b>B-SAW-034</b>	0.034"	±0.0008"	-	<b>28.00</b>	<b>76.00</b>
<b>B-SAW-046</b>	0.046"	±0.0010"	16	<b>35.00</b>	<b>98.00</b>

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## GUIDE WIRE ASSEMBLY — Stainless Steel Type 304



### HYPODERMIC TUBING AND GUIDE WIRE ASSEMBLY

These assemblies can be used in a variety of ways. Together, they can be used as an actuator or a push rod assembly. The wire can be used as a tube stiffener or as styler for removing debris from the matching tube.

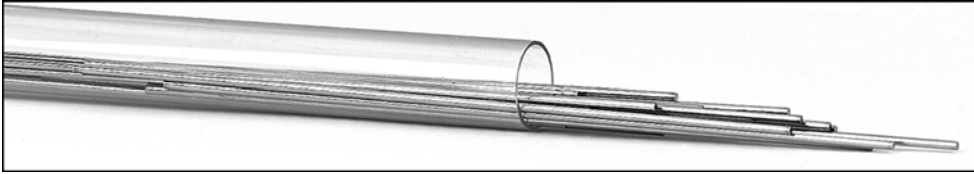
Each assembly consists of a 24" length of Type 304 welded and drawn Stainless Steel Hypodermic Tubing., and a 30" length of Type 304 "gun barrel straight" Stainless Steel Guide Wire. The inserted wire is approximately 0.001" smaller than the inside diameter of the tubing.

#### STAINLESS STEEL TYPE 304 Order Example: **B-GHX-14** is 14 gauge, 0.061" Guide Wire Assembly

Part No.	Gauge	O.D.	I.D.	Guide Wire Assembly	Price Each Assembly
<b>B-GHX-30</b>	30	0.012"	0.006"	0.005"	<b>7.55</b>
<b>B-GHX-29</b>	29	0.013"	0.007"	0.006"	<b>6.90</b>
<b>B-GHX-28</b>	28	0.014"	0.007"	0.006"	<b>6.90</b>
<b>B-GHX-27</b>	27	0.016"	0.008"	0.007"	<b>6.75</b>
<b>B-GHX-26</b>	26	0.018"	0.010"	0.009"	<b>6.25</b>
<b>B-GHX-25</b>	25	0.020"	0.010"	0.009"	<b>6.25</b>
<b>B-GHX-24</b>	24	0.022"	0.012"	0.011"	<b>6.35</b>
<b>B-GHX-23</b>	23	0.025"	0.013"	0.012"	<b>6.50</b>
<b>B-GHX-22</b>	22	0.028"	0.016"	0.015"	<b>6.60</b>
<b>B-GHX-21-1/2</b>	21-1/2	0.030"	0.023"	0.022"	<b>8.10</b>
<b>B-GHX-21</b>	21	0.032"	0.020"	0.019"	<b>6.75</b>
<b>B-GHX-20</b>	20	0.0355"	0.023"	0.022"	<b>7.55</b>
<b>B-GHX-19</b>	19	0.042"	0.027"	0.026"	<b>8.10</b>
<b>B-GHX-18</b>	18	0.050"	0.033"	0.032"	<b>10.05</b>
<b>B-GHX-17</b>	17	0.058"	0.042"	0.041"	<b>11.10</b>
<b>B-GHX-16</b>	16	0.065"	0.047"	0.046"	<b>11.50</b>
<b>B-GHX-15</b>	15	0.072"	0.054"	0.053"	<b>11.65</b>
<b>B-GHX-14</b>	14	0.083"	0.063"	0.061"	<b>12.00</b>
<b>B-GHX-13-1/2</b>	13-1/2	0.089"	0.071"	0.069"	<b>13.10</b>
<b>B-GHX-13</b>	13	0.095"	0.071"	0.069"	<b>13.25</b>
<b>B-GHX-12-1/2</b>	12-1/2	0.100"	0.082"	0.080"	<b>17.90</b>
<b>B-GHX-12</b>	12	0.109"	0.085"	0.083"	<b>15.25</b>
<b>B-GHX-11-1/2</b>	11-1/2	0.115"	0.095"	0.093"	<b>17.30</b>
<b>B-GHX-11</b>	11	0.120"	0.094"	0.092"	<b>19.45</b>
<b>B-GHX-10</b>	10	0.134"	0.106"	0.104"	<b>30.15</b>

**See our full line of Hypodermic Tubing Adaptors —  
Ferrules, Compression and Pipe Fittings  
for mechanical fastening and liquid / gas adaptations  
starting on page 108.**

## WIRE — Stainless Steel Type 304V



Precision ground, spring tempered and diamond drawn, Stainless Steel Type 304V Wire is used for dental wire, stylets, guide wires and catheter wires. Type 304V is formulated similar to commercial quality stainless steel, but it has been refined by melting or remelting in a vacuum, a process that segregates the melt from oxygen, nitrogen and other ambient gases, resulting in a cleaner, higher-quality, more pure stainless steel. This contributes to the extra bright finish, clean and “gun-barrel” straight features. Some sizes fit inside diameters of our Hypodermic Tubing (see chart). A special packaging charge is added to each order when shipping 60” lengths.

**NOTE:** When ordering wire, always specify exact dimensions in decimals. Stating gauge sizes can lead to confusion, since wire diameters may conform to various gauging systems. Hypodermic Tubing gauges are based on the Birmingham Gage, also known as Stub’s Iron Wire Gage.

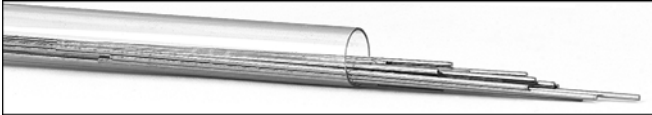
### STAINLESS STEEL TYPE 304V

Order Example: **B-SWGX-070-30** is 0.007 dia. × 30”

Part No.	Diameter	Fits Inside Hypodermic Tubing Gauge	Diameter Tolerance	Price	
				-30 30”	-60* 60”
B-SWGX-050	0.005”	30	±0.0002”	1.95	3.25
B-SWGX-055	0.0055”	—		2.20	3.65
B-SWGX-060	0.006”	29, 28		1.70	2.80
B-SWGX-065	0.0065”	—		2.20	3.65
B-SWGX-070	0.007”	27		1.75	2.90
B-SWGX-075	0.0075”	—		2.20	3.65
B-SWGX-080	0.008”	—		1.75	2.90
B-SWGX-085	0.0085”	—		2.05	3.45
B-SWGX-090	0.009”	26, 25		1.70	2.85
B-SWGX-095	0.0095”	—		1.95	3.25
B-SWGX-100	0.010”	—		1.70	2.80
B-SWGX-110	0.011”	24		1.70	2.80
B-SWGX-120	0.012”	23		1.75	2.30
B-SWGX-130	0.013”	—		1.75	2.75
B-SWGX-140	0.014”	—		1.85	2.85
B-SWGX-150	0.015”	22		1.85	2.85
B-SWGX-160	0.016”	—		2.00	3.25
B-SWGX-170	0.017”	—		2.00	3.25
B-SWGX-180	0.018”	—		2.10	3.30
B-SWGX-190	0.019”	21		2.10	3.30
B-SWGX-200	0.020”	—		2.15	3.35
B-SWGX-210	0.021”	—		2.50	3.65
B-SWGX-220	0.022”	20		2.50	3.65
B-SWGX-230	0.023”	—		2.70	4.00
B-SWGX-240	0.024”	—		2.70	4.00
B-SWGX-250	0.025”	—		2.70	4.00
B-SWGX-260	0.026”	19		3.25	4.75
B-SWGX-270	0.027”	—		3.40	5.25
B-SWGX-280	0.028”	—		3.55	5.95
B-SWGX-290	0.029”	—	4.00	6.25	

\* Special packaging charge for 60” lengths.

## WIRE — Stainless Steel Type 304V (cont.)



### STAINLESS STEEL TYPE 304V

Order Example: **B-SWGX-370-30** is 0.037 dia. × 30"

Part No.	Diameter	Fits Inside Hypodermic Tubing Gauge.	Diameter Tolerance	Price	
				-30 30"	-60* 60"
B-SWGX-300	0.030"	—	±0.0002"	4.25	6.65
B-SWGX-310	0.031"	—		4.50	6.95
B-SWGX-320	0.032"	18		4.50	7.10
B-SWGX-330	0.033"	—		5.00	7.75
B-SWGX-340	0.034"	—		5.00	7.75
B-SWGX-350	0.035"	—		5.00	7.75
B-SWGX-360	0.036"	—		5.20	8.15
B-SWGX-370	0.037"	—		5.25	8.20
B-SWGX-380	0.038"	—		5.35	8.30
B-SWGX-390	0.039"	—		5.35	8.50
B-SWGX-400	0.040"	—		5.55	8.65
B-SWGX-410	0.041"	17		5.55	8.65
B-SWGX-420	0.042"	—		5.60	8.90
B-SWGX-430	0.043"	—		5.70	9.00
B-SWGX-440	0.044"	—		5.75	9.25
B-SWGX-450	0.045"	—		5.95	9.40
B-SWGX-460	0.046"	16		6.00	9.55
B-SWGX-470	0.047"	—		6.00	9.55
B-SWGX-480	0.048"	—		6.00	9.55
B-SWGX-490	0.049"	—		6.00	9.55
B-SWGX-500	0.050"	—	6.00	9.55	
B-SWGX-510	0.051"	—	6.10	9.65	
B-SWGX-520	0.052"	—	6.20	9.70	
B-SWGX-530	0.053"	15	6.20	9.75	
B-SWGX-540	0.054"	—	-0.000" -0.0005"	6.25	10.25
B-SWGX-550	0.055"	—		6.25	10.25
B-SWGX-560	0.056"	—	6.25	10.25	
B-SWGX-570	0.057"	—	6.40	10.45	
B-SWGX-580	0.058"	—	6.40	10.45	
B-SWGX-590	0.059"	—	6.45	10.50	
B-SWGX-600	0.060"	—	6.45	10.50	
B-SWGX-610	0.061"	—	6.45	10.50	
B-SWGX-620	0.062"	14	6.45	10.50	
B-SWGX-690	0.069"	13½, 13	6.85	11.25	
B-SWGX-800	0.080"	12½	7.75	12.95	
B-SWGX-830	0.083"	12	7.75	12.95	
B-SWGX-920	0.092"	11	-0.000" -0.001"	7.75	12.95
B-SWGX-930	0.093"	11½		8.65	13.95
B-SWGX-1040	0.104"	10	15.00	22.50	

\* Special packaging charge for 60" lengths.

See our full line of Hypodermic Tubing starting on page 90

## WIRE — Stainless Steel Type 316V



Spring tempered and diamond drawn, Type 316V Wire is formulated similar to commercial quality stainless steel, but has been refined by melting or remelting in a vacuum, a process that segregates the melt from oxygen, nitrogen and other ambient gases, resulting in a cleaner, higher-quality, more pure stainless steel.

Type 316 Stainless Steel offers high corrosion resistance for many conditions, particularly when working with phosphoric and acetic acids. This wire comes "gun-barrel" straight and clean with a bright finish. The sizes listed fit inside diameters of our Hypodermic Tubing as indicated below. Minimum tensile strength: 220,000 psi.

### STAINLESS STEEL TYPE 316V

Order Example: **B-GWXX-150-30** is 0.015" dia. × 30"

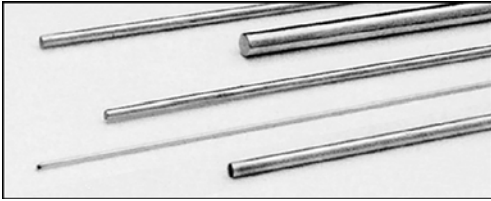
Part No.	Diameter	Fits Inside Hypodermic Tubing Gauge	Diameter Tolerances	Price	
				-30 30"	-60* 60"
B-GWXX-050	0.005"	30	±0.0002"	2.75	3.75
B-GWXX-060	0.006"	29, 28		2.75	3.75
B-GWXX-070	0.007"	27		2.75	3.75
B-GWXX-080	0.008"	-		2.75	3.75
B-GWXX-090	0.009"	26, 25		2.75	3.75
B-GWXX-100	0.010"	-		2.75	3.75
B-GWXX-110	0.011"	24		2.75	3.75
B-GWXX-120	0.012"	23		2.75	3.75
B-GWXX-130	0.013"	-		2.75	3.75
B-GWXX-140	0.014"	-		2.75	3.75
B-GWXX-150	0.015"	22		2.75	3.75
B-GWXX-190	0.019"	21		2.75	3.75
B-GWXX-200	0.020"	-		2.75	3.75
B-GWXX-220	0.022"	21½, 20		2.75	3.75
B-GWXX-250	0.025"	-		2.75	3.75
B-GWXX-260	0.026"	19		3.25	4.95
B-GWXX-280	0.028"	-		3.25	4.95
B-GWXX-300	0.030"	-		3.25	4.95
B-GWXX-320	0.032"	18		4.80	7.50
B-GWXX-350	0.035"	-		4.80	7.50
B-GWXX-400	0.040"	-	4.80	7.50	
B-GWXX-410	0.041"	17	5.95	9.25	
B-GWXX-450	0.045"	-	5.95	9.25	
B-GWXX-460	0.046"	16	6.25	9.95	
B-GWXX-500	0.050"	-	6.55	10.45	
B-GWXX-530	0.053"	15	6.55	10.45	
B-GWXX-550	0.055"	-	6.55	10.45	
B-GWXX-600	0.060"	-	10.25	16.75	
B-GWXX-620	0.062"	14	22.50	37.50	
B-GWXX-650	0.065"	-	22.50	37.50	
B-GWXX-930	0.093"	11-1/2	+0/-0.001"	34.50	57.50

\* Special packaging charge for 60" lengths.

**Cut-Off Power Saw and Hold Down Unit**

**See page 390**

## WIRE, SPRING — Stainless Steel 17-7 PH



### SPRING WIRE

Our 17-7 precipitation-hardened Spring temper Wire is furnished cold drawn (in Condition C). Its elastic properties permit reforming into a specific shape. It can be formed into springs or into required patterns as in the case of diagnostic catheters. This is accomplished by taking the formed cold drawn wire (Condition C) and aging it at 900°F (482°C) for one hour (to Condition CH900).

This 17-7 Spring Wire provides good corrosion resistance, excellent fatigue properties and minimum distortion on heat treatment. In addition, the material retains its load bearing ability with little or no relaxation up to 850°F (454°C). This unique combination of high strength, excellent spring properties, good corrosion resistance and fabricability makes it useful in a wide variety of applications. Furnished clean as "gun-barrel" straight lengths with a bright finish.

### STAINLESS STEEL 17-7 PH

Order Example: **B-SWPH-015-30** is 0.015" dia. × 30"

Part No.	Dimensions in Inches		Fits Inside Hypodermic Tubing Gauge	Cold Drawn - Condition C (psi x 1000)	Cold Drawn and Aged to Condition CH900 (psi x 1000)	Price	
	Dia.	Tol.				-30 30"	-60* 60"
<b>B-SWPH-006</b>	0.006	±0.0003	29, 28	-	-	<b>2.25</b>	<b>3.75</b>
<b>B-SWPH-009</b>	0.009	±0.0003	26, 25	248-305	335-365	<b>2.95</b>	<b>4.95</b>
<b>B-SWPH-012</b>	0.012	±0.0003	23	-	-	<b>2.25</b>	<b>3.75</b>
<b>B-SWPH-015</b>	0.015	±0.0003	22	248-305	335-365	<b>2.95</b>	<b>4.95</b>
<b>B-SWPH-020</b>	0.020	±0.0005	-	243-300	330-360	<b>3.25</b>	<b>5.25</b>
<b>B-SWPH-022</b>	0.022	±0.0005	20	234-240	320-350	<b>3.25</b>	<b>5.25</b>
<b>B-SWPH-025</b>	0.025	±0.0005	-	239-295	325-355	<b>3.95</b>	<b>7.25</b>
<b>B-SWPH-030</b>	0.030	±0.0005	18	234-290	320-350	<b>3.95</b>	<b>7.25</b>
<b>B-SWPH-032</b>	0.032	±0.0005	-	230-285	310-340	<b>3.95</b>	<b>7.25</b>
<b>B-SWPH-035</b>	0.035	±0.0005	-	234-290	320-350	<b>8.25</b>	<b>11.75</b>
<b>B-SWPH-040</b>	0.040	±0.0005	-	234-290	320-350	<b>8.25</b>	<b>11.75</b>
<b>B-SWPH-045</b>	0.045	±0.0005	16	230-285	310-340	<b>3.95</b>	<b>7.25</b>
<b>B-SWPH-050</b>	0.050	±0.0005	-	230-285	310-340	<b>8.25</b>	<b>11.75</b>
<b>B-SWPH-054</b>	0.054	±0.0005	-	225-280	305-335	<b>3.95</b>	<b>7.25</b>
<b>B-SWPH-061</b>	0.061	±0.0005	14	225-280	305-335	<b>8.25</b>	<b>11.75</b>
<b>B-SWPH-065</b>	0.065	±0.0005	-	218-272	297-327	<b>8.30</b>	<b>11.95</b>
<b>B-SWPH-070</b>	0.070	±0.0005	-	218-272	297-327	<b>20.50</b>	<b>32.50</b>
<b>B-SWPH-078</b>	0.078	±0.0005	-	207-260	282-312	<b>8.95</b>	<b>13.95</b>
<b>B-SWPH-093</b>	0.093	±0.0005	11½	207-260	282-312	<b>8.95</b>	<b>13.95</b>
<b>B-SWPH-133</b>	0.133	±0.0010	8	199-251	272-302	<b>15.75</b>	<b>26.30</b>

\* Special packaging charge for 60" lengths.



### MUSIC WIRE SHEAR — Xuron

Self-adjusting clamping fixture holds the material being cut perpendicular to the cutter jaws, increasing the precision of the cut as well as the cutting capacity. Cuts music wire to 0.060".

**B-XMS-2193F** Measures: 2.15" × 5.45" ..... **28.00**



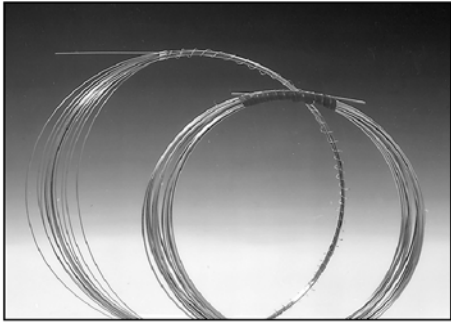
### ADJUSTABLE JAW CUT NIPPERS — Starrett®

These Nippers have a powerful compound leverage of 25:1 for cutting through Spring Wire, Music Wire — a process that will damage most other jaw types. Jaw tips are made with tungsten carbide for extra-long life. The jaws are detachable and may be reground and adjusted.

**B-AJCN-1** Length - 5". Cuts up to 3/32". ..... **145.00**

**B-AJCN-JTC** Replacement Jaws ..... **60.65**

## WIRE — Stainless Steel Type 304



This wire is made from a specially controlled Type 304 Stainless Steel which results in the perfect combination of strength and ductility. Torsion straightening removes coil-set normally found in coiled spring wire. It is provided in either 30 foot or 1/4 lb. coils, with diameters ranging from 0.011" to 0.043".

### 30 FT. WIRE COIL — Stainless Steel Type 304

Part No.	Dimensions in Inches		Breaking Strength Min.- Max. (lbs.)	Tensile Range Min.- Max. (000psi)	Price/30 Ft. Coils	
	Diameter	Tolerance			Each	10
<b>B-SWX-3011</b>	0.011	±0.0003	27-30	286-340	<b>1.80</b>	<b>16.50</b>
<b>B-SWX-3012</b>	0.012	±0.0004	32-35	284-346	<b>1.90</b>	<b>17.00</b>
<b>B-SWX-3013</b>	0.013	±0.0004	38-41	282-344	<b>1.95</b>	<b>17.60</b>
<b>B-SWX-3014</b>	0.014	±0.0004	44-48	280-342	<b>2.15</b>	<b>20.00</b>
<b>B-SWX-3016</b>	0.016	±0.0004	58-63	277-338	<b>2.30</b>	<b>20.50</b>
<b>B-SWX-3018</b>	0.018	±0.0004	69-75	273-334	<b>2.50</b>	<b>23.00</b>
<b>B-SWX-3020</b>	0.020	±0.0004	86-94	270-330	<b>2.70</b>	<b>25.00</b>
<b>B-SWX-3022</b>	0.022	±0.0004	105-115	266-326	<b>2.90</b>	<b>27.00</b>
<b>B-SWX-3024</b>	0.024	±0.0005	124-136	262-322	<b>2.95</b>	<b>27.00</b>
<b>B-SWX-3029</b>	0.029	±0.0005	174-191	256-315	<b>3.40</b>	<b>30.50</b>
<b>B-SWX-3035</b>	0.035	±0.0008	240-264	252-308	<b>4.30</b>	<b>39.50</b>
<b>B-SWX-3043</b>	0.043	±0.0008	360-396	244-300	<b>5.65</b>	<b>52.00</b>

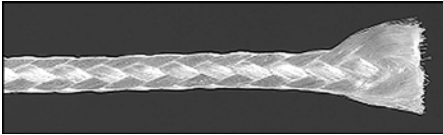
### 1/4 LB. WIRE COIL — Stainless Steel Type 304

Part No.	Dimensions in Inches		Breaking Strength Min.- Max. (lbs.)	Tensile Range Min.- Max. (000psi)	1/4 Lb. Coil Ft./Coil	Price 1/4 Lb. Coil
	Diameter	Tolerance				
<b>B-SWX-4011</b>	0.011	±0.0003	27-30	286-340	775	<b>13.45</b>
<b>B-SWX-4012</b>	0.012	±0.0004	32-35	284-346	651	<b>13.75</b>
<b>B-SWX-4013</b>	0.013	±0.0004	38-41	282-344	555	<b>13.55</b>
<b>B-SWX-4014</b>	0.014	±0.0004	44-48	280-342	478	<b>13.30</b>
<b>B-SWX-4016</b>	0.016	±0.0004	58-63	277-338	366	<b>11.85</b>
<b>B-SWX-4018</b>	0.018	±0.0004	69-75	273-334	289	<b>10.65</b>
<b>B-SWX-4020</b>	0.020	±0.0004	86-94	270-330	234	<b>10.20</b>
<b>B-SWX-4022</b>	0.022	±0.0004	105-115	266-326	193	<b>10.05</b>
<b>B-SWX-4024</b>	0.024	±0.0005	124-136	262-322	162	<b>9.35</b>
<b>B-SWX-4029</b>	0.029	±0.0005	174-191	256-315	111	<b>8.75</b>
<b>B-SWX-4035</b>	0.035	±0.0008	240-264	252-308	75	<b>8.40</b>
<b>B-SWX-4043</b>	0.043	±0.0008	360-396	244-300	50	<b>8.00</b>

### ASSORTMENTS

<b>B-SWX-150</b>	30 ft. coil. One B-SWX-3011 through B-SWX-3029 — 10 pieces	<b>22.10</b>
<b>B-SWX-250</b>	30 ft. coil. One B-SWX-3011 through B-SWX-3043 — 12 pieces	<b>31.05</b>

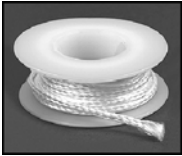
## CABLE — Polyethylene Fiber



### SPECTRA® CABLE

*Stronger than Polyester or Steel Wire!*

Low density Polyethylene Spectra Cable provides high specific strength, low stretch, zero water absorption and superior abrasion resistance in both wet and dry conditions.



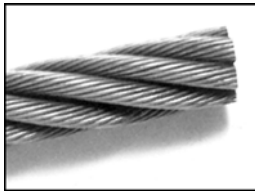
Unique to Small Parts, these sizes are specified to achieve high strength in small-diameter cables. Due to the single-braid, multi-strand construction, Spectra is as much as three times stronger than Polyester cables of equivalent weight, and its weight-to-strength ratio is approximately five times stronger than steel wire. A first choice for many marine and geological applications, Spectra is a "soft-hand" cable that is easy to splice. It has very low dielectric constants and loss-tangent with longer flex-fatigue life than other high strength cables. Elongation at break: 4% - 5%. Melts at 284°F (140°C).

®Allied Signal

## CABLE — Polyethylene Fiber

Part No.	Nominal Size	Breaking Strength	Price		
			10 ft.	25 ft.	100 ft.
<b>B-MCS-150</b>	0.030"	158 lb.	<b>5.75</b>	<b>10.95</b>	<b>35.35</b>
<b>B-MCS-300</b>	0.040"	468 lb.	<b>6.95</b>	<b>13.20</b>	<b>42.65</b>
<b>B-MCS-500</b>	0.054"	593 lb.	<b>9.15</b>	<b>17.30</b>	<b>55.90</b>
<b>B-MCS-750</b>	0.060"	876 lb.	<b>11.30</b>	<b>21.35</b>	<b>69.15</b>

## CABLE — Stainless Steel



### NYLON COATED CABLE — Stainless Steel Type 304

Small, highly reliable Nylon-Coated Stainless Steel Cable offers an inexpensive compact method of direct motion control with strong yet lightweight, corrosion-resistant materials. The nylon encased construction provides abrasion resistance and flexible strength. Make your own prototype assemblies, lanyards, etc. for control cabling in the areas of medicine, agriculture, instrumentation, boating, aviation, and a host of recreational activities.

### UNCOATED CABLE — Stainless Steel Type 304

Sometimes called wire rope, Uncoated Stainless Steel Cable is strong, lightweight and corrosion resistant. We offer two sizes each of 7 x 7 and 7 x 19 construction to give you a "strength range" for various applications. Uncoated Stainless Steel Cable is a commercial quality "Aircraft Grade" in terms of size, flexibility and minimum breaking strength. Please note: it does not meet all aspects of MIL-W-83420B for aircraft flight control cable.

*TIP: For even more protection against corrosion, treat Uncoated Cable with boiled linseed oil to fill crevices.*

### NYLON COATED CABLE — Stainless Steel Type 304

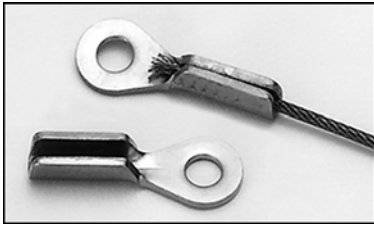
Part No.	Diameter		Construction	Breaking Strength	Price			
	Inches	Millimeters			10 ft.	25 ft.	100 ft.	250 ft.
<b>B-MCX-24</b>	0.024	0.615	7 x 7	40 lbs.	<b>6.25</b>	<b>14.15</b>	<b>51.40</b>	<b>116.85</b>
<b>B-MCX-37</b>	0.037	0.949	7 x 7	120 lbs.	<b>6.50</b>	<b>14.70</b>	<b>53.40</b>	<b>121.35</b>
<b>B-MCX-64</b>	1/16	1.59	7 x 7	270 lbs.	<b>6.75</b>	<b>15.25</b>	<b>55.40</b>	<b>125.85</b>
<b>B-MCX-94</b>	3/32	2.38	7 x 7	480 lbs.	<b>7.45</b>	<b>16.90</b>	<b>61.35</b>	<b>139.35</b>
<b>B-MCX-125</b>	1/8	3.18	7 x 7	920 lbs.	<b>8.40</b>	<b>19.05</b>	<b>69.25</b>	<b>157.30</b>
<b>B-MCX-188</b>	3/16	4.76	7 x 7	1700 lbs.	<b>11.95</b>	<b>27.20</b>	<b>98.90</b>	<b>224.70</b>
<b>B-MCX-250</b>	1/4	6.35	7 x 19	3700 lbs.	<b>18.65</b>	<b>42.35</b>	<b>154.00</b>	<b>350.00</b>

### UNCOATED CABLE — Stainless Steel Type 304

Part No.	Diameter		Construction	Breaking Strength	Price			
	Inches	Millimeters			10 ft.	25 ft.	100 ft.	250 ft.
<b>B-MCXU-1/32</b>	1/32	0.8	7 x 7	115 lbs.	<b>3.00</b>	<b>6.85</b>	<b>24.75</b>	<b>58.50</b>
<b>B-MCXU-3/64</b>	3/64	1.2	7 x 7	270 lbs.	<b>3.20</b>	<b>7.20</b>	<b>26.10</b>	<b>59.25</b>
<b>B-MCXU-1/16</b>	1/16	1.6	7 x 19	480 lbs.	<b>7.85</b>	<b>17.80</b>	<b>64.70</b>	<b>147.00</b>
<b>B-MCXU-3/32</b>	3/32	2.5	7 x 19	920 lbs.	<b>8.60</b>	<b>19.55</b>	<b>71.00</b>	<b>161.30</b>



## CABLE CONNECTORS AND ACCESSORIES



### CABLE ENDS

Eye type Cable Ends are a convenient way to terminate a cable. The larger sizes of these ends, particularly, require crimping pressures beyond the capabilities of ordinary hand tools. See the sleeve pressing and compound crimping tools beginning on [page 379](#). Greater strength will be gained if the nylon coating is peeled back an inch or so before attaching cable end.

#### STAINLESS STEEL TYPE 304

Part No.	For Cable Diameters	Dimension in Inches			Eye Thickness	Each	Price		
		Eye O.D.	Center of Eye to Base	Eye Diameter			10	25	100
<b>B-MCEY-24</b>	0.010-0.034	0.190	0.300	0.100	0.030	<b>1.00</b>	<b>7.05</b>	<b>14.70</b>	<b>49.00</b>
<b>B-MCEY-37</b>	0.014-0.044	0.260	0.550	0.142	0.040	<b>1.05</b>	<b>7.55</b>	<b>15.75</b>	<b>52.50</b>
<b>B-MCEY-64</b>	0.047-0.064	0.420	1.000	0.190	0.060	<b>1.40</b>	<b>11.60</b>	<b>24.15</b>	<b>80.50</b>
<b>B-MCEY-94</b>	3/32-1/8	0.500	1.313	0.251	0.090	<b>3.35</b>	<b>27.75</b>	<b>57.75</b>	<b>192.50</b>
<b>B-MCEY-188</b>	5/32-3/16	1.000	2.375	0.380	0.190	<b>13.15</b>	<b>109.40</b>	<b>227.85</b>	<b>295.00</b>

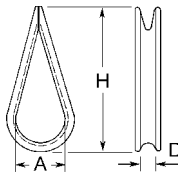


### WIRE ROPE CLIPS

Standard Wire Rope Clips provide maximum holding strength, and can be removed, adjusted or reused. Malleable Steel Rope Clips are plated with rust resistant zinc.

#### MALLEABLE STEEL

Part No.	Fits Cable Diameter	Min. Required For Max. Strength	Each	Price		
				10	25	100
<b>B-MCW-64</b>	1/16"	2	<b>1.15</b>	<b>9.35</b>	<b>19.50</b>	<b>65.00</b>
<b>B-MCW-125</b>	3/32" and 1/8"	2	<b>1.25</b>	<b>10.50</b>	<b>21.90</b>	<b>73.00</b>
<b>B-MCW-188</b>	3/16"	3	<b>1.50</b>	<b>12.25</b>	<b>25.50</b>	<b>85.00</b>
<b>B-MCW-250</b>	1/4"	3	<b>1.90</b>	<b>15.85</b>	<b>33.00</b>	<b>110.00</b>



### THIMBLES

Thimbles protect the cables where necessary or desirable. When the anchoring pin is rough or threaded, the use of a thimble will materially prolong the life of the nylon sheath.

#### STAINLESS STEEL TYPE 304

Part No.	For Cable Diameters	A	D	H	Each	Price		
						10	25	100
<b>B-MCT-1</b>	0.015" - 3/64"	0.188"	1/8"	0.422"	—	<b>4.70</b>	<b>9.75</b>	<b>32.40</b>
<b>B-MCT-3</b>	3/64" - 1/16" - 5/64"	0.339"	3/32"	0.937"	—	<b>6.20</b>	<b>12.90</b>	<b>42.90</b>
<b>B-MCT-5</b>	5/32"	0.400"	11/64"	1.125"	<b>1.20</b>	<b>9.95</b>	<b>20.75</b>	<b>69.15</b>
<b>B-MCT-6</b>	3/16"	0.500"	13/64"	1.484"	<b>1.70</b>	<b>14.15</b>	<b>29.40</b>	<b>98.00</b>
<b>B-MCT-7</b>	7/32" - 1/4"	0.700"	17/64"	1.984"	<b>2.35</b>	<b>19.60</b>	<b>40.80</b>	<b>136.00</b>

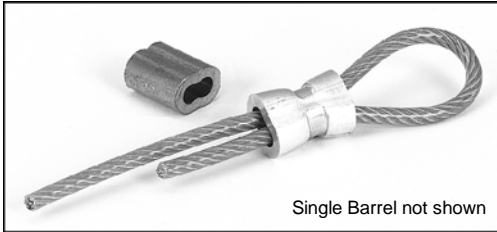
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## CABLE CONNECTORS AND ACCESSORIES (cont.)

### LOOP/SLEEVE CONNECTORS

Loop/Sleeve Connectors make it easy to secure loops when anchoring cable and they can be compressed by vise, pliers, or with a compression tool. It is suggested that the anchoring pin be at least five times the diameter of the cable and that the connector be set at a distance from the pin equal to 2.5 times the diameter of the pin. We stock aluminum and zinc plated copper for cable diameters 1/16" or greater, plus 0.037" in zinc plated copper and 0.024" in brass for securing very fine cables.

\*Single Barrel



Single Barrel not shown

### BRASS AND ZINC PLATED COPPER

Part No.	For Cable Diameter	Material	Recommended Crimping Pressing Tool	Each	Price		
					10	25	100
<b>B-MCC-24*</b>	0.024"	Brass	B-MCTL-17BA	—	<b>2.75</b>	<b>5.70</b>	<b>19.00</b>
<b>B-MCC-37</b>	0.037"	Copper, Zinc Plated	B-MCTL-185	—	<b>2.45</b>	<b>5.10</b>	<b>17.00</b>
<b>B-MCC-1/16</b>	1/16"	Copper, Zinc Plated	B-MCTL-185	—	<b>1.45</b>	<b>3.00</b>	<b>10.00</b>
<b>B-MCC-3/32</b>	3/32"	Copper, Zinc Plated	B-MCTL-188	—	<b>1.85</b>	<b>3.80</b>	<b>12.60</b>
<b>B-MCC-1/8</b>	1/8"	Copper, Zinc Plated	B-MCTL-188	—	<b>3.55</b>	<b>7.35</b>	<b>24.50</b>
<b>B-MCC-3/16</b>	3/16"	Copper, Zinc Plated	B-MCTL-188	<b>1.20</b>	<b>9.80</b>	<b>20.40</b>	<b>68.00</b>
<b>B-MCC-1/4</b>	1/4"	Copper, Zinc Plated	B-MCTL-188	<b>1.65</b>	<b>13.70</b>	<b>28.50</b>	<b>95.00</b>

### ALUMINUM

Part No.	For Cable Diameter	Material	Recommended Crimping Pressing Tool	Each	Price		
					10	25	100
<b>B-MCC-64</b>	1/16"	Aluminum	B-MCTL-185	—	<b>2.75</b>	<b>5.75</b>	<b>19.15</b>
<b>B-MCC-94A</b>	3/32"	Aluminum	B-MCTL-188	—	<b>4.40</b>	<b>9.15</b>	<b>30.40</b>
<b>B-MCC-125A</b>	1/8"	Aluminum	B-MCTL-188	—	<b>4.70</b>	<b>9.80</b>	<b>32.65</b>
<b>B-MCC-188A</b>	3/16"	Aluminum	B-MCTL-188	<b>1.15</b>	<b>9.60</b>	<b>19.95</b>	<b>66.40</b>
<b>B-MCC-250A</b>	1/4"	Aluminum	B-MCTL-188	<b>1.75</b>	<b>14.25</b>	<b>29.70</b>	<b>99.00</b>

### COPPER LOOP / SLEEVE CONNECTORS

Similar to the connectors above, these Loop Sleeve Connectors are all Copper for those applications where only copper is suitable. Sleeve Pressing Tools are listed below the chart and are pictured on [page 378](#).

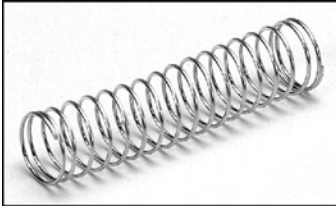
#### COPPER

Part No.	For Cable Diameter	Recommended Crimping/ Pressing Tool	Each	Price		
				10	25	100
<b>B-MCC-24C</b>	0.024"	B-MCTL-185	—	<b>3.40</b>	<b>7.05</b>	<b>23.50</b>
<b>B-MCC-37C</b>	0.037"	B-MCTL-185	—	<b>5.65</b>	<b>11.75</b>	<b>39.05</b>
<b>B-MCC-64C</b>	1/16"	B-MCTL-185	—	<b>6.85</b>	<b>14.20</b>	<b>47.30</b>
<b>B-MCC-94C</b>	3/32"	B-MCTL-188	—	<b>7.75</b>	<b>16.15</b>	<b>53.85</b>
<b>B-MCC-125C</b>	1/8"	B-MCTL-188	<b>1.30</b>	<b>10.90</b>	<b>22.65</b>	<b>75.45</b>
<b>B-MCC-188C</b>	3/16"	B-MCTL-188	<b>4.25</b>	<b>35.30</b>	<b>73.50</b>	<b>245.00</b>
<b>B-MCC-250C</b>	1/4"	B-MCTL-188	<b>4.45</b>	<b>36.85</b>	<b>76.80</b>	<b>256.00</b>

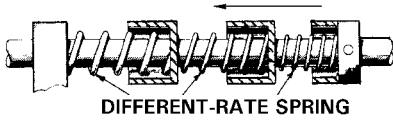
### SLEEVE PRESSING/CRIMPING TOOLS

<b>B-MCTL-17BA</b> (Length 8-1/4") Cable dia. up to 1/32" .....	<b>75.00</b>
<b>B-MCTL-185</b> (Length 8-1/2") Cable dia. up to 1/16" .....	<b>115.00</b>
<b>B-MCTL-188</b> (Length 18") Cable dia. 3/32" to 7/16" .....	<b>163.00</b>

## SPRINGS, COMPRESSION — Beryllium Copper



Beryllium Copper Compression Springs are uniformly made and have superior fatigue performance. Outstanding characteristics peculiar to beryllium copper as a spring material include corrosion resistance, excellent electrical conductivity, and high fatigue strength. In addition they are nonmagnetic.



### BERYLLIUM COPPER — Silver Coated

Part No.	Wire Diameter	Dimensions in Inches			Spring Rate Lbs./Inch	Price	
		Outer Diameter	Free Length	Turns		Each	10
<b>B-CS-11</b>	0.0720	0.813	1.580	7	11.6	<b>4.35</b>	<b>35.90</b>
<b>B-CS-13</b>	0.0720	0.770	0.690	5	23.050	<b>2.85</b>	<b>23.75</b>
<b>B-CS-18</b>	0.0508	0.423	4.060	35	3.390	<b>4.55</b>	<b>38.00</b>
<b>B-CS-19</b>	0.0508	0.370	0.430	5	59.7	<b>2.60</b>	<b>21.60</b>
<b>B-CS-20</b>	0.0508	0.345	1.500	12	22.210	<b>10.75</b>	<b>89.50</b>
<b>B-CS-22</b>	0.0453	0.300	0.975	10	26.868	<b>3.15</b>	<b>25.95</b>
<b>B-CS-23</b>	0.0453	0.345	1.125	11	14.710	<b>3.75</b>	<b>31.45</b>
<b>B-CS-24</b>	0.0359	0.305	0.540	6	17.345	<b>3.15</b>	<b>25.95</b>
<b>B-CS-25</b>	0.0359	0.393	3.200	20	3.004	<b>1.65</b>	<b>13.80</b>
<b>B-CS-26</b>	0.0359	0.476	0.500	5	5.166	<b>1.95</b>	<b>15.95</b>
<b>B-CS-28</b>	0.0359	0.278	2.250	28	3.890	<b>3.85</b>	<b>32.00</b>
<b>B-CS-29</b>	0.0359	0.228	0.860	15	15.8	<b>5.40</b>	<b>45.00</b>
<b>B-CS-30</b>	0.0320	0.500	2.300	16	0.625	<b>3.20</b>	<b>26.60</b>
<b>B-CS-32</b>	0.0320	0.594	1.240	8	0.820	<b>2.35</b>	<b>19.60</b>
<b>B-CS-37</b>	0.0254	0.365	1.500	16	0.650	<b>2.05</b>	<b>17.00</b>
<b>B-CS-39</b>	0.0250	0.340	1.875	22	0.547	<b>1.80</b>	<b>15.00</b>
<b>B-CS-41</b>	0.0254	0.408	1.750	14	0.528	<b>1.25</b>	<b>10.50</b>
<b>B-CS-42</b>	0.0200	0.258	0.625	11	1.116	<b>1.80</b>	<b>15.00</b>
<b>B-CS-44</b>	0.0200	0.350	1.560	18	0.393	<b>4.45</b>	<b>37.00</b>
<b>B-CS-45</b>	0.0200	0.350	2.000	17	0.418	<b>2.40</b>	<b>19.85</b>
<b>B-CS-46</b>	0.0200	0.297	3.240	47	0.145	<b>1.55</b>	<b>12.55</b>
<b>B-CS-47</b>	0.0179	0.186	0.380	8	3.001	<b>2.00</b>	<b>16.55</b>
<b>B-CS-48</b>	0.0179	0.240	0.670	11	0.881	<b>2.30</b>	<b>19.15</b>
<b>B-CS-49</b>	0.0179	0.236	1.375	22	0.426	<b>2.55</b>	<b>21.00</b>
<b>B-CS-50</b>	0.0179	0.285	2.000	18	0.289	<b>1.75</b>	<b>14.50</b>
<b>B-CS-51</b>	0.0179	0.280	2.560	22	0.245	<b>3.60</b>	<b>29.80</b>
<b>B-CS-53</b>	0.0159	0.240	1.750	22	0.244	<b>2.05</b>	<b>17.00</b>
<b>B-CS-54</b>	0.0142	0.190	1.400	32	0.216	<b>1.95</b>	<b>16.00</b>
<b>B-CS-55</b>	0.0126	0.195	0.550	10	0.437	<b>1.70</b>	<b>13.80</b>
<b>B-CS-56</b>	0.0089	0.170	0.800	12	0.127	<b>1.70</b>	<b>13.80</b>
<b>B-CS-58</b>	0.0080	0.073	0.370	22	0.642	<b>1.95</b>	<b>16.00</b>
<b>B-CS-59</b>	0.0080	0.107	0.295	9	0.505	<b>2.55</b>	<b>21.15</b>

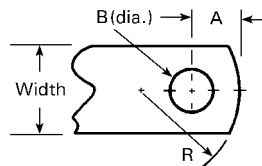
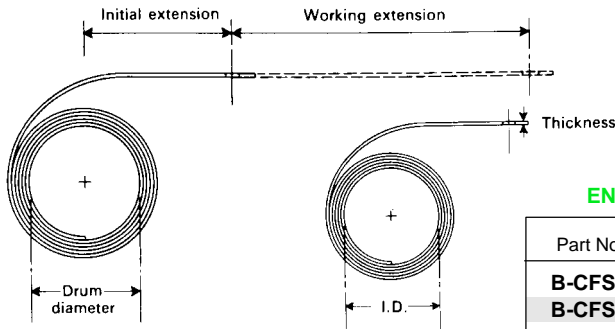
## SPRINGS, CONSTANT FORCE — Stainless Steel Type 301



Our Constant Force Spring is a roll of prestressed Type 301 Stainless Steel strip which exerts a nearly constant restraining force to resist uncoiling. When the strip is extended, the inherent stress resists the loading force at a nearly constant rate.

In use, the spring is usually mounted by tightly wrapping it on a drum. The free end is then attached to the loading force such as in a counterbalance application. This relationship can also be reversed. Typical applications include brush springs for motors, counterbalance springs for window sashes, and carriage return springs for typewriters.

If the spring is mounted on a drum, the drum diameter should be 10 to 20% larger than its natural diameter. One and one-half wraps should remain on the drum at maximum extension. The strip becomes unstable at long extensions and should be guided to prevent twisting or kinking on recoil. Idler pulleys must be larger in diameter than the natural diameter and should never be used to cause back-bending against the natural radius of curvature.



### END CONFIGURATION IN INCHES

Part No.	A	B	R
<b>B-CFS-050</b>	0.375	0.131	0.500
<b>B-CFS-075</b>	0.375	0.131	0.500
<b>B-CFS-112</b>	0.375	0.131	0.500
<b>B-CFS-162</b>	0.375	0.131	0.500
<b>B-CFS-237</b>	0.375	0.187	0.875
<b>B-CFS-350</b>	0.375	0.187	0.875
<b>B-CFS-500</b>	0.375	0.187	0.875
<b>B-CFS-700</b>	0.375	0.187	0.875

#### TO MOUNT SPRING ON DRUM:

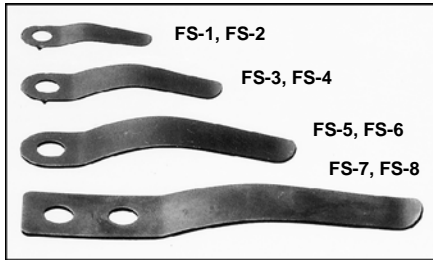
1. Insert a shaft of smaller diameter than the spring Internal diameter (I.D.)
2. Extend the spring fully, so that it is open-ended.
3. Place the spring onto the appropriate drum.
4. Slowly recoil the spring.

### STAINLESS STEEL TYPE 301

Part No.	Thickness	Width	Dimensions in Inches			I.D.	Drum Dia.	Load	Price Each
			Length	Initial Ext.	Working Ext.				
<b>B-CFS-050</b>	0.004	0.25	15	0.61	12	0.34	0.40	0.50 lbs.	<b>12.50</b>
<b>B-CFS-075</b>	0.005	0.31	18	0.75	15	0.42	0.50	0.75 lbs.	<b>12.60</b>
<b>B-CFS-112</b>	0.006	0.37	22	0.92	18	0.51	0.62	1.12 lbs.	<b>12.75</b>
<b>B-CFS-162</b>	0.007	0.50	26	1.06	21	0.59	0.75	1.62 lbs.	<b>13.75</b>
<b>B-CFS-237</b>	0.008	0.59	30	1.22	24	0.68	0.87	2.37 lbs.	<b>14.65</b>
<b>B-CFS-350</b>	0.010	0.68	34	1.53	27	0.85	1.00	3.50 lbs.	<b>15.55</b>
<b>B-CFS-500</b>	0.012	0.81	38	1.84	30	1.02	1.25	5.00 lbs.	<b>17.70</b>
<b>B-CFS-700</b>	0.014	1.00	43	2.14	33	1.19	1.50	7.00 lbs.	<b>19.90</b>

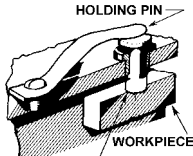
See our Metals Section for Bar Stock in Stainless Steel, Brass, Copper and Steel

## SPRINGS, FLAT — Steel, Blued



### STEEL FLAT SPRINGS

Steel Flat Springs are carefully blued and hardened for uniform action. They are available in a variety of sizes and thicknesses and therefore varying stiffness.



The single hole sizes have three small spikes (B-FS-1 through B-FS-6) which act to lock the spring in place and prevent rotation during use. These cost but a fraction of hand made springs.

*Flat Spring acts through pin that holds workpiece in fixture. This device also positively locates parts.*

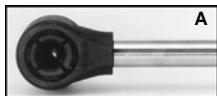
### STEEL, BLUED

Part No.	Length	Thickness	Width at Base	Height at Crown	Screw Size	Each	Price		
							10	25	100
B-FS-1	1"	0.010	5/16"	1/16"	6	1.90	15.70	32.65	108.80
B-FS-2	1"	0.015	5/16"	1/16"	6	1.90	15.70	32.65	108.80
B-FS-3	1-1/2"	0.015	3/8"	1/8"	8	1.90	15.70	32.65	108.80
B-FS-4	1-1/2"	0.020	3/8"	1/8"	8	1.90	15.70	32.65	108.80
B-FS-5	2"	0.020	7/16"	3/16"	10	2.00	16.60	34.55	115.15
B-FS-6	2"	0.025	7/16"	3/16"	10	2.00	16.60	34.55	115.15
B-FS-7	2-3/4"	0.025	1/2"	1/8"	10	2.70	22.35	46.55	155.20
B-FS-8	2-3/4"	0.032	1/2"	1/8"	10	2.70	22.35	46.55	155.20

### ASSORTMENT

B-FS-100	Contains two of each B-FS-1 thru B-FS-8 — 16 pcs.	33.50
B-FS-200	Contains five of each B-FS-1 thru B-FS-8 — 40 pcs.	79.40
B-FS-300	Contains ten of each B-FS-1 thru B-FS-8 — 80 pcs.	129.50

## SPRINGS, GAS



### GAS SPRINGS



### BALL STUD (supplied)

Gas Springs provide controlled and smooth lifting assistance, unlike conventional springs. Whether lifting, lowering, counterbalancing, or damping, they provide essential controlled motion; i.e. for opening, holding or closing heavy covers, doors, etc. Compact and lightweight, each spring at 60 lbs of force. With the body built from heavy gauge steel, and a shaft of hard chromium plated steel, gas springs are highly resistant to bending and buckling. They are automatically lubricated by a special hydraulic fluid which also provides end-of-travel damping. The gas spring works on the simple properties of gas pressure. It is fully extended by internal pressure acting on the shaft when no load is applied. As the shaft of the spring begins the compression cycle, the shaft displaces the gas, decreasing the available volume, thereby increasing the force required to compress the spring.

Ball Studs have snap-on full swivel ball joints for secure fastening and support of spring shafts. Supplied with Gas Springs and available separately, these steel fittings have a commercial zinc finish and come in one size to fit all spring sizes shown. 5/16-18 screw thread is 1/2" long. Rod diameter: 0.32".

Part No.	Tube Diameter	Compressed Size	Extended Size	Each	Price	
					1	2
B-GS-0840	0.75"	8.40"	11.90"	22.00	40.00	
B-GS-1025	0.75"	10.25"	15.25"	22.00	40.00	
B-GS-1100	0.75"	11.00"	17.00"	22.00	40.00	
B-GS-1262	0.75"	12.62"	19.62"	22.00	40.00	
B-GS-2030	Ball Studs with 5/16-18 screw thread 1/2" long			1.25	—	

# SCREW, TAP AND CLEARANCE DRILLS CHART



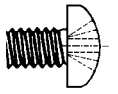
The drills indicated will provide approximately 75% threads when tapped to receive the screw size shown. However, if you wish to pass the screw through the hole, without threads, one of the clearance drills should be used. All metric tap drill sizes are shown for the metric coarse pitch series.

## TAP AND CLEARANCE DRILLS FOR COMMONLY USED S.A.E. AND METRIC SCREWS

SCREW Size/Thread	SPI Reference	O.D. Decimal	TAP DRILLS		CLEARANCE HOLE DRILLS*	
			Size	Decimal	Size	Decimal
#000-120	000120	0.0340"	71	0.0260"	63	0.0370"
M1 × 0.25	1	0.0394"	0.75	0.0295"	1.10	0.0433"
#00-90	0090	0.0470"	65	0.0350"	55	0.0520"
M1.2 × 0.25	12	0.0473"	0.95	0.0374"	1.30	0.0512"
M1.4 × 0.30	14	0.0551"	1.10	0.0433"	1.50	0.0591"
#0-80	080	0.0600"	3/64"	0.0469"	52	0.0635"
M1.6 × 0.35	16	0.0630"	1.25	0.0492"	1.70	0.0669"
M1.7 × 0.35	17	0.0670"	1.30	0.0512"	1.78	0.0700"
M1.8 × 0.35	18	0.0709"	1.45	0.0571"	1.85	0.0728"
#1-72	172	0.0730"	53	0.0595"	48	0.0760"
M2 × 0.4	2	0.0787"	1.60mm	0.0630"	2.2mm	0.0866"
#2-56	256	0.0860"	50	0.0700"	43	0.0890"
M2.2 × 0.45	22	0.0867"	1.75	0.0689"	2.25	0.0886"
M2.5 × 0.45	25	0.0984"	2.05mm	0.0807"	2.7mm	0.1063"
#4-40	440	0.1120"	43	0.0890"	32	0.1160"
M3 × 0.5	3	0.1181"	2.50mm	0.0984"	3.2mm	0.1250"
#5-40	540	0.1250"	38	0.1015"	30	0.1285"
#6-32	632	0.1380"	36	0.1065"	27	0.1440"
M4 × 0.7	4	0.1575"	3.30mm	0.1299"	4.10mm	0.1614"
#8-32	832	0.1640"	29	0.1360"	18	0.1695"
#10-32	032	0.1900"	21	0.1590"	9	0.1960"
M5 × 0.8	5	0.1969"	4.20mm	0.1695"	5.10mm	0.2008"
M6 × 1.0	6	0.2362"	5.0mm	0.1969"	6.10mm	0.2402"
1/4-20	1420	0.2500"	7	0.2010"	F	0.2570"
5/16-18	5618	0.3125"	F	0.2570"	P	0.3230"
3/8-16	3816	0.3750"	5/16"	0.3125"	W	0.3860"
1/2-13	1213	0.5000"	27/64"	0.4219"	33/64"	0.5156"

\*Close Fit

# MACHINE SCREWS — Phillips, Stainless Steel



Pan Head (P)



Flat Head (F)

We stock Stainless Steel Phillips Drive Machine Screws in Pan (P) and Flat (F) Heads. Lengths shown are entire length for Flat (F) and length under screw head for Pan (P).

**Be sure to specify head style when ordering: Pan (P) or Flat (F). Otherwise Pan Head (P) will be shipped.**

## STAINLESS STEEL 18-8 — Phillips

Order Example: **B-MPX-256-2F** is 2-56, 1/8" long, Flat Head

Part No.	Size/Thread	Length	Price			
			10	25	100	1000
B-MPX-080-2	#0-80	1/8"	1.15	2.40	7.95	63.60
B-MPX-080-3	#0-80	3/16"	1.05	2.15	7.05	56.40
B-MPX-080-4	#0-80	1/4"	1.10	2.25	7.45	59.60
B-MPX-080-5	#0-80	5/16"	1.20	2.45	8.15	65.20
B-MPX-080-6	#0-80	3/8"	1.20	2.50	8.25	66.00
B-MPX-080-8	#0-80	1/2"	1.25	2.55	8.50	68.00
B-MPX-172-2	#1-72	1/8"	1.25	2.55	8.50	68.00
B-MPX-172-3	#1-72	3/16"	1.30	2.70	9.00	72.00
B-MPX-172-4	#1-72	1/4"	1.40	2.85	9.50	76.00
B-MPX-172-6	#1-72	3/8"	1.50	3.10	10.25	82.00
B-MPX-172-8	#1-72	1/2"	1.60	3.35	11.15	89.00
B-MPX-172-16	#1-72	1"	2.30	4.75	15.85	126.80
B-MPX-256-2	#2-56	1/8"	—	1.15	3.75	30.00
B-MPX-256-3	#2-56	3/16"	—	1.15	3.75	30.00
B-MPX-256-4	#2-56	1/4"	—	1.15	3.75	30.00
B-MPX-256-6	#2-56	3/8"	—	1.15	3.75	30.00
B-MPX-256-8	#2-56	1/2"	—	1.15	3.75	30.00
B-MPX-256-12	#2-56	3/4"	—	1.15	3.75	30.00
B-MPX-256-16	#2-56	1"	—	1.15	3.75	30.00
B-MPX-440-2	#4-40	1/8"	—	1.40	4.65	37.20
B-MPX-440-3	#4-40	3/16"	—	1.15	3.75	30.00
B-MPX-440-4	#4-40	1/4"	—	1.15	3.75	30.00
B-MPX-440-6	#4-40	3/8"	—	1.15	3.75	30.00
B-MPX-440-8	#4-40	1/2"	—	1.15	3.75	30.00
B-MPX-440-12	#4-40	3/4"	—	1.15	3.75	30.00
B-MPX-440-16	#4-40	1"	—	1.15	3.75	30.00
B-MPX-632-2 *	#6-32	1/8"	1.00	2.10	6.95	55.60
B-MPX-632-3	#6-32	3/16"	—	1.15	3.75	30.00
B-MPX-632-4	#6-32	1/4"	—	1.15	3.75	30.00
B-MPX-632-6	#6-32	3/8"	—	1.15	3.75	30.00
B-MPX-632-8	#6-32	1/2"	—	1.15	3.75	30.00
B-MPX-632-12	#6-32	3/4"	—	1.15	3.75	30.00
B-MPX-632-16	#6-32	1"	—	1.35	4.40	35.20
B-MPX-632-24	#6-32	1-1/2"	—	1.75	5.75	46.00
B-MPX-832-3	#8-32	3/16"	—	1.20	3.90	31.20
B-MPX-832-4	#8-32	1/4"	—	1.15	3.75	30.00
B-MPX-832-6	#8-32	3/8"	—	1.15	3.75	30.00
B-MPX-832-8	#8-32	1/2"	—	1.15	3.75	30.00
B-MPX-832-12	#8-32	3/4"	—	1.60	5.30	42.40
B-MPX-832-16	#8-32	1"	—	1.95	6.40	51.20
B-MPX-832-24	#8-32	1-1/2"	1.20	2.45	8.15	65.20

\* Flat Head not available.

Continued →

## MACHINE SCREWS — Phillips, Stainless Steel (cont.)

**STAINLESS STEEL 18-8 — Phillips** Order Example: **B-MPX-1420-12F** is 1/4-20, 3/4" long, Flat Head

Part No.	Size/Thread	Length	Price			
			10	25	100	1000
B-MPX-024-4	#10-24	1/4"	—	1.55	5.05	40.40
B-MPX-024-6	#10-24	3/8"	—	1.35	4.50	36.00
B-MPX-024-8	#10-24	1/2"	—	1.70	5.55	44.40
B-MPX-024-12	#10-24	3/4"	—	1.80	5.95	47.60
B-MPX-024-16	#10-24	1"	1.15	2.35	7.80	62.40
B-MPX-024-20	#10-24	1-1/4"	2.80	2.80	9.25	74.00
B-MPX-024-24	#10-24	1-1/2"	1.50	3.15	10.45	83.60
B-MPX-032-4	#10-32	1/4"	—	1.50	4.95	39.60
B-MPX-032-6	#10-32	3/8"	—	1.45	4.85	38.80
B-MPX-032-8	#10-32	1/2"	—	1.70	5.55	44.40
B-MPX-032-12	#10-32	3/4"	1.05	2.15	7.05	56.40
B-MPX-032-16	#10-32	1"	1.10	2.25	7.45	59.60
B-MPX-032-24	#10-32	1-1/2"	1.50	3.15	10.45	83.60
B-MPX-1420-6	1/4-20	3/8"	1.25	2.60	8.70	69.60
B-MPX-1420-8	1/4-20	1/2"	1.50	3.10	10.30	81.40
B-MPX-1420-12	1/4-20	3/4"	2.00	4.15	13.75	110.00
B-MPX-1420-16	1/4-20	1"	2.40	5.00	16.55	132.40
B-MPX-1420-24	1/4-20	1-1/2"	3.25	6.75	22.40	179.20
B-MPX-1428-6	1/4-28	3/8"	2.10	4.35	14.50	116.00
B-MPX-1428-8	1/4-28	1/2"	2.30	4.75	15.70	125.60
B-MPX-1428-12	1/4-28	3/4"	3.25	6.75	22.50	180.00
B-MPX-1428-16	1/4-28	1"	4.15	8.65	28.85	230.80
B-MPX-1428-20	1/4-28	1-1/4"	4.35	9.00	29.95	239.60
B-MPX-1428-24	1/4-28	1-1/2"	5.40	11.25	37.50	300.00
B-MPX-1428-32	1/4-28	2"	6.70	13.95	46.50	372.00

### ASSORTMENTS — Machine Screws, Phillips, Stainless Steel 18-8

All assortments — except B-MPX-655 — come packaged in a hinged, lidded polypropylene box.

**Be sure to specify head style when ordering: Pan (P), Flat (F). Otherwise Pan Head (P) will be shipped.**

Part No.	Pieces Per Length	Size/Thread	Lengths	No. of Nuts & Washers	No. of Pieces	Price Each
<b>B-MPX-255</b>	10	#0-80	1/8", 3/16", 1/4", 5/16", 3/8", 1/2"	25 ea.	770	<b>53.30</b>
	10	#1-72	1/8", 3/16", 1/4", 3/8", 1/2", 1"	25 ea.		
	25	#2-56	1/8", 3/16", 1/4", 3/8", 1/2", 3/4", 1"	50 ea.		
	25	#4-40	1/8", 3/16", 1/4", 3/8", 1/2", 3/4", 1"	50 ea.		
<b>B-MPX-355</b>	25	#4-40	1/8", 3/16", 1/4", 3/8", 1/2", 3/4", 1"	50 ea.	825	<b>48.35</b>
	25	#6-32	3/16", 1/4", 3/8", 1/2", 3/4", 1", 1-1/2"	50 ea.		
	25	#8-32	3/16", 1/4", 3/8", 1/2", 3/4", 1", 1-1/2"	50 ea.		
<b>B-MPX-455</b>	25	#6-32	3/16", 1/4", 3/8", 1/2", 3/4", 1", 1-1/2"	50 ea.	800	<b>52.10</b>
	25	#8-32	3/16", 1/4", 3/8", 1/2", 3/4", 1", 1-1/2"	50 ea.		
	25	#10-32	1/4", 3/8", 1/2", 3/4", 1", 1-1/2"	50 ea.		
<b>B-MPX-555</b>	25	#8-32	3/16", 1/4", 3/8", 1/2", 3/4", 1", 1-1/2"	50 ea.	625	<b>50.65</b>
	25	#10-32	1/4", 3/8", 1/2", 3/4", 1", 1-1/2"	50 ea.		
	10	1/4-20	3/8", 1/2", 3/4", 1", 1-1/2"	25 ea.		
<b>B-MPX-655</b>	10	#0-80	1/8", 3/16", 1/4", 5/16, 3/8", 1/2"	25 ea.	1670	<b>97.15</b>
	10	#1-72	1/8", 3/16", 1/4", 3/8", 1/2", 1"	25 ea.		
	25	#2-56	1/8", 3/16", 1/4", 3/8", 1/2", 3/4", 1"	50 ea.		
	25	#4-40	1/8", 3/16", 1/4", 3/8", 1/2", 3/4", 1"	50 ea.		
	25	#6-32	3/16", 1/4", 3/8", 1/2", 3/4", 1", 1-1/2"	50 ea.		
	25	#8-32	3/16", 1/4", 3/8", 1/2", 3/4", 1", 1-1/2"	50 ea.		
	25	#10-32	1/4", 3/8", 1/2", 3/4", 1", 1-1/2"	50 ea.		
	10	1/4-20	3/8", 1/2", 3/4", 1", 1-1/2"	25 ea.		



# MACHINE SCREWS — Slotted or Phillips, Stainless Steel

## METRIC

### SLOTTED DRIVE



**Cheese Head (C)**  
DIN-84

**Pan Head (P)**  
DIN-85

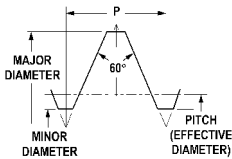
### PHILLIPS DRIVE



**Pan Head (P)**  
DIN-7985

**Flat Head (F)**  
DIN-965

We sell the most popular metric sizes of Slotted Drive Machine Screws in Cheese Head or Pan Head styles, and Phillips Drive Machine Screws in Pan or Flat Head style. Our catalog describes Metric Screws using the ISO metric system. Unless otherwise noted, we define these elements as follows:



ISO BASIC PROFILE  
(FORM)

**Nominal Screw Size:** "M" plus the millimeter size of screw.

**Pitch:** Distance between two corresponding points on adjacent screw threads. Shown as 0.4, 0.5, 0.7, etc. in millimeters (mm).

**Major Diameter:** Outside diameter of screw thread: 2.00, 3.00, etc. in millimeters (mm).

**Length:** The threaded length of screw to underside of head, except in oval and flat head screws where the length is the overall length of the screw: 6, 8, 10, etc. in millimeters (mm).

**Be sure to specify head style when ordering Slotted Screws:**

**Cheese (C) or Pan (P). Otherwise Cheese Head (C) will be shipped.**

**Phillips Screws: Pan (P) or Flat (F). Otherwise Pan Head (P) will be shipped.**

Order Example: **B-MMX-2/4** is a Slotted Cheese Head M2 × 0.4 × 4 mm

Order Example: **B-MMX-2/4P** is a Slotted Pan Head M2 × 0.4 × 4 mm

## STAINLESS STEEL 18-8 — Slotted or Phillips

\*Pan Head Not Available.

SLOTTED (Cheese or Pan) Part No.	PHILLIPS (Pan or Flat) Part No.	Dimensions in Millimeters					10	Price 25	100
		Nominal Size	Pitch	Major Diameter	Length				
B-MMX-1/3*	—	M1	0.25	1	3	9.85	20.50	66.75	
B-MMX-1/5*	—	M1	0.25	1	5	10.95	22.75	75.75	
B-MMX-14/3*	—	M1.4	0.3	1.4	3	9.05	18.85	62.80	
B-MMX-14/5*	—	M1.4	0.3	1.4	5	10.05	20.90	69.60	
B-MMX-2/4	B-MMPX-2/4	M2	0.4	2	4	—	1.15	3.85	
B-MMX-2/6	B-MMPX-2/6	M2	0.4	2	6	—	1.20	3.95	
B-MMX-2/8	B-MMPX-2/8	M2	0.4	2	8	—	1.35	4.50	
B-MMX-2/10	B-MMPX-2/10	M2	0.4	2	10	—	1.55	5.10	
B-MMX-2/12	B-MMPX-2/12	M2	0.4	2	12	—	1.65	5.40	
B-MMX-2/16	B-MMPX-2/16	M2	0.4	2	16	—	1.75	5.75	
B-MMX-2/20	B-MMPX-2/20	M2	0.4	2	20	—	2.05	6.80	
B-MMX-25/4	B-MMPX-25/4	M2.5	0.45	2.5	4	—	1.90	6.30	
B-MMX-25/6	B-MMPX-25/6	M2.5	0.45	2.5	6	—	1.25	4.05	
B-MMX-25/8	B-MMPX-25/8	M2.5	0.45	2.5	8	—	1.30	4.25	
B-MMX-25/10	B-MMPX-25/10	M2.5	0.45	2.5	10	—	1.45	4.75	
B-MMX-25/12	B-MMPX-25/12	M2.5	0.45	2.5	12	—	1.80	5.95	
B-MMX-25/16	B-MMPX-25/16	M2.5	0.45	2.5	16	1.00	2.05	6.80	
B-MMX-25/20	B-MMPX-25/20	M2.5	0.45	2.5	20	1.30	2.70	8.90	
B-MMX-3/5	B-MMPX-3/5	M3	0.5	3	5	—	1.40	4.70	
B-MMX-3/6	B-MMPX-3/6	M3	0.5	3	6	—	1.55	5.15	
B-MMX-3/10	B-MMPX-3/10	M3	0.5	3	10	—	1.65	5.40	
B-MMX-3/12	B-MMPX-3/12	M3	0.5	3	12	—	1.85	6.15	
B-MMX-3/20	B-MMPX-3/20	M3	0.5	3	20	—	2.00	6.70	
B-MMX-3/25	B-MMPX-3/25	M3	0.5	3	25	1.10	2.25	7.50	
B-MMX-4/6	B-MMPX-4/6	M4	0.7	4	6	—	1.75	5.80	
B-MMX-4/10	B-MMPX-4/10	M4	0.7	4	10	1.10	2.25	7.50	

Continued →

## MACHINE SCREWS — Slotted or Phillips, Stainless Steel (cont.)

### STAINLESS STEEL 18-8 — Slotted or Phillips

SLOTTED (Cheese or Pan) Part No.	PHILLIPS (Pan or Flat) Part No.	Nominal Size	Dimensions in Millimeters			10	Price 25	100
			Pitch	Major Diameter	Length			
B-MMX-4/12	B-MMPX-4/12	M4	0.7	4	12	1.35	2.75	9.20
B-MMX-4/20	B-MMPX-4/20	M4	0.7	4	20	1.50	3.15	10.40
B-MMX-4/25	B-MMPX-4/25	M4	0.7	4	25	1.55	3.25	10.85
B-MMX-4/40	B-MMPX-4/40	M4	0.7	4	40	2.30	4.80	15.95
B-MMX-5/10	B-MMPX-5/10	M5	0.8	5	10	1.95	4.05	13.50
B-MMX-5/12	B-MMPX-5/12	M5	0.8	5	12	2.05	4.20	14.00
B-MMX-5/20	B-MMPX-5/20	M5	0.8	5	20	2.15	4.50	15.00
B-MMX-5/25	B-MMPX-5/25	M5	0.8	5	25	2.10	4.35	17.80
B-MMX-5/40	B-MMPX-5/40	M5	0.8	5	40	4.40	9.15	30.50
B-MMX-6/10	B-MMPX-6/10	M6	1.0	6	10	1.90	3.95	13.20
B-MMX-6/12	B-MMPX-6/12	M6	1.0	6	12	2.00	4.10	13.60
B-MMX-6/20	B-MMPX-6/20	M6	1.0	6	20	2.65	5.45	18.20
B-MMX-6/25	B-MMPX-6/25	M6	1.0	6	25	2.85	5.95	19.80
B-MMX-6/40	B-MMPX-6/40	M6	1.0	6	40	4.75	9.85	32.75
B-MMX-6/60	B-MMPX-6/60	M6	1.0	6	60	5.25	10.90	36.25
B-MMX-8/12	B-MMPX-8/12	M8	1.25	8	12	3.55	7.35	24.50
B-MMX-8/20	B-MMPX-8/20	M8	1.25	8	20	3.80	7.85	26.20
B-MMX-8/25	B-MMPX-8/25	M8	1.25	8	25	11.40	11.40	37.90
B-MMX-8/40	B-MMPX-8/40	M8	1.25	8	40	6.35	13.20	43.90

### ASSORTMENTS — Machine Screws, Slotted or Phillips, Stainless Steel 18-8

Be sure to specify head style when ordering Slotted Screws: Cheese (C) or Pan (P). Otherwise Cheese Head will be shipped. Phillips Screws: Pan (P) or Flat (F). Otherwise Pan Head (P) will be shipped.

#### SLOTTED — Cheese or Pan Head Order Example: B-MMX-1000C - Assortment with Cheese Head

All Assortments — except B-MMX-3000 — come packaged in a hinged, lidded polypropylene box.

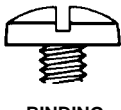
Part No.	Pieces Per Length	Nominal Size	Lengths in Millimeters	No. of Nuts and Washers	No. of Pieces	Price Each
<b>B-MMX-1000</b>	25	M2	4, 6, 8, 10, 12, 16, 20	50	800	<b>56.05</b>
	25	M2.5	4, 6, 8, 10, 12, 16, 20	50		
	25	M3	5, 6, 10, 12, 20, 25	50		
<b>B-MMX-2000</b>	10	M4	6, 10, 12, 20, 25, 40	25	320	<b>54.25</b>
	10	M5	10, 12, 20, 25, 40	25		
	10	M6	10, 12, 20, 25, 40, 60	25		
<b>B-MMX-3000</b>	Contains all six nominal sizes in quantities indicated above.				1120	<b>79.95</b>

#### PHILLIPS — Pan or Flat Head

All Assortments — except B-MMPX-3000 — come packaged in a hinged, lidded polypropylene box.

Part No.	Pieces Per Length	Nominal Size	Lengths in Millimeters	No. of Nuts and Washers	No. of Pieces	Price Each
<b>B-MMPX-1000</b>	25	M2	4, 6, 8, 10, 12, 16, 20	50	800	<b>56.05</b>
	25	M2.5	4, 6, 8, 10, 12, 16, 20	50		
	25	M3	5, 6, 10, 12, 20, 25	50		
<b>B-MMPX-2000</b>	10	M4	6, 10, 12, 20, 25, 40	25	320	<b>54.25</b>
	10	M5	10, 12, 20, 25, 40	25		
	10	M6	10, 12, 20, 25, 40, 60	25		
<b>B-MMPX-3000</b>	Contains all six nominal sizes in quantities indicated above.				1120	<b>79.95</b>

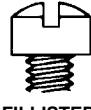
## MACHINE SCREWS — Slotted, Stainless Steel



BINDING



FLAT



FILLISTER

The Machine Screws listed below are stocked in Binding (B), Flat (F), and Fillister (FL) Heads. Please note length indicated in the chart represents entire screw length for Flat Head, and length under head for Binding and Fillister. See page 181 for Machine Screw Assortments.

Be sure to specify head style when ordering.  
Otherwise Binding Head (B) will be shipped.

Order Example: B-MX-172-2F is 1-72, 1/8" long, Flat Head

### STAINLESS STEEL 18-8 — Slotted

Specify Binding (B), Flat (F) or Fillister (FL)

Part No.	Size/Thread	Length	Price			
			10	25	100	1000
B-MX-0000160-1*	#0000-160	1/16"	40.50	88.75	302.00	**
B-MX-0000160-2*	#0000-160	1/8"	40.50	88.75	302.00	**
B-MX-0000160-3*	#0000-160	3/16"	40.50	88.74	302.00	**
B-MX-000120-1	#000-120	1/16"	12.00	25.00	83.25	667.00
B-MX-000120-2	#000-120	1/8"	12.00	25.00	83.25	667.00
B-MX-000120-3	#000-120	3/16"	12.00	25.00	83.25	667.00
B-MX-0090-1	#00-90	1/16"	3.40	7.05	23.40	195.00
B-MX-0090-2	#00-90	1/8"	3.40	7.05	23.40	195.00
B-MX-0090-3	#00-90	3/16"	3.40	7.05	23.40	195.00
B-MX-080-2	#0-80	1/8"	1.05	2.20	7.25	58.00
B-MX-080-3	#0-80	3/16"	1.10	2.25	7.35	58.80
B-MX-080-4	#0-80	1/4"	1.10	2.25	7.45	59.60
B-MX-080-6	#0-80	3/8"	1.10	2.30	7.60	60.80
B-MX-080-8	#0-80	1/2"	1.30	2.70	8.95	71.60
B-MX-080-12	#0-80	3/4"	2.25	4.60	15.25	122.00
B-MX-172-2	#1-72	1/8"	—	1.75	5.75	46.00
B-MX-172-3	#1-72	3/16"	—	1.90	6.25	50.00
B-MX-172-4	#1-72	1/4"	1.15	2.35	7.75	62.00
B-MX-172-5	#1-72	5/16"	1.70	3.55	11.80	94.40
B-MX-172-6	#1-72	3/8"	1.75	3.65	12.10	96.80
B-MX-172-8	#1-72	1/2"	2.05	4.20	14.00	112.00
B-MX-172-12	#1-72	3/4"	2.15	4.45	14.85	118.80
B-MX-256-2	#2-56	1/8"	—	1.05	3.50	28.00
B-MX-256-3	#2-56	3/16"	—	1.10	3.55	28.40
B-MX-256-4	#2-56	1/4"	—	1.10	3.60	28.80
B-MX-256-5	#2-56	5/16"	—	1.10	3.65	29.20
B-MX-256-6	#2-56	3/8"	—	1.15	3.70	29.60
B-MX-256-7	#2-56	7/16"	—	1.15	3.75	30.00
B-MX-256-8	#2-56	1/2"	—	1.20	3.95	31.60
B-MX-256-10	#2-56	5/8"	—	1.20	4.00	32.00
B-MX-256-12	#2-56	3/4"	—	1.30	4.25	34.00
B-MX-256-16	#2-56	1"	—	1.80	5.95	47.60
B-MX-440-2	#4-40	1/8"	1.15	2.35	7.75	62.00
B-MX-440-3	#4-40	3/16"	—	1.05	3.50	28.00
B-MX-440-4	#4-40	1/4"	—	1.10	3.55	28.40
B-MX-440-5	#4-40	5/16"	—	1.10	3.60	28.80

\*Fillister head only.

\*\* Special pricing available. Call Purchasing Services — 1-888-455-9712.

Continued →

## MACHINE SCREWS — Slotted, Stainless Steel (cont.)

### STAINLESS STEEL 18-8 — Slotted

Specify Binding (B), Flat (F) or Fillister (FL)

Part No.	Size/Thread	Length	Price			
			10	25	100	1000
B-MX-440-6	#4-40	3/8"	—	1.10	3.65	29.20
B-MX-440-7	#4-40	7/16"	—	1.10	3.70	29.60
B-MX-440-8	#4-40	1/2"	—	1.20	3.95	31.60
B-MX-440-10	#4-40	5/8"	—	1.25	4.15	33.20
B-MX-440-12	#4-40	3/4"	—	1.30	4.25	34.00
B-MX-440-14	#4-40	7/8"	—	1.35	4.35	34.80
B-MX-440-16	#4-40	1"	—	1.50	4.95	39.60
B-MX-440-20	#4-40	1-1/4"	1.15	2.35	7.75	62.00
B-MX-540-3	#5-40	3/16"	1.10	2.30	7.60	60.80
B-MX-540-4	#5-40	1/4"	—	1.55	5.15	41.20
B-MX-540-6	#5-40	3/8"	—	1.85	6.15	49.20
B-MX-540-8	#5-40	1/2"	1.00	2.10	6.95	55.60
B-MX-540-12	#5-40	3/4"	1.40	2.85	9.45	75.60
B-MX-632-3	#6-32	3/16"	—	1.50	5.00	40.00
B-MX-632-4	#6-32	1/4"	—	1.15	3.80	30.40
B-MX-632-5	#6-32	5/16"	—	1.10	3.65	29.20
B-MX-632-6	#6-32	3/8"	—	1.25	4.10	32.80
B-MX-632-7	#6-32	7/16"	—	1.30	4.25	34.00
B-MX-632-8	#6-32	1/2"	—	1.35	4.40	35.20
B-MX-632-10	#6-32	5/8"	—	1.35	4.50	36.00
B-MX-632-12	#6-32	3/4"	—	1.55	5.15	41.20
B-MX-632-14	#6-32	7/8"	—	1.60	5.25	42.00
B-MX-632-16	#6-32	1"	—	1.65	5.35	42.80
B-MX-632-20	#6-32	1-1/4"	1.00	2.10	7.00	56.00
B-MX-632-24	#6-32	1-1/2"	1.10	2.25	7.35	58.80
B-MX-832-4	#8-32	1/4"	—	1.45	4.85	38.80
B-MX-832-5	#8-32	5/16"	—	1.50	4.95	39.60
B-MX-832-6	#8-32	3/8"	—	1.55	5.20	41.60
B-MX-832-7	#8-32	7/16"	—	1.65	5.35	42.80
B-MX-832-8	#8-32	1/2"	—	1.70	5.65	45.20
B-MX-832-10	#8-32	5/8"	—	1.85	6.05	48.40
B-MX-832-12	#8-32	3/4"	—	1.95	6.40	51.20
B-MX-832-14	#8-32	7/8"	1.00	2.10	6.90	55.20
B-MX-832-16	#8-32	1"	1.05	2.20	7.25	58.00
B-MX-832-20	#8-32	1-1/4"	1.30	2.70	8.95	71.60
B-MX-832-24	#8-32	1-1/2"	1.40	2.85	9.35	74.80
B-MX-032-4	#10-32	1/4"	1.00	2.10	6.85	54.80
B-MX-032-5	#10-32	5/16"	—	1.95	6.50	52.00
B-MX-032-6	#10-32	3/8"	—	1.80	6.00	48.00
B-MX-032-7	#10-32	7/16"	—	1.90	6.25	50.00
B-MX-032-8	#10-32	1/2"	—	1.95	6.50	52.00
B-MX-032-10	#10-32	5/8"	1.15	2.35	7.75	62.00
B-MX-032-12	#10-32	3/4"	1.30	2.65	8.75	70.00
B-MX-032-14	#10-32	7/8"	1.40	2.90	9.65	77.20
B-MX-032-16	#10-32	1"	1.55	3.20	10.55	84.40

## MACHINE SCREWS — Slotted, Stainless Steel (cont.)

### STAINLESS STEEL 18-8 — Slotted

Specify Binding (B), Flat (F) or Fillister (FL)

Part No.	Size/Thread	Length	Price			
			10	25	100	1000
<b>B-MX-032-20</b>	#10-32	1-1/4"	<b>1.70</b>	<b>3.55</b>	<b>11.75</b>	<b>94.00</b>
<b>B-MX-032-24</b>	#10-32	1-1/2"	<b>2.05</b>	<b>4.20</b>	<b>13.85</b>	<b>110.80</b>
<b>B-MX-1420-6</b>	1/4-20	3/8"	<b>1.90</b>	<b>3.95</b>	<b>13.15</b>	<b>105.20</b>
<b>B-MX-1420-8</b>	1/4-20	1/2"	<b>2.05</b>	<b>4.30</b>	<b>14.30</b>	<b>114.40</b>
<b>B-MX-1420-10</b>	1/4-20	5/8"	<b>2.20</b>	<b>4.55</b>	<b>15.05</b>	<b>120.40</b>
<b>B-MX-1420-12</b>	1/4-20	3/4"	<b>2.25</b>	<b>4.65</b>	<b>15.40</b>	<b>123.20</b>
<b>B-MX-1420-16</b>	1/4-20	1"	<b>2.30</b>	<b>4.80</b>	<b>15.95</b>	<b>127.60</b>
<b>B-MX-1420-24</b>	1/4-20	1-1/2"	<b>3.10</b>	<b>6.45</b>	<b>21.45</b>	<b>171.60</b>
<b>B-MX-1420-48*</b>	1/4-20	3"	<b>4.75</b>	<b>9.75</b>	<b>32.25</b>	<b>268.50</b>

\*Available in Flat (F) only.

### ASSORTMENTS

#### Machine Screws — Slotted, Stainless Steel 18-8

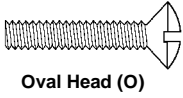
*Be sure to specify Slotted Drive head style when ordering:*

*Binding (B), Flat (F) or Fillister (FL). Otherwise Binding (B) will be shipped.*

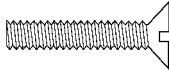
Part No.	Pieces Per Length	Size/Thread	Lengths Included	No. of Nuts and Washers	No. of Pieces	Price Each
<b>B-MX-15</b>	10	#000-120	1/16", 1/8", 3/16"	25	260	<b>148.45</b>
	10	#00-90	1/16", 1/8", 3/16"	25		
	10	#0-80	1/8", 3/16", 1/4", 3/8", 1/2"	25		
<b>B-MX-225</b>	10	#0-80	1/8", 3/16", 1/4", 3/8", 1/2", 3/4"	25	495	<b>42.85</b>
	10	#1-72	1/8", 3/16", 1/4", 3/8", 1/2", 3/4"	25		
	25	#2-56	1/8", 3/16", 1/4", 3/8", 1/2", 3/4", 1"	50		
<b>B-MX-325</b>	25	#2-56	3/16", 1/4", 3/8", 1/2", 3/4", 1"	50	825	<b>47.35</b>
	25	#4-40	3/16", 1/4", 3/8", 1/2", 3/4", 1"	50		
	25	#6-32	1/4", 3/8", 1/2", 3/4", 1", 1-1/2"	50		
<b>B-MX-380</b>	25	#6-32	3/16", 1/4", 3/8", 1/2", 3/4", 1", 1-1/2"	50	635	<b>46.55</b>
	25	#8-32	1/4", 3/8", 1/2", 3/4", 1", 1-1/2"	50		
	10	#10-32	1/4", 3/8", 1/2", 3/4", 1", 1-1/2"	25		
<b>B-MX-425</b>	25	#8-32	1/4", 3/8", 1/2", 3/4", 1", 1-1/2"	50	460	<b>37.00</b>
	10	#10-32	1/4", 3/8", 1/2", 3/4", 1", 1-1/2"	25		
	10	1/4-20	3/8", 1/2", 3/4", 1", 1-1/2"	25		
<b>B-MX-525</b>	10	#0-80	1/8", 3/16", 1/4", 3/8", 1/2", 3/4"	25	1505	<b>95.35</b>
	10	#1-72	1/8", 3/16", 1/4", 3/8", 1/2", 3/4"	25		
	25	#2-56	1/8", 3/16", 1/4", 3/8", 1/2", 3/4", 1"	50		
	25	#4-40	1/8", 3/16", 1/4", 3/8", 1/2", 3/4", 1"	50		
	25	#6-32	3/16", 1/4", 3/8", 1/2", 3/4", 1", 1-1/2"	50		
	25	#8-32	1/4", 3/8", 1/2", 3/4", 1", 1-1/2"	50		
	10	#10-32	1/4", 3/8", 1/2", 3/4", 1", 1-1/2"	25		
	10	1/4-20	3/8", 1/2", 3/4", 1", 1-1/2"	25		

**Don't see the thread size you need?**  
**Need a different length or head style?**  
**Call Purchasing Services Toll Free — 1-888-455-9712**

# MACHINE SCREWS — Slotted, Stainless Steel



Oval Head (O)



Flat Head (F)

The Machine Screws listed below are stocked in slotted Oval Head (O) and slotted Flat Head (F).

**Be sure to specify head style when ordering Slotted Screws: Oval (O) or Flat (F). Otherwise Oval (O) will be shipped.**

## METRIC

Order Example: **B-MMOX-3-20F** is M3 × 0.5 × 20mm, Flat Head

### STAINLESS STEEL 18-8 — 90° Countersink Slotted, Oval Head DIN-964/Flat Head DIN-963

Part No.	Nominal Size	Pitch	Dimensions in Millimeters		Price		
			Major Dia.	Length	10	25	100
<b>B-MMOX-3-10</b>	M3	0.5	3	10	—	<b>1.35</b>	<b>4.40</b>
<b>B-MMOX-3-12</b>	M3	0.5	3	12	—	<b>1.50</b>	<b>5.00</b>
<b>B-MMOX-3-20</b>	M3	0.5	4	20	<b>1.10</b>	<b>2.25</b>	<b>7.35</b>
<b>B-MMOX-4-10</b>	M4	0.7	4	10	—	<b>2.00</b>	<b>6.65</b>
<b>B-MMOX-4-12</b>	M4	0.7	4	12	<b>1.05</b>	<b>2.15</b>	<b>7.05</b>
<b>B-MMOX-4-20</b>	M4	0.7	4	20	<b>1.35</b>	<b>2.80</b>	<b>9.30</b>
<b>B-MMOX-5-10</b>	M5	0.8	5	10	<b>1.35</b>	<b>2.75</b>	<b>9.10</b>
<b>B-MMOX-5-12</b>	M5	0.8	5	12	<b>1.65</b>	<b>3.45</b>	<b>11.50</b>
<b>B-MMOX-5-20</b>	M5	0.8	5	20	<b>1.75</b>	<b>3.65</b>	<b>12.10</b>
<b>B-MMOX-6-12</b>	M6	1.0	6	12	<b>3.15</b>	<b>6.60</b>	<b>22.00</b>
<b>B-MMOX-6-20</b>	M6	1.0	6	20	<b>2.10</b>	<b>4.40</b>	<b>14.65</b>
<b>B-MMOX-6-25</b>	M6	1.0	6	25	<b>2.25</b>	<b>4.65</b>	<b>15.35</b>
<b>B-MMOX-6-40</b>	M6	1.0	6	40	<b>4.05</b>	<b>8.40</b>	<b>28.00</b>
<b>B-MMOX-8-20</b>	M8	1.25	8	20	<b>3.85</b>	<b>8.00</b>	<b>26.55</b>
<b>B-MMOX-8-25</b>	M8	1.25	8	25	<b>5.45</b>	<b>11.30</b>	<b>37.60</b>

## ASSORTMENTS

### Machine Screws — Slotted, Stainless Steel 18-8

This 330-piece assortment contains 10 Slotted Machine Screws in each nominal size and each corresponding length indicated below, plus 25 hex nuts and 25 flat washers for each nominal size. Oval or Flat head style is indicated by Part Number.

Nominal Size	Pitch	Major Diameter	Lengths			
			10 mm	12 mm	20 mm	40 mm
M3	0.5 mm	3 mm	10 mm	12 mm	20 mm	
M4	0.7 mm	4 mm	10 mm	12 mm	20 mm	
M5	0.8 mm	5 mm	10 mm	12 mm	20 mm	
M6	1.0 mm	6 mm	12 mm	20 mm	25 mm	40 mm

<b>B-MMOX-2500</b>	Oval Head	.....	<b>35.50</b>
<b>B-MMOX-2500F</b>	Flat Head	.....	<b>35.50</b>



See our full selection of PB Baumann  
Screwdrivers  
starting on page 352

## MACHINE SCREWS, MINIATURE — Slotted, Stainless Steel (UNM)



### UNM (Unified National Miniature) Machine Screws — Stainless Steel 18-8

Unified National Miniature Thread Series Machine Screws are provided in these extremely small sizes for subminiature applications. Components such as these are commonly used in guidance systems for the aerospace industry, in optical vision instruments, medical devices, and in many electronic products.

Manufactured and deburred to meet NAS721 standards, slotted screws with Fillister heads are made of Stainless Steel 18-8 for good corrosion resistance.

### STAINLESS STEEL 18-8 — SLOTTED, FILLISTER

Part No.	UNM Designation	Major Diameter	Length Inches	Each	Price	
					5	10
<b>B-MMX-05/060</b>	.5	0.5mm	0.060	<b>6.85</b>	<b>28.50</b>	<b>47.50</b>
<b>B-MMX-05/120</b>	.5	0.5mm	0.120	<b>6.85</b>	<b>28.50</b>	<b>47.50</b>
<b>B-MMX-06/100</b>	.6	0.6mm	0.100	<b>5.75</b>	<b>24.00</b>	<b>40.00</b>
<b>B-MMX-08/080</b>	.8	0.8mm	0.080	<b>1.65</b>	<b>6.75</b>	<b>11.25</b>
<b>B-MMX-08/100</b>	.8	0.8mm	0.100	<b>1.65</b>	<b>6.75</b>	<b>11.25</b>
<b>B-MMX-08/120</b>	.8	0.8mm	0.120	<b>1.65</b>	<b>6.75</b>	<b>11.25</b>
<b>B-MMX-09/120</b>	.9	0.9mm	0.120	<b>1.65</b>	<b>6.75</b>	<b>11.25</b>

## MACHINE SCREWS — Slotted, PEEK



### PEEK (Polyetheretherketone)

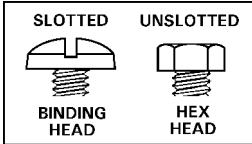
If you need a fastener that is virtually non-corrosive, PEEK Screws may be an adequate substitute for metal components and even for screws made from other plastics. This highly crystalline thermoplastic maintains its properties under an extreme range of conditions, and it offers good wear resistance, low moisture absorption, and excellent hydrolysis resistance. It withstands high temperature levels, even under sustained pressure, and with a continuous use temperature rating of 482°F (250°C), it can be sterilized repeatedly without damage to the material. It is also known for its excellent chemical resistance (organic, inorganic solvents, aqueous reagents) and high mechanical strength, including good flexural, tensile, impact and fatigue properties.

### PEEK — Pan Head

Part No.	Size/Thread	Length	Each	Price	
				5	6
<b>B-MP-440-12P</b>	#4-40	3/4"	<b>6.90</b>		<b>34.55</b>
<b>B-MP-632-16P</b>	#6-32	1"	<b>6.95</b>		<b>34.70</b>
<b>B-MP-832-16P</b>	#8-32	1"	<b>7.25</b>		<b>36.35</b>
<b>B-MP-032-16P</b>	#10-32	1"	<b>7.55</b>		<b>37.70</b>
<b>B-MP-1420-16P</b>	#1/4-20	1"	<b>8.65</b>		<b>43.10</b>

**For different material Fasteners, please contact  
Purchasing Services at 1-888-455-9712**

# MACHINE SCREWS — Nylon



## BINDING AND HEX HEAD — Slotted and Unslotted

Molded Nylon 6/6 Machine Screws offer excellent insulation in electrical and electronic applications. Lightweight and resistant to vibration and abrasions, nylon is nonmagnetic and resists most solvents, especially petroleum oils and greases. **Be sure to specify head style when ordering: Binding Head Slotted (B) or Hex Head Unslotted (H). Otherwise Binding Head (B) will be shipped.**

### NYLON — Binding and Hex Head

Order Example: **B-MN-440-12H** is #4-40, 3/4" long, Hex Head

Part No.	Size/Thread	Length	Price		
			10	25	100
B-MN-256-2	#2-56	1/8"	1.20	2.35	6.25
B-MN-256-3	#2-56	3/16"	1.30	2.40	6.45
B-MN-256-4	#2-56	1/4"	1.35	2.50	6.70
B-MN-256-6	#2-56	3/8"	1.40	2.60	6.95
B-MN-256-8	#2-56	1/2"	1.45	2.70	7.25
B-MN-256-12	#2-56	3/4"	1.50	2.80	7.50
B-MN-256-16	#2-56	1"	1.65	2.95	7.75
B-MN-440-3	#4-40	3/16"	1.20	2.35	6.25
B-MN-440-4	#4-40	1/4"	1.25	2.35	6.30
B-MN-440-6	#4-40	3/8"	1.30	2.40	6.45
B-MN-440-8	#4-40	1/2"	1.35	2.50	6.70
B-MN-440-12	#4-40	3/4"	1.40	2.60	6.95
B-MN-440-16	#4-40	1"	1.45	2.70	7.25
B-MN-440-20	#4-40	1-1/4"	1.55	2.80	7.50
B-MN-632-4	#6-32	1/4"	1.25	2.35	6.25
B-MN-632-6	#6-32	3/8"	1.30	2.40	6.45
B-MN-632-8	#6-32	1/2"	1.35	2.50	6.70
B-MN-632-12	#6-32	3/4"	1.40	2.60	6.95
B-MN-632-16	#6-32	1"	1.45	2.70	7.25
B-MN-632-20	#6-32	1-1/4"	1.50	2.75	7.35
B-MN-632-24	#6-32	1-1/2"	1.60	2.85	7.65
B-MN-832-4	#8-32	1/4"	1.25	2.35	6.25
B-MN-832-6	#8-32	3/8"	1.30	2.40	6.45
B-MN-832-8	#8-32	1/2"	1.35	2.50	6.70
B-MN-832-12	#8-32	3/4"	1.40	2.60	6.95
B-MN-832-16	#8-32	1"	1.45	2.70	7.25
B-MN-832-20	#8-32	1-1/4"	1.55	2.80	7.50
B-MN-832-24	#8-32	1-1/2"	1.65	2.95	7.75
B-MN-832-32	#8-32	2"	1.75	3.10	7.95
B-MN-032-4	#10-32	1/4"	1.35	2.50	6.70
B-MN-032-6	#10-32	3/8"	1.40	2.60	6.95
B-MN-032-8	#10-32	1/2"	1.45	2.70	7.25
B-MN-032-12	#10-32	3/4"	1.50	2.75	7.35
B-MN-032-16	#10-32	1"	1.50	2.75	7.35
B-MN-032-20	#10-32	1-1/4"	1.55	2.80	7.50
B-MN-032-24	#10-32	1-1/2"	1.60	2.85	7.65
B-MN-032-32	#10-32	2"	1.80	3.25	8.25
B-MN-1420-4	1/4-20	1/4"	1.60	2.85	7.65
B-MN-1420-6	1/4-20	3/8"	1.65	2.95	7.75
B-MN-1420-8	1/4-20	1/2"	1.70	3.05	7.85
B-MN-1420-12	1/4-20	3/4"	1.75	3.10	7.95
B-MN-1420-16	1/4-20	1"	1.80	3.25	8.25
B-MN-1420-20	1/4-20	1-1/4"	1.90	3.45	8.50
B-MN-1420-24	1/4-20	1-1/2"	1.95	3.55	8.65
B-MN-1420-32	1/4-20	2"	2.05	3.70	8.95



## MACHINE SCREWS — Nylon (cont.)

### ASSORTMENTS

#### Machine Screws — Binding and Hex Head

Contains 10 screws of each size and length listed with 25 hex nuts and 25 flat washers for each screw size.

**Be sure to specify head style when ordering: Binding Head (B) or Hex Head (H). Otherwise Binding Head (B) will be shipped.**

Part No.	Size/Thread	Lengths Included	No. of Pcs	Price Each
<b>B-MN-150</b>	#2-56	1/8", 1/4", 3/8", 1/2", 3/4", 1"	<b>320</b>	<b>38.50</b>
	#4-40	3/16", 1/4", 3/8", 1/2", 3/4", 1"		
	#6-32	1/4", 3/8", 1/2", 3/4", 1"		
<b>B-MN-250</b>	#6-32	1/4", 3/8", 1/2", 3/4", 1"	<b>320</b>	<b>39.50</b>
	#8-32	1/4", 3/8", 1/2", 3/4", 1", 1-1/2"		
	#10-32	1/4", 3/8", 1/2", 3/4", 1", 1-1/2"		
<b>B-MN-350</b>	#8-32	1/4", 3/8", 1/2", 3/4", 1", 1-1/2"	<b>330</b>	<b>39.35</b>
	#10-32	1/4", 3/8", 1/2", 3/4", 1", 1-1/2"		
	1/4-20	1/4", 3/8", 1/2", 3/4", 1", 1-1/2"		
<b>B-MN-550</b>	Contains all six sizes with lengths indicated above		<b>650</b>	<b>61.55</b>

#### NYLON — Pan Head, Miniature, Slotted

Part No.	Size/Thread	Length	10	Price 25	100
<b>B-MN-0090-8*</b>	#00-90	1/2"	<b>3.30</b>	<b>6.85</b>	<b>22.75</b>
<b>B-MN-080-2</b>	#0-80	1/8"	<b>2.80</b>	<b>5.80</b>	<b>19.20</b>
<b>B-MN-080-4</b>	#0-80	1/4"	<b>2.95</b>	<b>6.15</b>	<b>20.40</b>
<b>B-MN-080-6</b>	#0-80	3/8"	<b>3.15</b>	<b>6.50</b>	<b>21.60</b>
<b>B-MN-080-8</b>	#0-80	1/2"	<b>3.20</b>	<b>6.65</b>	<b>22.20</b>
<b>B-MN-172-2FL**</b>	#1-72	1/8"	<b>2.80</b>	<b>5.80</b>	<b>19.20</b>
<b>B-MN-172-4</b>	#1-72	1/4"	<b>2.95</b>	<b>6.15</b>	<b>20.40</b>
<b>B-MN-172-6</b>	#1-72	3/8"	<b>3.15</b>	<b>6.50</b>	<b>21.60</b>
<b>B-MN-172-8</b>	#1-72	1/2"	<b>3.20</b>	<b>6.65</b>	<b>22.20</b>

\* This size available in Binding Head only.

\*\* Fillister Head.

#### NYLON — Flat Head, 82°, Slotted

Part No.	Size/Thread	Length	10	Price 25	100
<b>B-MN-256-3F</b>	#2-56	3/16"	<b>1.30</b>	<b>2.40</b>	<b>6.45</b>
<b>B-MN-256-4F</b>	#2-56	1/4"	<b>1.35</b>	<b>2.50</b>	<b>6.70</b>
<b>B-MN-256-6F</b>	#2-56	3/8"	<b>1.40</b>	<b>2.60</b>	<b>6.95</b>
<b>B-MN-256-8F</b>	#2-56	1/2"	<b>1.45</b>	<b>2.70</b>	<b>7.25</b>
<b>B-MN-256-12F</b>	#2-56	3/4"	<b>1.50</b>	<b>2.80</b>	<b>7.50</b>
<b>B-MN-440-2F</b>	#4-40	1/8"	<b>1.20</b>	<b>2.35</b>	<b>6.25</b>
<b>B-MN-440-4F</b>	#4-40	1/4"	<b>1.25</b>	<b>2.35</b>	<b>6.30</b>
<b>B-MN-440-6F</b>	#4-40	3/8"	<b>1.30</b>	<b>2.40</b>	<b>6.45</b>
<b>B-MN-440-8F</b>	#4-40	1/2"	<b>1.35</b>	<b>2.50</b>	<b>6.70</b>
<b>B-MN-440-12F</b>	#4-40	3/4"	<b>1.40</b>	<b>2.60</b>	<b>6.95</b>
<b>B-MN-440-16F</b>	#4-40	1"	<b>1.45</b>	<b>2.70</b>	<b>7.25</b>
<b>B-MN-632-4F</b>	#6-32	1/4"	<b>1.25</b>	<b>2.35</b>	<b>6.25</b>
<b>B-MN-632-6F</b>	#6-32	3/8"	<b>1.30</b>	<b>2.40</b>	<b>6.45</b>
<b>B-MN-632-8F</b>	#6-32	1/2"	<b>1.35</b>	<b>2.50</b>	<b>6.70</b>
<b>B-MN-632-12F</b>	#6-32	3/4"	<b>1.40</b>	<b>2.60</b>	<b>6.95</b>
<b>B-MN-632-16F</b>	#6-32	1"	<b>1.45</b>	<b>2.70</b>	<b>7.25</b>
<b>B-MN-832-4F</b>	#8-32	1/4"	<b>1.25</b>	<b>2.35</b>	<b>6.25</b>
<b>B-MN-832-6F</b>	#8-32	3/8"	<b>1.30</b>	<b>2.40</b>	<b>6.45</b>

## MACHINE SCREWS — Nylon (cont.)

### NYLON — Flat Head, 82°, Slotted

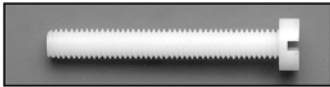
Part No.	Size/Thread	Length	10	Price 25	100
B-MN-832-8F	#8-32	1/2"	1.35	2.50	6.70
B-MN-832-12F	#8-32	3/4"	1.40	2.60	6.95
B-MN-832-16F	#8-32	1"	1.45	2.70	7.25
B-MN-032-4F	#10-32	1/4"	1.35	2.50	6.70
B-MN-032-6F	#10-32	3/8"	1.40	2.60	6.95
B-MN-032-8F	#10-32	1/2"	1.45	2.70	7.25
B-MN-032-12F	#10-32	3/4"	1.50	2.75	7.35
B-MN-032-16F	#10-32	1"	1.50	2.75	7.35
B-MN-1420-4F	1/4-20	1/4"	1.60	2.85	7.65
B-MN-1420-8F	1/4-20	1/2"	1.70	3.05	7.85
B-MN-1420-12F	1/4-20	3/4"	1.75	3.10	7.95
B-MN-1420-16F	1/4-20	1"	1.80	3.25	8.25
B-MN-1420-24F	1/4-20	1-1/2"	1.95	3.55	8.65
B-MN-1420-32F	1/4-20	2"	2.05	3.70	8.95

### Machine Screw Assortments — Flat Head, Nylon

Contains 10 screws of each size and length listed below.

Part No.	Size/Thread	Lengths Included	Price Each
B-MN-160F	#2-56	3/16", 1/4", 3/8", 1/2", 3/4"	25.65
	#4-40	1/8", 1/4", 3/8", 1/2", 3/4", 1"	
	#6-32	1/4", 3/8", 1/2", 3/4", 1"	
B-MN-260F	#6-32	1/4", 3/8", 1/2", 3/4", 1"	24.75
	#8-32	1/4", 3/8", 1/2", 3/4", 1"	
	#10-32	1/4", 3/8", 1/2", 3/4", 1"	
B-MN-360F	#8-32	1/4", 3/8", 1/2", 3/4", 1"	28.45
	#10-32	1/4", 3/8", 1/2", 3/4", 1"	
	1/4-20	1/4", 1/2", 3/4", 1", 1-1/2", 2"	
B-MN-560F	Contains all six sizes with lengths as indicated in the above assortments.		52.05

### METRIC



Nonconductive and corrosion resistant fasteners in metric sizes. Choose Slotted Cheese Head or Slotted Oval Head.

### SLOTTED, CHEESE HEAD DIN-84 AND OVAL HEAD DIN-964 — Nylon 6/6

CHEESE HEAD Part No.	OVAL HEAD Part No.	Nominal Size	Dimensions in Millimeters		Price			
			Pitch	Length	10	25	100	1000
B-MMN-2-4	—	M2	0.4	4	—	1.60	5.45	45.50
B-MMN-2-6	—	M2	0.4	6	—	1.65	5.50	45.90
B-MMN-2-8	—	M2	0.4	8	—	1.70	5.55	46.40
B-MMN-2-12	—	M2	0.4	12	—	1.70	5.70	47.30
B-MMN-2-16	—	M2	0.4	16	—	1.75	5.75	47.60
B-MMN-2-25	—	M2	0.4	25	—	1.75	5.80	48.50
B-MMN-25-4	B-MMON-25-4	M2.5	0.45	4	—	1.70	5.20	45.50
B-MMN-25-6	B-MMON-25-6	M2.5	0.45	6	—	1.70	5.25	45.90
B-MMN-25-8	B-MMON-25-8	M2.5	0.45	8	—	1.75	5.30	46.40
B-MMN-25-12	B-MMON-25-12	M2.5	0.45	12	—	1.75	5.40	47.30
B-MMN-25-16	B-MMON-25-16	M2.5	0.45	16	—	1.80	5.45	47.60
B-MMN-25-20	B-MMON-25-20	M2.5	0.45	20	—	1.80	5.50	48.00

# MACHINE SCREWS — Nylon (cont.)

## METRIC

### SLOTTED, CHEESE HEAD DIN-84 AND OVAL HEAD DIN-964 — Nylon 6/6

CHEESE HEAD Part No.	OVAL HEAD Part No.	Nominal Size	Dimensions in Millimeters			Price			
			Pitch	Length	10	25	100	1000	
B-MMN-25-25	B-MMON-25-25	M2.5	0.45	25	—	1.80	5.55	48.40	
B-MMN-3-6	B-MMON-3-6	M3	0.5	6	—	1.70	5.25	45.90	
B-MMN-3-12	B-MMON-3-12	M3	0.5	12	—	1.75	5.40	47.30	
B-MMN-3-20	B-MMON-3-20	M3	0.5	20	—	1.80	5.50	48.00	
B-MMN-3-25	B-MMON-3-25	M3	0.5	25	—	1.80	5.55	48.40	
B-MMN-3-30	B-MMON-3-30	M3	0.5	30	—	1.85	5.60	48.90	
B-MMN-4-6	B-MMON-4-6	M4	0.7	6	—	1.90	5.75	50.40	
B-MMN-4-12	B-MMON-4-12	M4	0.7	12	—	1.90	5.85	51.10	
B-MMN-4-20	B-MMON-4-20	M4	0.7	20	—	1.95	5.95	51.80	
B-MMN-4-25	B-MMON-4-25	M4	0.7	25	—	1.95	5.95	51.90	
B-MMN-5-6	B-MMON-5-6	M5	0.8	6	—	2.05	6.30	54.80	
B-MMN-5-8	B-MMON-5-8	M5	0.8	8	—	2.05	6.35	55.30	
B-MMN-5-10	B-MMON-5-10	M5	0.8	10	1.00	2.10	6.40	55.70	
B-MMN-5-12	B-MMON-5-12	M5	0.8	12	1.00	2.10	6.45	56.20	
B-MMN-5-20	B-MMON-5-20	M5	0.8	20	1.05	2.15	6.55	57.00	
B-MMN-5-25	B-MMON-5-25	M5	0.8	25	1.05	2.15	6.60	57.40	
B-MMN-5-40	B-MMON-5-40	M5	0.8	40	1.05	2.20	6.75	59.10	
B-MMN-6-8	B-MMON-6-8	M6	1.0	8	1.20	2.45	7.45	65.00	
B-MMN-6-10	B-MMON-6-10	M6	1.0	10	1.20	2.45	7.45	65.10	
B-MMN-6-12	B-MMON-6-12	M6	1.0	12	1.20	2.45	7.50	65.40	
B-MMN-6-20	B-MMON-6-20	M6	1.0	20	1.20	2.50	7.65	66.50	
B-MMN-6-25	B-MMON-6-25	M6	1.0	25	1.20	2.50	7.70	66.90	
B-MMN-6-40	B-MMON-6-40	M6	1.0	40	1.25	2.60	7.95	69.40	
B-MMN-6-45	B-MMON-6-45	M6	1.0	45	1.25	2.60	8.00	69.80	

## ASSORTMENTS

### Machine Screws — Slotted, Cheese Head DIN-84, Nylon 6/6

All assortments come in a hinged, lidded polypropylene box.

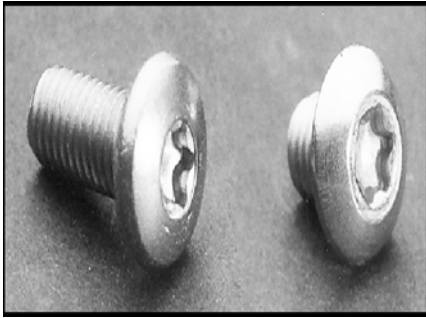
Part No.	Nominal Size	Pieces Per Length	# of nuts/washers	Lengths in Millimeters				Price Each
				4	8	16	25	
<b>B-MMN-1200</b>	M2	25	50	4	8	16	25	<b>39.95</b>
	M2.5	25	50	4	8	16	25	
	M3	25	50	6	12	20	30	
<b>B-MMN-2200</b>	M4	25	50	6	12	20	25	<b>35.10</b>
	M5	10	25	10	20	25	40	
	M6	10	25	10	20	25	45	
<b>B-MMN-3200</b>	Contains all six nominal sizes in the corresponding lengths and quantities listed above. 980 pieces.						<b>72.60</b>	

### Machine Screws — Slotted, Oval Head DIN-964, Nylon 6/6

This 825 piece assortment comes in a hinged, lidded polypropylene box.

Part No.	Nominal Size	Pieces Per Length	# of nuts/washers	Lengths in Millimeters				Price Each
				4	6	12	20	
<b>B-MMON-2400</b>	M2.5	10	25	4	6	12	20	<b>61.80</b>
	M3	10	25	6	12	20	25	
	M4	10	25	6	12	20	25	
	M5	10	25	8	12	20	25	
	M6	10	25	8	12	20	25	

## MACHINE SCREWS — TORX PLUS<sup>®</sup>, Stainless Steel



### TORX PLUS<sup>®</sup> — Stainless Steel Type 303, Passivated

The patented TORX PLUS<sup>®</sup> Drive system is the culmination of more than twenty-five years of fastener research based on the innovative design and proven performance of the original TORX<sup>®</sup> Drive system. Its unique elliptically based geometric configuration means the TORX PLUS<sup>®</sup> drive system outperforms and outlasts every other drive system available today. TORX PLUS<sup>®</sup> offers a 100% average improvement in driver bit life and 25% increase in average bit strength, meaning considerable reductions in assembly downtime and considerable savings. TORX PLUS<sup>®</sup> is compatible with existing driver bits.

### STAINLESS STEEL TYPE 303 — PAN HEAD

Part No.	Size/Thread	Length	Torx Driver	Price			
				10	25	100	1000
B-MTX-0090-1P	00-90	1/16	T3	2.55	5.25	17.40	145.00
B-MTX-0090-2P	00-90	1/8	T3	2.55	5.25	17.40	145.00
B-MTX-080-2P	0-80	1/8	T5	1.65	3.45	11.40	95.00
B-MTX-080-3P	0-80	3/16	T5	1.65	3.45	11.40	95.00
B-MTX-080-4P	0-80	1/4	T5	1.65	3.45	11.40	95.00
B-MTX-164-2P	1-64	1/8	T6	1.60	3.30	10.95	91.00
B-MTX-164-3P	1-64	3/16	T6	1.60	3.30	10.95	91.00
B-MTX-164-4P	1-64	1/4	T6	1.60	3.30	10.95	91.00
B-MTX-256-2P	2-56	1/8	T7	1.50	3.10	10.35	86.25
B-MTX-256-3P	2-56	3/16	T7	1.50	3.10	10.35	86.25
B-MTX-256-4P	2-56	1/4	T7	1.50	3.10	10.35	86.25
B-MTX-256-5P	2-56	5/16	T7	1.50	3.10	10.35	86.25
B-MTX-256-6P	2-56	3/8	T7	1.50	3.10	10.35	86.25
B-MTX-256-8P	2-56	1/2	T7	1.50	3.10	10.35	86.25
B-MTX-440-3P	4-40	3/16	T10	1.50	3.10	10.35	86.25
B-MTX-440-4P	4-40	1/4	T10	1.50	3.10	10.35	86.25
B-MTX-440-6P	4-40	3/8	T10	1.50	3.10	10.35	86.25
B-MTX-440-8P	4-40	1/2	T10	1.50	3.10	10.35	86.25

### STAINLESS STEEL TYPE 303 — FLAT HEAD

Part No.	Size/Thread	Length	Torx Driver	Price			
				10	25	100	1000
B-MTX-080-2F	0-80	1/8	T3	1.65	3.45	11.40	95.00
B-MTX-080-3F	0-80	3/16	T3	1.65	3.45	11.40	95.00
B-MTX-080-4F	0-80	1/4	T3	1.65	3.45	11.40	95.00
B-MTX-256-2F	2-56	1/8	T6	1.50	3.10	10.35	86.25
B-MTX-256-3F	2-56	3/16	T6	1.50	3.10	10.35	86.25
B-MTX-256-4F	2-56	1/4	T6	1.50	3.10	10.35	86.25
B-MTX-256-5F	2-56	5/16	T6	1.50	3.10	10.35	86.25
B-MTX-256-6F	2-56	3/8	T6	1.50	3.10	10.35	86.25
B-MTX-256-8F	2-56	1/2	T6	1.50	3.10	10.35	86.25
B-MTX-440-3F	4-40	3/16	T8	1.50	3.10	10.35	86.25
B-MTX-440-4F	4-40	1/4	T8	1.50	3.10	10.35	86.25
B-MTX-440-6F	4-40	3/8	T8	1.50	3.10	10.35	86.25
B-MTX-440-8F	4-40	1/2	T8	1.50	3.10	10.35	86.25

See our selection of PB Baumann Screwdrivers starting on page 352

## CAP SCREWS — Hex Socket Head, Stainless Steel



### HEX SOCKET HEAD — STAINLESS STEEL 18-8

Stainless Steel Cap Screws resist normal rusting and corrosion and can be easily torqued with a hex wrench. We offer the Hex Socket Head style in both standard and Metric sizes.

Flat Head Cap Screws Hex Sockets in inch sizes available [on page 192](#).  
Hex Keys sets begin [on page 364](#).

### STAINLESS STEEL 18-8 — Hex Socket Head

\*Screw not fully threaded to head.

Part No.	Size/ Thread	Length	Dimensions in Inches		Hex Wrench Size	Price			
			Head (Max.) Dia.	Height		10	25	100	1000
B-SHCX-080-2	#0-80	1/8	0.096	0.060	0.050	—	1.85	6.20	52.70
B-SHCX-080-3	#0-80	3/16	0.096	0.060	0.050	1.00	2.05	6.75	57.40
B-SHCX-080-4	#0-80	1/4	0.096	0.060	0.050	1.05	2.20	7.25	61.70
B-SHCX-080-6	#0-80	3/8	0.096	0.060	0.050	1.15	2.35	7.75	65.90
B-SHCX-080-8	#0-80	1/2	0.096	0.060	0.050	1.85	3.85	12.75	108.40
B-SHCX-172-2	#1-72	1/8	0.118	0.073	1/16	1.50	3.10	10.25	87.20
B-SHCX-172-3	#1-72	3/16	0.118	0.073	1/16	1.55	3.20	10.65	90.60
B-SHCX-172-4	#1-72	1/4	0.118	0.073	1/16	1.60	3.30	10.95	93.10
B-SHCX-172-6	#1-72	3/8	0.118	0.073	1/16	1.65	3.40	11.25	95.70
B-SHCX-172-8	#1-72	1/2	0.118	0.073	1/16	2.00	4.10	13.65	116.10
B-SHCX-256-2	#2-56	1/8	0.140	0.086	5/64	—	1.75	5.75	48.90
B-SHCX-256-3	#2-56	3/16	0.140	0.086	5/64	—	1.80	5.95	50.60
B-SHCX-256-4	#2-56	1/4	0.140	0.086	5/64	—	1.90	6.25	53.20
B-SHCX-256-6	#2-56	3/8	0.140	0.086	5/64	1.00	1.95	6.50	55.30
B-SHCX-256-8	#2-56	1/2	0.140	0.086	5/64	1.10	2.10	6.95	59.10
B-SHCX-256-12	#2-56	3/4	0.140	0.086	5/64	1.10	2.25	7.50	63.80
B-SHCX-440-2	#4-40	1/8	0.183	0.112	3/32	1.15	2.35	7.70	65.50
B-SHCX-440-3	#4-40	3/16	0.183	0.112	3/32	—	1.80	5.95	50.60
B-SHCX-440-4	#4-40	1/4	0.183	0.112	3/32	—	1.35	4.45	38.00
B-SHCX-440-6	#4-40	3/8	0.183	0.112	3/32	—	1.40	4.65	39.60
B-SHCX-440-8	#4-40	1/2	0.183	0.112	3/32	—	1.50	4.95	42.10
B-SHCX-440-12	#4-40	3/4	0.183	0.112	3/32	—	1.90	6.25	53.20
B-SHCX-440-16	#4-40	1	0.183	0.112	3/32	1.20	2.50	8.25	70.20
B-SHCX-632-2	#6-32	1/8	0.226	0.138	7/64	2.55	5.30	17.60	149.60
B-SHCX-632-3	#6-32	3/16	0.226	0.138	7/64	1.45	3.05	10.05	85.50
B-SHCX-632-4	#6-32	1/4	0.226	0.138	7/64	—	1.60	5.25	44.70
B-SHCX-632-6	#6-32	3/8	0.226	0.138	7/64	—	1.75	5.75	48.90
B-SHCX-632-8	#6-32	1/2	0.226	0.138	7/64	—	1.85	6.05	51.50
B-SHCX-632-12	#6-32	3/4	0.226	0.138	7/64	1.05	2.20	7.25	61.70
B-SHCX-632-16	#6-32	1	0.226	0.138	7/64	1.20	2.50	8.25	70.20
B-SHCX-832-3	#8-32	3/16	0.270	0.164	9/64	2.00	4.15	13.75	116.90
B-SHCX-832-4	#8-32	1/4	0.270	0.164	9/64	1.00	2.15	7.15	60.80
B-SHCX-832-6	#8-32	3/8	0.270	0.164	9/64	1.00	2.10	6.95	59.10
B-SHCX-832-8	#8-32	1/2	0.270	0.164	9/64	1.10	2.30	7.65	65.10
B-SHCX-832-12	#8-32	3/4	0.270	0.164	9/64	1.15	2.40	7.85	66.80
B-SHCX-832-16	#8-32	1	0.270	0.164	9/64	1.50	3.10	10.25	87.20
B-SHCX-832-24*	#8-32	1-1/2	0.270	0.164	9/64	2.30	4.75	15.75	133.90
B-SHCX-024-4	#10-24	1/4	0.312	0.190	5/32	1.75	3.60	11.95	101.60
B-SHCX-024-6	#10-24	3/8	0.312	0.190	5/32	1.00	2.10	6.95	59.10
B-SHCX-024-8	#10-24	1/2	0.312	0.190	5/32	1.10	2.30	7.65	65.10
B-SHCX-024-12	#10-24	3/4	0.312	0.190	5/32	1.15	2.40	7.85	66.80

# CAP SCREWS — Hex Socket Head, Stainless Steel (cont.)

## STAINLESS STEEL 18-8 — Hex Socket Head

\*Screw not fully threaded to head.

Part No.	Size/ Thread	Length	Dimensions in Inches			Hex Wrench Size	Price		
			Head (Max.)		10		25	100	1000
			Dia.	Height					
B-SHCX-024-16	#10-24	1	0.312	0.190	5/32	1.50	3.10	10.25	87.20
B-SHCX-024-20	#10-24	1-1/4	0.312	0.190	5/32	1.50	3.10	10.25	87.20
B-SHCX-024-24	#10-24	1-1/2	0.312	0.190	5/32	2.30	4.75	15.75	133.90
B-SHCX-032-4	#10-32	1/4	0.312	0.190	5/32	1.75	3.60	11.95	101.60
B-SHCX-032-6	#10-32	3/8	0.312	0.190	5/32	1.20	2.50	8.25	70.20
B-SHCX-032-8	#10-32	1/2	0.312	0.190	5/32	1.30	2.70	8.95	76.10
B-SHCX-032-12	#10-32	3/4	0.312	0.190	5/32	1.50	3.05	10.15	86.30
B-SHCX-032-16	#10-32	1	0.312	0.190	5/32	1.70	3.55	11.75	99.90
B-SHCX-032-24*	#10-32	1-1/2	0.312	0.190	5/32	2.25	15.50	15.50	131.80
B-SHCX-1420-4	1/4-20	1/4	0.375	0.250	3/16	3.20	6.60	21.95	186.60
B-SHCX-1420-6	1/4-20	3/8	0.375	0.250	3/16	2.65	5.50	18.25	155.20
B-SHCX-1420-8	1/4-20	1/2	0.375	0.250	3/16	1.80	3.75	12.35	105.00
B-SHCX-1420-12	1/4-20	3/4	0.375	0.250	3/16	2.10	4.35	14.35	122.00
B-SHCX-1420-16	1/4-20	1	0.375	0.250	3/16	2.30	4.75	15.75	133.90
B-SHCX-1420-24	1/4-20	1-1/2	0.375	0.250	3/16	2.95	6.10	20.25	172.20
B-SHCX-1420-32*	1/4-20	2	0.375	0.250	3/16	4.05	8.45	28.15	239.30
B-SHCX-1428-8	1/4-28	1/2	0.375	0.250	3/16	2.70	5.55	18.50	157.30
B-SHCX-1428-12	1/4-28	3/4	0.375	0.250	3/16	3.05	6.30	21.00	178.50
B-SHCX-1428-16	1/4-28	1	0.375	0.250	3/16	3.20	6.60	22.00	187.00
B-SHCX-1428-24	1/4-28	1-1/2	0.375	0.250	3/16	4.00	8.35	27.75	235.90
B-SHCX-1428-32	1/4-28	2	0.375	0.250	3/16	5.95	12.40	41.25	350.70
B-SHCX-3816-8	3/8-16	1/2	0.562	0.375	5/16	7.20	15.00	49.95	424.60
B-SHCX-3816-16	3/8-16	1	0.562	0.375	5/16	5.95	12.40	41.25	350.70
B-SHCX-3816-24	3/8-16	1-1/2	0.562	0.375	5/16	6.20	12.90	43.00	365.50
B-SHCX-3816-32*	3/8-16	2	0.562	0.375	5/16	7.95	16.50	55.00	467.50

### ASSORTMENTS

B-SHCX-1000	Ten each size B-SHCX-080-2 through B-SHCX-440-16 — 230 pcs.	28.25
B-SHCX-1500	Ten each size B-SHCX-632-2 through B-SHCX-3816-32 — 440 pcs.	96.95
B-SHCX-3000	Ten each size B-SHCX-080-2 through B-SHCX-3816-32 — 670 pcs.	119.20

### METRIC

## HEX SOCKET HEAD — STAINLESS STEEL 18-8 DIN-912

Part No.	Nominal Size	Pitch	Length	Dimensions in Millimeters		Hex Wrench Size	Price		
				Head (Max.)			10	25	100
				Dia.	Height				
B-MSHCX-2-6	M2	0.4	6	3.8	2	1.5	—	1.80	6.00
B-MSHCX-2-12	M2	0.4	12	3.8	2	1.5	1.50	3.15	10.45
B-MSHCX-25-6	M2.5	0.45	6	4.5	2.5	2.0	1.10	2.30	7.55
B-MSHCX-25-12	M2.5	0.45	12	4.5	2.5	2.0	—	1.40	4.55
B-MSHCX-3-5	M3	0.5	5	5.5	3	2.5	2.05	4.30	14.35
B-MSHCX-3-10	M3	0.5	10	5.5	3	2.5	1.55	3.25	10.75
B-MSHCX-3-12	M3	0.5	12	5.5	3	2.5	1.45	2.95	9.75
B-MSHCX-3-20	M3	0.5	20	5.5	3	2.5	1.85	3.85	12.75
B-MSHCX-4-6	M4	0.7	6	7	4	3.0	—	1.80	5.95
B-MSHCX-4-8	M4	0.7	8	7	4	3.0	—	1.90	6.25
B-MSHCX-4-12	M4	0.7	12	7	4	3.0	1.00	2.10	6.95
B-MSHCX-4-16	M4	0.7	16	7	4	3.0	1.15	2.35	7.75
B-MSHCX-4-20	M4	0.7	20	7	4	3.0	1.55	3.25	10.75
B-MSHCX-4-25	M4	0.7	25	7	4	3.0	2.65	5.55	18.50

## CAP SCREWS — Hex Socket Head, Stainless Steel (cont.)

### METRIC

#### STAINLESS STEEL 18-8 — Hex Socket Head

Part No.	Nominal Size	Pitch	Length	Dimensions in Millimeters						Price		
				Head (Max.)		Hex Wrench Size	10	25	100			
				Dia.	Height							
<b>B-MSHCX-5-8</b>	M5	0.8	8	8.5	5	4.0	<b>1.80</b>	<b>3.70</b>	<b>12.25</b>			
<b>B-MSHCX-5-12</b>	M5	0.8	12	8.5	5	4.0	<b>1.20</b>	<b>2.50</b>	<b>8.25</b>			
<b>B-MSHCX-5-16</b>	M5	0.8	16	8.5	5	4.0	<b>1.30</b>	<b>2.65</b>	<b>8.75</b>			
<b>B-MSHCX-5-20</b>	M5	0.8	20	8.5	5	4.0	<b>1.35</b>	<b>2.80</b>	<b>9.25</b>			
<b>B-MSHCX-5-25</b>	M5	0.8	25	8.5	5	4.0	<b>1.50</b>	<b>3.10</b>	<b>10.25</b>			
<b>B-MSHCX-5-35</b>	M5	0.8	35	8.5	5	4.0	<b>2.45</b>	<b>5.10</b>	<b>17.00</b>			
<b>B-MSHCX-6-12</b>	M6	1.0	12	10	6	5.0	<b>1.95</b>	<b>4.00</b>	<b>13.25</b>			
<b>B-MSHCX-6-20</b>	M6	1.0	20	10	6	5.0	<b>1.90</b>	<b>3.90</b>	<b>13.00</b>			
<b>B-MSHCX-6-25</b>	M6	1.0	25	10	6	5.0	<b>2.05</b>	<b>4.25</b>	<b>14.05</b>			
<b>B-MSHCX-6-35*</b>	M6	1.0	35	10	6	5.0	<b>2.90</b>	<b>6.00</b>	<b>19.95</b>			
<b>B-MSHCX-6-40*</b>	M6	1.0	12	10	6	5.0	<b>3.05</b>	<b>6.30</b>	<b>21.00</b>			
<b>B-MSHCX-6-50*</b>	M6	1.0	50	10	6	5.0	<b>3.20</b>	<b>6.60</b>	<b>22.00</b>			
<b>B-MSHCX-8-10</b>	M8	1.25	10	13	8	6.0	<b>3.45</b>	<b>7.20</b>	<b>24.00</b>			
<b>B-MSHCX-8-16</b>	M8	1.25	16	13	8	6.0	<b>3.30</b>	<b>6.90</b>	<b>23.00</b>			
<b>B-MSHCX-8-25</b>	M8	1.25	25	13	8	6.0	<b>3.85</b>	<b>7.95</b>	<b>26.50</b>			
<b>B-MSHCX-8-30</b>	M8	1.25	30	13	8	6.0	<b>4.80</b>	<b>10.00</b>	<b>33.25</b>			
<b>B-MSHCX-8-40*</b>	M8	1.25	40	13	8	6.0	<b>5.85</b>	<b>12.15</b>	<b>40.50</b>			
<b>B-MSHCX-8-50*</b>	M8	1.25	50	13	8	6.0	<b>6.50</b>	<b>13.50</b>	<b>45.00</b>			

\*Screw not fully threaded to head.

### ASSORTMENTS

#### CAP SCREWS — HEX SOCKET HEAD, STAINLESS STEEL 18-8

All assortments come in a hinged, lidded polypropylene box.

Part No.	Nominal Size	Lengths in Millimeters	Price
<b>B-MSHCX-1000</b>	M2/ M2.5/ M3/ M4	6, 12/ 6, 12/ 5, 10, 12, 20/ 8, 12, 16, 20, 25	<b>22.25</b>
<b>B-MSHCX-2000</b>	M5 / M6	12, 6, 20, 25, 35 / 12, 20, 25, 35, 20	<b>23.80</b>
<b>B-MSHCX-3000</b>	Contains <b>B-MSHCX-1000</b> and <b>B-MSHCX-2000</b>		<b>39.90</b>

## CAP SCREWS — Hex Socket Head, Alloy Steel



#### HEX SOCKET CAP SCREWS — ALLOY STEEL

Alloy Steel Cap Screws provide superior strength for the really tough jobs and can be used in applications where corrosion is not a factor. Smaller sizes have knurled heads.

#### ALLOY STEEL — Hex Socket Head

Part No.	Size/Thread	Length	Dimension in Inches				Price			
			Head (Max.)		Hex Wrench	10	25	100	1000	
			Dia.	Height						
<b>B-SCAS-256-3*</b>	#2-56	3/16	0.140	0.086	5/64	<b>1.30</b>	<b>2.65</b>	<b>8.75</b>	<b>70.00</b>	
<b>B-SCAS-256-6*</b>	#2-56	3/8	0.140	0.086	5/64	<b>1.35</b>	<b>2.70</b>	<b>8.96</b>	<b>71.70</b>	
<b>B-SCAS-256-10*</b>	#2-56	5/8	0.140	0.086	5/64	<b>3.10</b>	<b>6.40</b>	<b>21.25</b>	<b>170.00</b>	
<b>B-SCAS-348-3*</b>	#3-48	3/16	0.161	0.099	5/64	<b>1.50</b>	<b>3.15</b>	<b>10.45</b>	<b>83.60</b>	
<b>B-SCAS-348-6*</b>	#3-48	3/8	0.161	0.099	5/64	<b>1.55</b>	<b>3.20</b>	<b>10.50</b>	<b>84.00</b>	
<b>B-SCAS-348-8*</b>	#3-48	1/2	0.161	0.099	5/64	<b>1.65</b>	<b>3.40</b>	<b>11.30</b>	<b>90.40</b>	
<b>B-SCAS-440-3*</b>	#4-40	3/16	0.183	0.112	3/32	<b>1.45</b>	<b>3.05</b>	<b>10.05</b>	<b>80.40</b>	

Visit [www.smallparts.com](http://www.smallparts.com) E-mail [parts@smallparts.com](mailto:parts@smallparts.com)

## CAP SCREWS — Hex Socket Head, Alloy Steel (cont.)

### ALLOY STEEL — Hex Socket Head

Part No.	Size/Thread	Length	Dimension in Inches			Hex Wrench	Price			
			Head (Max.)		10		25	100	1000	
			Dia.	Height						
B-SCAS-440-4*	#4-40	1/4	0.183	0.112	3/32	—	1.55	5.10	40.80	
B-SCAS-440-8*	#4-40	1/2	0.183	0.112	3/32	—	1.65	5.40	43.20	
B-SCAS-440-12*	#4-40	3/4	0.183	0.112	3/32	—	1.70	5.95	47.60	
B-SCAS-540-6	#5-40	3/8	0.205	0.125	3/32	—	1.65	5.40	43.20	
B-SCAS-540-8	#5-40	1/2	0.205	0.125	3/32	—	1.70	5.50	44.00	
B-SCAS-540-12	#5-40	3/4	0.205	0.125	3/32	—	1.80	6.00	48.00	
B-SCAS-632-6	#6-32	3/8	0.226	0.138	7/64	—	1.65	5.40	43.20	
B-SCAS-632-8	#6-32	1/2	0.226	0.138	7/64	—	1.70	5.55	44.40	
B-SCAS-632-12	#6-32	3/4	0.226	0.138	7/64	—	1.85	6.15	49.20	
B-SCAS-632-16	#6-32	1	0.226	0.138	7/64	1.00	2.10	6.90	55.20	
B-SCAS-632-24**	#6-32	1-1/2	0.226	0.138	7/64	2.10	4.35	14.40	115.20	
B-SCAS-832-6	#8-32	3/8	0.270	0.164	9/64	—	1.65	5.40	43.20	
B-SCAS-832-8	#8-32	1/2	0.270	0.164	9/64	—	1.70	5.50	44.00	
B-SCAS-832-12	#8-32	3/4	0.270	0.164	9/64	—	1.85	6.15	49.20	
B-SCAS-832-16	#8-32	1	0.270	0.164	9/64	1.05	2.15	7.15	57.20	
B-SCAS-832-24**	#8-32	1-1/2	0.270	0.164	9/64	1.45	3.05	10.05	80.40	
B-SCAS-032-6	#10-32	3/8	0.312	0.190	5/32	—	1.70	5.70	45.60	
B-SCAS-032-8	#10-32	1/2	0.312	0.190	5/32	—	1.75	5.80	46.40	
B-SCAS-032-12	#10-32	3/4	0.312	0.190	5/32	—	1.90	6.25	50.00	
B-SCAS-032-16	#10-32	1	0.312	0.190	5/32	1.10	2.30	7.55	60.40	
B-SCAS-032-24**	#10-32	1-1/2	0.312	0.190	5/32	1.70	3.55	11.75	94.00	
B-SCAS-1420-8	1/4-20	1/2	0.375	0.250	3/16	1.10	2.25	7.45	59.60	
B-SCAS-1420-12	1/4-20	3/4	0.375	0.250	3/16	1.15	2.35	7.80	62.40	
B-SCAS-1420-16	1/4-20	1	0.375	0.250	3/16	1.35	2.80	9.35	74.80	
B-SCAS-1420-24**	1/4-20	1-1/2	0.375	0.250	3/16	1.65	3.40	11.30	90.40	
B-SCAS-1420-32**	1/4-20	2	0.375	0.250	3/16	2.15	4.45	14.80	118.40	

\* Knurled Head

\*\* Screw not fully threaded to head

## CAP SCREWS — Flat Head Hex Socket, Stainless Steel



Flat Head Hex Socket Cap Screws have an 82° head for flush mounting in a countersunk hole. They can be torqued with a hex wrench and are made of corrosion resistant Stainless Steel 18-8. Hex Keys sets begin [on page 364](#).

### STAINLESS STEEL 18-8 — Flat Head Hex Socket, 82°

Part No.	Size/Thread	Length	Dimensions in Inches			Hex Wrench Size	Price			
			Head (Max.)		10		25	100	1000	
			Dia.	Height						
B-SHCX-080-2F	#0-80	1/8	0.138	0.044	0.035	5.05	10.50	35.00	297.50	
B-SHCX-080-3F	#0-80	3/16	0.138	0.044	0.035	4.85	10.15	33.75	286.90	
B-SHCX-080-4F	#0-80	1/4	0.138	0.044	0.035	5.35	11.10	36.95	314.10	
B-SHCX-080-6F	#0-80	3/8	0.138	0.044	0.035	6.50	13.50	44.95	382.10	
B-SHCX-172-4F	#1-72	1/4	0.168	0.054	0.050	6.90	14.40	47.95	407.60	
B-SHCX-172-8F	#1-72	1/2	0.168	0.054	0.050	7.55	15.75	52.50	446.30	
B-SHCX-256-2F	#2-56	1/8	0.197	0.064	0.050	2.25	4.65	15.35	128.00	
B-SHCX-256-3F	#2-56	3/16	0.197	0.064	0.050	1.20	2.50	8.30	70.60	

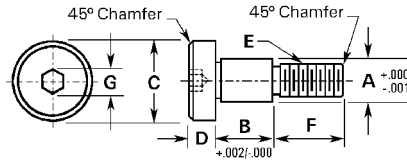


## CAP SCREWS — Flat Head Hex Socket, Stainless Steel (cont.)

### STAINLESS STEEL 18-8 — Flat Head Hex Socket, 82°

Part No.	Size/ Thread	Length	Dimensions in Inches		Hex Wrench Size	Price			
			Head (Max.) Dia.	Height		10	25	100	1000
B-SHCX-256-4F	#2-56	1/4	0.197	0.064	0.050	1.25	2.55	8.50	72.30
B-SHCX-256-6F	#2-56	3/8	0.197	0.064	0.050	1.30	2.75	9.05	77.00
B-SHCX-256-8F	#2-56	1/2	0.197	0.064	0.050	1.75	3.70	12.25	104.20
B-SHCX-256-12F	#2-56	3/4	0.197	0.064	0.050	1.90	3.90	13.00	110.50
B-SHCX-440-3F	#4-40	3/16	0.255	0.083	1/16	—	1.45	4.75	40.40
B-SHCX-440-4F	#4-40	1/4	0.255	0.083	1/16	—	1.50	4.85	41.30
B-SHCX-440-6F	#4-40	3/8	0.255	0.083	1/16	—	1.55	5.05	43.00
B-SHCX-440-8F	#4-40	1/2	0.255	0.083	1/16	—	1.65	5.15	43.80
B-SHCX-440-12F	#4-40	3/4	0.255	0.083	1/16	1.00	2.00	6.55	55.70
B-SHCX-440-16F	#4-40	1	0.255	0.083	1/16	1.05	2.20	7.25	61.70
B-SHCX-632-3F	#6-32	3/16	0.307	0.097	5/64	—	2.05	6.75	57.40
B-SHCX-632-4F	#6-32	1/4	0.307	0.097	5/64	—	1.70	5.25	44.70
B-SHCX-632-6F	#6-32	3/8	0.307	0.097	5/64	—	1.75	5.75	48.90
B-SHCX-632-8F	#6-32	1/2	0.307	0.097	5/64	—	1.80	6.00	51.00
B-SHCX-632-12F	#6-32	3/4	0.307	0.097	5/64	1.05	2.20	7.25	61.70
B-SHCX-832-4F	#8-32	1/4	0.359	0.212	3/32	—	1.95	6.50	55.30
B-SHCX-832-6F	#8-32	3/8	0.359	0.212	3/32	—	2.05	6.75	57.40
B-SHCX-832-8F	#8-32	1/2	0.359	0.212	3/32	1.05	2.15	7.05	60.00
B-SHCX-832-12F	#8-32	3/4	0.359	0.212	3/32	1.25	2.65	8.75	74.40
B-SHCX-832-16F	#8-32	1	0.359	0.212	3/32	1.40	2.85	9.50	80.80
B-SHCX-024-4F	#10-24	1/4	0.411	0.127	1/8	1.45	2.95	9.75	82.90
B-SHCX-024-6F	#10-24	3/8	0.411	0.127	1/8	1.20	2.50	8.25	70.20
B-SHCX-024-8F	#10-24	1/2	0.411	0.127	1/8	1.25	2.55	8.50	72.30
B-SHCX-024-12F	#10-24	3/4	0.411	0.127	1/8	1.55	3.25	10.75	91.40
B-SHCX-024-16F	#10-24	1	0.411	0.127	1/8	1.80	3.70	12.25	104.20
B-SHCX-024-20F	#10-24	1-1/4	0.411	0.127	1/8	2.00	4.15	13.75	116.90
B-SHCX-024-24F	#10-24	1-1/2	0.411	0.127	1/8	2.60	5.40	18.00	153.00
B-SHCX-032-4F	#10-32	1/4	0.411	0.127	1/8	1.30	2.70	8.95	76.10
B-SHCX-032-6F	#10-32	3/8	0.411	0.127	1/8	1.25	2.55	8.50	72.30
B-SHCX-032-8F	#10-32	1/2	0.411	0.127	1/8	1.30	2.65	8.75	74.40
B-SHCX-032-12F	#10-32	3/4	0.411	0.127	1/8	1.60	3.30	10.95	93.10
B-SHCX-032-16F	#10-32	1	0.411	0.127	1/8	2.10	4.35	14.50	123.30
B-SHCX-032-24F	#10-32	1-1/2	0.411	0.127	1/8	2.60	5.35	17.75	150.90
B-SHCX-1420-8F	1/4-20	1/2	0.531	0.161	5/32	2.00	4.20	13.95	118.60
B-SHCX-1420-12F	1/4-20	3/4	0.531	0.161	5/32	2.40	4.95	16.50	140.30
B-SHCX-1420-16F	1/4-20	1	0.531	0.161	5/32	2.90	6.00	19.95	169.60
B-SHCX-1420-24F	1/4-20	1-1/2	0.531	0.161	5/32	3.25	6.75	22.50	191.30
B-SHCX-1420-32F	1/4-20	2	0.531	0.161	5/32	4.55	9.45	31.50	267.80
B-SHCX-1428-6F	1/4-28	3/8	0.531	0.161	5/32	3.25	6.75	22.50	191.30
B-SHCX-1428-8F	1/4-28	1/2	0.531	0.161	5/32	3.20	6.60	22.00	187.00
B-SHCX-1428-12F	1/4-28	3/4	0.531	0.161	5/32	3.50	7.30	24.25	206.20
B-SHCX-1428-16F	1/4-28	1	0.531	0.161	5/32	3.90	8.10	26.95	229.10
B-SHCX-1428-20F	1/4-28	1-1/4	0.531	0.161	5/32	3.90	8.10	26.95	229.10
B-SHCX-1428-24F	1/4-28	1-1/2	0.531	0.161	5/32	2.60	5.35	17.75	150.90
B-SHCX-1428-32F	1/4-28	2	0.531	0.161	5/32	2.60	5.35	17.75	150.90
B-SHCX-3816-8F	3/8-16	1/2	0.781	0.234	7/32	6.85	14.25	47.50	403.80
B-SHCX-3816-16F	3/8-16	1	0.781	0.234	7/32	7.20	15.00	49.95	424.60
B-SHCX-3816-24F	3/8-16	1-1/2	0.781	0.234	7/32	9.50	19.80	65.95	560.60

# SHOULDER SCREWS — Hex Socket Head, Stainless Steel



## STAINLESS STEEL TYPE 303

Versatile Shoulder Screws can function as stripper bolts, fulcrum bolts, clevis pins and wheel bearing shafts. The heads have hexagonal sockets. Tough and reliable, Stainless Steel Type 303 is appropriate in chemical, marine, and other corrosive environments. Our strongest Shoulder Screws are formed from Alloy Steel, for higher torque and tension applications. [See page 195.](#)

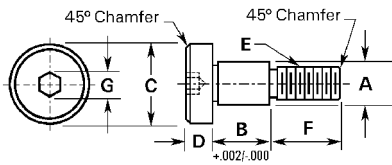
## STAINLESS STEEL TYPE 303

\*Stainless Steel 18-8

Part No.	Nominal Diameter	Dimensions in Inches								Price 10	25
		Shoulder Actual Diameter A	Head			Thread		Each			
			Length B	Dia. C	Length D	Size E	Length F				
B-SHDX-2/2	1/8	.1245	1/8	1/4	1/8	4-40	5/32	1.90	15.00	31.25	
B-SHDX-2/4	1/8	.1245	1/4	1/4	1/8	4-40	5/32	1.45	12.00	25.00	
B-SHDX-2/6	1/8	.1245	3/8	1/4	1/8	4-40	5/32	2.10	16.15	33.60	
B-SHDX-3/3	3/16	.1870	3/16	5/16	5/32	8-32	3/16	2.05	15.95	32.50	
B-SHDX-3/6	3/16	.1870	3/8	5/16	5/32	8-32	3/16	2.15	16.20	33.65	
B-SHDX-3/12	3/16	.1870	3/4	3/16	5/32	8-32	3/16	3.90	32.40	67.50	
B-SHDX-3/16	3/16	.1870	1	3/16	5/32	8-32	3/16	4.25	35.10	73.15	
B-SHDX-3/24	3/16	.1870	1-1/2	5/16	5/32	8-32	3/16	5.10	42.35	88.25	
B-SHDX-4/4	1/4	.2495	1/4	3/8	3/16	10-32	1/4	3.20	20.25	42.00	
B-SHDX-4/12	1/4	.2495	3/4	3/8	3/16	10-32	1/4	5.00	33.50	69.40	
B-SHDX-4/16	1/4	.2495	1	3/8	3/16	10-32	1/4	5.75	39.30	81.90	
B-SHDX-4/24	1/4	.2495	1-1/2	3/8	3/16	10-32	1/4	5.90	48.00	100.00	
B-SHDX-5/4	5/16	.3120	1/4	1/2	7/32	1/4-20	7/16	6.50	49.50	106.90	
B-SHDX-5/8	5/16	.3120	1/2	1/2	7/32	1/4-20	7/16	6.80	61.20	127.50	
B-SHDX-5/12	5/16	.3120	3/4	1/2	7/32	1/4-20	7/16	7.60	68.05	141.75	
B-SHDX-6/16*	3/8	.3745	1	9/16	1/4	5/16-18	1/2	5.30	44.25	92.15	
B-SHDX-6/32*	3/8	.3745	2	9/16	1/4	5/16-18	1/2	7.05	58.80	122.50	
B-SHDX-6/48*	3/8	.3745	3	9/16	1/4	5/16-18	1/2	10.60	127.50	265.65	
B-SHDX-8/16*	1/2	.4995	1	3/4	5/16	3/8-16	5/8	9.80	81.00	168.75	
B-SHDX-8/32*	1/2	.4995	2	3/4	5/16	3/8-16	5/8	12.80	95.40	198.75	
B-SHDX-8/64*	1/2	.4995	4	3/4	5/16	3/8-16	5/8	22.85	190.00	395.90	

G — HEX WRENCH SIZES						
Shoulder Diameter	1/8	3/16	1/4	3/16	3/8	1/2
Hex Wrench Size	5/64	3/32	1/8	5/32	3/16	1/4

## SHOULDER SCREWS — Hex Socket Head, Alloy Steel



### ALLOY STEEL — SAE 4037

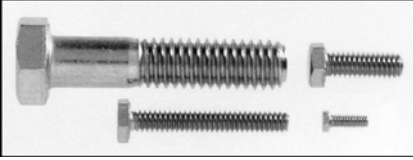
Our strongest Shoulder Screws are formed from Alloy Steel SAE 4037. They are recommended for use with stripper springs and guides in punch press die sets. They can also be used for attaching cams, rollers, links and levers, and as stationary guides and pressure pads. SAE 4037 Alloy Steel is a carbon steel that derives improved tensile strength, increased hardness, corrosion resistance and an even surface quality through its combination with manganese, molybdenum, silicon, sulfur and phosphorous. ANSI / ASME B18.3 (R1998).

### ALLOY STEEL — SAE 4037 ANSI/ASME B18.3 - 1998

Part No.	Dimensions in Inches									
	Dia. A	Shoulder Actual Dia. Max. / Min.	Length B	Dia. C	Length D	Thread Size E	Length F	Each	Price 10	25
B-SHDA-4/04	1/4	.2480/.2460	1/4	3/8	3/16	10-24	3/8	1.25	11.20	23.25
B-SHDA-4/06	1/4	.2480/.2460	3/8	3/8	3/16	10-24	3/8	1.00	8.55	17.85
B-SHDA-4/08	1/4	.2480/.2460	1/2	3/8	3/16	10-24	3/8	1.00	8.75	18.15
B-SHDA-4/10	1/4	.2480/.2460	5/8	3/8	3/16	10-24	3/8	1.00	9.00	18.75
B-SHDA-4/12	1/4	.2480/.2460	3/4	3/8	3/16	10-24	3/8	1.00	9.25	19.25
B-SHDA-4/16	1/4	.2480/.2460	1	3/8	3/16	10-24	3/8	1.10	9.75	20.25
B-SHDA-5/08	5/16	.3105/.3085	1/2	7/16	7/32	1/4-20	7/16	1.10	9.70	20.20
B-SHDA-5/10	5/16	.3105/.3085	5/8	7/16	7/32	1/4-20	7/16	1.10	9.95	20.70
B-SHDA-5/12	5/16	.3105/.3085	3/4	7/16	7/32	1/4-20	7/16	1.15	10.25	21.15
B-SHDA-5/16	5/16	.3105/.3085	1	7/16	7/32	1/4-20	7/16	1.20	10.65	22.15
B-SHDA-5/20	5/16	.3105/.3085	1-1/4	7/16	7/32	1/4-20	7/16	1.30	11.60	24.20
B-SHDA-5/24	5/16	.3105/.3085	1-1/2	7/16	7/32	1/4-20	7/16	1.35	12.10	25.25
B-SHDA-6/08	3/8	.3730/.3710	1/2	9/16	1/4	5/16-18	1/2	1.25	11.15	23.15
B-SHDA-6/12	3/8	.3730/.3710	3/4	9/16	1/4	5/16-18	1/2	1.30	11.60	24.20
B-SHDA-6/16	3/8	.3730/.3710	1	9/16	1/4	5/16-18	1/2	1.35	12.15	25.35
B-SHDA-6/20	3/8	.3730/.3710	1-1/4	9/16	1/4	5/16-18	1/2	1.40	12.85	26.75
B-SHDA-6/24	3/8	.3730/.3710	1-1/2	9/16	1/4	5/16-18	1/2	1.50	13.40	27.85
B-SHDA-6/32	3/8	.3730/.3710	2	9/16	1/4	5/16-18	1/2	1.65	15.05	31.40
B-SHDA-8/12	1/2	.4980/.4960	3/4	3/4	5/16	3/8-16	5/8	2.35	21.50	44.75
B-SHDA-8/16	1/2	.4980/.4960	1	3/4	5/16	3/8-16	5/8	2.45	21.95	45.75
B-SHDA-8/20	1/2	.4980/.4960	1-1/4	3/4	5/16	3/8-16	5/8	2.50	22.50	46.95
B-SHDA-8/24	1/2	.4980/.4960	1-1/2	3/4	5/16	3/8-16	5/8	2.55	23.05	48.00
B-SHDA-8/28	1/2	.4980/.4960	1-3/4	3/4	5/16	3/8-16	5/8	2.65	24.05	50.15
B-SHDA-8/32	1/2	.4980/.4960	2	3/4	5/16	3/8-16	5/8	2.75	24.75	51.50
B-SHDA-12/24	3/4	.7480/.7460	1-1/2	1	1/2	5/8-11	7/8	6.40	57.95	120.70
B-SHDA-12/32	3/4	.7480/.7460	2	1	1/2	5/8-11	7/8	6.80	61.95	129.00
B-SHDA-12/40	3/4	.7480/.7460	2-1/2	1	1/2	5/8-11	7/8	7.75	70.20	146.25

G — HEX WRENCH SIZES					
Shoulder Diameter	1/4	5/16	3/8	1/2	3/4
Hex Wrench Size	1/8	5/32	3/16	1/4	3/8

## MACHINE SCREWS/BOLTS — Hex Head, Stainless Steel



### HEX HEAD MACHINE SCREWS / BOLTS

Stainless Steel Machine Screws/Bolts offer corrosion resistance against atmospheric conditions, chemicals, and weather extremes, and have a tensile strength of 85 to 125 KSI (thousands pounds per square inch). We stock sizes from 3/16" to 4" lengths and from #0-80 to 1/2-13.

All Machine Bolts less than 1-1/2" in length are fully threaded to the bolt head. The formula to determine the threaded length (TL) is: TL = 2 times the diameter + 1/4".

#### STAINLESS STEEL 18-8

\*Bolt not fully threaded to head.

Part No.	Size/Thread	Length	Diameter	Each	Price		
					10	25	100
B-HBX-080-3	#0-80	3/16"	0.0600"	-	2.45	5.10	16.95
B-HBX-080-4	#0-80	1/4"	0.0600"	—	2.50	5.20	17.30
B-HBX-080-6	#0-80	3/8"	0.0600"	—	2.60	5.40	17.95
B-HBX-080-8	#0-80	1/2"	0.0600"	—	2.70	5.60	18.65
B-HBX-172-3	#1-72	3/16"	0.0730"	—	2.65	5.45	18.05
B-HBX-172-4	#1-72	1/4"	0.0730"	—	2.75	5.70	18.85
B-HBX-172-6	#1-72	3/8"	0.0730"	—	2.90	6.00	19.95
B-HBX-172-8	#1-72	1/2"	0.0730"	—	3.00	6.25	20.75
B-HBX-256-3	#2-56	3/16"	0.0860"	—	2.45	5.10	16.95
B-HBX-256-4	#2-56	1/4"	0.0860"	—	2.20	4.50	15.00
B-HBX-256-6	#2-56	3/8"	0.0860"	—	2.15	4.45	14.75
B-HBX-256-8	#2-56	1/2"	0.0860"	—	2.20	4.50	14.95
B-HBX-440-4	#4-40	1/4"	0.1120"	—	1.10	2.25	7.45
B-HBX-440-8	#4-40	1/2"	0.1120"	—	1.30	2.70	8.95
B-HBX-440-12	#4-40	3/4"	0.1120"	—	1.65	3.35	11.05
B-HBX-632-6	#6-32	3/8"	0.1380"	—	1.30	2.70	8.85
B-HBX-632-8	#6-32	1/2"	0.1380"	—	1.40	2.85	9.50
B-HBX-632-12	#6-32	3/4"	0.1380"	—	1.65	3.35	11.05
B-HBX-632-16	#6-32	1"	0.1380"	—	1.90	3.95	13.05
B-HBX-832-6	#8-32	3/8"	0.1640"	—	1.45	2.95	9.75
B-HBX-832-8	#8-32	1/2"	0.1640"	—	1.50	3.05	10.15
B-HBX-832-12	#8-32	3/4"	0.1640"	—	1.80	3.75	12.50
B-HBX-832-16	#8-32	1"	0.1640"	—	2.05	4.25	14.10
B-HBX-032-8	#10-32	1/2"	0.1900"	—	1.75	3.65	12.05
B-HBX-032-12	#10-32	3/4"	0.1900"	—	2.10	4.35	14.50
B-HBX-032-16	#10-32	1"	0.1900"	—	2.40	4.95	16.35
B-HBX-032-24	#10-32	1-1/2"	0.1900"	—	3.50	7.20	23.95
B-HBX-1420-8	1/4-20	1/2"	0.250"	—	1.15	2.40	8.00
B-HBX-1420-12	1/4-20	3/4"	0.250"	—	1.25	2.60	8.55
B-HBX-1420-16*	1/4-20	1"	0.250"	—	1.35	2.80	9.25
B-HBX-1420-24*	1/4-20	1-1/2"	0.250"	—	1.95	4.00	13.25
B-HBX-1420-32*	1/4-20	2"	0.250"	—	2.60	5.35	17.75
B-HBX-1420-48*	1/4-20	3"	0.250"	—	3.60	7.50	25.00
B-HBX-5618-12	5/16-18	3/4"	0.3125"	—	2.05	4.25	14.05
B-HBX-5618-16	5/16-18	1"	0.3125"	—	2.25	4.60	15.20
B-HBX-5618-24*	5/16-18	1-1/2"	0.3125"	—	3.20	6.60	21.90
B-HBX-5618-32*	5/16-18	2"	0.3125"	—	4.10	5.55	28.80
B-HBX-5618-48*	5/16-18	3"	0.3125"	—	5.15	10.70	35.65

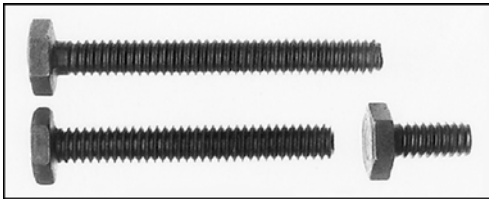
## MACHINE SCREWS/BOLTS — Hex Head, Stainless Steel

### STAINLESS STEEL 18-8

\*Bolt not fully threaded to head.

Part No.	Size/Thread	Length	Diameter	Each	Price		
					10	25	100
<b>B-HBX-3816-12</b>	3/8-16	3/4"	0.3750"	—	<b>2.90</b>	<b>6.00</b>	<b>19.95</b>
<b>B-HBX-3816-16</b>	3/8-16	1"	0.3750"	—	<b>3.55</b>	<b>7.40</b>	<b>24.65</b>
<b>B-HBX-3816-24*</b>	3/8-16	1-1/2"	0.3750"	—	<b>4.05</b>	<b>8.35</b>	<b>27.80</b>
<b>B-HBX-3816-32*</b>	3/8-16	2"	0.3750"	—	<b>5.50</b>	<b>11.45</b>	<b>38.05</b>
<b>B-HBX-3816-48*</b>	3/8-16	3"	0.3750"	<b>1.00</b>	<b>7.70</b>	<b>16.05</b>	<b>53.45</b>
<b>B-HBX-3816-64*</b>	3/8-16	4"	0.3750"	<b>1.35</b>	<b>11.35</b>	<b>23.60</b>	<b>78.60</b>
<b>B-HBX-1213-16</b>	1/2-13	1"	0.5000"	—	<b>6.10</b>	<b>12.65</b>	<b>42.10</b>
<b>B-HBX-1213-32*</b>	1/2-13	2"	0.5000"	<b>1.25</b>	<b>10.10</b>	<b>21.05</b>	<b>70.10</b>
<b>B-HBX-1213-40*</b>	1/2-13	2-1/2"	0.5000"	<b>1.45</b>	<b>11.90</b>	<b>24.80</b>	<b>82.65</b>
<b>B-HBX-1213-48*</b>	1/2-13	3"	0.5000"	<b>1.85</b>	<b>15.30</b>	<b>31.80</b>	<b>105.95</b>
<b>B-HBX-1213-64*</b>	1/2-13	4"	0.5000"	<b>2.45</b>	<b>20.25</b>	<b>42.15</b>	<b>140.35</b>

## MACHINE SCREWS/BOLTS — Hex Head, Titanium



### HEX HEAD MACHINE BOLTS

Nonmagnetic and lightweight, Titanium exhibits high strength to weight ratios, excellent temperature stability, and good corrosion resistance. Compared to Stainless or Alloy steels, commercially pure Titanium weighs approximately 44% less and is equal, or greater, in yield and tensile strength.

Titanium will withstand temperatures up to 800°F (up to 2000°F for short periods) and is resistant to the corrosive effects of salt water, many acids, alkalies, and other chemicals. See Titanium Nuts, [page 216](#), Titanium Washers, [pages 223 and 230](#).

### TITANIUM

Part No.	Size/Thread	Length	Each	Price	
				10	100
<b>B-HBTT-0632-16</b>	#6-32	1"	<b>2.70</b>	<b>22.50</b>	
<b>B-HBTT-0832-20</b>	#8-32	1-1/4"	<b>15.15</b>	<b>126.00</b>	
<b>B-HBTT-1032-8</b>	#10-32	1/2"	<b>2.95</b>	<b>24.40</b>	
<b>B-HBTT-1032-16</b>	#10-32	1"	<b>3.60</b>	<b>30.00</b>	
<b>B-HBTT-1032-32</b>	#10-32	2"	<b>8.60</b>	<b>71.65</b>	
<b>B-HBTT-1420-8</b>	1/4-20	1/2"	<b>2.40</b>	<b>19.80</b>	
<b>B-HBTT-1420-12</b>	1/4-20	3/4"	<b>2.80</b>	<b>23.45</b>	
<b>B-HBTT-1420-16</b>	1/4-20	1"	<b>3.05</b>	<b>25.40</b>	
<b>B-HBTT-1420-20</b>	1/4-20	1-1/4"	<b>3.20</b>	<b>26.65</b>	
<b>B-HBTT-1420-24</b>	1/4-20	1-1/2"	<b>3.55</b>	<b>29.70</b>	
<b>B-HBTT-1420-28</b>	1/4-20	1-3/4"	<b>3.95</b>	<b>32.65</b>	
<b>B-HBTT-1420-32</b>	1/4-20	2"	<b>4.10</b>	<b>34.00</b>	
<b>B-HBTT-5618-16</b>	5/16-18	1"	<b>5.50</b>	<b>45.90</b>	
<b>B-HBTT-5618-32</b>	5/16-18	2"	<b>8.05</b>	<b>66.80</b>	
<b>B-HBTT-3816-32</b>	3/8-16	2"	<b>11.30</b>	<b>94.05</b>	
<b>B-HBTT-3816-48</b>	3/8-16	3"	<b>17.35</b>	<b>144.40</b>	

## MACHINE SCREWS / BOLTS — Hex Head, Nylon



### HEX HEAD MACHINE SCREWS / BOLTS

Screws threaded entire length up to bolt head are indicated by an asterisk (\*), otherwise they are threaded approximately one inch.

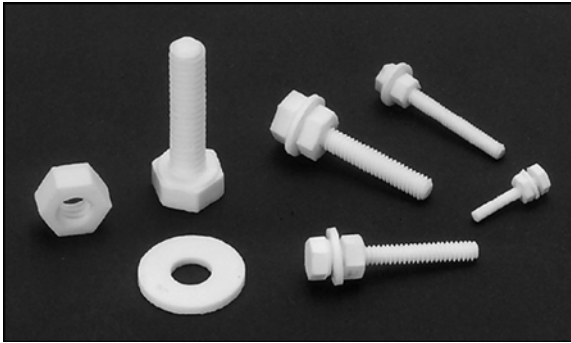
#### NYLON 6/6

Part No.	Size/Thread	Length	Each	Price		
				10	25	100
B-HBN-1420-8*	1/4-20	1/2"	—	1.15	2.45	8.10
B-HBN-1420-12*	1/4-20	3/4"	—	1.20	2.45	8.20
B-HBN-1420-16*	1/4-20	1"	—	1.20	2.50	8.30
B-HBN-1420-24	1/4-20	1-1/2"	—	1.25	2.55	8.50
B-HBN-1420-32	1/4-20	2"	—	1.25	2.60	8.65
B-HBN-1420-40	1/4-20	2-1/2"	—	2.10	4.35	14.45
B-HBN-1420-48	1/4-20	3"	—	2.15	4.45	14.75
B-HBN-1420-64	1/4-20	4"	—	5.15	10.75	35.70
B-HBN-5618-12*	5/16-18	3/4"	—	3.15	6.55	21.85
B-HBN-5618-16*	5/16-18	1"	—	3.20	6.65	22.20
B-HBN-5618-24	5/16-18	1-1/2"	—	3.30	6.85	22.85
B-HBN-5618-32	5/16-18	2"	—	3.40	7.05	23.50
B-HBN-5618-40	5/16-18	2-1/2"	—	3.50	7.25	24.20
B-HBN-5618-48	5/16-18	3"	—	3.60	7.45	24.85
B-HBN-5618-64	5/16-18	4"	2.25	18.50	38.55	128.40
B-HBN-5618-80	5/16-18	5"	2.40	19.80	41.20	137.35
B-HBN-3816-16*	3/8-16	1"	—	3.60	7.50	25.00
B-HBN-3816-24	3/8-16	1-1/2"	—	3.90	8.15	27.05
B-HBN-3816-32	3/8-16	2"	—	4.20	8.75	29.05
B-HBN-3816-40	3/8-16	2-1/2"	—	4.50	9.35	31.05
B-HBN-3816-48	3/8-16	3"	—	4.80	9.95	33.05
B-HBN-3816-64	3/8-16	4"	2.25	18.55	38.60	128.55
B-HBN-3816-80	3/8-16	5"	2.40	19.70	41.00	136.65
B-HBN-3816-96	3/8-16	6"	2.50	20.85	43.40	144.60
B-HBN-1213-16*	1/2-13	1"	—	6.60	13.75	45.80
B-HBN-1213-24	1/2-13	1-1/2"	—	7.05	14.65	48.80
B-HBN-1213-32	1/2-13	2"	—	7.45	15.55	51.85
B-HBN-1213-40	1/2-13	2-1/2"	—	7.90	16.45	54.85
B-HBN-1213-48	1/2-13	3"	1.15	9.25	19.30	64.35
B-HBN-1213-64	1/2-13	4"	2.75	22.75	47.35	157.85
B-HBN-1213-80	1/2-13	5"	2.95	24.45	50.85	169.50
B-HBN-1213-96	1/2-13	6"	3.20	26.65	55.55	185.05



See our  
**GEARWRENCH®**  
 Ratcheting Combination Sets  
 on page 368

## BOLTS, NUTS AND WASHERS — Ceramic



### CERAMIC FASTENERS

Threaded Bolts, Nuts and Washers are produced from low pressure injection molded ceramics, utilizing 99.8% fully dense aluminum oxide (Alumina A998). In addition to the outstanding electrical insulation properties of alumina, this material offers unusual resistance to high temperature, corrosion, and abrasion. Ceramic components are commonly specified for use with welding tools, heat treating equipment, lighting, instrumentation and medical applications. Hex Bolts are threaded to head.

#### HEX BOLTS — Ceramic A998

Part No.	Size/Thread	Length	Diameter	Price	
				Each	10
B-HBC-256-06	#2-56	3/8"	0.082"	13.05	118.50
B-HBC-256-08	#2-56	1/2"	0.082"	14.75	133.80
B-HBC-440-08	#4-40	1/2"	0.107"	15.55	141.45
B-HBC-440-16	#4-40	1"	0.107"	17.90	162.70
B-HBC-632-08	#6-32	1/2"	0.136"	16.95	154.20
B-HBC-632-16	#6-32	1"	0.136"	19.50	177.15
B-HBC-832-08	#8-32	1/2"	0.162"	17.90	162.70
B-HBC-832-16	#8-32	1"	0.162"	20.40	185.65
B-HBC-032-08	#10-32	1/2"	0.185"	18.55	168.65
B-HBC-032-16	#10-32	1"	0.185"	21.35	194.15
B-HBC-1420-08	1/4-20	1/2"	0.240"	19.40	176.30
B-HBC-1420-16	1/4-20	1"	0.240"	22.40	203.50

#### HEX NUTS — Ceramic A998

Part No.	Size/Thread	Dimensions in Inches		Price	
		Width Across Flats	Nominal Height	Each	10
B-HNC-256	#2-56	0.206"	0.065"	7.45	67.50
B-HNC-440	#4-40	0.212"	0.090"	7.80	70.90
B-HNC-632	#6-32	0.285"	0.138"	8.65	78.55
B-HNC-832	#8-32	0.356"	0.150"	8.95	81.10
B-HNC-032	#10-32	0.355"	0.150"	9.40	85.35
B-HNC-1420	1/4-20	0.500"	0.217-0.226"	9.70	87.90

#### WASHERS — Ceramic A998

Part No.	Size	O.D.	Dimensions in Inches		Price	
			I.D.	Thickness	Each	10
B-WC-02	#2	0.215"	0.087"	0.030"	2.40	21.60
B-WC-04	#4	0.303"	0.112"	0.038" - 0.048"	2.50	22.60
B-WC-06	#6	0.380"	0.154"	0.053"	2.60	23.60
B-WC-08	#8	0.428"	0.172"	0.049"	3.25	29.60
B-WC-10	#10	0.493"	0.200"	0.060"	3.25	29.60
B-WC-1/4	1/4	0.730"	0.268"	0.066"	3.40	30.60

## THREADED / ALLTHREAD ROD



### THREADED / ALLTHREAD ROD — Stainless Steel

**Machine Cut Stainless Steel Type 303** is highly resistant to most acids and corrosive substances. We offer regular Machine Cut Threaded Rod as well as Left-Hand Threaded Rod for projects requiring counterclockwise motion. Our Metric sizes (Stainless Steel 18-8) conform to DIN-975. Left Hand Taps and Dies are [on page 343](#).

**Cold Rolled Stainless Steel 18-8** Threaded Rod is produced with hardened steel dies whose threaded faces press against the periphery of a plain cylindrical stainless steel blank to reform its surface into the threads desired. Rolled threads have increased strength, uniform accuracy and a high degree of surface finish, but do not machine as easily as machine cut threaded rods.

Order Example: **B-TRX-540-36** is #5-40 thread, 36" long

### STAINLESS STEEL — Type 303 Machine Cut, Right Hand

Part No.	Size/Thread	Price			
		-6 6"	-12 12"	-24 24"	-36 36"
<b>B-TRX-0090</b>	#00-90	<b>10.65</b>	—	—	—
<b>B-TRX-080</b>	#0-80	<b>4.75</b>	<b>7.95</b>	<b>13.20</b>	—
<b>B-TRX-172</b>	#1-72	<b>4.65</b>	<b>7.75</b>	<b>12.90</b>	—
<b>B-TRX-256</b>	#2-56	<b>4.55</b>	<b>7.60</b>	<b>12.60</b>	—
<b>B-TRX-440</b>	#4-40	—	<b>5.80</b>	<b>9.60</b>	<b>13.95</b>
<b>B-TRX-540</b>	#5-40	—	<b>5.80</b>	<b>9.60</b>	<b>13.95</b>
<b>B-TRX-632</b>	#6-32	—	<b>5.40</b>	<b>9.00</b>	<b>12.15</b>
<b>B-TRX-832</b>	#8-32	—	<b>4.70</b>	<b>7.80</b>	<b>11.70</b>
<b>B-TRX-032</b>	#10-32	—	<b>5.40</b>	<b>9.00</b>	<b>12.75</b>
<b>B-TRX-1420</b>	1/4-20	—	<b>7.20</b>	<b>12.00</b>	<b>16.20</b>
<b>B-TRX-1428</b>	1/4-28	—	<b>8.10</b>	<b>13.50</b>	<b>18.00</b>
<b>B-TRX-5618</b>	5/16-18	—	<b>9.00</b>	<b>15.00</b>	<b>21.00</b>
<b>B-TRX-3816</b>	3/8-16	—	<b>11.55</b>	<b>19.20</b>	<b>28.00</b>
<b>B-TRX-1213</b>	1/2-13	—	<b>19.80</b>	<b>33.00</b>	<b>46.00</b>

### STAINLESS STEEL — Type 303 Machine Cut, Left Hand

Part No.	Size/Thread	Price		
		-12 12"	-24 24"	-36 36"
<b>B-TRLX-080</b>	#0-80	<b>9.50</b>	<b>15.00</b>	—
<b>B-TRLX-172</b>	#1-72	<b>9.25</b>	<b>14.80</b>	—
<b>B-TRLX-256</b>	#2-56	<b>9.25</b>	<b>14.80</b>	—
<b>B-TRLX-440</b>	#4-40	<b>6.85</b>	<b>10.95</b>	<b>16.25</b>
<b>B-TRLX-632</b>	#6-32	<b>5.80</b>	<b>9.30</b>	<b>14.40</b>
<b>B-TRLX-832</b>	#8-32	<b>5.90</b>	<b>9.45</b>	<b>14.40</b>
<b>B-TRLX-1032</b>	#10-32	<b>6.00</b>	<b>9.60</b>	<b>14.50</b>
<b>B-TRLX-1420</b>	1/4-20	<b>8.50</b>	<b>13.60</b>	<b>20.40</b>
<b>B-TRLX-5618</b>	5/16-18	<b>9.75</b>	<b>15.50</b>	<b>23.35</b>

**Screw Pitch Gauges — See page 430**



## THREADED ROD (cont.)

### METRIC

Order Example: **B-TRMX-2-25** is M2 thread, 25 cm long

#### STAINLESS STEEL 18-8 — DIN-975 Cold Rolled

Available in one meter lengths on special order.

Part No.	Size × Pitch	-25 25cm (approx. 9-1/2")	-50 50 cm (approx. 19-1/2")
<b>B-TRMX-2</b>	M2 × 0.4	<b>6.15</b>	<b>10.25</b>
<b>B-TRMX-25</b>	M2.5 × 0.45	<b>5.25</b>	<b>8.75</b>
<b>B-TRMX-3</b>	M3 × 0.5	<b>5.40</b>	<b>9.00</b>
<b>B-TRMX-4</b>	M4 × 0.7	<b>5.60</b>	<b>9.30</b>
<b>B-TRMX-5</b>	M5 × 0.8	<b>5.25</b>	<b>9.55</b>
<b>B-TRMX-6</b>	M6 × 1.0	<b>5.30</b>	<b>9.75</b>

#### STAINLESS STEEL 18-8 — Cold Rolled

Part No.	Size/Thread	Price			
		-12 12"	-24 24"	-36 36"	-72* 72"
<b>B-TRCX-256</b>	#2-56	<b>1.35</b>	<b>2.25</b>	<b>3.15</b>	—
<b>B-TRCX-440</b>	#4-40	<b>1.70</b>	<b>2.80</b>	<b>3.50</b>	<b>5.80</b>
<b>B-TRCX-632</b>	#6-32	<b>1.75</b>	<b>2.90</b>	<b>3.60</b>	<b>6.00</b>
<b>B-TRCX-832</b>	#8-32	<b>2.00</b>	<b>3.30</b>	<b>4.10</b>	<b>6.80</b>
<b>B-TRCX-032</b>	#10-32	<b>2.60</b>	<b>4.35</b>	<b>5.40</b>	<b>9.00</b>
<b>B-TRCX-1420</b>	1/4-20	<b>2.30</b>	<b>3.85</b>	<b>4.80</b>	<b>8.00</b>
<b>B-TRCX-1428</b>	1/4-28	<b>3.45</b>	<b>5.75</b>	<b>7.20</b>	<b>12.00</b>
<b>B-TRCX-5618</b>	5/16-18	<b>3.75</b>	<b>6.25</b>	<b>7.80</b>	<b>13.00</b>
<b>B-TRCX-3816</b>	3/8-16	<b>4.35</b>	<b>7.20</b>	<b>9.00</b>	<b>15.00</b>
<b>B-TRCX-1213</b>	1/2-13	<b>7.50</b>	<b>12.50</b>	<b>15.60</b>	<b>26.00</b>

\* Special packaging charge for over 60" lengths.

#### THREADED ROD — Brass

Brass C360, Unplated is an accepted standard for screw machine work. "Leaded" Brass C360 has a strong zinc content (up to 37%), and a small inclusion of lead that imparts a "free-cutting" quality to this alloy — 60-63% copper, 2.5-3.7% lead, balance in zinc. Rustproof and corrosion resistant, Brass finishes well and is easily plated, soldered and brazed. Nickel Plated finish improves appearance, hardness, and long-term wear, preventing pitting and other corrosion.

#### BRASS — C360, Unplated

Part No.	Size/Thread	Price		
		-12 12"	-24 24"	-36 36"
<b>B-TRBB-632</b>	#6-32	<b>2.60</b>	<b>4.70</b>	<b>6.40</b>
<b>B-TRBB-832</b>	#8-32	<b>2.55</b>	<b>4.70</b>	<b>6.40</b>
<b>B-TRBB-032</b>	#10-32	<b>3.95</b>	<b>7.15</b>	<b>9.75</b>
<b>B-TRBB-1420</b>	1/4-20	<b>3.95</b>	<b>7.15</b>	<b>9.75</b>
<b>B-TRBB-1428</b>	1/4-28	<b>4.55</b>	<b>8.25</b>	<b>11.25</b>
<b>B-TRBB-5618</b>	5/16-18	<b>8.75</b>	<b>14.55</b>	<b>18.20</b>
<b>B-TRBB-3816</b>	3/8-16	<b>11.60</b>	<b>19.35</b>	<b>24.15</b>

#### BRASS — C360, Nickel Plated

<b>B-TRB-632</b>	#6-32	<b>5.75</b>	<b>10.45</b>	<b>14.25</b>
<b>B-TRB-832</b>	#8-32	<b>5.75</b>	<b>10.45</b>	<b>14.25</b>
<b>B-TRB-032</b>	#10-32	<b>5.90</b>	<b>10.75</b>	<b>14.65</b>
<b>B-TRB-1420</b>	1/4-20	<b>6.95</b>	<b>12.65</b>	<b>17.25</b>
<b>B-TRB-1428</b>	1/4-28	<b>7.55</b>	<b>13.75</b>	<b>18.75</b>

## THREADED ROD (cont.)

### THREADED ROD — Titanium

Nonmagnetic. Titanium offers high strength to weight ratios, high temperature stability and good corrosion resistance to salt water and chemical environments. Grade 2 is "commercially pure" 99.3% Titanium, alloyed with minimal contents (0.20% or less of each) of iron, oxygen, carbon, nitrogen, hydrogen, and less than 0.4% residual elements.

#### TITANIUM — Grade 2 ASTM B-348

Part No.	Size/Thread	Price		
		-12 12"	-24 24"	-36 36"
<b>B-TRTT-0632</b>	#6-32	<b>18.85</b>	<b>34.30</b>	<b>46.75</b>
<b>B-TRTT-0832</b>	#8-32	<b>18.85</b>	<b>34.30</b>	<b>46.75</b>
<b>B-TRTT-1032</b>	#10-32	<b>20.25</b>	<b>36.75</b>	<b>50.00</b>
<b>B-TRTT-1420</b>	1/4-20	<b>22.25</b>	<b>40.35</b>	<b>55.00</b>
<b>B-TRTT-5618</b>	5/16-18	<b>24.95</b>	<b>65.10</b>	<b>86.10</b>
<b>B-TRTT-3816</b>	3/8-16	<b>48.25</b>	<b>89.95</b>	<b>118.95</b>

### THREADED ROD — PEEK

PEEK (Polyetheretherketone) is a highly crystalline thermoplastic that maintains its properties under an extreme range of conditions. Used extensively in medical, chemical processing and electronics industries, it is particularly valued for its ability to withstand high temperature levels, even under sustained pressure. This material also has excellent chemical resistance (organic, inorganic solvents, aqueous reagents) and high mechanical strength, including good flexural, tensile, impact and fatigue properties. It offers good wear resistance, low moisture absorption, and excellent hydrolysis resistance. Repeated sterilization by all known methods have no effect on PEEK devices. Continuous use temperature rating: 482°F (250°C).

#### PEEK

Part No.	Size/Thread	Price		
		-3 3"	-6 6"	-12 12"
<b>B-TRPK-256</b>	#2-56	<b>12.00</b>	<b>20.00</b>	<b>33.30</b>
<b>B-TRPK-440</b>	#4-40	<b>10.75</b>	<b>17.95</b>	<b>29.90</b>
<b>B-TRPK-632</b>	#6-32	<b>9.95</b>	<b>16.65</b>	<b>27.70</b>
<b>B-TRPK-832</b>	#8-32	<b>8.95</b>	<b>14.90</b>	<b>24.80</b>
<b>B-TRPK-032</b>	#10-32	<b>8.95</b>	<b>14.90</b>	<b>24.90</b>

### THREADED ROD — Nylon

Nylon Threaded Rod is useful as insulating spacers and studs. It is tough and abrasion resistant, unaffected by common solvents and most organic acids, and is light in weight. It is particularly useful with ball joints for making up control shafts and linkages for both power transmission of reciprocating motion and positioning instrument controls.

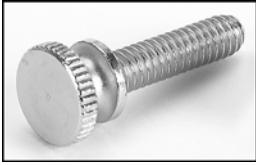
#### NYLON 6/6

Order Example: **B-TRN-1420-24** is 1/4-20 thread, 24" long

Part No.	Size/Thread	Price			
		-12 12"	-24 24"	-36 36"	-72* 72"
<b>B-TRN-440</b>	#4-40	<b>2.90</b>	<b>5.25</b>	<b>7.15</b>	<b>13.00</b>
<b>B-TRN-632</b>	#6-32	<b>2.25</b>	<b>4.00</b>	<b>5.50</b>	<b>9.95</b>
<b>B-TRN-832</b>	#8-32	<b>2.25</b>	<b>4.00</b>	<b>5.50</b>	<b>9.95</b>
<b>B-TRN-032</b>	#10-32	<b>2.15</b>	<b>3.95</b>	<b>5.35</b>	<b>9.75</b>
<b>B-TRN-1420</b>	1/4-20	<b>1.80</b>	<b>3.25</b>	<b>4.50</b>	<b>8.10</b>
<b>B-TRN-5618</b>	5/16-18	<b>2.75</b>	<b>5.05</b>	<b>6.90</b>	<b>12.50</b>
<b>B-TRN-3816</b>	3/8-16	<b>3.45</b>	<b>6.25</b>	<b>8.50</b>	<b>15.45</b>
<b>B-TRN-1213</b>	1/2-13	<b>5.60</b>	<b>10.25</b>	<b>14.05</b>	<b>25.50</b>

\*Special packaging charge for over 60" lengths.

# THUMB SCREWS



## THUMB SCREWS

Knurled Thumb Screws are frequently used for securing panels and sub-assemblies which must be easily removed, and for a decorative, finished look. We offer them in three materials, in various sizes. If you don't see what you need, **call Purchasing Services toll free — 1-888-455-9712.**

Thumb Nuts available [on page 217](#).

**Nickel Plated Brass** is attractive and practical for many applications where economy is important and high corrosion conditions are not present.

**Stainless Steel 18-8** gives you a stronger component, plus it stands up against chemicals, outdoor environments, and other corrosive threats.

**Nylon** is the solution when you need non-conductive fasteners that can be easily removed. Plus it is not magnetic, won't rust or easily corrode, and is both strong and attractive.

### THUMB SCREWS — Nickel Plated Brass

Part No.	Size/Thread	Stud Length	Diameter	Head		Price	
				Height	10	25	100
B-TSB-440-6	#4-40	3/8"	5/16"	0.281"	6.15	12.80	46.10
B-TSB-440-8	#4-40	1/2"	5/16"	0.281"	7.95	16.55	59.60
B-TSB-440-12	#4-40	3/4"	5/16"	0.281"	10.10	21.00	75.60
B-TSB-632-6	#6-32	3/8"	3/8"	0.281"	7.30	15.15	54.50
B-TSB-632-8	#6-32	1/2"	3/8"	0.281"	8.80	18.30	65.90
B-TSB-632-12	#6-32	3/4"	3/8"	0.281"	10.90	22.70	81.75
B-TSB-632-16	#6-32	1"	3/8"	0.281"	11.15	23.20	83.50
B-TSB-832-6	#8-32	3/8"	13/32"	0.312"	9.35	19.45	70.05
B-TSB-832-8	#8-32	1/2"	13/32"	0.312"	10.60	22.10	79.55
B-TSB-832-12	#8-32	3/4"	13/32"	0.312"	11.05	23.00	82.80
B-TSB-832-16	#8-32	1"	13/32"	0.312"	16.50	34.35	123.65
B-TSB-032-6	#10-32	3/8"	7/16"	0.328"	9.75	20.35	73.25
B-TSB-032-8	#10-32	1/2"	7/16"	0.328"	12.25	25.50	91.80
B-TSB-032-12	#10-32	3/4"	7/16"	0.328"	12.65	26.40	95.05
B-TSB-032-16	#10-32	1"	7/16"	0.328"	17.65	36.75	132.30
B-TSB-1420-6	1/4-20	3/8"	9/16"	0.375"	15.15	31.55	113.60
B-TSB-1420-8	1/4-20	1/2"	9/16"	0.375"	25.15	52.35	188.45
B-TSB-1420-12	1/4-20	3/4"	9/16"	0.375"	25.25	52.60	189.35
B-TSB-1420-16	1/4-20	1"	9/16"	0.375"	29.55	61.55	221.60

### THUMB SCREWS — Stainless Steel 18-8

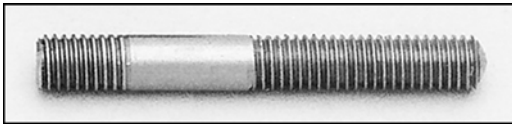
Part No.	Size/Thread	Stud Length	Diameter	Head		Price	
				Height	Each	10	25
B-TSX-440-6	#4-40	3/8"	3/8"	0.187"	2.45	20.40	41.75
B-TSX-440-8	#4-40	1/2"	3/8"	0.187"	2.60	21.70	44.50
B-TSX-632-6	#6-32	3/8"	3/8"	0.187"	2.80	23.40	47.75
B-TSX-632-8	#6-32	1/2"	3/8"	0.187"	2.80	23.70	48.50
B-TSX-832-6	#8-32	3/8"	3/8"	0.187"	2.80	23.60	48.25
B-TSX-832-8	#8-32	1/2"	3/8"	0.187"	2.85	24.10	49.25
B-TSX-032-6	#10-32	3/8"	3/8"	0.187"	1.90	15.90	32.50
B-TSX-032-8	#10-32	1/2"	3/8"	0.187"	3.05	25.50	52.25
B-TSX-1420-6	1/4-20	3/8"	1/2"	0.187"	3.50	29.40	60.25
B-TSX-1420-8	1/4-20	1/2"	1/2"	0.187"	3.55	29.90	61.25
B-TSX-1420-12	1/4-20	3/4"	1/2"	0.187"	4.45	37.60	77.00

## THUMB SCREWS (cont.)

### THUMB SCREWS — Nylon 6/6

Part No.	Size/Thread	Stud Length	Head		Price			
			Diameter	Height	10	25	100	1000
B-TSN-440-6	#4-40	3/8"	0.300"	0.280"	1.75	3.65	12.20	101.50
B-TSN-440-12	#4-40	3/4"	0.300"	0.280"	1.80	3.70	12.30	102.60
B-TSN-632-6	#6-32	3/8"	0.360"	0.275"	1.85	3.80	12.60	105.20
B-TSN-632-8	#6-32	1/2"	0.360"	0.275"	1.85	3.80	12.65	105.50
B-TSN-632-12	#6-32	3/4"	0.360"	0.275"	1.85	3.80	12.65	105.80
B-TSN-632-16	#6-32	1"	0.360"	0.275"	1.85	3.85	12.80	107.00
B-TSN-832-8	#8-32	1/2"	0.425"	0.305"	1.90	3.95	13.10	109.30
B-TSN-832-12	#8-32	3/4"	0.425"	0.305"	1.90	3.95	13.10	110.00
B-TSN-832-16	#8-32	1"	0.425"	0.305"	1.90	4.00	13.30	110.80
B-TSN-032-8	#10-32	1/2"	0.425"	0.325"	1.95	4.10	13.55	113.00
B-TSN-032-12	#10-32	3/4"	0.425"	0.325"	1.95	4.10	13.55	113.70
B-TSN-032-16	#10-32	1"	0.425"	0.325"	2.00	4.15	13.75	114.50
B-TSN-1420-8	1/4-20	1/2"	0.540"	0.365"	2.05	4.20	14.00	116.70
B-TSN-1420-12	1/4-20	3/4"	0.540"	0.365"	2.05	4.30	14.25	118.90
B-TSN-1420-16	1/4-20	1"	0.540"	0.365"	2.10	4.35	14.35	119.70

## FIXTURE STUDS — Stainless Steel Type 303



Useful to set up small presses, fixtures and jigs required in machining operations. Studs can be assembled with threaded standoffs to create any desired length. Can also be used as a standoff when combined with a bushing.

### STAINLESS STEEL TYPE

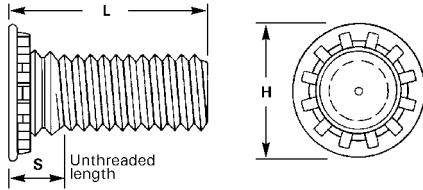
Part No.	Thread	Total Length	Longest Thread Length	Each	Price	
					10	25
B-FTSX-632-16	#6-32	1"	1/2"	4.20	34.80	69.75
B-FTSX-632-20	#6-32	1-1/4"	5/8"	4.20	34.80	69.75
B-FTSX-632-24	#6-32	1-1/2"	3/4"	4.20	34.80	69.75
B-FTSX-632-28	#6-32	1-3/4"	3/4"	4.55	37.90	75.75
B-FTSX-832-16	#8-32	1"	1/2"	4.20	34.80	69.75
B-FTSX-832-20	#8-32	1-1/4"	5/8"	4.20	34.80	69.75
B-FTSX-832-24	#8-32	1-1/2"	3/4"	4.20	34.80	69.75
B-FTSX-832-28	#8-32	1-3/4"	3/4"	4.55	37.90	75.75
B-FTSX-032-16	#10-32	1"	1/2"	4.20	34.80	69.75
B-FTSX-032-20	#10-32	1-1/4"	5/8"	4.20	34.80	69.75
B-FTSX-032-24	#10-32	1-1/2"	3/4"	4.20	34.80	69.75
B-FTSX-032-28	#10-32	1-3/4"	3/4"	4.55	37.90	75.75
B-FTSX-1420-24	1/4-20	1-1/2"	5/8"	4.85	40.35	81.90
B-FTSX-1420-48	1/4-20	3"	1"	6.05	50.20	100.65
B-FTSX-3816-26	3/8-16	1-5/8"	3/4"	6.05	50.20	100.65
B-FTSX-3816-48	3/8-16	3"	1-3/8"	6.35	52.70	105.60

# SELF-CLINCHING STUDS PEM® — Stainless Steel 18-8



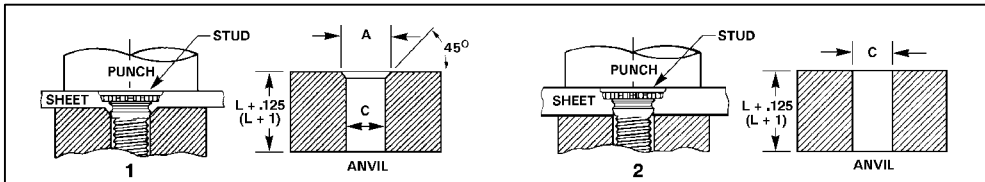
## PEM® — STAINLESS STEEL 18-8

Flush-head studs have a patented PEM® head along with an annular groove. Place the stud into a punched or drilled hole and squeeze into place with a standard press. The squeezing action embeds the head of the stud into the panel creating a flush-head assembly and securely locking the stud into the panel with high torque-out and pushout resistances. Can be used with Aluminum and Steel panels.



### TOOLING FOR INSTALLATION

1. Tooling for panel thicknesses 0.059 in. and less with #2 thru #10 thread sizes and less than 0.093 in. for 1/4-inch threads. (1.50mm and less with M3 thru M5 thread sizes and less than 2.4mm for M6 threads.)
2. Tooling for panel thicknesses 0.060 in. and greater with #2 thru #10 thread sizes and 0.093 in. and greater for 1/4 and 5/16 in. threads. (1.51mm and greater with M3 thru M5 thread sizes and 2.41mm and greater for M6 threads.)



## STAINLESS STEEL 18-8

Part No.	Size/ Thread	(L) Length +/- 0.015	Dimensions in Inches				Price		
			S Max.	H ±0.015	Anvil A C	10	25	100	
B-SCSX-256-4	#2-56	1/4	0.075	0.144	0.11	0.09	1.45	2.95	9.80
B-SCSX-256-6	#2-56	3/8	0.075	0.144	0.11	0.09	1.50	3.15	10.35
B-SCSX-256-10	#2-56	5/8	0.075	0.144	0.11	0.09	1.75	3.60	12.00
B-SCSX-440-4	#4-40	1/4	0.085	0.176	0.14	0.11	1.45	2.95	9.75
B-SCSX-440-6	#4-40	3/8	0.085	0.176	0.14	0.11	1.50	3.10	10.25
B-SCSX-440-12	#4-40	3/4	0.085	0.176	0.14	0.11	1.80	3.70	12.25
B-SCSX-632-4	#6-32	1/4	0.090	0.206	0.16	0.14	1.45	2.95	9.80
B-SCSX-632-6	#6-32	3/8	0.090	0.206	0.16	0.14	1.50	3.15	10.35
B-SCSX-632-8	#6-32	1/2	0.090	0.206	0.16	0.14	1.60	3.35	11.15
B-SCSX-632-12	#6-32	3/4	0.090	0.206	0.16	0.14	1.80	3.75	12.45
B-SCSX-632-16	#6-32	1	0.090	0.206	0.16	0.16	1.85	3.85	12.75
B-SCSX-832-4	#8-32	1/4	0.090	0.237	0.19	0.16	1.65	3.45	11.50
B-SCSX-832-8	#8-32	1/2	0.090	0.237	0.19	0.16	1.75	3.65	12.15
B-SCSX-832-12	#8-32	3/4	0.090	0.237	0.19	0.16	1.85	3.85	12.80
B-SCSX-832-16	#8-32	1	0.090	0.237	0.19	0.16	2.20	4.55	15.15
B-SCSX-024-8	#10-24	1/2	0.100	0.256	0.22	0.19	2.05	4.20	14.00
B-SCSX-024-14	#10-24	7/8	0.100	0.256	0.22	0.19	2.45	5.10	16.95
B-SCSX-032-8	#10-32	1/2	0.100	0.256	0.22	0.19	1.85	3.80	12.65
B-SCSX-032-14	#10-32	7/8	0.100	0.256	0.32	0.19	2.20	4.55	15.05
B-SCSX-032-24	#10-32	1-1/2	0.100	0.256	0.32	0.19	2.90	6.05	20.20
B-SCSX-1420-8	1/4-20	1/2	0.135	0.337	0.30	0.19	2.65	5.50	18.25
B-SCSX-1420-14	1/4-20	7/8	0.135	0.337	0.30	0.25	3.20	6.65	22.10
B-SCSX-1420-24	1/4-20	1-1/2	0.135	0.337	0.30	0.25	5.35	11.10	36.95
B-SCSX-5618-10	5/16-18	5/8	0.160	0.376	-	0.31	4.15	8.60	28.65
B-SCSX-5618-14	5/16-18	7/8	0.160	0.376	-	0.31	5.50	11.40	37.95
B-SCSX-5618-24	5/16-18	1-1/2	0.160	0.076	-	0.31	7.30	15.15	50.45

# SELF-CLINCHING STUDS — PEM® Stainless Steel (cont.)

## METRIC

### STAINLESS STEEL 18-8

Part No.	Nominal Size	Pitch	Dimensions in Millimeters							
			(L) Length +/- 0.4	S Max.	H ±0.4	Anvil		10	Price 25	100
						A +0.1	C +0.08			
<b>B-SCSXM-3-8</b>	M3	0.5	8	2.1	4.6	3.6	3.03	<b>1.20</b>	<b>2.55</b>	<b>8.45</b>
<b>B-SCSXM-3-10</b>	M3	0.5	10	2.1	4.6	3.6	3.03	<b>1.25</b>	<b>2.60</b>	<b>8.55</b>
<b>B-SCSXM-3-15</b>	M3	0.5	15	2.1	4.6	3.6	3.03	<b>1.45</b>	<b>2.95</b>	<b>9.75</b>
<b>B-SCSXM-4-8</b>	M4	0.7	8	2.4	5.9	4.6	4.03	<b>1.50</b>	<b>3.10</b>	<b>10.35</b>
<b>B-SCSXM-4-12</b>	M4	0.7	12	2.4	5.9	4.6	4.03	<b>1.60</b>	<b>3.25</b>	<b>10.80</b>
<b>B-SCSXM-4-18</b>	M4	0.7	18	2.4	5.9	4.6	4.03	<b>1.70</b>	<b>3.55</b>	<b>11.80</b>
<b>B-SCSXM-5-12</b>	M5	0.8	12	2.7	6.5	5.6	5.03	<b>1.65</b>	<b>3.40</b>	<b>11.25</b>
<b>B-SCSXM-5-18</b>	M5	0.8	18	2.7	6.5	5.6	5.03	<b>1.90</b>	<b>3.95</b>	<b>13.15</b>
<b>B-SCSXM-5-25</b>	M5	0.8	25	2.7	6.5	5.6	5.03	<b>2.25</b>	<b>4.65</b>	<b>15.45</b>
<b>B-SCSXM-6-12</b>	M6	1.0	12	3	8.2	6.6	6.03	<b>2.40</b>	<b>4.95</b>	<b>16.45</b>
<b>B-SCSXM-6-18</b>	M6	1.0	18	3	8.2	6.6	6.03	<b>2.85</b>	<b>5.95</b>	<b>19.75</b>
<b>B-SCSXM-6-25</b>	M6	1.0	25	3	8.2	6.6	6.03	<b>3.40</b>	<b>7.10</b>	<b>23.65</b>

# SELF-CLINCHING NUTS — Sheet Metal



Self-Clinching Nuts are a good solution whenever load-bearing threads are required in thin metal. These nuts can be inserted in a punched or drilled hole and with the application of pressure become a permanent part of the metal—ready for use. The clinching ring locks the displaced metal behind the tapered shank, giving high push out resistance. When the knurled platform is embedded in the sheet metal you get high torque out resistance.

Installed properly, the Self-Clinching Nut will resist loosening caused by vibration or repeated motion of the assembly. Self-Clinching Nuts in Type 303 Stainless Steel are nonmagnetic and are useful in applications where resistance to corrosion is desirable.

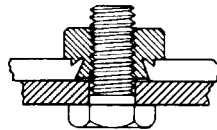
### INSTALLATION SUGGESTIONS



Install Fastener squarely in hole



Apply steady pressure to head of fastener



Install screw or bolt from side opposite to the head of the fastener

### STAINLESS STEEL TYPE 303

Part No.	Size/Thread	Major Diameter	Dimensions in Inches					
			Sheet Thickness	Hole Size	O.D.	10	Price 25	100
<b>B-ONX-256-32</b>	#2-56	2	0.032-0.039	0.166	1/4	<b>3.65</b>	<b>7.65</b>	<b>25.50</b>
<b>B-ONX-440-56</b>	#4-40	4	0.056-0.090	0.166	1/4	<b>3.15</b>	<b>6.50</b>	<b>21.60</b>
<b>B-ONX-632-56</b>	#6-32	6	0.056-0.090	0.1875	9/32	<b>3.35</b>	<b>6.95</b>	<b>23.10</b>
<b>B-ONX-832-56</b>	#8-32	8	0.056-0.090	0.213	5/16	<b>3.55</b>	<b>7.40</b>	<b>24.65</b>
<b>B-ONX-032-56</b>	#10-32	10	0.091-0.124	0.250	11/32	<b>5.20</b>	<b>10.85</b>	<b>36.15</b>
<b>B-ONX-1420-91</b>	1/4-20	1/4	0.091-0.124	0.344	7/16	<b>8.80</b>	<b>18.35</b>	<b>61.20</b>

### ASSORTMENTS

**B-ONX-150** Contains ten each B-ONX-256-32 through B-ONX-1420-91-60 pcs . . . . . **27.80**

## SELF-CLINCHING NUTS — Sheet Metal (cont.)



### STEEL — Zinc Plated

Part No.	Size/Thread	Major Diameter	Dimensions in Inches						Price 25	100
			Sheet Thickness	Hole Size	O.D.	10	100			
<b>B-ON-256-32</b>	#2-56	2	0.032-0.039	0.166	1/4	<b>2.80</b>	<b>5.85</b>	<b>19.45</b>		
<b>B-ON-256-56</b>	#2-56	2	0.056-0.090	0.166	1/4	<b>3.00</b>	<b>6.20</b>	<b>20.70</b>		
<b>B-ON-440-32</b>	#4-40	4	0.032-0.039	0.166	1/4	<b>1.45</b>	<b>3.05</b>	<b>10.15</b>		
<b>B-ON-440-56</b>	#4-40	4	0.056-0.090	0.166	1/4	<b>1.60</b>	<b>3.35</b>	<b>11.20</b>		
<b>B-ON-632-32</b>	#6-32	6	0.032-0.039	0.1875	9/32	<b>1.45</b>	<b>3.05</b>	<b>10.10</b>		
<b>B-ON-632-56</b>	#6-32	6	0.056-0.090	0.1875	9/32	<b>1.60</b>	<b>3.35</b>	<b>11.20</b>		
<b>B-ON-832-56</b>	#8-32	8	0.056-0.090	0.213	5/16	<b>1.80</b>	<b>3.70</b>	<b>12.25</b>		
<b>B-ON-832-91</b>	#8-32	8	0.091-UP	0.213	5/16	<b>1.85</b>	<b>3.80</b>	<b>12.60</b>		
<b>B-ON-032-56</b>	#10-32	10	0.056-0.090	0.250	11/32	<b>1.90</b>	<b>3.90</b>	<b>12.90</b>		
<b>B-ON-032-91</b>	#10-32	10	0.091-UP	0.250	11/32	<b>2.75</b>	<b>5.75</b>	<b>19.10</b>		
<b>B-ON-1420-91</b>	1/4-20	1/4	0.091-0.124	0.344	7/16	<b>3.45</b>	<b>7.15</b>	<b>23.80</b>		
<b>B-ON-1420-125</b>	1/4-20	1/4	0.125-UP	0.344	7/16	<b>4.95</b>	<b>10.25</b>	<b>34.05</b>		

### ASSORTMENTS

<b>B-ON-80</b>	Ten each B-ON-256-32 through B-ON-632-56 — 60 pieces	<b>13.60</b>
<b>B-ON-90</b>	Ten each B-ON-832-56 through B-ON-1420-125 — 60 pieces	<b>17.90</b>
<b>B-ON-100</b>	Ten each B-ON-256-32 through B-ON-1420-125 — 120 pieces	<b>31.85</b>

### METRIC

### STAINLESS STEEL TYPE 303

Part No.	Nominal Size	Pitch	Dimensions in Millimeters				O.D.	10	Price 25	100
			Major Diameter	Sheet Thickness	Hole Size	100				
<b>B-ONXM-25-0</b>	M2.5	0.45	2.5	0.8-1.0	4.25	6.3	<b>7.25</b>	<b>15.10</b>	<b>50.35</b>	
<b>B-ONXM-25-2</b>	M2.5	0.45	2.5	1.4	4.25	6.3	<b>7.25</b>	<b>15.10</b>	<b>50.35</b>	
<b>B-ONXM-4-0</b>	M4	0.7	4	0.8-1.0	5.4	7.9	<b>7.25</b>	<b>15.10</b>	<b>50.35</b>	
<b>B-ONXM-4-2</b>	M4	0.7	4	1.4	5.4	7.9	<b>7.25</b>	<b>15.10</b>	<b>50.35</b>	
<b>B-ONXM-6-1</b>	M6	1	6	1.4	8.75	11.05	<b>14.25</b>	<b>29.65</b>	<b>98.85</b>	

### STEEL — Zinc Plated

Part No.	Nominal Size	Pitch	Dimensions in Millimeters				O.D.	10	Price 25	100
			Major Diameter	Sheet Thickness	Hole Size	100				
<b>B-ONM-25-0</b>	M2.5	0.45	2.5	0.8-1.0	4.25	6.3	<b>2.75</b>	<b>5.70</b>	<b>18.95</b>	
<b>B-ONM-25-2</b>	M2.5	0.45	2.5	1.4	4.25	6.3	<b>2.80</b>	<b>5.75</b>	<b>19.10</b>	
<b>B-ONM-3-0</b>	M3	0.5	3	0.8-1.0	4.25	6.3	<b>1.60</b>	<b>3.35</b>	<b>11.20</b>	
<b>B-ONM-3-2</b>	M3	0.5	3	1.4	4.25	6.3	<b>1.65</b>	<b>3.45</b>	<b>11.50</b>	
<b>B-ONM-4-0</b>	M4	0.7	4	0.8-1.0	5.4	7.9	<b>1.60</b>	<b>3.35</b>	<b>11.25</b>	
<b>B-ONM-4-2</b>	M4	0.7	4	1.4	5.4	7.9	<b>2.45</b>	<b>5.05</b>	<b>16.75</b>	
<b>B-ONM-5-1</b>	M5	0.8	5	1.0	6.4	8.7	<b>1.75</b>	<b>3.65</b>	<b>12.05</b>	
<b>B-ONM-5-2</b>	M5	0.8	5	1.4	6.4	8.7	<b>1.75</b>	<b>3.65</b>	<b>12.10</b>	
<b>B-ONM-6-1</b>	M6	1	6	1.4	8.75	11.05	<b>3.15</b>	<b>6.50</b>	<b>21.55</b>	
<b>B-ONM-6-2</b>	M6	1	6	2.3	8.75	11.05	<b>3.25</b>	<b>6.80</b>	<b>22.60</b>	

## SET SCREWS — Hex Socket, Cup Point, Stainless Steel



Set Screws are often used for holding a pulley, gear, or other parts from turning relative to a shaft. Tighten gently or hex may strip. Ball Plungers with spring balls are on [page 212](#). Where Stainless Steel is not required, Alloy Steel Set Screws are available. See [page 210](#).

### STAINLESS STEEL 18-8 — Hex Socket, Cup Point

Part No.	Size/Thread	Length	Hex Wrench Size	Price		
				10	25	100
B-SSX-080/1	#0-80	1/16"	0.028"	5.00	10.40	34.60
B-SSX-080/2	#0-80	1/8"	0.028"	6.45	13.35	44.50
B-SSX-080/4	#0-80	1/4"	0.028"	6.85	14.30	47.65
B-SSX-256/1	#2-56	1/16"	0.035"	3.25	6.75	22.60
B-SSX-256/2	#2-56	1/8"	0.035"	2.25	4.65	15.50
B-SSX-256/4	#2-56	1/4"	0.035"	3.50	7.30	24.40
B-SSX-440/1	#4-40	1/16"	0.050"	3.45	7.20	23.90
B-SSX-440/2	#4-40	1/8"	0.050"	1.30	2.75	9.05
B-SSX-440/4	#4-40	1/4"	0.050"	2.35	4.85	16.15
B-SSX-632/2	#6-32	1/8"	1/16"	1.55	3.20	10.65
B-SSX-632/4	#6-32	1/4"	1/16"	1.25	2.55	8.40
B-SSX-632/6	#6-32	3/8"	1/16"	1.40	2.90	9.70
B-SSX-832/2	#8-32	1/8"	5/64"	1.85	3.90	12.90
B-SSX-832/4	#8-32	1/4"	5/64"	1.15	2.35	7.75
B-SSX-832/6	#8-32	3/8"	5/64"	1.25	2.60	8.75
B-SSX-024/4	#10-24	1/4"	3/32"	1.50	3.10	10.35
B-SSX-024/6	#10-24	3/8"	3/32"	1.60	3.30	10.95
B-SSX-024/8	#10-24	1/2"	3/32"	4.55	9.50	31.55
B-SSX-032/4	#10-32	1/4"	3/32"	1.30	2.75	9.05
B-SSX-032/6	#10-32	3/8"	3/32"	1.25	2.55	8.40
B-SSX-032/8	#10-32	1/2"	3/32"	1.55	3.25	10.85
B-SSX-1420/4	1/4-20	1/4"	1/8"	1.40	2.90	9.70
B-SSX-1420/6	1/4-20	3/8"	1/8"	1.40	2.90	9.70
B-SSX-1420/8	1/4-20	1/2"	1/8"	1.75	3.70	12.25

### ASSORTMENTS

<b>B-SSX-100</b>	Ten each size B-SSX-080/1 through B-SSX-632/6 — 120 pcs. ....	<b>44.90</b>
<b>B-SSX-150</b>	Ten each size B-SSX-632/2 through B-SSX-1420/8 — 150 pcs. ....	<b>28.40</b>
<b>B-SSX-300</b>	Ten each size B-SSX-080/1 through B-SSX-1420/8 — 240 pcs. ....	<b>53.25</b>

### METRIC

### STAINLESS STEEL 18-8 — Hex Socket, Cup Point DIN-916

Part No.	Dimensions in Millimeters						Price		
	Nominal Size	Pitch	Major Diameter	Length	Hex Wrench Size	10	25	100	
B-MSSX-2-4	M2	0.4	2	4	0.9	7.55	15.70	52.25	
B-MSSX-2.5-3	M2.5	0.45	2.5	3	1.3	6.40	13.35	44.50	
B-MSSX-3-3	M3	0.5	3	3	1.5	1.45	2.95	9.85	
B-MSSX-3-5	M3	0.5	3	5	1.5	1.70	3.55	11.85	
B-MSSX-3-6	M3	0.5	3	6	1.5	1.75	3.60	12.00	
B-MSSX-4-4	M4	0.7	4	4	2.0	1.50	3.10	10.25	
B-MSSX-4-6	M4	0.7	4	6	2.0	1.65	3.45	11.40	
B-MSSX-4-10	M4	0.7	4	10	2.0	2.05	4.25	14.05	



## SET SCREWS — Hex Socket, Cup Point, Stainless Steel (cont.)

### METRIC

#### STAINLESS STEEL 18-8 — Hex Socket, Cup Point DIN-916

Part No.	Nominal Size	Pitch	Dimensions in Millimeters			Hex Wrench Size	Price		
			Major Diameter	Length			10	25	100
<b>B-MSSX-5-6</b>	M5	0.8	5	6	2.5	<b>1.75</b>	<b>3.60</b>	<b>11.95</b>	
<b>B-MSSX-5-10</b>	M5	0.8	5	10	2.5	<b>2.25</b>	<b>4.70</b>	<b>15.55</b>	
<b>B-MSSX-5-12</b>	M5	0.8	5	12	2.5	<b>2.55</b>	<b>5.25</b>	<b>17.45</b>	
<b>B-MSSX-6-8</b>	M6	1.0	6	8	3.0	<b>2.00</b>	<b>4.10</b>	<b>13.65</b>	
<b>B-MSSX-6-12</b>	M6	1.0	6	12	3.0	<b>2.45</b>	<b>5.10</b>	<b>16.90</b>	
<b>B-MSSX-8-8</b>	M8	1.25	8	8	4.0	<b>2.00</b>	<b>4.10</b>	<b>13.65</b>	
<b>B-MSSX-8-12</b>	M8	1.25	8	12	4.0	<b>2.30</b>	<b>4.80</b>	<b>15.95</b>	
<b>B-MSSX-8-16</b>	M8	1.25	8	16	4.0	<b>5.80</b>	<b>12.05</b>	<b>40.20</b>	

### ASSORTMENTS

#### Set Screws — Hex Socket, Cup Point, Stainless Steel 18-8

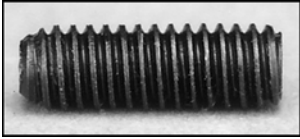
Each assortment contains 10 Set Screws of each size and corresponding length as indicated below.

Part No.	Nominal Size	Dimensions in Millimeters		No. of Pieces	Price
		Lengths			
<b>B-MSSX-1000</b>	M2	4		80	<b>24.55</b>
	M2.5	3			
	M3	3, 5, 6			
	M4	4, 6, 10			
<b>B-MSSX-1500</b>	M4	4, 6, 10		80	<b>17.45</b>
	M5	6, 10, 12			
	M6	8, 12			
<b>B-MSSX-2000</b>	M2	4		130	<b>37.65</b>
	M2.5	3			
	M3	3, 5, 6			
	M4	4, 6, 10			
	M5	6, 10, 12			
	M6	8, 12			



See our full selection of LOCTITE® Products  
Threadlockers, Adhesives, Sealants and Bonders starting on page 252

## SET SCREWS — Hex Socket, Alloy Steel



Hex Socket Set Screws in Alloy Steel offer superior strength for the really tough jobs and are more economical in applications where corrosion is not a factor. Set screws with cup points are used for fast, permanent and non-permanent location of parts on shafts when the impression of the cup edge is not objectionable. **To assure a more secure lock, use a taper pin or through-bolt.** Hex Wrenches begin on [page 364](#).

### ALLOY STEEL — Hex Socket, Cup Point

Part No.	Size/Thread	Length	Hex Wrench Size	Price		
				10	25	100
B-SSAS-080-1	#0-80	1/16"	0.028"	4.45	9.25	30.75
B-SSAS-080-2	#0-80	1/8"	0.028"	4.55	9.45	31.45
B-SSAS-080-3	#0-80	3/16"	0.028"	4.80	9.95	33.15
B-SSAS-172-2	#1-72	1/8"	0.035"	4.75	9.90	32.95
B-SSAS-172-3	#1-72	3/16"	0.035"	4.95	10.30	34.20
B-SSAS-172-4	#1-72	1/4"	0.035"	5.20	10.85	36.10
B-SSAS-256-2	#2-56	1/8"	0.035"	3.75	7.75	25.80
B-SSAS-256-3	#2-56	3/16"	0.035"	3.95	8.15	27.20
B-SSAS-256-4	#2-56	1/4"	0.035"	3.95	8.15	27.20
B-SSAS-256-6	#2-56	3/8"	0.035"	4.95	10.35	34.50
B-SSAS-348-2	#3-48	1/8"	0.050"	2.75	5.75	19.15
B-SSAS-348-4	#3-48	1/4"	0.050"	2.90	6.05	20.05
B-SSAS-440-2	#4-40	1/8"	0.050"	1.10	2.30	7.75
B-SSAS-440-3	#4-40	3/16"	0.050"	1.15	2.35	7.80
B-SSAS-440-4	#4-40	1/4"	0.050"	1.15	2.40	7.85
B-SSAS-440-6	#4-40	3/8"	0.050"	1.20	2.45	7.95
B-SSAS-440-8	#4-40	1/2"	0.050"	1.25	2.65	8.85
B-SSAS-540-2	#5-40	1/8"	0.062"	1.15	2.40	7.85
B-SSAS-540-4	#5-40	1/4"	0.062"	1.20	2.45	7.95
B-SSAS-540-6	#5-40	3/8"	0.062"	1.20	2.50	8.10
B-SSAS-540-8	#5-40	1/2"	0.062"	1.35	2.75	9.05
B-SSAS-632-4	#6-32	1/4"	0.062"	1.15	2.40	7.85
B-SSAS-632-6	#6-32	3/8"	0.062"	1.25	2.55	8.45
B-SSAS-632-8	#6-32	1/2"	0.062"	1.30	2.70	9.00
B-SSAS-632-12	#6-32	3/4"	0.062"	1.80	3.70	12.25
B-SSAS-832-3	#8-32	3/16"	0.078"	1.15	2.40	7.90
B-SSAS-832-6	#8-32	3/8"	0.078"	1.25	2.55	8.40
B-SSAS-832-8	#8-32	1/2"	0.078"	1.30	2.70	8.95
B-SSAS-832-12	#8-32	3/4"	0.078"	2.00	4.10	13.65
B-SSAS-024-4	#10-24	1/4"	0.093"	1.15	2.40	7.85
B-SSAS-024-6	#10-24	3/8"	0.093"	1.25	2.60	8.60
B-SSAS-024-8	#10-24	1/2"	0.093"	1.35	2.80	9.15
B-SSAS-024-12	#10-24	3/4"	0.093"	1.95	4.05	13.40
B-SSAS-032-4	#10-32	1/4"	0.093"	1.15	2.40	7.85
B-SSAS-032-6	#10-32	3/8"	0.093"	1.25	2.60	8.60
B-SSAS-032-8	#10-32	1/2"	0.093"	1.35	2.75	9.15
B-SSAS-032-12	#10-32	3/4"	0.093"	1.95	4.05	13.40
B-SSAS-1420-4	1/4-20	1/4"	0.125"	1.25	2.55	8.40
B-SSAS-1420-8	1/4-20	1/2"	0.125"	1.35	2.80	9.15
B-SSAS-1420-12	1/4-20	3/4"	0.125"	1.90	3.90	12.90
B-SSAS-1420-16	1/4-20	1"	0.125"	2.50	5.20	17.25
B-SSAS-5618-4	5/16-18	1/4"	0.156"	1.50	3.10	10.25
B-SSAS-5618-6	5/16-18	3/8"	0.156"	1.55	3.20	10.65

Continued →

## SET SCREWS — Hex Socket, Alloy Steel (cont.)

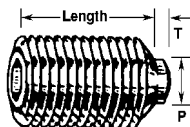
### ALLOY STEEL — Hex Socket

Part No.	Size/Thread	Length	Hex Wrench Size	Price		
				10	25	100
<b>B-SSAS-5618-8</b>	5/16-18	1/2"	0.156"	<b>1.60</b>	<b>3.35</b>	<b>11.05</b>
<b>B-SSAS-5618-12</b>	5/16-18	3/4"	0.156"	<b>2.05</b>	<b>4.25</b>	<b>14.05</b>
<b>B-SSAS-5618-16</b>	5/16-18	1"	0.156"	<b>2.75</b>	<b>5.75</b>	<b>19.10</b>
<b>B-SSAS-3816-4</b>	3/8-16	1/4"	0.188"	<b>1.75</b>	<b>3.65</b>	<b>12.05</b>
<b>B-SSAS-3816-6</b>	3/8-16	3/8"	0.188"	<b>1.55</b>	<b>3.20</b>	<b>10.65</b>
<b>B-SSAS-3816-8</b>	3/8-16	1/2"	0.188"	<b>1.65</b>	<b>3.40</b>	<b>11.30</b>
<b>B-SSAS-3816-12</b>	3/8-16	3/4"	0.188"	<b>2.05</b>	<b>4.25</b>	<b>14.05</b>
<b>B-SSAS-3816-16</b>	3/8-16	1"	0.188"	<b>3.20</b>	<b>6.60</b>	<b>22.00</b>

### ASSORTMENTS

<b>B-SSAS-100</b>	Ten each size B-SSAS-080-1 through B-SSAS-540-8 — 210 pcs. . . . .	<b>65.70</b>
<b>B-SSAS-150</b>	Ten each size B-SSAS-632-4 through B-SSAS-1420-16 — 200 pcs. . . . .	<b>36.80</b>
<b>B-SSAS-350</b>	Ten each size B-SSAS-080-1 through B-SSAS-3816-16 — 510 pcs. . . . .	<b>99.95</b>

## SET SCREWS — Alloy Steel with Brass Tip



Soft-brass tipped Set Screws allow for fine rotational and axial positioning when used in devices mounted on smooth hard round shafts. They are useful for locking on coarse threads and they make a good simple thrust bearing to take out the end play of slow to medium rotating shafts. Unlike plastic tipped set screws they allow high clamping loads and won't slip even at elevated temperatures. They won't mar steel shafts. Available from stock in convenient quantities of individual thread sizes, or an assortment.

### ALLOY STEEL — Hex Socket

\* Sizes #2-56, #4-40 and #6-32 are in Stainless Steel 18-8.

Part No.	Size/Thread	Length	Hex Wrench	Brass Tip		Each	Price		
				P	T		10	25	100
<b>B-BSAS-256-2*</b>	#2-56	1/8"	0.035"	1/32"	1/32"	<b>1.90</b>	<b>15.95</b>	<b>33.20</b>	<b>110.55</b>
<b>B-BSAS-440-2*</b>	#4-40	1/8"	0.050"	1/16"	1/32"	<b>1.45</b>	<b>11.85</b>	<b>24.60</b>	<b>81.90</b>
<b>B-BSAS-632-2*</b>	#6-32	1/8"	0.062"	1/16"	1/32"	<b>1.40</b>	<b>11.45</b>	<b>23.80</b>	<b>79.25</b>
<b>B-BSAS-632-4*</b>	#6-32	1/4"	0.062"	1/16"	1/32"	<b>1.40</b>	<b>11.45</b>	<b>23.80</b>	<b>79.25</b>
<b>B-BSAS-832-3</b>	#8-32	3/16"	0.078"	7/64"	3/64"	<b>1.45</b>	<b>11.90</b>	<b>24.75</b>	<b>82.35</b>
<b>B-BSAS-832-6</b>	#8-32	3/8"	0.078"	6/64"	3/64"	<b>1.50</b>	<b>12.05</b>	<b>25.05</b>	<b>83.45</b>
<b>B-BSAS-032-4</b>	#10-32	1/4"	0.093"	1/8"	3/64"	—	<b>6.25</b>	<b>13.00</b>	<b>43.25</b>
<b>B-BSAS-032-6</b>	#10-32	3/8"	0.093"	1/8"	3/64"	—	<b>6.45</b>	<b>13.40</b>	<b>44.55</b>
<b>B-BSAS-1420-5</b>	1/4-20	5/16"	0.125"	1/8"	3/64"	—	<b>6.70</b>	<b>13.90</b>	<b>46.25</b>
<b>B-BSAS-1420-8</b>	1/4-20	1/2"	0.125"	1/8"	3/64"	<b>1.00</b>	<b>7.05</b>	<b>14.70</b>	<b>48.95</b>
<b>B-BSAS-3816-8</b>	3/8-16	1/2"	0.1875"	3/16"	1/16"	<b>1.25</b>	<b>10.25</b>	<b>21.35</b>	<b>71.15</b>
<b>B-BSAS-3816-12</b>	3/8-16	3/4"	0.1875"	3/16"	1/16"	<b>1.60</b>	<b>13.20</b>	<b>27.45</b>	<b>91.50</b>

### ASSORTMENT

Neatly packed in a crush-proof, oil resistant polypropylene compartment box.

This assortment contains 190 pieces:

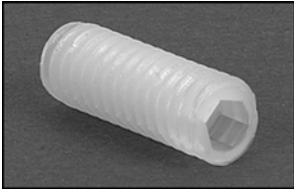
20 each size #2-56 × 1/8", #4-40 × 1/8", #6-32 × 1/8", #8-32 × 3/16", #10-32 × 1/4"

15 each size #2-56 × 1/4", #4-40 × 1/4", #6-32 × 1/4", #8-32 × 1/4"

10 each size #4-40 × 3/8", #6-32 × 3/8", #8-32 × 3/8"

**B-BSAS-300** . . . . . **115.00**

## SET SCREWS — Hex Socket, Nylon

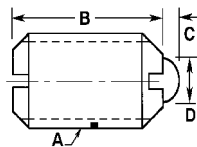


Designed for light duty or light fastening only, Nylon Set Screws have flat points that help prevent damage to shaft surfaces when tightened. Thread size #2-56 is slotted; threads #4-40 and greater are Hex Socket Heads. Where applications require greater torquing, see soft brass tipped set screws on [page 211](#).

### NYLON — Flat Point

Part No.	Size/Thread	Head Style	Hex Wrench Size	Length	Price			
					10	25	100	1000
<b>B-SSN-256-3</b>	#2-56	Slotted	—	3/16"	—	<b>1.70</b>	<b>5.65</b>	<b>48.10</b>
<b>B-SSN-256-4</b>	#2-56	Slotted	—	1/4"	—	<b>1.70</b>	<b>5.70</b>	<b>48.50</b>
<b>B-SSN-256-6</b>	#2-56	Slotted	—	3/8"	—	<b>1.75</b>	<b>5.80</b>	<b>49.30</b>
<b>B-SSN-440-2</b>	#4-40	Hex Socket	0.050"	1/8"	—	<b>1.65</b>	<b>5.60</b>	<b>47.60</b>
<b>B-SSN-440-4</b>	#4-40	Hex Socket	0.050"	1/4"	—	<b>1.70</b>	<b>5.70</b>	<b>48.50</b>
<b>B-SSN-440-6</b>	#4-40	Hex Socket	0.050"	3/8"	—	<b>1.75</b>	<b>5.80</b>	<b>49.30</b>
<b>B-SSN-632-2</b>	#6-32	Hex Socket	0.062"	1/8"	—	<b>1.90</b>	<b>6.30</b>	<b>53.50</b>
<b>B-SSN-632-4</b>	#6-32	Hex Socket	0.062"	1/4"	—	<b>1.80</b>	<b>5.95</b>	<b>50.60</b>
<b>B-SSN-632-6</b>	#6-32	Hex Socket	0.062"	3/8"	—	<b>1.85</b>	<b>6.05</b>	<b>51.50</b>
<b>B-SSN-832-4</b>	#8-32	Hex Socket	0.078"	1/4"	—	<b>1.90</b>	<b>6.25</b>	<b>53.20</b>
<b>B-SSN-832-6</b>	#8-32	Hex Socket	0.078"	3/8"	—	<b>1.90</b>	<b>6.30</b>	<b>53.60</b>
<b>B-SSN-832-8</b>	#8-32	Hex Socket	0.078"	1/2"	—	<b>1.95</b>	<b>6.35</b>	<b>54.00</b>
<b>B-SSN-032-4</b>	#10-32	Hex Socket	0.093"	1/4"	<b>1.00</b>	<b>2.05</b>	<b>6.80</b>	<b>57.80</b>
<b>B-SSN-032-6</b>	#10-32	Hex Socket	0.093"	3/8"	<b>1.00</b>	<b>2.10</b>	<b>6.90</b>	<b>58.70</b>
<b>B-SSN-032-8</b>	#10-32	Hex Socket	0.093"	1/2"	<b>1.00</b>	<b>2.10</b>	<b>6.95</b>	<b>59.10</b>
<b>B-SSN-1420-4</b>	1/4-20	Hex Socket	0.125"	1/4"	<b>1.15</b>	<b>2.40</b>	<b>8.00</b>	<b>68.00</b>
<b>B-SSN-1420-8</b>	1/4-20	Hex Socket	0.125"	1/2"	<b>1.20</b>	<b>2.45</b>	<b>8.10</b>	<b>68.90</b>
<b>B-SSN-1420-12</b>	1/4-20	Hex Socket	0.125"	3/4"	<b>1.25</b>	<b>2.50</b>	<b>8.20</b>	<b>69.70</b>

## BALL PLUNGERS — Stainless Steel with Spring Balls

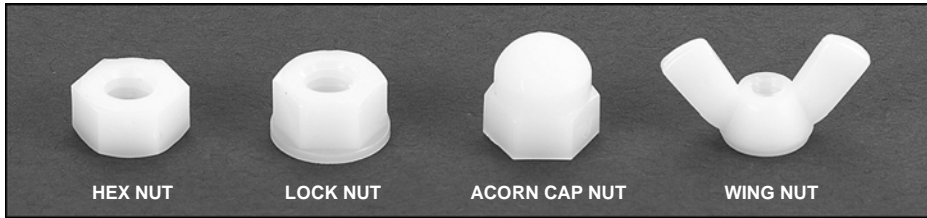


Stainless Steel Ball Plungers with spring balls are excellent where controlled end pressure or a specific indexing feature is required. Especially useful for many locating or positioning applications in dies, special tooling and automatic feed devices. Color: Silver.

### STAINLESS STEEL TYPE 303

Part No.	End Pressure (Lbs.)	Size/Thread A	B	C	D	Price	
						Each	10
<b>B-MSBX-448</b>	1/2	#4-48	0.187	0.020	0.062	<b>10.05</b>	<b>73.70</b>
<b>B-MSBX-540</b>	3/4	#5-40	0.250	0.020	0.062	<b>10.45</b>	<b>76.50</b>
<b>B-MSBX-640</b>	1	#6-40	0.312	0.023	0.078	<b>9.90</b>	<b>72.50</b>
<b>B-MSBX-836</b>	1-1/4	#8-36	0.344	0.025	0.093	<b>9.25</b>	<b>67.75</b>
<b>B-MSBX-032</b>	1-1/2	#10-32	0.513	0.025	0.0937	<b>10.25</b>	<b>74.85</b>

## NUTS — Nylon



### HEX NUTS FINISH FULL — Nylon 6/6

Nylon Hex Nuts are non-corrosive and will easily absorb minor vibrations. Match with our Nylon Machine Screws [pages 184](#) and Machine Bolts on [page 198](#).

Part No.	Size/Thread	Width		Thickness	10	Price		
		Across Flats				25	100	1000
<b>B-HNN-256</b>	#2-56	0.180"		0.070"	—	<b>1.55</b>	<b>5.15</b>	<b>43.80</b>
<b>B-HNN-440</b>	#4-40	0.250"		0.100"	—	<b>1.55</b>	<b>5.15</b>	<b>43.80</b>
<b>B-HNN-632</b>	#6-32	0.305"		0.120"	—	<b>1.60</b>	<b>5.25</b>	<b>44.70</b>
<b>B-HNN-832</b>	#8-32	0.335"		0.130"	—	<b>1.65</b>	<b>5.40</b>	<b>45.90</b>
<b>B-HNN-032</b>	#10-32	0.365"		0.135"	—	<b>1.65</b>	<b>5.50</b>	<b>46.80</b>
<b>B-HNN-1420</b>	1/4-20	0.425"		0.233"	—	<b>1.75</b>	<b>5.90</b>	<b>50.20</b>
<b>B-HNN-5618</b>	5/16-18	0.500"		0.270"	<b>1.65</b>	<b>3.45</b>	<b>11.55</b>	<b>98.20</b>
<b>B-HNN-3816</b>	3/8-16	0.560"		0.330"	<b>2.35</b>	<b>4.85</b>	<b>16.10</b>	<b>136.90</b>
<b>B-HNN-1213</b>	1/2-13	0.750"		0.430"	<b>3.35</b>	<b>6.95</b>	<b>23.10</b>	<b>196.40</b>

### METRIC

### HEX NUTS FINISH FULL DIN-934 — Nylon 6/6

Part No.	Nominal Size	Pitch	Dimensions in Millimeters		Nominal Height	25	Price		
			Width Across Flats	Major Diameter			100	1000	
<b>B-MHNN-2</b>	M2	0.4	3.9	2	1.2	<b>1.70</b>	<b>5.55</b>	<b>47.00</b>	
<b>B-MHNN-25</b>	M2.5	0.45	4.9	2.5	1.8	<b>1.70</b>	<b>5.55</b>	<b>47.00</b>	
<b>B-MHNN-3</b>	M3	0.5	5.4	3	2.2	<b>1.70</b>	<b>5.55</b>	<b>47.00</b>	
<b>B-MHNN-4</b>	M4	0.7	6.9	4	3.0	<b>1.70</b>	<b>5.55</b>	<b>47.00</b>	
<b>B-MHNN-5</b>	M5	0.8	7.9	5	4.3	<b>1.75</b>	<b>5.65</b>	<b>48.20</b>	
<b>B-MHNN-6</b>	M6	1.0	9.9	6	5.4	<b>1.80</b>	<b>5.95</b>	<b>50.40</b>	

### LOCK NUTS — Nylon 6/6

Our Nylon Lock Nuts provide excellent position locking capability for a Nylon Nut. Locking is achieved through thread interference. Use where vibration may be a problem; for light applications only.

Part No.	Size/Thread	Width		Thickness	10	Price		
		Across Flats				25	100	1000
<b>B-HLNN-256</b>	#2-56	0.180"		0.140"	<b>1.30</b>	<b>2.65</b>	<b>8.75</b>	<b>74.40</b>
<b>B-HLNN-440</b>	#4-40	0.250"		0.200"	<b>1.30</b>	<b>2.65</b>	<b>8.75</b>	<b>74.40</b>
<b>B-HLNN-632</b>	#6-32	0.305"		0.200"	<b>1.30</b>	<b>2.70</b>	<b>9.00</b>	<b>76.60</b>
<b>B-HLNN-832</b>	#8-32	0.335"		0.230"	<b>1.35</b>	<b>2.75</b>	<b>9.15</b>	<b>77.60</b>
<b>B-HLNN-032</b>	#10-32	0.365"		0.250"	<b>1.35</b>	<b>2.80</b>	<b>9.30</b>	<b>79.30</b>
<b>B-HLNN-1420</b>	1/4-20	0.425"		0.275"	<b>1.50</b>	<b>3.10</b>	<b>10.30</b>	<b>87.50</b>

## NUTS — Nylon (cont.)

### ACORN CAP NUTS — Nylon 6/6

Part No.	Size/Thread	Width		Price			
		Across Flats	Thickness	10	25	100	1000
<b>B-CNN-440</b>	#4-40	0.250"	0.280"	<b>1.40</b>	<b>2.90</b>	<b>9.65</b>	<b>82.00</b>
<b>B-CNN-632</b>	#6-32	0.305"	0.345"	<b>1.45</b>	<b>3.00</b>	<b>9.95</b>	<b>84.80</b>
<b>B-CNN-832</b>	#8-32	0.330"	0.375"	<b>1.50</b>	<b>3.10</b>	<b>10.30</b>	<b>87.50</b>
<b>B-CNN-032</b>	#10-32	0.365"	0.400"	<b>1.55</b>	<b>3.20</b>	<b>10.65</b>	<b>90.20</b>
<b>B-CNN-1420</b>	1/4-20	0.425"	0.475"	<b>1.65</b>	<b>3.40</b>	<b>11.25</b>	<b>95.70</b>

### WING NUTS — Nylon 6/6

Part No.	Size/Thread	Overall Height	Price			
			10	25	100	1000
<b>B-MWNN-440</b>	#4-40	0.500"	<b>2.05</b>	<b>4.25</b>	<b>14.10</b>	<b>119.80</b>
<b>B-MWNN-632</b>	#6-32	0.500"	<b>2.05</b>	<b>4.25</b>	<b>14.10</b>	<b>119.80</b>
<b>B-MWNN-832</b>	#8-32	0.500"	<b>2.05</b>	<b>4.25</b>	<b>14.10</b>	<b>119.80</b>
<b>B-MWNN-032</b>	#10-32	0.500"	<b>2.05</b>	<b>4.25</b>	<b>14.10</b>	<b>119.80</b>
<b>B-MWNN-1420</b>	1/4-20	0.820"	<b>2.65</b>	<b>5.55</b>	<b>18.50</b>	<b>157.00</b>
<b>B-MWNN-5618</b>	5/16-18	0.820"	<b>2.95</b>	<b>6.15</b>	<b>20.55</b>	<b>174.40</b>
<b>B-MWNN-3816</b>	3/8-16	0.820"	<b>2.95</b>	<b>6.15</b>	<b>20.55</b>	<b>174.40</b>
<b>B-MWNN-1213</b>	1/2-13	0.900"	<b>3.80</b>	<b>7.90</b>	<b>26.35</b>	<b>223.80</b>

## NUTS — Brass



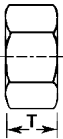
### ACORN CAP NUTS — Brass, Nickel Plated

Part No.	Size/Thread	Width		Height	Each	Price		
		Across Flats	Height			10	25	100
<b>B-CNB-256</b>	#2-56	3/16"	5/32"	—	<b>7.40</b>	<b>15.65</b>	<b>56.95</b>	
<b>B-CNB-440</b>	#4-40	1/4"	1/4"	—	<b>1.90</b>	<b>4.25</b>	<b>15.75</b>	
<b>B-CNB-632</b>	#6-32	5/16"	9/32"	—	<b>2.50</b>	<b>5.35</b>	<b>20.25</b>	
<b>B-CNB-832</b>	#8-32	5/16"	9/32"	—	<b>3.20</b>	<b>7.05</b>	<b>26.95</b>	
<b>B-CNB-032</b>	10-32	3/8"	11/32"	—	<b>4.00</b>	<b>8.25</b>	<b>29.25</b>	
<b>B-CNB-1420</b>	1/4-20	7/16"	3/8"	—	<b>10.25</b>	<b>21.00</b>	<b>75.50</b>	
<b>B-CNB-3816</b>	3/8-16	5/8"	1/2"	<b>1.50</b>	<b>14.15</b>	<b>29.50</b>	<b>94.40</b>	
<b>B-CNB-1213</b>	1/2-13	3/4"	9/16"	<b>1.85</b>	<b>17.70</b>	<b>36.80</b>	<b>117.80</b>	

### ACORN CAP NUTS — Brass, Unplated

Part No.	Size/Thread	Width		Height	Each	Price		
		Across Flats	Height			10	25	100
<b>B-CNBB-440</b>	#4-40	1/4"	1/4"	—	<b>1.50</b>	<b>3.40</b>	<b>12.20</b>	
<b>B-CNBB-632</b>	#6-32	5/16"	9/32"	—	<b>1.80</b>	<b>3.95</b>	<b>14.95</b>	
<b>B-CNBB-832</b>	#8-32	5/16"	9/32"	—	<b>1.95</b>	<b>4.25</b>	<b>15.50</b>	
<b>B-CNBB-032</b>	#10-32	3/8"	11/32"	—	<b>2.50</b>	<b>5.25</b>	<b>17.25</b>	
<b>B-CNBB-1420</b>	1/4-20	7/16"	3/8"	—	<b>4.95</b>	<b>11.30</b>	<b>40.95</b>	
<b>B-CNBB-3816</b>	3/8-16	5/8"	1/2"	<b>1.35</b>	<b>12.15</b>	<b>24.80</b>	<b>81.00</b>	
<b>B-CNBB-1213</b>	1/2-13	3/4"	9/16"	<b>1.60</b>	<b>15.20</b>	<b>31.10</b>	<b>101.10</b>	

## NUTS — Stainless Steel



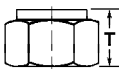
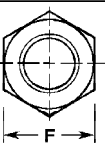
### HEX NUTS FINISH FULL — Stainless Steel 18-8

Part No.	Size/Thread	Width Across Flats	Thickness	Price			
				10	25	100	1000
<b>B-HNX-000120</b>	#000-120	3/32"	3/64"	<b>20.25</b>	<b>38.95</b>	<b>126.00</b>	—
<b>B-HNX-0090</b>	#00-90	5/64"	3/32"	<b>20.25</b>	<b>38.95</b>	<b>126.00</b>	—
<b>B-HNX-080</b>	#0-80	5/32"	3/64"	<b>1.15</b>	<b>2.40</b>	<b>7.95</b>	<b>67.60</b>
<b>B-HNX-172</b>	#1-72	5/32"	3/64"	<b>1.25</b>	<b>2.55</b>	<b>8.50</b>	<b>72.30</b>
<b>B-HNX-256</b>	#2-56	3/16"	1/16"	—	<b>1.00</b>	<b>3.00</b>	<b>25.50</b>
<b>B-HNX-440</b>	#4-40	1/4"	3/32"	—	<b>1.00</b>	<b>2.50</b>	<b>21.30</b>
<b>B-HNX-540</b>	#5-40	5/16"	7/64"	—	<b>1.20</b>	<b>3.95</b>	<b>33.60</b>
<b>B-HNX-632</b>	#6-32	5/16"	7/64"	—	<b>1.00</b>	<b>3.25</b>	<b>27.70</b>
<b>B-HNX-832</b>	#8-32	11/32"	1/8"	—	<b>1.10</b>	<b>3.55</b>	<b>30.20</b>
<b>B-HNX-024</b>	#10-24	3/8"	1/8"	—	<b>1.15</b>	<b>3.75</b>	<b>31.90</b>
<b>B-HNX-032</b>	#10-32	3/8"	1/8"	—	<b>1.15</b>	<b>3.75</b>	<b>31.90</b>
<b>B-HNX-1420</b>	1/4-20	7/16"	3/16"	—	<b>1.80</b>	<b>5.95</b>	<b>50.60</b>
<b>B-HNX-1428</b>	1/4-28	7/16"	3/16"	<b>1.05</b>	<b>2.15</b>	<b>7.10</b>	<b>60.40</b>
<b>B-HNX-5618</b>	5/16-18	35/64"	7/32"	<b>1.45</b>	<b>3.00</b>	<b>9.95</b>	<b>84.60</b>
<b>B-HNX-3816</b>	3/8-16	5/8"	1/4"	<b>2.10</b>	<b>4.35</b>	<b>14.50</b>	<b>123.30</b>
<b>B-HNX-1213</b>	1/2-13	3/4"	7/16"	<b>5.05</b>	<b>10.50</b>	<b>34.85</b>	<b>296.30</b>

### METRIC

### HEX NUTS FINISH FULL DIN-934 — Stainless Steel 18-8

Part No.	Nominal Size	Dimensions in Millimeters			Price		
		Pitch	T	F	10	25	100
<b>B-MHNX-1</b>	M1	0.25	0.8	2.5	<b>27.75</b>	<b>57.75</b>	<b>192.40</b>
<b>B-MHNX-14</b>	M1.4	0.30	1.2	3.0	<b>27.65</b>	<b>57.55</b>	<b>191.75</b>
<b>B-MHNX-2</b>	M2	0.4	1.6	4.0	<b>1.25</b>	<b>2.55</b>	<b>8.45</b>
<b>B-MHNX-25</b>	M2.5	0.45	2.0	5.0	—	<b>1.50</b>	<b>4.75</b>
<b>B-MHNX-3</b>	M3	0.5	2.4	5.5	—	<b>1.50</b>	<b>4.75</b>
<b>B-MHNX-4</b>	M4	0.7	3.2	7.0	—	<b>1.50</b>	<b>4.75</b>
<b>B-MHNX-5</b>	M5	0.8	4.0	8.0	—	<b>1.55</b>	<b>4.80</b>
<b>B-MHNX-6</b>	M6	1.0	5.0	10.0	—	<b>1.75</b>	<b>5.80</b>
<b>B-MHNX-8</b>	M8	1.25	8.0	13.0	<b>2.30</b>	<b>4.80</b>	<b>16.00</b>



### LOCK NUTS — Stainless Steel 18-8 with Nylon 6/6 Insert

Stainless Steel Nut with Nylon Locking Insert permanently installed. Prevents loosening due to vibration and is self-locking in any position. Can be removed and returned with minimum loss of locking effect.

Part No.	Size/Thread	Width Across Flats	Nominal Height	Price		
				10	25	100
<b>B-HLNX-256</b>	#2-56	1/4"	0.143"	<b>3.75</b>	<b>7.80</b>	<b>25.90</b>
<b>B-HLNX-440</b>	#4-40	1/4"	0.150"	—	<b>1.55</b>	<b>5.15</b>
<b>B-HLNX-632</b>	#6-32	5/16"	0.174"	—	<b>2.00</b>	<b>6.65</b>
<b>B-HLNX-832</b>	#8-32	11/32"	0.224"	<b>1.15</b>	<b>2.35</b>	<b>7.70</b>
<b>B-HLNX-024</b>	#10-24	3/8"	0.233"	<b>1.20</b>	<b>2.50</b>	<b>8.35</b>
<b>B-HLNX-032</b>	#10-32	3/8"	0.233"	<b>1.20</b>	<b>2.50</b>	<b>8.35</b>
<b>B-HLNX-1420</b>	1/4-20	7/16"	5/16"	<b>1.50</b>	<b>3.10</b>	<b>10.30</b>
<b>B-HLNX-5618</b>	5/16-18	1/2"	11/32"	<b>2.35</b>	<b>4.85</b>	<b>16.05</b>
<b>B-HLNX-3816</b>	3/8-16	9/16"	29/64"	<b>3.15</b>	<b>6.60</b>	<b>21.95</b>
<b>B-HLNX-1213</b>	1/2-13	3/4"	19/32"	<b>6.80</b>	<b>14.15</b>	<b>47.10</b>

## NUTS — Stainless Steel (cont.)

### METRIC

#### LOCK NUTS DIN-985 — Stainless Steel 18-8 with Nylon 6/6 Insert

Part No.	Nominal Size	Dimensions in Millimeters			Price		
		Pitch	T	F	10	25	100
<b>B-MHLNX-3</b>	M3	0.5	4.0	5.5	<b>1.95</b>	<b>3.95</b>	<b>11.80</b>
<b>B-MHLNX-4</b>	M4	0.7	5.0	7.0	<b>2.00</b>	<b>4.00</b>	<b>11.90</b>
<b>B-MHLNX-5</b>	M5	0.8	5.0	8.0	<b>2.05</b>	<b>4.10</b>	<b>12.20</b>
<b>B-MHLNX-6</b>	M6	1.0	6.0	10.0	<b>2.25</b>	<b>4.50</b>	<b>13.50</b>
<b>B-MHLNX-8</b>	M8	1.25	8.0	13.0	<b>3.50</b>	<b>7.00</b>	<b>21.00</b>



#### CAP NUTS — Stainless Steel 18-8

Part No.	Size/Thread	Width Across Flats	Nominal Height	Price		
				10	25	100
<b>B-CNX-440</b>	#4-40	1/4"	1/4"	<b>5.10</b>	<b>10.60</b>	<b>33.95</b>
<b>B-CNX-632</b>	#6-32	5/16"	5/16"	<b>5.20</b>	<b>10.85</b>	<b>34.65</b>
<b>B-CNX-832</b>	#8-32	5/16"	5/16"	<b>5.25</b>	<b>10.90</b>	<b>34.85</b>
<b>B-CNX-032</b>	#10-32	3/8"	3/8"	<b>5.35</b>	<b>11.10</b>	<b>35.50</b>
<b>B-CNX-1420</b>	1/4-20	7/16"	3/8"	<b>5.35</b>	<b>11.15</b>	<b>35.70</b>
<b>B-CNX-1428</b>	1/4-28	7/16"	7/16"	<b>8.30</b>	<b>17.25</b>	<b>55.20</b>



#### WING NUTS — Stainless Steel 18-8

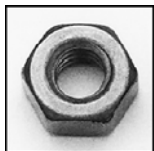
Part No.	Size/Thread	10	Price	
			25	100
<b>B-PWNX-632</b>	#6-32	<b>4.65</b>	<b>9.60</b>	<b>31.95</b>
<b>B-PWNX-832</b>	#8-32	<b>5.25</b>	<b>10.85</b>	<b>36.15</b>
<b>B-PWNX-032</b>	#10-32	<b>5.55</b>	<b>11.50</b>	<b>38.25</b>
<b>B-PWNX-1420</b>	1/4-20	<b>6.10</b>	<b>12.65</b>	<b>42.15</b>
<b>B-PWNX-3816</b>	3/8-16	<b>9.65</b>	<b>20.05</b>	<b>66.75</b>

### METRIC

#### WING NUTS — Stainless Steel 18-8 \* DIN 315

Part No.	Nominal Size	Pitch	Dimensions in Millimeters		Price		
			Wing Spread Max.	Wing Height Min.	10	25	100
<b>B-MW NX-3</b>	M3	0.5	17.6	8.6	<b>9.40</b>	<b>21.60</b>	<b>74.90</b>
<b>B-MW NX-4*</b>	M4	0.7	20	8.6	<b>10.95</b>	<b>25.20</b>	<b>87.75</b>
<b>B-MW NX-5</b>	M5	0.8	22.5	11.0	<b>11.25</b>	<b>25.85</b>	<b>89.90</b>
<b>B-MW NX-6</b>	M6	1.0	27.8	13.6	<b>14.20</b>	<b>32.65</b>	<b>113.45</b>

## NUTS — Titanium

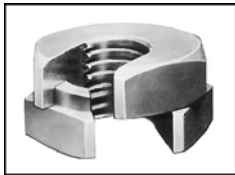


#### HEX NUTS, FINISH FULL — Titanium ASTM-B348 Grade 2

Part No.	Size/Thread	Each	Price	
			10	25
<b>B-HNTT-0632</b>	#6-32	<b>4.50</b>	<b>37.65</b>	<b>78.40</b>
<b>B-HNTT-0832</b>	#8-32	<b>3.00</b>	<b>24.00</b>	<b>48.00</b>
<b>B-HNTT-1032</b>	#10-32	<b>3.05</b>	<b>24.40</b>	<b>48.80</b>
<b>B-HNTT-1420</b>	1/4-20	<b>1.75</b>	<b>14.00</b>	<b>28.00</b>
<b>B-HNTT-5618</b>	5/16-18	<b>2.40</b>	<b>19.20</b>	<b>38.40</b>
<b>B-HNTT-3816</b>	3/8-16	<b>3.95</b>	<b>31.60</b>	<b>63.20</b>



## NUTS — Lock, Slip-On, Steel



Avoid time consuming threading to place a lock nut in position on a threaded rod or long bolt. Simply insert the Slip-On Lock Nut anywhere on the threaded shaft...twist and then tighten with a wrench...it locks in place. Ideal for retrofits (add only where needed) adjustable without dismantling system, bypass damaged or burred threads on rod, use as stops or quick change adjustments on molds, dies, fixtures, fabricating machines. Can replace welded nuts or conventional jam nuts in high vibratory situations, pipe racks, clevis hangers, cable trays, etc.

### SLIP-ON LOCK NUT — Steel

Part No.	Rod Dia. / Threads	Across Flats	Thickness	Each	Price	
					10	25
<b>B-SLN-1420</b>	1/4-20	5/8"	3/8"	<b>2.95</b>	<b>24.50</b>	<b>51.05</b>
<b>B-SLN-3816</b>	3/8-16	7/8"	0.490"	<b>3.80</b>	<b>31.40</b>	<b>65.45</b>
<b>B-SLN-1213</b>	1/2-13	1-1/8"	5/8"	<b>4.40</b>	<b>36.60</b>	<b>76.20</b>

## THUMB NUTS



### THUMB NUTS

Thumb Nuts are frequently used for securing panels and sub-assemblies which must be easily removed, and for a decorative, finished look. Other sizes available by special order. **Call Purchasing Services toll free — 1-888-455-9712.**

**Nickel Plated Brass** is attractive and practical for many applications where economy is important and high corrosion conditions are not present.

**Stainless Steel 18-8** gives you a stronger component, plus it stands up against chemicals, outdoor environments, and other corrosive threats.

**Nylon** is the solution when you need non-conductive fasteners that can be easily removed. Plus it is not magnetic, won't rust or easily corrode, and is both strong and attractive.

### THUMB NUTS — Nickel Plated Brass

Part No.	Size/Thread	Head Diameter	Height	10	Price	
					25	100
<b>B-TNB-440</b>	#4-40	3/8"	1/4"	<b>2.15</b>	<b>5.00</b>	<b>18.85</b>
<b>B-TNB-632</b>	#6-32	13/32"	9/32"	<b>2.70</b>	<b>6.20</b>	<b>23.55</b>
<b>B-TNB-832</b>	#8-32	7/16"	5/16"	<b>3.10</b>	<b>7.31</b>	<b>27.10</b>
<b>B-TNB-032</b>	#10-32	1/2"	21/64"	<b>3.55</b>	<b>7.95</b>	<b>30.60</b>
<b>B-TNB-1420</b>	1/4-20	5/8"	3/8"	<b>5.45</b>	<b>12.35</b>	<b>47.10</b>

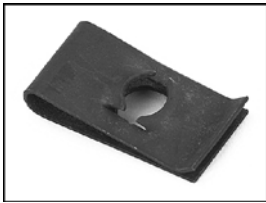
### THUMB NUTS — Stainless Steel 18-8

Part No.	Size/Thread	Head Diameter	Height	Each	Price	
					10	25
<b>B-TNX-440</b>	#4-40	5/16"	1/4"	<b>2.05</b>	<b>18.90</b>	<b>37.80</b>
<b>B-TNX-632</b>	#6-32	3/8"	9/32"	<b>2.25</b>	<b>20.70</b>	<b>41.40</b>
<b>B-TNX-832</b>	#8-32	7/16"	9/32"	<b>2.30</b>	<b>21.30</b>	<b>42.60</b>
<b>B-TNX-032</b>	#10-32	1/2"	11/32"	<b>2.85</b>	<b>26.40</b>	<b>52.80</b>
<b>B-TNX-1420</b>	1/4-20	9/16"	3/8"	<b>3.05</b>	<b>28.20</b>	<b>56.40</b>

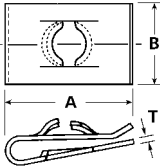
### THUMB NUTS — Nylon 6/6

Part No.	Size/Thread	Head Diameter	Height	10	25	Price	
						100	1000
<b>B-TNN-440</b>	#4-40	0.300"	0.280"	<b>2.40</b>	<b>4.95</b>	<b>16.50</b>	<b>140.30</b>
<b>B-TNN-632</b>	#6-32	0.360"	0.275"	<b>2.45</b>	<b>5.05</b>	<b>16.95</b>	<b>144.10</b>
<b>B-TNN-832</b>	#8-32	0.425"	0.305"	<b>2.50</b>	<b>5.20</b>	<b>17.35</b>	<b>147.50</b>
<b>B-TNN-032</b>	#10-32	0.425"	0.325"	<b>2.55</b>	<b>5.30</b>	<b>17.80</b>	<b>151.30</b>
<b>B-TNN-1420</b>	1/4-20	0.540"	0.365"	<b>2.65</b>	<b>5.50</b>	<b>18.25</b>	<b>155.10</b>

## NUTS — Spring Steel



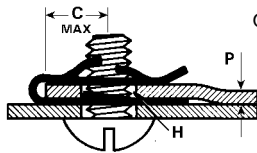
### STANDARD (STD)



One piece, self-locking Spring Steel Nuts are designed for both strength and speed of application. Eliminating the need for plain spanning washers or lock washers, these fasteners are effective and strong enough to resist loosening even when severe vibration exposure is required. Spring Steel Nuts are 100% austempered, a heat treating process that prevents distortion while developing maximum spring tension. Phosphate-coated SAE 1050 parts are dipped in a special oil, then spun dry. Color: Black.

### DESIGN VARIATION (CTU)

Only one end corner turned up, not entire leading edge.



### "U" TYPE

Where separate panels are to be securely mated, these "U" Type fasteners provide the same rapid attachment and ease of assembly inherent in all spring nut designs. They are easy to remove yet grip with a positive holding power that stays until you want it to loosen.

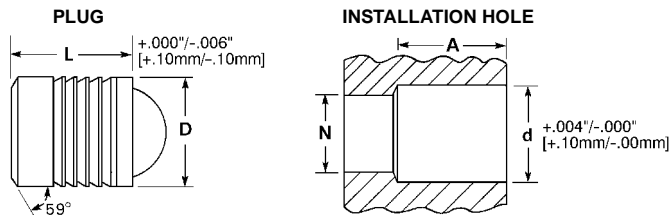
## "U" TYPE — Spring Steel SAE 1050

Part No.	Screw Size	Type	Panel Thickness	Dimensions in Inches					Price		
				A Length	B Width	T Thickness	H Hole Dia.	C Ctr. to Edge	10	25	100
<b>B-SNU-632</b>	#6-32	CTU	.050-.062	0.35	0.31	0.017	0.156	0.156	<b>2.35</b>	<b>4.85</b>	<b>16.05</b>
<b>B-SNU-832</b>	#8-32	STD	.050-.063	0.54	0.31	0.017	0.218	0.265	<b>2.85</b>	<b>5.95</b>	<b>19.75</b>
<b>B-SNU-1024</b>	#10-24	STD	.040-.094	0.77	0.44	0.020	0.281	0.343	<b>3.00</b>	<b>6.20</b>	<b>20.70</b>
<b>B-SNU-1420</b>	1/4-20	STD	.064-.125	0.97	0.50	0.025	0.343	0.500	<b>3.60</b>	<b>7.45</b>	<b>24.85</b>

## EXPANSION PLUGS



One-piece Stainless Steel Expansion Plugs effectively seal drilled holes with proof pressures up to 30,000 psig. They offer a cost effective way to seal holes in manifolds and castings for the automotive, machine tool, and fluid power industries...anywhere a reliable and positive seal is needed. Especially useful where crossed holes provide a pathway and one drilled hole must be plugged.



## STAINLESS STEEL TYPE 303

Part No.	Plug Dimensions			Installation Hole Dimensions			Price		
	Outside Diameter (D)	Tolerance	Length (L)	Opening (d)	Minimum (A)	Maximum (N)	10	25	100
<b>B-EP-1562</b>	.1562	+ .000/- .0012	.161	.1562	.149	.130	<b>9.40</b>	<b>19.35</b>	<b>64.40</b>
<b>B-EP-1875</b>	.1875	+ .000/- .0012	.220	.1875	.208	.160	<b>11.30</b>	<b>23.30</b>	<b>77.60</b>
<b>B-EP-2187</b>	.2187	+ .000/- .0012	.220	.2187	.208	.190	<b>15.25</b>	<b>31.80</b>	<b>106.00</b>
<b>B-EP-2500</b>	.2500	+ .000/- .0012	.259	.2500	.247	.220	<b>15.75</b>	<b>32.65</b>	<b>108.80</b>
<b>B-EP-2812</b>	.2812	+ .000/- .0014	.299	.2812	.287	.250	<b>23.35</b>	<b>48.60</b>	<b>162.00</b>
<b>B-EP-3125</b>	.3125	+ .000/- .0014	.338	.3125	.326	.281	<b>26.90</b>	<b>56.05</b>	<b>186.80</b>
<b>B-EP-3750</b>	.3750	+ .000/- .0014	.397	.3750	.385	.343	<b>36.10</b>	<b>75.15</b>	<b>250.40</b>

## THREAD INSERTS — E-Z Lok

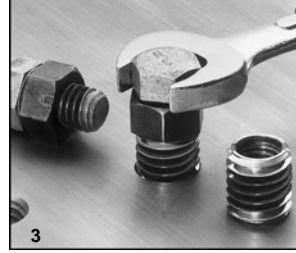


### E-Z LOK THREAD INSERTS

Many an expensive piece of equipment with damaged or stripped machine screw threads has been salvaged with E-Z LOK Carbon Steel Thread Inserts. Installation needs only standard drills and taps and the inserts can be used within minutes. E-Z Lok will not back out or vibrate loose. The microencapsulated self-locking epoxy adhesive on the external threads begins to set immediately upon installation and cures completely in 12-14 hours. Bonds to almost every type of metal.

#### INSTALLATION:

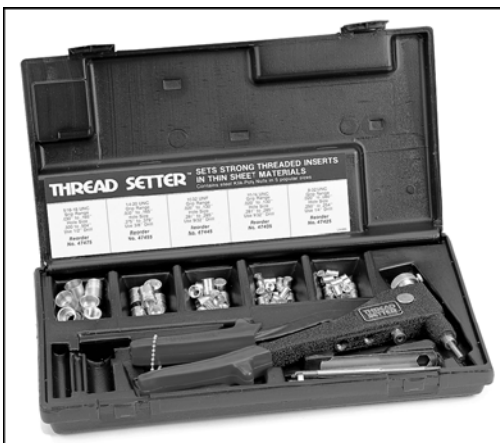
1. Use standard drill.
2. Tap with standard tap and clean newly threaded hole with degreaser.
3. Turn E-Z LOK home flush with bolt, nut and wrench.



### CARBON STEEL

Part No.	Internal Thread	Tap Size and External Thread	Length	Tap Drill Size	Minimum Full Thread Depth	Each	Price		
							10	25	100
<b>B-EZ-440</b>	#4-40	#10-32	0.250"	5/32	9/32"	<b>1.25</b>	<b>10.45</b>	<b>21.80</b>	<b>72.60</b>
<b>B-EZ-632</b>	#6-32	1/4-20	0.280"	7	11/32"	<b>1.35</b>	<b>11.35</b>	<b>23.60</b>	<b>78.60</b>
<b>B-EZ-832</b>	#8-32	5/16-18	0.290"	F	7/16"	<b>1.50</b>	<b>12.50</b>	<b>26.00</b>	<b>86.60</b>
<b>B-EZ-1024</b>	#10-24	3/8-16	0.406"	5/16	15/32"	<b>1.60</b>	<b>13.35</b>	<b>27.80</b>	<b>92.60</b>
<b>B-EZ-1032</b>	#10-32	3/8-16	0.406"	5/16	15/32"	<b>1.60</b>	<b>13.35</b>	<b>27.80</b>	<b>92.60</b>
<b>B-EZ-1420</b>	1/4-20	7/16-14	0.437"	23/64	1/2"	<b>1.75</b>	<b>14.40</b>	<b>30.00</b>	<b>100.00</b>
<b>B-EZ-1428</b>	1/4-28	7/16-14	0.437"	23/64	1/2"	<b>1.75</b>	<b>14.40</b>	<b>30.00</b>	<b>100.00</b>
<b>B-EZ-5624</b>	5/16-24	1/2-13	0.484"	27/64	9/16"	<b>2.00</b>	<b>16.45</b>	<b>34.20</b>	<b>114.00</b>
<b>B-EZ-3824</b>	3/8-24	9/16-12	0.515"	31/64	19/32"	<b>2.05</b>	<b>16.90</b>	<b>35.15</b>	<b>117.20</b>
<b>B-EZ-1213</b>	1/2-13	3/4-10	0.656"	21/32	3/4"	<b>2.90</b>	<b>24.20</b>	<b>50.40</b>	<b>168.00</b>

## THREAD SETTER™ KITS



Choose a kit for use with either Aluminum or Steel Threaded Inserts. Both versions include a Thread Setter tool for installing threaded inserts, as well as the mandrels and nosepieces for 6-32, 8-32, 10-24, 1/4-20, 5/16-18 and 3/8-16, and wrench instructions. The tool has a forged, heat treated steel upper handle, precision die-cast body of high strength aluminum alloy, patented fulcrum pin design, comfortable handgrips and a locking chain.

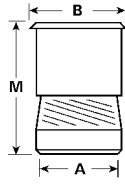
Kit contains a 62-piece assortment of Threaded Inserts in these sizes and quantities: 6-32(10), 8-32(10), 10-24(10), 10-32(10), 1/4-20(10), 5/16-18(6), 3/8-16(6). Molded plastic case.

**B-TS-A100** Aluminum Thread Setter™ Kit . **90.55**

**B-TS-S100** Steel Thread Setter™ Kit . . . . . **87.45**

*For individual Threaded Inserts, see next page.*

# THREADED INSERTS — Klik® Thread-Serts



## KLIK® THREAD-SERTS — Aluminum and Steel

Quickly install threaded holes in metal, plastic, fiberglass or any other rigid material with a minimum thickness of 3/32" (2.3812mm for metric sizes). All you need is a drilled or punched hole; no need for tapping, welding or brazing. Thread-Serts consist of an upper sleeve and a base with internal threads. During installation, the base is drawn upwards inside the upper sleeve, forcing a 360° contact between the sleeve and the application material. Use either standard or metric drills. See our Thread Setter Kits on previous page.

©Marson Corporation

### SPECIFICATIONS

Thread Size	Material Thickness 3/32" - 5/32" (0.0937" - 0.1562")		Material Thickness Greater than 5/32" (0.1562")		A ±0.005"	B ±0.015"	M (min) ±0.020"
	Hole Size	Drill Size	Hole Size	Drill Size			
#6-32	0.2210"	#2	0.2340"	A	0.215"	0.250"	0.375"
#8-32	0.2500"	1/4"	0.2610"	G	0.246"	0.282"	0.375"
#10-32	0.2812"	9/32"	0.2900"	L	0.277"	0.314"	0.375"
#10-24	0.2812"	9/32"	0.2900"	L	0.277"	0.314"	0.375"
1/4-20	0.3906"	25/64"	0.3906"	25/64"	0.372"	0.408"	0.510"
5/16-18	0.5000"	1/2"	0.5156"	33/64"	0.496"	0.537"	0.615"
3/8-16	0.5625"	9/16"	0.5781"	37/64"	0.559"	0.600"	0.740"

## ALUMINUM AND STEEL THREAD-SERTS

ALUMINUM Part No.	STEEL Part No.	Size	Price		
			10	50	100
<b>B-TS-632</b>	<b>B-TSS-632</b>	#6-32	<b>2.35</b>	<b>9.70</b>	<b>17.65</b>
<b>B-TS-832</b>	<b>B-TSS-832</b>	#8-32	<b>2.40</b>	<b>9.90</b>	<b>18.00</b>
<b>B-TS-1024</b>	<b>B-TSS-1024</b>	#10-24	<b>2.45</b>	<b>10.15</b>	<b>18.40</b>
<b>B-TS-1032</b>	<b>B-TSS-1032</b>	#10-32	<b>2.40</b>	<b>9.90</b>	<b>18.00</b>
<b>B-TS-1420</b>	<b>B-TSS-1420</b>	1/4-20	<b>2.90</b>	<b>12.05</b>	<b>21.85</b>
<b>B-TS-5618</b>	<b>B-TSS-5618</b>	5/16-18	<b>4.65</b>	<b>19.35</b>	<b>35.10</b>
<b>B-TS-3816</b>	<b>B-TSS-3816</b>	3/8-16	<b>6.65</b>	<b>27.60</b>	<b>50.15</b>

## METRIC

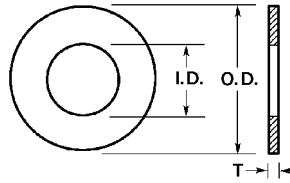
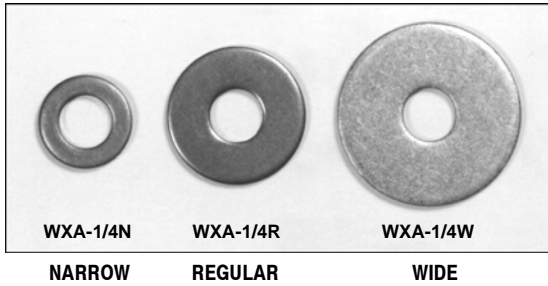
### SPECIFICATIONS (In Millimeters)

Thread Size	Material Thickness 2.3812 - 3.9688 mm		Material Thickness Greater than 3.9688 mm		A ±0.127	B ±0.381	M (min) ±0.51
	Hole Size	Drill Size	Hole Size	Drill Size			
3.5	5.60	5.60 (#2)	5.90	5.9 (A)	5.46	6.35	9.53
4	6.40	6.4 (1/4")	6.60	6.6 (G)	6.25	7.16	9.53
5	7.20	7.2 (9/32")	7.40	7.4 (L)	7.04	7.98	9.53
6	9.90	9.90 (25/64")	9.90	9.9 (25/64")	9.45	10.36	12.95
8	12.80	12.80 (1/2")	13.20	13.20 (33/64")	12.60	13.64	15.62
10	14.50	14.50 (9/16")	14.75	14.75 (37/64")	14.20	15.24	18.80

## ALUMINUM THREAD-SERTS

Part No.	Thread Size	Price		
		10	50	100
<b>B-TSM-03</b>	3.5 mm	<b>2.15</b>	<b>8.00</b>	<b>12.80</b>
<b>B-TSM-04</b>	4 mm	<b>2.45</b>	<b>9.15</b>	<b>14.65</b>
<b>B-TSM-05</b>	5 mm	<b>2.70</b>	<b>10.10</b>	<b>16.15</b>
<b>B-TSM-06</b>	6 mm	<b>3.55</b>	<b>13.30</b>	<b>21.30</b>
<b>B-TSM-08</b>	8 mm	<b>6.30</b>	<b>23.55</b>	<b>37.70</b>
<b>B-TSM-10</b>	10 mm	<b>8.30</b>	<b>31.15</b>	<b>49.80</b>

## WASHERS — Flat, Stainless Steel



Burr-free and passivated, these Flat Washers are made from Stainless Steel 18-8, which indicates strong resistance to corrosion from chemicals, atmospheric conditions, weather extremes and electrical fields. If your specifications call for Stainless Steel Metric Flat Washers, see page 222. All dimensions correspond to standards for Plain Washers under ANSI/ASME B18.22.1 1965 (R1998).

Width series — **NARROW, REGULAR, OR WIDE** — is indicated by the last digit of part number: **N, R, or W**.

### STAINLESS STEEL 18-8 — ANSI / ASME B18.22.1 1965 (R1998)

Part No.	Nominal Washer Size	Basic Dimensions in Inches			10	Price	
		I.D.	O.D.	Thickness (T)		25	100
<b>B-WX-000*</b>	000	0.040	0.090	0.010	<b>6.50</b>	<b>13.45</b>	<b>44.75</b>
<b>B-WX-00*</b>	00	0.053	0.108	0.015	<b>4.45</b>	<b>9.25</b>	<b>30.75</b>
<b>B-WXA-0N</b>	0	0.068	0.125	0.025	<b>1.00</b>	<b>2.05</b>	<b>6.75</b>
<b>B-WXA-0R</b>	0	0.068	0.188	0.025	<b>1.00</b>	<b>2.00</b>	<b>6.60</b>
<b>B-WXA-0W</b>	0	0.068	0.250	0.025	<b>1.00</b>	<b>2.10</b>	<b>6.90</b>
<b>B-WXA-1N</b>	1	0.084	0.156	0.025	<b>1.00</b>	<b>2.05</b>	<b>6.80</b>
<b>B-WXA-1R</b>	1	0.084	0.219	0.025	<b>1.00</b>	<b>2.00</b>	<b>6.65</b>
<b>B-WXA-1W</b>	1	0.084	0.281	0.032	<b>1.00</b>	<b>2.05</b>	<b>6.85</b>
<b>B-WXA-2N</b>	2	0.094	0.188	0.025	<b>1.00</b>	<b>2.05</b>	<b>6.85</b>
<b>B-WXA-2R</b>	2	0.094	0.250	0.032	<b>1.00</b>	<b>2.00</b>	<b>6.70</b>
<b>B-WXA-2W</b>	2	0.094	0.344	0.032	<b>1.00</b>	<b>2.10</b>	<b>6.95</b>
<b>B-WXA-4N</b>	4	0.125	0.250	0.032	<b>1.00</b>	<b>2.00</b>	<b>6.70</b>
<b>B-WXA-4R</b>	4	0.125	0.375	0.040	<b>1.00</b>	<b>2.00</b>	<b>6.55</b>
<b>B-WXA-4W</b>	4	0.125	0.438	0.040	<b>1.00</b>	<b>2.05</b>	<b>6.80</b>
<b>B-WXA-5N</b>	5	0.141	0.281	0.032	<b>1.00</b>	<b>2.10</b>	<b>6.90</b>
<b>B-WXA-5R</b>	5	0.141	0.406	0.040	<b>1.00</b>	<b>2.05</b>	<b>6.75</b>
<b>B-WXA-5W</b>	5	0.141	0.500	0.040	<b>1.05</b>	<b>2.15</b>	<b>7.05</b>
<b>B-WXA-6N</b>	6	0.156	0.312	0.032	<b>1.00</b>	<b>2.00</b>	<b>6.65</b>
<b>B-WXA-6R</b>	6	0.156	0.438	0.040	<b>1.00</b>	<b>1.95</b>	<b>6.50</b>
<b>B-WXA-6W</b>	6	0.156	0.562	0.040	<b>1.00</b>	<b>2.10</b>	<b>6.90</b>
<b>B-WXA-8N</b>	8	0.188	0.375	0.040	<b>1.00</b>	<b>2.00</b>	<b>6.65</b>
<b>B-WXA-8R</b>	8	0.188	0.500	0.040	<b>1.00</b>	<b>1.95</b>	<b>6.50</b>
<b>B-WXA-8W</b>	8	0.188	0.625	0.063	<b>1.00</b>	<b>2.10</b>	<b>6.90</b>
<b>B-WXA-10N</b>	10	0.203	0.406	0.040	<b>1.00</b>	<b>2.10</b>	<b>6.90</b>
<b>B-WXA-10R</b>	10	0.203	0.562	0.040	<b>1.00</b>	<b>2.05</b>	<b>6.75</b>
<b>B-WXA-10W</b>	10	0.203	0.734	0.063	<b>1.05</b>	<b>2.20</b>	<b>7.25</b>
<b>B-WXA-1/4N</b>	1/4	0.281	0.500	0.063	<b>1.30</b>	<b>2.65</b>	<b>8.80</b>
<b>B-WXA-1/4R</b>	1/4	0.281	0.734	0.063	<b>1.20</b>	<b>2.50</b>	<b>8.25</b>
<b>B-WXA-1/4W</b>	1/4	0.281	1.000	0.063	<b>1.35</b>	<b>2.75</b>	<b>9.05</b>
<b>B-WXA-5/16N</b>	5/16	0.344	0.625	0.063	<b>1.55</b>	<b>3.25</b>	<b>10.75</b>
<b>B-WXA-5/16R</b>	5/16	0.344	0.875	0.063	<b>1.50</b>	<b>3.15</b>	<b>10.40</b>
<b>B-WXA-5/16W</b>	5/16	0.344	1.125	0.063	<b>1.65</b>	<b>3.40</b>	<b>11.20</b>

\*No ANSI/ASME standard exists for this size.

## WASHERS — Flat, Stainless Steel (cont.)

### STAINLESS STEEL 18-8 — ANSI / ASME B18.22.1 1965 (R1998)

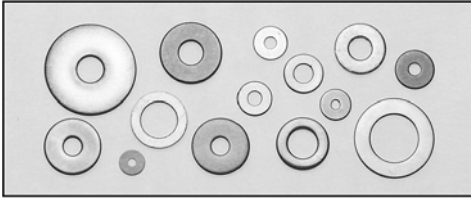
Part No.	Nominal Washer Size	Basic Dimensions in Inches			Price		
		I.D.	O.D.	Thickness (T)	10	25	100
B-WXA-3/8N	3/8	0.406	0.734	0.063	2.40	5.00	16.60
B-WXA-3/8R	3/8	0.406	1.000	0.063	2.15	4.50	15.00
B-WXA-3/8W	3/8	0.406	1.250	0.100	2.50	5.20	17.25
B-WXA-1/2N	1/2	0.531	1.000	0.063	3.05	6.35	21.15
B-WXA-1/2R	1/2	0.531	1.250	0.100	3.00	6.25	20.80
B-WXA-1/2W	1/2	0.531	1.750	0.100	5.05	10.50	35.00

### METRIC

### STAINLESS STEEL 18-8 — DIN-125A

Part No.	Nominal Size	Dimensions in Millimeters			Price		
		O.D.	I.D.	Thickness	10	25	100
B-MWX-1	M1	3.2	1.1	0.3	16.95	35.30	117.60
B-MWX-14	M1.4	3.8	1.5	0.3	10.15	21.10	70.35
B-MWX-2	M2	5	2.2	0.3	—	1.00	2.50
B-MWX-25	M2.5	6	2.7	0.5	—	1.00	2.50
B-MWX-3	M3	7	3.2	0.5	—	1.00	2.50
B-MWX-4	M4	9	4.3	0.8	—	1.00	3.35
B-MWX-5	M5	10	5.3	1	—	1.15	3.80
B-MWX-6	M6	12.5	6.42	1.6	—	1.45	4.75
B-MWX-8	M8	16.0	8.4	1.6	—	1.95	5.75

## WASHERS — Flat, Stainless Steel



Our standard Flat Washers are an economical choice when your application calls for spacers, shims, or re-enforcements with nominal dimensions only. We continue to supply those customers whose products are dimensional to these sizes. Note that we also sell Metric Washers in sizes from M1 up to M8.

Tolerance: O.D. +0.020" / -0.005"

### STAINLESS STEEL 18-8

Part No.	Size	Nominal		10	Price	
		I.D.	O.D.		25	100
B-WX-0	0	0.063"	0.156"	—	1.05	3.50
B-WX-1	1	0.078"	0.188"	—	1.05	3.50
B-WX-2	2	0.099"	0.250"	—	1.05	3.50
B-WX-4	4	0.125"	0.312"	—	1.05	3.50
B-WX-5	5	0.143"	0.406"	—	1.05	3.50
B-WX-6	6	0.149"	0.375"	—	1.05	3.50
B-WX-8	8	0.174"	0.375"	—	1.05	3.50
B-WX-10	10	0.203"	0.438"	—	1.05	3.50
B-WX-1/4	1/4	0.265"	0.500"	—	1.20	4.00
B-WX-5/16	5/16	0.328"	0.562"	1.00	1.95	6.50
B-WX-3/8	3/8	0.390"	0.625"	1.05	2.20	7.25
B-WX-1/2	1/2	0.515"	0.875"	1.25	2.55	8.50

## WASHERS — Flat, Phosphor Bronze

Exceptionally thin, these Flat Washers are valuable in applications requiring friction reduction. Phosphor Bronze resists wear, stress and marine corrosion, and can be polished to a rich, golden shine. Except for thickness, these washers meet standards for Regular Plain Washers, ANSI/ASME B18.22.1 1965 (R1998).

### PHOSPHOR BRONZE — ANSI / ASME B18.22.1 1965 (R1998)

Part No.	Nominal Size	Dimensions in Inches			Price		
		I.D.	O.D.	Thickness (T)*	10	25	100
<b>B-WPB-0</b>	0	0.068	0.188	0.010	<b>1.40</b>	<b>2.80</b>	<b>8.95</b>
<b>B-WPB-1</b>	1	0.084	0.219	0.010	<b>1.40</b>	<b>2.80</b>	<b>8.95</b>
<b>B-WPB-2</b>	2	0.094	0.250	0.010	<b>1.40</b>	<b>2.80</b>	<b>8.95</b>
<b>B-WPB-4</b>	4	0.125	0.375	0.010	<b>1.45</b>	<b>2.90</b>	<b>9.30</b>
<b>B-WPB-5</b>	5	0.141	0.406	0.010	<b>1.65</b>	<b>3.30</b>	<b>10.55</b>
<b>B-WPB-6</b>	6	0.156	0.438	0.010	<b>1.65</b>	<b>3.30</b>	<b>10.55</b>
<b>B-WPB-8</b>	8	0.188	0.500	0.010	<b>1.65</b>	<b>3.30</b>	<b>10.55</b>
<b>B-WPB-10</b>	10	0.203	0.562	0.010	<b>1.75</b>	<b>3.50</b>	<b>11.20</b>
<b>B-WPB-1/4</b>	1/4	0.281	0.734	0.010	<b>2.05</b>	<b>4.10</b>	<b>13.15</b>
<b>B-WPB-5/16</b>	5/16	0.344	0.875	0.010	<b>2.30</b>	<b>4.60</b>	<b>14.75</b>
<b>B-WPB-3/8</b>	3/8	0.406	1.000	0.016	<b>2.95</b>	<b>5.90</b>	<b>18.90</b>
<b>B-WPB-1/2</b>	1/2	0.531	1.250	0.016	<b>3.80</b>	<b>7.60</b>	<b>24.30</b>

\*ANSI/ASME standards do not apply to Thickness dimension.

## WASHERS — Flat, Silicon Bronze

Because it is nonmagnetic and has good friction reduction qualities, Silicon Bronze is a good washer choice when joining dissimilar materials. In addition, it stands up well under harsh conditions. Known as a high-strength alloy with good toughness and a high degree of thermal conductivity, Silicon Bronze has excellent resistance to corrosion caused by brine, gases, and sulphite solutions. Fasteners made from Silicon Bronze are frequently used for marine construction and in applications for liquid handling and sewage disposal equipment.

### SILICON BRONZE

Part No.	Nominal		Basic Dimensions in Inches			Price		
	Size	Major Dia.	I.D.	O.D.	Thickness (T)	10	25	100
<b>B-WSB-06</b>	6	0.138	0.147	0.375	0.032	<b>1.00</b>	<b>1.80</b>	<b>6.00</b>
<b>B-WSB-08</b>	8	0.164	0.172	0.375	0.032	<b>1.05</b>	<b>2.05</b>	<b>6.75</b>
<b>B-WSB-10</b>	10	0.190	0.200	0.437	0.036	<b>1.10</b>	<b>2.25</b>	<b>7.50</b>
<b>B-WSB-1/4</b>	1/4	0.250	0.260	0.687	0.040	<b>1.65</b>	<b>3.45</b>	<b>11.40</b>
<b>B-WSB-5/16</b>	5/16	0.312	0.340	0.875	0.062	<b>3.75</b>	<b>7.80</b>	<b>26.00</b>
<b>B-WSB-3/8</b>	3/8	0.375	0.392	1.000	0.062	<b>4.75</b>	<b>9.90</b>	<b>33.00</b>
<b>B-WSB-1/2</b>	1/2	0.500	0.562	1.250	0.091	<b>7.20</b>	<b>15.00</b>	<b>49.90</b>

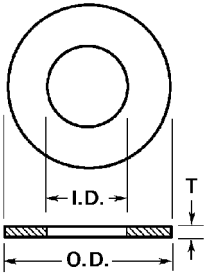
## WASHERS — Flat, Titanium

Nonmagnetic. Titanium exhibits high strength to weight ratios, excellent temperature stability, and good corrosion resistance. Titanium Washers are a good choice for applications that demand resistance to high temperatures and the corrosive effects of saltwater, many acids, alkalies and other chemicals.

### TITANIUM

Part No.	Nominal Size	Dimensions in Inches			Price	
		I.D.	O.D.	Thickness (T)	Each	10
<b>B-WTT-6</b>	6	0.160	0.375	0.050	<b>1.10</b>	<b>9.00</b>
<b>B-WTT-8</b>	8	0.290	0.437	0.040	<b>1.30</b>	<b>10.90</b>
<b>B-WTT-10</b>	10	0.220	0.500	0.050	<b>1.00</b>	<b>7.20</b>
<b>B-WTT-1/4</b>	1/4	0.260	0.750	0.040	<b>1.05</b>	<b>8.60</b>
<b>B-WTT-5/16</b>	5/16	0.335	0.687	0.050 - 0.065	<b>1.25</b>	<b>10.50</b>
<b>B-WTT-3/8</b>	3/8	0.390	0.812	0.063 - 0.078	<b>1.65</b>	<b>13.70</b>

## WASHERS — Flat, Nylon



### NARROW, REGULAR, WIDE

Frequently used as a material for bearings and other wear surfaces, Nylon 6/6 offers low friction and good fatigue resistance. Nylon has been used in temperatures as low as  $-40^{\circ}\text{F}$  ( $-40^{\circ}\text{C}$ ). Under flexural load of 264 psi it endures temperatures as high as  $158^{\circ}$  to  $212^{\circ}\text{F}$  ( $70^{\circ}$  to  $100^{\circ}\text{C}$ ). Plus it stands up to a wide spectrum of fuels, oils and other chemicals.

Nonmagnetic Nylon Washers are a good choice for insulation, friction reduction or for preventing wear between parts. Color: Natural. All dimensions correspond to standards for Plain Washers under ANSI/ASME B18.22.1 1965 (R1998). Choose the width series appropriate to your application: Narrow, Regular, or Wide, indicated by last digit of part number, N, R, or W.

### NYLON 6/6—ANSI / ASME B18.22.1 1965 (R1998)

Part No.	Nominal Washer Size	Basic Dimensions in Inches			Price		
		I.D.	O.D.	T	25	100	1000
B-WNA-0N	0	0.068	0.125	0.025	1.50	5.00	40.00
B-WNA-0R	0	0.068	0.188	0.025	1.50	4.85	38.80
B-WNA-0W	0	0.068	0.250	0.025	1.55	5.10	40.80
B-WNA-1N	1	0.084	0.156	0.025	1.50	4.95	39.60
B-WNA-1R	1	0.084	0.219	0.025	1.45	4.75	38.00
B-WNA-1W	1	0.084	0.281	0.031	1.55	5.20	41.60
B-WNA-2N	2	0.094	0.188	0.025	1.30	4.25	34.00
B-WNA-2R	2	0.094	0.250	0.031	1.25	4.10	32.80
B-WNA-2W	2	0.094	0.344	0.031	1.35	4.40	35.20
B-WNA-4N	4	0.125	0.250	0.031	1.20	3.95	31.60
B-WNA-4R	4	0.125	0.375	0.040	1.15	3.80	30.40
B-WNA-4W	4	0.125	0.438	0.040	1.25	4.10	32.80
B-WNA-5N	5	0.141	0.281	0.031	1.65	5.40	43.20
B-WNA-5R	5	0.141	0.406	0.040	1.60	5.25	42.00
B-WNA-5W	5	0.141	0.500	0.040	1.70	5.60	44.80
B-WNA-6N	6	0.156	0.312	0.031	1.20	3.95	31.60
B-WNA-6R	6	0.156	0.438	0.040	1.15	3.80	30.40
B-WNA-6W	6	0.156	0.562	0.040	1.25	4.10	32.80
B-WNA-8N	8	0.188	0.375	0.040	1.30	4.25	34.00
B-WNA-8R	8	0.188	0.500	0.040	1.25	4.05	32.40
B-WNA-8W	8	0.188	0.625	0.062	1.35	4.40	35.20
B-WNA-10N	10	0.203	0.406	0.040	1.50	4.95	39.60
B-WNA-10R	10	0.203	0.562	0.040	1.45	4.80	38.40
B-WNA-10W	10	0.203	0.734	0.062	1.55	5.15	41.20
B-WNA-1/4N	1/4	0.281	0.500	0.062	1.75	5.80	46.40
B-WNA-1/4R	1/4	0.281	0.734	0.062	1.70	5.65	45.20
B-WNA-1/4W	1/4	0.281	1.000	0.062	1.80	6.00	48.00
B-WNA-5/16N	5/16	0.344	0.625	0.062	1.95	6.35	50.80
B-WNA-5/16R	5/16	0.344	0.875	0.062	1.85	6.20	49.60
B-WNA-5/16W	5/16	0.344	1.125	0.062	3.55	11.80	94.40
B-WNA-3/8N	3/8	0.406	0.734	0.062	2.05	6.75	54.00
B-WNA-3/8R	3/8	0.406	1.000	0.062	1.95	6.50	52.00
B-WNA-3/8W	3/8	0.406	1.250	0.093	3.85	12.80	102.40
B-WNA-1/2N	1/2	0.531	1.000	0.062	2.40	7.90	63.20
B-WNA-1/2W	1/2	0.531	1.750	0.100	6.30	21.00	168.00

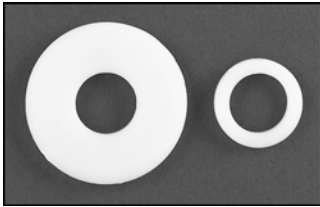


## WASHERS — Flat, Nylon (cont.)

### METRIC

#### NYLON 6/6 — DIN-125

Part No.	Nominal Size	Dimensions in Millimeters			25	Price	
		I.D.	O.D.	Thickness		100	1000
<b>B-MWN-2</b>	M2	2.15	5.00	0.80	<b>1.00</b>	<b>2.15</b>	<b>17.70</b>
<b>B-MWN-25</b>	M2.5	2.65	5.60	0.80	<b>1.00</b>	<b>2.15</b>	<b>17.70</b>
<b>B-MWN-3</b>	M3	3.20	8.00	0.80	<b>1.00</b>	<b>2.45</b>	<b>20.20</b>
<b>B-MWN-4</b>	M4	4.30	9.00	0.80	<b>1.05</b>	<b>3.35</b>	<b>28.00</b>
<b>B-MWN-5</b>	M5	5.30	11.00	1.00	<b>1.35</b>	<b>4.45</b>	<b>36.80</b>
<b>B-MWN-6</b>	M6	6.40	12.00	1.50	<b>1.65</b>	<b>5.35</b>	<b>44.70</b>



#### NYLON 6/6

For years we have distributed Flat Washers in both inch and metric sizes. We now offer Nylon washers in ANSI sizes as well. (See page 224). However, those customers whose projects depend on dimensions previously used can rely on us for continued supply. The extra wide sizes, designed by a "W" following the part number, provide load distribution over a wider area. Use them for stress reduction, or as insulators and for surface protection. Available with inside diameters as small as 0.065" for use with 080 screws.

#### NYLON 6/6

Part No.	Size	Basic Dimensions in Inches			25	Price	
		I.D.	O.D.	Thickness (T)		100	1000
<b>B-WN-0</b>	0	0.065"	0.125"	0.010"	<b>1.50</b>	<b>5.00</b>	<b>40.00</b>
<b>B-WN-0W</b>	0	0.065"	0.187"	0.015"	<b>1.55</b>	<b>5.10</b>	<b>40.80</b>
<b>B-WN-1</b>	1	0.080"	0.187"	0.015"	<b>1.40</b>	<b>4.65</b>	<b>37.20</b>
<b>B-WN-2</b>	2	0.094"	0.188"	0.020"	<b>1.25</b>	<b>4.05</b>	<b>32.40</b>
<b>B-WN-2W</b>	2	0.090"	0.250"	.032"	<b>1.35</b>	<b>4.45</b>	<b>35.60</b>
<b>B-WN-4</b>	4	0.115"	0.281"	0.047"	<b>1.15</b>	<b>3.75</b>	<b>30.00</b>
<b>B-WN-4W</b>	4	0.125"	0.625"	0.062"	<b>1.20</b>	<b>3.90</b>	<b>31.20</b>
<b>B-WN-6</b>	6	0.140"	0.312"	0.047"	<b>1.15</b>	<b>3.75</b>	<b>30.00</b>
<b>B-WN-6W</b>	6	0.177"	0.408"	0.062"	<b>1.20</b>	<b>3.90</b>	<b>31.20</b>
<b>B-WN-8</b>	8	0.171"	0.375"	0.062"	<b>1.20</b>	<b>4.00</b>	<b>32.00</b>
<b>B-WN-8W</b>	8	0.187"	0.625"	0.062"	<b>1.25</b>	<b>4.20</b>	<b>33.60</b>
<b>B-WN-10</b>	10	0.200"	0.437"	0.062"	<b>1.35</b>	<b>4.50</b>	<b>36.00</b>
<b>B-WN-10W</b>	10	0.218"	0.625"	0.062"	<b>1.40</b>	<b>4.70</b>	<b>37.60</b>
<b>B-WN-1/4</b>	1/4	0.260"	0.562"	0.062"	<b>1.65</b>	<b>5.45</b>	<b>43.60</b>
<b>B-WN-1/4W</b>	1/4	0.260"	0.687"	0.060"	<b>1.75</b>	<b>5.75</b>	<b>46.00</b>
<b>B-WN-5/16</b>	5/16	0.317"	0.500"	0.062"	<b>1.80</b>	<b>5.95</b>	<b>47.60</b>
<b>B-WN-5/16W</b>	5/16	0.365"	1.235"	0.100"	<b>1.90</b>	<b>6.25</b>	<b>50.00</b>
<b>B-WN-3/8</b>	3/8	0.380"	0.625"	0.093"	<b>1.90</b>	<b>6.35</b>	<b>50.80</b>
<b>B-WN-3/8W</b>	3/8	0.406"	0.984"	0.125"	<b>2.00</b>	<b>6.70</b>	<b>53.60</b>
<b>B-WN-1/2</b>	1/2	0.505"	0.750"	0.093"	<b>2.15</b>	<b>7.10</b>	<b>56.80</b>
<b>B-WN-1/2W</b>	1/2	0.525"	1.375"	0.125"	<b>2.40</b>	<b>8.00</b>	<b>64.00</b>

See our wide selection of Nylon Machine Screws

Starting on page 184

## WASHERS — Flat, Fiberglass



Nonconductive and resistant to many corrosives, Fiberglass Washers are a good choice for applications threatened by salt water, oils, mild solvents, and other harsh environments. Flame retardant fiberglass has good electrical properties and high mechanical strength, and it maintains its flexural capacities in a wide range of temperatures, resisting continuous no-load heat to 250°F (121°C). The dimensions of our Fiberglass Washers conform to ANSI/ASME specifications for Regular Plain Washers, B18.22.1 1965 (R1998).

### FIBERGLASS G-10 EPOXY RESIN — Regular ANSI / ASME B18.22.1 1965 (R1998)

Part No.	Nominal	Basic Dimensions in Inches				Price		
	Size	I.D.	O.D.	Thickness (T)	10	25	100	
<b>B-WFGA-0</b>	0	0.068	0.188	0.025	<b>3.10</b>	<b>6.25</b>	<b>19.00</b>	
<b>B-WFGA-1</b>	1	0.084	0.219	0.025	<b>3.10</b>	<b>6.25</b>	<b>19.00</b>	
<b>B-WFGA-2</b>	2	0.094	0.250	0.032	<b>2.50</b>	<b>5.00</b>	<b>15.00</b>	
<b>B-WFGA-4</b>	4	0.125	0.375	0.040	<b>2.50</b>	<b>5.00</b>	<b>15.00</b>	
<b>B-WFGA-5</b>	5	0.141	0.406	0.040	<b>3.00</b>	<b>6.00</b>	<b>19.00</b>	
<b>B-WFGA-6</b>	6	0.156	0.438	0.040	<b>2.50</b>	<b>5.00</b>	<b>15.00</b>	
<b>B-WFGA-8</b>	8	0.188	0.500	0.040	<b>2.50</b>	<b>5.00</b>	<b>15.00</b>	
<b>B-WFGA-10</b>	10	0.203	0.562	0.040	<b>2.50</b>	<b>5.00</b>	<b>15.00</b>	
<b>B-WFGA-1/4</b>	1/4	0.281	0.735	0.063	<b>2.80</b>	<b>5.50</b>	<b>17.00</b>	
<b>B-WFGA-5/16</b>	5/16	0.344	0.875	0.063	<b>4.10</b>	<b>8.00</b>	<b>24.00</b>	
<b>B-WFGA-3/8</b>	3/8	0.406	1.000	0.063	<b>4.30</b>	<b>8.50</b>	<b>26.00</b>	
<b>B-WFGA-1/2</b>	1/2	0.531	1.250	0.100	<b>4.90</b>	<b>9.75</b>	<b>29.00</b>	

## WASHERS — Flat, Hard Fiber



Useful for insulation or light duty sealing jobs, Hard Fiber Washers resist compression and help maintain appropriate spacing between materials or parts. This commercial grade vulcanized fiber material performs with continuous heat resistance to 212°F (100°C) under no load conditions. Color: Black.

### HARD FIBER— Regular ANSI / ASME B18.22.1 1965 (R1998)

Part No.	Nominal	Basic Dimensions in Inches				Price		
	Size	I.D.	O.D.	Thickness (T)	100	500	1000	
<b>B-WHFA-0</b>	0	0.068	0.188	0.025	<b>2.25</b>	<b>9.00</b>	<b>14.00</b>	
<b>B-WHFA-1</b>	1	0.084	0.219	0.025	<b>2.70</b>	<b>10.80</b>	<b>16.80</b>	
<b>B-WHFA-2</b>	2	0.094	0.250	0.032	<b>2.70</b>	<b>10.80</b>	<b>16.80</b>	
<b>B-WHFA-4*</b>	4	0.125	0.375	0.045	<b>3.15</b>	<b>12.60</b>	<b>19.60</b>	
<b>B-WHFA-5*</b>	5	0.141	0.406	0.045	<b>3.60</b>	<b>14.40</b>	<b>22.40</b>	
<b>B-WHFA-6*</b>	6	0.156	0.438	0.045	<b>4.05</b>	<b>16.20</b>	<b>25.20</b>	
<b>B-WHFA-8*</b>	8	0.188	0.500	0.045	<b>4.05</b>	<b>16.20</b>	<b>25.20</b>	
<b>B-WHFA-10*</b>	10	0.203	0.562	0.045	<b>4.50</b>	<b>18.00</b>	<b>28.00</b>	
<b>B-WHFA-1/4*</b>	1/4	0.281	0.734	0.063	<b>6.75</b>	<b>27.00</b>	<b>42.00</b>	
<b>B-WHFA-5/16*</b>	5/16	0.344	0.875	0.063	<b>8.10</b>	<b>32.40</b>	<b>50.40</b>	
<b>B-WHFA-3/8*</b>	3/8	0.406	1.000	0.063	<b>11.70</b>	<b>46.80</b>	<b>72.80</b>	
<b>B-WHFA-1/2*</b>	1/2	0.531	1.250	0.093	<b>16.20</b>	<b>64.80</b>	<b>100.80</b>	

\*Thickness dimension is within standard tolerance.

## WASHERS — Flat, Felt



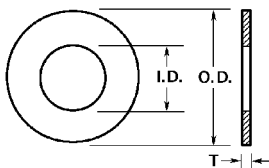
The absorption capacity of our all wool Felt Washers is recommended for applications requiring sound reduction or vibration deadening, and they work well as thermal insulators or as nonmarring separation materials. Or soak them with oil for use as lubrication aids. Although not standard thicknesses, the inside and outside diameters of these flat washers meet specifications for Regular Plain Washers, ANSI/ASME B18.22.1 1965 (R1998).

### FELT — ANSI / ASME B18.22.1 1965 (R1998)

Part No.	Nominal Size	Dimensions in Inches			10	Price	
		I.D.	O.D.	Thickness (T)*		25	100
<b>B-WFLT-10</b>	10	0.203	0.562	0.187	<b>2.85</b>	<b>5.85</b>	<b>18.00</b>
<b>B-WFLT-1/4</b>	1/4	0.281	0.734	0.187	<b>2.55</b>	<b>5.25</b>	<b>16.20</b>
<b>B-WFLT-5/16</b>	5/16	0.344	0.875	0.187	<b>3.25</b>	<b>6.65</b>	<b>20.50</b>
<b>B-WFLT-3/8</b>	3/8	0.406	1.000	0.187	<b>4.05</b>	<b>8.30</b>	<b>25.55</b>
<b>B-WFLT-1/2</b>	1/2	0.531	1.250	0.250	<b>5.75</b>	<b>11.80</b>	<b>36.35</b>

\*ANSI/ASME standards do not apply to Thickness dimension.

## WASHERS — Flat, PTFE (Teflon®)



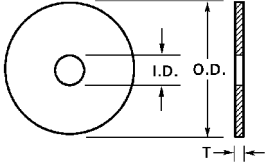
Few materials match the advantageous characteristics of PTFE. Chemically inert, it functions well in both high and low temperatures. It operates in temperatures as low as  $-450^{\circ}\text{F}$  ( $-268^{\circ}\text{C}$ ). It will endure up to  $190^{\circ}\text{F}$  ( $88^{\circ}\text{C}$ ) under flexural load of 264 psi. It also has excellent anti-frictional and electrical properties.

PTFE Washers have high chemical and corrosion resistance, and maintain dimensional stability even under heavy loads. They are nonmagnetic and are a good choice as spacers or for minimizing wear between rotating parts. Note that Teflon materials should never be heated to temperatures above  $752^{\circ}\text{F}$  ( $400^{\circ}\text{C}$ ). All dimensions conform to standards for Regular Plain Washers under ANSI/ASME B18.22.1 1965 (R1998). Color: White.

### PTFE (TEFLON®) — Regular ANSI / ASME B18.22.1 1965 (R1998)

Part No.	Nominal Size	Basic Dimensions in Inches			10	Price	
		I.D.	O.D.	Thickness (T)		25	100
<b>B-WTFA-0</b>	0	0.068	0.188	0.025	<b>2.50</b>	<b>5.15</b>	<b>16.50</b>
<b>B-WTFA-01</b>	1	0.084	0.219	0.025	<b>2.75</b>	<b>5.75</b>	<b>18.40</b>
<b>B-WTFA-02</b>	2	0.094	0.250	0.032	<b>3.05</b>	<b>6.25</b>	<b>20.00</b>
<b>B-WTFA-04</b>	4	0.125	0.375	0.040	<b>3.20</b>	<b>6.55</b>	<b>21.00</b>
<b>B-WTFA-05</b>	5	0.141	0.406	0.040	<b>4.15</b>	<b>8.50</b>	<b>27.20</b>
<b>B-WTFA-06</b>	6	0.156	0.438	0.040	<b>4.40</b>	<b>9.00</b>	<b>28.80</b>
<b>B-WTFA-08</b>	8	0.188	0.500	0.040	<b>4.80</b>	<b>9.85</b>	<b>31.55</b>
<b>B-WTFA-10</b>	10	0.203	0.562	0.040	<b>5.40</b>	<b>11.05</b>	<b>35.40</b>
<b>B-WTFA-1/4</b>	1/4	0.281	0.735	0.063	<b>5.95</b>	<b>12.20</b>	<b>39.05</b>
<b>B-WTFA-5/16</b>	5/16	0.344	0.875	0.063	<b>6.80</b>	<b>13.95</b>	<b>44.65</b>
<b>B-WTFA-3/8</b>	3/8	0.406	1.000	0.063	<b>7.00</b>	<b>14.35</b>	<b>45.95</b>
<b>B-WTFA-1/2</b>	1/2	0.531	1.250	0.100	<b>7.25</b>	<b>14.85</b>	<b>47.55</b>

## WASHERS — Fender, Stainless Steel



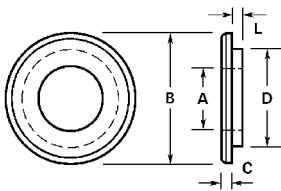
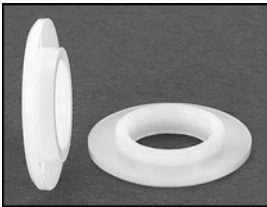
Fender Washers get their name from their origin in the automotive industry, but nowadays they are mostly used in sheet metal, electrical, plumbing, drywall and wood paneling applications — anywhere an extra-wide bearing surface is required for installation of fixtures. Fender Washers are great for holding sheets of metal parallel, and they are frequently used for attaching signs to posts and walls.

Always a good choice for corrosion resistance, Stainless Steel 18-8 construction offers high strength and excellent thermal performance.

### STAINLESS STEEL 18-8

Part No.	Nominal Size	Dimensions in Inches			Price		
		I.D.	O.D.	Thickness (T)	10	25	100
<b>B-WXF-0</b>	0	0.068	0.250	0.025	<b>1.45</b>	<b>3.00</b>	<b>10.00</b>
<b>B-WXF-1</b>	1	0.084	0.281	0.032	<b>2.95</b>	<b>6.15</b>	<b>20.45</b>
<b>B-WXF-2</b>	2	0.094	0.344	0.032	<b>1.80</b>	<b>3.75</b>	<b>12.55</b>
<b>B-WXF-4</b>	4	0.125	0.312	0.016	<b>1.95</b>	<b>4.05</b>	<b>13.45</b>
<b>B-WXF-5</b>	5	0.143	0.500	0.040	<b>2.55</b>	<b>5.30</b>	<b>17.60</b>
<b>B-WXF-6</b>	6	0.156	0.562	0.040	<b>2.10</b>	<b>4.35</b>	<b>14.45</b>
<b>B-WXF-8</b>	8	0.188	0.625	0.063	<b>2.25</b>	<b>4.70</b>	<b>15.55</b>
<b>B-WXF-10</b>	10	0.203	0.688	0.063	<b>2.40</b>	<b>5.00</b>	<b>16.60</b>
<b>B-WXF-1/4</b>	1/4	0.281	1.000	0.062	<b>2.50</b>	<b>5.20</b>	<b>17.25</b>
<b>B-WXF-5/16</b>	5/16	0.344	1.250	0.063	<b>3.05</b>	<b>6.35</b>	<b>21.10</b>
<b>B-WXF-3/8</b>	3/8	0.406	1.500	0.062	<b>3.35</b>	<b>6.95</b>	<b>23.10</b>
<b>B-WXF-1/2</b>	1/2	0.531	2.000	0.062	<b>5.05</b>	<b>10.45</b>	<b>34.80</b>

## WASHERS — Shoulder, Nylon



Excellent as insulators for screws, shafts, wires and rivets, Shoulder Washers may also be used as bushings for tubing, or as spacers and bumpers. High strength yet lightweight, Nylon 6/6 is naturally corrosion resistant, has good anti-frictional qualities, and withstands temperatures as low as -40°F (-40°C). It has a deflection temperature of 158° to 212°F (70° to 100°C) under flexural load of 264 psi. Nylon also provides good electrical insulation. Color: Natural.

### NYLON 6/6

Part No.	Nominal Size	Dimensions in Inches					Price		
		A	B	C	D	L	25	100	1000
<b>B-WNS-2</b>	2	0.093	0.250	0.040	0.156	0.040	<b>1.25</b>	<b>3.85</b>	<b>32.80</b>
<b>B-WNS-4</b>	4	0.122	0.281	0.040	0.187	0.040	<b>1.35</b>	<b>4.40</b>	<b>37.50</b>
<b>B-WNS-6</b>	6	0.146	0.328	0.040	0.218	0.040	<b>1.40</b>	<b>4.55</b>	<b>38.80</b>
<b>B-WNS-8</b>	8	0.174	0.375	0.050	0.250	0.050	<b>1.50</b>	<b>4.70</b>	<b>40.00</b>
<b>B-WNS-10</b>	10	0.201	0.437	0.050	0.281	0.050	<b>1.55</b>	<b>5.00</b>	<b>42.50</b>
<b>B-WNS-1/4</b>	1/4	0.260	0.562	0.060	0.375	0.060	<b>1.60</b>	<b>5.15</b>	<b>43.80</b>
<b>B-WNS-3/8</b>	3/8	0.385	0.750	0.060	0.500	0.060	<b>1.75</b>	<b>5.75</b>	<b>48.90</b>

# WASHERS — Lock, Stainless Steel

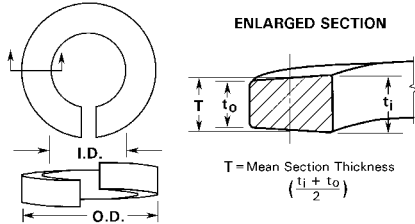


## HELICAL SPRING SPLIT LOCK — Regular

Helical Spring Split Lock Washers help achieve tight assemblies by providing good bolt tension per unit of applied torque, with uniform torque control and even load distribution. These washers perform with a type of spring action created by pressure from a slight spiral or "helical" form.

Upward and downward bent projections on respective sides of the split allow the washer to grasp adjoining materials, which helps prevent components from loosening under vibration or corrosion.

Tough and reliable for many applications, Stainless Steel 18-8 holds up in extremes of heat and cold, and it has resistance to many chemicals, atmospheric conditions, electrical fields and other corrosives. All dimensions correspond to standards for Regular Helical Spring Lock Washers under ANSI/ASME B18.21.1 1994.



## STAINLESS STEEL 18-8 — Regular / ANSI

Part No.	Nominal Size	Basic Major Dia.	Dimensions in Inches		Thickness (T)		Price	
			I.D. Min.	O.D. Max.			10	25
<b>B-LWX-0*</b>	0	0.060	0.062	0.137	0.017	—	<b>2.15</b>	<b>6.65</b>
<b>B-LWX-1*</b>	1	0.073	0.075	0.150	0.022	—	<b>2.15</b>	<b>6.65</b>
<b>B-LWXA-086</b>	2	0.086	0.088	0.172	0.020	—	<b>1.25</b>	<b>4.00</b>
<b>B-LWXA-112</b>	4	0.112	0.114	0.209	0.025	—	<b>1.25</b>	<b>4.00</b>
<b>B-LWXA-125</b>	5	0.125	0.127	0.236	0.031	—	<b>1.25</b>	<b>4.00</b>
<b>B-LWXA-138</b>	6	0.138	0.141	0.250	0.031	—	<b>1.25</b>	<b>4.00</b>
<b>B-LWXA-164</b>	8	0.164	0.167	0.293	0.040	—	<b>1.25</b>	<b>4.00</b>
<b>B-LWXA-190</b>	10	0.190	0.193	0.334	0.047	—	<b>1.25</b>	<b>4.00</b>
<b>B-LWXA-250</b>	1/4	0.250	0.254	0.487	0.062	<b>1.10</b>	<b>2.25</b>	<b>4.75</b>
<b>B-LWXA-312</b>	5/16	0.312	0.317	0.583	0.078	<b>1.25</b>	<b>2.25</b>	<b>8.50</b>
<b>B-LWXA-375</b>	3/8	0.375	0.380	0.680	0.094	<b>1.60</b>	<b>3.35</b>	<b>11.10</b>
<b>B-LWXA-500</b>	1/2	0.500	0.506	0.869	0.125	<b>3.05</b>	<b>6.30</b>	<b>21.00</b>

\*No ANSI/ASME standard exists for this size.

## HELICAL SPRING SPLIT LOCK — Hi-Collar

These washers have comparatively smaller outside diameters for placement in confined areas, but are thick enough to provide performance comparable to a Regular Series type. They are normally used with socket head cap screws or other smaller-head screws, and for applications with clearance limitations. Stainless Steel construction offers high corrosion resistance and a hard bearing surface. All dimensions correspond to standards for Hi-Collar Helical Spring Lock Washers under ANSI/ASME B18.21.1 1994.

## STAINLESS STEEL 18-8 — Hi-Collar / ANSI

Part No.	Nominal Size	Basic Major	I.D.		O.D. Max.	Thickness (T)	Width (W)	Price		
			Max.	Min.				10	25	100
<b>B-LCSA-4</b>	4	0.112	0.120	0.114	0.173	0.022	0.022	—	<b>1.75</b>	<b>5.40</b>
<b>B-LCSA-6</b>	6	0.138	0.148	0.141	0.216	0.030	0.030	—	<b>1.80</b>	<b>6.00</b>
<b>B-LCSA-8</b>	8	0.164	0.174	0.167	0.267	0.047	0.042	<b>1.10</b>	<b>2.25</b>	<b>6.95</b>
<b>B-LCSA-10</b>	10	0.190	0.200	0.193	0.294	0.047	0.042	<b>1.20</b>	<b>2.45</b>	<b>7.55</b>
<b>B-LCSA-1/4</b>	1/4	0.250	0.260	0.252	0.363	0.078	0.047	<b>1.45</b>	<b>2.95</b>	<b>9.10</b>
<b>B-LCSA-5/16</b>	5/16	0.312	0.322	0.314	0.457	0.093	0.062	<b>1.80</b>	<b>3.70</b>	<b>11.40</b>
<b>B-LCSA-3/8</b>	3/8	0.375	0.385	0.377	0.550	0.125	0.076	<b>3.00</b>	<b>6.15</b>	<b>18.95</b>
<b>B-LCSA-1/2</b>	1/2	0.500	0.512	0.502	0.733	0.172	0.103	<b>3.75</b>	<b>7.70</b>	<b>26.00</b>

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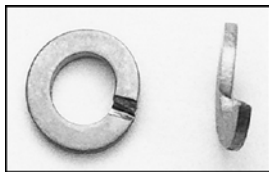
## WASHERS — Lock, Stainless Steel (cont.)

### METRIC

#### STAINLESS STEEL 18-8 — Lock Washers DIN-127

Part No.	Nominal Size	Dimensions in Millimeters				Price		
		O.D.	I.D.	Thickness	25	100	1000	
<b>B-MLWX-2</b>	M2	4.4	2.1	0.5	—	<b>1.25</b>	<b>4.00</b>	
<b>B-MLWX-25</b>	M2.5	5.1	2.6	0.6	—	<b>1.25</b>	<b>4.00</b>	
<b>B-MLWX-3</b>	M3	6.2	3.1	0.8	—	<b>1.25</b>	<b>4.00</b>	
<b>B-MLWX-4</b>	M4	7.6	4.1	0.9	—	<b>1.25</b>	<b>4.00</b>	
<b>B-MLWX-5</b>	M5	9.2	5.1	1.2	—	<b>1.25</b>	<b>4.00</b>	
<b>B-MLWX-6</b>	M6	11.8	6.1	1.6	—	<b>1.75</b>	<b>5.70</b>	
<b>B-MLWX-8</b>	M8	14.8	8.1	2	<b>1.50</b>	<b>3.10</b>	<b>10.25</b>	

## WASHERS — Lock, Silicon Bronze



#### HELICAL SPRING SPLIT LOCK — Regular

Silicon Bronze is an excellent material for use in marine environments, helping to prevent rot around screw holes when used under water. It is relatively strong and highly resistant to corrosion by brine and sulfite solutions, nonoxidizing inorganic acids, alkalis, and other media. Also, it is a good friction reduction material. All dimensions correspond to standards for Regular Helical Spring Lock Washers under ANSI/ASME B18.21.1 1994.

#### SILICON BRONZE — Regular / ANSI

Part No.	Nominal Size	Dimensions in Inches				Price		
		Basic Major Dia.	I. D. Min.	O. D. Max.	Thickness	10	25	100
<b>B-LSBA-2</b>	2	0.086	0.088	0.172	0.020	<b>1.45</b>	<b>3.00</b>	<b>10.00</b>
<b>B-LSBA-4</b>	4	0.112	0.114	0.209	0.025	<b>1.75</b>	<b>3.60</b>	<b>12.00</b>
<b>B-LSBA-6</b>	6	0.138	0.141	0.250	0.031	<b>1.95</b>	<b>4.05</b>	<b>13.50</b>
<b>B-LSBA-8</b>	8	0.164	0.167	0.293	0.040	<b>2.15</b>	<b>4.45</b>	<b>14.75</b>
<b>B-LSBA-10</b>	10	0.190	0.193	0.334	0.047	<b>2.40</b>	<b>4.95</b>	<b>16.45</b>
<b>B-LSBA-1/4</b>	1/4	0.250	0.252	0.487	0.062	<b>2.60</b>	<b>5.40</b>	<b>18.00</b>
<b>B-LSBA-5/16</b>	5/16	0.312	0.314	0.583	0.078	<b>2.80</b>	<b>5.75</b>	<b>19.20</b>
<b>B-LSBA-3/8</b>	3/8	0.375	0.377	0.680	0.094	<b>3.05</b>	<b>6.30</b>	<b>21.00</b>
<b>B-LSBA-1/2</b>	1/2	0.500	0.502	0.869	0.125	<b>3.75</b>	<b>7.80</b>	<b>26.00</b>

## WASHERS — Lock, Titanium

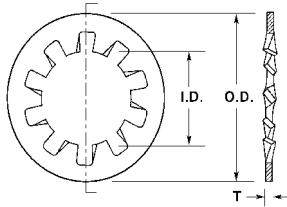
#### HELICAL SPRING SPLIT LOCK — Regular

Nonmagnetic. Titanium exhibits high strength to weight ratios, excellent temperature stability, and good corrosion resistance. Titanium Washers are a good choice for applications that demand resistance to high temperatures and the corrosive effects of saltwater, many acids, alkalis and other chemicals.

#### TITANIUM — Regular

Part No.	Min. I.D.	O.D.	Nominal		Thickness	Price	
			Size	Each		10	
<b>B-LWTT-6</b>	0.141"	0.250"	#6	0.050"	<b>3.95</b>	<b>35.30</b>	
<b>B-LWTT-8</b>	0.167"	0.312"	#8	0.050"	<b>2.40</b>	<b>21.40</b>	
<b>B-LWTT-10</b>	0.193"	0.312"	#10	0.050"	<b>1.70</b>	<b>15.15</b>	
<b>B-LWTT-1/4</b>	0.252"	0.500"	1/4	0.063"	<b>1.60</b>	<b>14.40</b>	
<b>B-LWTT-5/16</b>	0.314"	0.625"	5/16	0.078"	<b>1.90</b>	<b>16.95</b>	
<b>B-LWTT-3/8</b>	0.377"	0.687"	3/8	0.125"	<b>2.65</b>	<b>23.40</b>	

## WASHERS — Lock, Stainless Steel



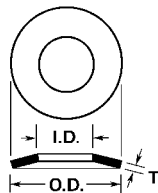
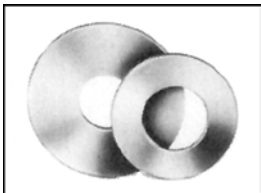
### INTERNAL TOOTH LOCK — Type A

Internal Tooth Lock Washers have small teeth along the inside diameter that bite deep into the screwhead as well as the work surface, to provide continuing resistance to removal rotation. They are designed to actually lock tighter as vibration increases. These washers meet standards for Internal Tooth Lock Washers Type A under ANSI/ASME B 18.21.1 1994.

### STAINLESS STEEL TYPE 18-8 — ANSI

Part No.	Nominal Size	Basic Major Dia.	Dimensions in Inches		Thickness (T)	10	Price	
			Minimum I.D.	Maximum O.D.			25	100
<b>B-LSXA-2</b>	2	0.086	0.095	0.200	0.010	—	<b>1.15</b>	<b>3.50</b>
<b>B-LSXA-4</b>	4	0.112	0.123	0.270	0.015	—	<b>1.15</b>	<b>3.50</b>
<b>B-LSXA-6</b>	6	0.138	0.150	0.295	0.017	—	<b>1.15</b>	<b>3.50</b>
<b>B-LSXA-8</b>	8	0.164	0.176	0.340	0.018	—	<b>1.15</b>	<b>3.50</b>
<b>B-LSXA-10</b>	10	0.190	0.204	0.381	0.020	—	<b>1.15</b>	<b>3.50</b>
<b>B-LSXA-1/4</b>	1/4	0.250	0.267	0.478	0.023	—	<b>1.45</b>	<b>4.75</b>
<b>B-LSXA-5/16</b>	5/16	0.312	0.332	0.610	0.028	<b>1.05</b>	<b>2.15</b>	<b>7.20</b>
<b>B-LSXA-3/8</b>	3/8	0.375	0.398	0.692	0.032	<b>1.65</b>	<b>3.35</b>	<b>11.10</b>
<b>B-LSXA-1/2</b>	1/2	0.500	0.530	0.900	0.037	<b>2.60</b>	<b>5.40</b>	<b>18.00</b>

## WASHERS — Belleville Spring, Stainless Steel



Because they can sustain relatively large loads with small deflections, Belleville Spring Washers are especially suited for high loads in small places. Numerous load-carrying possibilities can be obtained by stacking the springs in various sequences. Stainless Steel Type 302 provides a strong bearing surface with good corrosion resistance.

### STAINLESS STEEL TYPE 302

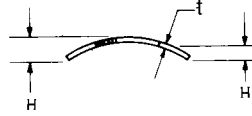
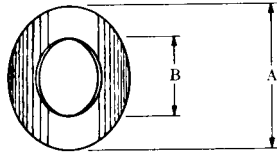
Part No.	Dimensions in Inches				10	Price	
	Min. I.D.	Max. O.D.	Thickness (T)	pa*		25	100
<b>B-WSX-187/07</b>	3/32	3/16	0.0065	9.9	<b>21.20</b>	<b>48.15</b>	<b>160.50</b>
<b>B-WSX-187/10</b>	3/32	3/16	0.0100	27.8	<b>20.55</b>	<b>46.55</b>	<b>155.15</b>
<b>B-WSX-250/13</b>	1/8	1/4	0.0133	48.0	<b>17.05</b>	<b>38.55</b>	<b>128.40</b>
<b>B-WSX-250/15</b>	.138	9/32	0.0150	62.0	<b>16.30</b>	<b>36.95</b>	<b>123.05</b>
<b>B-WSX-250/19</b>	.164	11/32	0.0185	93.0	<b>15.65</b>	<b>35.35</b>	<b>117.70</b>
<b>B-WSX-375/15</b>	3/16	3/8	0.0150	55.0	<b>15.65</b>	<b>35.35</b>	<b>117.70</b>
<b>B-WSX-500/18</b>	1/4	1/2	0.0180	70.0	<b>18.00</b>	<b>39.95</b>	<b>132.25</b>
<b>B-WSX-625/22</b>	5/16	5/8	0.0220	105.0	<b>19.15</b>	<b>43.35</b>	<b>144.45</b>
<b>B-WSX-750/28</b>	3/8	3/4	0.0280	175.0	<b>21.50</b>	<b>48.80</b>	<b>162.65</b>

\* Pa = Pounds - Calculated load in the flat position.

## WASHERS — Curved Spring, Stainless Steel



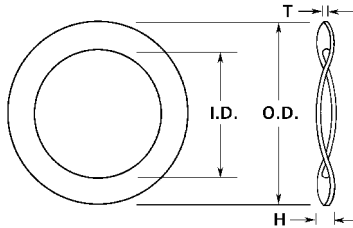
These curved washers exert relatively light thrust loads and are often used to absorb axial end play. The rate is linear between 10% and 80% of available deflection.



### STAINLESS STEEL TYPE 301

Part No.	Free Fit Screw or Rod Size	Free Fit in Hole Dia.	Dimensions in Inches				Load at H1 (lbs.) ±15%	t	Price		
			Max. O.D. (A)	Min. I.D. (B)	H (ref.)	H1			10	25	100
<b>B-WCX-093</b>	3/32	7/32	0.215	0.100	0.028	0.015	1.5	0.0045	<b>7.55</b>	<b>14.70</b>	<b>50.00</b>
<b>B-WCX-125</b>	#5	1/4	0.245	0.135	0.034	0.020	2.0	0.006	<b>7.55</b>	<b>14.70</b>	<b>50.00</b>
<b>B-WCX-138</b>	#6	9/32	0.270	0.148	0.035	0.022	2.5	0.007	<b>7.65</b>	<b>14.85</b>	<b>51.00</b>
<b>B-WCX-164</b>	#8	11/32	0.322	0.174	0.042	0.025	3.0	0.0075	<b>8.25</b>	<b>15.95</b>	<b>54.25</b>
<b>B-WCX-190</b>	#10	3/8	0.370	0.200	0.047	0.028	4.5	0.009	<b>8.25</b>	<b>15.95</b>	<b>54.25</b>
<b>B-WCX-250</b>	1/4	7/16	0.423	0.269	0.055	0.032	2.5	0.0082	<b>8.80</b>	<b>17.10</b>	<b>58.50</b>

## WASHERS — Wave, Beryllium Copper



Wave Washers can be placed next to a bearing on a shaft to take up end play, or used in static applications for proper resilience and tension at fastening points. The curved waves absorb shock and vibration, and resist loosening and fatigue, with increased load bearing capacity. Wave Washers are frequently used in applications with limited radial space.

Beryllium Copper has superior strength for impact, is a good conductor of both heat and electricity, and is nonmagnetic and corrosion resistant. Number of waves: 3.

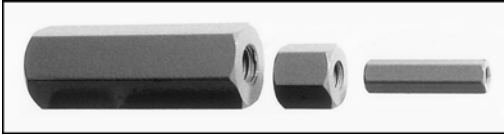
### BERYLLIUM COPPER — C172

Part No.	Nominal Size	Basic Major Dia.	I.D.	O.D.	Nominal Thickness T	Overall Height H	Price		
							10	25	100
<b>B-WWBC-1/4</b>	1/4	0.250	0.328	0.682	0.010	0.062	<b>5.70</b>	<b>11.70</b>	<b>36.10</b>
<b>B-WWBC-5/16</b>	5/16	0.312	0.390	0.682	0.010	0.065	<b>5.85</b>	<b>11.95</b>	<b>37.00</b>
<b>B-WWBC-3/8</b>	3/8	0.375	0.455	0.870	0.010	0.094	<b>5.85</b>	<b>11.95</b>	<b>37.00</b>
<b>B-WWBC-1/2</b>	1/2	0.500	0.550	0.740	0.016	0.110	<b>6.00</b>	<b>12.30</b>	<b>38.00</b>

See Beryllium Copper Strip — Page 50



## STANDOFFS — Aluminum, Clear Anodized



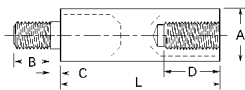
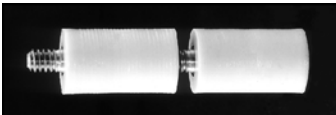
### CLEAR ANODIZE ALUMINUM

These Standoffs are internally threaded at each end to accept screws or studs in thread sizes indicated. The hexagonal exterior makes it easy to hold with a wrench while end screws are tightened.

### ALUMINUM — Type 2011-T3

Part No.	Thread	Thread Depth	Length	Across Flats	Each	Price		
						10	25	100
B-S4-3	#4-40	Through	3/16"	3/16"	—	7.10	14.75	47.20
B-S4-6	#4-40	Through	3/8"	3/16"	1.15	9.45	19.65	62.90
B-S4-12	#4-40	Through	3/4"	3/16"	1.50	12.25	25.45	81.45
B-S6-3	#6-32	Through	3/16"	1/4"	—	8.05	16.75	53.60
B-S6-6	#6-32	Through	3/8"	1/4"	1.25	10.15	21.10	67.55
B-S6-12	#6-32	Through	3/4"	1/4"	1.55	12.75	26.55	84.95
B-S6-24	#6-32	3/8"	1-1/2"	1/4"	2.85	23.60	49.10	157.15
B-S6-48	#6-32	3/8"	3"	1/4"	3.40	28.15	58.65	187.70
B-S8-6	#8-32	Through	3/8"	5/16"	1.50	12.30	25.65	85.50
B-S8-12	#8-32	Through	3/4"	5/16"	2.10	17.35	36.15	120.50
B-S8-24	#8-32	7/16"	1-1/2"	5/16"	3.40	28.40	59.10	197.00
B-S8-48	#8-32	7/16"	3"	5/16"	3.85	32.10	66.90	223.00
B-S10-6	#10-32	Through	3/8"	3/8"	1.90	15.60	32.50	104.00
B-S10-12	#10-32	Through	3/4"	3/8"	2.85	23.50	48.95	156.65
B-S10-24	#10-32	1/2"	1-1/2"	3/8"	4.25	35.55	74.05	236.95
B-S10-48	#10-32	1/2"	3"	3/8"	4.65	38.95	81.15	259.70
B-S10-96	#10-32	1/2"	6"	3/8"	6.50	54.15	112.80	306.95
B-S25-12	1/4-20	Through	3/4"	1/2"	2.90	23.90	49.80	159.35
B-S25-24	1/4-20	5/8"	1-1/2"	1/2"	4.80	39.85	83.05	265.75
B-S25-48	1/4-20	5/8"	3"	1/2"	6.40	53.35	111.15	355.70
B-S25-96	1/4-20	5/8"	6"	1/2"	7.60	63.45	132.15	422.90

## STANDOFFS — STURDIPOST™, Nylon / Brass



### THREADED NYLON

When good mechanical strength is required, Threaded Nylon Sturdiposts provide reliable, insulated spacing. Brass inserts and Brass studs are permanently molded into the white Nylon 6/6 spacer.

### NYLON 6/6 AND BRASS

Part No.	Body Length (L)	Body Diameter (A)	Stud Length (B)	Max. Not Threaded (C)	Insert Depth (D)	Thread Size	Price		
							Each	10	25
B-TNS-0416	1"	1/4"	1/4"	1/16"	11/64"	#6-32	5.10	42.25	88.00
B-TNS-0424	1-1/2"	1/4"	1/4"	1/16"	11/64"	#6-32	5.20	43.10	89.75
B-TNS-0432	2"	1/4"	1/4"	1/16"	11/64"	#6-32	5.25	43.70	91.00
B-TNS-0814	7/8"	1/2"	9/32"	3/32"	3/16"	#10-24	5.50	45.75	95.25
B-TNS-1020	1-1/4"	5/8"	7/16"	1/8"	21/64"	1/4-20	6.05	50.40	105.00

## STANDOFFS — Ceramic



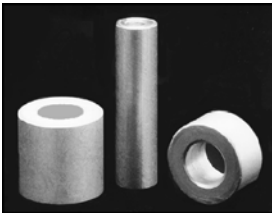
### CERAMIC STANDOFFS — Glazed Steatite

With a temperature tolerance to 2350°F (1288°C), Ceramic Standoffs made from Glazed Steatite provide electrical isolation, resistance to thermal extremes, high-wear conditions, and/or corrosion. Glazing provides an aesthetically pleasing finish, but its primary function is ease of cleaning, which helps prevent surface conduction via contaminants. Magnesia/Silica/Alumina ceramic parts are threaded on both ends, with a countersunk lead. Sharp edges have been removed to avoid chipping. Color: Tan.

#### CERAMIC — Glazed Steatite

Part No.	Thread	O.D.	Length	Min. Thread Depth	Price Each
<b>B-CSTO-0632-08</b>	#6-32	3/8"	1/2"	5/32"	<b>3.40</b>
<b>B-CSTO-0632-12</b>	#6-32	3/8"	3/4"	1/4"	<b>3.60</b>
<b>B-CSTO-0632-16</b>	#6-32	3/8"	1"	3/8"	<b>3.80</b>
<b>B-CSTO-0632-20</b>	#6-32	3/8"	1-1/4"	3/8"	<b>3.90</b>
<b>B-CSTO-0632-24</b>	#6-32	3/8"	1-1/2"	3/8"	<b>4.00</b>
<b>B-CSTO-0632-32</b>	#6-32	3/8"	2"	3/8"	<b>4.20</b>
<b>B-CSTO-1420-20</b>	1/4-20	1"	1-1/4"	7/16"	<b>4.80</b>
<b>B-CSTO-1420-24</b>	1/4-20	1"	1-1/2"	1/2"	<b>6.00</b>
<b>B-CSTO-1420-32</b>	1/4-20	1"	2"	3/8"	<b>6.00</b>

## SPACERS — Aluminum



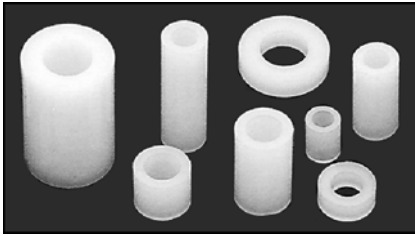
### ALUMINUM SPACERS

Get all the advantages of versatile Aluminum when you need a clearance spacer or other cylindrical, unthreaded component that is lightweight yet physically strong and stands up to atmospheric corrosion. Attractive enough to use in decorative functions too, Aluminum Spacers are available in six screw sizes with your choice of 1/4", 1/2" or 1" lengths. Not anodized.

#### ALUMINUM — Type 2011-T3

Part No.	Screw Size	Dimensions			Price		
		Length	O.D.	I.D.	10	25	100
<b>B-RSA-2/4</b>	#2	1/4"	0.250"	0.091"	<b>3.50</b>	<b>7.30</b>	<b>23.35</b>
<b>B-RSA-2/8</b>	#2	1/2"	0.250"	0.091"	<b>3.95</b>	<b>8.25</b>	<b>26.40</b>
<b>B-RSA-2/16</b>	#2	1"	0.250"	0.091"	<b>6.25</b>	<b>12.95</b>	<b>41.45</b>
<b>B-RSA-4/4</b>	#4	1/4"	0.250"	0.115"	<b>4.20</b>	<b>8.75</b>	<b>28.00</b>
<b>B-RSA-4/8</b>	#4	1/2"	0.250"	0.115"	<b>4.45</b>	<b>9.20</b>	<b>29.45</b>
<b>B-RSA-4/16</b>	#4	1"	0.250"	0.115"	<b>6.95</b>	<b>14.50</b>	<b>46.40</b>
<b>B-RSA-6/4</b>	#6	1/4"	0.250"	0.140"	<b>4.20</b>	<b>8.75</b>	<b>28.00</b>
<b>B-RSA-6/8</b>	#6	1/2"	0.250"	0.140"	<b>4.45</b>	<b>9.20</b>	<b>29.45</b>
<b>B-RSA-6/16</b>	#6	1"	0.250"	0.140"	<b>6.95</b>	<b>14.50</b>	<b>46.40</b>
<b>B-RSA-8/4</b>	#8	1/4"	0.312"	0.171"	<b>7.20</b>	<b>15.00</b>	<b>48.00</b>
<b>B-RSA-8/8</b>	#8	1/2"	0.312"	0.171"	<b>8.55</b>	<b>17.75</b>	<b>56.80</b>
<b>B-RSA-8/16</b>	#8	1"	0.312"	0.171"	<b>11.25</b>	<b>23.45</b>	<b>75.05</b>
<b>B-RSA-10/4</b>	#10	1/4"	0.312"	0.194"	<b>8.15</b>	<b>16.95</b>	<b>54.25</b>
<b>B-RSA-10/8</b>	#10	1/2"	0.312"	0.194"	<b>8.25</b>	<b>17.10</b>	<b>56.95</b>
<b>B-RSA-10/16</b>	#10	1"	0.312"	0.194"	<b>12.55</b>	<b>26.15</b>	<b>83.70</b>
<b>B-RSA-14/4</b>	#14	1/4"	0.500"	0.257"	<b>11.05</b>	<b>22.95</b>	<b>73.45</b>
<b>B-RSA-14/8</b>	#14	1/2"	0.500"	0.257"	<b>12.95</b>	<b>27.00</b>	<b>86.40</b>
<b>B-RSA-14/16</b>	#14	1"	0.500"	0.257"	<b>17.35</b>	<b>36.10</b>	<b>115.55</b>

## SPACERS — Nylon, Round



### NYLON SPACERS

Tough, resilient Nylon Spacers work well in electrical and electronic insulation applications, and are often used as bushings, bearings, rollers or glides. Drilled, non-threaded Spacers are made from corrosion resistant Nylon Type 6/6. Stocked in a series of convenient sizes and lengths.

#### NYLON 6/6

Part No.	Screw Size	Dimensions			25	Price	
		Length	O.D.	I.D.		100	1000
B-RSN-2/2	#2	1/8"	0.187"	0.091"	1.35	4.35	37.00
B-RSN-2/4	#2	1/4"	0.187"	0.091"	1.40	4.70	40.00
B-RSN-2/6	#2	3/8"	0.187"	0.091"	1.50	5.00	42.50
B-RSN-2/8	#2	1/2"	0.187"	0.091"	1.65	5.35	45.50
B-RSN-2/12	#2	3/4"	0.187"	0.091"	1.80	5.95	50.60
B-RSN-2/16	#2	1"	0.187"	0.091"	1.50	6.40	54.40
B-RSN-4/2	#4	1/8"	0.187"	0.115"	1.30	4.25	36.20
B-RSN-4/3	#4	3/16"	0.250"	0.115"	1.35	4.45	37.20
B-RSN-4/4	#4	1/4"	0.187"	0.115"	1.40	4.55	38.70
B-RSN-4/4W	#4	1/4"	0.250"	0.115"	1.50	4.90	41.65
B-RSN-4/6	#4	3/8"	0.187"	0.115"	1.50	4.90	41.70
B-RSN-4/8	#4	1/2"	0.187"	0.115"	1.60	5.20	44.20
B-RSN-4/12	#4	3/4"	0.187"	0.115"	1.75	5.80	49.30
B-RSN-4/16	#4	1"	0.187"	0.115"	1.90	6.30	53.60
B-RSN-6/2	#6	1/8"	0.250"	0.140"	1.35	4.50	38.30
B-RSN-6/3	#6	1/4"	0.250"	0.140"	1.40	4.75	39.35
B-RSN-6/4	#6	1/4"	0.250"	0.140"	1.45	4.80	40.80
B-RSN-6/6	#6	3/8"	0.250"	0.140"	1.55	5.15	43.80
B-RSN-6/7	#6	3/8"	0.250"	0.140"	1.60	5.30	44.80
B-RSN-6/8	#6	1/2"	0.250"	0.140"	1.65	5.40	45.90
B-RSN-6/12	#6	3/4"	0.250"	0.140"	1.80	5.85	49.80
B-RSN-6/16	#6	1"	0.250"	0.140"	1.90	6.30	53.60
B-RSN-8/2	#8	1/8"	0.312"	0.171"	1.35	4.45	37.90
B-RSN-8/4	#8	1/4"	0.312"	0.171"	1.45	4.70	40.00
B-RSN-8/6	#8	3/8"	0.312"	0.171"	1.55	5.05	43.00
B-RSN-8/8	#8	1/2"	0.312"	0.171"	1.60	5.30	45.10
B-RSN-8/12	#8	3/4"	0.312"	0.171"	1.80	5.95	50.60
B-RSN-8/16	#8	1"	0.312"	0.171"	2.00	6.55	55.70
B-RSN-10/2	#10	1/8"	0.312"	0.194"	1.35	4.40	37.40
B-RSN-10/4	#10	1/4"	0.312"	0.194"	1.40	4.65	39.60
B-RSN-10/5	#10	3/8"	0.312"	0.194"	1.45	4.85	40.95
B-RSN-10/6	#10	3/8"	0.312"	0.194"	1.50	4.95	42.10
B-RSN-10/8	#10	1/2"	0.312"	0.194"	1.60	5.20	27.31
B-RSN-10/12	#10	3/4"	0.312"	0.194"	5.80	5.80	49.30
B-RSN-10/16	#10	1"	0.312"	0.194"	1.95	6.45	54.90
B-RSN-10/24	#10	1-1/2"	0.312"	0.194"	6.30	20.95	178.10
B-RSN-14/2	1/4"	1/8"	0.500"	0.257"	1.45	4.80	40.80
B-RSN-14/3	1/4"	5/16"	0.500"	0.257"	1.50	5.05	43.10
B-RSN-14/4	1/4"	1/4"	0.500"	0.257"	1.65	5.35	45.50

## SPACERS — Nylon, Round (cont.)

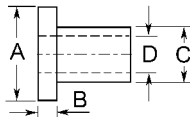
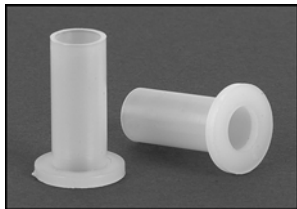
### NYLON 6/6

Part No.	Screw Size	Dimensions			25	Price	
		Length	O.D.	I.D.		100	1000
<b>B-RSN-14/5</b>	1/4"	3/8"	0.500"	0.257"	<b>1.70</b>	<b>5.65</b>	<b>47.60</b>
<b>B-RSN-14/6</b>	1/4"	3/8"	0.500"	0.257"	<b>1.80</b>	<b>5.85</b>	<b>49.80</b>
<b>B-RSN-14/8</b>	1/4"	1/2"	0.500"	0.257"	<b>1.95</b>	<b>6.40</b>	<b>54.40</b>
<b>B-RSN-14/12</b>	1/4"	3/4"	0.500"	0.257"	<b>2.25</b>	<b>7.45</b>	<b>63.40</b>
<b>B-RSN-14/16</b>	1/4"	1"	0.500"	0.257"	<b>2.55</b>	<b>8.50</b>	<b>72.30</b>
<b>B-RSN-14/26</b>	1/4"	1-5/8"	0.500"	0.257"	<b>8.10</b>	<b>26.95</b>	<b>229.10</b>

### ASSORTMENTS

<b>B-RSN-1000</b>	Twenty-Five each. B-RSN-2/2 through B-RSN-6/16 — 550 pieces . . . . .	<b>40.95</b>
<b>B-RSN-1500</b>	Twenty-Five each. B-RSN-8/2 through B-RSN-14/26 — 550 pieces . . . . .	<b>49.50</b>
<b>B-RSN-3000</b>	Twenty-Five each. B-RSN-2/2 through B-RSN-14/26 — 1100 pieces . . . . .	<b>70.10</b>

## SCREW INSULATORS — Nylon



Nylon Screw Insulators are used to isolate metal screws electrically as well as to reduce corrosion.

They can be used as light load bearings in many applications.

### NYLON 6/6

Part No.	Screw Size	Length	Dimensions in Inches				Price			
			A	B	C	D	10	25	100	1000
<b>B-IN-2/2</b>	#2	1/8"	0.181"	0.047"	0.120"	0.090"	<b>1.10</b>	<b>2.25</b>	<b>5.00</b>	<b>42.50</b>
<b>B-IN-2/4</b>	#2	1/4"	0.181"	0.047"	0.120"	0.090"	<b>1.10</b>	<b>2.25</b>	<b>5.00</b>	<b>42.50</b>
<b>B-IN-2/6</b>	#2	3/8"	0.181"	0.047"	0.120"	0.090"	<b>1.10</b>	<b>2.25</b>	<b>5.00</b>	<b>42.50</b>
<b>B-IN-4/2</b>	#4	1/8"	0.235"	0.047"	0.145"	0.115"	<b>1.20</b>	<b>2.50</b>	<b>6.00</b>	<b>51.00</b>
<b>B-IN-4/4</b>	#4	1/4"	0.235"	0.047"	0.145"	0.115"	<b>1.20</b>	<b>2.50</b>	<b>6.00</b>	<b>51.00</b>
<b>B-IN-4/6</b>	#4	3/8"	0.235"	0.047"	0.145"	0.115"	<b>1.20</b>	<b>2.50</b>	<b>6.00</b>	<b>51.00</b>
<b>B-IN-6/2</b>	#6	1/8"	0.290"	0.047"	0.170"	0.140"	<b>1.30</b>	<b>2.70</b>	<b>6.15</b>	<b>52.30</b>
<b>B-IN-6/4</b>	#6	1/4"	0.290"	0.047"	0.170"	0.140"	<b>1.30</b>	<b>2.70</b>	<b>6.15</b>	<b>52.30</b>
<b>B-IN-6/6</b>	#6	3/8"	0.290"	0.047"	0.170"	0.140"	<b>1.30</b>	<b>2.70</b>	<b>6.15</b>	<b>52.30</b>
<b>B-IN-6/8</b>	#6	1/2"	0.290"	0.047"	0.170"	0.140"	<b>1.30</b>	<b>2.70</b>	<b>6.15</b>	<b>52.30</b>
<b>B-IN-8/2</b>	#8	1/8"	0.344"	0.062"	0.205"	0.173"	<b>1.45</b>	<b>2.95</b>	<b>6.20</b>	<b>52.70</b>
<b>B-IN-8/4</b>	#8	1/4"	0.344"	0.062"	0.205"	0.173"	<b>1.45</b>	<b>2.95</b>	<b>6.20</b>	<b>52.70</b>
<b>B-IN-8/6</b>	#8	3/8"	0.344"	0.062"	0.205"	0.173"	<b>1.45</b>	<b>2.95</b>	<b>6.20</b>	<b>52.70</b>
<b>B-IN-8/8</b>	#8	1/2"	0.344"	0.062"	0.205"	0.173"	<b>1.45</b>	<b>2.95</b>	<b>6.20</b>	<b>52.70</b>
<b>B-IN-10/4</b>	#10	1/4"	0.399"	0.062"	0.260"	0.200"	<b>1.55</b>	<b>3.15</b>	<b>6.75</b>	<b>57.40</b>
<b>B-IN-10/6</b>	#10	3/8"	0.399"	0.062"	0.260"	0.200"	<b>1.55</b>	<b>3.15</b>	<b>6.75</b>	<b>57.40</b>
<b>B-IN-10/8</b>	#10	1/2"	0.399"	0.062"	0.260"	0.200"	<b>1.55</b>	<b>3.15</b>	<b>6.75</b>	<b>57.40</b>
<b>B-IN-10/12</b>	#10	3/4"	0.399"	0.062"	0.260"	0.200"	<b>1.55</b>	<b>3.15</b>	<b>6.75</b>	<b>57.40</b>
<b>B-IN-14/4</b>	1/4	1/4"	0.513"	0.062"	0.312"	0.260"	<b>1.70</b>	<b>3.45</b>	<b>7.30</b>	<b>62.10</b>
<b>B-IN-14/6</b>	1/4	3/8"	0.513"	0.062"	0.312"	0.260"	<b>1.70</b>	<b>3.45</b>	<b>7.30</b>	<b>62.10</b>
<b>B-IN-14/8</b>	1/4	1/2"	0.513"	0.062"	0.312"	0.260"	<b>1.70</b>	<b>3.45</b>	<b>7.30</b>	<b>62.10</b>
<b>B-IN-14/12</b>	1/4	3/4"	0.513"	0.062"	0.312"	0.260"	<b>1.70</b>	<b>3.45</b>	<b>7.30</b>	<b>62.10</b>

# SHIM STOCK — Metal

## STEEL SHIM STOCK

Hard cold rolled SAE 1010 Steel, Rockwell B-90

Thin Sheet Steel can be used for spacing any two surfaces which must be parallel and yet separated. Excellent material for small or lightweight assemblies of fabricated metal. Properly prepared will take hard or soft solder readily. May be cut with scissors or metal snips. Available in fifteen single sheets of 6" x 18" sheets, or in assortments of various thicknesses.

**No. 2 finish** (see note). Steel shim stock is used mostly in tool and die alignment, for arbor spacers, and shim applications where hardness, flatness and accuracy are required. Carefully oiled to resist rust and stain. A basic material for any working laboratory.

## STEEL — 6" x 18" Sheet

Part No.	Thickness	Tolerance	Price Each
<b>B-SHSS-010</b>	0.001"	± 10%	<b>2.85</b>
<b>B-SHSS-015</b>	0.0015"	± 10%	<b>2.35</b>
<b>B-SHSS-020</b>	0.002"	± 10%	<b>2.30</b>
<b>B-SHSS-030</b>	0.003"	± 10%	<b>2.40</b>
<b>B-SHSS-040</b>	0.004"	± 0.0005"	<b>2.40</b>
<b>B-SHSS-050</b>	0.005"	± 0.0005"	<b>2.40</b>
<b>B-SHSS-060</b>	0.006"	± 0.0005"	<b>2.40</b>
<b>B-SHSS-070</b>	0.007"	± 0.00075"	<b>2.40</b>
<b>B-SHSS-080</b>	0.008"	± 0.00075"	<b>2.45</b>
<b>B-SHSS-100</b>	0.010"	± 0.00075"	<b>2.50</b>
<b>B-SHSS-120</b>	0.012"	± 0.00075"	<b>2.60</b>
<b>B-SHSS-150</b>	0.015"	± 0.00075"	<b>2.65</b>
<b>B-SHSS-200</b>	0.020"	± 0.001"	<b>2.65</b>
<b>B-SHSS-250</b>	0.025"	± 0.001"	<b>2.90</b>
<b>B-SHSS-310</b>	0.031"	± 0.002"	<b>3.05</b>

## ASSORTMENTS

**B-SHSS-1000** 6" x 18" sheet. One B-SHSS-010 through B-SHSS-150 — 12 pieces ..... **28.90**  
**B-SHSS-2000** 6" x 18" sheet. One B-SHSS-010 through B-SHSS-310 — 15 pieces ..... **34.50**

## STAINLESS STEEL SHIM STOCK —

Type 301, Full Hard Cold Rolled, Chrome-Nickel Alloy,

Rockwell 40/45

This material is used in nuclear and conventional power plants, oil and gas refineries, medical instrumentation, food processing or anywhere that corrosion resistance is required. It can be silver soldered and has excellent welding qualities.

**No. 2 Finish. No. 3 Edge**

## STAINLESS STEEL — 6" x 18" Sheet

Part No.	Thickness	Tolerance	Price Each
<b>B-SHSX-010</b>	0.001"	± 0.0002"	<b>5.95</b>
<b>B-SHSX-020</b>	0.002"	± 0.0002"	<b>4.50</b>
<b>B-SHSX-030</b>	0.003"	± 0.0003"	<b>4.65</b>
<b>B-SHSX-040</b>	0.004"	± 0.0004"	<b>4.75</b>
<b>B-SHSX-050</b>	0.005"	± 0.0005"	<b>4.95</b>
<b>B-SHSX-060</b>	0.006"	± 0.0006"	<b>5.65</b>
<b>B-SHSX-070</b>	0.007"	± 0.0007"	<b>6.05</b>
<b>B-SHSX-080</b>	0.008"	± 0.0008"	<b>6.25</b>
<b>B-SHSX-100</b>	0.010"	± 0.001"	<b>6.60</b>
<b>B-SHSX-120</b>	0.012"	± 0.001"	<b>7.05</b>
<b>B-SHSX-150</b>	0.015"	± 0.001"	<b>7.70</b>
<b>B-SHSX-200</b>	0.020"	± 0.0015"	<b>8.10</b>
<b>B-SHSX-250</b>	0.025"	± 0.0015"	<b>8.90</b>
<b>B-SHSX-310</b>	0.031"	± 0.002"	<b>9.65</b>

### NOTE:

*No. 2 Finish: A Regular bright finish produced by rolling on moderately bright rolls.*

*No. 3 Edge: Square produced by slitting only. Not filled. Width tolerances close.*

## ASSORTMENT

**B-SHSX-1000** 6" x 18" sheet. One B-SHSX-010 through B-SHSX-310 — 14 pieces ..... **90.50**



See our selection of Metal Cutters on page on 377

## SHIM STOCK — Metal (cont.)

### BRASS SHIM STOCK — Type C260, Half Hard, Cold Rolled

This material takes hard or soft solder readily, has excellent forming qualities and may be lightly drawn blanked or stamped. 6" x 18" single sheets.

No. 2 Finish, No.3 Edge

**NOTE:**

No. 2 Finish: A Regular bright finish produced by rolling on moderately bright rolls.

No. 3 Edge: Square produced by slitting only. Not filled. Width tolerances close.

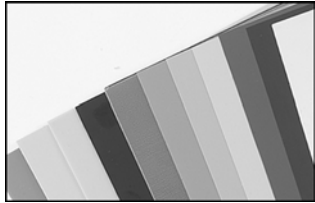
### BRASS SHIM STOCK — 6" x 18" Sheet

Part No.	Thickness	Tolerance	Price Each
B-SHSB-010	0.001"	± 0.0003"	3.05
B-SHSB-015	0.0015"	± 0.0003"	3.05
B-SHSB-020	0.002"	± 0.0003"	3.05
B-SHSB-030	0.003"	± 0.0003"	3.05
B-SHSB-040	0.004"	± 0.0003"	3.30
B-SHSB-050	0.005"	± 0.0004"	3.55
B-SHSB-060	0.006"	± 0.0004"	4.20
B-SHSB-070	0.007"	± 0.0006"	4.30
B-SHSB-080	0.008"	± 0.0006"	4.30
B-SHSB-100	0.010"	± 0.0008"	4.45
B-SHSB-120	0.012"	± 0.0008"	5.25
B-SHSB-150	0.015"	± 0.001"	6.00
B-SHSB-200	0.020"	± 0.0013"	6.40
B-SHSB-250	0.025"	± 0.0015"	8.35
B-SHSB-310	0.031"	± 0.002"	8.45

### ASSORTMENTS

<b>B-SHSB-1000</b>	6" x 18" sheet. One B-SHSB-010 through B-SHSB-150 — 12 pieces	50.95
<b>B-SHSB-2000</b>	6" x 18" sheet. One B-SHSB-010 through B-SHSB-310 — 15 pieces	74.05

## SHIM STOCK — Plastic



### PLASTIC SHIM STOCK — Color Oriented Polyester

The color system assures selection of the right thickness every time.

A glance at the color identification chart shows the correct shim stock for your thickness requirements from 0.0005" to 0.030". Manufactured from Oriented Polyester. Impervious to oil, it has minimum compressibility characteristics and is easy to cut. Can be easily made into gaskets when using specialty tools such as pointed dividers.

### ORIENTED POLYESTER — 5" x 20" Sheet

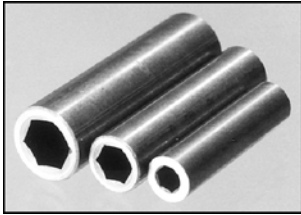
15 Thicknesses, 15 Colors

Part No.	Thickness	Color	Tolerance	Price Each
B-SHSP-005	0.0005"	Silver	± 0.0002"	3.60
B-SHSP-0075	0.00075"	Gold	± 0.0002"	3.60
B-SHSP-010	0.001"	Amber	± 0.0002"	3.60
B-SHSP-015	0.0015"	Purple	± 0.0002"	3.60
B-SHSP-020	0.002"	Red	± 0.0002"	3.60
B-SHSP-030	0.003"	Green	± 0.0002"	3.60
B-SHSP-040	0.004"	Tan	± 0.0002"	3.85
B-SHSP-050	0.005"	Blue	± 0.0002"	3.85
B-SHSP-075	0.0075"	Transp. Matte	± 0.0003"	3.85
B-SHSP-100	0.010"	Brown	± 5%	4.05
B-SHSP-125	0.0125"	Black	± 5%	4.20
B-SHSP-150	0.015"	Pink	± 5%	4.20
B-SHSP-200	0.020"	Yellow	± 5%	4.30
B-SHSP-250	0.025"	Solid White	± 5%	4.80
B-SHSP-300	0.030"	Coral	± 5%	4.80

### ASSORTMENT

<b>B-SHSP-1000</b>	6" x 20 sheet. One each B-SHSP-005 through B-SHSP-300 — 15 Sheets	45.00
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## SLEEVES — Steel



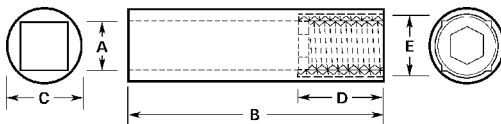
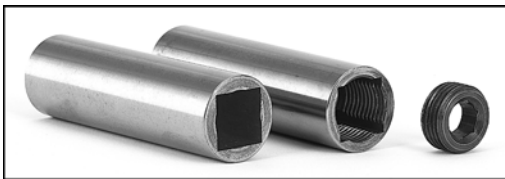
### HEXAGON-HOLE SLEEVES

These versatile sleeves have a round O.D. with a uniform hexagon hole broached from one end to the other. They are manufactured from cold rolled mild steel in five different sizes. The hex hole sizes are a few thousandths larger than commercial CRS, brass or aluminum hex stock tolerances to allow convenient assemblies to be made.

The O.D. is "stock size" as the material comes from the mill. Their soft condition and ample stock permits alteration by the customer. These sleeves can be used for couplings, extensions, sockets, drivers, simple sliding splines and dog clutches.

### SLEEVES — Hexagon-Hole

Part No.	O.D. (Stock Size)	Hex Size (Across Flats)	Length	Each	Price	10
<b>B-1000112</b>	1/4"	0.128"	3/4"	<b>11.35</b>		<b>104.05</b>
<b>B-1000120</b>	3/8"	0.1875"	1-1/2"	<b>11.65</b>		<b>106.90</b>
<b>B-1000132</b>	1/2"	0.250"	2"	<b>12.00</b>		<b>109.65</b>
<b>B-1000140</b>	5/8"	0.375"	2-1/2"	<b>13.80</b>		<b>126.35</b>
<b>B-1000144</b>	13/16"	0.500"	2-3/4"	<b>17.40</b>		<b>159.80</b>



### SQUARE-HOLE SLEEVES

A Square-Hole Sleeve is a round sleeve with a perfectly square hole broached end to end through the center. They are made accurately and uniformly in large production runs, and are much less expensive than making your own squared holes. They are supplied in five convenient sizes of mild machine steel, concentric and square to 0.003" T.I.R. Two styles are available, one with a tapped hole at one end to receive the back-up set-screw sleeve (supplied), the other without.

Use Square-Hole Sleeves for making boring bars, milling cutters, flycutters, tool holders, couplings, extensions, drivers and any other application where an accurate square hole is required. Sleeves may also be used with the Brass Bar shown on [page 35](#) to form an extendable "spline" drive shaft.

### SLEEVES — Square-Hole

Part No.	A Hole Size	B Length	C O.D. +0.005-.000	D Full Thread Depth	E Thread	Each	Price	10
<b>B-1000312</b>	0.128"	3/4"	0.2187"	1/4"	#10-32	<b>17.00</b>		<b>156.10</b>
<b>B-1000324</b>	0.1915"	1-1/2"	0.3125"	7/16"	1/4-28	<b>18.25</b>		<b>167.25</b>
<b>B-1000332</b>	0.255"	2"	0.4375"	1/2"	5/16-24	<b>20.45</b>		<b>187.70</b>
<b>B-1000340</b>	0.380"	2-1/2"	0.5937"	5/8"	1/2-20	<b>22.70</b>		<b>208.10</b>
<b>B-1000344</b>	0.505"	2-3/4"	0.7812"	5/8"	5/8-18	<b>27.95</b>		<b>256.40</b>
<b>B-1000212</b>	0.128"	3/4"	0.2187"		Without thread	<b>16.80</b>		<b>154.20</b>
<b>B-1000224</b>	0.1915"	1-1/2"	0.3125"		Without thread	<b>17.85</b>		<b>163.50</b>
<b>B-1000242</b>	0.255"	2"	0.4375"		Without thread	<b>20.05</b>		<b>183.95</b>
<b>B-1000240</b>	0.380"	2-1/2"	0.5937"		Without thread	<b>21.90</b>		<b>200.70</b>
<b>B-1000244</b>	0.505"	2-3/4"	0.7812"		Without thread	<b>26.95</b>		<b>247.15</b>

## WOOD SCREWS — Square Drive, Flat Head



### SQUARE DRIVE WOOD SCREWS — Robertson Type

The square drive in the flat head of our Square Drive Wood Screws prevents slippage even under maximum torque, and the screws have positive holding power in a variety of materials. Also known as "Type A" or "Wood Tapping" screws, both Stainless Steel 18-8 and Silicon Bronze screws have a sheet metal type thread, which is a single lead, fine thread design. Screws 1" or smaller are threaded to the head; sizes longer than 1" are threaded for approximately two-thirds of the shank.

**Stainless Steel 18-8** screws are a very good choice in environments that might damage or destroy components made of other materials. The stainless steel undergoes a process called "passivating" which gives it outstanding corrosion resistance.

**Silicon Bronze** is highly corrosion resistant. A standard for marine construction, it helps prevent rot around the screw holes when used under water. Also, it is often used to solve problems encountered when dissimilar materials must be joined.

### STAINLESS STEEL 18-8

Part No.	Size	Length	10	Price 25	100
B-SDX-06-10F	#6	5/8"	1.10	2.20	7.25
B-SDX-06-16F	#6	1"	1.55	3.25	10.80
B-SDX-08-10F	#8	5/8"	2.60	5.40	18.00
B-SDX-08-16F	#8	1"	2.75	5.70	19.00
B-SDX-08-24F	#8	1-1/2"	2.90	6.05	20.20
B-SDX-10-16F	#10	1"	3.45	7.20	23.95
B-SDX-10-24F	#10	1-1/2"	4.00	8.35	27.70
B-SDX-10-32F	#10	2"	4.65	9.65	32.10

### SILICON BRONZE

B-SDSB-06-10F	#6	5/8"	1.40	2.60	6.85
B-SDSB-06-16F	#6	1"	1.90	3.60	9.55
B-SDSB-08-16F	#8	1"	2.20	4.15	11.00
B-SDSB-10-20F	#10	1-1/4"	3.50	6.55	17.45

## WOOD SCREWS — Phillips, Stainless Steel



Stainless Steel Phillips Drive Wood Screws are stocked only in Flat Heads.

### STAINLESS STEEL 18-8 — Phillips Drive

Part No.	Size	Length	10	Price 25	100
B-WDPX-6-08	#6	1/2"	1.45	2.95	9.85
B-WDPX-6-12	#6	3/4"	1.50	3.15	10.45
B-WDPX-6-16	#6	1"	2.15	4.45	14.75
B-WDPX-6-24	#6	1-1/2"	4.35	9.00	30.00
B-WDPX-8-12	#8	3/4"	2.30	4.80	16.00
B-WDPX-8-16	#8	1"	3.55	7.40	24.60
B-WDPX-8-24	#8	1-1/2"	4.55	9.45	31.40
B-WDPX-10-12	#10	3/4"	3.55	7.40	24.60
B-WDPX-10-16	#10	1"	4.25	8.85	29.50
B-WDPX-10-32	#10	2"	7.10	14.80	49.20

### ASSORTMENTS

B-WDPX-1000 Ten each size B-WDPX-6-08 through B-WDPX-10-32 — 100 pieces ..... 37.40



## SHEET METAL SCREWS — Stainless Steel



FLAT HEAD

ROUND HEAD

PAN HEAD

### SLOTTED DRIVE

Useful for a variety of fastening applications where thin metals or plastics are involved, or in wood where long holding power is needed.

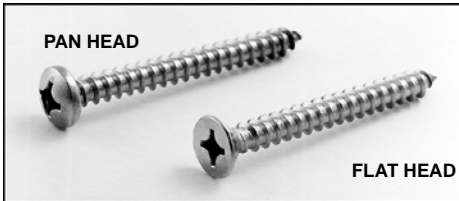
Type A, sharp point, Sheet Metal Screws are available with Slotted Drive. Flat, Pan and Round head styles based on size.

### STAINLESS STEEL 18-8 — Slotted

Part No.	Size	Length	Diameter	Head Style	Price		
					10	25	100
B-TX000-1-1/2	#000	3/32"	0.034"	Flat	26.00	54.15	180.35
B-TX000-2	#000	1/8"	0.034"	Flat	26.00	54.15	180.35
B-TX00-2	#00	1/8"	0.047"	Flat	13.50	28.10	93.60
B-TX00-3	#00	3/16"	0.047"	Flat	13.50	28.10	93.60
B-TX0-2	#0	1/8"	0.060"	Flat	12.00	25.00	83.25
B-TX0-3	#0	3/16"	0.060"	Flat	12.00	25.00	83.25
B-TX1-3	#1	3/16"	0.073"	Flat	12.65	26.35	87.75
B-TX1-4	#1	1/4"	0.073"	Flat	12.65	26.35	87.75
B-TX1-6	#1	3/8"	0.073"	Flat	12.65	26.35	87.75
B-TX2-4	#2	1/4"	0.089"	Round	1.00	2.00	6.60
B-TX2-5	#2	5/16"	0.089"	Pan	1.45	3.05	10.10

### ASSORTMENTS

B-TX-500 Ten each size B-TX000-1-1/2 through B-TX2-5 — 110 pieces ..... 132.75



PAN HEAD

FLAT HEAD

### PHILLIPS DRIVE

Our Type A (sharp point) Phillips Drive screw, with its low profile, large diameter head delivers outstanding driving power.

*Be sure to specify head style when ordering:  
Pan (P) or Flat (F).*

*Otherwise Pan Head will be shipped.*

### STAINLESS STEEL 18-8 — Phillips

Part No.	Size	Length	Price		
			10	25	100
B-TPX4-4	#4	1/4"	—	1.05	3.50
B-TPX4-6	#4	3/8"	—	1.10	3.65
B-TPX4-8	#4	1/2"	—	1.15	3.75
B-TPX6-4	#6	1/4"	—	1.15	3.80
B-TPX6-6	#6	3/8"	—	1.20	3.90
B-TPX6-8	#6	1/2"	—	1.25	4.05
B-TPX6-12	#6	3/4"	—	1.25	4.20
B-TPX8-8	#8	1/2"	—	1.30	4.25
B-TPX8-12	#8	3/4"	—	1.40	4.60
B-TPX8-16	#8	1"	1.00	2.00	6.60
B-TPX8-24	#8	1-1/2"	1.25	2.55	8.40
B-TPX10-8	#10	1/2"	—	1.70	5.65
B-TPX10-12	#10	3/4"	1.05	2.15	7.05
B-TPX10-16	#10	1"	1.35	2.75	9.05

## SHEET METAL SCREWS — Stainless Steel (cont.)

### STAINLESS STEEL 18-8 — Phillips

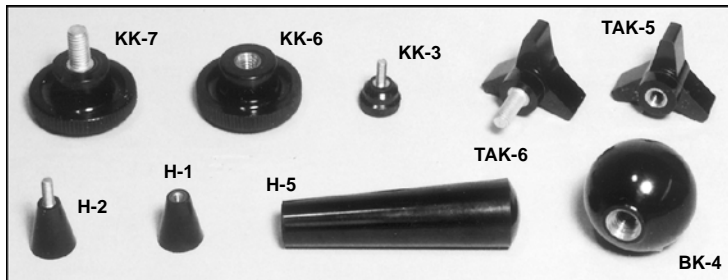
Part No.	Size	Length	10	Price 25	100
<b>B-TPX10-24</b>	#10	1-1/2"	<b>1.60</b>	<b>3.35</b>	<b>11.15</b>
<b>B-TPX10-32</b>	#10	2"	<b>2.10</b>	<b>4.35</b>	<b>14.45</b>
<b>B-TPX12-16</b>	#12	1"	<b>1.60</b>	<b>3.35</b>	<b>11.20</b>
<b>B-TPX12-24</b>	#12	1-1/2"	<b>2.30</b>	<b>4.75</b>	<b>15.75</b>
<b>B-TPX12-32</b>	#12	2"	<b>2.85</b>	<b>5.95</b>	<b>19.80</b>

### ASSORTMENTS

Each assortment comes in a hinged, lidded polypropylene box.

<b>B-TPX-250</b>	Twenty five each B-TPX4-4 through B-TPX8-24 — 275 pieces .....	<b>20.00</b>
<b>B-TPX-500</b>	Ten each B-TPX10-8 through B-TPX12-32 — 80 pieces .....	<b>18.30</b>
<b>B-TPX-1000</b>	Contains all sizes in B-TPX-250 and B-TPX-500 — 355 pieces .....	<b>32.15</b>

## KNOBS AND HANDLES



All knobs and handles are compression molded from solid black, hard, durable, general purpose phenolic. They are noncorrosive and completely unaffected by oil, water or grease. Useful as handles, levers, hand wheels and terminals, every experimental shop and laboratory should have an assortment on hand.

Available with tapped brass insert or zinc plated steel stud of similar thread as indicated below.

### BLACK PHENOLIC — BALL KNOBS BK Series

Part No.	Diameter	Insert Thread	Tapped Hole	Each	Price	
					10	25
<b>B-BK-1</b>	3/4"	1/4-20	3/8"	<b>1.05</b>	<b>8.75</b>	<b>18.20</b>
<b>B-BK-2</b>	1"	5/16-18	1/2"	<b>1.65</b>	<b>13.70</b>	<b>28.50</b>
<b>B-BK-3</b>	1-3/8"	3/8-16	1/2"	<b>2.00</b>	<b>16.70</b>	<b>34.80</b>
<b>B-BK-4</b>	1-7/8"	1/2-13	5/8"	<b>3.65</b>	<b>30.15</b>	<b>62.75</b>

### BLACK PHENOLIC — KNURLED KNOBS KK Series

Part No.	Diameter	Insert Thread	Depth of Tapped Hole	Thread	Length	Each	Price	
							10	25
<b>B-KK-3</b>	3/4"	-	-	10-32	1/2"	<b>1.50</b>	<b>12.50</b>	<b>26.05</b>
<b>B-KK-4</b>	1-3/8"	1/4-20	7/16"	-	-	<b>2.40</b>	<b>19.85</b>	<b>41.30</b>
<b>B-KK-5</b>	1-3/8"	-	-	1/4-20	1/2"	<b>1.70</b>	<b>14.20</b>	<b>29.50</b>
<b>B-KK-6</b>	1-7/8"	3/8-16	1/2"	-	-	<b>2.40</b>	<b>19.85</b>	<b>41.30</b>
<b>B-KK-7</b>	1-7/8"	-	-	3/8-16	3/4"	<b>1.95</b>	<b>15.90</b>	<b>33.10</b>

### BLACK PHENOLIC — HANDLES H Series

Part No.	Diameter	Length	Insert Thread	Depth of Tapped Hole	Stud		Each	Price	
					Thread	Length		10	25
<b>B-H-1</b>	3/4"	7/8"	10-32	5/16"	-	-	<b>2.05</b>	<b>17.10</b>	<b>35.60</b>
<b>B-H-2</b>	3/4"	7/8"	-	-	10-32	1/2"	<b>1.80</b>	<b>14.85</b>	<b>30.95</b>
<b>B-H-5</b>	1-1/8"	4"	3/8-16	5/8"	-	-	<b>3.90</b>	<b>32.45</b>	<b>67.60</b>

# KNOB AND HANDLES

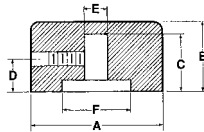
## BLACK PHENOLIC — THREE-ARM KNOBS — TAK Series

Part No.	Center to End Of Arm	Insert Thread	Depth of Tapped Hole	Thread	Stud Length	Each	Price	
							10	25
<b>B-TAK-1</b>	9/16"	10-32	3/8"	-	-	<b>1.10</b>	<b>8.85</b>	<b>18.40</b>
<b>B-TAK-2</b>	9/16"	-	-	10-32	7/16"	<b>1.00</b>	<b>7.65</b>	<b>15.90</b>
<b>B-TAK-3</b>	3/4"	1/4-20	3/8"	-	-	<b>1.40</b>	<b>11.70</b>	<b>24.40</b>
<b>B-TAK-4</b>	3/4"	-	-	1/4-20	9/16"	<b>1.15</b>	<b>9.45</b>	<b>19.70</b>
<b>B-TAK-5</b>	1"	5/16-18	1/2"	-	-	<b>2.05</b>	<b>16.80</b>	<b>35.00</b>
<b>B-TAK-6</b>	1"	-	-	5/16-18	3/4"	<b>1.90</b>	<b>15.55</b>	<b>32.40</b>



## BLACK PHENOLIC — BAR KNOBS Bar Series, with Brass Insert or Steel Zinc Plated Stud

Part No.	Length	Height	Insert Thread	Depth of Tapped Hole	Thread	Stud Length	Each	Price	
								10	25
<b>B-BAR-1</b>	1-1/8"	3/4"	1/4-20	3/8"	-	-	<b>1.00</b>	<b>7.80</b>	<b>16.25</b>
<b>B-BAR-2</b>	1-1/8"	3/4"	-	-	1/4-20	3/4"	<b>1.00</b>	<b>7.80</b>	<b>16.25</b>
<b>B-BAR-3</b>	2"	1-1/8"	5/16-18	9/16"	-	-	<b>1.75</b>	<b>14.65</b>	<b>30.45</b>
<b>B-BAR-4</b>	2"	1-1/8"	-	-	5/16-18	3/4"	<b>1.35</b>	<b>11.30</b>	<b>23.50</b>



## BLACK PHENOLIC — POINTER KNOBS IK Series, with Steel Zinc Plated Insert

Pointer knobs are useful for electronic instrumentation and electrical equipment. All knobs have 1/4" plastic holes and are supplied with an 8-32 slotted set screw.

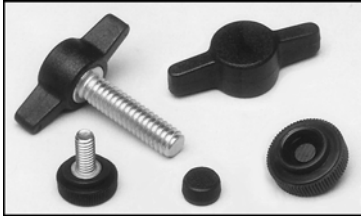
Part No	A	B	C	D	E	F	Depth of Tapped Hole	Set Screw	Each	Price	
										10	25
<b>B-IK-1</b>	3/4"	9/16"	13/32"	7/32"	1/4"	9/16"	15/32"	8-32	<b>1.40</b>	<b>11.60</b>	<b>24.10</b>
<b>B-IK-2</b>	1-1/8"	9/16"	1/2"	9/32"	1/4"	11/16"	1/2"	8-32	<b>1.00</b>	<b>8.25</b>	<b>17.20</b>
<b>B-IK-3</b>	1-1/2"	3/4"	5/8"	5/16"	1/4"	13/16"	5/8"	8-32	<b>2.05</b>	<b>17.20</b>	<b>35.80</b>



## POLYPROPYLENE — STAR KNOBS SK Series, with Steel Zinc Plated Insert

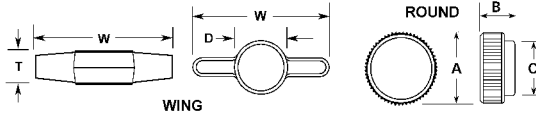
Part No.	Nominal Diameter	Height	Insert Thread	Configuration	Each	Price	
						10	25
<b>B-SK-1</b>	2-1/4"	23/32"	1/4-20	through hole	<b>1.05</b>	<b>8.65</b>	<b>18.00</b>
<b>B-SK-2</b>	3-1/2"	1-1/4"	3/8-16	through hole	<b>3.10</b>	<b>25.80</b>	<b>53.75</b>

## CAP SCREW KNOBS



Bolt not included.

These high quality knobs allow you to build your own Cap Screw Knob assemblies as you need them. They can be assembled by any device that provides a positive clamping force, such as a vise grip, bench vise, or arbor press. Just align the socket cap screw with the matching counterbore on the knob and press it on. Available in wing or round style. Color: Black.



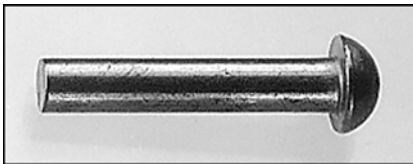
### WING — Nylon 6/6

Part No.	Fits Socket Cap Screws	W	Dimensions in Inches			Price	
			T	D	10	25	100
<b>B-TSK-10W</b>	#10-32	1	1/4	7/16	<b>2.70</b>	<b>5.60</b>	<b>18.70</b>
<b>B-TSK-14W</b>	1/4-20	1-17/64	11/32	17/32	<b>2.90</b>	<b>5.95</b>	<b>19.80</b>

### ROUND — Nylon 6/6

Part No.	Fits Socket Cap Screws	A	Dimensions in Inches			Price	
			B	C	10	25	100
<b>B-TSK-4</b>	#4-40	5/16	11/64	9/32	<b>2.10</b>	<b>4.35</b>	<b>14.50</b>
<b>B-TSK-6</b>	#6-32	3/8	13/64	21/64	<b>2.10</b>	<b>4.35</b>	<b>14.50</b>
<b>B-TSK-8</b>	#8-32	1/2	7/32	3/8	<b>2.10</b>	<b>4.35</b>	<b>14.50</b>
<b>B-TSK-10</b>	#10-32	21/32	1/4	27/64	<b>2.70</b>	<b>5.60</b>	<b>18.70</b>
<b>B-TSK-14</b>	1/4-20	1	21/64	1/2	<b>3.95</b>	<b>8.25</b>	<b>27.45</b>

## RIVETS — Copper



### COPPER SOLID RIVETS — Round Head

This type of rivet produces a formed shape when the solid end of the shank is headed over, hammered or spun. These small-diameter, commercially pure Copper Solid Rivets are a good choice when appearance, good electrical properties and corrosion resistance are important.

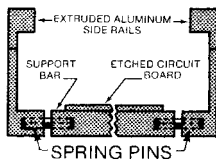
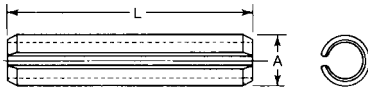
### COPPER

Part No.	Shaft Dia.	Length	Head		Price		
			Diameter	Height	50	100	500
<b>B-YCR-A6</b>	1/16"	3/8"	0.109"	0.047"	<b>2.90</b>	<b>4.80</b>	<b>19.85</b>
<b>B-YCR-A8</b>	1/16"	1/2"	0.109"	0.047"	<b>4.90</b>	<b>8.10</b>	<b>33.70</b>
<b>B-YCR-B4</b>	3/32"	1/4"	0.166"	0.071"	<b>3.25</b>	<b>5.40</b>	<b>22.40</b>
<b>B-YCR-B6</b>	3/32"	3/8"	0.166"	0.071"	<b>3.05</b>	<b>5.05</b>	<b>20.90</b>
<b>B-YCR-B8</b>	3/32"	1/2"	0.166"	0.071"	<b>4.60</b>	<b>7.60</b>	<b>31.60</b>
<b>B-YCR-B16</b>	3/32"	1"	0.166"	0.071"	<b>5.65</b>	<b>9.40</b>	<b>39.00</b>
<b>B-YCR-C6</b>	1/8"	3/8"	0.219"	0.094"	<b>4.80</b>	<b>8.00</b>	<b>33.20</b>
<b>B-YCR-C8</b>	1/8"	1/2"	0.219"	0.094"	<b>5.05</b>	<b>8.40</b>	<b>35.00</b>
<b>B-YCR-C12</b>	1/8"	3/4"	0.219"	0.094"	<b>6.85</b>	<b>11.40</b>	<b>47.45</b>
<b>B-YCR-E8</b>	3/16"	1/2"	0.327"	0.140"	<b>9.90</b>	<b>16.50</b>	<b>68.70</b>
<b>B-YCR-E12</b>	3/16"	3/4"	0.327"	0.140"	<b>10.60</b>	<b>17.65</b>	<b>73.55</b>
<b>B-YCR-E16</b>	3/16"	1"	0.327"	0.140"	<b>12.00</b>	<b>20.00</b>	<b>83.35</b>

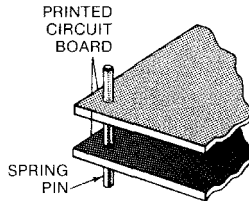
## SPRING PINS — Carbon Steel, Zinc Plated



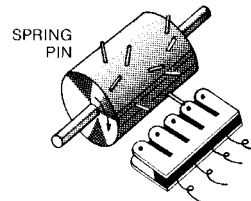
Also referred to as Roll, Tension and Expansion Pins. Hollow and slotted lengthwise to create tension, these self retaining Spring Pins are made of Carbon Steel. They are installed by two easy operations, just drill and drive. Useful for many purposes, including electrical connectors in patchboard circuits, terminals, fixtures for wire harness, actuators for drum, to secure pulley or gear to shaft, hinges, positioning, studs and many others. Superior to and used in place of drive pins, taper pins, collar pins, etc. They permit a wider hole tolerance because of the flexibility. Tapered ends make starting easy. See Pilot Punches on [page 335](#).



As support bars in electronic component models. Easily installed without close tolerance.



As a standoff



As drum mounted actuators to close electrical contacts in predetermined sequence.

### CARBON STEEL — Zinc Plated

PartNo.	O.D. A	Length L	Hole Size		10	Price	
			Min.	Max.		25	100
B-SPS-116-3	1/16"	3/16"	0.062"	0.065"	—	1.00	3.00
B-SPS-116-6	1/16"	3/8"	0.062"	0.065"	—	1.00	3.00
B-SPS-116-8	1/16"	1/2"	0.062"	0.065"	—	1.00	3.00
B-SPS-116-12	1/16"	3/4"	0.062"	0.065"	—	1.00	3.00
B-SPS-332-6	3/32"	3/8"	0.094"	0.097"	—	1.00	3.00
B-SPS-332-8	3/32"	1/2"	0.094"	0.097"	—	1.00	3.00
B-SPS-332-12	3/32"	3/4"	0.094"	0.097"	—	1.00	3.00
B-SPS-18-6	1/8"	3/8"	0.125"	0.129"	—	1.00	3.00
B-SPS-18-8	1/8"	1/2"	0.125"	0.129"	—	1.00	3.00
B-SPS-18-12	1/8"	3/4"	0.125"	0.129"	—	1.10	3.65
B-SPS-18-24	1/8"	1-1/2"	0.125"	0.129"	1.00	2.05	6.75
B-SPS-316-8	3/16"	1/2"	0.187"	0.192"	—	1.45	4.80
B-SPS-316-12	3/16"	3/4"	0.187"	0.192"	—	1.75	5.80
B-SPS-316-16	3/16"	1"	0.187"	0.192"	1.10	2.30	7.55
B-SPS-316-24	3/16"	1-1/2"	0.187"	0.192"	1.50	3.05	10.20
B-SPS-14-12	1/4"	3/4"	0.250"	0.256"	1.20	2.45	8.05
B-SPS-14-16	1/4"	1"	0.250"	0.256"	1.50	3.15	10.45
B-SPS-14-24	1/4"	1-1/2"	0.250"	0.256"	1.45	3.00	9.95
B-SPS-14-32	1/4"	2"	0.250"	0.256"	3.00	6.25	20.70

### ASSORTMENTS

B-SPS-100	Twenty five each size B-SPS-116-3 through B-SPS-18-24 — 275 pieces	17.05
B-SPS-200	Ten each size B-SPS-316-8 through B-SPS-14-32 — 80 pieces	16.05
B-SPS-300	Contains assortments B-SPS-100 and B-SPS-200 — 355 pieces	27.00

## DOWEL PINS — Stainless Steel



Dowel Pins also referred to as Parallel Pins, are commonly used to retain parts in a fixed position or to preserve alignment. Accurately ground to plus 0.0002", minus 0.0000" of the stated diameter and  $\pm 0.010$ " of the length, they are chamfered at both ends for easy insertion. A selection of sizes and lengths is a useful addition to the well-equipped shop or laboratory.

**Note:** Dowel Pins in Metric sizes have rounded edges. [See next page.](#)

### STAINLESS STEEL TYPE 18-8

Part No.	Size	Decimal	Length	Price		
				10	25	100
B-DWX-1-4	1/16"	0.0625"	1/4"	1.00	1.95	6.45
B-DWX-1-6	1/16"	0.0625"	3/8"	1.00	1.95	6.45
B-DWX-1-8	1/16"	0.0625"	1/2"	1.05	2.00	6.65
B-DWX-1-12	1/16"	0.0625"	3/4"	1.10	2.30	7.60
B-DWX-1-16	1/16"	0.0625"	1"	1.30	2.65	8.75
B-DWX-15-3	3/32"	0.0937"	3/16"	1.10	2.10	6.95
B-DWX-15-5	3/32"	0.0937"	5/16"	1.10	2.30	7.55
B-DWX-15-7	3/32"	0.0937"	7/16"	1.30	2.65	8.75
B-DWX-15-9	3/32"	0.0937"	9/16"	1.40	2.90	9.55
B-DWX-15-11	3/32"	0.0937"	11/16"	1.45	3.00	9.95
B-DWX-15-13	3/32"	0.0937"	13/16"	1.55	3.20	10.55
B-DWX-15-15	3/32"	0.0937"	15/16"	1.60	3.35	11.15
B-DWX-2-4	1/8"	0.1250"	1/4"	1.10	2.25	7.45
B-DWX-2-6	1/8"	0.1250"	3/8"	1.25	2.55	8.50
B-DWX-2-8	1/8"	0.1250"	1/2"	1.30	2.65	8.75
B-DWX-2-10	1/8"	0.1250"	5/8"	1.40	2.90	9.60
B-DWX-2-12	1/8"	0.1250"	3/4"	1.55	3.20	10.65
B-DWX-2-16	1/8"	0.1250"	1"	2.30	4.80	16.00
B-DWX-2-24	1/8"	0.1250"	1-1/2"	3.25	6.70	22.30
B-DWX-3-6	3/16"	0.1875"	3/8"	2.05	4.25	14.10
B-DWX-3-8	3/16"	0.1875"	1/2"	2.15	4.50	14.95
B-DWX-3-10	3/16"	0.1875"	5/8"	2.35	4.90	16.25
B-DWX-3-12	3/16"	0.1875"	3/4"	2.75	5.70	19.00
B-DWX-3-16	3/16"	0.1875"	1"	3.70	7.65	25.50
B-DWX-3-24	3/16"	0.1875"	1-1/2"	4.40	9.10	30.25
B-DWX-4-8	1/4"	0.2500"	1/2"	3.00	6.20	20.60
B-DWX-4-12	1/4"	0.2500"	3/4"	3.85	7.95	26.45
B-DWX-4-16	1/4"	0.2500"	1"	4.40	9.15	30.45
B-DWX-4-24	1/4"	0.2500"	1-1/2"	7.05	14.65	48.85
B-DWX-4-32	1/4"	0.2500"	2"	9.60	19.95	66.35
B-DWX-5-8	5/16"	0.3125"	1/2"	4.90	10.15	33.70
B-DWX-5-16	5/16"	0.3125"	1"	7.95	16.55	55.15
B-DWX-5-24	5/16"	0.3125"	1-1/2"	11.60	24.05	80.10
B-DWX-6-16	3/8"	0.3750"	1"	11.65	24.10	80.25
B-DWX-6-24	3/8"	0.3750"	1-1/2"	16.80	34.95	116.60
B-DWX-6-32	3/8"	0.3750"	2"	19.00	39.60	131.95

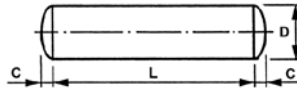
### ASSORTMENTS

B-DWX-100	Ten each size B-DWX-1-4 through B-DWX-2-24 — 190 pieces	30.50
B-DWX-150	Ten each size B-DWX-3-6 through B-DWX-6-32 — 170 pieces	111.60

## DOWEL PINS — Stainless Steel (cont.)

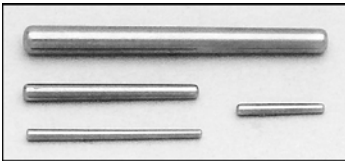
### METRIC

#### STAINLESS STEEL 18-8 — DIN 7



Part No.	Dimensions in Millimeters			Price		
	D	C	L	10	25	100
B-MDWX-1-05	1	0.15	5	1.80	3.70	12.25
B-MDWX-1-08	1	0.15	8	2.80	5.85	19.40
B-MDWX-1-12	1	0.15	12	3.10	6.45	21.50
B-MDWX-2-06	2	0.3	6	2.80	5.80	19.20
B-MDWX-2-10	2	0.3	10	3.05	6.30	21.00
B-MDWX-2-12	2	0.3	12	1.90	3.90	13.00
B-MDWX-2-14	2	0.3	14	2.00	4.15	13.75
B-MDWX-3-06	3	0.45	6	2.10	4.30	14.25
B-MDWX-3-10	3	0.45	10	2.25	4.60	15.25
B-MDWX-3-12	3	0.45	12	2.55	5.30	17.50
B-MDWX-3-16	3	0.45	16	2.65	5.50	18.25
B-MDWX-4-06	4	0.6	6	2.65	5.50	18.20
B-MDWX-4-10	4	0.6	10	3.40	7.05	23.50
B-MDWX-4-16	4	0.6	16	3.85	7.95	26.50
B-MDWX-4-18	4	0.6	18	4.25	8.85	29.50
B-MDWX-6-10	6	0.9	10	5.30	10.95	36.50
B-MDWX-6-12	6	0.9	12	5.75	11.95	39.75
B-MDWX-6-16	6	0.9	16	6.35	13.20	44.00
B-MDWX-6-20	6	0.9	20	7.65	15.90	53.00

## TAPER DOWEL PINS — Stainless Steel



Taper Dowel Pins can be used for plates, gauges and tools which require absolute alignment. They release easily, without galling, particularly in soft plate applications. Taper pins have a uniform taper over the pin length with both ends crowned. The major diameter of the large end is the basis for pin size. The diameter at the small end is computed by multiplying the nominal length of the pin by the factor 0.02083 and subtracting the result from the basic pin diameter. The taper of these pins is  $0.25 \pm 0.006$  per foot. See Taper Reamers on page 331.

#### STAINLESS STEEL 18-8

Part No.	Major Diameter × Length	Major Pin Diameter	Each	Price		
				10	25	100
B-DWXT-2708	7/0 × 1/2"	0.0625"	—	6.50	13.50	45.00
B-DWXT-2712	7/0 × 3/4"	0.0625"	1.30	10.65	22.10	73.55
B-DWXT-2716	7/0 × 1"	0.0625"	2.55	21.10	43.95	146.35
B-DWXT-4508	5/0 × 1/2"	0.0940"	—	4.70	9.75	31.85
B-DWXT-4512	5/0 × 3/4"	0.0940"	—	5.75	11.95	39.85
B-DWXT-4516	5/0 × 1"	0.0940"	—	6.60	13.70	45.65
B-DWXT-6312	3/0 × 3/4"	0.125"	—	5.75	11.95	39.70
B-DWXT-6316	3/0 × 1"	0.125"	—	6.15	12.75	42.50
B-DWXT-6324	3/0 × 1-1/2"	0.125"	1.60	13.30	27.70	92.20
B-DWXT-8012	0 × 3/4"	0.156"	1.00	8.30	17.30	57.60
B-DWXT-8016	0 × 1"	0.156"	1.20	9.85	20.50	68.25
B-DWXT-8028	0 × 1-3/4"	0.156"	3.00	24.75	51.55	171.75

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# COTTER AND HITCH PINS



**COTTER PINS**



## COTTER PINS — STAINLESS STEEL 18-8

Part No.	Diameter		Recommended Hole Size	Length	10	Price	
						25	100
B-CPX-132-4	1/32"	0.031"	3/64"	1/4"	—	1.25	3.50
B-CPX-132-8	1/32"	0.031"	3/64"	1/2"	—	1.25	3.50
B-CPX-132-12	1/32"	0.031"	3/64"	3/4"	—	1.25	3.50
B-CPX-364-4	3/64"	0.047"	1/16"	1/4"	—	1.25	3.50
B-CPX-364-8	3/64"	0.047"	1/16"	1/2"	—	1.25	3.50
B-CPX-364-12	3/64"	0.047"	1/16"	3/4"	—	1.25	3.50
B-CPX-364-16	3/64"	0.047"	1/16"	1"	—	1.30	3.95
B-CPX-564-8	5/64"	0.078"	3/32"	1/2"	—	1.40	4.60
B-CPX-564-12	5/64"	0.078"	3/32"	3/4"	—	1.80	5.95
B-CPX-564-16	5/64"	0.078"	3/32"	1"	1.05	2.20	7.35
B-CPX-564-20	5/64"	0.078"	3/32"	1-1/4"	1.30	2.65	8.75
B-CPX-764-8	7/64"	0.109"	1/8"	1/2"	—	2.05	6.85
B-CPX-764-12	7/64"	0.109"	1/8"	3/4"	1.25	2.60	8.60
B-CPX-764-16	7/64"	0.109"	1/8"	1"	1.55	3.20	10.65
B-CPX-764-24	7/64"	0.109"	1/8"	1-1/2"	2.15	4.45	14.75
B-CPX-964-12	9/64"	0.141"	5/32"	3/4"	2.10	4.40	14.65
B-CPX-964-16	9/64"	0.141"	5/32"	1"	2.45	5.10	16.95
B-CPX-964-20	9/64"	0.141"	5/32"	1-1/4"	2.80	5.80	19.25
B-CPX-964-24	9/64"	0.141"	5/32"	1-1/2"	3.15	6.50	21.55

## ASSORTMENTS

<b>B-CPX-100</b>	Contains 25 each B-CPX-132-4 through B-CPX-564-20 — 275 pcs.	21.30
<b>B-CPX-150</b>	Contains 25 each B-CPX-564-8 through B-CPX-964-24 — 300 pcs.	44.05
<b>B-CPX-300</b>	Contains assortments B-CPX-100 and B-CPX-150 — 575 pcs.	39.55

## HITCH PINS — STAINLESS STEEL TYPE 302

Part No.	Wire Diameter		Hole Size	Shaft Diameter.		Length	Price		
				Min.	Max.		25	100	
B-200005	3/64"	0.047"	1/16"	1/8"	3/16"	9/16"	3.25	6.75	22.40
B-200010	3/64"	0.047"	1/16"	3/16"	1/4"	1"	2.85	6.00	19.65
B-200015	3/32"	0.094"	7/64"	1/4"	1/2"	1-5/8"	4.10	8.55	28.45
B-200020	3/32"	0.094"	7/64"	3/8"	3/4"	2-1/2"	6.00	12.45	41.50
B-200025	1/8"	0.125"	9/64"	1/2"	3/4"	1-3/4"	7.15	14.90	49.60
B-200030	5/32"	0.156"	11/64"	5/8"	1"	2-15/16"	13.30	27.70	92.30
B-200035	3/16"	0.177"	13/64"	7/8"	1-1/4"	3-3/4"	23.00	47.90	159.70

## HITCH PINS — STEEL, ZINC PLATED

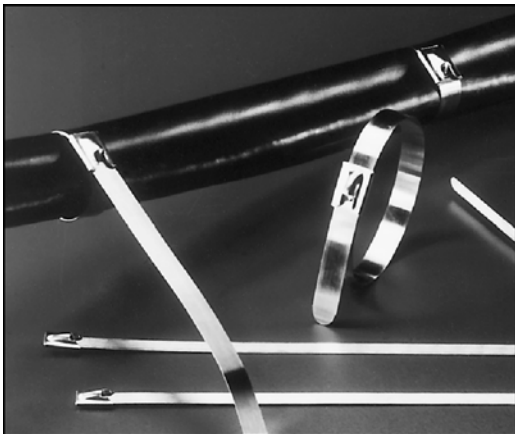
B-HPC-21	3/64"	0.047"	1/16"	1/8"	3/16"	9/16"	—	1.10	3.30
B-HPC-23	3/64"	0.047"	3/64"	3/16"	1/4"	1"	—	1.05	2.95
B-HPC-3	3/32"	0.094"	7/64"	1/4"	1/2"	1-5/8"	—	1.25	4.05
B-HPC-14	3/32"	0.094"	7/64"	3/8"	3/4"	2-1/2"	1.10	2.00	6.65
B-HPC-16	1/8"	0.125"	9/64"	1/2"	3/4"	1-3/4"	1.20	2.30	7.60
B-HPC-10	5/32"	0.156"	11/64"	5/8"	1"	2-15/16"	2.35	4.35	14.45
B-HPC-8	3/16"	0.187"	13/64"	7/8"	1-1/4"	3-3/4"	3.70	9.15	30.40

## ASSORTMENT — (Bulk with sizes not identified)

<b>B-200040</b>	Contains 10 each B-200040 thru B-200035 — 70 pcs.	54.75
<b>B-HPC-100</b>	Contains 10 each B-HPC-21 thru B-HPC-8 — 70 pcs.	15.65



## CABLE TIES — Stainless Steel



Securely anchor hoses, cables, poles, pipes and more, even in marine environments or other harsh conditions. Fully adjustable, self-locking Type 316 Stainless Steel Cable Ties are nonmagnetic and can be used indoors, outdoors, and underground — anywhere corrosion, vibration, weathering, radiation and temperature extremes are of concern. Strong and reliable, Cable Ties resist up to 100 pounds of unlocking force. Low profile one-piece clamps have smooth, rounded edges for safe, efficient handling and withstand temperatures from  $-112^{\circ}$  to  $1000^{\circ}\text{F}$  ( $-80^{\circ}$  to  $538^{\circ}\text{C}$ ). Available in sizes to accommodate bundle diameters up to 2", 4", or 6".

### STAINLESS STEEL TYPE 316

Part No.	Maximum Bundle Diameter	Length	Width	Each	Price	
					10	25
<b>B-STXX-32</b>	2"	7.9"	0.18"	<b>1.40</b>	<b>11.55</b>	<b>24.00</b>
<b>B-STXX-48</b>	4"	14.2"	0.18"	<b>1.75</b>	<b>14.30</b>	<b>29.75</b>
<b>B-STXX-96</b>	6"	20.4"	0.18"	<b>2.60</b>	<b>21.50</b>	<b>44.75</b>

## SPIRAL BUNDLING WRAP



Quickly wrap or bundle hoses, tubes, wires and other conductors, during or after assembly. Flexible spirals twist to the tightness you need for rigidity or maximum resistance to moisture and chemicals; or stretch it out for light duty or more economical installation. Easy to cut polyethylene protects against abrasion, is fire resistant and self-extinguishing. Transparent white. An assembly tool is included with each order.

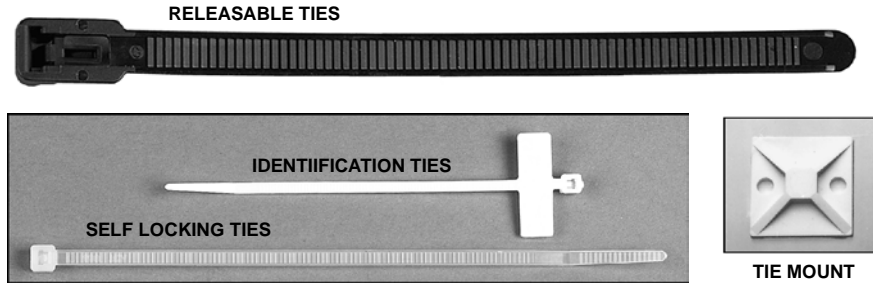
***Be sure to specify length by adding appropriate suffix to part number.***

### POLYETHYLENE

Order Example: **B-SW-062/8-B** is 1/2" O.D. × 50 feet long

Part No.	Outside Diameter	Wall Thickness	Bundle Range	Price	
				-A 25 ft.	-B 50 ft.
<b>B-SW-032/2</b>	1/8"	0.032"	1/16" to 1/4"	<b>3.10</b>	<b>5.15</b>
<b>B-SW-040/4</b>	1/4"	0.040"	3/16" to 2"	<b>5.15</b>	<b>8.60</b>
<b>B-SW-040/8</b>	1/2"	0.040"	3/8" to 4"	<b>7.55</b>	<b>12.55</b>
<b>B-SW-062/8</b>	1/2"	0.062"	3/8" to 4"	<b>9.65</b>	<b>16.10</b>

# CABLE TIES — Nylon



## RELEASABLE NYLON TIES

A practical alternative for applications that require the addition or removal of wires during service work or prototype construction, these Hellerman Tyton® ties may be released by a simple pressure of the thumb against the latch and tightened again for re-use as needed. Ties are a one-piece molded design of black Nylon 6/6.

### RELEASABLE — Nylon 6/6 (Black)

Part No.	Length	Max. Bundle Diameter	Min. Tensile Strength	Price			
				10	25	100	1000
<b>B-RTN-50R</b>	5-1/2"	1-3/8"	50 lbs.	<b>3.65</b>	<b>7.55</b>	<b>25.20</b>	<b>210.00</b>
<b>B-RTN-50L</b>	10"	2-3/4"	50 lbs.	<b>4.15</b>	<b>8.65</b>	<b>28.75</b>	<b>239.40</b>

## SELF LOCKING NYLON TIES

Wire bundles and cables stay harnessed securely with these Nylon 6/6 ties from TYTON® Corp. Gradually tapered grip-tip tails insert smoothly into the patented, self-locking heads. Uniform serrations along the length of the ties permit total pull-through, ready for final tensioning and cut-off to make a neat, secure harness. Fungus-inert, self-extinguishing 6/6 Nylon remains serviceable from -40° to 185°F. These ties meet all applicable military specifications, are QPL listed and UL recognized under File #E64139. The color is natural. Mil-S-23190E (Type 1, Close1). One-piece design.

### SELF LOCKING — Nylon 6/6 (Natural)

Part No.	Length	Max. Bundle Diameter	Min. Tensile Strength	Price			
				10	25	100	1000
<b>B-STN-18R</b>	4"	3/4"	18	—	<b>1.70</b>	<b>5.55</b>	<b>44.40</b>
<b>B-STN-30R</b>	6"	1-1/4"	30	<b>1.55</b>	<b>3.25</b>	<b>10.70</b>	<b>85.60</b>
<b>B-STN-50R</b>	8"	1-3/4"	50	<b>2.35</b>	<b>4.85</b>	<b>16.05</b>	<b>128.40</b>
<b>B-STN-18L</b>	8"	2"	18	<b>1.30</b>	<b>2.70</b>	<b>8.95</b>	<b>71.60</b>
<b>B-STN-30L</b>	14-1/2"	4"	30	<b>4.45</b>	<b>9.30</b>	<b>31.00</b>	<b>248.00</b>
<b>B-STN-50L</b>	15-1/2"	4"	50	<b>6.20</b>	<b>12.90</b>	<b>43.00</b>	<b>344.00</b>

## IDENTIFICATION SELF LOCKING NYLON TIES

Another handy Hellerman Tyton® product to harness and identify bundles of cable in one operation. Large flat area for imprinting or writing the required identification. Nylon 6/6. Gov't designation MIL-S-23190E (Type II, Class I).

### IDENTIFICATION SELF LOCKING — Nylon 6/6 (Natural Opaque)

Part No.	Width	Length	Max. Bundle Diameter	Min. Tensile Strength	Price			
					10	25	100	1000
<b>B-ITN-18R</b>	0.10"	4"	3/4"	18 lbs.	<b>2.75</b>	<b>5.70</b>	<b>19.00</b>	<b>152.00</b>

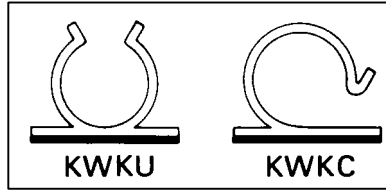
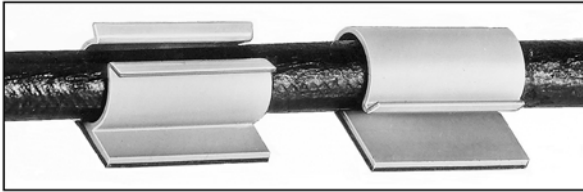
## TIE MOUNT — NYLON

Made of Nylon 6/6, these adhesive-backed mounts assure firm and rapid application. Screw holes size #8 facilitate mechanical mounting for extra holding power. Insertion of ties can be made from all four sides.

### TIE MOUNT — Nylon 6/6 (White)

Part No.	Base Size	Tie Size	Price			
			10	25	100	1000
<b>B-TMN-3A</b>	3/4" sq.	STN-18R	<b>5.45</b>	<b>11.30</b>	<b>37.55</b>	<b>300.20</b>
<b>B-TMN-4A</b>	1-1/8" sq.	STN-30R	<b>7.05</b>	<b>15.20</b>	<b>50.55</b>	<b>404.40</b>

## CABLE CLAMPS

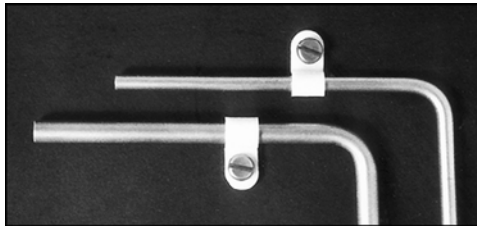
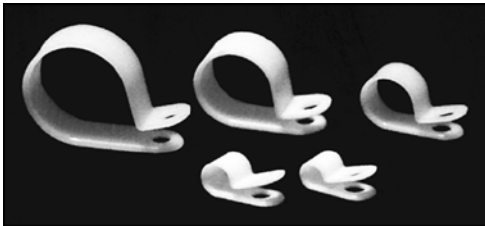


### PVC CABLE CLAMPS — Clip Type

These handy clamps are provided with adhesive backing that assures fast sure mounting on any clean, smooth surface. Just strip off the backing and press into place. Made from strong but resilient PVC plastic — elastic enough to receive cable, tubing, or rod up to 3/4" diameter and firm enough to hold it securely.

### PVC (Polyvinylchloride)

Part No.	Loop Size	Length	Base Width	Clip Style	Price		
					10	25	100
B-KWKU-2	1/8"	3/4"	3/4"	U	4.75	9.90	33.00
B-KWKU-4	1/4"	3/4"	3/4"	U	5.80	12.05	40.20
B-KWKU-6	3/8"	3/4"	3/4"	U	6.70	13.90	46.25
B-KWKU-8	1/2"	1"	1"	U	9.50	19.75	65.85
B-KWKU-12	3/4"	1"	1"	U	14.10	29.35	97.85
B-KWKC-2	1/8"	3/4"	3/4"	C	5.35	11.10	36.90
B-KWKC-4	1/4"	3/4"	3/4"	C	6.60	13.70	45.65
B-KWKC-6	3/8"	3/4"	3/4"	C	7.40	15.35	51.05
B-KWKC-8	1/2"	1"	1"	C	9.40	19.55	65.15
B-KWKC-12	3/4"	1"	1"	C	15.10	31.45	104.75



### NYLON CABLE CLAMPS

These clamps are designed specifically to secure cable, wire, tubing, and rods. Provides for a neat, installation with all the advantages of nylon. For long life, shield from direct sunlight. Color: Natural. Hole Size: .203, Screw Size: #10.

### NYLON

Part No.	Loop Size	Center of Loop to Screw	Width	Thickness	Price			
					10	25	100	1000
B-CCN-2	1/8"	21/64"	3/8"	1/16"	—	1.70	5.55	46.20
B-CCN-3	3/16"	25/64"	3/8"	1/16"	—	1.75	5.70	47.20
B-CCN-4	1/4"	27/64"	3/8"	1/16"	—	1.75	5.75	47.60
B-CCN-6	3/8"	31/64"	1/2"	1/16"	—	1.75	5.80	48.00
B-CCN-8	1/2"	9/16"	3/8"	1/16"	—	1.80	5.90	49.00
B-CCN-10	5/8"	5/8"	1/2"	1/16"	1.15	2.35	7.75	64.60
B-CCN-12	3/4"	49/64"	1/2"	1/16"	2.05	4.30	14.25	118.60
B-CCN-16	1"	29/32"	1/2"	1/16"	2.45	5.10	17.00	141.40



## THREADLOCKERS

### LOCTITE 222 — LOW STRENGTH (B-AL-TL-10)

Use Loctite 222 where occasional adjustments of small fasteners may be required. Small hand tools can be used to overcome the adhesive seal. Best for 1/4" and smaller fasteners. Temp. range: -65° to 300°F (-54° to 149°C).

### LOCTITE 242 — MEDIUM STRENGTH (B-AL-TM-10, B-AL-TM-50)

Make ordinary nuts vibration-proof! Loctite 242 holds bolts and cap screws securely, while sealing out air and moisture, thus preventing wear and corrosion. Nuts can be removed with ordinary hand tools. Temp. range: -65° to 300°F (-54° to 149°C).

### LOCTITE 262 — HIGH STRENGTH (B-AL-TH-10)

Loctite 262 helps you permanently anchor studs, cylindrical parts, bearings and bushings. Replace shaft locking devices such as keyways and splines. Provides greater break-loose torque than Class 5 Interference fits. Seals against leakage and corrosion; unaffected by liquid fuels, lubricants and most chemicals. Temp. range: -65° to 300°F (-54° to 149°C).

### LOCTITE 271 — HIGH STRENGTH (B-AL-271-50)

Loctite 271 is a high strength adhesive for larger fasteners up to 1" in diameter. It is used with marine engine studs, automotive suspension bolts, pump fasteners and with other heavy duty bolt applications. Temp. range: -65° to 300°F (-54° to 149°C).

### LOCTITE 290 — MEDIUM STRENGTH (B-AL-W-10)

This capillary sealant locks and seals fasteners without disassembly. Loctite 290 uses a "wicking" action to penetrate nonvisible spaces and pores, then hardens into a solvent-resistant structural seal. Makes adjustment screws and set screws tamper-proof. Temp. range: -65° to 300°F (-54° to 149°C).



## RAPID ADHESIVES

### *Surface Insensitive:*

These adhesives create strong bonds on a variety of difficult-to-bond substrates including rough, porous and acidic surfaces. Temp. range: -65° to 180°F (-54° to 82°C).

### LOCTITE 401 (B-AL-IS-01)

Loctite 401 is a general purpose instant adhesive.

### LOCTITE 454 (B-AL-IS-03, B-AL-IS-20)

Loctite 454 is a general purpose nonflowing gel adhesive, suitable for porous substrates.

### *Toughened:*

Combines shear strength with excellent peel and impact resistance. These adhesives are designed for high stress, temperature, humidity, vibration and impact applications. Good gap filling ability. Temp. range: -65° to 223°F (-54° to 106°C).

### LOCTITE 410 AND LOCTITE 380 (B-AL-IT-11, B-AL-IT-12)

Use Loctite 410 or Loctite 380 for bonding metal, rubber and plastics. Excellent peel, impact and tensile shear strength.

# LOCTITE® — Adhesives, Sealants and Bonders (cont.)



## Super Bonders:

These adhesives contain no solvents and are nonflammable.

### LOCTITE 404 (B-AL-404-033)

Loctite 404 quickly bonds rubber parts such as O-rings and belts. Fills gaps to .005". Temp. range: -65° to 180°F (-54° to 82°C).

### LOCTITE 430 (B-AL-IB-32)

Especially effective on metallic surfaces, Loctite 430 fills gaps to .005". Temp. range: -65° to 180°F (-54° to 82°C).

### LOCTITE 495 (B-AL-IB-34, B-AL-IB-100)

Loctite 495 bonds rubber, metal and plastic parts with gaps to .004". Temp. range: -65° to 180°F (-54° to 82°C).

### LOCTITE 498 (B-AL-IB-35)

Loctite 498 is a thermal cycling adhesive that resists continuous temperatures up to 223°F (106°C), intermittent to 250°F (121°C). Temp. range: -40° to 223°F (-40° to 106°C).

## RETAINING COMPOUND

### LOCTITE 609 (B-AL-RC-50)

Loctite 609 augments the strength of press-fitted assemblies and can be used on slip fits up to 0.005" diameter clearance. Great for spindle bearings, lip seals, and bearing races. Temp. range: -65° to 300°F (-54° to 149°C).

## SEALANTS

### LOCTITE 567 — PIPE SEALANT WITH TEFLON (B-AL-PS-50, B-AL-PS-060)

Loctite 567 seals threaded pipe and fittings instantly, then slowly hard-cures to form an insoluble seal which exceeds the pressure rating of all sized pipes. Lubricates threads during assembly and permits accurate positioning of elbow, valve and gauges before setting. Excellent chemical resistance. Temp. range: -65° to 400°F (-54° to 204°C).

Part No.	LOCTITE No.	Curing Times		Size	Color	Price Each
		Partial	Full			
B-AL-TL-10	222	30-60 min	24 hrs	10 ml	Purple	12.30
B-AL-TM-10	242	20 min	6 hrs	10 ml	Blue	12.60
B-AL-TM-50	242	20 min	6 hrs	50 ml	Blue	34.25
B-AL-TH-10	262	10 min	1-2 hrs	10 ml	Red	12.60
B-AL-271-50	271	20 min	24 hrs	50 ml	Red	34.25
B-AL-W-10	290	10 min	1-2 hrs	10 ml	Green	12.60
B-AL-PS-50	567	12-24 hrs	48 hrs	50 ml	White	18.05
B-AL-PS-060	567	12-24 hrs	48 hrs	6 ml	White	5.30
B-AL-RC-50	609	10 min	24 hrs	10 ml	Green	12.60
B-AL-IS-01	401	20 sec	24 hrs	3 gr.	Clear	5.20
B-AL-IS-03	454	15-90 sec	24 hrs	3 gr.	Clear	5.20
B-AL-IS-20	454	15-90 sec	24 hrs	20 gr.	Clear	21.10
B-AL-IT-11	410	2-3 min	120 hrs	20 gr.	Black	21.70
B-AL-IT-12	380	2-3 min	120 hrs	3 gr.	Black	5.20
B-AL-404-033	404	20-40 sec	24 hrs	1/3 oz.	Clear	22.25
B-AL-IB-32	430	20-40 sec	24 hrs	3 gr.	Clear	3.90
B-AL-IB-34	495	20-40 sec	24 hrs	3 gr.	Clear	3.80
B-AL-IB-100	495	20-40 sec	24 hrs	1 oz.	Clear	19.30
B-AL-IB-35	498	30-60 sec	24 hrs	1 oz.	Clear	21.20

## TAPE — Teflon® Thread Sealant

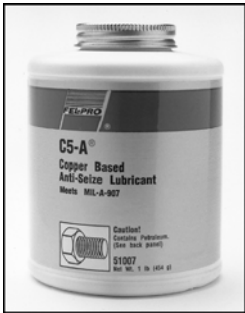


### TEFLON® — DuPont

This thread seal tape creates a positive seal on threaded connections. Tape has strong chemical resistance to alkalies, acids and solvents. Temperature range is -400° to +500°F. Color is white. Meets Mil Spec. T 27730 A for higher performance applications.

**B-TTST-08** Width: 1/2" — Length: 520" ..... **2.50**

## LUBRICANTS — Anti-Seize

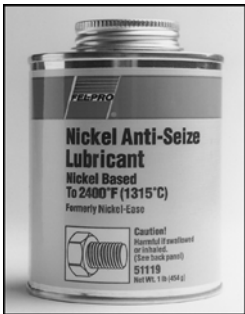


### COPPER BASED ANTI-SEIZE LUBRICANT

Protect nuts, bolts, studs, fittings, shafts and machine surfaces against the effects of high temperatures, heavy loads, chemicals and vibration. This industrial grade formula suspends copper and graphite in a high quality grease to protect metal parts from rust, corrosion, galling and seizing. Also recommended for fittings on steam turbines, pumps, valves, flanges, extruders and dies, this general purpose metal lubricant protects to 1800°F (982°C). It has good electrical conductivity and works effectively with aluminum, with other soft metals, and with stainless steel. Supplied in a brush-top can.

**B-ASL-C08** Can - 8 oz. .... **12.40**

**B-ASL-C16** Can - 16 oz. .... **19.90**

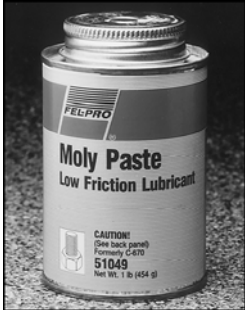


### NICKEL ANTI-SEIZE LUBRICANT — Copper Free

Extremely resistant to high temperatures and to acids, chemical corrosion and oxidation, this premium nickel/graphite lubricant is free of copper, lead, sulfides, fluorides, and chlorides. Nickel Anti-Seize is recommended for use with stainless steel screws, flanges, nozzles, couplings and other metal fittings. This inert lubricant is electrically conductive, protects to 2400°F (1315°C), and won't poison catalyst beds or reaction chambers. Typical applications include use in chemical plants, oil refineries and in water and sewage plants. Brush-top can.

**B-ASL-N08** Can - 8 oz. .... **21.05**

**B-ASL-N16** Can - 16 oz. .... **31.05**



### MOLY PASTE — Low Friction Lubricant

Protect your equipment during the break-in phase and under high static or slow moving loads. High performance Moly Paste allows maximum clamping from available torque and stays in place through heat, load and vibration to ensure trouble-free disassembly, even in press-fit applications. An excellent choice for stainless steel components, this copper-free formula contains 67% molybdenum disulfide in a high quality grease that provides maximum lubrication at high temperatures, to 750°F (399°C). USDA authorized. Brush-top can.

**B-ASL-M08** Can - 8 oz. .... **24.45**

**B-ASL-M16** Can - 16 oz. .... **38.85**

# LUBRICANTS, SEALANTS AND ADHESIVES



SL-3451



SL-0748



SL-3451

## NONCORROSIVE SEALANT

This general purpose noncorrosive silicone sealant is particularly recommended for electrical sealing applications, or anywhere corrosion may be a problem. It will not stain or corrode copper or other sensitive surfaces.

**B-SL-0748** Tube — 3 fl. oz. . . . . **8.50**

## CHEMICAL RESISTANT BEARING GREASE

Use this anti-friction lubricant for bearings that are exposed to wear under heavy loads, high speeds, high temperatures, or harsh environments.

**B-SL-3451** Tube — 3 fl. oz. . . . . **40.00**

## METAL ASSEMBLY LUBRICATING SPRAY\*

Reduce wear on parts during breaking-in and new parts assembly. Lubricating Spray also reduces galling and seizing. Applications include: cutting, shearing, drills and taps, metal-to-metal lubrication, threaded connections, metal forming, splines and shafts. Contains no ozone depleting chemicals. Contents under pressure.

**B-SL-GN11** Aerosol can — 11 oz. . . . . **22.75**

\* Hazardous Material. Shipped FOB Ground, Miami Lakes, FL.

A Hazardous Materials charge of \$15 for each line item ordered will be added to FOB shipping charges.

## SPECIFICATIONS

Part No.	Temperature Range		Cure Time		Color
	°F	°C	Tack-Free @77°F	Full @ 77°F	
<b>B-SL-0748</b>	-67 to +350	-55 to +177	30 min	36 hrs	White
<b>B-SL-3451</b>	-40 to +450	-40 to +232	N/A	N/A	Milky
<b>B-SL-GN11</b>	0 to +250	-18 to +121	N/A	N/A	Gray



## EPOXY — CLEAR FAST SETTING

Z-Poxy™ 5-Minute and 30-Minute formula Pacer's Z-Poxy is a clear two-part resin/hardener system. The resin is epoxy based and the hardener contains amine resin. Both the five and thirty minute formulations permanently bond fiberglass, metal, wood, plastics and other materials. Z-Poxy is non-shrinking and has excellent gap filling characteristics. They are highly resistant to shock and solvents. Uncured excess may be cleaned up with denatured alcohol and it is easily sanded when cured.

**B-EPX-PT37** 5-Minute System — 4oz . . . . . **10.95**

**B-EPX-PT38** 5-Minute System — 8oz . . . . . **14.95**

**B-EPX-PT39** 30-Minute System — 8oz . . . . . **14.95**



## EPOXY — GENERAL PURPOSE ADHESIVE

This popular General Purpose Adhesive Epoxy combines low toxicity with good physical properties. It can be used to bond our VTE series Teflon Sheet (etched side only. See page 79). This two-tube adhesive has a noncritical mixing ratio with 1:1 used most frequently. The two components are of different colors (dark brown and light gray), providing a visual indication of proper and complete mixing. When the epoxy blend has cured, the final color is brown. 2.5-ounce volume in each tube. Room temperature cure. Useful in a broad range of applications for high strength bonding of ceramics, glass, plastic laminates, hard rubber, al metals, woods, thermosetting plastics and many thermoplastics.

Maximum work life, 77°F: 90 min. Optimum cure schedule: 2 hrs. at 165°F. Fast cure: 5 min. at 300°F. Hardness: 70 Shore D. Glass transition temp.: 140°F.

**B-EPX-12C** Two-tube set . . . **28.65**



### **TEFLON COATED FIBERGLASS — Tape and Fabric**

A strong Fiberglass substrate coated with non-stick PTFE (Polytetrafluoroethylene) resists high temperatures, chemicals, moisture and abrasion, with excellent dimensional stability. Used in electronics, packaging, chemical processing, and automotive industries, tape has a non-conductive, pressure-sensitive Silicone adhesive that withstands temperatures from -100° to 500°F (-74° to 260°C). Clean-release adhesive. Use PTFE Coated Fiberglass Fabric for non-adhesive applications in temperatures to 550°F (288°C). Dielectric Strength for Tapes: 2500 Volts - 3 mil / 5500 Volts - 10 mil. Color: Natural Brown.

### **CONFORMABLE TEFLON — Silicone Adhesive**

This is a tough, high-density tape used in electrical products (coil wraps, separators, transformers, slot liners, harness wrapping), and in mechanical applications that require low friction and/or heat-resistant surfaces, like guide rail linings, die forming, mold release cable wrap, and roller wrapping. Known as "skived" Teflon, pure PTFE (Polytetrafluoroethylene), has a non-stick, high slip, chemical, moisture, and temperature resistant surface and excellent conformability with 100% elongation. Clean-release Silicone adhesive withstands temperatures of -100° to 500°F (-74° to 260°C). Dielectric Strength: 10,000 Volts. Self-wound, no liner. Color: Brown.

### **“SUPER SLICK / SUPER TOUGH” POLYETHYLENE UHMW — Rubber Adhesive**

Ultra-High Molecular Weight Polyethylene backed with 5 mil thick high-tack Rubber adhesive make this tape super tough, and it offers the same non-stick, low co-efficient of friction as Teflon. It reduces noise and friction with high resistance to punctures and abrasion. Applications include chute linings, sound dampening components, slides, and use in packaging systems. FDA approved. Temperature range: 0° to 150°F (-18° to 65°C). Color: Translucent White.

### **POLYIMIDE KAPTON® — Silicone Adhesive**

Superior insulating strength, high abrasion and temperature resistance. Excellent for wrapping and splicing wires and cables, and for masking wave soldering printed circuit boards, or as a high temperature mask for powder coating. Temperature range: -100° to 500°F (-73° to 260°C). Dielectric Strength: 6,800 Volts Single / 7,500 Volts Double. Color: Copper.

### **OPTICALLY CLEAR TEFLON® — Silicone Adhesive**

Exceptional electrical properties and chemical resistance in a non-yellowing, optically clear tape used as primary insulation on motors, coils and transformers; capacitors and cable terminations. Teflon FEP (Fluorinated Ethylene-Propylene) non-yellowing tape also serves as protective overlay for cables and harnesses and as clear protection over printed surfaces, bar code sensors, etc. Dielectric Strength: 8,500 Volts. Temperature range: -100° to 400°F (-73° to 204°C). Color: Clear.

### **HIGH TEMPERATURE FIBERGLASS CLOTH TAPE — Silicone Adhesive**

Durable woven Fiberglass with Silicone adhesive makes a tough, temperature resistant overwrap for motor rewinds, wires and cables. Or use as masking in welding, plasma spraying, and grit blasting operations. Temperature range: -100° to 500°F (-73° to 260°C). Dielectric Strength: 3,500 Volts. Meets MIL-I-19666C. Color: Ivory.

### **CONDUCTIVE GRADE PTFE COATED FIBERGLASS — Silicone Adhesive**

This high-strength Conductive Grade tape resists wear, tear, cut through, breaking and flow under heat and pressure. Fiberglass fabric coated with PTFE (Polytetrafluoroethylene) and backed with 2 mils of Silicone adhesive withstands continuous use temperatures up to 500°F (260°C) and is used in diverse industrial applications requiring release properties, static dissipative performance, and resistance to chemicals and environmental conditions. Color: Black.



## TAPE, HIGH PERFORMANCE (cont.)

### TEFLON COATED FIBERGLASS TAPE — Silicone Adhesive

Part No.	Width	Thickness		3 Yards	Price Each Roll	
		Backing	Adhesive		6 yards	18 Yards
<b>B-HTT-210308</b>	1/2"	3 mil	2 mil	<b>3.10</b>	<b>4.55</b>	<b>11.35</b>
<b>B-HTT-210316</b>	1"	3 mil	2 mil	<b>5.25</b>	<b>8.75</b>	<b>21.95</b>
<b>B-HTT-210332</b>	2"	3 mil	2 mil	<b>10.35</b>	<b>17.25</b>	<b>43.05</b>
<b>B-HTT-211008</b>	1/2"	10 mil	2 mil	<b>6.15</b>	<b>10.20</b>	<b>25.50</b>
<b>B-HTT-211016</b>	1"	10 mil	2 mil	<b>11.75</b>	<b>19.45</b>	<b>48.65</b>

### TEFLON COATED FIBERGLASS FABRIC — No Adhesive

Part No.	Width	Thickness		3 Yards	Price Each Roll	
		Backing	Adhesive		6 yards	18 Yards
<b>B-HTT-520324</b>	1-1/2"	3 mil	None	<b>9.25</b>	<b>15.35</b>	<b>38.40</b>

### COMFORMABLE TEFLON — Silicone Adhesive

Part No.	Width	Thickness		3 Yards	Price Each Roll	
		Backing	Adhesive		6 yards	36 Yards
<b>B-HTT-150208</b>	1/2"	2 mil	2 mil	—	—	<b>20.80</b>
<b>B-HTT-150216</b>	1"	2 mil	2 mil	—	—	<b>40.75</b>

### “SUPER SLICK / SUPER TOUGH” POLYETHYLENE UHMW — Rubber Adhesive

Part No.	Width	Thickness		3 Yards	Price Each Roll	
		Backing	Adhesive		6 yards	18 Yards
<b>B-HTT-190516</b>	1"	5 mil	5 mil	<b>4.15</b>	<b>6.90</b>	<b>17.25</b>
<b>B-HTT-190532</b>	2"	5 mil	5 mil	<b>8.10</b>	<b>13.45</b>	<b>33.65</b>

### POLYIMIDE KAPTON® — Silicone Adhesive

Part No.	Width	Thickness		3 Yards	Price Each Roll		
		Backing	Adhesive		6 yards	36 Yards	
<b>B-HTT-180108</b>	1/2"	Single Side	1 mil	2 mil	<b>1.95</b>	<b>3.25</b>	<b>15.90</b>
<b>B-HTT-180116</b>	1"	Single Side	1 mil	2 mil	<b>3.90</b>	<b>6.50</b>	<b>32.50</b>
<b>B-HTT-181008</b>	1/2"	Double Side	1 mil	2 mil	<b>5.40</b>	<b>9.00</b>	<b>45.00</b>
<b>B-HTT-181016</b>	1"	Double Side	1 mil	2 mil	<b>10.55</b>	<b>17.60</b>	<b>87.95</b>

### OPTICALLY CLEAR TEFLON® — Silicone Adhesive

Part No.	Width	Thickness		3 Yards	Price Each Roll	
		Backing	Adhesive		5 yards	
<b>B-HTT-230216</b>	1"	2 mil	2 mil	—	—	<b>15.95</b>

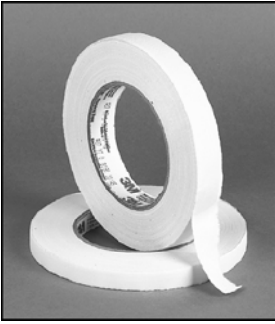
### HIGH TEMPERATURE FIBERGLASS CLOTH TAPE — Silicone Adhesive

Part No.	Width	Thickness		3 Yards	Price Each Roll		
		Backing	Adhesive		6 yards	36 Yards	
<b>B-HTT-170408</b>	1/2"	Single Side	4 mil	4.5 mil	<b>2.05</b>	<b>3.35</b>	<b>16.80</b>
<b>B-HTT-170416</b>	1"	Single Side	4 mil	4.5 mil	<b>3.95</b>	<b>6.65</b>	<b>33.05</b>
<b>B-HTT-174508</b>	1/2"	Double Side	4 mil	3 mil	<b>2.05</b>	<b>3.45</b>	<b>17.20</b>
<b>B-HTT-174516</b>	1"	Double Side	4 mil	3 mil	<b>4.05</b>	<b>6.70</b>	<b>33.45</b>

### CONDUCTIVE GRADE PTFE COATED FIBERGLASS — Silicone Adhesive

Part No.	Width	Thickness		3 Yards	Price Each Roll	
		Backing	Adhesive		6 yards	36 Yards
<b>B-HTT-200516</b>	1"	5 mil	2 mil	<b>9.80</b>	<b>16.35</b>	<b>40.80</b>

## TAPE — Insulating



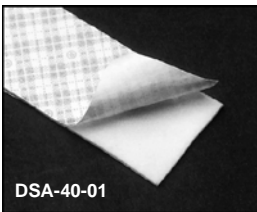
### HIGH TEMPERATURE INSULATING TAPE

Thermosetting, heat-stable insulation for motor leads, switches, furnace and oven controls. This woven insulating Glass Cloth tape won't shrink, rot or burn, and it's corrosion resistant. High mechanical strength and heat resistance rated to 266°F° (130°C). Tensile Strength: 150 pounds/inch. Dielectric breakdown/volts: 3,000. Thickness: 7 mil. Meets MIL-I-15126F.

### SCOTCH® 27 — High Temperature Glass Cloth

Part No.	Width	Feet per Roll	Price Per Roll
<b>B-ECT-04</b>	1/4"	180	<b>8.00</b>
<b>B-ECT-08</b>	1/2"	180	<b>16.00</b>
<b>B-ECT-16</b>	1"	180	<b>32.00</b>

## ADHESIVES — General Purpose



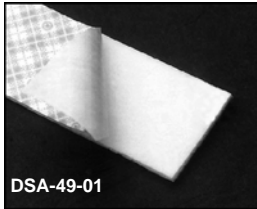
DSA-40-01

### DOUBLE SIDED URETHANE FOAM — A-20 Acrylic Adhesive

This high density Foam Tape has long-aging acrylic adhesive on both sides. Its A-20 designation rates its ultimate bond strength very high, with good initial peel strength. A good choice for a variety of mounting and holding jobs, for reducing vibration transmission and for providing thermal insulation. Tape can be applied to most clean, dry surfaces including smooth or rough.

- Thickness: 0.032" (0.08mm), Density: 20.0 lb/ft<sup>3</sup> (320 kg/m<sup>3</sup>)

**B-DSA-40-01** Foam Tape — 1" × 12" ..... **1.90**



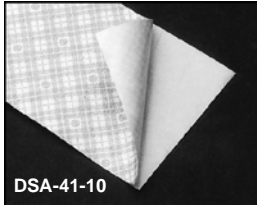
DSA-49-01

### DOUBLE SIDED ACRYLIC FOAM — A-30 Acrylic Adhesive

White closed cell acrylic Foam Tape provides high strength, long-aging acrylic adhesive on both sides. This A-30 Acrylic tape features excellent immediate tack and the highest peel strength in a pressure sensitive system. Industrial assembly applications of double coated acrylic tapes provide an alternative to mechanical fasteners and liquid adhesives.

- Thickness: 0.045" (1.14mm), Density: 50.0 lb/ft<sup>3</sup> (800 kg/m<sup>3</sup>)

**B-DSA-49-01** Foam Tape — 1" × 12" ..... **2.50**



DSA-41-10

### DOUBLE SIDED PAPER — R-50 Rubber Adhesive

Coated on both sides with a high shear adhesive, this paper tissue tape provides an exceedingly high level of adhesion to most clean, smooth surfaces. Can be used to hold non-magnetic parts for machining applications.

- Total Thickness: 0.009" (0.23mm), Tape Thickness: 0.005" (0.13mm)

Adhesion to Steel: 50 oz/in.

**B-DSA-41-10** 2" wide × 10' rolls ..... **18.00**



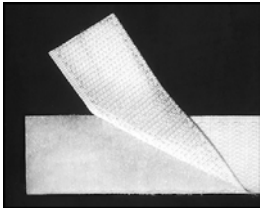
### EPOXY — GENERAL PURPOSE ADHESIVE

This popular General Purpose Adhesive Epoxy combines low toxicity with good physical properties. This two-tube adhesive has a noncritical mixing ratio with 1:1 used most frequently. The two components are of different colors (dark brown and light gray), providing a visual indication of proper and complete mixing. When the epoxy blend has cured, the final color is brown. 2.5-ounce volume in each tube. Room temperature cure. Useful in a broad range of applications for high strength bonding of ceramics, glass, plastic laminates, hard rubber, all metals, woods, thermosetting plastics and many thermoplastics.

Maximum work life, 77°F: 90 min. Optimum cure schedule: 2 hrs. at 165°F. Fast cure: 5 min. at 300°F. Hardness: 70 Shore D. Glass transition temp.: 140°F.

**B-EPX-12C** Two-tube set . . . **28.65**

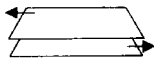
## HOOK AND LOOP — Gripper Strip



In the Hook and Loop fastening field, Gripper Strip is a strong, lightweight and versatile development, available in the familiar "Sew-On" style, and with Pressure Sensitive backing for use on surfaces that cannot be sewn. Each style is a mating of Grips and Strips: the Strip side is a knitted **Nylon** base with Loops, the Grip side is a **Polyester** back with **Polypropylene** Hooks (grabbing in all directions). All Gripper Strip materials are formulated for marine, outdoor and industrial use.

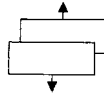
**When ordering:** You will note that each side of the mated tapes has a price of its own and must be ordered individually. Mix and match Sew-On with Pressure Sensitive, wide with narrow, in many useful and creative combinations.

SHEAR TEST LENGTHWISE



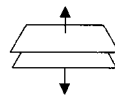
16 lbs./Square Inch

SHEAR TEST LATERAL



9.75 lbs./Square Inch

LATCHING EFFECT TEST



7.5 lbs./Square Inch

PEEL TEST



2.85 lbs./Inch Width

Part No.	Description	Size/Color	5 ft.	Price	
				10 ft.	25 ft.
<b>B-GS-PH-12</b>	Pressure Sensitive-Hook	3/4" White	<b>4.85</b>	<b>8.05</b>	<b>16.75</b>
<b>B-GS-PH-16</b>	Pressure Sensitive-Hook	1" White	<b>5.65</b>	<b>9.35</b>	<b>19.50</b>
<b>B-GS-PH-32</b>	Pressure Sensitive-Hook	2" White	<b>9.45</b>	<b>15.75</b>	<b>32.75</b>
<b>B-GS-PH-64</b>	Pressure Sensitive-Hook	4" White	<b>9.80</b>	<b>16.35</b>	<b>34.00</b>
<b>B-GS-PL-12</b>	Pressure Sensitive-Loop	3/4" White	<b>4.85</b>	<b>8.05</b>	<b>16.75</b>
<b>B-GS-PL-16</b>	Pressure Sensitive-Loop	1" White	<b>5.65</b>	<b>9.35</b>	<b>19.50</b>
<b>B-GS-PL-32</b>	Pressure Sensitive-Loop	2" White	<b>9.45</b>	<b>15.75</b>	<b>32.75</b>
<b>B-GS-PL-64</b>	Pressure Sensitive-Loop	4" White	<b>9.80</b>	<b>16.35</b>	<b>34.00</b>
<b>B-GS-SH-12</b>	Sew On-Hook	3/4" White	<b>2.30</b>	<b>3.85</b>	<b>7.95</b>
<b>B-GS-SH-16</b>	Sew On-Hook	1" White	<b>2.65</b>	<b>4.45</b>	<b>9.25</b>
<b>B-GS-SH-32</b>	Sew On-Hook	2" White	<b>4.25</b>	<b>7.10</b>	<b>14.75</b>
<b>B-GS-SL-12</b>	Sew On-Loop	3/4" White	<b>2.30</b>	<b>3.85</b>	<b>7.95</b>
<b>B-GS-SL-16</b>	Sew On-Loop	1" White	<b>2.65</b>	<b>4.45</b>	<b>9.25</b>
<b>B-GS-SL-32</b>	Sew On-Loop	2" White	<b>4.25</b>	<b>7.10</b>	<b>14.75</b>

## TAPE — Insulating, Self-Bonding



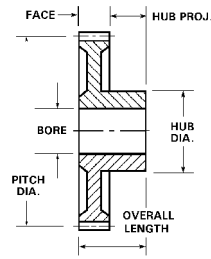
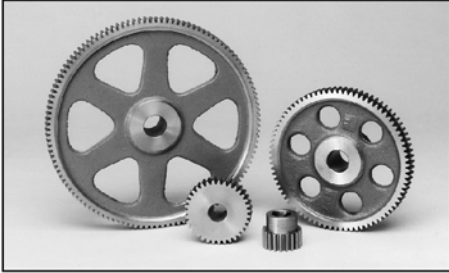
### VERSIWRAP™ TAPE — Silicone Rubber

Strong and elastic, Versiwrap Silicone Rubber Tape bonds to itself for tough, permanent resilience and cohesive insulation. Use it for coils, tool handles, joint seals, cable splices and terminations — and many other applications. Designed with a triangular guideline for perfect half-lap wrapping, this tape gives a uniform wrap over any shape. Versiwrap protects against vibration and shock and will not crack or separate with expansion or contraction stresses. It is composed of specially formulated silicone rubber to provide self-bonding, self-curing properties for void-free insulation within 24 hours at room temperature. Performs in temperature ranges from -76° to 392°F (-60° to 200°C) for continuous use or -85° to 500°F (-65° to 260°C) for intermittent applications. Should be stored in a cool, dry place for optimum shelf life. Rolls are 36 feet long. Color: Red.

### SILICONE RUBBER

Part No.	Width	Thickness	Price Per 36 Foot Roll
<b>B-SRT-012</b>	1"	0.020"	<b>11.15</b>
<b>B-SRT-015</b>	1"	0.030"	<b>13.70</b>
<b>B-SRT-020</b>	1"	0.040"	<b>18.50</b>

# SPUR GEARS



## SPUR GEARS — Steel

Spur Gears transmit motion and power between parallel shafts. The 20° pressure angle gears have a higher load carrying capacity than 14-1/2° pressure angle gears.

### STEEL SPUR GEARS — 20 Pitch, 20° Pressure Angle

Face Width: 0.500". Outside Diameter = Pitch Diameter + 0.100". Overall Length = 0.500" + Hub Projection

Part No.	Teeth	Pitch Dia	Dimensions in Inches			Each	Price	
			Bore	Hub Diameter	Hub Proj.		10	
B-GSS-2012	12	0.600	0.313	0.46	0.44	15.15	117.75	
B-GSS-2014	14	0.700	0.313	0.56	0.44	16.50	123.75	
B-GSS-2015	15	0.750	0.375	0.60	0.44	16.80	126.00	
B-GSS-2016	16	0.800	0.375	0.66	0.44	17.40	130.50	
B-GSS-2018	18	0.900	0.375	0.74	0.44	17.55	131.65	
B-GSS-2020	20	1.000	0.500	0.84	0.44	17.65	132.40	
B-GSS-2024	24	1.200	0.500	0.92	0.44	19.45	145.90	
B-GSS-2025	25	1.250	0.500	0.97	0.44	19.85	149.90	
B-GSS-2030	30	1.500	0.500	1.22	0.44	21.85	163.90	
B-GSS-2035	35	1.750	0.500	1.47	0.50	26.20	196.50	
B-GSS-2040	40	2.000	0.500	1.72	0.50	30.45	228.40	
B-GSS-2045	45	2.250	0.500	1.97	0.50	35.20	264.00	
B-GSS-2050	50	2.500	0.500	1.62	0.50	35.85	268.90	
B-GSS-2060	60	3.000	0.500	2.12	0.50	37.50	281.25	
B-GSS-2070	70	3.500	0.500	2.38	0.50	45.00	337.50	

### STEEL SPUR GEARS — 20 Pitch, 14-1/2° Pressure Angle

Face Width: 0.375". Outside Diameter = Pitch Diameter + 0.100". Overall Length = 0.375" + Hub Projection

Part No.	Teeth	Pitch Dia	Dimensions in Inches			Each	Price	
			Bore	Hub Diameter	Hub Proj.		10	
B-GSS-1412	12	0.600	0.313	0.46	0.38	7.90	59.25	
B-GSS-1414	14	0.700	0.313	0.56	0.38	9.10	68.35	
B-GSS-1415	15	0.750	0.375	0.60	0.38	9.55	71.60	
B-GSS-1416	16	0.800	0.375	0.66	0.38	9.85	73.85	
B-GSS-1418	18	0.900	0.375	0.74	0.35	10.45	78.45	
B-GSS-1420	20	1.000	0.375	0.84	0.38	11.70	87.80	
B-GSS-1424	24	1.200	0.375	0.92	0.38	13.10	98.15	
B-GSS-1425	25	1.250	0.375	0.97	0.38	13.45	100.80	
B-GSS-1430	30	1.500	0.375	1.22	0.38	14.40	107.85	
B-GSS-1432	32	1.600	0.375	1.32	0.50	16.80	126.00	
B-GSS-1435	35	1.750	0.375	1.47	0.50	18.90	141.65	
B-GSS-1440	40	2.000	0.375	1.72	0.50	19.95	149.55	
B-GSS-1448	48	2.400	0.375	1.33	0.50	24.80	185.85	
B-GSS-1450	50	2.500	0.375	1.42	0.50	26.20	188.65	
B-GSS-1460	60	3.000	0.375	1.92	0.50	28.40	212.95	
B-GSS-1470	70	3.500	0.375	1.25	0.50	30.65	230.00	

## SPUR GEARS (cont.)

### CAST IRON SPUR GEARS — 20 Pitch, 20° Pressure Angle

Face Width: 0.500". Outside Diameter = Pitch Diameter + 0.100". Overall Length = 0.500" + Hub Projection

Part No.	Teeth	Pitch Dia	Dimensions in Inches			Hub Proj.	Price	
			Bore	Hub Diameter	Each		10	
<b>B-GIS-2080</b>	80	4.000	0.625	1.38	0.62	<b>38.60</b>	<b>289.50</b>	
<b>B-GIS-2090</b>	90	4.500	0.625	1.38	0.62	<b>41.55</b>	<b>311.65</b>	
<b>B-GIS-20100</b>	100	5.000	0.625	1.50	0.62	<b>44.85</b>	<b>336.40</b>	
<b>B-GIS-20120</b>	120	6.000	0.625	1.50	0.62	<b>57.45</b>	<b>430.90</b>	
<b>B-GIS-20140</b>	140	7.000	0.625	1.50	0.62	<b>84.25</b>	<b>631.90</b>	

### BRASS SPUR GEARS — 32 Pitch, 20° Pressure Angle

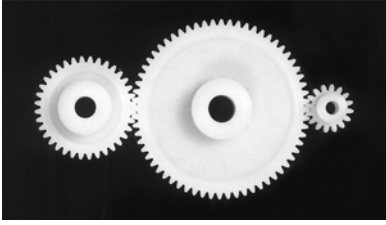
Face Width: 0.188". Outside Diameter = Pitch Diameter + 0.062". Overall Length = 0.188" + Hub Projection

Part No.	Teeth	Pitch Dia.	Dimensions in Inches			Hub Proj.	Price	
			Bore	Hub Diameter	Each		10	
<b>B-GBS-3212</b>	12	0.375	0.125	0.28	0.25	<b>8.05</b>	<b>60.40</b>	
<b>B-GBS-3214</b>	14	0.438	0.125	0.34	0.25	<b>8.50</b>	<b>63.75</b>	
<b>B-GBS-3216</b>	16	0.500	0.188	0.40	0.25	<b>8.95</b>	<b>67.15</b>	
<b>B-GBS-3218</b>	18	0.562	0.188	0.43	0.25	<b>9.40</b>	<b>70.50</b>	
<b>B-GBS-3220</b>	20	0.625	0.188	0.47	0.25	<b>10.05</b>	<b>75.40</b>	
<b>B-GBS-3224</b>	24	0.750	0.188	0.53	0.25	<b>11.40</b>	<b>85.50</b>	
<b>B-GBS-3228</b>	28	0.875	0.188	0.59	0.25	<b>12.45</b>	<b>93.40</b>	
<b>B-GBS-3232</b>	32	1.000	0.250	0.66	0.25	<b>13.35</b>	<b>100.15</b>	
<b>B-GBS-3236</b>	36	1.125	0.250	0.72	0.25	<b>15.80</b>	<b>118.50</b>	
<b>B-GBS-3240</b>	40	1.250	0.250	0.72	0.25	<b>17.15</b>	<b>128.65</b>	
<b>B-GBS-3248</b>	48	1.500	0.250	0.78	0.25	<b>20.15</b>	<b>151.15</b>	
<b>B-GBS-3256</b>	56	1.750	0.313	0.84	0.25	<b>21.85</b>	<b>163.90</b>	
<b>B-GBS-3264</b>	64	2.000	0.313	0.90	0.25	<b>33.15</b>	<b>248.65</b>	
<b>B-GBS-3272</b>	72	2.250	0.313	0.88	0.31	<b>35.80</b>	<b>268.50</b>	
<b>B-GBS-3280</b>	80	2.500	0.313	0.88	0.31	<b>39.00</b>	<b>292.50</b>	
<b>B-GBS-3296</b>	96	3.000	0.313	1.00	0.31	<b>43.20</b>	<b>324.00</b>	

### BRASS SPUR GEARS — 48 Pitch, 20° Pressure Angle

Face Width — 0.125". Outside Diameter = Pitch Diameter + 0.042". Overall Length = 0.125" + Hub Projection

Part No.	Teeth	Pitch Dia	Dimensions in Inches			Hub Proj.	Price	
			Bore	Hub Diameter	Each		10	
<b>B-GBS-4812</b>	12	0.250	0.125	0.18	0.19	<b>6.90</b>	<b>51.75</b>	
<b>B-GBS-4815</b>	15	0.312	0.125	0.22	0.19	<b>7.40</b>	<b>55.50</b>	
<b>B-GBS-4818</b>	18	0.375	0.125	0.28	0.19	<b>8.05</b>	<b>60.40</b>	
<b>B-GBS-4821</b>	21	0.438	0.125	0.35	0.19	<b>8.75</b>	<b>65.65</b>	
<b>B-GBS-4824</b>	24	0.500	0.188	0.38	0.25	<b>9.35</b>	<b>70.15</b>	
<b>B-GBS-4827</b>	27	0.562	0.188	0.44	0.25	<b>9.75</b>	<b>73.15</b>	
<b>B-GBS-4830</b>	30	0.625	0.188	0.44	0.25	<b>10.50</b>	<b>78.75</b>	
<b>B-GBS-4836</b>	36	0.750	0.188	0.50	0.25	<b>11.05</b>	<b>82.90</b>	
<b>B-GBS-4842</b>	42	0.875	0.188	0.57	0.25	<b>14.35</b>	<b>107.65</b>	
<b>B-GBS-4848</b>	48	1.000	0.250	0.63	0.25	<b>17.15</b>	<b>128.65</b>	
<b>B-GBS-4854</b>	54	1.125	0.250	0.69	0.25	<b>22.45</b>	<b>168.40</b>	
<b>B-GBS-4860</b>	60	1.250	0.250	0.69	0.25	<b>26.15</b>	<b>196.15</b>	
<b>B-GBS-4872</b>	72	1.500	0.250	0.75	0.25	<b>31.50</b>	<b>236.25</b>	
<b>B-GBS-4884</b>	84	1.750	0.250	0.82	0.25	<b>36.30</b>	<b>272.25</b>	
<b>B-GBS-4896</b>	96	2.000	0.250	0.88	0.25	<b>38.60</b>	<b>289.50</b>	
<b>B-GBS-48120</b>	120	2.500	0.313	0.75	0.31	<b>42.85</b>	<b>321.40</b>	



## SPUR GEARS — Delrin®

Gears molded of Delrin® have the advantage of being quiet, non-corrosive, lightweight and shock resistant. Useful for both continuous movement and in static control systems where only a quarter or half turn is made. They may be used in train with brass, steel or cast iron gears. Furnished with bored hub — but not drilled for pin or tapped for set screw. Color: Natural.

®E.I. Dupont

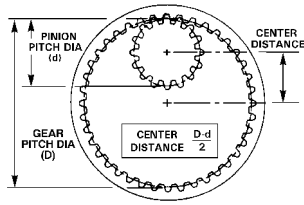
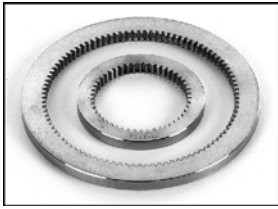
### 32 Pitch — 20° Pressure Angle. 3/16" Face Width, with 5/16" Hub Projection.

Part No.	Teeth	Pitch Dia.	Bore	Hub Dia.	Each	Price	
						10	25
B-GD-3212	12	0.375"	5/32"	9/32"	4.00	36.25	82.40
B-GD-3214	14	0.438"	5/32"	5/16"	4.00	36.25	82.40
B-GD-3216	16	0.500"	5/32"	11/32"	4.10	37.15	86.65
B-GD-3218	18	0.562"	5/32"	11/32"	4.45	40.45	91.90
B-GD-3220	20	0.625"	3/16"	15/32"	4.90	44.55	101.25
B-GD-3224	24	0.750"	3/16"	1/2"	5.60	50.85	115.50
B-GD-3228	28	0.875"	3/16"	1/2"	6.25	56.90	129.30
B-GD-3230	30	0.938"	3/16"	9/16"	6.60	60.20	136.80
B-GD-3232	32	1.000"	1/4"	5/8"	7.00	63.50	144.30
B-GD-3236	36	1.125"	1/4"	39/64"	7.75	70.15	159.40
B-GD-3240	40	1.250"	1/4"	39/64"	8.45	76.70	174.30
B-GD-3244	44	1.375"	1/4"	39/64"	9.15	83.05	188.75
B-GD-3248	48	1.500"	1/4"	5/8"	9.60	87.05	197.80
B-GD-3256	56	1.750"	5/16"	43/64"	10.50	95.25	216.50
B-GD-3264	64	2.000"	5/16"	43/64"	11.60	105.40	239.55
B-GD-3272	72	2.250"	5/16"	13/16"	12.70	115.50	262.50
B-GD-3280	80	2.500"	5/16"	13/16"	13.85	125.65	285.50
B-GD-3296	96	3.000"	5/16"	13/16"	16.05	145.80	331.30

### 48 Pitch — 20° Pressure Angle. 1/8" Face Width, with 1/4" Hub Projection.

Part No.	Teeth	Pitch Dia.	Bore	Hub Dia.	Each	Price	
						10	25
B-GD-4818	18	0.375"	5/32"	5/16"	4.00	36.25	82.40
B-GD-4820	20	0.417"	5/32"	11/32"	4.00	36.25	82.40
B-GD-4822	22	0.458"	5/32"	3/8"	4.00	36.25	82.40
B-GD-4824	24	0.500"	5/32"	13/32"	4.05	36.95	84.00
B-GD-4826	26	0.542"	5/32"	29/64"	4.15	37.65	85.60
B-GD-4828	28	0.583"	5/32"	31/64"	4.30	39.20	89.10
B-GD-4830	30	0.625"	5/32"	1/2"	4.50	40.75	92.55
B-GD-4832	32	0.667"	3/16"	35/64"	4.65	42.15	95.75
B-GD-4834	34	0.708"	3/16"	35/64"	4.85	43.80	99.50
B-GD-4836	36	0.750"	3/16"	35/64"	5.00	45.40	103.15
B-GD-4840	40	0.833"	3/16"	35/64"	5.35	48.70	110.65
B-GD-4842	42	0.875"	3/16"	35/64"	6.05	54.90	124.70
B-GD-4844	44	0.917"	3/16"	35/64"	5.75	52.00	118.15
B-GD-4848	48	1.000"	1/4"	39/64"	6.05	55.10	125.15
B-GD-4854	54	1.125"	1/4"	39/64"	6.45	58.40	132.65
B-GD-4860	60	1.250"	1/4"	39/64"	6.85	62.15	141.20
B-GD-4872	72	1.500"	1/4"	39/64"	7.90	71.75	163.05
B-GD-4884	84	1.750"	1/4"	39/64"	8.95	81.40	185.00
B-GD-48108	108	2.250"	1/4"	39/64"	10.75	97.65	221.95
B-GD-48120	120	2.500"	1/4"	39/64"	11.80	107.25	243.75

## INTERNAL GEARS — Brass



NOTE: The difference in tooth numbers between Gear and Pinion should not be less than 12.

Internal Gears have the teeth cut on the inside of the rim rather than the outside. When used with pinions (see page 264), more teeth carry the load and it is distributed more evenly. This distribution of load decreases the pressure intensity and extends the life of the gear. The compact arrangement of an Internal Gear also means the center distance for a given velocity is shorter than that of an external gear.

### INTERNAL GEARS — Brass

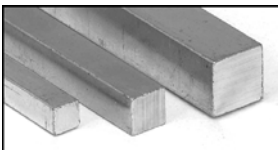
**32 Pitch** — 20° Pressure Angle. O.D. Tol.: +0.001" to +0.003", I.D. Tol.: +0.006", -0.000"

Part No.	Teeth	Pitch Dia.	O.D.	I.D.	Price Each
B-GBI-3248	48	1.500"	2.000"	1.461"	<b>59.40</b>
B-GBI-3264	64	2.000"	2.750"	1.961"	<b>65.80</b>
B-GBI-3296	96	3.000"	3.750"	2.961"	<b>87.80</b>
B-GBI-32128	128	4.000"	4.750"	3.961"	<b>89.95</b>

**48 Pitch** — 20° Pressure Angle. O.D. Tol: + 0.001" to + 0.003", I.D. Tolerance: + 0.005", -0.000"

B-GBI-4848	48	1.000"	1.500"	0.974"	<b>48.50</b>
B-GBI-4872	72	1.500"	2.000"	1.474"	<b>53.85</b>
B-GBI-4896	96	2.000"	2.750"	1.974"	<b>61.35</b>
B-GBI-48144	144	3.000"	3.750"	2.974"	<b>78.15</b>

## KEYSTOCK — Square, Zinc Plated Steel



Measure, cut, and file Keystock to precise dimensions, using your choice of Oversized or Undersized tolerances. Keystock provides coupling and torque transmission between shafts, pulleys, gears, sprockets, and other rotating power devices. Oversize assures tight fit in keyways for positive, zero-backlash power transmission. Undersize allows closer or undersized dimension tolerances.

Zinc Plated Steel is available with both Oversized and Undersized tolerances. Stainless Steel Type 303 is a good alternative to Steel when corrosion resistance is of concern.

### STEEL, ZINC PLATED — Oversized

**AISI C-1018** Tolerance: +0.003 / -0.000

Part No.	Dimensions	12" Length Price
B-KSS-0938	3/32"	<b>1.35</b>
B-KSS-1250	1/8"	<b>0.85</b>
B-KSS-1563	5/32"	<b>0.85</b>
B-KSS-1875	3/16"	<b>0.85</b>
B-KSS-2188	7/32"	<b>1.00</b>
B-KSS-2500	1/4"	<b>1.05</b>
B-KSS-2813	9/32"	<b>1.35</b>
B-KSS-3125	5/16"	<b>1.45</b>
B-KSS-3750	3/8"	<b>1.80</b>

### STEEL, ZINC PLATED — Undersized

**AISI C-1018** Tolerance: +0.001 / -0.002

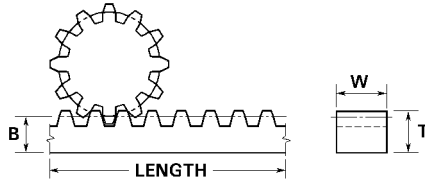
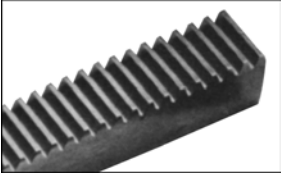
Part No.	Dimensions	12" Length Price
B-KSU-1250	3/32"	<b>0.95</b>
B-KSU-1875	1/8"	<b>1.35</b>
B-KSU-2500	5/32"	<b>1.80</b>
B-KSU-3125	3/16"	<b>1.90</b>
B-KSU-3750	7/32"	<b>2.75</b>

### STAINLESS STEEL TYPE 303

Tolerance: +0.002 / -0.01

B-KSX-1250	1/8"	<b>1.95</b>
B-KSX-1875	3/16"	<b>2.50</b>
B-KSX-2500	1/4"	<b>3.90</b>
B-KSX-3125	5/16"	<b>5.90</b>
B-KSX-3750	3/8"	<b>7.90</b>

## RACK — Steel, Carbon



### RACK — 20° and 14-1/2° Pressure Angle

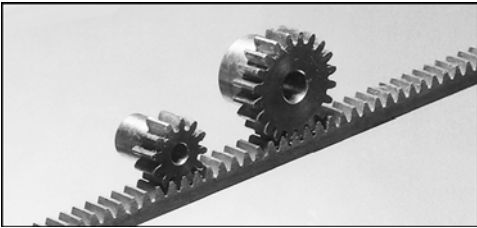
When coupled with Spur Gears ([page 260](#)) Carbon Steel Rack facilitates straightline motion, by converting rotary motion into controlled lateral movement. Made of Carbon Steel, Rack is easily drilled and tapped. Note that the ends are not machined, but the +1.000"/-0.000" length tolerance does allow for cutting and matching. For most spur gear applications, straight mineral oil is the recommended lubrication.

### CARBON STEEL — 20° Pitch

Part No.	Pressure Angle	Face Width W	Overall Thickness (T)	Pitch Line to Base (B)	Price				
					6"	12"	24"	36"	*72"
<b>B-GRS-20</b>	20°	1/2"	1/2"	0.450"	<b>11.25</b>	<b>18.75</b>	<b>31.20</b>	<b>39.00</b>	<b>65.00</b>
<b>B-GRS-14</b>	14-1/2°	3/8"	3/8"	0.325"	<b>11.45</b>	<b>19.05</b>	<b>31.70</b>	<b>39.60</b>	<b>66.00</b>

\* Special packaging charge for 72" lengths.

## RACKS AND PINIONS — Brass



Brass Racks and Pinions are useful in numerous shop and lab applications where it is desirable to change circular motion into controlled lateral movement. Easily drilled, tapped or soldered. 48 and 32 pitch racks may be combined with similar pitch Delrin Gears. [See page 262.](#)

### BRASS RACKS — 20° Pressure Angle

Order Example: **B-GRB-64-12** is 12" of 64 pitch Rack

Part No.	Pitch	Face Width	Overall Thickness	Pitch Line to Base	Price		
					6"	12"	24"
<b>B-GRB-64</b>	64	1/8"	1/8"	0.109"	<b>10.31</b>	<b>19.65</b>	<b>37.37</b>
<b>B-GRB-48</b>	48	1/8"	1/8"	0.104"	<b>9.86</b>	<b>18.81</b>	<b>35.74</b>
<b>B-GRB-32</b>	32	3/16"	3/16"	0.156"	<b>11.74</b>	<b>22.38</b>	<b>42.49</b>

### BRASS PINIONS — 20° Pressure Angle

Part No.	Pitch	Teeth	Pitch Diameter	Face Width	Bore	Hub			Price	
						Dia.	Proj.	Each	10	
<b>B-PGB-6416</b>	64	16	0.250"	1/8"	1/8"	3/16"	3/16"	<b>7.15</b>	<b>53.65</b>	
<b>B-PGB-6420</b>	64	20	0.312"	1/8"	1/8"	1/4"	3/16"	<b>8.10</b>	<b>60.65</b>	
<b>B-PGB-6424</b>	64	24	0.375"	1/8"	1/8"	9/32"	3/16"	<b>8.40</b>	<b>62.80</b>	
<b>B-PGB-4812</b>	48	12	0.250"	1/8"	1/8"	3/16"	3/16"	<b>6.50</b>	<b>48.75</b>	
<b>B-PGB-4818</b>	48	18	0.375"	1/8"	1/8"	9/32"	3/16"	<b>7.60</b>	<b>56.80</b>	
<b>B-PGB-4824</b>	48	24	0.500"	1/8"	3/16"	3/8"	1/4"	<b>8.80</b>	<b>66.05</b>	
<b>B-PGB-3212</b>	32	12	0.375"	3/16"	1/8"	9/32"	1/4"	<b>7.60</b>	<b>57.00</b>	
<b>B-PGB-3216</b>	32	16	0.500"	3/16"	3/16"	13/32"	1/4"	<b>8.45</b>	<b>63.40</b>	
<b>B-PGB-3220</b>	32	20	0.625"	3/16"	3/16"	15/32"	1/4"	<b>9.45</b>	<b>70.90</b>	
<b>B-PGB-3224</b>	32	24	0.750"	3/16"	3/16"	17/32"	1/4"	<b>10.75</b>	<b>80.65</b>	



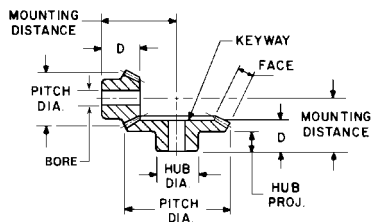
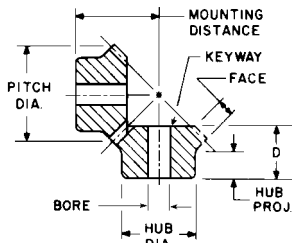
# GEARS — Miter and Bevel, Brass



MITER GEARS



BEVEL GEARS



Miter and Bevel gears transmit motion and power between intersecting shafts positioned at right angles. Both gear types are cut with a generated tooth form that has a localized lengthwise tooth bearing. These gears permit minor adjustment of gears during assembly and allow for some displacement due to deflection under operating loads without concentrating the load on the end of the tooth. For reliable performance, Gears must be pinned to shaft with a dowel or taper pin. See pages 246 and 247.

A set of Miter gears consists of two identical gears that yield a 1:1 ratio. Bevel gear sets consist of two gears of different pitch diameter that yield ratios greater than 1:1. Undrilled. No set screw supplied.

## MITER GEAR SETS — Brass

48 Pitch — 1:1 Ratio — 20° Pressure Angle. Bore Tolerance = ±0.0005"

Part No.	Teeth	Pitch Dia.	Face	Bore	Dimensions in Inches			Hub Diameter	Hub Proj.	Price Per Set
					Mounting Distance	D	Hub Proj.			
<b>B-GBM-4815</b>	15	0.312	0.07	0.125	0.312	0.215	0.25	0.13	<b>14.25</b>	
<b>B-GBM-4818</b>	18	0.375	0.08	0.125	0.406	0.286	0.31	0.16	<b>14.75</b>	
<b>32 Pitch — 1:1 Ratio</b>										
<b>B-GBM-3216</b>	16	0.500	0.12	0.188	0.500	0.349	0.41	0.19	<b>16.10</b>	
<b>B-GBM-3224</b>	24	0.750	0.14	0.188	0.688	0.427	0.50	0.25	<b>19.75</b>	

## BEVEL GEAR SETS — Brass

20° Pressure Angle. Bore Tolerance = ±0.0005"

Description/Part No.	Teeth	Pitch Dia.	Face	Bore	Dimensions in Inches			Hub Diameter	Hub Proj.	Price Per Set
					Mounting Distance	D	Hub Proj.			
<b>B-GBB-482</b>	18	0.375	0.12	0.125	0.594	0.335	0.28	0.19		
48 pitch 2:1 ratio	36	0.750	0.12	0.188	0.438	0.257	0.44	0.19	<b>22.55</b>	
<b>B-GBB-483</b>	12	0.250	0.09	0.125	0.562	0.285	0.22	0.17		
48 pitch 3:1 ratio	36	0.750	0.09	0.188	0.375	0.257	0.44	0.19	<b>22.00</b>	
<b>B-GBB-322</b>	16	0.500	0.14	0.188	0.719	0.365	0.38	0.17		
32 pitch 2:1 ratio	32	1.000	0.14	0.188	0.594	0.382	0.56	0.25	<b>23.50</b>	
<b>B-GBB-324</b>	16	0.500	0.24	0.188	1.250	0.500	0.38	0.22		
32 pitch 4:1 ratio	64	2.000	0.24	0.313	0.688	0.445	1.00	0.31	<b>38.65</b>	

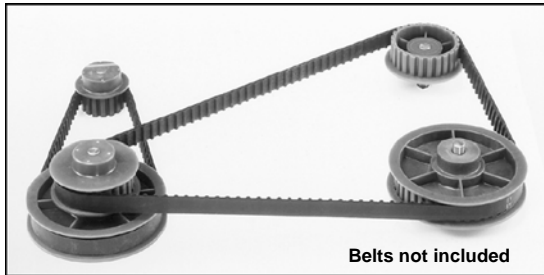


### GEAR CUTTING PRACTICE

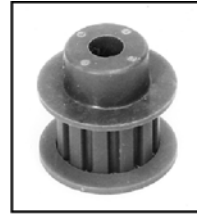
If you cut gears or ever intend to, this 1937 reference manual is a must. Includes thorough discussions of gear cutting practice, shaping methods, spur gears, helical gears, bevel gears, worms and worm gears, internal gears, hobs, cutters, etc. Soft cover, 344 pages with plenty of charts, graphs, tables and photos. Written by Fred H. Colvin and Frank A. Stanley.

**B-YL-20889** ..... **14.95**

## PULLEYS, TIMING — Nylon, Glass Filled



SINGLE FLANGE



DOUBLE FLANGE

These 1/5" Pitch (XL) Pulleys are precision molded to match belt configuration and provide accurate register between drive and driven shafts. They are molded of fiberglass-reinforced nylon for light weight, exceptional strength and quiet running characteristics. All hubs are drilled, tapped and supplied with stainless steel set screw. For certainty of attachment, pulleys can be cross drilled and fixed with a bolt or dowel pin. Available with single or double flange. Pitch diameter is measured with belt on pulley.

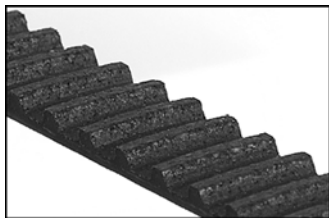
### SINGLE FLANGE

Part No.	No. of Grooves	Pitch Diameter	Outside Diameter	Flange O.D.	Bore	Price	
						Each	10
<b>B-TBPN-10/S</b>	10	0.637"	0.617"	0.866"	1/4"	<b>5.60</b>	<b>47.05</b>
<b>B-TBPN-11/S</b>	11	0.700"	0.682"	0.938"	1/4"	<b>5.65</b>	<b>47.20</b>
<b>B-TBPN-12/S</b>	12	0.764"	0.744"	0.993"	1/4"	<b>5.70</b>	<b>47.35</b>
<b>B-TBPN-14/S</b>	14	0.891"	0.871"	1.120"	1/4"	<b>5.75</b>	<b>47.85</b>
<b>B-TBPN-15/S</b>	15	0.955"	0.935"	1.184"	1/4"	<b>5.80</b>	<b>48.00</b>
<b>B-TBPN-16/S</b>	16	1.019"	0.999"	1.248"	1/4"	<b>5.85</b>	<b>48.70</b>
<b>B-TBPN-18/S</b>	18	1.146"	1.126"	1.375"	1/4"	<b>5.90</b>	<b>49.20</b>
<b>B-TBPN-20/S</b>	20	1.273"	1.253"	1.502"	1/4"	<b>5.96</b>	<b>49.70</b>
<b>B-TBPN-21/S</b>	21	1.337"	1.317"	1.566"	1/4"	<b>6.05</b>	<b>50.50</b>
<b>B-TBPN-22/S</b>	22	1.401"	1.381"	1.630"	1/4"	<b>6.10</b>	<b>50.65</b>
<b>B-TBPN-24/S</b>	24	1.528"	1.508"	1.757"	1/4"	<b>6.15</b>	<b>51.35</b>
<b>B-TBPN-28/S</b>	28	1.783"	1.763"	2.012"	1/4"	<b>6.35</b>	<b>52.85</b>
<b>B-TBPN-30/S</b>	30	1.910"	1.890"	2.139"	1/4"	<b>6.45</b>	<b>53.50</b>
<b>B-TBPN-40/S</b>	40	2.546"	2.526"	2.775"	1/4"	<b>7.60</b>	<b>63.25</b>

### DOUBLE FLANGE

Part No.	No. of Grooves	Pitch Diameter	Outside Diameter	Flange O.D.	Bore	Price	
						Each	10
<b>B-TBPN-10/D</b>	10	0.637"	0.617"	0.866"	1/4"	<b>6.70</b>	<b>58.50</b>
<b>B-TBPN-11/D</b>	11	0.700"	0.682"	0.938"	1/4"	<b>6.75</b>	<b>58.70</b>
<b>B-TBPN-12/D</b>	12	0.764"	0.744"	0.993"	1/4"	<b>6.80</b>	<b>58.85</b>
<b>B-TBPN-14/D</b>	14	0.891"	0.871"	1.120"	1/4"	<b>6.85</b>	<b>59.40</b>
<b>B-TBPN-15/D</b>	15	0.955"	0.935"	1.184"	1/4"	<b>6.90</b>	<b>59.60</b>
<b>B-TBPN-16/D</b>	16	1.019"	0.999"	1.248"	1/4"	<b>6.95</b>	<b>60.30</b>
<b>B-TBPN-18/D</b>	18	1.146"	1.126"	1.375"	1/4"	<b>7.00</b>	<b>60.85</b>
<b>B-TBPN-20/D</b>	20	1.273"	1.253"	1.502"	1/4"	<b>7.10</b>	<b>61.40</b>
<b>B-TBPN-21/D</b>	21	1.337"	1.317"	1.566"	1/4"	<b>7.15</b>	<b>62.30</b>
<b>B-TBPN-22/D</b>	22	1.401"	1.381"	1.630"	1/4"	<b>7.20</b>	<b>62.45</b>
<b>B-TBPN-24/D</b>	24	1.528"	1.508"	1.757"	1/4"	<b>7.30</b>	<b>63.20</b>
<b>B-TBPN-28/D</b>	28	1.783"	1.763"	2.012"	1/4"	<b>7.45</b>	<b>64.80</b>
<b>B-TBPN-30/D</b>	30	1.910"	1.890"	2.139"	1/4"	<b>7.55</b>	<b>65.50</b>
<b>B-TBPN-40/D</b>	40	2.546"	2.526"	2.775"	1/4"	<b>8.75</b>	<b>76.15</b>

## BELTS — Timing



### ONE-SIDED TIMING BELTS

#### Nylon Covered Fiberglass Reinforced Neoprene

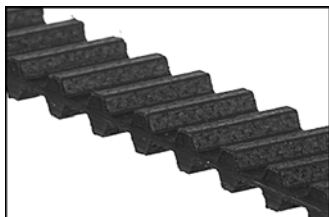
Evenly spaced teeth on the inside circumference of One-Sided Timing Belts help avoid the slippage or creep encountered with simple flat belts. Important for applications involving a definite motion sequence or indexing, these belts are capable of transmitting high torque and can withstand rapid accelerations. The trapezoidal tooth profile concentrates stress near the root of the tooth, promoting positive grip and uniform speed transmission.

Made of Nylon Covered Fiberglass Reinforced Neoprene, these belts require no lubrication, are resistant to chemicals, and have very low stretch with excellent strength and dimensional stability. Also, since a narrower belt will handle a larger load, they are generally of lower cost than other drive mediums. We offer a range of pitch length sizes for both one-sided and two-sided timing belts, all 3/8" wide, with an extra light 1/5" pitch.

#### FIBERGLASS REINFORCED NEOPRENE — 1/5" Pitch Extra Light - 3/8" Wide

Part No.	Pitch Length*	Price		Part No.	Pitch Length*	Price	
		1	10			1	10
<b>B-TB6-60</b>	6	<b>3.50</b>	<b>29.10</b>	<b>B-TB6-170</b>	17	<b>4.80</b>	<b>39.80</b>
<b>B-TB6-70</b>	7	<b>3.65</b>	<b>30.40</b>	<b>B-TB6-180</b>	18	<b>4.90</b>	<b>40.90</b>
<b>B-TB6-80</b>	8	<b>3.75</b>	<b>31.00</b>	<b>B-TB6-190</b>	19	<b>5.05</b>	<b>41.90</b>
<b>B-TB6-90</b>	9	<b>3.85</b>	<b>32.20</b>	<b>B-TB6-200</b>	20	<b>5.15</b>	<b>42.70</b>
<b>B-TB6-100</b>	10	<b>3.95</b>	<b>33.00</b>	<b>B-TB6-210</b>	21	<b>5.25</b>	<b>43.70</b>
<b>B-TB6-110</b>	11	<b>4.15</b>	<b>34.40</b>	<b>B-TB6-220</b>	22	<b>5.40</b>	<b>44.90</b>
<b>B-TB6-120</b>	12	<b>4.20</b>	<b>34.80</b>	<b>B-TB6-230</b>	23	<b>5.45</b>	<b>45.50</b>
<b>B-TB6-130</b>	13	<b>4.35</b>	<b>36.10</b>	<b>B-TB6-240</b>	24	<b>5.60</b>	<b>46.80</b>
<b>B-TB6-140</b>	14	<b>4.45</b>	<b>37.00</b>	<b>B-TB6-250</b>	25	<b>5.70</b>	<b>47.60</b>
<b>B-TB6-150</b>	15	<b>4.55</b>	<b>37.80</b>	<b>B-TB6-260</b>	26	<b>5.85</b>	<b>48.50</b>
<b>B-TB6-160</b>	16	<b>4.70</b>	<b>39.00</b>				

\*Circumference of Belt equals pitch length in inches.



### TWO-SIDED TIMING BELTS

#### Nylon Covered Fiberglass Reinforced Neoprene

Driving teeth on both sides of the Two-Sided Timing Belt allow for reverse rotation of one or more synchronized pulleys, using only one belt. With identical teeth on the inside and outside circumference, these belts can also be used when a long distance between the motor and shaft requires a third idler pulley to take up slack and maintain timing.

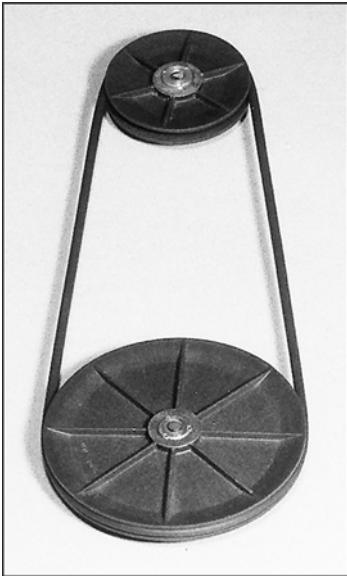
Chemically resistant with the added advantage of high strength, these belts are made of Fiberglass embedded in Neoprene, with a protective Nylon fabric facing on the inside teeth. They are frequently used for computers and office equipment, business machines, and for other light duty applications.

#### FIBERGLASS REINFORCED NEOPRENE — 1/5" Pitch Extra Light - 3/8" Wide

Part No.	Pitch Length*	Price		Part No.	Pitch Length*	Price	
		1	10			1	10
<b>B-TP62-140</b>	14	<b>10.95</b>	<b>99.20</b>	<b>B-TP62-210</b>	21	<b>12.95</b>	<b>117.40</b>
<b>B-TP62-150</b>	15	<b>11.25</b>	<b>102.20</b>	<b>B-TP62-220</b>	22	<b>13.25</b>	<b>120.70</b>
<b>B-TP62-160</b>	16	<b>11.60</b>	<b>105.30</b>	<b>B-TP62-230</b>	23	<b>13.45</b>	<b>122.40</b>
<b>B-TP62-170</b>	17	<b>11.75</b>	<b>106.90</b>	<b>B-TP62-240</b>	24	<b>13.85</b>	<b>125.60</b>
<b>B-TP62-180</b>	18	<b>12.15</b>	<b>110.10</b>	<b>B-TP62-250</b>	25	<b>14.10</b>	<b>128.10</b>
<b>B-TP62-190</b>	19	<b>12.40</b>	<b>112.50</b>	<b>B-TP62-260</b>	26	<b>14.35</b>	<b>130.50</b>
<b>B-TP62-200</b>	20	<b>12.65</b>	<b>115.00</b>				

\*Circumference of Belt equals pitch length in inches.

## BELTING — Round, Polycord



Polycord is a green synthetic round belting of homogenous structure with high elasticity and flexibility. Endless belts can easily and quickly be made without noticeable joint, assuring quiet, smooth and uniform power transmission over grooved or "V" pulleys.

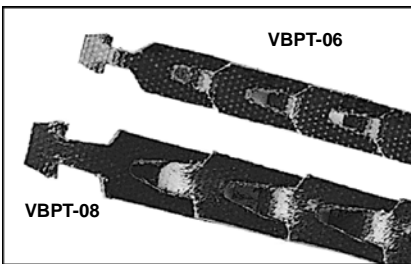
Given an initial tension of 8% which remains constant in operation, polycord belts eliminate the need for take-up or idler pulleys. Polycord is resistant to oil, fat, water and solvents and has limited resistance to acetone, caustic liquids, acids and amines. Made in Switzerland.

### INSTRUCTIONS FOR MAKING ENDLESS BELTS

1. Measure total distance over pulleys (at bottom of groove or "V").
2. Deduct 8% from the measured length and cut ends squarely.
3. Simultaneously heat belt ends to the melting point with a torch flame.
4. Immediately join ends using "L" shaped stock as a guide for correct alignment and press ends firmly together for about 1 minute.
5. After 5 minutes cooling remove flash with knife or grinding wheel. The joint attains maximum strength after 30 minutes but may be used after 5 minutes if needed.

Part No.	Belt Diameter		Minimum Pulley Dia.	H.P.	R.P.M.	Price Per Foot	
	Inches	mm				1-9 Feet	10 Ft. or More
<b>B-PRB-2</b>	1/8	3mm	1"	1/8	14,000	<b>1.40</b>	<b>1.15</b>
<b>B-PRB-3</b>	3/16	5mm	1-3/4"	1/8	5,000	<b>2.65</b>	<b>2.20</b>
<b>B-PRB-4</b>	1/4	6mm	2-1/4"	1/4	3,450	<b>4.10</b>	<b>3.40</b>

## BELTING — V-Belts, Adjustable



Make a brand new V-belt or install a replacement within minutes. Adjustable PowerTwist Plus® V-Belts use a tab and link system to interlock — no tools are needed. Simply twist tabs into links for fast coupling. Assemble belts or repair sections of any length, then fit them to the drive without dismantling your conveyor system.

Made of a Polyurethane elastomer reinforced with multiple plies of Polyester fabric, these belts provide high tensile strength, low stretch, extended belt life, and high drive efficiency, with the same horsepower ratings as classic V-belts. This material handles temperature extremes from -40° to 240°F (-40° to 116°C), with high resistance to water, oil, solvents, and other chemicals. Color: Red.

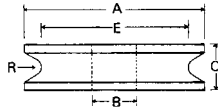
® Fenner Drives

### ADJUSTABLE V-BELTS — Polyurethane

Part No.	Belt Type	Size	Price Per Foot	
			1-9	10+
<b>B-VBPT-06</b>	3L	3/8"	<b>6.95</b>	<b>5.80</b>
<b>B-VBPT-08</b>	A/4L	1/2"	<b>7.10</b>	<b>5.90</b>

**Cables — Page 168**

## PULLEYS, IDLER — Acetal



Pulleys guide control cables through directional changes. Acetal Pulleys have high mechanical strength and resiliency; a fatigue endurance unmatched by other plastics; resistance to most solvents and neutral chemicals, and good electrical insulating characteristics.

### ACETAL

Part No.	Dimensions in Inches					Cable Size Up to	Price	
	A	B	C	E	R		Each	10
<b>B-IPD-8</b>	0.500	0.128	0.125	0.435	0.025	3/64"	<b>1.25</b>	<b>9.75</b>
<b>B-IPD-10</b>	0.625	0.128	0.125	0.500	0.025	3/64"	<b>1.30</b>	<b>9.90</b>
<b>B-IPD-12</b>	0.750	0.128	0.156	0.625	0.025	3/64"	<b>1.35</b>	<b>10.80</b>
<b>B-IPD-16</b>	1.000	0.190	0.156	0.813	0.025	3/64"	<b>1.40</b>	<b>11.05</b>
<b>B-IPD-20</b>	1.250	0.190	0.219	1.063	0.035	1/16"	<b>1.65</b>	<b>12.85</b>
<b>B-IPD-24</b>	1.500	0.254	0.281	1.250	0.046	3/32"	<b>2.05</b>	<b>16.25</b>
<b>B-IPD-28</b>	1.750	0.254	0.281	1.375	0.066	1/8"	<b>2.20</b>	<b>17.35</b>

## PULLEYS — Glass-Reinforced Nylon



These Pulleys are especially designed for fractional horsepower drives requiring high strength-to-weight ratios. Glass-reinforced nylon is molded to steel hubs for extra strength. Hubs are drilled, tapped and supplied with stainless steel (10-24) set screws.

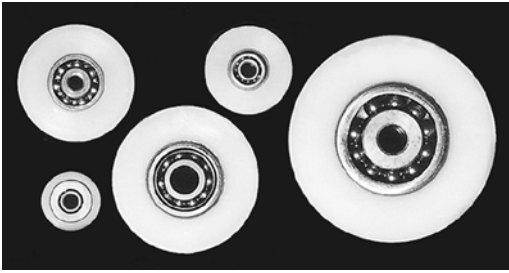
Hub Diameter: 15/16". Overall Height: 1".

\* Hub Diameter: 7/8". Overall Height: 11/16".

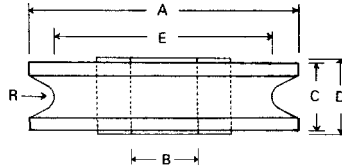
Price

Part No.	Outside Diameter	Pitch Diameter	Bore	Each	10
<b>B-PNG-4-16*</b>	1.0"	0.9"	1/4"	<b>6.60</b>	<b>54.75</b>
<b>B-PNG-4-24</b>	1.5"	1.4"	1/4"	<b>6.65</b>	<b>55.40</b>
<b>B-PNG-4-32</b>	2.0"	1.9"	1/4"	<b>7.25</b>	<b>60.45</b>
<b>B-PNG-4-40</b>	2.5"	2.4"	1/4"	<b>11.15</b>	<b>92.85</b>
<b>B-PNG-4-48</b>	3.0"	2.9"	1/4"	<b>11.30</b>	<b>94.10</b>
<b>B-PNG-4-56</b>	3.5"	3.4"	1/4"	<b>11.75</b>	<b>98.00</b>
<b>B-PNG-4-64</b>	4.0"	3.9"	1/4"	<b>12.05</b>	<b>100.45</b>
<b>B-PNG-4-72</b>	4.5"	4.4"	1/4"	<b>13.15</b>	<b>109.50</b>
<b>B-PNG-4-80</b>	5.0"	4.9"	1/4"	<b>13.60</b>	<b>113.40</b>
<b>B-PNG-4-96</b>	6.0"	5.9"	1/4"	<b>16.35</b>	<b>136.10</b>
<b>B-PNG-6-24*</b>	1.5"	1.4"	3/8"	<b>6.65</b>	<b>55.40</b>
<b>B-PNG-6-32</b>	2.0"	1.9"	3/8"	<b>7.25</b>	<b>60.45</b>
<b>B-PNG-6-40</b>	2.5"	2.4"	3/8"	<b>11.15</b>	<b>92.85</b>
<b>B-PNG-6-48</b>	3.0"	2.9"	3/8"	<b>11.30</b>	<b>94.10</b>
<b>B-PNG-6-56</b>	3.5"	3.4"	3/8"	<b>11.75</b>	<b>98.00</b>
<b>B-PNG-6-64</b>	4.0"	3.9"	3/8"	<b>12.05</b>	<b>100.45</b>
<b>B-PNG-6-72</b>	4.5"	4.4"	3/8"	<b>13.15</b>	<b>109.50</b>
<b>B-PNG-6-80</b>	5.0"	4.9"	3/8"	<b>13.60</b>	<b>113.40</b>
<b>B-PNG-6-96</b>	6.0"	5.9"	3/8"	<b>16.35</b>	<b>136.10</b>

## PULLEYS — Nylon, Bearing Mounted



These bearing mounted Nylon Pulleys are designed for use with small cables or cords where moderate load and speed applications do not require the use of more precise bearings. The nylon pulley is press-fit over the bearing, and proper alignment of the cable or cord will avoid undue stress on the pulley and contribute to the longer life of the bearing.



### NYLON

Part No.	A	B	Dimensions in Inches		E	R	Cable Size Up to	Each	Price	
			C	D					10	
<b>B-PNB-2/8</b>	0.500	0.125	0.125	0.156	0.435	0.025	3/64"	<b>6.15</b>	<b>53.25</b>	
<b>B-PNB-2/12</b>	0.750	0.125	0.156	0.156	0.625	0.025	3/64"	<b>6.25</b>	<b>54.10</b>	
<b>B-PNB-2/16</b>	1.000	0.125	0.156	0.188	0.813	0.025	3/64"	<b>10.25</b>	<b>89.20</b>	
<b>B-PNB-4/20</b>	1.250	0.250	0.219	0.250	1.063	0.035	1/16"	<b>6.75</b>	<b>58.75</b>	
<b>B-PNB-4/24</b>	1.500	0.250	0.281	0.312	1.250	0.046	3/32"	<b>6.80</b>	<b>59.00</b>	
<b>B-PNB-4/28</b>	1.750	0.250	0.281	0.312	1.373	0.066	1/8"	<b>6.90</b>	<b>59.90</b>	



### O-RING SPLICING KIT — Buna-N

Everything you need for on-the-spot standard or unusual diameter O-Ring construction. The kit contains seven feet of Buna-N Cord in each of four sizes: 3/32", 1/8", 3/16" and 1/4"; a tube of special rapid-set adhesive; and a splicing jig. There is even a razor blade, so there's no delay in finishing that first splice. Compact plastic hinged-lid box. Additional stocks of cord and adhesive are available.

<b>B-ORBK-100</b>	O-Ring Splicing Kit . . . . .	<b>39.05</b>
<b>B-ORBK-ADS</b>	Adhesive . . . . .	<b>3.85</b>

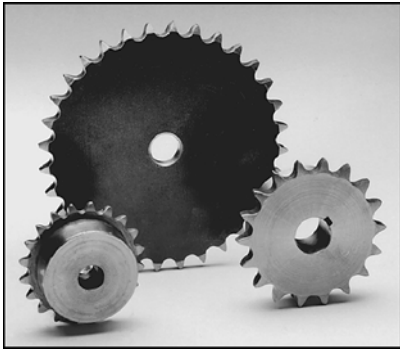
### O-RING SPLICING KIT REFILLS

\*This size is not part of the O-Ring Splicing Kit

Part No.	Nominal Size	Actual Diameter	Price per Foot
<b>B-ORBK-1*</b>	1/16"	0.070"	<b>0.85</b>
<b>B-ORBK-1-1/2</b>	3/32"	0.103"	<b>0.80</b>
<b>B-ORBK-2</b>	1/8"	0.139"	<b>0.90</b>
<b>B-ORBK-3</b>	3/16"	0.210"	<b>1.00</b>
<b>B-ORBK-4</b>	1/4"	0.275"	<b>1.05</b>

See our complete selection of O-Rings  
starting on page 141.

## ROLLER CHAIN SPROCKETS — Steel



### ROLLER CHAIN SPROCKETS — Single Hub

Single hub stock bore Sprockets are made with free-machining, Low Carbon Steel. All units are built to ANSI B29.1 specifications for superior fatigue resistance and long operational life in a host of industrial and process applications. The 1/4" pitch No. 25 sizes have a one-piece construction and are furnished with a set screw #10-32. No. 35 Sprockets in smaller sizes are one-piece; those with 28 or more teeth are of two-piece construction. All 3/8" pitch No. 35 Sprockets come with a standard keyway and are supplied with 1/4-20 set screws, located over the keyway. Standard bore tolerance for all sizes:  $\pm 0.001$ ".

#### NO. 25 1/4" PITCH — Low Carbon Steel

Part No.	Teeth	Pitch Diameter	Dimensions in Inches			Price Each
			Bore	Hub Diameter	Length Through Bore	
<b>B-RCSS-2410</b>	10	0.809	1/4	17/32	1/2	<b>7.70</b>
<b>B-RCSS-2412</b>	12	0.966	1/4	11/16	1/2	<b>10.50</b>
<b>B-RCSS-2414</b>	14	1.123	1/4	3/4	1/2	<b>11.30</b>
<b>B-RCSS-2416</b>	16	1.281	1/4	13/16	1/2	<b>11.25</b>
<b>B-RCSS-2418</b>	18	1.440	1/4	1	1/2	<b>12.05</b>
<b>B-RCSS-2618</b>	18	1.440	3/8	1	1/2	<b>12.05</b>
<b>B-RCSS-2420</b>	20	1.598	1/4	1-5/32	1/2	<b>12.30</b>
<b>B-RCSS-2620</b>	20	1.598	3/8	1-5/32	1/2	<b>12.30</b>
<b>B-RCSS-2622</b>	22	1.757	3/8	1-7/16	5/8	<b>15.90</b>
<b>B-RCSS-2624</b>	24	1.915	3/8	1-1/2	5/8	<b>16.95</b>

#### NO. 35 3/8" PITCH — Low Carbon Steel

Part No.	Teeth	Pitch Diameter	Dimensions in Inches				Price Each
			Bore	Hub Diameter	Length Through Bore	Keyway	
<b>B-RCSS-3810*</b>	10	1.214	1/2	31/32	3/4	**1/8 x 1/16	<b>8.50</b>
<b>B-RCSS-3812*</b>	12	1.449	1/2	1-7/32	3/4	1/8 x 1/16	<b>9.10</b>
<b>B-RCSS-3814</b>	14	1.685	1/2	1-1/4	3/4	1/8 x 1/16	<b>9.40</b>
<b>B-RCSS-3816</b>	16	1.922	1/2	1-15/32	3/4	1/8 x 1/16	<b>10.20</b>
<b>B-RCSS-3818</b>	18	2.160	1/2	1-23/32	3/4	1/8 x 1/16	<b>11.10</b>
<b>B-RCSS-3820</b>	20	2.397	1/2	1-15/16	3/4	1/8 x 1/16	<b>13.80</b>
<b>B-RCSS-3824</b>	24	2.873	1/2	2	7/8	1/8 x 1/16	<b>18.75</b>
<b>B-RCSS-3828</b>	28	3.349	1/2	2	7/8	1/8 x 1/16	<b>23.00</b>
<b>B-RCSS-3830</b>	30	3.588	1/2	2	7/8	1/8 x 1/16	<b>24.85</b>
<b>B-RCSS-3832</b>	32	3.826	1/2	2	7/8	1/8 x 1/16	<b>26.90</b>
<b>B-RCSS-31032</b>	32	3.826	5/8	2	7/8	3/16 x 3/32	<b>26.90</b>
<b>B-RCSS-31036</b>	36	4.303	5/8	2-1/4	7/8	3/16 x 3/32	<b>30.75</b>
<b>B-RCSS-31040</b>	40	4.780	5/8	2-1/4	1	3/16 x 3/32	<b>31.40</b>
<b>B-RCSS-31048</b>	48	5.734	5/8	2-1/4	1	—	<b>23.50</b>

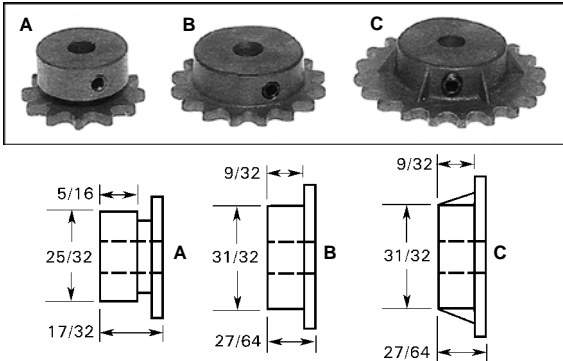
\* Recessed groove in hub for chain clearance.

\*\* Set Screw located at 90° instead of over keyway.

## ROLLER CHAIN SPROCKETS — Nylon

### ROLLER CHAIN SPROCKETS Fiberglass-Reinforced Nylon

Strong and economical, these Sprockets have a molded Nylon body reinforced with Fiberglass for less weight, quieter operation, and self-lubrication of teeth. Designed for use with 1/4" pitch Roller Chains, Sprockets are available in diameters as small as 0.861" up to 3.952", with teeth counts ranging from 9 to 48. Nylon Roller Chain Sprockets are frequently applied to maintain accurate register in fractional horsepower chain drive assemblies, such as business machines, displays and servo systems. Stainless Steel set screw #10-24 provided.



### FIBERGLASS REINFORCED NYLON — For 1/4" Pitch

\* Will not accept plastic chain

Part No.	Style	Teeth	Pitch Dia.	Dimensions in Inches			Price	
				Outside Dia.	Bore	Each	10	
<b>B-RCS-9*</b>	A	9	0.731	0.850	1/4	<b>4.45</b>	<b>40.60</b>	
<b>B-RCS-10*</b>	A	10	0.809	0.931	1/4	<b>4.50</b>	<b>40.80</b>	
<b>B-RCS-12*</b>	A	12	0.966	1.092	1/4	<b>4.55</b>	<b>41.45</b>	
<b>B-RCS-16</b>	B	16	1.281	1.412	1/4	<b>4.75</b>	<b>42.95</b>	
<b>B-RCS-18</b>	B	18	1.439	1.573	1/4	<b>4.80</b>	<b>43.40</b>	
<b>B-RCS-20</b>	C	20	1.598	1.731	1/4	<b>4.85</b>	<b>43.80</b>	
<b>B-RCS-24</b>	C	24	1.915	2.052	1/4	<b>4.95</b>	<b>45.10</b>	
<b>B-RCS-28</b>	C	28	2.233	2.368	3/8	<b>6.75</b>	<b>61.30</b>	
<b>B-RCS-30</b>	C	30	2.392	2.529	3/8	<b>6.85</b>	<b>62.15</b>	
<b>B-RCS-36</b>	C	36	2.868	3.003	3/8	<b>8.70</b>	<b>79.15</b>	
<b>B-RCS-40</b>	C	40	3.186	3.319	3/8	<b>8.95</b>	<b>81.45</b>	
<b>B-RCS-48</b>	C	48	3.822	3.955	3/8	<b>9.70</b>	<b>88.10</b>	

## ROLLER CHAIN TOOLS

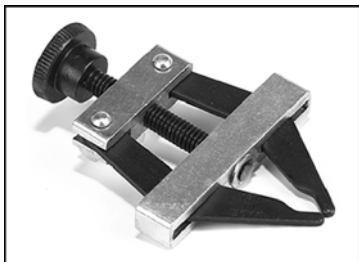


### CHAIN BREAKER

Quickly disconnect riveted roller chains with this simple Chain Breaker. Made with hardened Steel, this tool will break any roller chain manufactured to ANSI specification, from No. 25 to No. 60.

The replaceable punch point is made of Tool Steel and tempered for long life.

**B-RCB-1** Chain Breaker ..... **29.55**



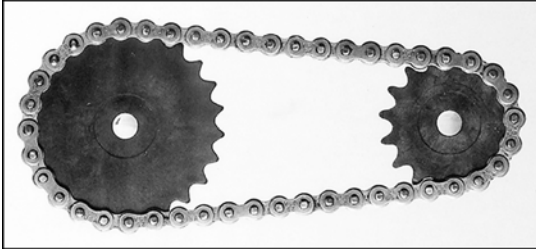
### CHAIN PULLER

Install roller chains quickly and easily. Just hook the two jaws into the end of the chain and turn the screw until the two ends almost meet. Then insert the connecting link and fasten. 2" jaw spread. Pulls chain sizes from No. 35 to No. 60. The smaller No. 25 chain can be pulled by hand.

**B-RCB-3560** Chain Puller ..... **23.85**



## ROLLER CHAIN — Carbon Steel and Stainless Steel



### RIVETED ROLLER CHAIN — Single Strand

Accuracy, strength and durability are essential in the high speed drive systems of industrial machinery, machine tools, power vehicles and other applications where Riveted Roller Chain is normally employed.

A riveted construction helps maintain even spacing by securing pins and side plates with greater rigidity, and is considered standard for pitch sizes up to 3/4".

You can assure maximum chain life by lubricating whenever possible. Soap lubrication is recommended, using detergent or nonalkali fluid type lubricant. Water lubrication should only be used when nothing else can be tolerated. Dimensions and material fabrication of both our Stainless Steel and Carbon Steel chains conform to ANSI B29.1 for No. 25 and No. 35 Riveted Single Strand Roller Chains.

**Carbon Steel — Type 1117** is an economical and long-lasting material for use in non-corrosive environments. This chain offers precision and strength without high cost. Its performance is equal to or better than Stainless Steel as long as corrosion resistance is not a critical factor. We recommend pairing this material with the Steel Sprockets shown on [page 271](#).

#### CARBON STEEL — Type 1117

Order Example: **B-RRCC-25-5** is 5' of 1/4" pitch of Roller Chain

Part No.	ANSI No.	Pitch	Roller Diameter	Width	Average Break Load	Price	
						-5 5'	-10 10'
<b>B-RRCS-25</b>	25	1/4"	0.130"	1/8"	925 lbs	<b>18.90</b>	<b>31.50</b>
<b>B-RRCS-35</b>	35	3/8"	0.200"	3/16"	2100 lbs	<b>15.65</b>	<b>26.10</b>

**Stainless Steel — Type 304** is a good choice for assemblies that are exposed to fluctuating atmospheric conditions, electrical fields, chemicals and other corrosives. With its reliable strength and excellent corrosion resistance, this chain combines well with the Fiberglass-Reinforced Nylon Sprockets on [page 272](#). It is useful in fractional horsepower chain drive assemblies, particularly where register must be maintained.

#### STAINLESS STEEL — Type 304

Part No.	ANSI No.	Pitch	Diameter	Width	Break Load	Price	
						-5 5'	-10 10'
<b>B-RCX-25</b>	25	1/4"	0.130"	1/8"	900 lbs	<b>14.85</b>	<b>27.00</b>

## ROLLER CHAIN — Nylon



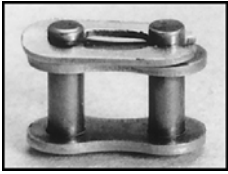
### 1/4" PITCH ROLLER CHAIN — Nylatron GS®

This plastic chain is desirable for use where caustic fumes are present or where electrical isolation is required. Chain snaps apart and can easily be connected into any required length. Available in 1 and 5-Foot length.

#### NYLATRON GS®

Part No.	Size	Pitch	Diameter	Width	Break Load	Price	
						1'	5'
<b>B-RCP-25-1</b>	#25	1/4"	0.130"	1/8"	65 lbs	<b>10.65</b>	<b>53.05</b>

## ROLLER CHAIN LINKS



### CONNECTING LINKS

Connecting Links with spring clips close up chain links by grasping the grooves in connecting pins and snapping to a firm hold. They are used to assemble chain strands that have an even number of links. The three-piece assembly consists of a two-posted pin link with a detached plate and a spring clip.

### CONNECTING LINKS

Part No.	Pitch	Fits	Material	Spring-Clip	Price	
					5	10
<b>B-RRCS-25CL</b>	1/4"	B-RRCS-25	Carbon Steel	Closed	<b>3.65</b>	<b>6.60</b>
<b>B-RRCS-35CL</b>	3/8"	B-RRCS-35	Carbon Steel	Open	<b>3.05</b>	<b>5.50</b>
<b>B-RCCX-25</b>	1/4"	B-RCX-25	Stainless Steel	Open	<b>14.85</b>	<b>29.00</b>

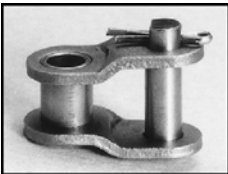


### ROLLER LINKS

Add to chain length or replace damaged sections with complete-assembly Roller Links.

### ROLLER LINKS

Part No.	Pitch	Fits	Material	Price	
				5	10
<b>B-RRCS-25RL</b>	1/4"	B-RRCS-25	Carbon Steel	<b>2.20</b>	<b>4.00</b>
<b>B-RRCS-35RL</b>	3/8"	B-RRCS-35	Carbon Steel	<b>2.50</b>	<b>4.50</b>



ONE-PITCH



TWO-PITCH

### OFFSET LINKS

**One-Pitch Offset Links** compensate for chains with an odd number of pitches. Units are composed of two offset plates assembled with a bushing at one end and an offset link pin at the other. The link is secured with a removable pin.

**Two-Pitch Offset Link** assemblies consist of a roller link and offset link riveted together. These parts are normally specified for severe service applications.

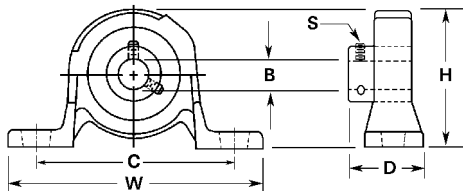
### OFFSET LINKS

Part No.	Pitch	Fits	Material	Type	Price	
					5	10
<b>B-RRCS-351P</b>	3/8"	B-RRCS-35	Carbon Steel	One-Pitch	<b>6.60</b>	<b>12.00</b>
<b>B-RRCS-252P</b>	1/4"	B-RRCS-25	Carbon Steel	Two-Pitch	<b>7.60</b>	<b>13.80</b>
<b>B-RRCS-352P</b>	3/8"	B-RRCS-35	Carbon Steel	Two-Pitch	<b>6.65</b>	<b>12.10</b>
<b>B-RCOX-25</b>	1/4"	B-RCX-25	Stainless Steel	Two-Pitch	<b>28.35</b>	<b>51.50</b>



See Roller Chain Tools  
on page 272

## BEARINGS, MOUNTED — Pillow Blocks

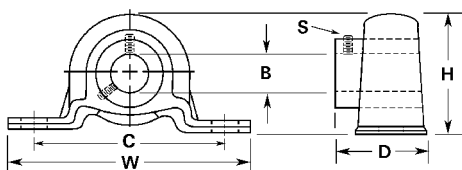


### BALL BEARING — One-Piece Housing, Self Aligning

Mounted with deep groove ball bearings for high radial and thrust loads, these light duty Pillow Blocks have a one-piece, Cast Ductile Iron housing. A machined housing bore and spherical outer race help achieve full self-alignment, with positive locking by set screws through the extended inner race. Bearings have a synthetic Viton® lip-type seal. Temperature performance from -30° to 225°F (-34° to 107°C). Bore tolerance: +0.001" / -0.000". Set screws are included (2 @ 120°).

#### CAST DUCTILE IRON

Part No.	Bore (B)	Width (W)	Depth (D)	Height (H)	Set Screw (S)	Mounting Holes (C)		Price Each
						Min.	Max.	
<b>B-MBDH-08</b>	1/2	4-1/2	1.1250	2-5/32	10-32	3-3/16	3-11/16	<b>28.75</b>
<b>B-MBDH-10</b>	5/8	4-1/2	1.1250	2-5/32	10-32	3-3/16	3-11/16	<b>28.75</b>
<b>B-MBDH-12</b>	3/4	4-3/4	1.2342	2-7/16	10-32	3-5/8	3-7/8	<b>31.50</b>



### BALL BEARING — Two-Piece Housing, Self Aligning

The outer housing of these Pillow Blocks is made from quality Pressed Steel, with deep groove ball bearings to support radial and thrust loads. Lubricated for life, the high chrome-bearing Steel bearings have a spherical outer race for full self alignment. Races are closed by synthetic lip type seals made of Viton®. Two set screws provide positive locking through an extended inner race. The Pillow Blocks are easy to assemble — the housing halves just snap together. Temperature range: -30° to 225°F (-34° to 107°C). Bore tolerance: +0.001" / -0.000". Includes set screws (2 @ 120°).

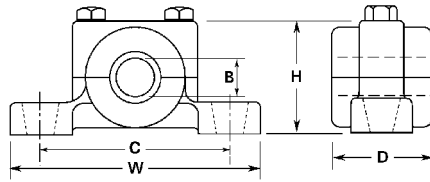
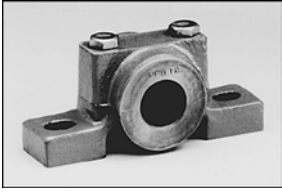
#### LOW CARBON PRESSED STEEL

Part No.	Bore (B)	Width (W)	Dimensions in Inches			Set Screw (S)	Mounting Holes (C)	Price Each
			Depth (D)	Height (H)				
<b>B-MBSH-08</b>	1/2	3-5/8	1.1250	1-3/4	10-32	2-11/16	<b>18.65</b>	
<b>B-MBSH-10</b>	5/8	3-5/8	1.1250	1-3/4	10-32	2-11/16	<b>18.65</b>	
<b>B-MBSH-12</b>	3/4	4-1/8	1.2030	2-1/16	10-32	3	<b>20.70</b>	



Flanged Bearings are on page 277

## BEARINGS, MOUNTED — Pillow Blocks (cont.)

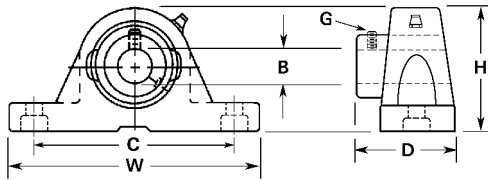
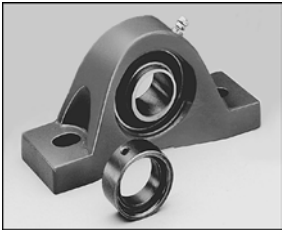


### PLAIN BEARING — Split Housing

Light duty Pillow Blocks are furnished with an oil-impregnated sintered bronze sleeve bearing to supply self-contained lubrication. These mounted bearings have a split Cast Iron housing for reliable light-duty load support. The bore and mounting base are machined, and the bottom and split surfaces are ground. Both end surfaces of the bore are finished perpendicular to the base. Bolt holes in the base are slotted. Operating temperature:  $-30^{\circ}$  to  $225^{\circ}\text{F}$  ( $-34^{\circ}$  to  $107^{\circ}\text{C}$ ). Bore tolerance:  $+0.000'' / -0.001''$ .

### CAST IRON

Part No.	Nominal Size	Dimensions in Inches					Mounting Holes (C)	Price Each
		Bore (B)	Width (W)	Depth (D)	Height (H)			
<b>B-MBBB-04</b>	1/4	0.2510	2.75	1.00	1.00	2-1/8	<b>22.60</b>	
<b>B-MBBB-06</b>	3/8	0.3770	2.75	1.00	1.00	2-1/8	<b>23.25</b>	
<b>B-MBBB-08</b>	1/2	0.5020	3.75	1.50	1.50	2-1/8	<b>32.50</b>	
<b>B-MBBB-10</b>	5/8	0.6270	5.00	2.00	2.00	3-3/4	<b>41.20</b>	
<b>B-MBBB-12</b>	3/4	0.7530	5.00	2.00	2.00	3-3/4	<b>41.65</b>	



### BALL BEARING — One-Piece Housing, Eccentric Lock

A solid one-piece Cast Iron housing with a precision machined base and spherical bore provides the load support needed for standard duty performance. The bearing features Chrome Alloy Steel balls and a spherical outer race with synthetic Viton<sup>®</sup> lip-type seals that seal out dirt and moisture. An eccentric locking collar provides reliable shaft stability even under shock load, and the 1/4-28 threaded grease fitting is removable. Operating range from  $-30^{\circ}$  to  $225^{\circ}\text{F}$  ( $-34^{\circ}$  to  $107^{\circ}\text{C}$ ). Standard bore tolerance is  $+0.0012'' / -0.0000''$ .

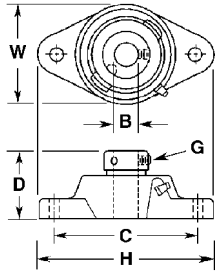
### CAST IRON

Part No.	Bore (B)	Width (W)	Depth (D)	Height (H)	Grease Fitting (G)	Mounting Holes (C)		Price Each
						Min.	Max.	
<b>B-MBRL-08</b>	1/2	5-1/16	1-5/8	2-9/32	1/4-28	3-5/16	4	<b>34.10</b>
<b>B-MBRL-10</b>	5/8	5-1/16	1-5/8	2-9/32	1/4-28	3-5/16	4	<b>34.10</b>
<b>B-MBRL-12</b>	3/4	5-1/4	1-45/64	2-17/32	1/4-28	3-7/16	4-1/8	<b>38.45</b>

## Sintered Bronze Bearings

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## BEARINGS, MOUNTED — Flanged Housing

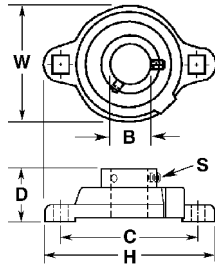


### BALL BEARING — One-Piece Housing Eccentric Lock

A rigid one-piece housing made of Cast Iron features a precision machined base and spherical bore. These bearings contain Chrome Alloy Steel balls, enclosed by synthetic Viton<sup>®</sup> lip-type seals. The bearing has a spherical outer race. An eccentric locking collar secures bearing to shaft. Removable 1/4-28 threaded grease fitting allows regular maintenance. Operates in temperature ranges from -30° to 225°F (-34° to 107°C). Bore tolerance: +0.0012"/ -0.000".

#### CAST IRON

Part No.	Dimensions in Inches						
	Bore (B)	Height (H)	Width (W)	Depth (D)	Grease Fitting (G)	Mounting Holes (C)	Price Each
<b>B-MBFE-08</b>	1/2	3-3/4	2-9/32	1-37/64	1/4-28	3	<b>34.10</b>
<b>B-MBFE-10</b>	5/8	3-3/4	2-9/32	1-37/64	1/4-28	3	<b>34.10</b>
<b>B-MBFE-12</b>	3/4	4-13/32	2-37/64	1-13/16	1/4-28	3-17/32	<b>38.45</b>

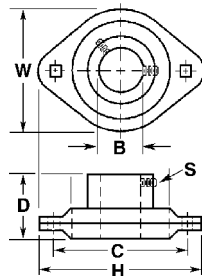
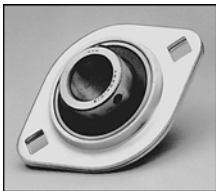


### BALL BEARING — One-Piece Housing Self Aligning

Prelubricated bearings are housed in one-piece Cast Ductile Iron, with a two-bolt flange for reliable light duty performance. The machined housing bore and spherical outer race of the bearing help maintain full self-alignment with positive locking by set screws through an extended inner race. Synthetic Viton<sup>®</sup> lip type seal. Temperature range: -30° to 225°F (-34° to 107°C). Bore tolerance: +0.001" / -0.000". Set screws are included (2 @ 120°).

#### CAST DUCTILE IRON

Part No.	Dimensions in Inches						
	Bore (B)	Height (H)	Width (W)	Depth (D)	Set Screw (S)	Mounting Holes (C)	Price Each
<b>B-MBFD-08</b>	1/2	3-3/16	1-15/16	1	10-32	2-1/2	<b>27.15</b>
<b>B-MBFD-10</b>	5/8	3-3/16	1-15/16	1	10-32	2-1/2	<b>27.15</b>
<b>B-MBFD-12</b>	3/4	3-9/16	2-1/4	1-1/8	10-32	2-13/16	<b>29.60</b>



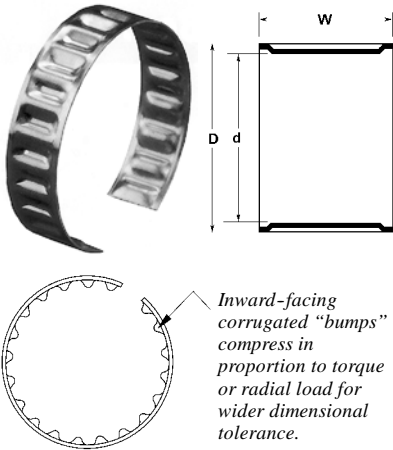
### BALL BEARING — Two-Piece Housing

Housings for these mounted ball bearings are made of Pressed Steel with deep groove ball bearings set in a two-bolt flange configuration for light duty strength. Positive locking is achieved with an extended inner race and two set screws. Synthetic Viton<sup>®</sup> lip type seals enclose the inner race to maintain lifetime lubrication. Operating temperatures from -30° to 225°F (-34° to 107°C). Bore tolerance: +0.001" / -0.000". Set screws are included (2 @ 120°).

#### PRESSED STEEL

Part No.	Dimensions in Inches							
	Bore (B)	Height (H)	Width (W)	Min. Frame Opening (F)	Depth (D)	Set Screw (S)	Mounting Holes (C)	Price Each
<b>B-MBFS-08</b>	1/2	3-3/16	2-5/16	1-15/16	29/32	10-32	2-1/2	<b>14.30</b>
<b>B-MBFS-10</b>	5/8	3-3/16	2-5/16	1-15/16	29/32	10-32	2-1/2	<b>14.30</b>
<b>B-MBFS-12</b>	3/4	3-9/16	2-5/8	2-3/16	1	10-32	2-13/16	<b>15.95</b>

# TOLERANCE RINGS — Stainless Steel Type 301



Tolerance Rings are a low-cost, wide tolerance, hold-fast solution for joining mating cylindrical parts. These frictional fasteners assemble quickly and provide retention to securely mount bearings and other components inside a bore, while compensating for small amounts of misalignment and thermal expansion. No need for set screws, adhesives, knurls, D-shafts or nuts when used under recommended loading capacity, and you can employ broader machining tolerances for interference fits.

Cut to fit outside a nominal circumference, the free-state diameter of the ring is open, so that when installed inside a bore the ring will conform and be self-retaining.

Each inward-facing corrugated "bump" acts like a stiff, radial spring that compresses in proportion to torque or radial load, thereby allowing for a wider dimensional tolerance of mating diameters.

Load capacities vary with the amount of interference fit and the radial spring design allows for infinite rotational indexing of parts prior to assembly.

## SPECIFICATIONS

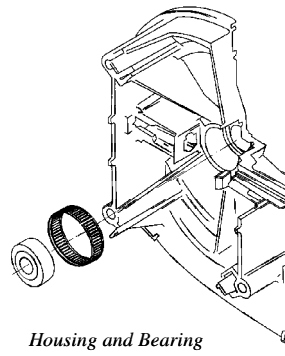
Part No.	Nominal Size	Bearing O.D.	Dimensions in Inches			Ring d	Ring W	Radial Load	Typical Bore for Bearing Mount	
			Bearing Bore Dia.	Bearing Thickness					D Min.	D Max.
<b>B-RTX-0375</b>	3/8	0.3750	0.1250	0.1562	0.375	0.250	190	0.430	0.433	
<b>B-RTX-0500</b>	1/2	0.5000	0.1880	0.1960	0.500	0.250	270	0.555	0.558	
<b>B-RTX-0625</b>	5/8	0.6250	0.2500	0.1960	0.625	0.250	320	0.680	0.683	
<b>B-RTX-0750</b>	3/4	0.7500	0.2500	0.2812	0.750	0.250	440	0.825	0.828	
<b>B-RTX-0866</b>	22mm	0.8750	0.2812	0.2812	0.866	0.276	550	0.941	0.944	
<b>B-RTX-1125</b>	1-1/8	1.1250	0.3125	0.3125	1.125	0.500	1440	1.199	1.203	
<b>B-RTX-1378</b>	35mm	1.3750	0.3438	0.3438	1.378	0.433	820	1.452	1.456	
<b>B-RTX-1625</b>	1-5/8	1.6250	0.4375	0.4375	1.625	0.500	1200	1.699	1.703	

Made of Stainless Steel Type 301 for high corrosion resistance, these fastening devices are useful for mounting a bearing outer race, or for mounting a fan or pulley to a shaft of common diameter. Worn housing bores, or bores that have been accidentally machined oversize, can be salvaged by use of a Tolerance Ring.

Tolerance Rings are suited for transmitting torque from one cylindrical component to another; axial retention; radial loading between mating machine parts; and for component fastening onto housings. They can also be applied to compensate for thermal expansion, without overstressing brittle components.

## STAINLESS STEEL TYPE 301

Part No.	Nominal Size	Fits Bearing	Each	Price	
				10	25
<b>B-RTX-0375</b>	3/8	B-BR-2	<b>2.35</b>	<b>18.75</b>	<b>38.75</b>
<b>B-RTX-0500</b>	1/2	B-BR-3	<b>2.35</b>	<b>18.75</b>	<b>38.75</b>
<b>B-RTX-0625</b>	5/8	B-BR-4	<b>2.35</b>	<b>18.75</b>	<b>38.75</b>
<b>B-RTX-0750</b>	3/4	B-BR-4L	<b>2.35</b>	<b>18.75</b>	<b>38.75</b>
<b>B-RTX-0866</b>	22mm	B-BMR-7 / 7L	<b>2.35</b>	<b>18.75</b>	<b>38.75</b>
<b>B-RTX-1125</b>	1-1/8	B-BR-8	<b>2.35</b>	<b>18.75</b>	<b>38.75</b>
<b>B-RTX-1378</b>	35mm	B-BMR-10	<b>2.35</b>	<b>18.75</b>	<b>38.75</b>
<b>B-RTX-1625</b>	1-5/8	B-BR-12	<b>3.75</b>	<b>28.20</b>	<b>59.30</b>



## BEARINGS, BALL — Steel



These Ball Bearings are made from SAE 52100 Chrome Steel to sustain radial, thrust and combined loads proportionate to the capacities of the small shafts for which they are designed. Especially suitable for use in fractional horsepower motors, small appliances, precision instruments, tape recorders and similar devices, these double-shielded\* Bearings are electric motor quality for applications requiring extra-quiet performance.

ABEC 1 Tolerance: I.D.: +.0000"/-.0003"  
Width: +.000"/-.005"

**Other sizes available. Call our Purchasing Services department toll free — 1-888-455-9712.**

### CHROME STEEL — SAE 52100

Part No.	Bore		Outside Diameter		Thickness		Price	
	Inches	Millimeters	Inches	Millimeters	Inches	Millimeters	Each	10
<b>B-BR-1*</b>	0.0469	1.191	0.1562	3.967	0.0937	2.3790	<b>12.95</b>	<b>107.60</b>
<b>B-BR-1-1/2*</b>	0.0937	2.380	0.3125	7.938	0.1406	3.5710	<b>11.55</b>	<b>96.00</b>
<b>B-BR-2</b>	0.1250	3.175	0.3750	9.525	0.1562	3.9675	<b>4.20</b>	<b>35.00</b>
<b>B-BR-3</b>	0.1875	4.763	0.5000	12.700	0.1960	4.9784	<b>4.95</b>	<b>41.00</b>
<b>B-BR-4</b>	0.2500	6.350	0.6250	15.870	0.1960	4.9784	<b>4.15</b>	<b>34.50</b>
<b>B-BR-4L</b>	0.2500	6.350	0.7500	19.050	0.2812	7.1424	<b>6.20</b>	<b>51.40</b>
<b>B-BR-6</b>	0.3750	9.525	0.8750	22.225	0.2812	7.1424	<b>4.30</b>	<b>35.55</b>
<b>B-BR-8</b>	0.5000	12.700	1.1250	28.575	0.3125	7.9375	<b>5.20</b>	<b>43.25</b>
<b>B-BR-10</b>	0.6250	15.875	1.3750	34.925	0.3438	8.7320	<b>7.30</b>	<b>60.50</b>
<b>B-BR-12</b>	0.7500	19.050	1.6250	41.275	0.4375	11.1130	<b>9.10</b>	<b>75.75</b>
<b>B-BR-16</b>	1.0000	25.400	2.0000	50.800	0.5000	12.7000	<b>10.55</b>	<b>88.00</b>
<b>B-BR-20</b>	1.2500	31.750	2.2500	57.150	0.5000	12.7000	<b>12.35</b>	<b>102.80</b>

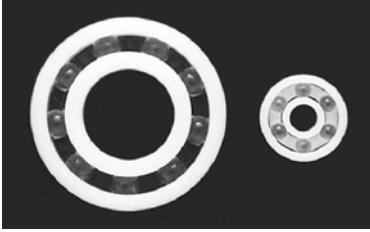
\*Stainless Steel Type 440C, unshielded.

### METRIC

Part No.	Bore		Outside Diameter		Thickness		Price	
	Millimeters	Inches	Millimeters	Inches	Millimeters	Inches	Each	10
<b>B-BMR-1*</b>	1	0.0394	3	0.1181	1.0	0.0394	<b>14.55</b>	<b>121.25</b>
<b>B-BMR-1-1/2</b>	1.5	0.0591	6	0.2362	3	0.1181	<b>31.20</b>	<b>260.00</b>
<b>B-BMR-2</b>	2	0.0787	7	0.2756	3.5	0.1378	<b>24.75</b>	<b>206.35</b>
<b>B-BMR-3</b>	3	0.1181	10	0.3937	4	0.1575	<b>6.00</b>	<b>50.00</b>
<b>B-BMR-4</b>	4	0.1575	13	0.5118	5	0.1969	<b>6.00</b>	<b>50.00</b>
<b>B-BMR-4L</b>	4	0.1575	16	0.6299	5	0.1969	<b>6.60</b>	<b>55.00</b>
<b>B-BMR-5</b>	5	0.1969	16	0.6299	5	0.1969	<b>4.60</b>	<b>38.20</b>
<b>B-BMR-6</b>	6	0.2362	19	0.7480	6	0.2362	<b>4.30</b>	<b>35.75</b>
<b>B-BMR-7</b>	7	0.2756	19	0.7480	6	0.2362	<b>4.80</b>	<b>39.95</b>
<b>B-BMR-7L</b>	7	0.2756	22	0.8661	7	0.2756	<b>5.55</b>	<b>46.00</b>
<b>B-BMR-8</b>	8	0.3150	22	0.8661	7	0.2756	<b>4.00</b>	<b>33.00</b>
<b>B-BMR-9</b>	9	0.3543	24	0.9449	7	0.2756	<b>6.00</b>	<b>48.95</b>
<b>B-BMR-9L</b>	9	0.3543	26	1.0236	8	0.3150	<b>6.85</b>	<b>56.85</b>
<b>B-BMR-10</b>	10	0.3937	35	1.3780	11	0.4331	<b>6.60</b>	<b>54.95</b>
<b>B-BMR-15</b>	15	0.5906	42	1.6535	13	0.5118	<b>6.90</b>	<b>57.30</b>
<b>B-BMR-20</b>	20	0.7874	52	2.0472	15	0.5906	<b>9.30</b>	<b>77.50</b>

\*Stainless Steel Type 440C, unshielded.

## BEARINGS, BALL — Nonmetallic



There are many applications for nonmetallic Ball Bearings when metal bearings are not suitable due to corrosive conditions. Self-lubricating and highly resistant to corrosion, moisture, acids and solvents, these plastic bearings have an Acetal housing with Nylon cages to hold the Glass balls in place. Factors such as temperature and concentration of solution may affect performance of acetal bearings.

### ACETAL/NYLON/GLASS

Part No.	Bore	Dimensions in Inches			Price	
		O.D.	Thickness	Each	10	
<b>B-BNM-412</b>	1/4	3/4	7/32	<b>12.35</b>	<b>103.00</b>	
<b>B-BNM-614</b>	3/8	7/8	9/32	<b>11.75</b>	<b>97.80</b>	
<b>B-BNM-818</b>	1/2	1-1/8	1/4	<b>11.75</b>	<b>97.80</b>	
<b>B-BNM-8186</b>	1/2	1-1/8	3/8	<b>12.00</b>	<b>100.00</b>	
<b>B-BNM-1022</b>	5/8	1-3/8	0.344	<b>12.25</b>	<b>102.20</b>	

### METRIC

Part No.	Bore		Outside Diameter		Thickness		Price	
	Millimeters	Inches	Millimeters	Inches	Millimeters	Inches	Each	10
<b>B-BMNM-5</b>	5	0.1969	16	0.6299	5	0.1969	<b>11.90</b>	<b>95.25</b>
<b>B-BMNM-6</b>	6	0.2362	19	0.7480	6	0.2362	<b>12.85</b>	<b>106.90</b>
<b>B-BMNM-7</b>	7	0.2756	19	0.7480	6	0.2362	<b>12.15</b>	<b>100.85</b>
<b>B-BMNM-8</b>	8	0.3150	22	0.8661	7	0.2756	<b>14.10</b>	<b>117.20</b>
<b>B-BMNM-9</b>	9	0.3543	24	0.9449	7	0.2756	<b>14.65</b>	<b>122.00</b>
<b>B-BMNM-15</b>	15	0.5906	32	1.2598	8	0.3150	<b>16.35</b>	<b>136.00</b>
<b>B-BMNM-20</b>	20	0.7874	42	1.6535	12	0.4724	<b>21.30</b>	<b>177.40</b>

## CAM FOLLOWERS — Stainless Steel



### CAM FOLLOWERS — Needle Bearing

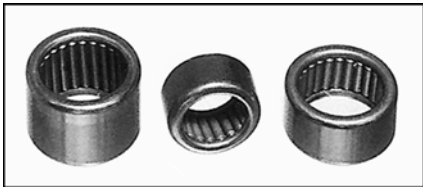
High quality stainless steel provides extended bearing life and reduces routine maintenance costs. Recommended for use in numerous medical applications, Needle Bearing Cam Followers use a food-grade lubricant to help minimize bearing contamination and keep your machinery running without downtime. Sealed bearings, with a hex socket for mounting.

### CAM FOLLOWERS — Stainless Steel Type 440C

Part No.	Size	Dimensions in Inches					Thread	Recomm. Torque (In./Lbs.)	Max. Static Capacity (Lbs.)	Price Each
		Roller		Stud						
		O.D.	Width	Dia.	Length	Length	UNF 2-A			
<b>B-NBCF-08</b>	1/2	.500	.375	.190	.625	.250	#10-32	15	632	<b>52.40</b>
<b>B-NBCF-12</b>	3/4	.750	.500	.375	.875	.375	3/8-24	95	1652	<b>51.75</b>
<b>B-NBCF-16</b>	1	1.000	.625	.4375	1.000	.500	7/16-20	250	2448	<b>63.50</b>
<b>B-NBCF-20</b>	1-1/4	1.250	.750	.500	1.250	.625	1/2-20	350	3400	<b>76.05</b>



## BEARINGS — Needle Roller, Steel



A selection of Torrington's general purpose, drawn cup Needle Roller Bearings can be kept on hand for experimental, prototype or model work. Since the needles roll directly on the shaft, a good quality, hardened steel shaft should be used. Lubrication by oil or grease depends on the application. Drawn cup bearings must be pressed into the housing, never hammered. Shaft raceway diameters and housing bores are shown below.

### NEEDLE ROLLER BEARINGS — Steel

Part No	Bore	O.D.	Width	Dimensions in Inches		Housing Bore		Each	Price
				Raceway Diameter Max.	Raceway Diameter Min.	Min.	Max.		
<b>B-NR-B24</b>	1/8	1/4	1/4	0.1250	0.1247	0.2500	0.2505	<b>13.85</b>	<b>115.35</b>
<b>B-NR-B34</b>	3/16	11/32	1/4	0.1875	0.1872	0.3432	0.3437	<b>10.85</b>	<b>90.15</b>
<b>B-NR-B36</b>	3/16	11/32	3/8	0.1875	0.1872	0.3432	0.3437	<b>9.10</b>	<b>75.90</b>
<b>B-NR-B44</b>	1/4	7/16	1/4	0.2500	0.2495	0.4370	0.4380	<b>9.75</b>	<b>81.20</b>
<b>B-NR-B47</b>	1/4	7/16	7/16	0.2500	0.2495	0.4370	0.4380	<b>6.25</b>	<b>52.10</b>
<b>B-NR-B56</b>	5/16	1/2	3/8	0.3125	0.3120	0.4995	0.5005	<b>6.80</b>	<b>56.75</b>
<b>B-NR-B59</b>	5/16	1/2	9/16	0.3125	0.3120	0.4995	0.5005	<b>7.10</b>	<b>59.10</b>
<b>B-NR-B65</b>	3/8	9/16	5/16	0.3750	0.3745	0.5620	0.5630	<b>7.10</b>	<b>59.10</b>
<b>B-NR-B68</b>	3/8	9/16	1/2	0.3750	0.3745	0.5620	0.5630	<b>6.25</b>	<b>52.10</b>
<b>B-NR-B86</b>	1/2	11/16	3/8	0.5000	0.4995	0.6870	0.6880	<b>6.95</b>	<b>57.90</b>
<b>B-NR-B88</b>	1/2	11/16	1/2	0.5000	0.4995	0.6870	0.6880	<b>6.95</b>	<b>57.90</b>
<b>B-NR-B812</b>	1/2	11/16	3/4	0.5000	0.4995	0.6870	0.6880	<b>7.10</b>	<b>59.10</b>
<b>B-NR-B108</b>	5/8	7/8	1/2	0.6250	0.6245	0.8745	0.8755	<b>7.15</b>	<b>60.15</b>
<b>B-NR-B1010</b>	5/8	7/8	5/8	0.6250	0.6245	0.8745	0.8755	<b>7.85</b>	<b>65.25</b>
<b>B-NR-B1012</b>	5/8	7/8	3/4	0.6250	0.6245	0.8745	0.8755	<b>7.90</b>	<b>65.50</b>
<b>B-NR-B128</b>	3/4	1	1/2	0.7500	0.7495	0.9995	1.0005	<b>7.65</b>	<b>63.55</b>
<b>B-NR-B1210</b>	3/4	1	5/8	0.7500	0.7495	0.9995	1.0005	<b>7.95</b>	<b>66.30</b>
<b>B-NR-B1212</b>	3/4	1	3/4	0.7500	0.7495	0.9995	1.0005	<b>8.70</b>	<b>72.25</b>



### GROUND TOOL STEEL SAE 0-1

Oil hardenable steel alloy recommended for dies, punches, gauges and tools. It should be used where a greater degree of accuracy is desired in hardening. Its precise diameter and smooth finish make it excellent for use as steel shafting. Also referred to as "Silver Steel" in England.

#### Heat Treatment:

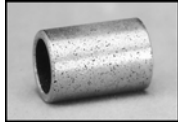
For cross sections smaller than 1/4" heat to 1450°-1475°F (788° - 802°C) and hold until heated through. For larger sections, preheat to 1200°F (649°C), then raise to 1450°-1500°F (788° - 815°C) hardening temperature, hold half an hour per inch of cross section. **Quench in oil** at 125°-150°F (52° - 65°C) and TEMPER IMMEDIATELY.

**For a list of sizes and prices see page 64**

# BEARINGS — Sintered Bronze, Oilite®



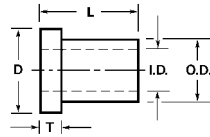
**THRUST**



**SLEEVE**



**FLANGE**



Oil cushioned Oilite® Sintered Bearings are fabricated from metal powders and contain approximately 18% oil (by volume). This vacuum impregnated oil supplements the strong, pure bronze structure and forms a hydraulic cushion to absorb unusual shocks and impacts, allowing the bearing to carry heavy loads. Self-lubricating Oilite® bearings are separated from the shaft by a protective film of oil. The oil is supplied through thousands of interconnected, oil impregnated pores. Oil rises to the bearing surface when the shaft is in motion and is reabsorbed by the bearing through capillary action when the shaft is idle. Available in Thrust, Sleeve and Flange type bearings. Sleeve and Flange Type Bearings can be machined to any length.

©Beemer Precision Inc.

## THRUST TYPE — SAE 841

Tolerance: I.D.  $\pm 0.005''$ , O.D.  $\pm 0.010''$

Part No.	Nominal		Dimensions in Inches			Price	
	I.D.	O.D.	I.D.	O.D.	Thickness (Tol. $\pm 0.0025''$ )	Each	10
<b>B-TBB-4/8</b>	1/4"	1/2"	0.2550	0.5000	1/16	<b>1.15</b>	<b>10.60</b>
<b>B-TBB-4/10</b>	1/4"	5/8"	0.2550	0.6250	1/16	<b>1.20</b>	<b>10.65</b>
<b>B-TBB-5/10</b>	5/16"	5/8"	0.3145	0.6250	1/16	<b>1.20</b>	<b>10.65</b>
<b>B-TBB-5/12</b>	5/16"	3/4"	0.3150	0.7500	1/16	<b>1.35</b>	<b>11.50</b>
<b>B-TBB-6/10</b>	3/8"	5/8"	0.3850	0.6250	1/16	<b>1.20</b>	<b>10.60</b>
<b>B-TBB-6/12</b>	3/8"	3/4"	0.3775	0.7500	1/16	<b>1.20</b>	<b>10.60</b>
<b>B-TBB-8/12</b>	1/2"	3/4"	0.5070	0.7500	1/16	<b>1.20</b>	<b>10.60</b>
<b>B-TBB-8/16</b>	1/2"	1"	0.5100	1.0000	1/16	<b>1.25</b>	<b>10.95</b>
<b>B-TBB-10/16</b>	5/8"	1"	0.6280	1.0000	1/8	<b>1.60</b>	<b>12.75</b>
<b>B-TBB-12/20</b>	3/4"	1-1/4"	0.7530	1.2500	1/8	<b>1.80</b>	<b>13.50</b>

## ASSORTMENTS

**B-TBB-100** Contains two Thrust Type Bearings each size -20 pcs. . . . . **29.80**

## SLEEVE TYPE — SAE 841

Tolerance: I.D. and O.D.  $+ 0.000/-0.001''$

Part No.	Nominal		Dimensions in Inches			Price	
	I.D.	O.D.	I.D.	O.D.	Length (Tol. $\pm 0.005''$ )	Each	10
<b>B-SBB-1</b>	1/16"	1/4"	0.0627	0.2501	7/64	<b>11.60</b>	<b>96.60</b>
<b>B-SBB-1-1/2</b>	3/32"	5/16"	0.0937	0.3125	7/64	<b>12.55</b>	<b>104.40</b>
<b>B-SBB-2/2</b>	1/8"	3/16"	0.1265	0.1895	1/8	<b>1.25</b>	<b>11.15</b>
<b>B-SBB-2/5</b>	1/8"	3/16"	0.1265	0.1895	5/16	<b>1.25</b>	<b>11.15</b>
<b>B-SBB-3/3</b>	3/16"	5/16"	0.1895	0.3145	3/16	<b>1.25</b>	<b>11.15</b>
<b>B-SBB-3/6</b>	3/16"	5/16"	0.1895	0.3145	3/8	<b>1.30</b>	<b>11.20</b>
<b>B-SBB-4/4</b>	1/4"	3/8"	0.2520	0.3770	1/4	<b>1.30</b>	<b>11.20</b>
<b>B-SBB-4/8</b>	1/4"	3/8"	0.2520	0.3770	1/2	<b>1.35</b>	<b>11.25</b>
<b>B-SBB-4/16</b>	1/4"	3/8"	0.2520	0.3770	1	<b>2.25</b>	<b>18.40</b>
<b>B-SBB-5/5</b>	5/16"	7/16"	0.3135	0.4395	5/16	<b>1.40</b>	<b>11.50</b>
<b>B-SBB-5/10</b>	5/16"	7/16"	0.3135	0.4395	5/8	<b>1.55</b>	<b>12.75</b>
<b>B-SBB-5/20</b>	5/16"	7/16"	0.3135	0.4395	1-1/4	<b>1.65</b>	<b>13.65</b>
<b>B-SBB-6/8</b>	3/8"	1/2"	0.3780	0.5025	1/2	<b>1.35</b>	<b>11.25</b>
<b>B-SBB-6/12</b>	3/8"	1/2"	0.3780	0.5025	3/4	<b>1.40</b>	<b>11.50</b>
<b>B-SBB-6/16</b>	3/8"	1/2"	0.3780	0.5025	1	<b>2.20</b>	<b>18.25</b>
<b>B-SBB-8/8</b>	1/2"	5/8"	0.5015	0.6280	1/2	<b>1.65</b>	<b>13.65</b>
<b>B-SBB-8/16</b>	1/2"	5/8"	0.5015	0.6280	1	<b>1.70</b>	<b>14.00</b>
<b>B-SBB-8/24</b>	1/2"	5/8"	0.5015	0.6280	1-1/2	<b>2.05</b>	<b>17.75</b>

# BEARINGS — Sintered Bronze, Oilite® (cont.)

## SLEEVE TYPE

Tolerance: I.D. and O.D. +0.000/-0.001"

Part No.	Nominal		Dimensions in Inches			Price	
	I.D.	O.D.	I.D.	O.D. (Tol.0.0005")	Length (Tol.±0.005")	Each	10
B-SBB-10/8	5/8"	3/4"	0.6260	0.7530	1/2	1.75	15.50
B-SBB-10/16	5/8"	3/4"	0.6260	0.7530	1	1.85	17.00
B-SBB-10/20	5/8"	3/4"	0.6260	0.7530	1-1/4	1.95	17.95
B-SBB-12/9	3/4"	7/8"	0.7510	0.8780	9/16	1.60	13.55
B-SBB-12/16	3/4"	7/8"	0.7510	0.8780	1	1.70	15.30
B-SBB-12/26	3/4"	7/8"	0.7510	0.8780	1-5/8	2.45	20.75
B-SBB-14/10	7/8"	1"	0.8780	1.0020	5/8	1.80	16.60
B-SBB-14/16	7/8"	1"	0.8780	1.0020	1	2.25	18.50
B-SBB-14/28	7/8"	1"	0.8780	1.0020	1-3/4	2.55	23.30
B-SBB-16/12	1"	1-1/8"	1.0020	1.1260	3/4	1.90	17.65
B-SBB-16/24	1"	1-1/8"	1.0020	1.1260	1-1/2	2.50	23.25

Special sizes quoted upon request. **Call Purchasing Services toll free — 1-888-455-9712.**

## ASSORTMENTS

**B-SBB-100** Contains two Sleeve Type Bearings each size listed above 58 pcs. . . . . **138.60**

## FLANGE TYPE

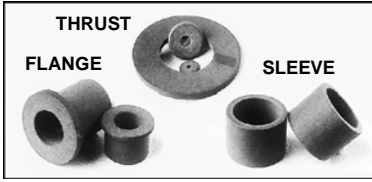
Tolerance: I.D. and O.D.: +0.000/-0.001", Flange: ±0.005", Thickness: ±0.0025"

Part No.	Nominal		Inches		(L) Length	Flange Tol.±0.005"		Price	
	I.D.	O.D.	I.D.	O.D.		(D) O.D.	(T) Thickness	Each	10
B-FBB-1	1/16"	1/4"	0.0627	0.2501	7/64"	19/64"	1/32"	8.50	74.00
B-FBB-1-1/2	3/32"	5/16"	0.0937	0.3125	7/64"	23/64"	1/32"	8.50	74.00
B-FBB-2/4	1/8"	1/4"	0.1260	0.2520	1/4"	5/16"	1/16"	1.40	12.40
B-FBB-2/6	1/8"	1/4"	0.1260	0.2520	3/8"	5/16"	1/16"	1.40	12.40
B-FBB-3/3	3/16"	5/16"	0.1895	0.3140	3/16"	7/16"	1/16"	1.40	12.40
B-FBB-3/6	3/16"	5/16"	0.1895	0.3140	3/8"	7/16"	1/16"	1.45	12.45
B-FBB-3/8	3/16"	5/16"	0.1895	0.3140	1/2"	7/16"	1/16"	1.50	12.50
B-FBB-4/4	1/4"	3/8"	0.2520	0.3775	1/4"	15/32"	1/16"	1.45	12.45
B-FBB-4/6	1/4"	3/8"	0.2520	0.3775	3/8"	15/32"	1/16"	1.45	12.45
B-FBB-4/8	1/4"	3/8"	0.2520	0.3775	1/2"	15/32"	1/16"	1.50	12.50
B-FBB-5/6	5/16"	7/16"	0.3125	0.4400	3/8"	9/16"	1/16"	1.45	12.45
B-FBB-5/8	5/16"	7/16"	0.3125	0.4400	1/2"	9/16"	1/16"	1.35	12.00
B-FBB-5/14	5/16"	7/16"	0.3125	0.4400	7/8"	9/16"	1/16"	1.55	13.95
B-FBB-6/6	3/8"	1/2"	0.3765	0.5020	3/8"	5/8"	1/16"	1.50	12.50
B-FBB-6/8	3/8"	1/2"	0.3765	0.5020	1/2"	5/8"	1/16"	1.55	12.85
B-FBB-8/8	1/2"	5/8"	0.5020	0.6270	1/2"	7/8"	1/16"	1.55	12.85
B-FBB-8/12	1/2"	5/8"	0.5020	0.6270	3/4"	7/8"	1/16"	1.55	12.95
B-FBB-8/16	1/2"	5/8"	0.5020	0.6270	1"	7/8"	1/16"	1.80	15.55
B-FBB-10/10	5/8"	7/8"	0.6270	0.8770	5/8"	1"	1/8"	1.95	16.50
B-FBB-10/20	5/8"	7/8"	0.6270	0.8770	1-1/4"	1"	1/8"	2.80	23.75
B-FBB-12/8	3/4"	1"	0.7505	1.0020	1/2"	1-7/16"	1/8"	2.45	20.85
B-FBB-12/18	3/4"	1"	0.7505	1.0020	1-1/8"	1-7/16"	1/8"	3.45	29.25
B-FBB-14/10	7/8"	1"	0.8780	1.0020	5/8"	1-1/4"	1/8"	2.05	18.50
B-FBB-14/16	7/8"	1"	0.8780	1.0020	1"	1-1/4"	1/8"	2.15	19.50
B-FBB-16/12	1"	1-1/4"	1.0020	1.2500	3/4"	1-7/8"	1/8"	3.30	28.85
B-FBB-16/20	1"	1-1/4"	1.0020	1.2500	1-1/4"	1-7/8"	1/8"	3.80	35.90

## ASSORTMENTS

**B-FBB-100** Contains two Flange Type Bearings each size listed above 52 pcs. . . . . **122.75**

# BEARINGS — Nonmetallic, RULON® J



## Rulon® J

Nonmetallic Bearings offer an innovative solution to design problems that may involve lubrication, heat, cold, friction, wear and corrosion difficulties. With maximum usable temperature of 550°F (288°C), these Bearings are highly reliable and efficient.

RULON® J is a patented all-polymeric reinforced PTFE compound that operates satisfactorily against soft mating surfaces, including stainless, aluminum, mild steel and many plastics.

### THRUST TYPE— Rulon® J

Part No.	Nominal		Actual		Thickness	Price	
	I.D.	O.D.	I.D.	O.D.		Each	10
<b>B-TBP-4/10</b>	1/4"	5/8"	0.2540	0.6250	.060"	<b>2.65</b>	<b>22.95</b>
<b>B-TBP-6/12</b>	3/8"	3/4"	0.3790	0.7500	.060"	<b>2.90</b>	<b>24.95</b>
<b>B-TBP-8/16</b>	1/2"	1"	0.5040	1.0000	.060"	<b>3.30</b>	<b>28.85</b>
<b>B-TBP-12/22</b>	3/4"	1-3/8"	0.7550	1.3750	1/8"	<b>7.25</b>	<b>63.35</b>

### SLEEVE TYPE

Tolerance: I.D. and O.D.: +.002"/-0.000; Length: ±.005"

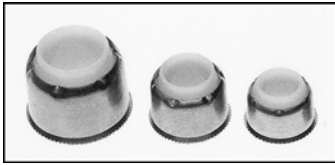
Part No.	Nominal		Actual		Length	Price	
	I.D.	O.D.	I.D.	O.D.		Each	10
<b>B-SBP-2/4</b>	1/8"	1/4"	0.1290	0.2510	1/4"	<b>2.40</b>	<b>19.90</b>
<b>B-SBP-2/6</b>	1/8"	1/4"	0.1290	0.2510	3/8"	<b>2.80</b>	<b>23.05</b>
<b>B-SBP-3/4</b>	3/16"	5/16"	0.1910	0.3130	1/4"	<b>2.85</b>	<b>23.75</b>
<b>B-SBP-3/8</b>	3/16"	5/16"	0.1910	0.3130	1/2"	<b>3.80</b>	<b>31.65</b>
<b>B-SBP-4/4</b>	1/4"	3/8"	0.2540	0.3760	1/4"	<b>3.05</b>	<b>25.45</b>
<b>B-SBP-4/8</b>	1/4"	3/8"	0.2540	0.3760	1/2"	<b>4.30</b>	<b>35.55</b>
<b>B-SBP-5/6</b>	5/16"	1/2"	0.3160	0.5010	3/8"	<b>5.10</b>	<b>42.40</b>
<b>B-SBP-5/8</b>	5/16"	1/2"	0.3160	0.5010	1/2"	<b>5.10</b>	<b>42.40</b>
<b>B-SBP-6/6</b>	3/8"	9/16"	0.3790	0.5630	3/8"	<b>5.05</b>	<b>42.15</b>
<b>B-SBP-6/12</b>	3/8"	9/16"	0.3790	0.5630	3/4"	<b>7.65</b>	<b>63.90</b>
<b>B-SBP-8/8</b>	1/2"	3/4"	0.5040	0.7510	1/2"	<b>7.50</b>	<b>62.40</b>
<b>B-SBP-8/16</b>	1/2"	3/4"	0.5040	0.7510	1"	<b>12.30</b>	<b>102.30</b>
<b>B-SBP-10/10</b>	5/8"	7/8"	0.6300	0.8760	5/8"	<b>10.50</b>	<b>87.30</b>
<b>B-SBP-10/16</b>	5/8"	7/8"	0.6300	0.8760	1"	<b>14.30</b>	<b>119.10</b>
<b>B-SBP-12/8</b>	3/4"	1"	0.7550	1.0010	1/2"	<b>11.60</b>	<b>96.60</b>
<b>B-SBP-12/24</b>	3/4"	1"	0.7550	1.0010	1-1/2"	<b>26.95</b>	<b>224.40</b>
<b>B-SBP-14/12</b>	7/8"	1-1/8"	0.8770	1.126	3/4"	<b>15.45</b>	<b>128.70</b>
<b>B-SBP-14/16</b>	7/8"	1-1/8"	0.8770	1.126	1"	<b>15.95</b>	<b>132.60</b>
<b>B-SBP-16/12</b>	1"	1-1/4"	1.005	1.251	3/4"	<b>28.50</b>	<b>237.60</b>
<b>B-SBP-16/16</b>	1"	1-1/4"	1.005	1.251	1"	<b>33.95</b>	<b>282.90</b>
<b>B-SBP-16/24</b>	1"	1-1/4"	1.005	1.251	1-1/2"	<b>35.50</b>	<b>295.80</b>

### FLANGE TYPE

Tol.: I.D. and O.D.: +.002"/-0.000; Length: ±.005" - Flange O.D.: ±.005"; Thick.: ±.003"

Part No.	Nominal		Actual		Length	Flange		Price	
	I.D.	O.D.	I.D.	O.D.		O.D.	Thickness	Each	10
<b>B-FBP-3/4</b>	3/16"	5/16"	0.1910	0.3130	1/4"	0.437"	1/16"	<b>2.95</b>	<b>24.60</b>
<b>B-FBP-3/8</b>	3/16"	5/16"	0.1910	0.3130	1/2"	0.437"	1/16"	<b>4.40</b>	<b>36.75</b>
<b>B-FBP-4/6</b>	1/4"	3/8"	0.2540	0.3760	3/8"	0.500"	1/16"	<b>4.45</b>	<b>36.95</b>
<b>B-FBP-4/8</b>	1/4"	3/8"	0.2540	0.3760	1/2"	0.500"	1/16"	<b>5.30</b>	<b>44.00</b>
<b>B-FBP-6/8</b>	3/8"	5/8"	0.3790	0.6260	1/2"	0.875"	1/8"	<b>10.40</b>	<b>86.70</b>
<b>B-FBP-6/12</b>	3/8"	5/8"	0.3790	0.6260	3/4"	0.875"	1/8"	<b>13.85</b>	<b>115.20</b>
<b>B-FBP-8/8</b>	1/2"	3/4"	0.5040	0.7510	1/2"	1.000"	1/8"	<b>8.95</b>	<b>74.40</b>
<b>B-FBP-8/16</b>	1/2"	3/4"	0.5040	0.7510	1"	1.000"	1/8"	<b>18.65</b>	<b>155.40</b>
<b>B-FBP-10/16</b>	5/8"	7/8"	0.6300	0.8760	1"	1.000"	1/8"	<b>19.10</b>	<b>159.00</b>
<b>B-FBP-12/16</b>	3/4"	1"	0.7550	1.0010	1"	1.250"	1/8"	<b>31.20</b>	<b>259.80</b>
<b>B-FBP-16/20</b>	1"	1-1/4"	1.005	1.251	1-1/2"	1.500"	1/8"	<b>58.70</b>	<b>489.00</b>

## BEARINGS, PRESS — Alignable



"Spyralign" Acetal Press Bearings provide bearings where thin metals are encountered in light load, low speed applications. These easy-to-install bearings offer a smooth, insulating surface and assure trouble-free operation. For high precision, bearings may be aligned within 5% of center line. Friction is minimal and frequent lubrication is not necessary. Stainless Steel 18-8 retainers.

**To install:** By applying constant force, press bearing into hole of correct size and lubricate with light oil during run-in period.

### PRESS BEARINGS — Acetal

Part No.	Shaft Size	Hole Size In Panel	Drill Size	Bearing Bore	Minimum Panel Thickness	Price	
						Each	10
<b>B-PBXD-2</b>	1/8"	0.297"-0.300"	19/64"	0.1265-0.1280	0.040"	<b>3.25</b>	<b>27.10</b>
<b>B-PBXD-3</b>	3/16"	0.375"-0.378"	3/8"	0.1905-0.1920	0.040"	<b>3.25</b>	<b>27.10</b>
<b>B-PBXD-4</b>	1/4"	0.375"-0.378"	3/8"	0.2520-0.2535	0.040"	<b>2.90</b>	<b>24.50</b>
<b>B-PBXD-5</b>	5/16"	0.547"-0.550"	35/64"	0.3150-0.3165	0.060"	<b>5.30</b>	<b>44.00</b>
<b>B-PBXD-6</b>	3/8"	0.625"-0.628"	5/8"	0.3775-0.3790	0.060"	<b>4.90</b>	<b>40.70</b>
<b>B-PBXD-8</b>	1/2"	0.812"-0.815"	13/16"	0.5035-0.5055	0.060"	<b>6.45</b>	<b>55.00</b>

## BEARINGS, LINEAR MOTION — Ceramic



Two types of ceramic linear motion bearings are available. The standard form requires lubrication while the Rulon® J type is self-lubricating. The Aluminum Oxide coating linear motion bearing has an extremely low coefficient of friction — even lower than Teflon bearings — to prevent shaft wear and galling. These bearings, totally interchangeable with rolling element equivalents, allow line-to-line contact.

They provide excellent electrical insulation and will not rust or corrode. The 0.002-inch aluminum oxide coating of the ceramic bearing on a machined aluminum substrate, provides an excellent wear-resistant surface. These unique bearings perform well under vacuum conditions and their durable coating is non-toxic. The self-lubricating type (Rulon® J liner) is recommended for use with soft shafting, including cold rolled steel, aluminum, and 300 series stainless steel.

**Typical Tolerances:** Bore: +.001"/-.000", O.D.: +.0000"/-.001", Length: +.000"/-.015".

Properties	Standard	Self-Lubricating
Coefficient of Friction	0.04-0.08	0.10-0.18
Temperature Range	400° to -200°F 204° to -129°C	550° to -400°F 288° to -240°C
Maximum Velocity (no load)	unlimited	400 SFM
Maximum Load (static) Linear Motion	5,000 psi	5,000 psi
Maximum Load (static) Rotary Motion	10,000 psi	10,000 psi
Shaft Hardness (minimum)	RC 58-63	RB 25

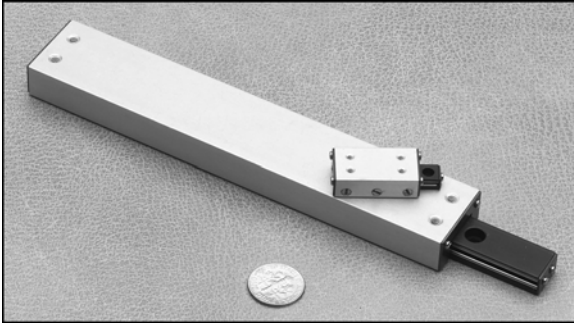
### STANDARD — Lubrication Required, Aluminum Oxide Bearing Surface

Part No.	Dimensions in Inches		Length	Each	Price	
	Bore	O.D.			5	5
<b>B-CLB-2505</b>	0.2505	0.5000	0.750	<b>20.15</b>	<b>74.95</b>	
<b>B-CLB-3755</b>	0.3755	0.6250	0.875	<b>21.85</b>	<b>89.95</b>	
<b>B-CLB-5005</b>	0.5005	0.8750	1.250	<b>22.75</b>	<b>89.10</b>	

### SELF-LUBRICATING — Rulon® J Bearing Surface

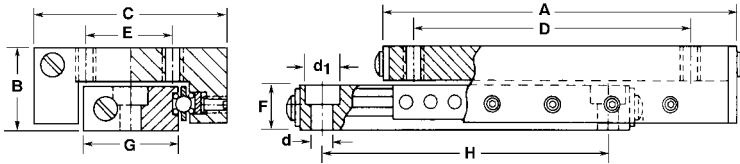
Part No.	Dimensions in Inches		Length	Each	Price	
	Bore	O.D.			5	5
<b>B-CLB-2505SL</b>	0.2505	0.5000	0.750	<b>20.15</b>	<b>74.95</b>	
<b>B-CLB-3755SL</b>	0.3755	0.6250	0.875	<b>21.85</b>	<b>89.95</b>	
<b>B-CLB-5005SL</b>	0.5005	0.8750	1.250	<b>22.75</b>	<b>89.10</b>	

## SLIDES — Linear Motion



Linear Motion Slides provide precise linear motion control — 0.0002" positional repeatability — with a straight line accuracy of 0.0005"/inch of travel. Riding between smooth hardened rods, steel balls within the slide roll parallel to the line of motion (coefficient of friction is 0.003). The rated load must be centered and distributed over the slide, and the base must be fully supported on a flat mounting surface, so the slide does not act as beam. Ball slides are lightly lubricated during assembly and are self-cleaning in normal service.

Additional lubrication is required for speeds above 1800 inches per minute and is advisable at lower speeds where high loads are applied in continuous duty applications. Preload adjustments prevent sideplay and backlash. Lightweight Aluminum carriage and base. Built-in holes simplify installation and component mounting. Larger sizes may be obtained. Clear anodize finish. Black anodize available at no extra cost. **Call Purchasing Services toll free — 1-888-455-9712.**



### SPECIFICATIONS

Part No.	All Dimensions in Inches							
	Carriage						Base	
	A	B	C	D	E	F	G	H
B-LMS-075	0.75	0.23	0.38	0.375	0.156	0.135	0.156	0.375
B-LMS-106	1.06	0.32	0.56	0.625	0.218	0.187	0.250	0.750
B-LMS-1061	1.06	0.41	0.75	0.625	0.375	0.250	0.275	0.750
B-LMS-156	1.56	0.53	1.06	1.250	0.437	0.312	0.500	1.125
B-LMS-125	1.25	0.23	0.38	0.875	0.156	0.135	0.156	0.875
B-LMS-206	2.06	0.32	0.56	1.625	0.218	0.187	0.250	1.375
B-LMS-2062	2.06	0.41	0.75	1.625	0.375	0.250	0.375	1.375
B-LMS-200	2.00	0.62	1.50	1.375	0.625	0.340	0.750	1.500
B-LMS-2002	2.00	0.75	1.75	1.375	0.875	0.400	0.875	1.625
B-LMS-262	2.62	1.00	2.62	2.125	1.250	0.625	1.500	2.125
B-LMS-175	1.75	0.23	0.38	1.375	0.156	0.135	0.156	1.375
B-LMS-256	2.56	0.53	1.06	2.250	0.437	0.312	0.500	2.125
B-LMS-2623	2.62	1.00	2.62	1.625	1.250	0.625	1.500	1.875
B-LMS-306	3.06	0.41	0.75	2.625	0.375	0.250	0.375	2.375
B-LMS-300	3.00	0.62	1.50	2.375	0.625	0.340	0.750	2.500
B-LMS-356	3.56	0.53	1.06	3.250	0.437	0.312	0.500	3.250
B-LMS-325	3.25	0.75	1.75	2.625	0.875	0.400	0.875	2.750
B-LMS-4002	4.00	1.00	2.62	3.00	1.250	0.625	1.500	3.375
B-LMS-400	4.00	0.62	1.50	3.375	0.625	0.340	0.750	3.500
B-LMS-4003	4.00	0.75	1.75	3.375	0.875	0.400	0.875	3.500
B-LMS-600	6.00	0.53	1.06	5.500	0.437	0.312	0.500	4.000
B-LMS-800	8.00	0.75	1.75	7.500	0.875	0.400	0.875	5.000
B-LMS-900*	12.00	1.00	2.62	9.000	1.250	0.625	1.500	10.000

\*Eight mounting holes with 3" spacing

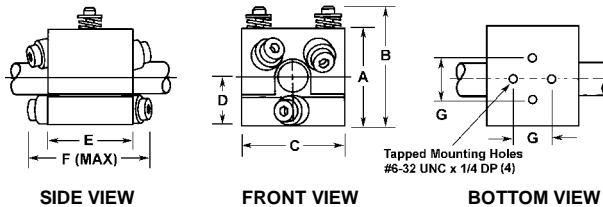
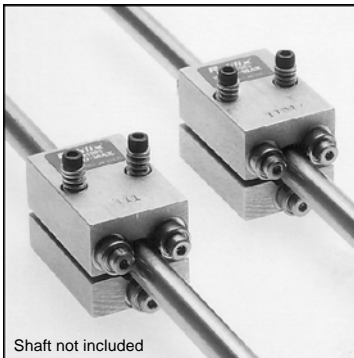
## SLIDES — Linear Motion (cont.)

### LINEAR MOTION SLIDES

Part No.	Travel	Load Capacity	Carriage (4)	Mounting Holes			Price Each
				d	d1	H	
<b>B-LMS-075</b>	0.50	1.5 lbs.	#2-56	#2-56	-	-	<b>71.10</b>
<b>B-LMS-106</b>	0.50	4 lbs.	#2-56	0.101	0.144	0.100	<b>63.60</b>
<b>B-LMS-1061</b>	0.50	8 lbs.	#4-40	0.125	0.198	0.125	<b>73.25</b>
<b>B-LMS-156</b>	0.75	15 lbs.	#6-32	0.157	0.244	0.150	<b>84.95</b>
<b>B-LMS-125</b>	1.00	1.5 lbs.	#2-56	#2-56	-	-	<b>77.50</b>
<b>B-LMS-206</b>	1.00	8 lbs.	#2-56	0.101	0.144	0.100	<b>74.30</b>
<b>B-LMS-2062</b>	1.00	10 lbs.	#4-40	0.125	0.198	0.125	<b>84.95</b>
<b>B-LMS-200</b>	1.00	15 lbs.	#6-32	0.157	0.244	0.150	<b>90.35</b>
<b>B-LMS-2002</b>	1.00	20 lbs.	#6-32	0.157	0.244	0.150	<b>94.60</b>
<b>B-LMS-262</b>	1.00	30 lbs.	#10-32	0.204	0.328	0.205	<b>99.95</b>
<b>B-LMS-175</b>	1.50	1.5 lbs.	#2-56	#2-56	-	-	<b>89.25</b>
<b>B-LMS-256</b>	1.50	18 lbs.	#6-32	0.157	0.244	0.150	<b>91.45</b>
<b>B-LMS-2623</b>	1.50	35 lbs.	#10-32	0.204	0.328	0.205	<b>107.45</b>
<b>B-LMS-306</b>	2.00	12 lbs.	#4-40	0.125	0.198	0.125	<b>90.35</b>
<b>B-LMS-300</b>	2.00	20 lbs.	#6-32	0.157	0.244	0.150	<b>93.55</b>
<b>B-LMS-356</b>	2.00	20 lbs.	#6-32	0.157	0.244	0.150	<b>105.30</b>
<b>B-LMS-325</b>	2.00	42 lbs.	#6-32	0.204	0.328	0.205	<b>108.50</b>
<b>B-LMS-4002</b>	2.00	62 lbs.	#10-32	0.157	0.244	0.150	<b>121.30</b>
<b>B-LMS-400</b>	3.00	25 lbs.	#6-32	0.157	0.244	0.150	<b>103.15</b>
<b>B-LMS-4003</b>	3.00	52 lbs.	#6-32	0.157	0.244	0.150	<b>118.10</b>
<b>B-LMS-600</b>	4.00	30 lbs.	#6-32	0.157	0.244	0.150	<b>141.65</b>
<b>B-LMS-800</b>	6.00	75 lbs.	#6-32	0.157	0.244	0.150	<b>154.45</b>
<b>B-LMS-900*</b>	9.00	185 lbs.	#10-32	0.204	0.328	0.205	<b>261.35</b>

\*Eight mounting holes with 3" spacing

## NO TAG LINEAR ACTUATORS



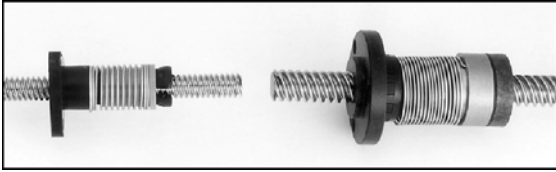
The Roh'lix® is a threadless, mechanical screw-type linear actuator that converts rotary motion into precise linear motion and thrust with the unique ability to slip if overloaded. Both units require threadless 3/8" shaft. (Not included with actuator). See page 54 for Precision Ground Bar.

### LINEAR ACTUATOR — 2-Piece, Split Aluminum Block

Part No.	Shaft Diameter	Dimensions in Inches							Lead	Thrust Rating	Price Each
		A	B	C	D	E	F	G			
<b>B-ZM-1104</b>	3/8	1.14	1.66	1.12	.57	1.62	2.25	.75	0.03	5 lbs.	<b>109.75</b>
<b>B-ZM-1111</b>	3/8	1.14	1.66	1.12	.57	1.62	2.25	.75	0.10	5 lbs.	<b>109.75</b>

Visit [www.smallparts.com](http://www.smallparts.com) E-mail [parts@smallparts.com](mailto:parts@smallparts.com)

# LEAD SCREWS AND ANTI-BACKLASH NUTS



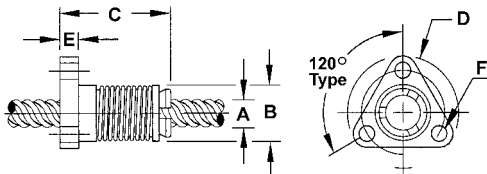
Lead Screws and Nuts sold separately

Lead Screws with Anti-Backlash Nuts are very effective linear actuators, especially where precise positional accuracy and repeatability are necessary. Position repeatability is within 50 micro-inch (0.0013 mm). Standard lead accuracy is 0.0006"/inch. Light and heavy duty nuts are available for different load applications. Other lengths are available. **Call Purchasing Services — 1-888-455-9712.**

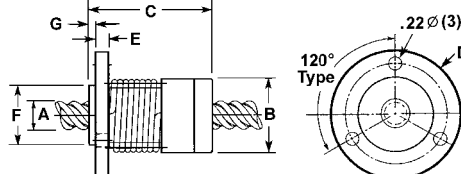
## LEAD SCREWS — Stainless Steel Type 303

Order Example: **B-LSX-3708-24** is 3/8" dia. x 24" long

Part No.	Screw Diameter	Lead	Description	Price	
				-24 24"	-36 36"
<b>B-LSX-2504</b>	1/4"	0.250"	Fits w/LSX-2504Z	<b>48.55</b>	<b>75.40</b>
<b>B-LSX-2516</b>	1/4"	1.000"	Fits w/LSX-2516Z	<b>48.55</b>	<b>75.40</b>
<b>B-LSX-3708</b>	3/8"	0.500"	Fits w/LSX-3708Z	<b>52.15</b>	<b>81.65</b>
<b>B-LSX-3716</b>	3/8"	1.000"	Fits w/LSX-3716Z	<b>52.15</b>	<b>81.65</b>
<b>B-LSX-3724</b>	3/8"	1.500"	Fits w/LSX-3724Z	<b>52.15</b>	<b>81.65</b>
<b>B-LSX-5008</b>	1/2"	0.500"	Fits w/LSX-5008V/Z	<b>70.75</b>	<b>104.30</b>
<b>B-LSX-5016</b>	1/2"	1.000"	Fits w/LSX-5016V/Z	<b>70.75</b>	<b>104.30</b>



**LIGHT DUTY ANTI-BACKLASH NUTS**



**HEAVY DUTY ANTI-BACKLASH NUTS**

## LIGHT DUTY ANTI-BACKLASH NUTS — Polyacetal

Part No.	A Screw Diameter	B Nut Diameter	C Nut Length	D Flange Diameter	E Flange Thick.	F Mount. Holes	Drag Torque (oz.-in.)	Design Load (lbs.)	Efficiency %	Price Each
<b>B-LSX-2504Z</b>	1/4"	0.50"	1.0"	1.0"	.18"	.140"	0.5-2	5	79	<b>19.40</b>
<b>B-LSX-2516Z</b>	1/4"	0.50"	1.0"	1.0"	.18"	.140"	0.5-2	5	84	<b>19.40</b>
<b>B-LSX-3708Z</b>	3/8"	0.70"	1.9"	1.5"	.18"	.20"	1-3	10	81	<b>28.60</b>
<b>B-LSX-3716Z</b>	3/8"	0.70"	1.9"	1.5"	.18"	.20"	1-3	10	84	<b>28.60</b>
<b>B-LSX-3724Z</b>	3/8"	0.70"	1.9"	1.5"	.18"	.20"	1-3	10	83	<b>28.60</b>
<b>B-LSX-5008Z</b>	1/2"	0.89"	2.0"	1.62"	.26"	.20"	2-5	25	79	<b>37.00</b>
<b>B-LSX-5016Z</b>	1/2"	0.89"	2.0"	1.62"	.26"	.20"	2-5	25	84	<b>37.00</b>

## HEAVY DUTY ANTI-BACKLASH NUTS — Polyacetal

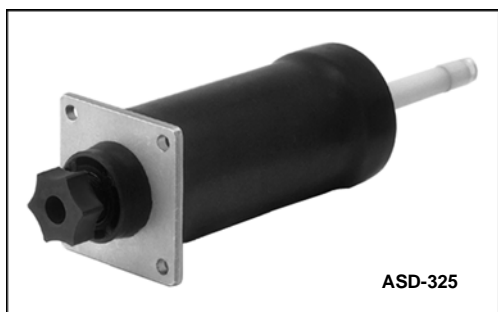
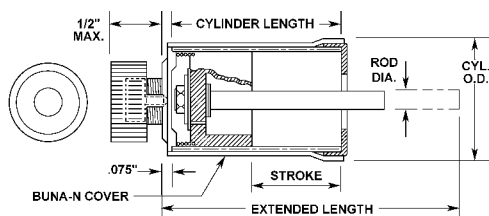
Part No.	A Screw Diameter	B Nut Diameter	C Nut Length	D Flange Diameter	E Flange Thick.	F Hub Diameter	Drag Torque (oz.-in.)	Design Load (lbs.)	Efficiency %	Price Each
<b>B-LSX-5008V</b>	1/2"	1.12"	2.3"	1.75"	.23"	.93"	2-6	150	79	<b>79.40</b>
<b>B-LSX-5016V</b>	1/2"	1.12"	2.3"	1.75"	.23"	.93"	2-6	150	84	<b>79.40</b>



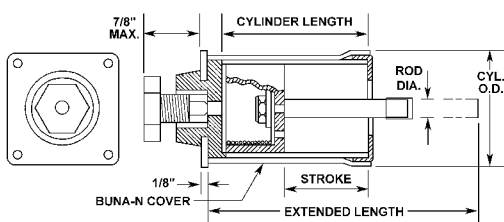
## DASHPOT SNUBBERS



ASD-160



ASD-325



Prevent shock damage to your sensitive equipment, and reduce impact noise and bounce with the Airpot® Dashpot Snubber. Precise and accurate, this pneumatic deceleration device is a non-electrical, low-cost control for positioning, sequencing and scanning mechanisms that need damping at the end of travel.

Pneumatic dashpots work by forcing air through an orifice to dissipate kinetic energy, which is transformed into heat by the molecular friction of compression and vented to the atmosphere. The Snubber uses ambient air as the damping medium. The force to be damped is transmitted through the piston rod, which moves the piston within the cylinder. Orifice settings are adjustable over a 10,000:1 range to control the degree of damping desired. Note: In addition to The Snubber, an external stop for positive positioning is required for the moving load.

Compact for limited space and locked-in designs, these ultra-low friction, push-directional units require no lubrication or maintenance, won't rust or corrode, have no seals to leak or cause drag, and can be mounted to operate in any position. The Snubber uses a graphitized carbon for the piston and Pyrex® for the cylinder, for high strength and operational stability in temperatures ranging from -107° to 212°F (-75° to 100°C). A snug-fitting Buna-N cover on the cylinder protects against breakage during installation or use.

Dashpot Snubbers are used in many kinds of equipment, including copiers, duplicating and printing machines, semi conductor processing equipment, assembly and conveying equipment, etc.

**B-ASD-160** has an absorption range of 0 to 0.3 foot pounds. It has a urethane push rod and uses a 1/4" hex screw capped with a removable plastic twist knob for orifice adjustment.

**B-ASD-325** has a rigid Delrin® rod with a urethane bumper for effective impact absorption from 0 to 3.0 foot pounds. It uses a 7/8" hex-shaped polyurethane threaded knob for damping adjustment and is provided with a pre-drilled 1-3/4" square aluminum mounting flange. Flange Holes diameter: 0.173".

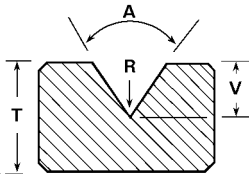
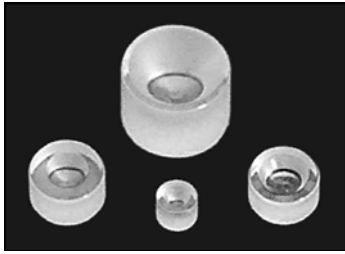
### SPECIFICATIONS

Part No.	Friction	Spring Force		Rod Diameter	Damping Coefficient lbs./in./second
		Extended	Compressed		
<b>B-ASD-160</b>	<2gms.	0.16 #	0.28 #	0.375"	2.5
<b>B-ASD-325</b>	<4 gms.	0.25 #	0.5 #	0.312"	20

### DASHPOT SNUBBERS

Part No.	Cylinder O.D.	Cylinder Length	Extended Length	Stroke	Absorption Range	Price Each
<b>B-ASD-160</b>	0.980" max.	2"	4.075"	1.25"	0 to 0.3 ft. lb.	<b>42.30</b>
<b>B-ASD-325</b>	1.805" max.	3.475"	5.75"	2.25"	0 to 3 ft. lb.	<b>67.05</b>

# BEARINGS — Vee Jewel, Sapphire



## VEE JEWEL BEARINGS

Synthetic sapphires are next to diamonds in hardness which makes these highly polished bearings scratch and shock resistant. They also have a long wear life, and are highly resistant to heat, corrosion and distortion. In addition, sapphire bearings are nonmagnetic, dielectrically strong and provide good shaft end support and freedom of motion. They are especially well suited for use in delicate instruments such as ammeters, voltmeters, compasses and precision indicator devices.

The jewel radius should be 2.5 to 3 times the pivot radius. In general, the greater the ratio between jewel and pivot, the greater the sensitivity and pivot roll. The contact area of the pivot should be highly polished and a finish of 2 to 3 micro-inch on the pivot radius is recommended. Color: Transparent.

### Properties

Melting Point	3722°F (2050°C)
Specific Gravity	3.98
Scratch Hardness (Mohs' Scale)	9
Compressive Strength	300,000 psi at 25°C (77°F)
Thermal Conductivity	100°C=.06 cal cm./sec °C cm <sup>2</sup>

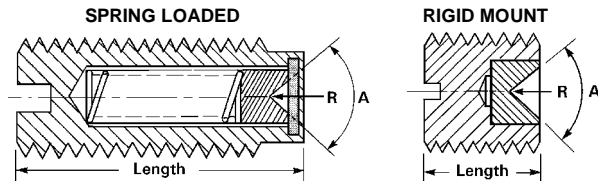
## SYNTHETIC SAPPHIRE

Part No.	Angle (A)	O.D.	Dimensions in Inches			Price	
			Thickness (T)	Vee Depth (V)	Radius (R)	Each	5
<b>B-VJ-0469</b>	75/85°	.0469/.0472	.0374/.0394	.0138/.0177	.0020/.00331	<b>8.55</b>	<b>35.50</b>
<b>B-VJ-0787</b>	85/95°	.0787/.0791	.0433/.0453	.0250/.0300	.0080/.0120	<b>6.00</b>	<b>23.90</b>
<b>B-VJ-0800</b>	85/95°	.0800/.0803	.0450/.0500	.0200/.0300	.0080/.0120	<b>9.25</b>	<b>38.45</b>
<b>B-VJ-1244</b>	90/95°	.1244/.1256	.0880/.0930	.0450/.0550	.0059/.0099	<b>14.00</b>	<b>52.50</b>



## VEE JEWEL ASSEMBLY

Set in Brass, Vee Jewel Assemblies are screw mounted. Spring loaded assemblies are recommended in an environment of shock and vibration. The Beryllium Copper spring acts as a shock absorber and permits the jewel and pivot to move without breaking and then return to its normal position. Non-spring loaded screw mounted assemblies are typically used in a more stable environment. Pivot not included.



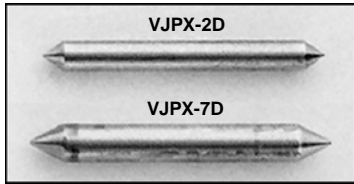
## BRASS

Part No.	Angle (A)	Radius (R)	Dimensions in Inches			Screw Size	Price	
			Length	Vee Depth	Length		Each	5
<b>B-VJA-1</b>	80/85°	.003/.004	.172	0.015/0.020	#2-80 UNS-3A (rigid)	<b>7.00</b>	<b>26.25</b>	
<b>B-VJA-3</b>	80/85°	.003/.004	.175	0.015/0.020	#2-80 UNS-3A (spring loaded)	<b>7.00</b>	<b>26.25</b>	
<b>B-VJA-5</b>	80/85°	.003/.004	.250	0.015/0.020	#5-40 UNC-2 (rigid)	<b>8.00</b>	<b>30.00</b>	
<b>B-VJA-7</b>	85/95°	.008/.012	.750	0.025/0.030	#10-32 (spring loaded)	<b>12.00</b>	<b>45.00</b>	

## TAPS FOR VEE JEWEL ASSEMBLY — High Speed Steel

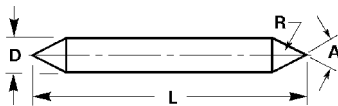
Part No.	Size/Thread	Flutes	Each	Price	
				Each	5
<b>B-HST-280</b>	2-80 NS	3	<b>40.10</b>	<b>180.35</b>	
<b>B-HST-540</b>	5-40 NC	3	<b>5.60</b>	<b>25.50</b>	
<b>B-HST-1032</b>	10-32 NF	4	<b>4.35</b>	<b>19.70</b>	

## PIVOTS — For Vee Jewel Bearings



### STAINLESS STEEL VEE JEWEL PIVOTS

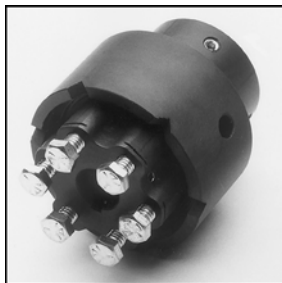
These double-pointed pivots are used in conjunction with Vee Jewel and Vee Jewel Assemblies found on [page 290](#). To keep friction at a minimum, the radius in the pit of the vee of the jewel should be approximately three times larger than the radius of the pivot (3:1 ratio).



PIVOT	VEE JEWEL	PIVOT	ASSEMBLY
VPJX-2D	VJ-0469	VJPX-2D	VJA-1
VJPX-7D	VJ-0787		VJA-3
	VJ-0800	VJA-5	
	VJ-1244	VJPX-7D	VJA-7

Part No.	Dimensions in Inches				Price	
	R Radius	D Diameter	L Length	A Angle	Each	5
<b>B-VJPX-2D</b>	0.00069-0.00089	0.0397-0.0403	0.365-0.375	70°	<b>2.60</b>	<b>10.70</b>
<b>B-VJPX-7D</b>	0.002-0.004	0.0496-0.0501	0.395-0.405	53°	<b>3.70</b>	<b>15.35</b>

## TORQUE LIMITERS

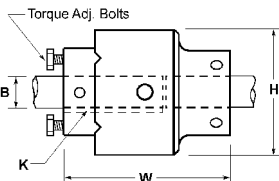


### ADJUSTABLE TORQUE LIMITERS

Dependable and corrosion resistant, Adjustable Torque Limiters work on a spring-loaded convex pin and detent design that disengages the motor drive when a jam up or excess overload occurs. Once overload is removed and speed reduced, precision tempered Carbon Steel torque springs automatically expand with a resetting action that engages the drive shaft and puts the entire drive system back into motion at its original angular position. Adjustable Torque Limiters continue to operate and protect, even after repeated overloads. When operating conditions require periodic changes, torque settings can be adjusted via external compression bolts.

These units react to overloads — not to lubricants — so unlike friction-type torque limiters they can be submerged in oil and still provide precise disengagement at your design limits. Constructed with long-wearing Delrin® pins inside a durable Nylatron GS® housing, Adjustable Torque Limiters resist water, salts, mild acids and many other corrosive elements and abuse, even in temperature ranges from -40° to 180°F (-40° to 82°C). Since disengagement does not generate heat that might alter disengagement characteristics or wear out faces of the unit, you get the same accurate overload protection time after time.

Units are fitted with Plated Steel 1/4-20 hex head bolts for external adjustment of spring tension on the Delrin® pins. In hard to reach applications, use set screws for spring tension adjustments. In corrosive environments, bolts or set screws made of Nylon may be substituted. Bore tolerance: +0.002"/ -0.000".



### ADJUSTABLE TORQUE LIMITERS - Delrin® and Nylatron GS®

Part No.	Torque Range (In. Lbs.)	Bore (B)	Dimensions in Inches			Price Each
			Height (H)	Keyway (K)	Width (W)	
<b>B-TQL-B04</b>	4-60	0.250	2.00	None	2.50	<b>87.00</b>
<b>B-TQL-R04</b>	40-125	0.250	2.00	None	2.50	<b>87.00</b>
<b>B-TQL-B06</b>	4-60	0.375	2.00	None	2.50	<b>87.00</b>
<b>B-TQL-R06</b>	40-125	0.375	2.00	None	2.50	<b>87.00</b>
<b>B-TQL-B08</b>	4-60	0.500	2.00	1/8	2.50	<b>87.00</b>
<b>B-TQL-R08</b>	40-125	0.500	2.00	1/8	2.50	<b>87.00</b>
<b>B-TQL-B12</b>	40-150	0.750	3.20	3/16	3.45	<b>144.00</b>
<b>B-TQL-R12</b>	140-350	0.750	3.20	3/16	3.45	<b>144.00</b>

# TRANTORQUE— Keyless Bushing

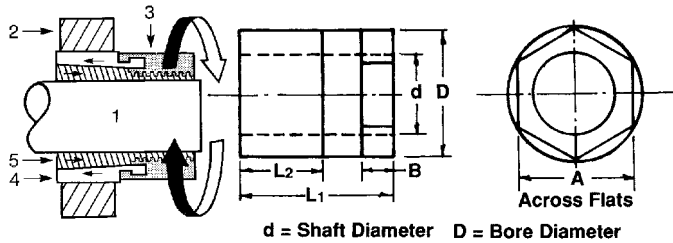


Trantorque keyless bushings grip like a mechanical shrink fit on a shaft, eliminating backlash, and resisting shock and torque reversals better than keyways. Single-nut design self centers accurately and locks or unlocks with a twist of a wrench. Thus, hubless devices like plate sprockets, hubless gears and disc brakes can be easily mounted. Precise radial adjustment of timing gears permits exact initial timing with easy readjustment of the bushing being a major advantage over a fixed keyed connection.

The trantorque can be mounted directly over empty key ways to repair a worn or damaged connection. Bushings can be removed and reinstalled many times; a distinct advantage for prototype work and new product development.



Hubless gear trantorque mounted on a shaft.



Once installed between the shaft (1) and the desired hubless device (2), tightening the center nut (3) draws the outer and inner wedged shaped compression plates (4) & (5) in opposing linear directions to achieve a tight and precisely centered mount.

## TRANTORQUE

Part No.	d	D	Dimensions in Inches				Shaft and Hub Tol. (Inch)	Installation Torque In-Lbs.	Max. Transmissible		Price Each
			L <sub>1</sub>	L <sub>2</sub>	A	B			Torque In-Lbs.	Thrust Lbs.	
B-TTQ-3/10	3/16	5/8	3/4	3/8	1/2	1/8	±0.0015	125	100	700	26.75
B-TTQ-4/10	1/4	5/8	3/4	3/8	1/2	1/8		125	150	790	26.75
B-TTQ-5/12	5/16	3/4	7/8	7/16	5/8	1/8		150	200	890	28.50
B-TTQ-6/12	3/8	3/4	7/8	7/16	5/8	1/8		150	250	925	28.50
B-TTQ-8/14	1/2	7/8	1	1/2	3/4	3/16		175	350	980	30.75
B-TTQ-10/16	5/8	1	1-1/8	5/8	7/8	3/16	±0.003	200	450	1000	31.95
B-TTQ-12/24	3/4	1-1/2	1-1/2	3/4	1-1/4	5/16		1200	2500	4400	41.95
B-TTQ-16/28	1	1-3/4	1-7/8	7/8	1-1/2	7/16		1500	3500	6600	45.50

## METRIC

Part No.	d	D	Dimensions in Millimeters				Shaft and Hub Tol. (mm)	Installation Torque N-m	Max. Transmissible		Price Each
			L <sub>1</sub>	L <sub>2</sub>	A	B			Torque N-m	Thrust kN	
B-MTTQ-5-16	5	16	19	9.5	13	3	±0.038	14.1	12	3.17	26.75
B-MTTQ-6-16	6	16	19	9.5	13	3		14.1	16	3.42	26.75
B-MTTQ-8-19	8	19	22	11	16	3		17.0	23	3.97	28.50
B-MTTQ-9-19	9	19	22	11	16	3		17.0	26	4.06	28.50
B-MTTQ-10-225	10	22.5	25.5	12.5	19	5		19.8	30	4.15	30.75
B-MTTQ-12-225	12	22.5	25.5	12.5	19	5		19.8	39	4.30	30.75
B-MTTQ-14-255	14	25.5	28.5	16	22	5		22.6	44	4.40	31.50
B-MTTQ-16-255	16	25.5	28.5	16	22	5		22.6	50	4.46	31.50

## ROLLER CLUTCHES — One-Way, Steel



The drawn cup roller clutch transmits torque between the shaft and the housing in one direction and allows free overrun in the opposite direction. When transmitting torque either the shaft or the housing can be the input member. The patented design utilizes the same small size as Drawn Cup Needle Roller Bearings. Units operate directly on a hardened shaft and are easily mounted with a light press fit into the housing or may be held in place with Loctite. See page 252.

## OVERRIDING ROLLER CLUTCHES — Steel

Part No.	Bore	O.D.	Width	Raceway Diameter		Housing Boxing		Each	Price	
				Max.	Min.	Min.	Max.			10
<b>B-NR-RC2</b>	1/8"	9/32"	1/4"	0.1250	0.1247	0.2812	0.2817	<b>12.85</b>	<b>106.95</b>	
<b>B-NR-RC4</b>	1/4"	7/16"	1/2"	0.2500	0.2495	0.4370	0.4380	<b>10.05</b>	<b>82.25</b>	
<b>B-NR-RC6</b>	3/8"	5/8"	1/2"	0.3750	0.3745	0.6245	0.6255	<b>10.15</b>	<b>84.30</b>	
<b>B-NR-RC8</b>	1/2"	3/4"	1/2"	0.5000	0.4995	0.7495	0.7505	<b>10.30</b>	<b>85.70</b>	
<b>B-NR-RC10</b>	5/8"	7/8"	5/8"	0.6250	0.6245	0.8745	0.8755	<b>10.95</b>	<b>91.55</b>	
<b>B-NR-RC12</b>	3/4"	1"	5/8"	0.7500	0.7495	0.9995	1.0005	<b>12.60</b>	<b>105.00</b>	

## SLIP CLUTCHES — Miniature

These clutches are friction devices which may be pre-set to a specific torque level by an adjustment ring. They may be used to protect against overload between the drive and driven components, to absorb inertia in intermittent or reversing applications, or to provide continuous braking. The overload or breaking level may be varied by the knurled adjustment ring, which, once set, will continue to perform at that level. In applications where continuous braking is being applied, care should be taken not to allow the surface temperature to exceed 80°C. An O-ring set into the adjustment ring serves both as a thread lock against accidental movement and also seals the unit against dirt and moisture.



**MINIATURE SLIP CLUTCH - TYPE A** is designed to become an integral part of a gear or wheel to provide overload protection between the drive and driven components. Since the clutch, in effect, becomes a part of the gear or wheel, the space required is held to a minimum. Torque Range: 3.4 - 76 oz. in. Power dissipation at 68°F (20°C) is 7.0 watts.

Part No.	Bore Size	Overall Length	Outside Diameter	Max. Shaft Penetration		Price Each
				End 1	End 2	
<b>B-MSCA-4</b>	1/4"	1.039"	1.004"	Through bore		<b>52.00</b>
<b>B-MSCA-5</b>	5/16"	1.039"	1.004"	Through bore		<b>52.00</b>



**MINIATURE SLIP CLUTCH - TYPE B** is designed to operate either with one spindle unsupported or as a link between the power source and the mechanism to provide overload protection. Damage to delicate or sensitive equipment may be avoided by setting the torque level just above the required power to drive the equipment.

Part No.	Bore Size	Overall Length	Outside Diameter	Max. Shaft Penetration		Price Each
				End 1	End 2	
<b>B-MSCB-4</b>	1/4"	1.417"	1.000"	0.984"	0.354"	<b>62.65</b>
<b>B-MSCB-5</b>	5/16"	1.417"	1.000"	0.984"	0.354"	<b>62.65</b>

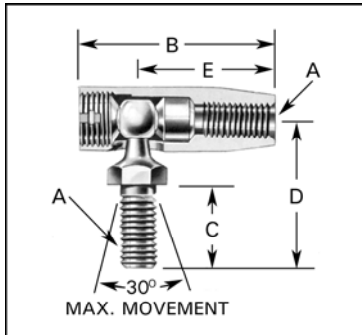
## REDUCING ADAPTERS

Obtain a 1/8" bore size by inserting a Reducing Adapter into the bore of either of the 1/4" units.

**B-MSCB-2A** ..... 3.25

## BALL JOINTS — Steel, Zinc Plated

Special linkages are easily assembled with Ball Joints made of Steel and plated with Zinc. They permit levers to work hinged arms without binding or stressing. Available in adjustable, positive, slip-on and swivel action. Threaded Rod is recommended for use with these Ball Joints. See page 200 for a selection of sizes in various materials.

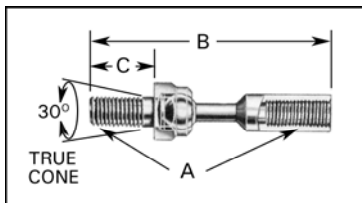


JS-1 & JS-2

### POSITIVE ADJUSTABLE TYPE — B-JS-1 & B-JS-2

This type does not have spring tension. The shell is drilled five ways. The fine pitch thread top bearing is inserted and locked by a cotter pin to provide desired free movement.

Part Number	B-JS-1	B-JS-2
A Thread Size	#10	1/4"
Threads per Inch	32	28
B Overall Length	1-1/4"	1-3/8"
C Shank Length	7/16"	9/16"
D Height to Center/Length	7/8"	1-1/32"
E Length to Ball	7/8"	31/32"
Price Each	<b>8.35</b>	<b>8.05</b>
10	<b>69.50</b>	<b>67.00</b>

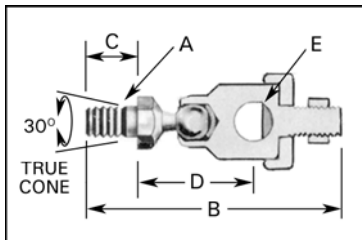


JS-3 & JS-4

### STRAIGHT SWIVEL TYPE — B-JS-3 & B-JS-4

Straight Swivel Type Ball Joints are for motion transmittal applications where the forces exerted are relatively light. The end of the male thread base is spun over the ball and a neoprene washer is used to cushion movement and maintain proper tension.

Part Number	B-JS-3	B-JS-4
A Thread Size	#10	1/4"
Threads per Inch	32	28
B Overall Length	2-1/32"	2-3/32"
C Shank Length	9/16"	9/16"
Price Each	<b>11.95</b>	<b>5.65</b>
10	<b>99.50</b>	<b>47.00</b>

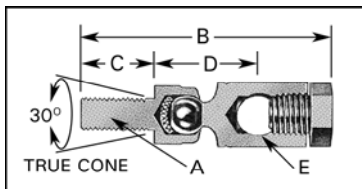


JS-5

### SWIVEL TYPE — B-JS-5 & B-JS-6

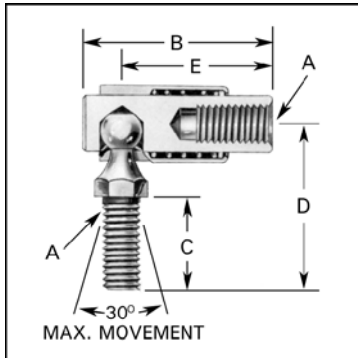
The specially designed short neck of the Swivel Type ball stud enables greater load capacity. Swivel construction is assembled with a grease resistant neoprene washer to cushion movement and maintain proper tension. This type allows for rapid adjustment over great length.

Part Number	B-JS-5	B-JS-6
A Thread Size	#10	1/4"
Threads per Inch	32	28
B Overall Length	1-11/16"	1-13/16"
C Shank Length	1/2"	7/16"
D Height to Center/Length	5/8"	25/32"
E Hole Diameter	0.192"	0.320"
Price Each	<b>15.80</b>	<b>4.75</b>
10	<b>131.75</b>	<b>39.50</b>



JS-6

## BALL JOINTS — Steel, Zinc Plated (cont.)



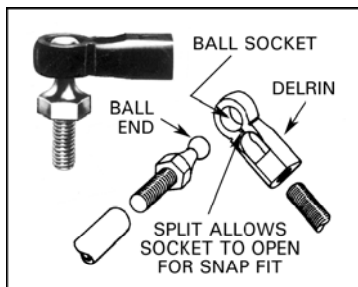
JS-7 & JS-8

### SLIP ON - QUICK DISCONNECT TYPE — B-JS-7 & B-JS-8

Retraction of the outer shell exposes the socket for quick insertion or withdrawal of the ball screw. This design completely houses compression spring and retains ball screw in its socket. Ball screw socket is machined into the shell with tolerance for minimum end play.

Part No.		B-JS-7	B-JS-8
A	Thread Size	#10	1/4"
	Threads per Inch	32	28
B	Overall Length	1-3/32"	1-3/32"
C	Shank Length	7/16"	9/16"
D	Height to Center/Length	29/32"	1-1/32"
E	Length to Ball	29/32"	29/32"
Price Each		<b>5.25</b>	<b>4.65</b>
10		<b>43.75</b>	<b>38.50</b>

## BALL JOINTS — Delrin® and Steel



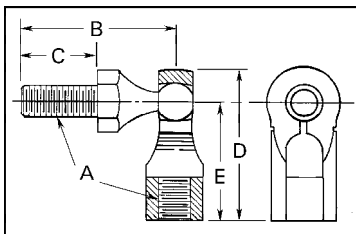
JSN-9 & JSN-10

### SLIP ON TYPE — DELRIN SHELL B-JSN-9 & B-JSN-10

Quick and easy installation made possible by the Delrin® (acetal resin) snap-on shell, combined with its miniature size, makes this ball joint outstanding. The Delrin® shell provides electrical isolation. Designed for light applications where minimum end play and maximum resistance to wear are necessary.

®E.I. DuPont

Part No.		B-JSN-9	B-JSN-10
A	Thread Size	#10	1/4"
	Threads per Inch	32	28
B	Overall Height	7/8"	7/8"
C	Shank Length	7/16"	9/16"
D	Overall Length-Shell	7/8"	1-7/64"
E	Length to Ball	21/32"	27/32"
Price Each		<b>5.25</b>	<b>3.10</b>
10		<b>43.75</b>	<b>25.75</b>



## COLD ROLLED THREADED ROD

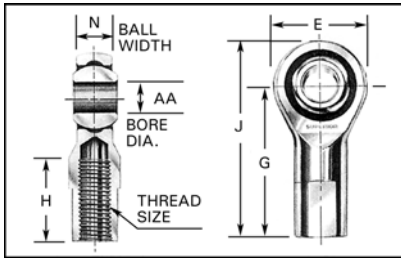


Cold Rolled Stainless Steel Threaded Rod is produced with hardened steel dies whose threaded faces press against the periphery of a plain cylindrical stainless steel blank to reform its surface into the threads desired. Rolled threads have increased strength, uniform accuracy and a high degree of surface finish, but do not machine as easily as machine cut threaded rods.

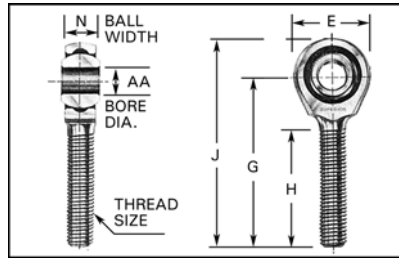
[See our selection of Threaded Rod on page 200](#)

## ROD ENDS — Steel

Rod Ends are manufactured from solid steel bar to give them unusual strength and stability. The fiberglass-reinforced nylon raceways are formed by high pressure injection molding and are permanently lubricated with molybdenum disulfide. Precision hardened alloy steel balls provide free movement with minimum play.



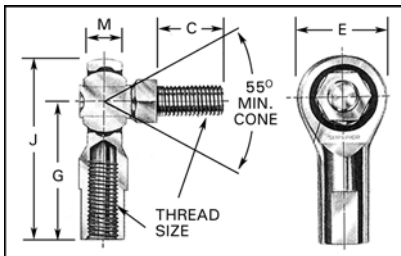
REJF



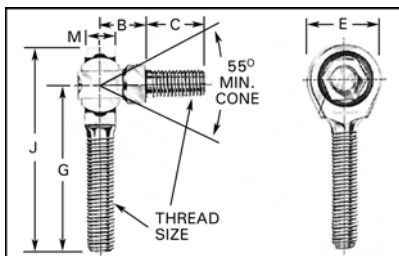
REJM

### ROD ENDS WITHOUT STUDS

Part No.	Thread Size	AA	E	Dimensions in Inches					Price	
				G	H	J	N	Each	10	
<b>B-REJF-3</b>	10-32	0.189/0.191	0.625	1.062	0.562	1.375	0.312	<b>7.20</b>	<b>60.00</b>	
<b>B-REJF-4</b>	1/4-28	0.250/0.252	0.750	1.312	0.750	1.687	0.375	<b>6.30</b>	<b>52.50</b>	
<b>B-REJF-5</b>	5/16-24	0.3125/0.3145	0.875	1.375	0.750	1.812	0.437	<b>7.30</b>	<b>60.60</b>	
<b>B-REJF-6</b>	3/8-24	0.375/0.377	1.000	1.625	0.937	2.125	0.500	<b>10.65</b>	<b>88.50</b>	
<b>B-REJM-3</b>	10-32	0.189/0.191	0.625	1.250	0.750	1.562	0.312	<b>7.20</b>	<b>60.00</b>	
<b>B-REJM-4</b>	1/4-28	0.250/0.252	0.750	1.562	1.000	1.937	0.375	<b>6.30</b>	<b>52.50</b>	
<b>B-REJM-5</b>	5/16-24	0.3125/0.3145	0.875	1.875	1.250	2.312	0.437	<b>7.30</b>	<b>60.60</b>	
<b>B-REJM-6</b>	3/8-24	0.375/0.377	1.000	1.937	1.250	2.437	0.500	<b>10.65</b>	<b>88.50</b>	



RESF



RESM

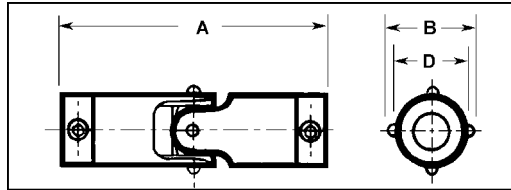
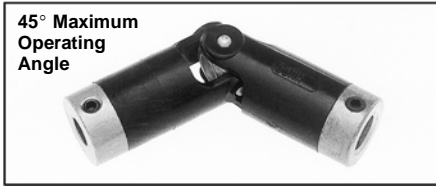
### ROD ENDS WITH STUDS

Part No.	Thread Size	C	Dimensions in Inches					Price	
			E	G	M	J	Each	10	
<b>B-RESF-3</b>	10-32	0.437	0.625	1.062	0.250	1.375	<b>13.70</b>	<b>114.00</b>	
<b>B-RESF-4</b>	1/4-28	0.562	0.750	1.312	0.281	1.687	<b>10.80</b>	<b>90.00</b>	
<b>B-RESF-5</b>	5/16-24	0.687	0.875	1.375	0.344	1.812	<b>11.70</b>	<b>97.50</b>	
<b>B-RESF-6</b>	3/8-24	0.875	1.000	1.625	0.406	2.125	<b>15.30</b>	<b>127.50</b>	

Part No.	Thread Size	B	C	Dimensions in Inches			Price	
				E	H	J	Each	10
<b>B-RESM-3</b>	10-32	0.437	0.437	0.625	0.750	1.562	<b>8.20</b>	<b>68.10</b>
<b>B-RESM-4</b>	1/4-28	0.469	0.562	0.750	1.000	1.937	<b>11.70</b>	<b>97.50</b>
<b>B-RESM-5</b>	5/16-24	0.531	0.687	0.875	1.250	2.312	<b>14.75</b>	<b>123.00</b>
<b>B-RESM-6</b>	3/8-24	0.625	0.875	1.000	1.250	2.437	<b>15.30</b>	<b>127.50</b>



## UNIVERSAL JOINTS — Delrin<sup>®</sup> and Brass



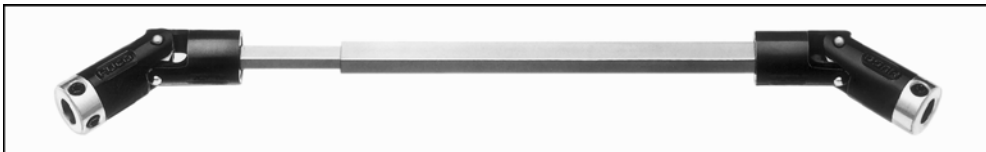
These single Universal Joints are capable of driving through angles of up to 45° and are excellent for shaft couplings when there is a possibility of angular misalignment. They will NOT accept, however, parallel shaft misalignment. All parts are constructed of non-ferrous materials with the exception of the alloy steel set screws. No lubrication is necessary. The unusual design of these units provide for continuous or interrupted motion with a minimum of backlash. Bore Tolerance +0.001" — 0.000"

### UNIVERSAL JOINTS — Delrin<sup>®</sup> and Brass

Part No.	Bore Sizes	A	B	D	Bore Length	Max. Rec. Torque*	Price	
							1	10
<b>B-UJD-6-2/2</b>	1/8" × 1/8"	1.05	0.28	0.25	0.37	16	<b>16.55</b>	<b>144.00</b>
<b>B-UJD-9-2/3</b>	1/8" × 3/16"	1.48	0.44	0.37	0.52	56	<b>17.95</b>	<b>155.95</b>
<b>B-UJD-9-3/3</b>	3/16" × 3/16"	1.48	0.44	0.37	0.52	56	<b>17.95</b>	<b>155.95</b>
<b>B-UJD-13-3/4</b>	3/16" × 1/4"	1.82	0.56	0.50	0.62	152	<b>19.95</b>	<b>173.20</b>
<b>B-UJD-13-4/4</b>	1/4" × 1/4"	1.82	0.56	0.50	0.62	152	<b>19.95</b>	<b>173.20</b>
<b>B-UJD-16-5/5</b>	5/16" × 5/16"	2.66	0.69	0.62	0.86	240	<b>21.75</b>	<b>189.05</b>
<b>B-UJD-16-6/6</b>	3/8" × 3/8"	2.66	0.69	0.62	0.86	240	<b>21.75</b>	<b>189.05</b>

\*Ounces per inch.

## UNIVERSAL JOINTS, TELESCOPING — Delrin<sup>®</sup> and Brass

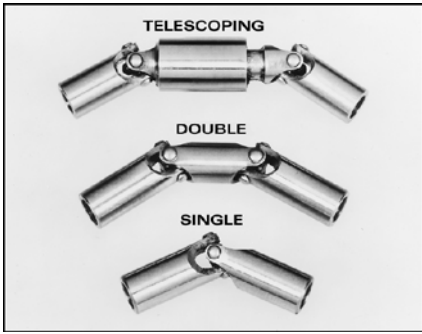


Our slideable telescoping drive shafts connect a rotating source to a load. Telescoping drive shafts facilitate the separation of mechanisms for servicing or replacement purposes. Joints consist of HUCO-POL<sup>®</sup> universal joints with acetal forks connected by PTFE coated square brass tubing. These joints are intended for applications which need neither rigidity nor the torque capabilities associated with steel drive shafts. Best suited for low speed operation.

### TELESCOPING LIGHT DUTY JOINTS — Delrin<sup>®</sup> and Brass

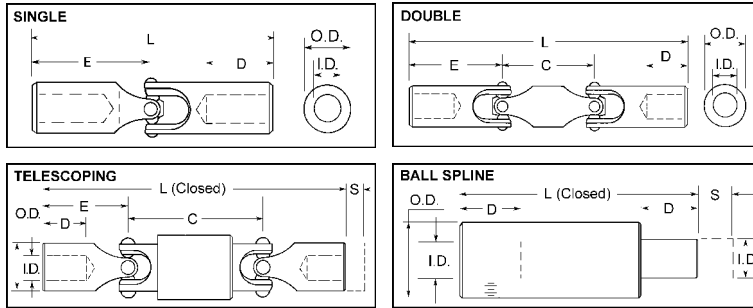
Part No.	Bore Size	Minimum Overall Length	Maximum Usable Length	Coupling Maximum O.D.	Price Each
<b>B-TDS-2/2</b>	1/8" × 1/8"	8.91	14.27	0.44	<b>40.15</b>
<b>B-TDS-2/3</b>	1/8" × 3/16"	8.91	14.27	0.44	<b>40.15</b>
<b>B-TDS-3/3</b>	3/16" × 3/16"	10.88	17.68	0.56	<b>46.45</b>
<b>B-TDS-3/4</b>	3/16" × 1/4"	10.88	17.68	0.56	<b>46.45</b>
<b>B-TDS-4/4</b>	1/4" × 1/4"	10.88	17.68	0.56	<b>46.45</b>
<b>B-TDS-4/6</b>	1/4" × 3/8"	13.57	20.85	0.69	<b>49.50</b>
<b>B-TDS-6/6</b>	3/8" × 3/8"	13.57	20.85	0.69	<b>49.50</b>

# UNIVERSAL JOINTS, MINIATURE — Stainless Steel



For greater freedom of instruments and control systems, Miniature Universal Joints have zero backlash with continuous contact in either direction to provide accurate transmission in any application. Because of their light weight and consequent low moment of inertia, they also provide sensitive control. Lightweight Type 303 stainless steel body with Type 440 stainless steel balls has dual protection lubrication, with sealed in solid film plus oil suspension. Requires set screw or pin to secure to shaft. Set screws not supplied.

Available in four types: Single; Double; Telescoping Double, which allows longitudinal adjustment through a preloaded ball spline; and Ball Spline Assembly to transmit torque and permit telescoping motion. These assemblies are useful in linear slide applications or as components for a custom telescoping universal joint.



## MINIATURE UNIVERSAL JOINTS — Stainless Steel Type 303

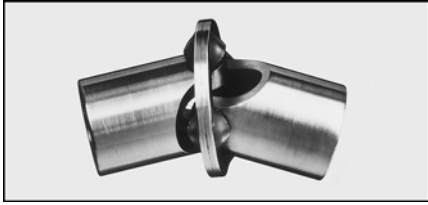
Dimensions in Inches

Part No.	O.D.	Bore Dia. I.D.	Bore Depth D	End Unit E	Center C	Length L	*Torque In. Oz.	Price Each
<b>SINGLE</b>								
B-UJX-0	3/16	Solid	-	1/2	-	1	16	41.50
B-UJX-1	3/16	0.0938	11/32	1/2	-	1	16	44.05
B-UJX-2	3/16	0.1250	3/16	1/2	-	1	16	44.05
B-UJX-3	9/32	0.1875	7/16	11/16	-	1-3/8	64	44.05
B-UJX-4	3/8	0.2500	1/2	7/8	-	1-3/4	256	44.05
<b>DOUBLE</b>								
B-UJX-DB1	3/16	0.0938	11/32	1/2	1/2	1-1/2	16	92.00
B-UJX-DB2	3/16	0.1250	11/32	1/2	1/2	1-1/2	16	92.00
B-UJX-DB3	9/32	0.1875	7/16	11/16	5/8	2	64	92.00
B-UJX-DB4	3/8	0.2500	1/2	7/8	3/4	2-1/2	256	92.00
<b>TELESCOPING</b>								
B-UJX-TL1	3/16	0.0938	3/16	3/8	3/4**	1-1/26**	16	149.25
B-UJX-TL2	3/16	0.1250	3/16	3/8	3/4**	1-1/2**	16	149.25
B-UJX-TL3	9/32	0.1875	9/32	9/16	15/16**	2-1/16**	64	149.25
B-UJX-TL4	3/8	0.2500	3/8	3/4	1-1/4**	2-3/4**	256	149.25
<b>BALL SPLINE</b>								
B-UJX-BS3	3/8	0.1875	5/16	-	-	1-1/4**	64	128.50
B-UJX-BS4	1/2	0.2500	3/8	-	-	1-1/2**	256	128.50

\* Torque ratings are for static in-line loading, maximum load being one which causes the joint to yield.

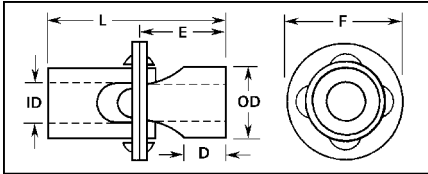
\*\* Closed dimension for standard 1/4" of travel ("S" Dimension).

## UNIVERSAL JOINTS, MINIATURE — Stainless Steel (cont.)



### F-MINI JOINTS — Stainless Steel Type 303

The F-Mini Joint is a heavy duty universal joint for applications with higher torque requirements. It uses Type 440 Stainless Steel precision balls and burnished spherical sockets for bearing elements. The load is transmitted between the yokes by two formed rings which when fastened together make up into spherical bearings that are accurately sized and spaced. In each bearing the ball is free to rotate between the yoke and the flanged section.

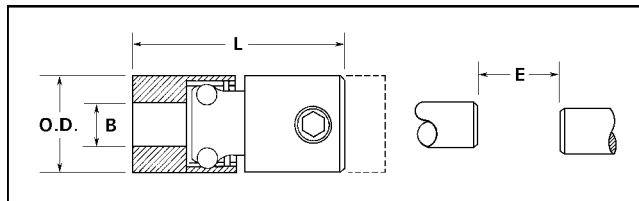


Smooth and quiet with low friction loss operation, these single spline universal joints have accurate load transmission with zero backlash at an operating angle of 20 degrees or greater. Dual protection lubrication, with sealed-in solid film plus oil suspension.

### F-MINI JOINTS — Stainless Steel Type 303

Part No.	O.D.	Bore		Dimensions in Inches		Length L	Torque Oz. In.	Price Each
		(+0.001 -0.000) I.D.	Min. Bore Depth D	End Unit E	Flange Diameter F			
<b>B-FMJ-187</b>	3/8	0.1875	3/8	3/4	3/4	1-1/2	256	<b>48.40</b>
<b>B-FMJ-250</b>	1/2	0.2500	7/16	13/16	15/16	1-5/8	320	<b>52.50</b>
<b>B-FMJ-375</b>	3/4	0.3750	5/8	1	1-3/8	2	480	<b>75.10</b>
<b>B-FMJ-500</b>	1	0.5000	7/8	1-5/16	1-7/8	2-5/8	1200	<b>91.40</b>

## COUPLINGS, MINIATURE — Stainless Steel



### MINI-JOINT COUPLING

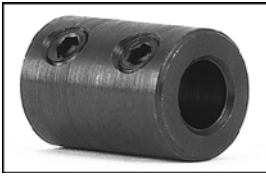
Mini-Joint Coupling units permit angular, radial and lateral misalignment in shaft location, without introducing loads or acceleration errors. The constant velocity assembly exhibits low friction loss and has a low moment of inertia, which allows the coupling to operate efficiently and smoothly, even at high speeds and can be used at low torque levels (0.01 oz. in.) with negligible power loss.

Formed from Type 303 Stainless Steel and lubricated with molybdenum disulphide and grease. Used in many applications, from actuating of sensitive controls to couplings of rugged servo motors. Operating Angle: 5° at full torque and RPM.

### MINI-JOINT COUPLING — Stainless Steel Type 303

Part No.	Body. O.D.	Dimensions in Inches		Shaft Spacing E	Set Screw	Torque Oz. In.	Price Each
		Bore B	Length L				
<b>B-MJC-062</b>	7/32	0.0625	5/8	3/8	#2-56	100	<b>45.55</b>
<b>B-MJC-093</b>	5/16	0.0938	23/32	13/32	#2-56	200	<b>44.55</b>
<b>B-MJC-125</b>	5/16	0.1250	23/32	13/32	#2-56	200	<b>44.55</b>

## COUPLINGS — Set Screw Type



Precision machined Couplings, Set Screw type give you quality torque transmission and alignment of shafting in a cost effective design. Made of Stainless Steel Type 303 for high strength and corrosion resistance. Provided with two set screws made of Stainless Steel 18-8.

Drill and pin coupling for added strength.

Bore Tolerance: +0.003"/ -0.000"

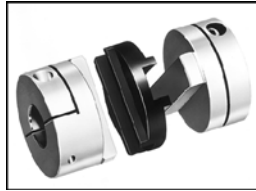
### STAINLESS STEEL TYPE 303

Part No.	Bore	O.D.	Length	Set Screw	Price
<b>B-CRSX-4</b>	1/4"	1/2"	3/4"	10-32 × 1/8"	<b>9.30</b>
<b>B-CRSX-5</b>	5/16"	5/8"	1"	10-32 × 1/8"	<b>10.80</b>
<b>B-CRSX-6</b>	3/8"	3/4"	1"	1/4-20 × 3/16"	<b>11.05</b>
<b>B-CRSX-8</b>	1/2"	1"	1-1/2"	1/4-20 × 1/4"	<b>14.15</b>
<b>B-CRSX-10</b>	5/8"	1-1/4"	2"	5/16-18 × 5/16"	<b>20.25</b>
<b>B-CRSX-12</b>	3/4"	1-1/2"	2"	5/16-18 × 3/8"	<b>24.85</b>

## COUPLINGS, MISALIGNMENT — Parallel



SET SCREW



CLAMP

### OLDHAM BLIND BORED COUPLERS

Operating on a sliding contact principle, Misalignment Couplers provide backlash-free motion transfer without the risk of misalignment-induced metal fatigue. Typical uses are in robotics, machine tools, and measuring instruments.

The 3-part construction allows axial or radial separation of the drive train without removing the hubs from the shaft. This allows a convenient breakpoint for equipment servicing purposes.

### OLDHAM BLIND BORED COUPLERS — Aluminum / Black Acetal

Part No.	Type	Bore Size	O.D.	Maximum Shaft Penetration	Nominal Distance Between Shafts	Overall Length	Price	
							Each	10
<b>B-OHC-2/2</b>	Set Screws	1/8" × 1/8"	0.50"	0.17"	0.29"	0.63"	<b>16.70</b>	<b>139.05</b>
<b>B-OHC-3/3</b>	Clamp	3/16" × 3/16"	0.75"	0.25"	0.37"	0.87"	<b>18.95</b>	<b>157.95</b>
<b>B-OHC-3/4</b>	Clamp	3/16" × 1/4"	0.75"	0.25"	0.37"	0.87"	<b>18.95</b>	<b>157.95</b>
<b>B-OHC-3/5</b>	Clamp	3/16" × 5/16"	0.75"	0.25"	0.37"	0.87"	<b>18.95</b>	<b>157.95</b>
<b>B-OHC-4/4</b>	Clamp	1/4" × 1/4"	0.75"	0.25"	0.37"	0.87"	<b>19.25</b>	<b>160.20</b>
<b>B-OHC-4/5</b>	Clamp	1/4" × 5/16"	0.75"	0.25"	0.37"	0.87"	<b>19.25</b>	<b>160.20</b>
<b>B-OHC-5/5</b>	Clamp	5/16" × 5/16"	0.75"	0.25"	0.37"	0.87"	<b>19.25</b>	<b>160.20</b>
<b>B-OHCL-4/4</b>	Clamp	1/4" × 1/4"	1.00"	0.34"	0.44"	1.12"	<b>27.05</b>	<b>225.45</b>
<b>B-OHCL-4/5</b>	Clamp	1/4" × 5/16"	1.00"	0.34"	0.44"	1.12"	<b>27.05</b>	<b>225.45</b>
<b>B-OHCL-4/6</b>	Clamp	1/4" × 3/8"	1.00"	0.34"	0.44"	1.12"	<b>27.05</b>	<b>225.45</b>
<b>B-OHCL-5/5</b>	Clamp	5/16" × 5/16"	1.00"	0.34"	0.44"	1.12"	<b>27.05</b>	<b>225.45</b>
<b>B-OHCL-5/6</b>	Clamp	5/16" × 3/8"	1.00"	0.34"	0.44"	1.12"	<b>27.05</b>	<b>225.45</b>
<b>B-OHCL-6/6</b>	Clamp	3/8" × 3/8"	1.00"	0.34"	0.44"	1.12"	<b>27.05</b>	<b>225.45</b>

### TORQUE DISCS REPLACEMENT — Black Acetal

Part No.	Outside Diameter	Price	
		Each	10
<b>B-OHTD-3</b>	0.50"	<b>1.15</b>	<b>9.25</b>
<b>B-OHTD-4</b>	0.75"	<b>1.30</b>	<b>10.60</b>
<b>B-OHTD-5</b>	1.00"	<b>2.45</b>	<b>20.50</b>

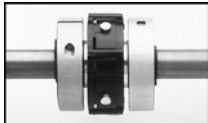
## COUPLERS, MISALIGNMENT — Parallel and Angular



### UNI-LAT COUPLERS

The Uni-Lat Couplers combine the principles of the universal joint and the Oldham coupler. Two non-ferrous hubs (through bored) with integral trunnions displace radially and pivotally within pairs of plastics half-bearings assembled with a slight pre-load. Advantages include: zero backlash, corrosion resistance, no lubrication, electrical isolation and angular, parallel and skewed misalignment compensation.

Clamp hubs rely on friction and their fastening integrity is governed by the surface area in contact (the larger the better) and by the tension applied to the fastening screw. Round close tolerance shafts leaving minimal clearance in the bore produce the best results. The cap screw is relatively unaffected by vibration, load reversal or start/stop cycle. **Uni-Lat Couplers should always be used singly, never in pairs.** The shaft should be supported as close to the coupler as is practicable.



Both shafts are aligned with 0° offset.



Right shaft illustrates parallel offset. (Max. 0.010" @ 1000 rpm)



Left shaft illustrates angular offset. (Max. 2° @ 1000 rpm)

Part No.	Type	Bore Size	Hub Diameter Outside	Hub Diameter Hole	Overall Length	Price Each
<b>B-UNC-1-1/2</b>	Set Screw	3/32" × 3/32"	0.71"	0.35"	0.56"	<b>26.00</b>
<b>B-UNC-2/2</b>	Clamp	1/8" × 1/8"	0.75"	-	0.75"	<b>30.40</b>
<b>B-UNC-3/3</b>	Clamp	3/16" × 3/16"	1.10"	-	1.00"	<b>30.35</b>
<b>B-UNC-3/4*</b>	Clamp	3/16" × 1/4"	1.10"	-	1.00"	<b>33.25</b>
<b>B-UNC-4/4*</b>	Clamp	1/4" × 1/4"	1.10"	-	1.00"	<b>29.45</b>
<b>B-UNC-6/6*</b>	Clamp	3/8" × 3/8"	1.10"	-	1.00"	<b>31.20</b>

\*Maximum 0.016" parallel offset @1000 rpm

## FLEXIBLE SHAFTS

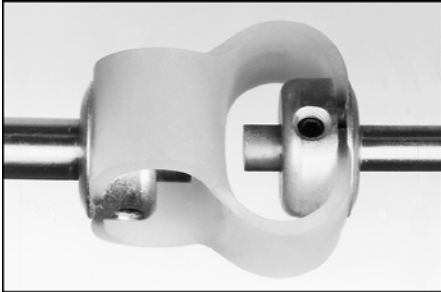


### FLEXIBLE SHAFTS REMOTE CONTROL ASSEMBLIES

These flexible shafts are easily installed and provide manual control of distant components without the use of intricate gear trains. They may also be used to reduce vibration between components, correct shaft misalignment and generally permit greater freedom of design. Although intended for manual use they may be safely driven at speeds up to 100 rpm. The FDCC series provides for connection of two shafts of similar diameter; while the FDCCP units allow panel control over an inner component. The diameter of each flexible shaft is 0.130" while the coupling dimensions vary: 1/8" bore — 3/8" O.D., 1/4" bore — 1/2" O.D. The overall length indicated below includes end fittings. On panel mounted units the control shaft is 1/4" in diameter and extends approximately 1/2" beyond panel when mounted.

Part No.	Overall Length	End Coupling Bore Dimensions	Bore Depth	Price Each
<b>B-FDCC-2/6</b>	6"	1/8" × 1/8"	1/4"	<b>24.60</b>
<b>B-FDCC-2/12</b>	12"	1/8" × 1/8"	1/4"	<b>24.60</b>
<b>B-FDCC-4/3</b>	3"	1/4" × 1/4"	3/8"	<b>24.60</b>
<b>B-FDCC-4/6</b>	6"	1/4" × 1/4"	3/8"	<b>24.60</b>
<b>B-FDCC-4/12</b>	12"	1/4" × 1/4"	3/8"	<b>24.60</b>
<b>B-FDCCP-4/6</b>	6"	1/4" × Panel	3/8"	<b>24.60</b>
<b>B-FDCCP-4/12</b>	12"	1/4" × Panel	3/8"	<b>24.60</b>

# COUPLINGS, MISALIGNMENT — K-Coupling



## K-COUPLING — ANGULAR MISALIGNMENT

### Flexible coupling for fractional HP drives or linkage

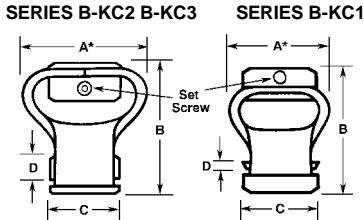
A K-coupling is essentially a double-loop Polyurethane elastomeric material assembled by specialized equipment to Zinc-Plated Steel hubs. Hubs are then attached to shafts by set screws.

**Absorbs shaft misalignments**, easily withstands torque loads at up to 3/16" parallel and 15° angular misalignment. Gives smooth, quiet flexibility with no added load on bearing. Speeds up to 3600 RPM, but for light loads only.

**Provides for variable end-to-end distance**, with simplified installation in tight quarters and quick disconnect.

**Dampens vibration and absorbs shock** with great success when used in place of universal joints in pumps, drives and mechanical linkages. Isolates and protects ultrasensitive instruments.

**Tough and resilient**, Angular Misalignment Couplings resist oils, solvents and ozone oxidation.



\*Dimensions at widest diagonal points

## ZINC PLATED STEEL / POLYURETHENE

Part No.	Shaft Sizes	Set Screw	Series No.	Dimensions			Price Each		
				A*	B	C		D	
<b>B-KC1-3/3</b>	3/16" × 3/16"	6-32	<b>B-KC1</b>	1-1/8"	1-1/8"	11/16"	1/16"	<b>20.05</b>	
<b>B-KC1-3/4</b>	3/16" × 1/4"	6-32						<b>20.05</b>	
<b>B-KC1-4/4</b>	1/4" × 1/4"	6-32						Torque Capacity: 3 inch pounds	<b>20.05</b>
<b>B-KC1-4/6</b>	1/4" × 3/8"	6-32						Max. Misalignment: 10° Angular	<b>20.05</b>
<b>B-KC1-6/6</b>	3/8" × 3/8"	6-32						3/32" Parallel	<b>20.05</b>
<b>B-KC2-4/4</b>	1/4" × 1/4"	10-24	<b>B-KC2</b>	1-7/8"	1-3/4"	1"	3/8"	<b>23.15</b>	
<b>B-KC2-4/5</b>	1/4" × 5/16"	10-24						<b>23.15</b>	
<b>B-KC2-4/6</b>	1/4" × 3/8"	10-24						Torque Capacity: 12 inch pounds	<b>23.15</b>
<b>B-KC2-5/5</b>	5/16" × 5/16"	10-24						Max. Misalignment: 15° Angular	<b>23.15</b>
<b>B-KC2-5/6</b>	5/16" × 3/8"	10-24						1/8" Parallel	<b>20.05</b>
<b>B-KC2-6/6</b>	3/8" × 3/8"	10-24		<b>20.05</b>					
<b>B-KC3-6/6</b>	3/8" × 3/8"	1/4-20	<b>B-KC3</b>	2-1/8"	2-1/8"	1-1/8"	7/16"	<b>27.90</b>	
<b>B-KC3-6/8</b>	3/8" × 1/2"	1/4-20						Torque Capacity: 28 inch pounds	<b>27.90</b>
<b>B-KC3-8/8</b>	1/2" × 1/2"	1/4-20						Max. Misalignment: 15° Angular	<b>27.90</b>
								3/16" Parallel	<b>27.90</b>



Precision Ground Stainless Steel Rod-Page 54.

## COUPLINGS, CLAMPING — Stainless Steel



Clamping Couplings are practical for connecting shafting where misalignment is not present, operating effectively under moderate torque loads. Precision machined in Stainless Steel Type 303 to reduce "run out", these couplings are highly suitable for marine and food applications, or for other corrosive environments. Set screws are made of Stainless Steel 18-8.

### STAINLESS STEEL TYPE 303

Part No.	Bore Size		Tolerance	O.D.	Length	Clamp Screw	Price Each
	A	B					
<b>B-CCX-4/4</b>	1/4"	1/4"	+ .0005" / +.0025"	0.687"	1.125"	#4-40	<b>24.40</b>
<b>B-CCX-6/4</b>	3/8"	1/4"	+ .0005" / +.0025"	0.875"	1.375"	#6-32	<b>33.35</b>
<b>B-CCX-6/6</b>	3/8"	3/8"	+ .0005" / +.0025"	0.875"	1.375"	#6-32	<b>26.95</b>
<b>B-CCX-8/6</b>	1/2"	3/8"	+ .0005" / +.0025"	1.125"	1.750"	#8-32	<b>40.35</b>
<b>B-CCX-8/8</b>	1/2"	1/2"	+ .0005" / +.0025"	1.125"	1.750"	#8-32	<b>32.85</b>
<b>B-CCX-10/10</b>	5/8"	5/8"	+ .0005" / +.0030"	1.313"	2.000"	#10-32	<b>46.30</b>
<b>B-CCX-12/12</b>	3/4"	3/4"	+ .0005" / +.0030"	1.500"	2.250"	#1/4-28	<b>53.85</b>

## SHAFT COLLAR — Quick Release



### QUICK RELEASE SHAFT COLLARS/FASTENERS

**No tools needed! Locks automatically!**

Quick release Shaft Collar/Fasteners from Grip Fast™ can be moved, removed or adjusted in seconds. No need for tightening set screws or clamping devices. In fact, no tools are needed at all. Just slide the Fastener onto the shaft and it locks automatically in the opposite direction, holding tight where you want it secured. Release occurs with a simple squeeze action that allows the spring loaded housing to slide in either direction for removal or repositioning. The inner mechanism is comprised of three Chrome Alloy Grade 25 balls, a case hardened Steel retention ring with a tapering inner diameter, and one hard drawn spring.

The housing is made up of one inner body, an outer sleeve, and an end release ring, all made of injection molded virgin ABS. All sizes fit tolerances of +/- 0.020. Collar dimensions have tolerances of +/- 0.050.

® SMI, Inc.

### SHAFT COLLARS/FASTENERS — Self Locking

Part No.	Bore	O.D.	Length Through Bore		Each	Price
			Min.	Max.		
<b>B-SCF-02</b>	1/8"	0.558"	0.94"	1.02"	<b>13.70</b>	<b>122.95</b>
<b>B-SCF-03</b>	3/16"	0.558"	0.94"	1.02"	<b>13.70</b>	<b>122.95</b>
<b>B-SCF-04</b>	1/4"	0.714"	1.00"	1.09"	<b>13.70</b>	<b>122.95</b>
<b>B-SCF-05</b>	5/16"	0.714"	1.00"	1.09"	<b>13.70</b>	<b>122.95</b>
<b>B-SCF-06</b>	3/8"	1.107"	1.05"	1.18"	<b>11.50</b>	<b>103.50</b>
<b>B-SCF-08</b>	1/2"	1.107"	1.05"	1.18"	<b>13.15</b>	<b>118.35</b>
<b>B-SCF-09</b>	9/16"	1.400"	1.43"	1.73"	<b>14.20</b>	<b>127.80</b>
<b>B-SCF-10</b>	5/8"	1.400"	1.43"	1.73"	<b>15.30</b>	<b>137.70</b>
<b>B-SCF-12</b>	3/4"	1.400"	1.43"	1.73"	<b>16.40</b>	<b>147.60</b>
<b>B-SCF-16</b>	1"	1.860"	2.00"	2.30"	<b>20.10</b>	<b>180.90</b>

## SHAFT COLLARS



### SET SCREW TYPE

Precision machined Shaft Collars are furnished with socket cup point set screw and are double chamfered. Useful for locating shafting, as thrust collars, arbor spacers, sprocket hubs, bearing holders and as end stops for spacers, they are also handy for experimental uses. Available in Zinc Plated Steel or in Stainless Steel Type 303.

### STEEL TYPE 12L14, ZINC PLATED

Part No.	Bore	O.D.	Width	Set Screw	Price	
					Each	10
<b>B-SC-2</b>	1/8"	0.375"	0.250"	#6-32	<b>1.10</b>	<b>9.10</b>
<b>B-SC-3</b>	3/16"	0.438"	0.250"	#8-32	<b>1.10</b>	<b>9.10</b>
<b>B-SC-4</b>	1/4"	0.500"	0.313"	#10-32	<b>1.15</b>	<b>9.15</b>
<b>B-SC-5</b>	5/16"	0.625"	0.313"	#10-32	<b>1.20</b>	<b>9.25</b>
<b>B-SC-6</b>	3/8"	0.750"	0.375"	1/4-20	<b>1.25</b>	<b>9.45</b>
<b>B-SC-7</b>	7/16"	0.875"	0.438"	1/4-20	<b>1.30</b>	<b>9.80</b>
<b>B-SC-8</b>	1/2"	1.000"	0.438"	1/4-20	<b>1.35</b>	<b>10.15</b>
<b>B-SC-10</b>	5/8"	1.125"	0.500"	5/16-18	<b>1.40</b>	<b>10.75</b>
<b>B-SC-12</b>	3/4"	1.250"	0.563"	5/16-18	<b>1.50</b>	<b>12.50</b>
<b>B-SC-14</b>	7/8"	1.500"	0.563"	5/16-18	<b>1.80</b>	<b>15.00</b>
<b>B-SC-16</b>	1"	1.625"	0.625"	5/16-18	<b>2.00</b>	<b>16.50</b>

### STAINLESS STEEL TYPE 303

<b>B-SX-2</b>	1/8"	0.375"	0.250"	#6-32	<b>2.85</b>	<b>23.50</b>
<b>B-SX-3</b>	3/16"	0.438"	0.250"	#8-32	<b>2.90</b>	<b>23.65</b>
<b>B-SX-4</b>	1/4"	0.500"	0.281"	#10-32	<b>2.95</b>	<b>23.95</b>
<b>B-SX-5</b>	5/16"	0.625"	0.344"	#10-32	<b>3.00</b>	<b>24.25</b>
<b>B-SX-6</b>	3/8"	0.750"	0.375"	1/4-20	<b>3.05</b>	<b>24.95</b>
<b>B-SX-7</b>	7/16"	0.875"	0.438"	1/4-20	<b>3.35</b>	<b>27.85</b>
<b>B-SX-8</b>	1/2"	1.000"	0.438"	1/4-20	<b>3.60</b>	<b>29.95</b>
<b>B-SX-10</b>	5/8"	1.125"	0.500"	5/16-18	<b>4.20</b>	<b>34.80</b>
<b>B-SX-12</b>	3/4"	1.250"	0.563"	5/16-18	<b>5.15</b>	<b>42.65</b>
<b>B-SX-14</b>	7/8"	1.500"	0.563"	5/16-18	<b>7.20</b>	<b>60.00</b>
<b>B-SX-16</b>	1"	1.625"	0.625"	5/16-18	<b>8.70</b>	<b>72.45</b>



### CLAMP TYPE COLLARS — 2 Piece

Two-piece collar provides greater holding capacity over split collar. Includes two hex socket-cap clamp screws. Excellent choice where shaft ends are constrained or disassembly of machine is not recommended. For larger sizes call **Purchasing Services at 1-888-455-2719**.

### STAINLESS STEEL 18-8

Part No.	Bore	O.D.	Width	Clamp Screw	Price	
					Each	10
<b>B-SC2X-4</b>	1/4"	0.813"	0.250"	#4-40	<b>6.25</b>	<b>52.00</b>
<b>B-SC2X-5</b>	5/16"	0.813"	0.250"	#4-40	<b>6.80</b>	<b>56.50</b>
<b>B-SC2X-6</b>	3/8"	1.063"	0.313"	#6-32	<b>6.95</b>	<b>57.85</b>
<b>B-SC2X-8</b>	1/2"	1.250"	0.375"	#8-32	<b>8.85</b>	<b>73.45</b>
<b>B-SC2X-10</b>	5/8"	1.500"	0.406"	#10-32	<b>10.95</b>	<b>91.35</b>
<b>B-SC2X-12</b>	3/4"	1.750"	0.500"	1/4-28	<b>12.00</b>	<b>99.95</b>
<b>B-SC2X-14</b>	7/8"	1.875"	0.500"	1/4-28	<b>13.85</b>	<b>115.40</b>
<b>B-SC2X-16</b>	1"	2.000"	0.500"	1/4-28	<b>14.40</b>	<b>119.65</b>

Continued →



## SHAFT COLLARS (cont.)



### CLAMP TYPE COLLARS

Dimensioned to keep the clamping hex socket cap screw safely within the outside diameter of the collar, these Shaft Collars apply even pressure to the shaft for greater torque strength. They can be moved or repositioned without damage to the shaft.

#### STAINLESS STEEL 18-8

Part No.	Bore	O.D.	Width	Clamp Screw	Price	
					Each	10
<b>B-SCX-2</b>	1/8"	0.813"	0.250"	#4-40	<b>5.65</b>	<b>47.00</b>
<b>B-SCX-3</b>	3/16"	0.687"	0.156"	#4-40	<b>4.05</b>	<b>33.50</b>
<b>B-SCX-4</b>	1/4"	0.813"	0.250"	#4-40	<b>4.05</b>	<b>33.50</b>
<b>B-SCX-5</b>	5/16"	0.813"	0.250"	#4-40	<b>4.15</b>	<b>34.45</b>
<b>B-SCX-6</b>	3/8"	1.063"	0.313"	#6-32	<b>4.95</b>	<b>41.00</b>
<b>B-SCX-7</b>	7/16"	1.063"	0.313"	#6-32	<b>5.75</b>	<b>47.70</b>
<b>B-SCX-8</b>	1/2"	1.250"	0.375"	#8-32	<b>6.35</b>	<b>52.85</b>
<b>B-SCX-10</b>	5/8"	1.500"	0.406"	#10-32	<b>7.55</b>	<b>62.85</b>
<b>B-SCX-12</b>	3/4"	1.750"	0.500"	1/4-28	<b>8.75</b>	<b>72.90</b>
<b>B-SCX-14</b>	7/8"	1.875"	0.500"	1/4-28	<b>10.50</b>	<b>87.30</b>
<b>B-SCX-16</b>	1"	2.000"	0.500"	1/4-28	<b>12.45</b>	<b>103.65</b>

#### METRIC

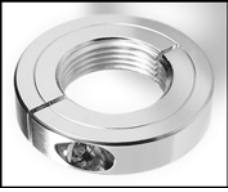
#### STAINLESS STEEL 18-8

Part No.	Bore	O.D.	Width	Clamp Screw	Price	
					Each	10
<b>B-MSCX-05</b>	5mm	16mm	9mm	M3×8	<b>4.45</b>	<b>40.40</b>
<b>B-MSCX-06</b>	6mm	16mm	9mm	M3×8	<b>5.65</b>	<b>51.60</b>
<b>B-MSCX-08</b>	8mm	18mm	9mm	M3×8	<b>5.75</b>	<b>52.20</b>
<b>B-MSCX-10</b>	10mm	24mm	9mm	M3×10	<b>5.85</b>	<b>53.20</b>
<b>B-MSCX-12</b>	12mm	28mm	11mm	M4×12	<b>6.15</b>	<b>55.60</b>

#### ALUMINUM — TYPE 2011 or TYPE 2024

Part No.	Bore	O.D.	Width	Clamp Screw	Price	
					Each	10
<b>B-SCA-2</b>	1/8"	0.813"	0.250"	#4-40	<b>3.20</b>	<b>26.50</b>
<b>B-SCA-3</b>	3/16"	0.813"	0.250"	#4-40	<b>3.05</b>	<b>25.45</b>
<b>B-SCA-4</b>	1/4"	0.813"	0.250"	#4-40	<b>2.55</b>	<b>21.25</b>
<b>B-SCA-5</b>	5/16"	0.813"	0.250"	#4-40	<b>2.65</b>	<b>22.15</b>
<b>B-SCA-6</b>	3/8"	1.063"	0.313"	#6-32	<b>2.70</b>	<b>22.45</b>
<b>B-SCA-7</b>	7/16"	1.063"	0.313"	#6-32	<b>3.75</b>	<b>31.45</b>
<b>B-SCA-8</b>	1/2"	1.250"	0.375"	#8-32	<b>3.85</b>	<b>32.20</b>
<b>B-SCA-10</b>	5/8"	1.500"	0.406"	#10-32	<b>3.95</b>	<b>33.05</b>
<b>B-SCA-12</b>	3/4"	1.750"	0.500"	1/4-28	<b>4.40</b>	<b>36.75</b>
<b>B-SCA-14</b>	7/8"	1.875"	0.500"	1/4-28	<b>4.75</b>	<b>39.25</b>
<b>B-SCA-16</b>	1"	2.000"	0.500"	1/4-28	<b>5.25</b>	<b>43.50</b>

## SHAFT COLLARS (cont.)



### THREADED CLAMP TYPE COLLARS — 1 Piece, Split

A Shaft Collar can be used as a thrust collar, arbor spacer, sprocket hub, bearing holder and/or a shaft protector. Commonly used for an adjustment limit switch. Threaded on the inside, these Collars can be finely adjusted by rotation on a threaded shaft. They are then clamp locked on the shaft by tightening the split portion screw.

#### STAINLESS STEEL 18-8

Part No.	Internal Thread	O.D.	Width	Clamp Screw	Price	
					Each	10
<b>B-SCTX-832</b>	#8-32	0.687"	0.250"	#4-40	<b>14.25</b>	<b>118.50</b>
<b>B-SCTX-032</b>	#10-32	0.687"	0.250"	#4-40	<b>14.25</b>	<b>118.50</b>
<b>B-SCTX-1420</b>	1/4-20	0.813"	0.250"	#4-40	<b>8.40</b>	<b>69.95</b>
<b>B-SCTX-1428</b>	1/4-28	0.813"	0.250"	#4-40	<b>8.65</b>	<b>72.00</b>
<b>B-SCTX-5618</b>	5/16-18	0.813"	0.250"	#4-40	<b>8.80</b>	<b>73.15</b>
<b>B-SCTX-3816</b>	3/8-16	1.063"	0.313"	#6-32	<b>9.25</b>	<b>76.85</b>
<b>B-SCTX-1213</b>	1/2-13	1.250"	0.375"	#8-32	<b>10.40</b>	<b>86.65</b>

## SHAFT COLLARS — Miniature



### MINIATURE SHAFT COLLARS — Nickel Plated Brass

Miniature Shaft Collars can function as thrust collars, arbor spacers, and sprocket hubs, among other potential uses. Precision machined of Nickel Plated Brass for high corrosion resistance, this selection of smaller sizes allows for many hobby uses.

The Brass can be reworked to change the outside diameter for close fitting applications. Bore sizes up to 3/16" are furnished with Hex Keys. Socket cup point set screws alloy steel included.

#### NICKEL PLATED BRASS

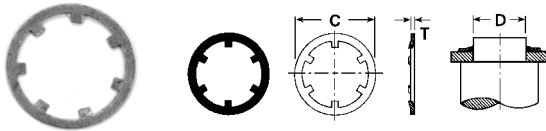
Part No.	Bore	O.D.	Width	Set Screw	Price	
					5	10
<b>B-SCB-010</b>	1/16"	0.219"	0.189"	#4-40	<b>3.60</b>	<b>6.40</b>
<b>B-SCB-015</b>	3/32"	0.250"	0.189"	#4-40	<b>3.60</b>	<b>6.40</b>
<b>B-SCB-020</b>	1/8"	0.281"	0.189"	#4-40	<b>3.60</b>	<b>6.40</b>
<b>B-SCB-025</b>	5/32"	0.344"	0.219"	#6-32	<b>3.60</b>	<b>6.40</b>
<b>B-SCB-030</b>	3/16"	0.375"	0.219"	#6-32	<b>3.60</b>	<b>6.40</b>
<b>B-SCB-035</b>	7/32"	0.484"	0.250"	#8-32	<b>8.10</b>	<b>14.40</b>
<b>B-SCB-040</b>	1/4"	0.500"	0.250"	#8-32	<b>8.10</b>	<b>14.40</b>



See our selection of Hex Keys starting on page 364

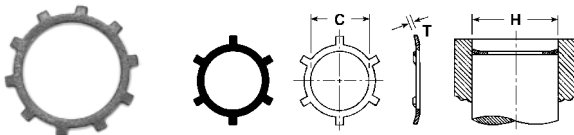
## RETAINING RINGS

Self-locking internal and external retaining rings provide shoulders in housings or on shafts of low-carbon steel, cast material and plastic. They are applied by pushing them into the housing (internal ring) or onto the shaft (external ring) to the desired position. When applying reverse force to the ring, the prongs embed themselves into the housing or shafts, holding them in place. Once applied, they are difficult to dislodge, but can be readily removed with suitable pliers. Please refer to [page 310](#) for pliers used to install retaining rings.



### SELF-LOCKING EXTERNAL RINGS — Steel, Zinc Plated

Part No.	Shaft Dia. (D)	Ring Dimensions		No. Prongs	Price		
		Outside Dia. (C)	Thickness (T)		10	25	100
<b>B-RSE-1-1/2</b>	3/32"	0.250"	0.010"	3	<b>1.00</b>	<b>2.10</b>	<b>6.90</b>
<b>B-RSE-2</b>	1/8"	0.325"	0.010"	4	<b>1.05</b>	<b>2.15</b>	<b>7.15</b>
<b>B-RSE-3</b>	3/16"	0.387"	0.010"	6	<b>1.10</b>	<b>2.25</b>	<b>7.35</b>
<b>B-RSE-4</b>	1/4"	0.450"	0.010"	6	<b>1.15</b>	<b>2.40</b>	<b>7.95</b>
<b>B-RSE-5</b>	5/16"	0.512"	0.010"	6	<b>1.40</b>	<b>2.85</b>	<b>9.35</b>
<b>B-RSE-6</b>	3/8"	0.575"	0.010"	6	<b>1.45</b>	<b>2.95</b>	<b>9.75</b>
<b>B-RSE-8</b>	1/2"	0.750"	0.015"	6	<b>1.95</b>	<b>4.00</b>	<b>13.25</b>
<b>B-RSE-10</b>	5/8"	0.875"	0.015"	7	<b>3.05</b>	<b>6.35</b>	<b>21.05</b>
<b>B-RSE-12</b>	3/4"	1.000"	0.015"	8	<b>3.80</b>	<b>7.85</b>	<b>26.10</b>
<b>B-RSE-14</b>	7/8"	1.125"	0.015"	10	<b>4.70</b>	<b>9.75</b>	<b>32.50</b>
<b>B-RSE-16</b>	1"	1.250"	0.015"	10	<b>5.25</b>	<b>10.85</b>	<b>36.10</b>



### SELF-LOCKING INTERNAL RINGS — Steel, Zinc Plated

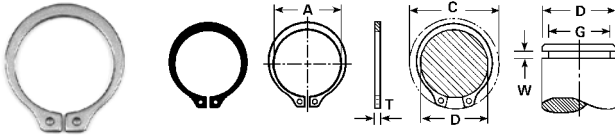
Part No.	Housing Dia. (H)	Ring Dimensions		No. Prongs	Price		
		Inside Dia. (C)	Thickness (T)		10	25	100
<b>B-RSI-5</b>	5/16"	0.136"	0.010"	6	<b>1.40</b>	<b>2.85</b>	<b>9.50</b>
<b>B-RSI-6</b>	3/8"	0.175"	0.010"	6	<b>1.45</b>	<b>2.95</b>	<b>9.80</b>
<b>B-RSI-7</b>	7/16"	0.237"	0.010"	6	<b>1.50</b>	<b>3.00</b>	<b>9.90</b>
<b>B-RSI-8</b>	1/2"	0.258"	0.010"	6	<b>1.55</b>	<b>3.15</b>	<b>10.35</b>
<b>B-RSI-10</b>	5/8"	0.390"	0.010"	6	<b>1.65</b>	<b>3.35</b>	<b>11.05</b>
<b>B-RSI-12</b>	3/4"	0.500"	0.015"	8	<b>1.95</b>	<b>4.05</b>	<b>13.45</b>
<b>B-RSI-14</b>	7/8"	0.625"	0.015"	8	<b>2.15</b>	<b>4.45</b>	<b>14.80</b>
<b>B-RSI-16</b>	1"	0.750"	0.015"	10	<b>2.35</b>	<b>4.90</b>	<b>16.20</b>

### ASSORTMENTS

Each assortment contains ten rings each of the sizes indicated. Each size packed separately and identified.

<b>B-RSI-500</b>	Ten each B-RSI-5, B-RSI-6, B-RSI-7, B-RSI-8 — 40 pcs. . . . .	<b>8.20</b>
<b>B-RSI-1100</b>	Ten each B-RSI-5 through B-RSI-16 — 80 pcs. . . . .	<b>15.50</b>
<b>B-RSE-700</b>	Ten each B-RSE-1-1/2, B-RSE-2, B-RSE-3, B-RSE-4, B-RSE-5, B-RSE-6 — 60 pcs. . . . .	<b>11.05</b>
<b>B-RSE-1200</b>	Ten each B-RSE-1-1/2 through B-RSE-16 — 110 pcs. . . . .	<b>29.45</b>

## RETAINING RINGS (cont.)



Useful in many machine assemblies, Retaining Rings provide an artificial shoulder for accurately locating, retaining or locking components in position, replacing nuts, threaded sleeves, cotter pins, rivets, machined shoulders and other bulkier fittings.

The tapered design maintains circularity and pressure against grooves. They are axially applied and can be removed with Retaining Ring Pliers. See page 310.

The B-RE series is Carbon Steel with a Zinc Plated finish, except B-RE-2 and B-RE-3 which are Beryllium Copper. The B-REX series is Stainless Steel Type PH-15-7, a precipitation hardening alloy that offers high strength-to-weight ratio and corrosion resistance. B-MER Metric Rings are made of Carbon Spring Steel that has a Phosphate and Oil finish.

### EXTERNAL RINGS — Steel, Zinc Plated

Part No.	Dimensions in Inches									
	Shaft Dia. (D)	Free Dia. (A)	Thickness (T)	Groove		Ring Clearance (C)	Price			
				Dia. (G)	Width (W)		10	25	100	
<b>B-RE-2*</b>	1/8	0.125	0.112	0.010	0.117	0.012	0.22	<b>1.50</b>	<b>3.10</b>	<b>10.30</b>
<b>B-RE-3*</b>	3/16	0.188	0.168	0.015	0.175	0.018	0.30	<b>1.45</b>	<b>2.95</b>	<b>9.75</b>
<b>B-RE-4</b>	1/4	0.250	0.225	0.025	0.230	0.029	0.45	<b>1.20</b>	<b>2.50</b>	<b>8.30</b>
<b>B-RE-5</b>	5/16	0.312	0.281	0.025	0.290	0.029	0.54	<b>1.15</b>	<b>2.45</b>	<b>8.15</b>
<b>B-RE-6</b>	3/8	0.375	0.338	0.025	0.352	0.029	0.60	<b>1.25</b>	<b>2.60</b>	<b>8.65</b>
<b>B-RE-7</b>	7/16	0.438	0.395	0.025	0.412	0.029	0.66	<b>1.40</b>	<b>2.90</b>	<b>9.55</b>
<b>B-RE-8</b>	1/2	0.500	0.461	0.035	0.468	0.039	0.77	<b>1.60</b>	<b>3.30</b>	<b>10.85</b>
<b>B-RE-9</b>	9/16	0.562	0.521	0.038	0.530	0.039	0.83	<b>1.75</b>	<b>3.65</b>	<b>12.15</b>
<b>B-RE-10</b>	5/8	0.625	0.579	0.035	0.588	0.039	0.90	<b>1.90</b>	<b>3.95</b>	<b>13.10</b>
<b>B-RE-12</b>	3/4	0.750	0.693	0.042	0.704	0.046	1.09	<b>2.25</b>	<b>4.60</b>	<b>15.30</b>
<b>B-RE-14</b>	7/8	0.875	0.810	0.042	0.821	0.046	1.22	<b>2.30</b>	<b>4.75</b>	<b>15.70</b>
<b>B-RE-16</b>	1	1.000	0.925	0.042	0.940	0.046	1.44	<b>3.35</b>	<b>6.95</b>	<b>23.15</b>

\*Beryllium Copper

### ASSORTMENTS

<b>B-RE-100</b>	Ten each B-RE-2 through B-RE-8 — 70 pieces	<b>11.50</b>
<b>B-RE-200</b>	Ten each B-RE-2 through B-RE-16 — 120 pieces	<b>25.10</b>

### EXTERNAL RINGS — Stainless Steel, PH-15-7

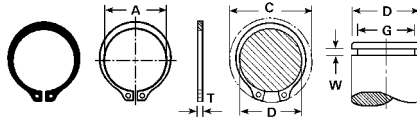
Part No.	Dimensions in Inches									
	Shaft Dia. (D)	Free Dia. (A)	Thickness (T)	Groove		Ring Clearance (C)	Price			
				Dia. (G)	Width (W)		10	25	100	
<b>B-REX-4</b>	1/4	0.250	0.225	0.025	0.230	0.029	0.45	<b>9.45</b>	<b>19.60</b>	<b>65.20</b>
<b>B-REX-5</b>	5/16	0.312	0.281	0.025	0.290	0.029	0.54	<b>9.55</b>	<b>19.90</b>	<b>66.20</b>
<b>B-REX-6</b>	3/8	0.375	0.338	0.025	0.352	0.029	0.60	<b>9.70</b>	<b>20.20</b>	<b>67.25</b>
<b>B-REX-7</b>	7/16	0.438	0.395	0.025	0.412	0.029	0.66	<b>9.85</b>	<b>20.50</b>	<b>68.30</b>
<b>B-REX-8</b>	1/2	0.500	0.461	0.035	0.468	0.039	0.77	<b>10.90</b>	<b>22.65</b>	<b>75.50</b>
<b>B-REX-9</b>	9/16	0.562	0.521	0.035	0.530	0.039	0.83	<b>11.55</b>	<b>24.05</b>	<b>80.10</b>
<b>B-REX-10</b>	5/8	0.625	0.579	0.035	0.588	0.039	0.90	<b>12.20</b>	<b>25.35</b>	<b>84.50</b>
<b>B-REX-12</b>	3/4	0.750	0.693	0.042	0.704	0.046	1.09	<b>14.50</b>	<b>30.15</b>	<b>100.35</b>
<b>B-REX-14</b>	7/8	0.875	0.810	0.042	0.821	0.046	1.22	<b>16.30</b>	<b>33.95</b>	<b>113.20</b>
<b>B-REX-16</b>	1	1.000	0.925	0.042	0.940	0.046	1.41	<b>18.40</b>	<b>38.30</b>	<b>127.60</b>

### ASSORTMENTS

<b>B-REX-100</b>	Ten each B-REX-4 through B-REX-8 — 50 pieces	<b>47.40</b>
<b>B-REX-200</b>	Ten each B-REX-4 through B-REX-16 — 100 pieces	<b>116.30</b>

# RETAINING RINGS (cont.)

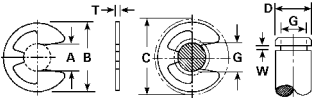
## METRIC



Lug for sizes 4 to 8

### EXTERNAL RINGS — Carbon Spring Steel, Phosphate / Oil Finish DIN 471

Part No.	Dimensions in Millimeters							Price		
	Shaft Dia. (D)	Free Dia. (A)	Thickness (T)	Groove		Ring Clearance (C)	10	25	100	
				Dia. (G)	Width (W)					
<b>B-MER-04</b>	4	3.7	0.40	3.8	0.50	8.6	-	<b>1.00</b>	<b>3.10</b>	
<b>B-MER-05</b>	5	4.7	0.60	4.8	0.70	10.3	-	<b>1.05</b>	<b>3.45</b>	
<b>B-MER-06</b>	6	5.6	0.70	5.7	0.80	11.7	-	<b>1.25</b>	<b>4.15</b>	
<b>B-MER-07</b>	7	6.5	0.80	6.7	0.90	13.5	-	<b>1.35</b>	<b>4.45</b>	
<b>B-MER-08</b>	8	7.4	0.80	7.6	0.90	14.7	-	<b>1.40</b>	<b>4.65</b>	
<b>B-MER-10</b>	10	9.3	1.00	9.6	1.10	17.0	<b>1.05</b>	<b>2.20</b>	<b>7.30</b>	
<b>B-MER-12</b>	12	11.0	1.00	11.5	1.10	19.0	<b>1.15</b>	<b>2.35</b>	<b>7.70</b>	



Radially applied and easily snapped into position, replacing cotter pins, machined shoulders, screw-fastened collars, and other fastening devices.

### E- RINGS — Steel, Zinc Plated

Part No.	Dimensions in Inches							Price		
	Shaft Dia. (D)	Free Dia. (A)	Thickness (T)	Ring Dimensions		Groove	10	25	100	
				Dia.(B) / Clearance(C)	Dia.(G) / Width(W)					
<b>B-REE-1</b>	1/16	0.062	0.051	0.010	0.140 / 0.150	0.052 / 0.012	—	<b>1.00</b>	<b>3.00</b>	
<b>B-REE-2</b>	1/8	0.125	0.094	0.015	0.230 / 0.240	0.095 / 0.018	—	<b>1.05</b>	<b>3.15</b>	
<b>B-REE-3</b>	3/16	0.188	0.122	0.025	0.375 / 0.390	0.125 / 0.029	—	<b>1.10</b>	<b>3.25</b>	
<b>B-REE-4</b>	1/4	0.250	0.207	0.025	0.527 / 0.540	0.210 / 0.029	—	<b>1.30</b>	<b>4.20</b>	
<b>B-REE-5</b>	5/16	0.312	0.243	0.025	0.500 / 0.520	0.250 / 0.029	—	<b>1.25</b>	<b>4.10</b>	
<b>B-REE-6</b>	3/8	0.375	0.300	0.035	0.660 / 0.680	0.303 / 0.039	—	<b>1.75</b>	<b>5.75</b>	
<b>B-REE-7</b>	7/16	0.437	0.375	0.035	0.600 / 0.620	0.380 / 0.039	—	<b>1.90</b>	<b>6.25</b>	
<b>B-REE-8</b>	1/2	0.500	0.392	0.042	0.800 / 0.820	0.396 / 0.046	<b>1.30</b>	<b>2.65</b>	<b>8.75</b>	
<b>B-REE-10</b>	5/8	0.625	0.480	0.042	0.940 / 0.960	0.485 / 0.046	<b>1.65</b>	<b>3.45</b>	<b>11.35</b>	
<b>B-REE-12</b>	3/4	0.750	0.574	0.050	1.120 / 1.140	0.580 / 0.056	<b>2.20</b>	<b>4.55</b>	<b>15.05</b>	
<b>B-REE-14</b>	7/8	0.875	0.668	0.050	1.300 / 1.320	0.675 / 0.056	<b>3.70</b>	<b>7.70</b>	<b>25.60</b>	
<b>B-REE-16</b>	1	1.000	0.822	0.050	1.500 / 1.530	0.835 / 0.056	<b>4.35</b>	<b>9.05</b>	<b>30.05</b>	

### ASSORTMENTS

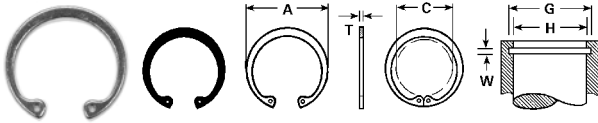
**B-REE-100** 25 each B-REE-1 thru B-REE-8 — 200 pcs. . . . . **13.70**  
**B-REE-200** 25 each B-REE-1 thru B-REE-8 and 10 each B-REE-10 thru B-REE-16 — 240 pcs. . . **27.65**

## METRIC

### E-RINGS — Carbon Spring Steel, Phosphate / Oil Finish DIN 6799

Part No.	Dimensions in Millimeters					Price		
	Shaft Dia. (D)	Free Dia. (A)	Thickness (T)	Groove	Ring Dia. / Clearance	10	25	100
				Dia. (G) / Width (W)	(B) / (C)			
<b>B-MERE-04</b>	6.00	3.34	0.70	4.0 / 0.74	8.80 / 9.3	—	<b>1.05</b>	<b>3.50</b>
<b>B-MERE-05</b>	7.00	4.11	0.70	5.0 / 0.74	10.75 / 11.3	—	<b>1.15</b>	<b>3.75</b>
<b>B-MERE-06</b>	8.00	5.26	0.70	6.0 / 0.74	11.75 / 12.3	—	<b>1.30</b>	<b>4.20</b>
<b>B-MERE-07</b>	9.50	5.84	0.90	7.0 / 0.94	13.80 / 14.3	—	<b>1.60</b>	<b>5.25</b>
<b>B-MERE-08</b>	10.50	6.52	1.00	8.0 / 1.05	15.60 / 16.3	—	<b>1.70</b>	<b>5.65</b>
<b>B-MERE-10</b>	13.00	8.32	1.20	10.0 / 1.25	19.65 / 20.4	<b>1.35</b>	<b>2.75</b>	<b>9.05</b>
<b>B-MERE-12</b>	15.50	10.45	1.30	12.0 / 1.35	22.65 / 23.4	<b>1.60</b>	<b>3.30</b>	<b>10.95</b>

## RETAINING RINGS (cont.)



The tapered design maintains circularity and pressure against grooves. Axially applied and removed with Retaining Ring Pliers.

### INTERNAL RINGS — Steel, Zinc Plated

Part No.	Dimensions in Inches							Price		
	Housing Dia. (H)	Free Dia. (A)	Thickness (T)	Groove		Ring Clearance (C)	10	25	100	
				Dia. (G)	Width (W)					
<b>B-RI-4</b>	1/4	0.250	0.280	0.015	0.268	0.018	0.11	<b>1.15</b>	<b>2.40</b>	<b>7.95</b>
<b>B-RI-5</b>	5/16	0.312	0.346	0.015	0.330	0.018	0.17	<b>1.20</b>	<b>2.45</b>	<b>8.15</b>
<b>B-RI-6</b>	3/8	0.375	0.415	0.025	0.397	0.029	0.20	<b>1.25</b>	<b>2.50</b>	<b>8.25</b>
<b>B-RI-7</b>	7/16	0.438	0.482	0.025	0.461	0.029	0.23	<b>1.30</b>	<b>2.55</b>	<b>8.35</b>
<b>B-RI-8</b>	1/2	0.500	0.548	0.035	0.530	0.039	0.26	<b>1.45</b>	<b>2.95</b>	<b>9.85</b>
<b>B-RI-9</b>	9/16	0.562	0.620	0.035	0.596	0.039	0.28	<b>1.55</b>	<b>3.15</b>	<b>10.45</b>
<b>B-RI-10</b>	5/8	0.625	0.694	0.035	0.665	0.039	0.34	<b>1.65</b>	<b>3.40</b>	<b>11.30</b>
<b>B-RI-12</b>	3/4	0.750	0.831	0.035	0.796	0.039	0.44	<b>2.15</b>	<b>4.45</b>	<b>14.80</b>
<b>B-RI-14</b>	7/8	0.875	0.971	0.042	0.931	0.046	0.54	<b>2.55</b>	<b>5.25</b>	<b>17.45</b>
<b>B-RI-16</b>	1	1.000	1.111	0.042	1.066	0.046	0.67	<b>3.35</b>	<b>6.95</b>	<b>23.10</b>

### ASSORTMENTS

<b>B-RI-100</b>	Ten each B-RI-4 through B-RI-8 — 50 pcs. ....	<b>8.60</b>
<b>B-RI-200</b>	Ten each B-RI-4 through B-RI-16 — 100 pcs. ....	<b>21.95</b>

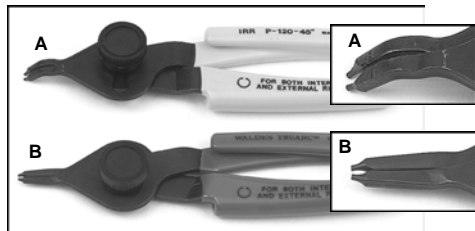
### INTERNAL RINGS — Stainless Steel

Part No.	Dimensions in Inches							Price		
	Housing Dia. (H)	Free Dia. (A)	Thickness (T)	Groove		Ring Clearance (C)	10	25	100	
				Dia. (G)	Width (W)					
<b>B-RIX-4</b>	1/4	0.250	0.280	0.015	0.268	0.018	0.11	<b>16.60</b>	<b>33.15</b>	<b>106.10</b>
<b>B-RIX-5</b>	5/16	0.312	0.346	0.015	0.330	0.018	0.17	<b>17.05</b>	<b>34.05</b>	<b>108.85</b>
<b>B-RIX-6</b>	3/8	0.375	0.415	0.025	0.397	0.029	0.20	<b>17.70</b>	<b>35.35</b>	<b>113.05</b>
<b>B-RIX-7</b>	7/16	0.438	0.482	0.025	0.461	0.029	0.23	<b>18.20</b>	<b>36.35</b>	<b>116.25</b>
<b>B-RIX-8</b>	1/2	0.500	0.548	0.035	0.530	0.039	0.26	<b>19.25</b>	<b>38.45</b>	<b>122.95</b>
<b>B-RIX-9</b>	9/16	0.562	0.620	0.035	0.596	0.039	0.28	<b>20.40</b>	<b>40.75</b>	<b>130.35</b>
<b>B-RIX-10</b>	5/8	0.625	0.694	0.035	0.665	0.039	0.34	<b>21.00</b>	<b>42.00</b>	<b>134.35</b>
<b>B-RIX-12</b>	3/4	0.750	0.831	0.035	0.796	0.039	0.44	<b>23.35</b>	<b>46.65</b>	<b>149.15</b>
<b>B-RIX-14</b>	7/8	0.875	0.971	0.042	0.931	0.046	0.54	<b>28.30</b>	<b>56.55</b>	<b>180.95</b>
<b>B-RIX-16</b>	1	1.000	1.111	0.042	1.066	0.046	0.67	<b>31.25</b>	<b>62.45</b>	<b>199.75</b>

### ASSORTMENTS

<b>B-RIX-100</b>	Ten each B-RIX-4 through B-RIX-8 — 50 pcs. ....	<b>82.80</b>
<b>B-RIX-200</b>	Ten each B-RIX-4 through B-RIX-16 — 100 pcs. ....	<b>197.95</b>

## RETAINING RING PLIERS

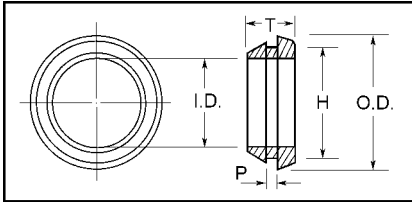


### RETAINING RING PLIERS High Carbon Steel

Simplify assembly and dismantling of axially installed Retaining Rings. Choose **Straight Tip** for standard applications, or the **45° Angle Tip** where clearance is limited. Instructions included with each plier.

<b>B-RP-1</b>	(A) Angled 45° .....	<b>31.50</b>
<b>B-RP-2</b>	(B) Straight .....	<b>26.25</b>

## GROMMETS — Cable Protection



### QUICK FIT GROMMET

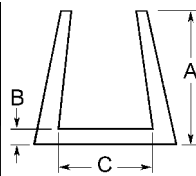
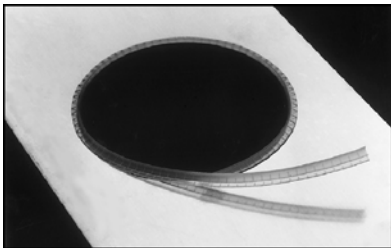
#### Polyvinylchloride

Quick Fit Grommet snaps neatly and quickly into panel hole to protect wires and cables that pass through the metal panels.

### POLYVINYLCHLORIDE

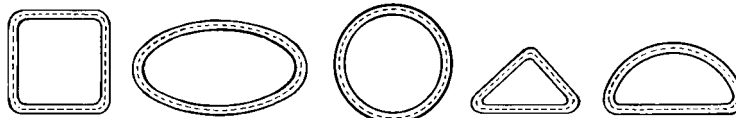
Part No.	I.D.	O.D.	Thickness T	Fits Hole Size		For Panel Thickness P	Price		
				H			10	25	100
<b>B-QFG-039</b>	0.24"	0.53"	0.32"	0.39"		0.06"	<b>1.50</b>	<b>3.08</b>	<b>10.25</b>
<b>B-QFG-043</b>	0.28"	0.57"	0.32"	0.43"		0.06"	<b>2.10</b>	<b>4.35</b>	<b>14.50</b>
<b>B-QFG-047</b>	0.32"	0.61"	0.32"	0.47"		0.06"	<b>2.15</b>	<b>4.45</b>	<b>14.85</b>
<b>B-QFG-055</b>	0.39"	0.69"	0.32"	0.55"		0.06"	<b>2.55</b>	<b>5.25</b>	<b>17.55</b>
<b>B-QFG-071</b>	0.55"	0.85"	0.32"	0.71"		0.06"	<b>2.95</b>	<b>6.10</b>	<b>20.25</b>

## GROMMET, CONTINUOUS — Nylon



Serrated Continuous Grommet eliminates sharp edges dangerous to hands and prevents abrasion and cut-through damage to wires and cables. Cut it to the proper circumferential length and slip over the panel edge. Fits snugly and will not jar loose. Easy, smooth installation in any shaped opening.

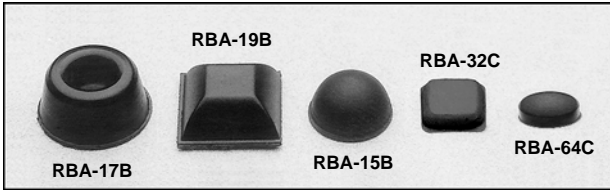
**FITS  
ANY  
SHAPE**



### NYLON

Part No.	For Panel Thickness	Dimensions			-2 2 Ft	Price	
		A	B	C		-10 10 Ft.	-50 50 Ft.
<b>B-CGP-36</b>	To .036"	1/8"	1/32"	0.100"	<b>2.70</b>	<b>12.30</b>	<b>55.85</b>
<b>B-CGP-105</b>	0.037" to 0.105"	5/32"	1/32"	0.170"	<b>2.90</b>	<b>13.15</b>	<b>59.75</b>
<b>B-CGP-164</b>	0.106" to 0.164"	5/32"	3/64"	0.205"	<b>4.00</b>	<b>18.10</b>	<b>82.20</b>
<b>B-CGP-187</b>	0.165" to 0.187"	3/16"	3/64"	0.280"	<b>4.35</b>	<b>19.75</b>	<b>89.75</b>
<b>B-CGP-250</b>	0.188" to 0.250"	3/16"	3/64"	0.340"	<b>4.75</b>	<b>21.50</b>	<b>97.75</b>

# BUMPERS

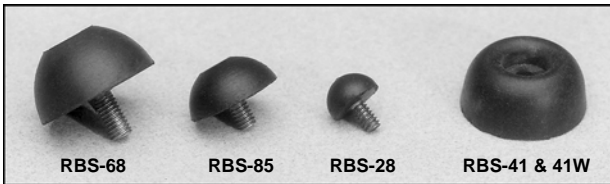


## SELF ADHESIVE — Elastomeric

Self Adhesive Bumpers press onto most smooth surfaces and stay without the use of holes, screws or rivets. They are skid and scratch resistant and protect instruments, desks and machinery from damage or movement. Made of modified PVC containing a plasticizer. Acrylic-based adhesive back.

## SELF ADHESIVE BUMPERS

Part No.	Description	Height × Width	Color	Price per Pack			
				12/Pack	24/Pack	36/Pack	
<b>B-RBA-17B</b>	Circular Depressed	0.40" × 0.88"	Black	—	<b>4.55</b>	<b>7.55</b>	<b>9.45</b>
				16/Pack	32/Pack	48/Pack	64/Pack
<b>B-RBA-19B</b>	Tapered Square	0.30" × 0.81"	Black	<b>3.70</b>	<b>6.15</b>	<b>7.70</b>	<b>8.55</b>
				12/Pack	24/Pack	48/Pack	72/Pack
<b>B-RBA-15B</b>	Hemispherical	0.32" × 0.63"	Black	<b>4.85</b>	<b>8.10</b>	<b>10.10</b>	<b>12.60</b>
				25/Pack	50/Pack	100/Pack	
<b>B-RBA-32C</b>	Tapered Square	0.12" × 0.50"	Black	—	<b>2.90</b>	<b>4.85</b>	<b>6.05</b>
				25/Pack	50/Pack	100/Pack	
<b>B-RBA-64CB</b>	Cylindrical	0.06" × 0.50"	Black	—	<b>6.15</b>	<b>10.20</b>	<b>12.75</b>



## SCREW TYPE — Rubber Head

Natural Rubber Bumpers adhere to metal, provide electrical resistivity and impact strength. A variety of styles to protect machinery from skidding and prevent marring of surfaces. Easily mounted to machinery, metal boxes and other equipment.

Service Temperature:  
-60° to 180°F (-51° to 82°C).  
Durometer Range: 10-20.

## SPECIFICATIONS

Part No.	Outside Diameter	Bumper Height	Size/Length	Recess		Bore Diameter
				Diameter	Depth	
<b>B-RBS-41</b>	1"	7/16"	—	3/8"	3/16"	3/16"
<b>B-RBS-41W*</b>	1"	7/16"	—	3/8"	3/16"	3/16"
<b>B-RBS-28</b>	7/16"	1/4"	#6-32 × 1/4"	—	—	—
<b>B-RBS-85</b>	3/4"	11/32"	#8-32 × 1/4"	—	—	—
<b>B-RBS-68</b>	15/16"	1/2"	#10-32 × 3/8"	5/16"	—	—

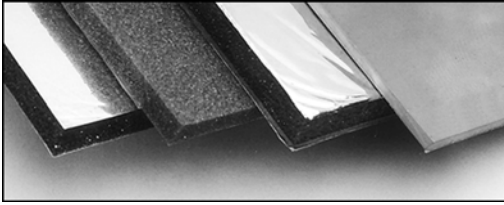
## RUBBER BUMPERS — Screw Type

Part No.	Description	10	Price	
			25	100
<b>B-RBS-41</b>	Doughnut Top	<b>7.50</b>	<b>15.60</b>	<b>52.00</b>
<b>B-RBS-41W*</b>	Doughnut Top	<b>4.45</b>	<b>9.20</b>	<b>30.55</b>
<b>B-RBS-28</b>	#6-32	<b>4.25</b>	<b>8.85</b>	<b>29.50</b>
<b>B-RBS-85</b>	#8-32	<b>7.95</b>	<b>16.55</b>	<b>55.10</b>
<b>B-RBS-68</b>	#10-32	<b>8.50</b>	<b>17.70</b>	<b>59.00</b>

\* W indicates bumper comes with a steel washer.



## DAMPING SHEETS — Noise and Vibration Control



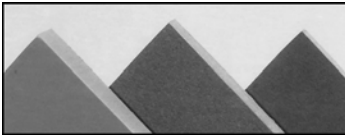
Equipment noise and vibration can be far more than an irritant. Excessive levels can cause permanent damage to people and/or equipment. At the very least, minimizing noise and vibration can improve productivity from man and machine. You can maximize the results of your efforts to lower noise and vibration by matching the correct material to the problem area in need of control. We've identified four primary areas to control:

**DAMPING** - controls structureborne vibrations before they produce noise.

**ABSORPTION** - dissipates built-up sound energy within a space.

**BARRIER** - blocks the transmission of airborne noise.

**SOLATION** - provides means to prevent structureborne vibrations from reaching attached surfaces.



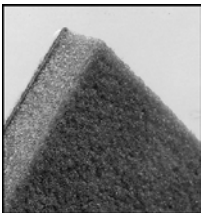
### DAMPING SHEET

Maximum performance for minimum weight and thickness. This material is furnished with pressure-sensitive backing for easy installation. Highly effective for damping of metal parts, circuit boards, cases, and housings for electronic applications. Specifically designed to prevent ringing in lightweight precision frames.

#### DAMPING SHEET

Order example: **B-NVC-125D-C** is a 12" × 12" sheet 0.125" thick

Part No.	Nominal Thickness	Price		
		12" × 12" (C)	12" × 24" (D)	24" × 24" (E)
<b>B-NVC-040D</b>	0.040"	<b>11.90</b>	<b>20.40</b>	<b>34.00</b>
<b>B-NVC-125D</b>	0.125"	<b>21.95</b>	<b>37.60</b>	<b>63.00</b>
<b>B-NVC-187D</b>	0.187"	<b>24.70</b>	<b>42.35</b>	<b>71.95</b>



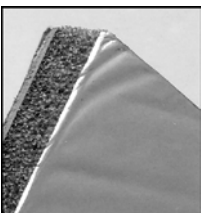
### DAMPING COMPOSITE SHEET

Combines damping sheet with textured acoustical foam. Bends around curved and irregular surfaces and provides excellent flame resistance. Damping Composite Sheet is frequently specified for electromechanical equipment such as printers and disk drives, or medical and office equipment. Furnished with pressure-sensitive backing for easy installation. Acoustical performance: 0.50 noise reduction coefficient using random incidence testing methods.

#### DAMPING COMPOSITE SHEET

Order example: **B-NVC-035DC-D** is a 12" × 24" sheet 0.535" thick

Part No.	Nominal Thickness	Price		
		12" × 12" (C)	12" × 24" (D)	24" × 24" (E)
<b>B-NVC-035DC</b>	0.535"	<b>10.55</b>	<b>18.10</b>	<b>33.15</b>



### BARRIER COMPOSITE SHEET

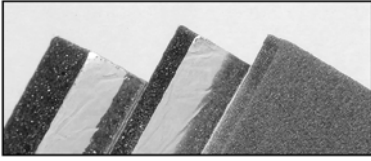
Combines tough, flexible barrier materials with sound absorbing aluminum faced foam. This sound-blocking product is especially effective for machinery housings and motor enclosures provides an additional layer of foam to decouple the composite sheet from the structure, thereby maximizing sound transmission loss at higher frequency ranges.

#### BARRIER COMPOSITE SHEET

Order example: **B-NVC-850DBC-E** is a 24" × 24" sheet 0.850" thick

Part No.	Composite Type	Nominal Thickness	Price		
			12" × 12" (C)	12" × 24" (D)	24" × 24" (E)
<b>B-NVC-850DBC</b>	B - foam/barrier/foam/facing	0.850"	<b>19.20</b>	<b>32.00</b>	<b>53.30</b>

## DAMPING SHEETS — Noise and Vibration Control (cont.)

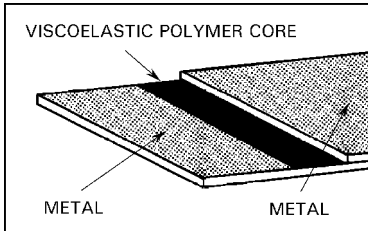


### ABSORBING FOAMS

**Type F** - faced foam provides absorption of sound energy but protects the foam with a 1 mil thick aluminum facing. You won't have to worry about the foam picking up oil, grease or water and affecting sound absorption properties. In a less demanding environment, use **Type O**, an economical open foam face than has been fused for a tougher, more impervious surface than other plain, unfaced foams.

Order Example: **B-NVC-500AFF-C** is a 12" × 12" sheet, faced foam, 0.500" thick

Part No.	Thickness	Acoustical Absorption	12" × 12"(C)	12" × 24"(D)	24" × 24"(E)
<b>B-NVC-500AOF</b>	0.500"	0.03 @ 125 hz.	<b>3.80</b>	<b>6.35</b>	<b>10.55</b>
<b>B-NVC-500AFF</b>	0.500"	0.11 @ 125 hz.	<b>4.30</b>	<b>7.35</b>	<b>12.25</b>
<b>B-NVC-1000AFF</b>	1.000"	0.20 @ 125 hz.	<b>6.25</b>	<b>10.65</b>	<b>17.75</b>



### LAMINATED METAL COMPOSITES

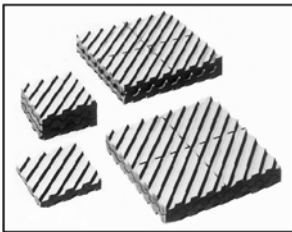
Thin, lightweight and effective, Laminated Metal Composites have a built-in damping component that lets you mount machine tool damping panels directly on the machine without insulating spacers. Or you can customize noise and vibration damping features on panels, chutes, cabinets and hoods. With a total thickness of just 0.0482", this "noiseless steel" damping sheet offers noise reductions of 10-20db, insulating against airborne sounds, structureborne noise, and inherent vibrations.

Acoustically constructed panels are comprised of a 0.0004" viscoelastic polymer core with high damping ability, sandwiched between two 0.0239" sheets of electrogalvanized steel. The plastic inner layer effectively isolates the two metal plates, reducing contact corrosion between them. Exterior surfaces can be painted for even more protection.

Order Example: **B-NS-0482-C** is a 12" × 12" sheet 0.0482" thick

Part No.	Thickness	6" × 12" (B)	12" × 12" (C)	12" × 24" (D)
<b>B-NS-0482</b>	0.0482"	<b>7.80</b>	<b>13.70</b>	<b>23.45</b>

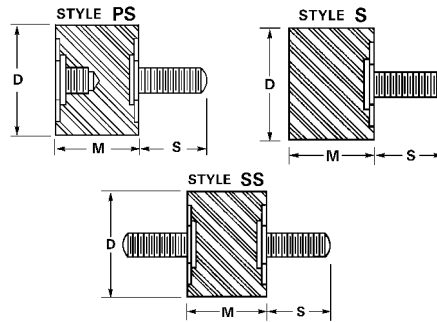
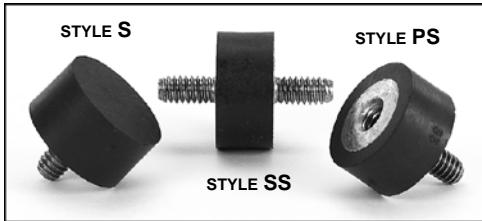
## PADS — Neoprene Cushioning



Equipment Mounting Pads provide a simple way to cushion against moderate shock, vibration and noise. The ribbing pattern allows nesting "ribbin-groove", or stacked with ribs at 90° to each other. This versatility gives optimum shock and vibration protection for many types of equipment. No tools, bolts, or adhesives are required. The ribs provide a firm footing to floor and equipment. Simply set the machine legs down on the pad or pads as needed. Provided in four standard sizes, precut and ready to use. Or a large piece may be easily cut with scissors along prescored 2" lines. A single layer is 3/8" thick and will support 50 psi at an approximated natural frequency of 18 hz.

Part No.	Price			
	-A 4" × 4"	-B 12" × 12"	-C 12" × 24"	-D 24" × 24"
<b>B-PAD-6</b>	<b>5.65</b>	<b>42.45</b>	<b>70.75</b>	<b>117.95</b>

## RUBBER MOUNTS — Noise and Vibration Control



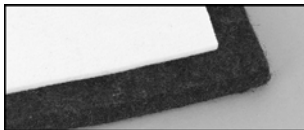
Rubber Mounts help decrease vibration, shock and noise problems at the equipment mounting point. The anti-skid design of Vibration Mounts often eliminates the need for bolts or other costly tie-down methods.

### RUBBER MOUNTS — Natural Rubber

Part No.	Threads	Dimensions in Inches			Maximum		Price		
		D	M	S	Compression Load	Shear	Each	10	25
<b>B-PM-632-4SS</b>	6-32	0.43	0.40	0.25	4 lbs.	3 lbs.	<b>1.45</b>	<b>11.75</b>	<b>24.40</b>
<b>B-PM-832-9SS</b>	8-32	0.56	0.50	0.375	9.5 lbs.	4.5 lbs.	<b>2.15</b>	<b>17.75</b>	<b>37.00</b>
<b>B-PM-832-18SS</b>	8-32	0.56	0.50	0.375	18 lbs.	6 lbs.	<b>2.15</b>	<b>17.75</b>	<b>37.00</b>
<b>B-PM-1032-18SS*</b>	10-32	0.56	0.50	0.375	18 lbs.	6 lbs.	<b>3.20</b>	<b>26.65</b>	<b>55.50</b>
<b>B-PM-1420-45SS*</b>	1/4-20	1.00	0.53	0.50	45 lbs.	30 lbs.	<b>3.45</b>	<b>28.55</b>	<b>59.50</b>
<b>B-PM-632-4PS*</b>	6-32	0.43	0.40	0.25	4.4 lbs.	3.4 lbs.	<b>4.40</b>	<b>36.75</b>	<b>76.50</b>
<b>B-PM-832-9PS</b>	8-32	0.56	0.50	0.375	9.5 lbs.	4.5 lbs.	<b>2.15</b>	<b>17.75</b>	<b>37.00</b>
<b>B-PM-832-18PS</b>	8-32	0.56	0.50	0.375	18 lbs.	6 lbs.	<b>2.15</b>	<b>17.75</b>	<b>37.00</b>
<b>B-PM-1032-18PS</b>	10-32	0.56	0.50	0.375	18 lbs.	6 lbs.	<b>2.15</b>	<b>17.75</b>	<b>37.00</b>
<b>B-PM-1420-45PS*</b>	1/4-20	1.00	0.53	0.50	45 lbs.	32 lbs.	<b>3.45</b>	<b>28.80</b>	<b>60.00</b>
<b>B-PM-1420-45S</b>	1/4-20	1.00	0.53	0.375	40 lbs.	n/a	<b>4.15</b>	<b>34.55</b>	<b>72.00</b>

\* Neoprene.

### PRESSED WOOL FELT

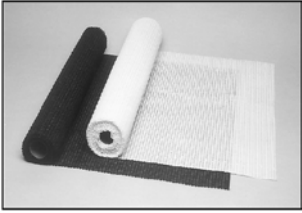


Felt is used in many applications, including sound absorption, vibration deadening, filtration, cushioning, thermal insulation, wicking, gaskets and washers. Type SAE F-5 Felt (white) has a minimum wool content of 95%, and is suggested for use where a firm, resilient felt is required. Type SAE F-13 is a gray combination of 75% wool and 25% fiber, recommended when abrasion and wear are not factors of special importance.

### FELT — Wool, Pressed

Part No.	Type	Color	Thick.	Weight oz/sq ft	Price			
					-A 3" × 6"	-B 6" × 12"	-C 12" × 12"	-D 12" × 24"
<b>B-FELT-5/2</b>	SAE F-5	White	1/8"	2.66	<b>9.05</b>	<b>30.05</b>	<b>50.10</b>	<b>83.50</b>
<b>B-FELT-5/4</b>	SAE F-5	White	1/4"	5.33	<b>7.75</b>	<b>25.85</b>	<b>43.05</b>	<b>71.75</b>
<b>B-FELT-5/6</b>	SAE F-5	White	3/8"	8.00	<b>6.25</b>	<b>20.80</b>	<b>34.70</b>	<b>57.80</b>
<b>B-FELT-13/2</b>	SAE F-13	Gray	1/8"	1.88	<b>3.05</b>	<b>10.10</b>	<b>16.80</b>	<b>28.00</b>
<b>B-FELT-13/4</b>	SAE F-13	Gray	1/4"	3.79	<b>3.70</b>	<b>12.25</b>	<b>20.50</b>	<b>34.05</b>
<b>B-FELT-13/6</b>	SAE F-13	Gray	3/8"	5.67	<b>4.85</b>	<b>16.10</b>	<b>26.85</b>	<b>44.70</b>

## NON-SLIP MATTING — Polyester / Polyvinylchloride



The incredible “stay-put” action of our lightweight PVC Non-Slip Matting prevents slipping and sliding of most materials. Use it for lining trays, shelves, carts, tool boxes, etc. Resists fungal growth in moist environments. Clean with warm water and soap to remove dirt, light oils and other contaminants and to help restore non-slip properties. Flame retardant Mat is composed of Polyester scrim fiber reinforcement coated with Polyvinyl Chloride (outside material). Softening point: 280°F (173°C) - Melting point: 300°F (184°C).

### NON-SLIP MATTING — Polyester / PVC

Part No.	Width	Color	5 Feet	Price Per Roll	
				10 Feet	25 Feet
<b>B-MAT-4</b>	36"	Black	<b>8.50</b>	<b>15.00</b>	<b>29.50</b>
<b>B-MAT-5</b>	36"	Beige	<b>8.50</b>	<b>15.00</b>	<b>29.50</b>

## CONTINUOUS HINGE — Stainless Steel Type 302



Sturdy, corrosion resistant Continuous or Piano type Hinges are a very practical choice where swinging motion is required. They provide superior strength and prevent binding due to misalignment. Furnished without holes so you may readily drill them to suit your needs or spot weld them in place. Hinge and pin are Stainless Steel Type 302.

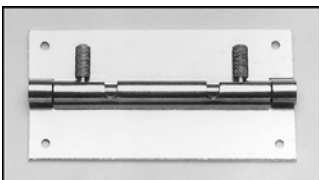
### STAINLESS STEEL TYPE 302

Part No.	Open Width	Thickness	Pin Diameter	Price				
				6"	12"	24"	36"	*72"
<b>B-PH-50</b>	1/2"	0.025"	0.055"	<b>2.65</b>	<b>4.25</b>	<b>7.60</b>	<b>11.20</b>	<b>20.45</b>
<b>B-PH-75</b>	3/4"	0.025"	0.062"	<b>2.60</b>	<b>4.15</b>	<b>7.45</b>	<b>10.80</b>	<b>20.05</b>
<b>B-PH-1</b>	1-1/16"	0.035"	0.091"	<b>2.65</b>	<b>4.25</b>	<b>7.60</b>	<b>11.20</b>	<b>20.45</b>
<b>B-PH-2</b>	1-1/2"	0.050"	0.120"	<b>3.15</b>	<b>5.00</b>	<b>8.95</b>	<b>13.10</b>	<b>24.25</b>
<b>B-PH-3</b>	2"	0.060"	0.120"	<b>3.75</b>	<b>5.95</b>	<b>10.80</b>	<b>15.80</b>	<b>28.50</b>

\* Special packaging charge over 60" lengths.

**B-PH-100** 6" Piece. One each size B-PH-50 through B-PH-3 — 5 Pieces **19.45**

## SPRING RELEASE HINGE



### SPRING RELEASE HINGES — Stainless Steel

Spring Release Hinges combine a hinge and a latch into one unique piece of hardware. Made of Stainless Steel, they provide secure closure, while allowing easy access when required. Just push the spring-loaded knurled peg into lock position for removal of panel doors. Can be installed with screws, rivets or by welding. Available in three configurations.

### STAINLESS STEEL 18-8

Part No.	Dimensions in Inches			Configuration	Price Each
	Length/Width	Pin Diameter	Metal Thickness		
<b>B-SRH-6416</b>	4 × 1	0.250	0.050	Two holes on each plate	<b>21.85</b>
<b>B-SRH-2816L</b>	1-3/4 × 1	0.250	0.050	Left - no holes	<b>14.45</b>
<b>B-SRH-2816R</b>	1-3/4 × 1	0.250	0.050	Right - no holes	<b>12.65</b>

# LOCKING DEVICES — Latches

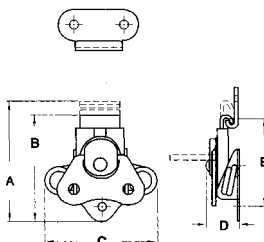
## LATCHES — Link Lock®

These Latches pack a large load capacity into a compact design. They assure a positive hold and will not slip open. Just lift the wing and turn it 180° to engage or disengage. Excellent for rapid fastening and removal of access panels, machine guards, covers or sub-assemblies.

® Southco, Inc.

## SPECIFICATIONS

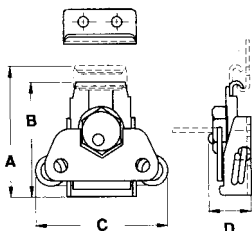
Part No.	A	B	C	D	E
<b>B-LL-1</b>	2.07"	1.82"	1.93"	0.58"	1.52"
<b>B-LL-2</b>	2.42"	2.11"	2.51"	0.79"	N/A
<b>B-LL-3</b>	3.79"	3.43"	2.75"	0.67"	N/A
<b>B-LH-1</b>	4.16"	2.06"	4.42"	0.44"	N/A
<b>B-LH-2</b>	5.26"	3.22"	6.31"	0.44"	N/A



### SPRING LOADED LATCH Stainless Steel

Only about 2" in length, the Spring Loaded Latch has a maximum load capacity of 450 lbs. It has a torsion spring that automatically compensates for misalignment and also absorbs vibration.

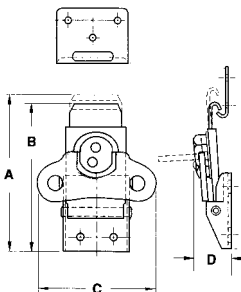
**B-LL-1** ..... Each .... **9.25**  
10 ..... **82.15**



### SPRING LOADED LATCH Steel, Zinc Chromated

This medium-size Spring Loaded Latch has a maximum load capacity of 600 lbs. The unique spring loaded design absorbs vibration and automatically compensates for misalignment. Dipped in bright zinc chromate.

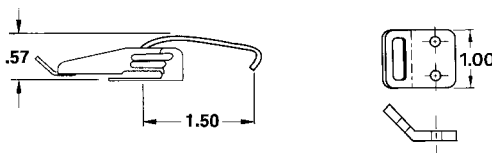
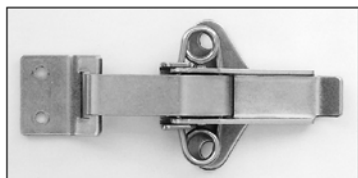
**B-LL-2** ..... Each .... **9.40**  
10 ..... **83.20**



### HEAVY DUTY LATCH Stainless Steel

A large Latch with greater load capacity than B-LL-1 and B-LL-2. Made specifically for heavy duty applications. Maximum load capacity — 900 lbs.

**B-LL-3** ..... Each ... **21.15**  
10 ..... **190.25**

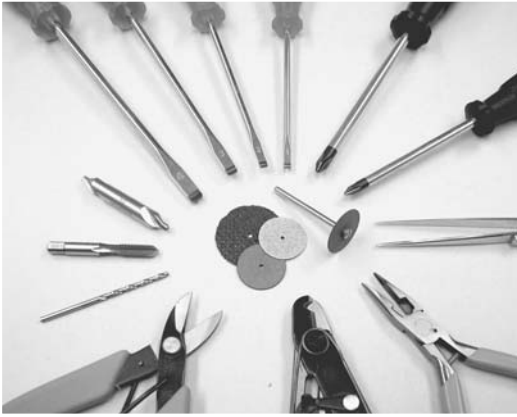


### DRAW LATCH — Stainless Steel

This spring-loaded draw latch has a clamping force of up to 120 lbs. and is made of tough stainless steel.

**B-LD-1** ..... Each .. **6.60** ..... 10 ... **56.35**

# TOOLS



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# DRILLS — High Speed Steel and Cobalt



HIGH SPEED STEEL



COBALT

## FRACTIONS, NUMBERS, LETTERS — Bright Jobber Length

**High Speed Steel Drills, 118°** — For your convenience, we stock a complete range of top industrial quality in jobbers length, in all wire gauges, fractional and letter sizes from No. 97 (0.0059") through 1/2" (0.5000"). Both decimal and millimeter diameters are shown. Metric sizes begin on [page 322](#).

**Cobalt Drills, 135°** — For faster drilling in high-tensile materials such as Stainless Steel, Titanium, and various alloys, we offer Cobalt sizes from No. 80 (0.0135") through No. 1 and in fractional sizes down to 1/64". On [page 174](#) you will find tap and body drill sizes for the American screws which we stock. Long drill sizes and reduced shanks are found on [page 325](#).

Order Example: **B-CHSD-78** is Cobalt, Size 78

### HIGH SPEED STEEL

### COBALT

HIGH SPEED STEEL Part No.	HSD Price		Drill Size	Diameter		Length in Inches		COBALT Part No.	CHSD Price	
	Each	10		Inches	mm	Overall	Flute		Each	10
B-HSD-97	8.55	72.75	97	0.0059	0.1499	3/4	.05	—	—	—
B-HSD-96	8.55	72.75	96	0.0063	0.1600	3/4	.05	—	—	—
B-HSD-95	7.75	65.90	95	0.0067	0.1702	3/4	.05	—	—	—
B-HSD-94	7.75	65.90	94	0.0071	0.1803	3/4	.06	—	—	—
B-HSD-93	6.25	53.15	93	0.0075	0.1905	3/4	.06	—	—	—
B-HSD-92	6.25	53.15	92	0.0079	0.2007	3/4	.06	—	—	—
B-HSD-91	6.25	53.15	91	0.0083	0.2108	3/4	.07	—	—	—
B-HSD-90	6.25	53.15	90	0.0087	0.2210	3/4	.07	—	—	—
B-HSD-89	6.25	53.15	89	0.0091	0.2311	3/4	.07	—	—	—
B-HSD-88	6.25	53.15	88	0.0095	0.2413	3/4	.08	—	—	—
B-HSD-87	4.65	39.55	87	0.0100	0.2540	3/4	.08	—	—	—
B-HSD-86	4.65	39.55	86	0.0105	0.2667	3/4	.09	—	—	—
B-HSD-85	4.10	34.85	85	0.0111	0.2794	3/4	.09	—	—	—
B-HSD-84	4.10	34.85	84	0.0115	0.2921	3/4	.10	—	—	—
B-HSD-83	4.10	34.85	83	0.0120	0.3048	3/4	.10	—	—	—
B-HSD-82	3.80	32.30	82	0.0125	0.3175	3/4	.10	—	—	—
B-HSD-81	3.80	32.30	81	0.0130	0.3302	3/4	.10	—	—	—
B-HSD-80	1.90	16.15	80	0.0135	0.3429	3/4	3/16	B-CHSD-80	3.60	31.00
B-HSD-79	1.90	16.15	79	0.0145	0.3683	3/4	3/16	B-CHSD-79	3.60	31.00
B-HSD-1/64	1.50	12.75	1/64"	0.0156	0.3962	3/4	3/16	B-CHSD-1/64	3.85	33.20
B-HSD-78	1.90	16.15	78	0.0160	0.4064	7/8	3/16	B-CHSD-78	3.60	31.00
B-HSD-77	1.90	16.15	77	0.0180	0.4572	7/8	3/16	B-CHSD-77	3.60	31.00
B-HSD-76	1.90	16.15	76	0.0200	0.5080	7/8	3/16	B-CHSD-76	3.60	31.00
B-HSD-75	1.90	16.15	75	0.0210	0.5334	1	1/4	B-CHSD-75	3.60	31.00
B-HSD-74	1.75	14.90	74	0.0225	0.5715	1	1/4	B-CHSD-74	3.30	28.50
B-HSD-73	1.75	14.90	73	0.0240	0.6096	1-1/8	5/16	B-CHSD-73	3.30	28.50
B-HSD-72	1.75	14.90	72	0.0250	0.6350	1-1/8	5/16	B-CHSD-72	3.30	28.50
B-HSD-71	1.75	14.90	71	0.0260	0.6604	1-1/4	3/8	B-CHSD-71	3.30	28.50
B-HSD-70	1.75	14.90	70	0.0280	0.7112	1-1/4	3/8	B-CHSD-70	3.30	28.50
B-HSD-69	1.75	14.90	69	0.0292	0.7417	1-3/8	1/2	B-CHSD-69	3.30	28.50
B-HSD-68	1.40	11.90	68	0.0310	0.7874	1-3/8	1/2	B-CHSD-68	2.90	25.00
B-HSD-1/32	1.40	11.90	1/32"	0.0312	0.7925	1-3/8	1/2	B-CHSD-1/32	3.05	26.35
B-HSD-67	1.40	11.90	67	0.0320	0.8128	1-3/8	1/2	B-CHSD-67	2.90	25.00
B-HSD-66	1.40	11.90	66	0.0330	0.8382	1-3/8	1/2	B-CHSD-66	2.90	25.00
B-HSD-65	1.40	11.90	65	0.0350	0.8890	1-1/2	5/8	B-CHSD-65	3.00	26.00
B-HSD-64	1.40	11.90	64	0.0360	0.9144	1-1/2	5/8	B-CHSD-64	3.00	26.00

Continued →

# DRILLS — High Speed Steel and Cobalt (cont.)

## HIGH SPEED STEEL

## COBALT

HIGH SPEED STEEL		HSD Price		Drill Size	Diameter		Length in Inches		COBALT Part No.		CHSD Price	
Part No.	Each	10			Inches	mm	Overall	Flute	Prefix	Each	10	
B-HSD-63	1.40	11.90	63	0.0370	0.9398	1-1/2	5/8	B-CHSD-63	3.00	26.00		
B-HSD-62	1.40	11.90	62	0.0380	0.9652	1-1/2	5/8	B-CHSD-62	3.00	26.00		
B-HSD-61	1.40	11.90	61	0.0390	0.9906	1-5/8	11/16	B-CHSD-61	3.00	26.00		
B-HSD-60	1.40	11.90	60	0.0400	1.0160	1-5/8	11/16	B-CHSD-60	2.70	23.50		
B-HSD-59	1.35	11.50	59	0.0410	1.0414	1-5/8	11/16	B-CHSD-59	2.70	23.50		
B-HSD-58	1.30	11.25	58	0.0420	1.0668	1-5/8	11/16	B-CHSD-58	2.70	23.50		
B-HSD-57	1.30	11.25	57	0.0430	1.0922	1-3/4	3/4	B-CHSD-57	2.70	23.50		
B-HSD-56	1.30	11.25	56	0.0465	1.1811	1-3/4	3/4	B-CHSD-56	2.10	18.15		
B-HSD-3/64	1.30	11.25	3/64"	0.0469	1.1913	1-3/4	3/4	B-CHSD-3/64	2.85	24.60		
B-HSD-55	1.30	11.25	55	0.0520	1.3208	1-7/8	7/8	B-CHSD-55	1.85	16.15		
B-HSD-54	1.25	10.65	54	0.0550	1.3970	1-7/8	7/8	B-CHSD-54	1.85	16.15		
B-HSD-53	1.25	10.65	53	0.0595	1.5113	1-7/8	7/8	B-CHSD-53	1.85	16.15		
B-HSD-1/16	1.25	10.65	1/16"	0.0625	1.5875	1-7/8	7/8	B-CHSD-1/16	1.85	15.90		
B-HSD-52	1.25	10.65	52	0.0635	1.6129	1-7/8	7/8	B-CHSD-52	1.85	16.15		
B-HSD-51	1.25	10.65	51	0.0670	1.7018	2	1	B-CHSD-51	1.85	16.15		
B-HSD-50	1.25	10.65	50	0.0700	1.7780	2	1	B-CHSD-50	1.85	16.15		
B-HSD-49	1.25	10.65	49	0.0730	1.8771	2	1	B-CHSD-49	1.85	16.15		
B-HSD-48	1.25	10.65	48	0.0760	1.9304	2	1	B-CHSD-48	1.85	16.15		
B-HSD-5/64	1.25	10.65	5/64"	0.0781	1.9837	2	1	B-CHSD-5/64	1.85	15.90		
B-HSD-47	1.25	10.65	47	0.0785	1.9939	2	1	B-CHSD-47	1.85	16.15		
B-HSD-46	1.25	10.65	46	0.0810	2.0574	2-1/8	1-1/8	B-CHSD-46	1.85	16.15		
B-HSD-45	1.25	10.65	45	0.0820	2.0828	2-1/8	1-1/8	B-CHSD-45	1.85	16.15		
B-HSD-44	1.25	10.65	44	0.0860	2.1844	2-1/8	1-1/8	B-CHSD-44	1.85	16.15		
B-HSD-43	1.25	10.65	43	0.0890	2.2606	2-1/4	1-1/4	B-CHSD-43	1.85	16.15		
B-HSD-42	1.25	10.65	42	0.0935	2.3749	2-1/4	1-1/4	B-CHSD-42	1.85	16.15		
B-HSD-3/32	1.25	10.65	3/32"	0.0938	2.3825	2-1/4	1-1/4	B-CHSD-3/32	1.85	15.90		
B-HSD-41	1.25	10.65	41	0.0960	2.4384	2-3/8	1-3/8	B-CHSD-41	1.85	16.15		
B-HSD-40	1.25	10.65	40	0.0980	2.4892	2-3/8	1-3/8	B-CHSD-40	1.85	16.15		
B-HSD-39	1.25	10.65	39	0.0995	2.5273	2-3/8	1-3/8	B-CHSD-39	1.85	16.15		
B-HSD-38	1.25	10.65	38	0.1015	2.5781	2-1/2	1-7/16	B-CHSD-38	1.85	16.15		
B-HSD-37	1.25	10.65	37	0.1040	2.6416	2-1/2	1-7/16	B-CHSD-37	2.05	18.00		
B-HSD-36	1.25	10.65	36	0.1065	2.7051	2-1/2	1-7/16	B-CHSD-36	2.05	18.00		
B-HSD-7/64	1.25	10.65	7/64"	0.1094	2.7788	2-5/8	1-1/2	B-CHSD-7/64	1.95	17.00		
B-HSD-35	1.25	10.65	35	0.1100	2.7940	2-5/8	1-1/2	B-CHSD-35	2.05	18.00		
B-HSD-34	1.25	10.65	34	0.1110	2.1894	2-5/8	1-1/2	B-CHSD-34	2.05	18.00		
B-HSD-33	1.25	10.65	33	0.1130	2.8702	2-5/8	1-1/2	B-CHSD-33	2.05	18.00		
B-HSD-32	1.25	10.65	32	0.1160	2.9464	2-5/8	1-1/2	B-CHSD-32	2.05	18.00		
B-HSD-31	1.25	10.65	31	0.1200	3.0480	2-3/4	1-5/8	B-CHSD-31	2.05	18.00		
B-HSD-1/8	1.30	11.25	1/8	0.1250	3.1750	2-3/4	1-5/8	B-CHSD-1/8	2.35	20.25		
B-HSD-30	1.30	11.25	30	0.1285	3.2639	2-3/4	1-5/8	B-CHSD-30	2.05	18.00		
B-HSD-29	1.30	11.25	29	0.1360	3.4544	2-7/8	1-3/4	B-CHSD-29	2.05	18.00		
B-HSD-28	1.30	11.25	28	0.1405	3.5687	2-7/8	1-3/4	B-CHSD-28	2.05	18.00		
B-HSD-9/64	1.30	11.25	9/64"	0.1406	3.5712	2-7/8	1-3/4	B-CHSD-9/64	2.50	21.60		
B-HSD-27	1.30	11.25	27	0.1440	3.6576	3	1-7/8	B-CHSD-27	2.15	18.50		
B-HSD-26	1.35	11.50	26	0.1470	3.7338	3	1-7/8	B-CHSD-26	2.30	20.00		
B-HSD-25	1.35	11.50	25	0.1495	3.7973	3	1-7/8	B-CHSD-25	2.30	20.00		
B-HSD-24	1.35	11.50	24	0.1520	3.8608	3-1/8	2	B-CHSD-24	2.50	21.50		
B-HSD-23	1.35	11.50	23	0.1540	3.9116	3-1/8	2	B-CHSD-23	2.50	21.50		

Continued →



# DRILLS — High Speed Steel and Cobalt (cont.)

## HIGH SPEED STEEL

HIGH SPEED STEEL Part No.	HSD Price		Drill Size	Diameter		Length in Inches	
	Each	10		Inches	mm	Overall	Flute
B-HSD-5/32	1.35	11.50	5/32"	0.1562	3.9675	3-1/8	2
B-HSD-22	1.50	12.75	22	0.1570	3.3978	3-1/8	2
B-HSD-21	1.50	12.75	21	0.1590	4.0386	3-1/4	2-1/8
B-HSD-20	1.50	12.75	20	0.1610	4.0894	3-1/4	2-1/8
B-HSD-19	1.50	12.75	19	0.1660	4.2164	3-1/4	2-1/8
B-HSD-18	1.50	12.75	18	0.1695	4.3053	3-1/4	2-1/8
B-HSD-11/64	1.50	12.75	11/64"	0.1719	4.3663	3-1/4	2-1/8
B-HSD-17	1.85	15.75	17	0.1730	4.3942	3-3/8	2-3/16
B-HSD-16	1.85	15.75	16	0.1770	4.4958	3-3/8	2-3/16
B-HSD-15	1.95	16.75	15	0.1800	4.5720	3-3/8	2-3/16
B-HSD-14	1.95	16.75	14	0.1820	4.6228	3-3/8	2-3/16
B-HSD-13	1.95	16.75	13	0.1850	4.6990	3-1/2	2-5/16
B-HSD-3/16	1.85	16.75	3/16"	0.1875	4.7625	3-1/2	2-5/16
B-HSD-12	1.95	16.75	12	0.1890	4.8006	3-1/2	2-5/16
B-HSD-11	1.95	16.75	11	0.1910	4.8514	3-1/2	2-5/16
B-HSD-10	2.05	17.50	10	0.1935	4.9149	3-5/8	2-7/16
B-HSD-9	2.05	17.50	9	0.1960	4.9784	3-5/8	2-7/16
B-HSD-8	2.05	17.50	8	0.1990	5.0546	3-5/8	2-7/16
B-HSD-7	2.05	17.50	7	0.2010	5.1054	3-5/8	2-7/16
B-HSD-13/64	2.00	17.25	13/64"	0.2031	5.1587	3-5/8	2-7/64
B-HSD-6	2.60	22.25	6	0.2040	5.1816	3-3/4	2-1/2
B-HSD-5	2.60	22.25	5	0.2055	5.2197	3-3/4	2-1/2
B-HSD-4	2.60	22.25	4	0.2090	5.3086	3-3/4	2-1/2
B-HSD-3	2.60	22.25	3	0.2130	5.4102	3-3/4	2-1/2
B-HSD-7/32	1.95	16.75	7/32"	0.2188	5.5575	3-3/4	2-1/2
B-HSD-2	2.60	22.25	2	0.2210	5.6134	3-7/8	2-5/8
B-HSD-1	2.60	22.25	1	0.2280	5.7912	3-7/8	2-5/8
B-HSD-A	2.90	24.65	A	0.2340	5.9436	3-7/8	2-5/8
B-HSD-15/64	2.20	18.75	15/64"	0.2344	5.9538	3-7/8	2-5/8
B-HSD-B	2.90	24.65	B	0.2380	6.0452	4	2-3/4
B-HSD-C	2.90	24.65	C	0.2420	6.1468	4	2-3/4
B-HSD-D	2.90	24.65	D	0.2460	6.2484	4	2-3/4
B-HSD-1/4	2.65	22.60	1/4"	0.2500	6.3500	4	2-3/4
B-HSD-E	2.95	25.10	E	0.2500	6.3500	4	2-3/4
B-HSD-F	3.60	30.60	F	0.2570	6.5278	4-1/8	2-7/8
B-HSD-G	3.60	30.60	G	0.2610	6.6294	4-1/8	2-7/8
B-HSD-17/64	3.10	26.35	17/64"	0.2656	6.7462	4-1/8	2-7/8
B-HSD-H	3.65	31.10	H	0.2660	6.7564	4-1/8	2-7/8
B-HSD-I	3.95	33.75	I	0.2720	6.9088	4-1/8	2-7/8
B-HSD-J	3.95	33.75	J	0.2770	7.0358	4-1/8	2-7/8
B-HSD-K	4.30	36.55	K	0.2810	7.1374	4-1/4	2-15/16
B-HSD-9/32	3.60	30.60	9/32"	0.2812	7.1425	4-1/4	2-15/16
B-HSD-L	4.30	36.55	L	0.2900	7.3660	4-1/4	2-15/16
B-HSD-M	4.40	37.40	M	0.2950	7.4930	4-3/8	3-1/16
B-HSD-19/64	3.75	31.95	19/64"	0.2969	7.5413	4-3/8	3-1/16
B-HSD-N	4.50	38.25	N	0.3020	7.6708	4-3/8	3-1/16
B-HSD-5/16	3.95	33.75	5/16"	0.3125	7.9375	4-1/2	3-1/16
B-HSD-O	4.50	38.25	O	0.3160	8.0264	4-1/2	3-3/16

## COBALT

COBALT Part No. Prefix	CHSD Price	
	Each	10
B-CHSD-5/32	2.65	23.00
B-CHSD-22	2.50	21.50
B-CHSD-21	2.70	23.50
B-CHSD-20	2.70	23.50
B-CHSD-19	2.70	23.50
B-CHSD-18	2.85	24.50
B-CHSD-11/64	2.85	24.50
B-CHSD-17	3.15	27.10
B-CHSD-16	3.15	27.10
B-CHSD-15	3.45	30.00
B-CHSD-14	3.45	30.00
B-CHSD-13	3.60	31.00
B-CHSD-3/16	3.15	27.50
B-CHSD-12	3.60	31.00
B-CHSD-11	3.60	31.00
B-CHSD-10	3.60	31.00
B-CHSD-09	3.60	31.00
B-CHSD-08	3.60	31.00
B-CHSD-07	3.85	33.30
B-CHSD-13/64	4.10	35.50
B-CHSD-06	4.45	38.75
B-CHSD-05	4.45	38.75
B-CHSD-04	4.45	38.75
B-CHSD-03	5.30	46.00
B-CHSD-7/32	4.35	37.75
B-CHSD-02	5.30	46.00
B-CHSD-01	5.30	46.00
—	—	—
B-CHSD-15/64	4.75	41.25
—	—	—
—	—	—
—	—	—
B-CHSD-1/4	5.25	45.60
—	—	—
—	—	—
—	—	—
B-CHSD-17/64	5.65	49.25
—	—	—
—	—	—
B-CHSD-9/32	6.10	52.75
—	—	—
—	—	—
B-CHSD-19/64	7.15	62.00
—	—	—
B-CHSD-5/16	7.65	66.30
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## DRILLS — High Speed Steel and Cobalt (cont.)

### HIGH SPEED STEEL

HIGH SPEED STEEL Part No.	HSD Price		Drill Size	Diameter		Length in Inches	
	Each	10		Inches	mm	Overall	Flute
B-HSD-P	5.10	43.35	P	0.3230	8.2042	4-5/8	3-5/16
B-HSD-21/64	4.25	36.15	21/64"	0.3281	8.3337	4-5/8	3-5/16
B-HSD-Q	5.20	44.20	Q	0.3320	8.4328	4-3/4	3-7/16
B-HSD-R	5.40	45.90	R	0.3390	8.6106	4-3/4	3-7/16
B-HSD-11/32	4.50	38.25	11/32"	0.3438	8.7325	4-3/4	3-7/16
B-HSD-S	6.35	53.95	S	0.3480	8.8392	4-7/8	3-1/2
B-HSD-T	6.35	53.95	T	0.3580	9.0932	4-7/8	3-1/2
B-HSD-23/64	5.45	46.35	23/64"	0.3594	9.1288	4-7/8	3-1/2
B-HSD-U	6.35	53.95	U	0.3680	9.3472	5	3-5/8
B-HSD-3/8	5.50	46.75	3/8"	0.3750	9.5250	5	3-5/8
B-HSD-V	6.35	53.95	V	0.3770	9.5758	5	3-5/8
B-HSD-W	7.25	61.65	W	0.3860	9.8044	5-1/8	3-3/4
B-HSD-25/64	6.35	53.95	25/64"	0.3906	9.9212	5-1/8	3-3/4
B-HSD-X	8.25	70.15	X	0.3970	10.083	5-1/8	3-3/4
B-HSD-Y	8.50	72.25	Y	0.4040	10.261	5-1/4	3-7/8
B-HSD-13/32	6.35	53.95	13/32"	0.4062	10.317	5-1/4	3-7/8
B-HSD-Z	9.75	82.95	Z	0.4130	10.490	5-1/4	3-7/8
B-HSD-27/64	7.25	61.65	27/64"	0.4219	10.717	5-3/8	3-15/16
B-HSD-7/16	7.95	67.60	7/16"	0.4375	11.1125	5-1/2	4-1/16
B-HSD-29/64	8.95	76.10	29/64"	0.4531	11.508	5-5/8	4-3/16
B-HSD-15/32	9.05	76.95	15/32"	0.4688	11.907	5-3/4	4-5/16
B-HSD-31/64	9.95	84.60	31/64"	0.4844	12.303	5-7/8	4-3/8
B-HSD-1/2	9.95	84.60	1/2"	0.5000	12.700	6	4-1/2

### COBALT

COBALT Part No. Prefix	CHSD Price	
	Each	10
—	—	—
B-CHSD-21/64	8.30	71.90
—	—	—
—	—	—
B-CHSD-11/32	9.75	84.50
—	—	—
—	—	—
B-CHSD-23/64	11.05	95.90
—	—	—
B-CHSD-3/8	11.60	100.80
—	—	—
—	—	—
B-CHSD-25/64	12.10	105.20
—	—	—
—	—	—
B-CHSD-13/32	12.85	111.75
—	—	—
B-CHSD-27/64	13.65	118.75
B-CHSD-7/16	14.20	123.25
B-CHSD-29/64	17.10	148.45
B-CHSD-15/32	17.30	150.50
B-CHSD-31/64	17.90	155.75
B-CHSD-1/2	18.40	159.75

## DRILLS — High Speed Steel



### METRIC

### DRILLS — High Speed Steel

These high-quality high speed steel jobber length drills are crafted in Germany by Titex Tools®. They are available in diameters from 0.20mm (0.0079") to 3.50mm (0.1378") in 0.05mm increments, and from 3.50mm to 6.00mm (0.2362") in 0.10mm increments, and from 6.00mm to 7.50mm (0.2955") in .50mm increments. Sizes from .20mm through 3.00mm have a bright finish; over 3.00mm have a steam oxide finish. Decimal equivalents as shown.

### HIGH SPEED STEEL — DIN-338, Bright Finish

Part No.	Diameter		Length in Millimeters		Price	
	Millimeters	Inches	Overall	Flute Only	Each	10
B-HSMD-020	0.20	0.0079	19	2.5	6.30	57.25
B-HSMD-025	0.25	0.0098	19	3.0	6.20	56.20
B-HSMD-030	0.30	0.0118	19	3.0	4.80	43.70
B-HSMD-035	0.35	0.0138	19	4.0	3.70	33.35
B-HSMD-040	0.40	0.0157	20	5.0	3.70	33.35
B-HSMD-045	0.45	0.0177	20	5.0	3.30	29.75
B-HSMD-050	0.50	0.0197	22	6.0	3.20	29.00
B-HSMD-055	0.55	0.0217	24	7.0	4.35	39.70

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## DRILLS — High Speed Steel (cont.)



### METRIC

#### HIGH SPEED STEEL — DIN-338, Bright Finish

Part No.	Diameter		Length in Millimeters		Price	
	Millimeters	Inches	Overall	Flute Only	Each	10
B-HSMD-060	0.60	0.0236	24	7.0	3.20	29.00
B-HSMD-065	0.65	0.0256	25	8.0	3.15	28.60
B-HSMD-070	0.70	0.0276	28	9.0	2.80	25.35
B-HSMD-075	0.75	0.0295	28	9.0	3.00	27.35
B-HSMD-080	0.80	0.0315	30	10.0	2.75	25.00
B-HSMD-085	0.85	0.0335	30	10.0	2.45	22.00
B-HSMD-090	0.90	0.0354	32	11.0	2.15	19.70
B-HSMD-095	0.95	0.0374	34	12.0	3.15	28.40
B-HSMD-100	1.00	0.0394	34	12.0	2.15	19.20
B-HSMD-105	1.05	0.0413	34	12.0	2.00	18.25
B-HSMD-110	1.10	0.0433	36	14.0	2.50	22.85
B-HSMD-115	1.15	0.0453	36	14.0	2.50	22.85
B-HSMD-120	1.20	0.0472	38	16.0	2.45	22.25
B-HSMD-125	1.25	0.0492	38	16.0	2.15	19.45
B-HSMD-130	1.30	0.0512	38	16.0	2.00	18.25
B-HSMD-135	1.35	0.0531	40	18.0	2.15	19.70
B-HSMD-140	1.40	0.0551	40	18.0	2.00	18.25
B-HSMD-145	1.45	0.0571	40	18.0	2.00	18.25
B-HSMD-150	1.50	0.0591	40	18.0	2.00	18.25
B-HSMD-155	1.55	0.0610	43	20.0	2.00	18.25
B-HSMD-160	1.60	0.0630	43	20.0	2.00	18.25
B-HSMD-165	1.65	0.0650	43	20.0	2.00	18.25
B-HSMD-170	1.70	0.0669	43	20.0	2.00	18.25
B-HSMD-175	1.75	0.0689	46	22.0	2.00	18.25
B-HSMD-180	1.80	0.0709	46	22.0	2.00	18.25
B-HSMD-185	1.85	0.0728	46	22.0	2.00	18.25
B-HSMD-190	1.90	0.0748	46	22.0	2.00	18.25
B-HSMD-195	1.95	0.0768	49	24.0	2.00	18.25
B-HSMD-200	2.00	0.0787	49	24.0	2.00	18.25
B-HSMD-205	2.05	0.0807	49	24.0	2.00	18.25
B-HSMD-210	2.10	0.0827	49	24.0	2.00	18.25
B-HSMD-215	2.15	0.0846	53	27.0	2.00	18.25
B-HSMD-220	2.20	0.0866	53	27.0	2.00	18.25
B-HSMD-225	2.25	0.0886	53	27.0	2.00	18.25
B-HSMD-230	2.30	0.0906	53	27.0	2.00	18.25
B-HSMD-235	2.35	0.0925	53	27.0	2.00	18.25
B-HSMD-240	2.40	0.0945	57	30.0	2.00	18.25
B-HSMD-245	2.45	0.0965	57	30.0	3.45	18.70
B-HSMD-250	2.50	0.0984	57	30.0	2.00	18.25
B-HSMD-255	2.55	0.1004	57	30.0	3.45	31.25
B-HSMD-260	2.60	0.1024	57	30.0	2.00	18.25
B-HSMD-265	2.65	0.1043	57	30.0	3.45	31.25
B-HSMD-270	2.70	0.1063	61	33.0	2.00	18.25
B-HSMD-275	2.75	0.1083	61	33.0	3.45	31.25

Continued →

## DRILLS — High Speed Steel (cont.)



### METRIC

#### HIGH SPEED STEEL — DIN-338, Bright Finish

Part No.	Diameter		Length in Millimeters		Price	
	Millimeters	Inches	Overall	Flute Only	Each	10
B-HSMD-280	2.80	0.1102	61	33.0	2.00	18.25
B-HSMD-285	2.85	0.1122	61	33.0	3.45	31.25
B-HSMD-290	2.90	0.1142	61	33.0	2.00	18.25
B-HSMD-295	2.95	0.1161	61	33.0	2.00	18.25
B-HSMD-300	3.00	0.1181	61	33.0	2.00	18.25
B-HSMD-305	3.05	0.1201	65	36.0	2.00	18.25
B-HSMD-310	3.10	0.1220	65	36.0	2.00	18.25
B-HSMD-315	3.15	0.1240	65	36.0	3.55	32.35
B-HSMD-320	3.20	0.1260	65	36.0	2.00	18.25
B-HSMD-325	3.25	0.1280	65	36.0	3.55	32.35
B-HSMD-330	3.30	0.1299	65	36.0	2.05	18.45
B-HSMD-335	3.35	0.1319	65	36.0	2.15	19.25
B-HSMD-340	3.40	0.1339	70	39.0	2.05	18.45
B-HSMD-345	3.45	0.1358	70	39.0	2.20	19.60
B-HSMD-350	3.50	0.1378	70	39.0	2.05	18.45
B-HSMD-360	3.60	0.1417	70	39.0	2.40	21.75
B-HSMD-370	3.70	0.1457	70	39.0	2.40	21.75
B-HSMD-380	3.80	0.1496	75	43.0	2.35	21.25
B-HSMD-390	3.90	0.1535	75	43.0	2.50	22.45
B-HSMD-400	4.00	0.1575	75	43.0	2.60	23.45
B-HSMD-420	4.20	0.1654	75	43.0	2.60	23.45
B-HSMD-430	4.30	0.1693	80	47.0	2.60	23.45
B-HSMD-440	4.40	0.1732	80	47.0	3.05	27.85
B-HSMD-450	4.50	0.1772	80	47.0	3.05	27.85
B-HSMD-460	4.60	0.1811	80	47.0	3.05	27.85
B-HSMD-480	4.80	0.1890	86	52.0	3.25	29.50
B-HSMD-490	4.90	0.1929	86	52.0	3.15	28.60
B-HSMD-500	5.00	0.1969	86	52.0	3.40	30.75
B-HSMD-510	5.10	0.2008	86	52.0	3.90	35.45
B-HSMD-530	5.30	0.2087	86	52.0	3.90	35.45
B-HSMD-540	5.40	0.2126	93	57.0	3.90	35.45
B-HSMD-550	5.50	0.2165	93	57.0	3.90	35.45
B-HSMD-560	5.60	0.2205	93	57.0	4.30	38.85
B-HSMD-570	5.70	0.2244	93	57.0	4.30	38.85
B-HSMD-580	5.80	0.2283	93	57.0	4.65	42.00
B-HSMD-590	5.90	0.2323	93	57.0	4.65	42.00
B-HSMD-600	6.00	0.2362	93	57.0	4.65	42.00
B-HSMD-650	6.50	0.2559	100	63.0	5.15	46.60
B-HSMD-700	7.00	0.2756	109	69.0	5.65	51.45
B-HSMD-750	7.50	0.2953	109	69.0	7.20	65.35

## DRILLS — High Speed Steel, Reduced Shank



### FRACTIONAL DRILLS — 1/4" Reduced Shank

Part No.	Drill Size	Inches	Diameter		Price Each
			Millimeters		
B-HS4D-9/32	9/32"	0.2812"	7.1424		3.60
B-HS4D-5/16	5/16"	0.3125"	7.9375		4.20
B-HS4D-11/32	11/32"	0.3438"	8.7325		5.00
B-HS4D-3/8	3/8"	0.3750"	9.5250		5.75
B-HS4D-13/32	13/32"	0.4062"	10.3174		6.75
B-HS4D-7/16	7/16"	0.4375"	11.1125		7.70
B-HS4D-15/32	15/32"	0.4688"	11.9075		9.00
B-HS4D-1/2	1/2"	0.5000"	12.7000		9.70

### FRACTIONAL DRILLS — 1/2" Reduced Shank, 6" Overall Length

Part No.	Drill Size	Inches	Diameter		Price Each
			Millimeters		
B-HS8D-9/16	9/16"	0.5625"	14.2875		20.20
B-HS8D-5/8	5/8"	0.6250"	15.8750		22.45
B-HS8D-11/16	11/16"	0.6875"	17.4625		24.95
B-HS8D-3/4	3/4"	0.7500"	19.0500		27.25
B-HS8D-13/16	13/16"	0.8125"	20.6375		30.60
B-HS8D-7/8	7/8"	0.8750"	22.2250		32.70
B-HS8D-15/16	15/16"	0.9375"	23.8125		37.10
B-HS8D-16/16	1"	1.0000"	25.4000		42.50

## DRILLS — High Speed Steel, Long



### LONG DRILLS — 12", Fractional Sizes, Straight Shank

Part No.	Drill Size	Inches	Diameter		Length	Price Each
			Millimeters			
B-HSELD-1/16	1/16"	0.0625"	1.5875mm		0.875"	5.60
B-HSELD-1/8	1/8"	0.1250"	3.1750mm		1.6250"	6.00
B-HSELD-3/16	3/16"	0.1875"	4.7625mm		2.3125"	7.65
B-HSELD-1/4	1/4"	0.2500"	6.3500mm		2.7500"	8.70
B-HSELD-5/16	5/16"	0.3125"	7.9375mm		3.3125"	11.70
B-HSELD-3/8	3/8"	0.3750"	9.5250mm		3.6250"	14.55
B-HSELD-7/16	7/16"	0.4375"	11.1125mm		4.0625"	18.00
B-HSELD-1/2	1/2"	0.5000"	12.7000mm		4.5000"	21.50

### METRIC

### LONG DRILLS — DIN 1869

Part No.	Millimeters	Diameter		Length (in Millimeters)		Price Each
		Inches		Overall	Flute Only	
B-HSLMD-04	4.0	0.1575		220	190	38.75
B-HSLMD-05	5.0	0.1969		315	210	50.05
B-HSLMD-06	6.0	0.2362		330	225	57.15

## DRILLS, CENTER — High Speed Steel



### 60° CENTER DRILLS — Spiral Flute

Used to establish a starting point that assures a precise hole location. These particular center drills are designed with spiral flutes for accurate centering, improved tool life. They can also be used as 60° countersinks.

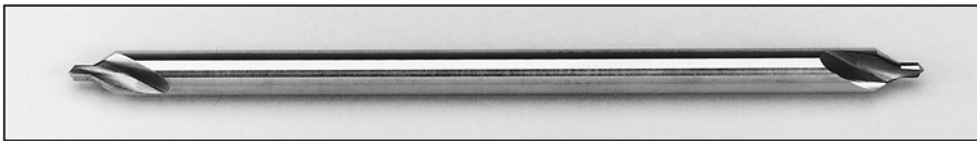
### 60° CENTER DRILLS — High Speed Steel

Part No.	Size	Overall Length	Diameter		Price Each
			Body	Drill Point	
<b>B-HSCD-50</b>	00000	1-1/4"	1/8"	0.010"	<b>6.20</b>
<b>B-HSCD-40</b>	0000	1-1/4"	1/8"	0.015"	<b>5.65</b>
<b>B-HSCD-30</b>	000	1-1/4"	1/8"	0.020"	<b>5.40</b>
<b>B-HSCD-20</b>	00	1-1/4"	1/8"	0.025"	<b>5.40</b>
<b>B-HSCD-0</b>	0	1-1/4"	1/8"	0.031"	<b>5.40</b>
<b>B-HSCD-1/0</b>	1-0	1-1/4"	1/8"	0.040"	<b>6.90</b>
<b>B-HSCD-1</b>	1	1-1/4"	1/8"	3/64"	<b>4.10</b>
<b>B-HSCD-2</b>	2	1-7/8"	3/16"	5/64"	<b>4.30</b>
<b>B-HSCD-3</b>	3	2"	1/4"	7/64"	<b>4.55</b>
<b>B-HSCD-4</b>	4	2-1/8"	5/16"	1/8"	<b>4.70</b>
<b>B-HSCD-4-1/2</b>	4-1/2	2-1/2"	3/8"	9/64"	<b>7.45</b>
<b>B-HSCD-5</b>	5	2-3/4"	7/16"	3/16"	<b>7.70</b>

### ASSORTMENTS

<b>B-HSCD-100</b>	Contains one each of sizes 1, 2, 3, 4, 4-1/2. ....	<b>33.25</b>
<b>B-HSCD-200</b>	Contains one each of sizes 00000, 0000, 000, 00, 0 and 1-0 . . . . .	<b>35.15</b>

## DRILLS, CENTER — High Speed Steel, Long



### 60° LONG CENTER DRILLS — Spiral Flute

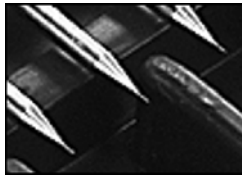
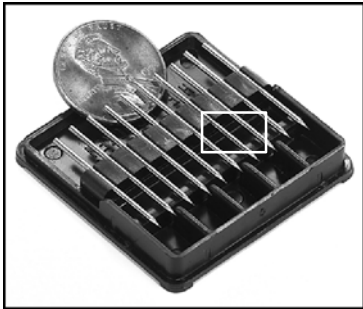
For deep pocket work, these drills provide a longer overall length than the center drills shown above.

### 60° LONG CENTER DRILLS — High Speed Steel

Part No.	Size	Overall Length	Diameter		Price Each
			Body	Drill Point	
<b>B-HSCD-16L</b>	1	6"	1/8"	3/64"	<b>20.55</b>
<b>B-HSCD-26L</b>	2	6"	3/16"	5/64"	<b>26.75</b>
<b>B-HSCD-36L</b>	3	6"	1/4"	7/64"	<b>29.75</b>
<b>B-HSCD-46L</b>	4	6"	5/16"	1/8"	<b>31.50</b>
<b>B-HSCD-456L</b>	4.5	6"	3/8"	9/64"	<b>32.95</b>
<b>B-HSCD-56L</b>	5	6"	7/16"	3/16"	<b>33.95</b>

# DRILLS, MICRO — Cobalt

## METRIC



### COBALT MICRO DRILLS

Highly concentric lips and shanks on these fine diameter Micro Drills facilitate precise drilling of extremely small holes over a range of materials, including stainless steel, titanium, aluminum, brass, copper, tool steels, cast iron, German silver, plastics, etc. Made in Germany by Titex.

Two flutes on all sizes. Shank diameter: 1mm (0.0394"). Cutting diameter tolerance: +0.000 / -0.004mm (-0.00015"). The Albrecht Precision Chuck is specially designed to hold small diameter drills. See page 330.

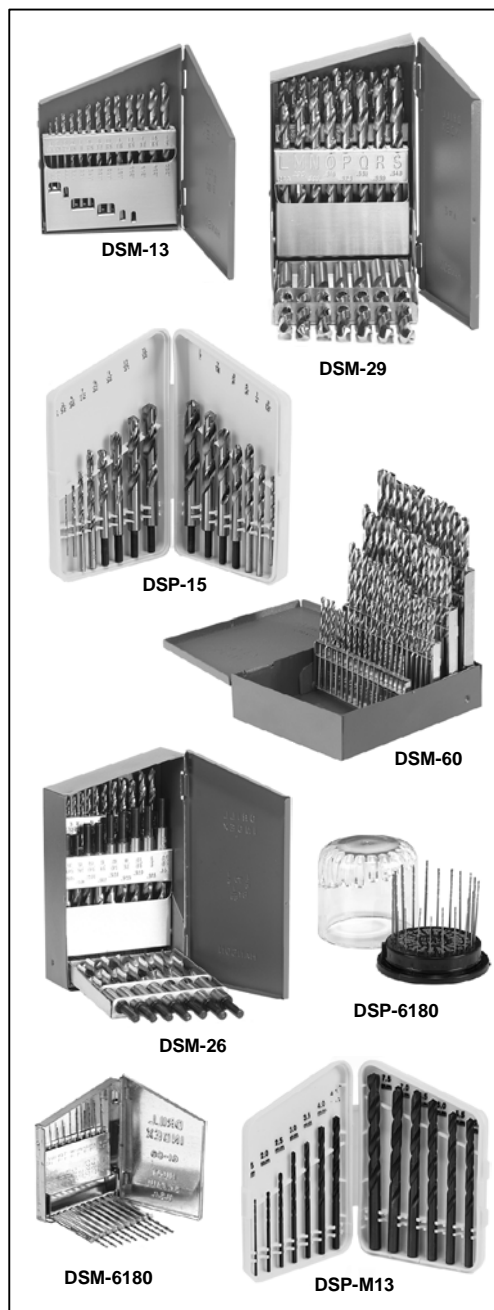
### COBALT MICRO DRILLS — DIN 1899

Part No.	Diameter		Useful Length	Price	
	Millimeters	Inches		Each	10
B-MMCD-05	0.05	0.0019	0.4mm	16.50	132.50
B-MMCD-06	0.06	0.0024	0.4mm	16.50	132.50
B-MMCD-07	0.07	0.0028	0.4mm	16.50	132.50
B-MMCD-08	0.08	0.0032	0.5mm	16.50	132.50
B-MMCD-09	0.09	0.0035	0.5mm	16.50	132.50
B-MMCD-10	0.10	0.0039	0.7mm	16.50	132.50
B-MMCD-11	0.11	0.0043	0.7mm	16.50	132.50
B-MMCD-12	0.12	0.0047	0.7mm	16.50	132.50
B-MMCD-13	0.13	0.0051	1.0mm	16.50	132.50
B-MMCD-14	0.14	0.0055	1.0mm	14.10	112.50
B-MMCD-15	0.15	0.0059	1.0mm	14.10	112.50
B-MMCD-16	0.16	0.0063	1.4mm	14.10	112.50
B-MMCD-17	0.17	0.0067	1.4mm	14.10	112.50
B-MMCD-18	0.18	0.0071	1.4mm	14.10	112.50
B-MMCD-19	0.19	0.0075	1.4mm	14.10	112.50
B-MMCD-20	0.20	0.0079	1.8mm	9.80	79.00
B-MMCD-21	0.21	0.0083	1.8mm	9.80	79.00
B-MMCD-22	0.22	0.0087	1.8mm	9.80	79.00
B-MMCD-23	0.23	0.0091	1.8mm	9.80	79.00
B-MMCD-24	0.24	0.0094	2.8mm	9.80	79.00
B-MMCD-25	0.25	0.0098	2.2mm	9.80	79.00
B-MMCD-26	0.26	0.0102	2.2mm	9.80	79.00
B-MMCD-27	0.27	0.0106	2.2mm	9.80	79.00
B-MMCD-28	0.28	0.0110	2.2mm	9.80	79.00
B-MMCD-29	0.29	0.0114	2.2mm	9.80	79.00
B-MMCD-30	0.30	0.0118	2.2mm	9.80	79.00
B-MMCD-31	0.31	0.0122	2.8mm	9.80	79.00
B-MMCD-32	0.32	0.0126	2.8mm	9.80	79.00
B-MMCD-33	0.33	0.0130	2.8mm	9.80	79.00
B-MMCD-34	0.34	0.0134	2.8mm	9.80	79.00

# DRILL SETS

## FRACTIONS, NUMBERS, LETTERS, METRIC — 118° Split Point, Bright Jobber Length

These 118° Drill Sets give you a wide variety of sizes, including Metric as well as all Fractional, Number and Letter sizes to 1/2". All are carefully ground High Speed Steel and each group is packed in a handy metal or plastic case assuring protection and convenience. Replaceable from our stock.



### FRACTIONAL — 13-Piece Set

1/16" thru 1/4" in 1/64" increments

Hanson drills in a metal index showing size and decimal equivalent for each.

**B-DSM-13** . . . . . 19.50

### FRACTIONAL — 29-Piece Set

1/16" thru 1/2" in 1/64" increments

Hanson drills conveniently packed in an indexed steel hinged case. Sizes above 1/4" provided with reduced shank to fit a 1/4" chuck.

**B-DSM-29** . . . . . 110.50

### FRACTIONAL — 15-Piece Set

1/16" thru 1/2" in 1/32" increments

15 drills to fit a 1/4" chuck. Some have reduced shanks. Packed in an unbreakable hinged plastic case for convenient use and storage.

**B-DSP-15** . . . . . 65.00

### NUMBERED — 60-Piece Set

#1 thru #60

60 standard drills made of carefully ground High Speed Steel, indexed in a metal case. Each compartment shows number size and decimal equivalent plus tap and body drill sizes for standard machine screws.

**B-DSM-60** . . . . . 75.00

### NUMBERED — 20-Piece Set

#61 thru #80

Visible storage on the shelf or in the laboratory. Twenty drills are packed in a transparent covered base.

**B-DSP-6180** . . . . . 26.75

### NUMBERED — 20-Piece Set

#61 thru #80

A hinged metal case protects this 20-piece assortment of Numbered Drills.

**B-DSM-6180** . . . . . 29.95

### LETTER — 26-Piece Set

A thru Z

Every letter size drill is included. Stores in a compact steel indexed case.

**B-DSM-26** . . . . . 105.10

### METRIC — 13-Piece Set

1.5mm through 7.5mm

Commonly used Metric Drills made of High Speed Steel, sized from 1.5mm through 7.5mm in 0.5mm increments. Packed in a hinged plastic case.

**B-DSP-M13** . . . . . 22.75



## DRILL BIT SHARPENER



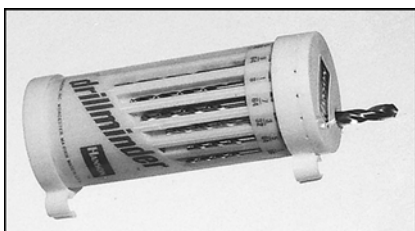
### FRACTIONAL / NUMBER / LETTER METRIC / MASONRY

The portable *Drill Doctor* salvages the money you've already invested in drill bits, quickly sharpening them to precision aligned and fast cutting razor-sharp points. Use with two-flute, fractional, metric, number and letter sized drills to produce conventional, split point or masonry point styles.

The 1/2" diamond grinding wheel also re-sharpens a wide variety of other bit types, including carbide, high speed steel, cobalt, and titanium nitride coated, as well as standard, and parabolic twist drill bits. And you can adjust the drill point angle to sharpen or create 118° or 135° points. The chuck assembly holds drills with diameters from 3/32" up to 1/2". Impact resistant plastic casing. Double-insulated electrical cord is six feet long. 120VAC.

- B-DBS-100** Drill Bit Sharpener ..... **159.00**  
**B-DBS-08** 1/2" Replacement Diamond Grinding Wheel ..... **19.95**

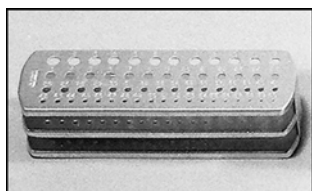
## DRILL STANDS AND DISPENSER



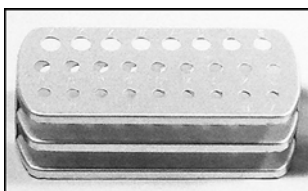
### DRILL DISPENSER — Drillminder™

Protect and dispense your fractional drills. This highly visible yellow plastic case will sit on a nearby shelf, or clip to any pencil-size rod or power cord: Available with 13 of Hansons fractional high-speed steel drills from 1/16" thru 1/4" in increments of 1/64th; or order the Case only to organize your own fractional sizes.

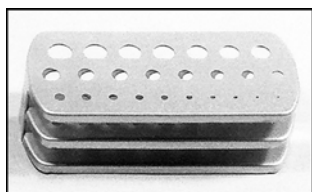
- B-DSP-DM13** Contains 13 drills from  
1/16" to 1/4" in 1/64" increments .. **22.25**  
**B-DSP-DM** Case only. No drills included ..... **5.75**



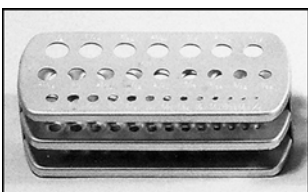
**SDMW-60**



**SDMF-29**



**SDML-26**



**SDMM-25**

### DRILL STANDS

Heavy-duty, rugged Drill Stands in a variety of sizes to help organize your workbench or tool box.

#### Numbered — Holds 60 sizes

Wire gauge size stand, 1 thru 60. Steel construction.

- B-SDMW-60** ..... **5.90**

#### Fractional — Holds 29 sizes

1/16" thru 1/2" in 1/64" increments.

- B-SDMF-29** ..... **5.90**

#### Letter — Holds 26 sizes

From A to Z stand, a great organizer with all letters clearly stamped.

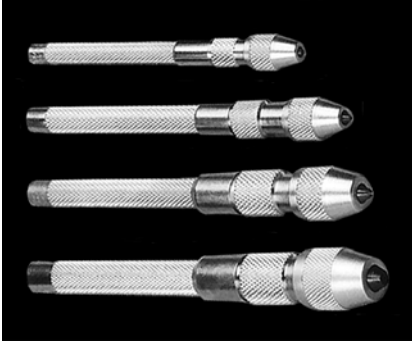
- B-SDML-26** ..... **5.90**

### METRIC DRILLS STAND - Holds 25 sizes

For storing metric size drills or punches. Each hole indexed for easy identification. 25 Sizes — 1.0 mm thru 13.0 mm by 0.5 mm increments.

- B-SDMM-25** ..... **5.90**

# DRILLING ACCESSORIES



## PIN VISE — Starrett®

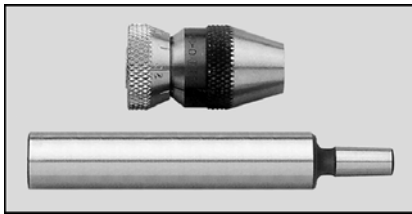
Pin Vises securely hold wires, scriber points, small files, taps, drills, miniature reamers, and other small tools. A hole extends through the full length of the handle to hold wires of any length. Hand held or machine use. Nickel-plated, hardened steel construction for long life. Knurled handle and chuck provide better grip. May be purchased individually or as a set.

<b>B-PV-5</b>	0.000" - 0.055"	17.60
<b>B-PV-6</b>	0.025" - 0.075"	19.80
<b>B-PV-7</b>	0.045" - 0.135"	22.00
<b>B-PV-8</b>	0.110" - 0.200"	24.20

## PIN VISE SET

Contains the four individual sizes shown above with a range of 0.000" to 0.200". Packed in a durable vinyl pouch.

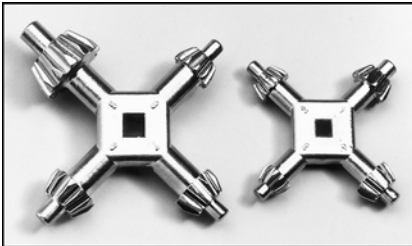
<b>B-PV500</b>	70.00
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## ALBRECHT PRECISION CHUCK— Jacobs Arbor

An excellent closure if you prefer a keyless type drill chuck or require the ultimate in drill chuck accuracy. Specially designed to hold small diameter twist drills, it has a micrometer graduation on its sleeve to facilitate changing of small drills. Its minimum capacity is 0.008" (0.20mm) and its maximum is 1/16" (1.59mm). Can also be used as a hefty, well controlled Pin Vise. Furnished as a set with a 1/2" diameter Jacobs Taper to Straight Shank Arbor.

<b>B-AKC-0</b>	220.00
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## 4-WAY MULTICHUCK KEY

Opens hundreds of different chucks. Always have the right size key handy to save wear and tear on your chuck. Large size fits heavy duty 3/8" to 3/4" chucks; smaller size fits lighter duty, 1/4" to 1/2" chucks.

The squared center of the key opens acetylene tanks. Polished stainless steel, extra wear resistant and does not rust.

<b>B-MKX-12</b>	Fits 1/4" to 1/2" chucks	17.40
<b>B-MKX-13</b>	Fits 3/8" to 3/4" chucks	18.85
<b>B-MKX-23</b>	Set of 2 above: 1/4" - 3/4" range	34.85



## YANKEE PROFESSIONAL PUSH DRILL

*Great for drilling in tight spots!*

The Yankee Professional Push Drill turns by using up-down strokes. Drill points are held in place during use by a spring chuck. The screw topped magazine handle holds the 8 drill points for ready access.

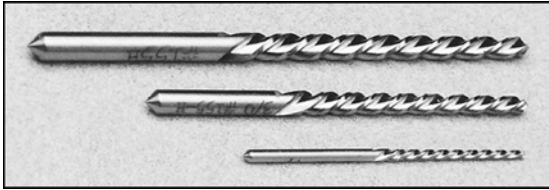
The unit comes with 1/16", 5/64", 3/32", 7/64", 1/8", 9/64", 5/32", 11/64" drill bits in the magazine.

<b>B-YPD-1</b>	59.25
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## REPLACEMENT DRILL POINT SET

<b>B-YPD-500</b>	One each size: 1/16", 5/64", 3/32", 7/64", 1/8", 9/64", 5/32", 11/64".	23.05
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## REAMERS — High Speed Steel



### TAPER PIN REAMER-HELICAL FLUTE

Designed for machine reaming of holes for tapered dowel pins. The special helical fluting prevents the packing of chips in the flutes and helps reduce reamer breakage. When free cutting at high speeds a fine finish is created. Taper for the reamer is 0.25" per foot. Also can be used with a tap wrench for hand reaming. See Taper Dowel Pins on page 247.

### HIGH SPEED STEEL — Taper Pin Reamer

Part No.	Diameter		Size No.	Flute	Length		Shank Diameter	Price Each
	Small	Large			Overall			
<b>B-HSRT-270</b>	0.0497"	0.0666"	7/0	13/16"	1-13/16"	5/64"	<b>27.40</b>	
<b>B-HSRT-450</b>	0.0719"	0.0966"	5/0	1-3/16"	2-3/16"	7/64"	<b>26.45</b>	
<b>B-HSRT-630</b>	0.1029"	0.1302"	3/0	1-5/16"	2-5/16"	9/64"	<b>23.86</b>	
<b>B-HSRT-810</b>	0.1287"	0.1638"	0	1-11/16"	2-15/16"	11/64"	<b>23.86</b>	



### STANDARD CHUCKING REAMERS

Standard Chucking Reamers with straight shank and straight flutes. These Reamers are designed to remove a small amount of metal, 0.003" to 0.006". Diameter Tolerance: +0.0002"/-0.0000".

The sizes we selected are matched to our Stainless Steel Dowel Pins.

### HIGH SPEED STEEL

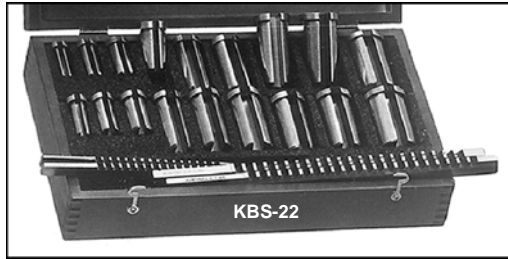
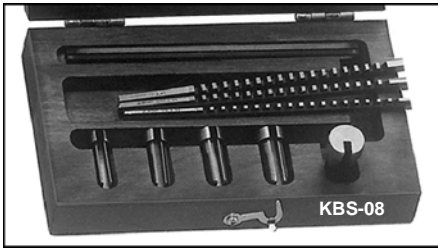
Part No.	Finish Diameter	Flutes	Each Price
<b>B-HSR-062</b>	0.0620"	4	<b>18.75</b>
<b>B-HSR-063</b>	0.0630"	4	<b>17.10</b>
<b>B-HSR-093</b>	0.0930"	4	<b>15.30</b>
<b>B-HSR-094</b>	0.0940"	4	<b>17.10</b>
<b>B-HSR-124</b>	0.1240"	4	<b>14.85</b>
<b>B-HSR-126</b>	0.1260"	4	<b>14.85</b>
<b>B-HSR-186</b>	0.1860"	6	<b>17.40</b>
<b>B-HSR-188</b>	0.1880"	6	<b>22.35</b>
<b>B-HSR-249</b>	0.2490"	6	<b>20.40</b>
<b>B-HSR-251</b>	0.2510"	6	<b>20.10</b>
<b>B-HSR-311</b>	0.3115"	6	<b>23.70</b>
<b>B-HSR-313</b>	0.3135"	6	<b>23.70</b>
<b>B-HSR-374</b>	0.3740"	6	<b>25.65</b>
<b>B-HSR-376</b>	0.3760"	6	<b>25.65</b>

### METRIC

### HIGH SPEED STEEL

Part No.	Finish Diameter	Flutes	Each Price
<b>B-MHSR-10</b>	1mm	4	<b>19.50</b>
<b>B-MHSR-20</b>	2mm	4	<b>14.50</b>
<b>B-MHSR-30</b>	3mm	4	<b>15.50</b>
<b>B-MHSR-40</b>	4mm	6	<b>16.00</b>
<b>B-MHSR-60</b>	6mm	6	<b>19.00</b>

## BROACH SETS — Keyway



Minute Man® Keyway Broach Sets keep broaches, slotted bushings, and necessary shims organized and ready to go for short-run production or general maintenance. B-KBS-08 is our Precision Set, with three broaches and five bushings to provide fifteen of the most common keyway combinations for small keyways and bores. Combination Set B-KBS-22 features 18 bushing diameters in 1/16" increments, with four broaches for up to 36 keyway combinations. Both bushings and broaches are designated by a letter that signifies width of keyway broach and bushing opening. For proper fit, use bushings with the same letter designation as the broach. All sets are furnished in a handsome varnished wood box. Individual broaches available. **Call Purchasing Services — 1-888-455-9712.**

### KEYWAY BROACH SETS

® duMont Corporation

Part No.	Set/Pieces	Dumont Broach Style	Dimensions in Inches		Price Each
			Keyway Sizes	Bushing Diameters	
<b>B-KBS-08</b>	Precision/8	A	1/16, 3/32, 1/8	1/4, 5/16, 3/8, 7/16, 1/2	<b>155.00</b>
<b>B-KBS-22</b>	Combination/22	B	1/8, 3/16	1/2, 9/16, 5/8, 11/16, 3/4, 13/16, 7/8	<b>335.00</b>
		C	1/4, 3/8	15/16, 1, 1-1/16, 1-1/8, 1-3/16, 1-1/4, 1-5/16, 1-3/8, 1-7/16 1-1/2, 1-9/16	



### COUNTERSINK SET — 82°

82° cutters with single cutting edge for fast removal of stock and finish. Set up carefully to keep them free of chatter. Easily resharpened. The Countersink Set has five sizes to handle holes from 5/64" thru 1". Though designed for use as a countersink for standard 82° flat and oval head screws, they can also be used as deburring tools.

**B-HSCS-500** ..... **72.50**

### COUNTERSINKS

Part No.	Diameter of Cut		Shank Diameter	Price Each
	Min.	Max.		
<b>B-HSCS-0</b>	0.073"	15/64"	1/4"	<b>18.75</b>
<b>B-HSCS-2</b>	3/16"	17/32"	1/4"	<b>23.00</b>
<b>B-HSCS-3</b>	0.307"	25/32"	1/2"	<b>31.55</b>



### MACHINE DEBURRING TOOL — 90°

Provides 90° hole deburring or chamfering as required. Set up carefully to prevent chatter.

Part No.	Diameter of Cut		Shank Diameter	Price Each
	Min.	Max.		
<b>B-DBR-04</b>	1/64"	11/64"	0.186"	<b>20.90</b>
<b>B-DBR-08</b>	1/8"	15/64"	0.248"	<b>11.50</b>
<b>B-DBR-18</b>	3/16"	17/32"	0.248"	<b>16.10</b>
<b>B-DBR-26</b>	5/16"	25/32"	0.248"	<b>27.90</b>

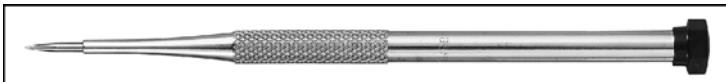
## MARKING — Scribers



### CARBIDE POCKET SCRIBER AND MAGNET WITH POCKET CLIP

Made of lightweight Aluminum with a reversible tip for safety when not in use. 5-1/2" long.

**B-MT-10** ..... 6.25



### REPLACEABLE NEEDLEPOINT SCRIBER

**Four spare points store under the cap!** Layout work, tool marking and engraving goes smoothly when you have plenty of sharp points available. The Needlepoint Scriber stores four extra points under the cap, so you can readily continue scribing during critical tasks. Scribes stainless steel, copper, brass, glass, and ceramics. Hex cap prevents the tool from rolling around on the benchtop. Polished Steel body has a knurled handle for improved grip. Includes protective tip cover. Scriber measures 5-5/16" overall.

**B-MT-9** Replaceable Needlepoint Scriber ..... 4.75

**B-MT-9R** Replacement Points — Package of 4 ..... 1.75

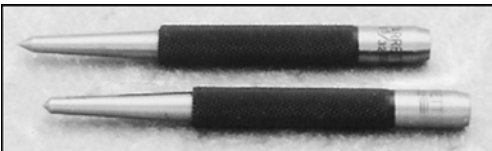
## MARKING — Punches



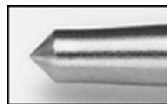
### AUTOMATIC CENTER PUNCH

Unique design allows one-hand operation in marking the work material. Eliminates the need for a hammer to pinpoint a center. While holding the punch in an upright position, press handle down and the built-in mechanism strikes a perfect center mark right where you want it. Lightweight steel construction with removable hardened steel points for resharpening or replacement.

**B-ACP-1** Length: 4-13/16", Dia.: 9/16" . . 27.50



PRICK



CENTER

### PRICK AND CENTER PUNCHES — Starrett®

Forged from fine tool steel and properly hardened, these punches are specially tempered to prevent fracturing of the head, adding to the life of the punch. Punches are highly finished and have a knurled grip.

### PRICK AND CENTER PUNCHES

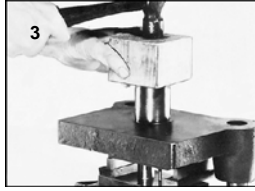
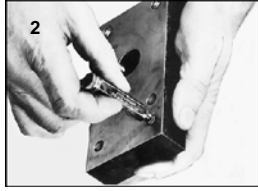
Part No.	Description	Length	Body Diameter	Price Each
<b>B-DKP-4</b>	Prick Punch — Round head & body	4"	3/8"	<b>5.75</b>
<b>B-DCP-1</b>	Center Punch — Round head & body	3-1/4"	3/16"	<b>4.50</b>
<b>B-DCP-2</b>	Center Punch — Round head & body	4"	9/32"	<b>4.50</b>
<b>B-DCP-3</b>	Center Punch — Round head & body	4"	5/16"	<b>4.50</b>
<b>B-DCP-4</b>	Center Punch — Round head & body	4"	3/8"	<b>4.50</b>

## TRANSFER SCREW PUNCHES



A fast and precise method to transfer hole centers to matching parts, is made easy by these Transfer Screw Punches. Use in open or blind threaded holes for layout and tool and die work.

Unique hollow handle design is both a wrench and storage holder for 6 screws. Each screw size is provided in sets of six packed in the handle.



1. Slip screw into end of wrench.
2. Screw in flush with top of hex.
3. One solid blow provides an accurate transfer.

### TRANSFER SCREW PUNCHES

Part No.	Screw Size	Price Each
<b>B-TRS-440</b>	#4-40	<b>20.10</b>
<b>B-TRS-632</b>	#6-32	<b>19.00</b>
<b>B-TRS-832</b>	#8-32	<b>19.00</b>
<b>B-TRS-032</b>	#10-32	<b>19.75</b>
<b>B-TRS-1420</b>	1/4-20	<b>19.75</b>
<b>B-TRS-5618</b>	5/16-18	<b>20.95</b>
<b>B-TRS-3816</b>	3/8-16	<b>20.95</b>
<b>B-TRS-1213</b>	1/2-13	<b>20.95</b>

### ASSORTMENTS

<b>B-TRS-100</b> One each B-TRS-440 through B-TRS-032 — 4 pieces .....	<b>76.20</b>
<b>B-TRS-200</b> One each B-TRS-1420 through B-TRS-1213 — 4 pieces .....	<b>80.45</b>
<b>B-TRS-300</b> One each B-TRS-440 through B-TRS-1213 — 8 pieces .....	<b>143.90</b>

### METRIC

### TRANSFER SCREW PUNCHES

Part No.	Screw Size	Price Each
<b>B-TRSM-3</b>	M3 × 0.5	<b>20.10</b>
<b>B-TRSM-4</b>	M4 × 0.7	<b>19.00</b>
<b>B-TRSM-5</b>	M5 × 0.8	<b>19.75</b>
<b>B-TRSM-6</b>	M6 × 1.0	<b>19.75</b>

### ASSORTMENT

<b>B-TRSM-100</b> Contains 1 each B-TRSM-3 through B-TRSM-6 - 4 pieces .....	<b>48.50</b>
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### PRECISION TRANSFER PUNCHES — 28-Piece Set

28 Precision Transfer Punches, 4-7/8" long indexed stand. Sizes 3/32" to 1/2" by 1/64" increments plus handy 17/32" size. Finest tool steel, carefully heat-treated.

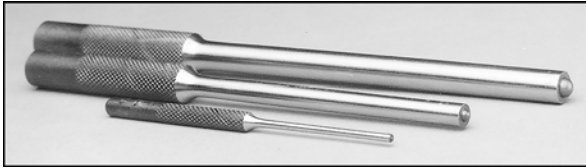
**B-TPS-28** ..... **69.70**

### METRIC — 25-Piece Set

Metric Set comprised of 25 precision punches, carefully heat-treated and tempered to highest standards. Sizes from 1.0 mm up to 13 mm, in 0.5 mm increments.

**B-TPS-25M** ..... **83.70**

## PUNCHES



### PILOT PUNCHES

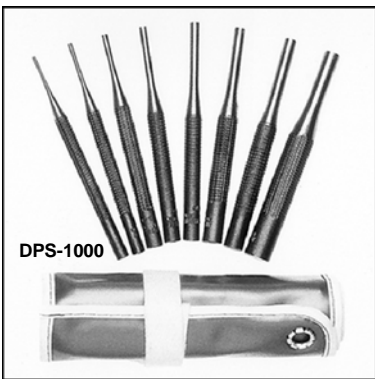
Carefully designed to safely and quickly remove roll or spring pins. The round ball on the center of the point end assures proper contact, eliminating damage to pin or wall of hole. You'll find Spring Pins on [page 245](#).

### PILOT PUNCHES

Part No.	Pin Diameter	Overall Length	Price Each
<b>B-DRPP-1</b>	1/16"	2-3/4"	<b>4.30</b>
<b>B-DRPP-13</b>	5/64"	3-1/4"	<b>4.50</b>
<b>B-DRPP-15</b>	3/32"	3-1/2"	<b>4.90</b>
<b>B-DRPP-2</b>	1/8"	4"	<b>5.00</b>
<b>B-DRPP-25</b>	5/32"	4-1/2"	<b>5.65</b>
<b>B-DRPP-3</b>	3/16"	4-1/2"	<b>5.80</b>
<b>B-DRPP-35</b>	7/32"	5"	<b>6.60</b>
<b>B-DRPP-4</b>	1/4"	5-1/2"	<b>7.50</b>
<b>B-DRPP-5</b>	5/16"	6"	<b>8.25</b>

### PILOT PUNCH SET

**B-DRPP-100** Contains nine Pilot Punches 1/16" thru 5/16" listed above. Placed in plastic Kit . . . . . **56.00**



### DRIVE PIN PUNCHES

Remove fast dowel and roll pins with Our Drive Pin Punches Sets. Hammer forged of round steel, knurled head and taper polished.

#### 5-PIECE SET

8" long with pin diameters of 1/8", 3/16", 1/4", 5/16", and 3/8". Packed in storage tube.

**B-DPS-500** . . . . . **25.95**

#### 8-PIECE SET

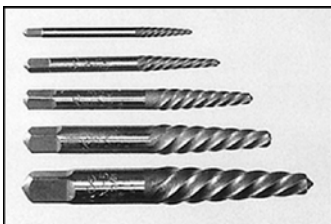
4" Pin Punches in diameters of 1/16", 3/32", 1/8", 5/32", 3/16", 7/32", 1/4", and 5/16". Conveniently packed in plastic kit.

**B-DPS-1000** . . . . . **35.50**

Individual Drive Pin Punches available.

**Call Purchasing Services — 1-888-455-9712.**

## SCREW EXTRACTOR



A broken bolt or screw may be removed from a threaded hole with these Spiral Flute Extractors. Drill a hole (size indicated on the tool) BEING CAREFUL TO ACCURATELY CENTER THE DRILL. After drilling, press extractor into this hole, turn counter-clockwise with a tap wrench. Extractor grips into side of the drilled hole and removes part without damage to the threaded hole. Size range for screws 3/32" to 5/8" in diameter. Packed in a convenient pouch.

**B-EXS-10** . . . . . **10.95**

## DRILLS AND POWER BITS SET — Hex Shank



### QUICK-CHUCK SET 14-Piece

**Change hex shank drills and power bits fast!**

Complete power set packed in a Gray plastic case.  
3-1/2" x 4-1/2" x 1".

#### Set includes:

- Quick Change Chuck
- Hex Shank Drills with Power Groove:  
3/32", 7/64", 1/8", 9/64", 5/32"
- Extra Hard Phillips Hex Power Bits: #1, #2, #3
- Extra Hard Slotted Full Hex Power Bits: #6-8, #6-10
- Full Hex Square Recess Bits: #1, #2, #3

**B-HHD-200 . . . . . 38.50**



### QUICK CHANGE CHUCK

Converts the standard chuck into a quick-change attachment. Accommodates all 1/4" Hex Shank insert bits. Fits 3/8" and 1/2" drills.

**B-HHD-ADP . . . . . 18.50**



### HEX SHANK DRILL BITS — High Speed Steel

Quickly penetrates wood, plastic and metal. Hex shanks work in cordless and conventional drills; as well as, in cordless screwdrivers. 118° point, bright finish.

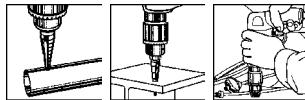
### HEX SHANK DRILL BITS — High Speed Steel

Part No.	Drill Size	Diameter		Overall	Length	Flute	Price Each
		Inches	Millimeters				
<b>B-HHD-3/32</b>	3/32"	0.0938"	2.38	2-3/4"	1-3/16"		<b>3.85</b>
<b>B-HHD-7/64</b>	7/64"	0.1094"	2.78	2-7/8"	1-1/4"		<b>3.85</b>
<b>B-HHD-1/8</b>	1/8"	0.1250"	3.17	3"	1-5/16"		<b>3.85</b>
<b>B-HHD-9/64</b>	9/64"	0.1406"	3.57	3-1/16"	1-7/16"		<b>3.90</b>
<b>B-HHD-5/32</b>	5/32"	0.1562"	3.97	3-3/16"	1-1/2"		<b>3.95</b>

## STEP DRILLS — High Speed Steel



Hanson® Step Drills save time by eliminating the need to change drills when drilling round holes in thin materials. Each smaller size drill also acts as a pilot for the next size. The single radial flute assures perfectly round holes. Use on steel, brass, aluminum and other thin materials. Step Drills are self-starting and will not slip.



Drill diameters etched in flute for easy identification.

Part No.	Hole Size Range	Increments	Step Thickness	Shank Size	Price Each
<b>B-HSUD-1</b>	1/8" x 1/2"	1/32"	1/8"	1/4"	<b>19.95</b>
<b>B-HSUD-2</b>	3/16" x 1/2"	1/16"	3/8"	1/4"	<b>19.95</b>
<b>B-HSUD-3</b>	1/4" x 3/4"	1/16"	1/8"	3/8"	<b>34.95</b>
<b>B-HSUD-4</b>	3/16" x 7/8"	1/16"	1/8"	3/8"	<b>41.35</b>

### ASSORTMENT

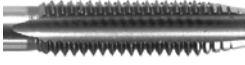
**B-HSUD-100** Includes one each B-HSUD-1, B-HSUD-2, and B-HSUD-3 — 3 pieces . . . . . **63.50**



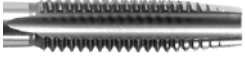
## TAPS — High Speed Steel



Bottoming Chamfer



Plug Chamfer



Taper Chamfer



Spiral Pointed

We offer several types of taps which are characterized by the style of fluting or the specific application. The cutting chamfer at the lead of the tap further characterizes them as Bottoming, Plug, or Taper.

- **Bottoming Chamfer** - Has 1 to 2 chamfered threads. Use in blind holes where you must come as close to the hole's bottom as possible.

- **Plug Chamfer** - Has 3 to 5 chamfered threads. Use them in through holes, as well as in blind holes with sufficient space at the bottom for chips to accumulate.

- **Taper Chamfer** - Has 7 to 10 chamfered threads. Commonly used in through holes and for starting threads.

**STRAIGHT FLUTE TAPS** - These general purpose taps have a specified number of flutes that are "straight".

**SPIRAL POINTED TAPS** - These straight fluted taps have an angular relief ground on the first few threads of the tap. This angle forces the cutting chips ahead of the tap to prevent clogging. The angular relief also provides a path for tapping lubricant to migrate to the leading edge of the cut. Recommended when tapping through hole in ductile materials where long continuous chips form.

### HIGH SPEED STEEL — Plug Style, Ground Thread

Part No.	Size/Thread	Flutes	Price	
			Each	5
B-HST-000160*	0000-160	3	49.85	224.35
B-HST-000120*	000-120	3	40.25	181.15
B-HST-0090*	00-90	3	30.15	135.70
B-HST-080	0-80 NF	2	12.55	56.50
B-HST-164	1-64 NC	2	11.65	52.45
B-HST-172	1-72 NF	2	11.65	52.45
B-HST-256	2-56 NC	3	8.85	40.15
B-HST-264	2-64 NF	3	9.45	42.75
B-HST-280	2-80 NS	3	40.10	180.35
B-HST-348	3-48 NC	3	6.90	31.30
B-HST-356	3-56 NF	3	7.65	34.75
B-HST-440	4-40 NC	3	8.60	25.50
B-HST-448	4-48 NF	3	6.05	27.40
B-HST-540	5-40 NC	3	5.60	25.50
B-HST-544	5-44 NF	3	6.05	27.40
B-HST-632	6-32 NC	3	4.10	18.55
B-HST-640	6-40 NF	3	4.55	20.65
B-HST-832	8-32 NC	4	4.35	19.70
B-HST-836	8-36 NF	4	4.35	19.70
B-HST-1024	10-24 NC	4	4.35	19.70
B-HST-1032	10-32 NF	4	4.35	19.70
B-HST-1224	12-24 NC	4	4.75	21.55
B-HST-1228	12-28 NF	4	5.30	24.00
B-HST-1420	1/4-20 NC	4	4.45	20.25
B-HST-1428	1/4-28 NF	4	4.45	20.25
B-HST-5618	5/16-18 NC	4	5.75	26.20
B-HST-5624	5/16-24 NF	4	5.75	26.20
B-HST-3816	3/8-16 NC	4	6.80	30.75
B-HST-3824	3/8-24 NF	4	6.80	30.75
B-HST-7614	7/16-14 NC	4	11.50	52.15
B-HST-7620	7/16-20 NF	4	11.50	52.15
B-HST-1213	1/2-13 NC	4	12.35	56.05
B-HST-1220	1/2-20 NF	4	13.90	63.20

\*Tin Coated

## TAPS — High Speed Steel (cont.)



### METRIC

#### HIGH SPEED STEEL — Plug Style, Right Hand (DIN-352), Ground Thread, Titex

Part No.	Nominal Diameter	Pitch	Dimensions in Millimeters			Flutes	Price	
			Overall Length	Thread	Thread		Each	5
<b>B-HSMT-10</b>	M1.0	0.25	32	5.5	3	<b>22.25</b>	<b>101.15</b>	
<b>B-HSMT-12</b>	M1.2	0.25	32	5.5	3	<b>21.05</b>	<b>95.60</b>	
<b>B-HSMT-14</b>	M1.4	0.30	32	7.0	3	<b>19.55</b>	<b>88.95</b>	
<b>B-HSMT-16</b>	M1.6	0.35	32	8.0	3	<b>17.20</b>	<b>78.10</b>	
<b>B-HSMT-17</b>	M1.7	0.35	32	8.0	3	<b>17.35</b>	<b>78.90</b>	
<b>B-HSMT-18</b>	M1.8	0.35	32	8.0	3	<b>17.20</b>	<b>78.10</b>	
<b>B-HSMT-20</b>	M2.0	0.40	40	8.0	3	<b>14.55</b>	<b>66.00</b>	
<b>B-HSMT-22</b>	M2.2	0.45	40	9.0	3	<b>15.65</b>	<b>71.10</b>	
<b>B-HSMT-25</b>	M2.5	0.45	40	9.0	3	<b>12.60</b>	<b>57.30</b>	
<b>B-HSMT-30</b>	M3.0	0.50	40	11.0	3	<b>10.40</b>	<b>47.20</b>	
<b>B-HSMT-35</b>	M3.5	0.60	45	13.0	3	<b>14.40</b>	<b>65.50</b>	
<b>B-HSMT-40</b>	M4.0	0.70	45	13.0	3	<b>10.85</b>	<b>49.30</b>	
<b>B-HSMT-45</b>	M4.5	0.75	50	16.0	3	<b>18.75</b>	<b>85.25</b>	
<b>B-HSMT-50</b>	M5.0	0.80	50	16.0	3	<b>10.75</b>	<b>48.70</b>	
<b>B-HSMT-60</b>	M6.0	1.00	50	19.0	3	<b>11.10</b>	<b>50.40</b>	
<b>B-HSMT-80</b>	M8.0	1.25	56	22.0	3	<b>14.60</b>	<b>66.25</b>	



#### HIGH SPEED STEEL — Bottoming Style, Ground Thread

Part No.	Size/Thread	Flutes	Each	Price	
				Each	5
<b>B-HSBT-080</b>	0-80 NF	2	<b>12.55</b>		<b>56.50</b>
<b>B-HSBT-164</b>	1-64 NC	2	<b>11.65</b>		<b>52.45</b>
<b>B-HSBT-172</b>	1-72 NF	2	<b>11.65</b>		<b>52.45</b>
<b>B-HSBT-256</b>	2-56 NC	3	<b>8.85</b>		<b>40.15</b>
<b>B-HSBT-264</b>	2-64 NF	3	<b>6.90</b>		<b>31.30</b>
<b>B-HSBT-348</b>	3-48 NC	3	<b>7.65</b>		<b>34.75</b>
<b>B-HSBT-356</b>	3-56 NF	3	<b>9.45</b>		<b>42.75</b>
<b>B-HSBT-440</b>	4-40 NC	3	<b>8.60</b>		<b>25.50</b>
<b>B-HSBT-448</b>	4-48 NF	3	<b>6.05</b>		<b>27.40</b>
<b>B-HSBT-540</b>	5-40 NC	3	<b>5.60</b>		<b>25.50</b>
<b>B-HSBT-544</b>	5-44 NF	3	<b>6.05</b>		<b>27.40</b>
<b>B-HSBT-632</b>	6-32 NC	3	<b>4.10</b>		<b>18.55</b>
<b>B-HSBT-640</b>	6-40 NF	3	<b>4.55</b>		<b>20.65</b>
<b>B-HSBT-832</b>	8-32 NC	4	<b>4.35</b>		<b>19.70</b>
<b>B-HSBT-836</b>	8-36 NF	4	<b>4.35</b>		<b>19.70</b>
<b>B-HSBT-1024</b>	10-24 NC	4	<b>4.35</b>		<b>19.70</b>
<b>B-HSBT-1032</b>	10-32 NF	4	<b>4.35</b>		<b>19.70</b>
<b>B-HSBT-1224</b>	12-24 NC	4	<b>4.75</b>		<b>21.55</b>

## TAPS — High Speed Steel (cont.)

### HIGH-SPEED STEEL — Bottoming Style, Ground Thread

Part No.	Size/Thread	Flutes	Price	
			Each	5
<b>B-HSBT-1228</b>	12-28 NF	4	<b>5.30</b>	<b>24.00</b>
<b>B-HSBT-1420</b>	1/4-20 NC	4	<b>4.45</b>	<b>20.25</b>
<b>B-HSBT-1428</b>	1/4-28 NF	4	<b>4.45</b>	<b>20.25</b>
<b>B-HSBT-5618</b>	5/16-18 NC	4	<b>5.75</b>	<b>26.20</b>
<b>B-HSBT-5624</b>	5/16-24 NF	4	<b>5.75</b>	<b>26.20</b>
<b>B-HSBT-3816</b>	3/8-16 NC	4	<b>6.80</b>	<b>30.75</b>
<b>B-HSBT-3824</b>	3/8-24 NF	4	<b>6.80</b>	<b>30.75</b>
<b>B-HSBT-7614</b>	7/16-14 NC	4	<b>11.50</b>	<b>52.15</b>
<b>B-HSBT-7620</b>	7/16-20 NF	4	<b>11.50</b>	<b>52.15</b>
<b>B-HSBT-1213</b>	1/2-13 NC	4	<b>12.35</b>	<b>56.05</b>
<b>B-HSBT-1220</b>	1/2-20 NF	4	<b>13.90</b>	<b>63.20</b>



### HIGH-SPEED STEEL — Taper Style, Ground Thread

Part No.	Size/Thread	Flutes	Price	
			Each	5
<b>B-HSTT-080</b>	0-80 NF	2	<b>10.80</b>	<b>49.05</b>
<b>B-HSTT-164</b>	1-64 NC	2	<b>10.25</b>	<b>46.45</b>
<b>B-HSTT-172</b>	1-72 NF	2	<b>10.25</b>	<b>46.45</b>
<b>B-HSTT-256</b>	2-56 NC	3	<b>8.95</b>	<b>40.65</b>
<b>B-HSTT-264</b>	2-64 NF	3	<b>9.50</b>	<b>43.25</b>
<b>B-HSTT-348</b>	3-48 NC	3	<b>7.00</b>	<b>31.80</b>
<b>B-HSTT-356</b>	3-56 NF	3	<b>7.75</b>	<b>35.25</b>
<b>B-HSTT-440</b>	4-40 NC	3	<b>5.75</b>	<b>26.00</b>
<b>B-HSTT-448</b>	4-48 NF	3	<b>6.15</b>	<b>27.90</b>
<b>B-HSTT-540</b>	5-40 NC	3	<b>5.75</b>	<b>26.00</b>
<b>B-HSTT-544</b>	5-44 NF	3	<b>6.15</b>	<b>27.90</b>
<b>B-HSTT-632</b>	6-32 NC	3	<b>4.20</b>	<b>19.05</b>
<b>B-HSTT-640</b>	6-40 NF	3	<b>4.65</b>	<b>21.15</b>
<b>B-HSTT-832</b>	8-32 NC	4	<b>4.45</b>	<b>20.20</b>
<b>B-HSTT-836</b>	8-36 NF	4	<b>4.45</b>	<b>20.20</b>
<b>B-HSTT-1024</b>	10-24 NC	4	<b>4.45</b>	<b>20.20</b>
<b>B-HSTT-1032</b>	10-32 NF	4	<b>4.45</b>	<b>20.20</b>
<b>B-HSTT-1224</b>	12-24 NC	4	<b>4.85</b>	<b>22.05</b>
<b>B-HSTT-1228</b>	12-28 NF	4	<b>5.40</b>	<b>24.50</b>
<b>B-HSTT-1420</b>	1/4-20 NC	4	<b>4.60</b>	<b>20.75</b>
<b>B-HSTT-1428</b>	1/4-28 NF	4	<b>4.60</b>	<b>20.75</b>
<b>B-HSTT-5618</b>	5/16-18 NC	4	<b>5.90</b>	<b>26.70</b>
<b>B-HSTT-5624</b>	5/16-24 NF	4	<b>5.90</b>	<b>26.70</b>
<b>B-HSTT-3816</b>	3/8-16 NC	4	<b>6.90</b>	<b>31.25</b>
<b>B-HSTT-3824</b>	3/8-24 NF	4	<b>6.90</b>	<b>31.25</b>
<b>B-HSTT-7614</b>	7/16-14 NC	4	<b>11.60</b>	<b>52.65</b>
<b>B-HSTT-7620</b>	7/16-20 NF	4	<b>11.60</b>	<b>52.65</b>
<b>B-HSTT-1213</b>	1/2-13 NC	4	<b>12.45</b>	<b>56.55</b>
<b>B-HSTT-1220</b>	1/2-20 NF	4	<b>14.00</b>	<b>63.70</b>

## TAPS — High Speed Steel (cont.)



### SPIRAL POINTED TAPS

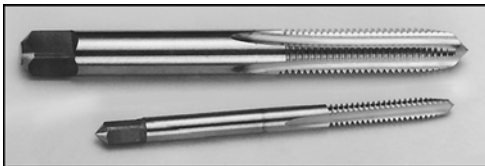
Made for use on through holes in a variety of materials. These highly efficient and rigid cutting taps can be run at higher speeds than conventional straight fluted hand taps. The shearing action of the point produces curled, free-flowing chips which are ejected ahead of the tap. Each tap has two flutes and ground threads except for our two largest sizes, which have three flutes.

#### HIGH SPEED STEEL — Spiral Pointed

\*Three flutes.

Part No.	Size	Dimensions		Each	Price	
		Thread Length	Overall Length		Each	5
<b>B-SPT-080</b>	0-80	5/16"	1-5/8"	<b>16.85</b>		<b>75.85</b>
<b>B-SPT-172</b>	1-72	3/8"	1-11/16"	<b>15.25</b>		<b>68.65</b>
<b>B-SPT-256</b>	2-56	7/16"	1-3/4"	<b>12.95</b>		<b>58.30</b>
<b>B-SPT-348</b>	3-48	1/2"	1-13/16"	<b>10.35</b>		<b>46.60</b>
<b>B-SPT-440</b>	4-40	9/16"	1-7/8"	<b>7.15</b>		<b>32.20</b>
<b>B-SPT-540</b>	5-40	5/8"	1-15/16"	<b>7.15</b>		<b>32.20</b>
<b>B-SPT-632</b>	6-32	11/16"	2"	<b>6.00</b>		<b>27.00</b>
<b>B-SPT-832</b>	8-32	3/4"	2-1/8"	<b>6.00</b>		<b>27.00</b>
<b>B-SPT-1024</b>	10-24	7/8"	2-3/8"	<b>6.00</b>		<b>27.00</b>
<b>B-SPT-1032</b>	10-32	7/8"	2-3/8"	<b>6.00</b>		<b>27.00</b>
<b>B-SPT-1420</b>	1/4-20	1"	2-1/2"	<b>6.00</b>		<b>27.00</b>
<b>B-SPT-1428</b>	1/4-28	1"	2-1/2"	<b>6.00</b>		<b>27.00</b>
<b>B-SPT-5618</b>	5/16-18	1-1/8"	2-23/32"	<b>6.60</b>		<b>29.70</b>
<b>B-SPT-3816*</b>	3/8-16	1-1/4"	2-15/16"	<b>7.75</b>		<b>34.90</b>
<b>B-SPT-1213*</b>	1/2-13	1-21/32"	3-3/8"	<b>15.50</b>		<b>69.75</b>

## TAPS — High Speed Steel / Titanium Nitride Coated



Titanium Nitride Coated High Speed Steel Taps are useful for elevated surface speeds. They are longer lasting than uncoated taps because they protect the cutting edges and keep them sharp. Titanium nitride also helps reduce pick-up, especially when lubrication is insufficient.

#### HIGH SPEED STEEL / TITANIUM NITRIDE COATED — Plug Style, Ground Thread

Part No.	Size/Thread	Flutes	Each	Price	
				Each	5
<b>B-HSNT-080</b>	0-80 NF	2	<b>17.50</b>		<b>70.00</b>
<b>B-HSNT-164</b>	1-64 NC	2	<b>14.75</b>		<b>59.00</b>
<b>B-HSNT-172</b>	1-72 NF	2	<b>13.65</b>		<b>54.60</b>
<b>B-HSNT-256</b>	2-56 NC	3	<b>12.85</b>		<b>51.40</b>
<b>B-HSNT-264</b>	2-64 NF	3	<b>13.25</b>		<b>53.00</b>
<b>B-HSNT-348</b>	3-48 NC	3	<b>9.50</b>		<b>38.00</b>
<b>B-HSNT-356</b>	3-56 NF	3	<b>10.50</b>		<b>42.00</b>
<b>B-HSNT-440</b>	4-40 NC	3	<b>8.00</b>		<b>32.00</b>
<b>B-HSNT-448</b>	4-48 NF	3	<b>8.50</b>		<b>34.00</b>
<b>B-HSNT-540</b>	5-40 NC	3	<b>8.80</b>		<b>35.20</b>
<b>B-HSNT-544</b>	5-44 NF	3	<b>9.50</b>		<b>38.00</b>

## TAPS — High Speed Steel / Titanium Nitride Coated (cont.)

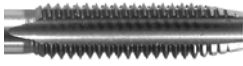
### HIGH SPEED STEEL / TITANIUM NITRIDE COATED — Plug Style, Ground Thread

Part No.	Size/Thread	Flutes	Price	
			Each	5
B-HSNT-632	6-32 NC	3	7.25	29.00
B-HSNT-640	6-40 NF	3	7.50	30.00
B-HSNT-832	8-32 NC	4	7.40	29.60
B-HSNT-836	8-36 NF	4	8.50	34.00
B-HSNT-1024	10-24 NC	4	8.25	33.00
B-HSNT-1032	10-32 NF	4	8.25	33.00
B-HSNT-1224	12-24 NC	4	9.50	38.00
B-HSNT-1228	12-28 NF	4	9.65	38.60
B-HSNT-1420	1/4-20 NC	4	9.50	38.00
B-HSNT-1428	1/4-28 NF	4	9.70	38.80

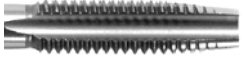
## TAP SETS — High Speed Steel, Ground Thread



Bottoming



Plug



Taper

### HIGH SPEED STEEL —

#### Set includes each Bottoming, Plug and Taper Style

Part No.	Size/Thread	Flutes	Price Per Set
B-HSTS-080	0-80 NF	2	30.70
B-HSTS-164	1-64 NC	2	29.05
B-HSTS-172	1-72 NF	2	29.05
B-HSTS-256	2-56 NC	3	25.40
B-HSTS-264	2-64 NF	3	27.05
B-HSTS-348	3-48 NC	3	19.85
B-HSTS-356	3-56 NF	3	22.00
B-HSTS-440	4-40 NC	3	16.20
B-HSTS-448	4-48 NF	3	17.35
B-HSTS-540	5-40 NC	3	16.20
B-HSTS-544	5-44 NF	3	17.35
B-HSTS-632	6-32 NC	3	11.80
B-HSTS-640	6-40 NF	3	13.10
B-HSTS-832	8-32 NC	4	12.50
B-HSTS-836	8-36 NF	4	12.50
B-HSTS-1024	10-24 NC	4	12.50
B-HSTS-1032	10-32 NF	4	12.50
B-HSTS-1224	12-24 NC	4	13.70
B-HSTS-1228	12-28 NF	4	15.25
B-HSTS-1420	1/4-20 NC	4	12.90
B-HSTS-1428	1/4-28 NC	4	12.90
B-HSTS-5618	5/16-24 NF	4	16.60
B-HSTS-5624	5/16-24 NF	4	16.60
B-HSTS-3816	3/8-16 NC	4	19.50
B-HSTS-3824	3/8-24 NF	4	19.50
B-HSTS-7614	7/16-14 NC	4	32.95
B-HSTS-7620	7/16-20 NF	4	32.95
B-HSTS-1213	1/2-13 NC	4	35.40
B-HSTS-1220	1/2-20 NF	4	39.95

## DIES — Adjustable, Carbon Steel



### ADJUSTABLE DIES

Where exacting quality is required these dies are recommended. The adjusting provision allows the user to cut slightly under or over size threads for a precision fit. Adjustment of the die is made by a set screw. Die Stocks are on [page 347](#).

### CARBON STEEL

Part No.	Size/Thread	Diameter	Use Die Stock	Price Each
B-ACSD-080	0-80 NF	13/16"	DS-13	15.90
B-ACSD-164	1-64 NC	13/16"	DS-13	14.95
B-ACSD-172	1-72 NF	13/16"	DS-13	14.95
B-ACSD-256	2-56 NC	13/16"	DS-13	14.95
B-ACSD-264	2-64 NF	13/16"	DS-13	14.95
B-ACSD-348	3-48 NC	13/16"	DS-13	14.95
B-ACSD-356	3-56 NF	13/16"	DS-13	14.95
B-ACSD-440	4-40 NC	13/16"	DS-13	8.75
B-ACSD-448	4-48 NF	13/16"	DS-13	8.75
B-ACSD-540	5-40 NC	13/16"	DS-13	8.75
B-ACSD-544	5-44 NF	13/16"	DS-13	8.75
B-ACSD-632	6-32 NC	13/16"	DS-13	8.75
B-ACSD-640	6-40 NF	13/16"	DS-13	8.75
B-ACSD-832	8-32 NC	13/16"	DS-13	8.75
B-ACSD-836	8-36 NF	13/16"	DS-13	8.75
B-ACSD-1024	10-24 NC	13/16"	DS-13	8.75
B-ACSD-1032	10-32 NF	13/16"	DS-13	8.75
B-ACSD-1224	12-24 NC	13/16"	DS-13	8.75
B-ACSD-1228	12-28 NF	13/16"	DS-13	8.75
B-ACSD-1420	1/4-20 NC	13/16"	DS-13	8.75
B-ACSD-1428	1/4-28 NF	13/16"	DS-13	8.75
B-ACSD-5618	5/16-18 NC	13/16"	DS-13	8.75
B-ACSD-5624	5/16-24 NF	13/16"	DS-13	8.75
B-ACSD-3816	3/8-16 NC	1"	DS-25	10.75
B-ACSD-3824	3/8-24 NF	1"	DS-25	10.75
B-ACSD-7614	7/16-14 NC	1"	DS-25	10.75
B-ACSD-7620	7/16-20 NF	1"	DS-25	10.75
B-ACSD-1213	1/2-13 NC	1"	DS-25	10.75
B-ACSD-1220	1/2-20 NF	1"	DS-25	10.75

### METRIC

#### HIGH SPEED STEEL — Right Hand Dies, Round Solid I.S.O., DIN 13 - Titex

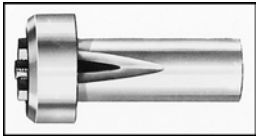
Part No.	Nominal Diameter	Pitch	O. D.	Thickness	Price Each
B-RHMD-10	M1.0	0.25mm	16mm	5mm	50.50
B-RHMD-12	M1.2	0.25mm	16mm	5mm	48.60
B-RHMD-14	M1.4	0.30mm	16mm	5mm	47.35
B-RHMD-16	M1.6	0.35mm	16mm	5mm	43.90
B-RHMD-17	M1.7	0.35mm	16mm	5mm	43.90
B-RHMD-18	M1.8	0.35mm	16mm	5mm	43.90
B-RHMD-20	M2.0	0.40mm	16mm	5mm	39.15

## DIES — Adjustable, Carbon Steel (cont.)

### METRIC

#### HIGH SPEED STEEL — Right Hand Dies, Round Solid I.S.O., DIN 13 - Titex

Part No.	Nominal Diameter	Pitch	O. D.	Thickness	Price Each
<b>B-RHMD-22</b>	M2.2	0.45mm	16mm	5mm	<b>38.50</b>
<b>B-RHMD-25</b>	M2.5	0.45mm	16mm	5mm	<b>34.50</b>
<b>B-RHMD-30</b>	M3.0	0.50mm	20mm	5mm	<b>36.60</b>
<b>B-RHMD-35</b>	M3.5	0.60mm	20mm	5mm	<b>36.60</b>
<b>B-RHMD-40</b>	M4.0	0.70mm	20mm	5mm	<b>36.60</b>
<b>B-RHMD-50</b>	M5.0	0.80mm	20mm	7mm	<b>32.05</b>
<b>B-RHMD-60</b>	M6.0	1.00mm	20mm	7mm	<b>32.05</b>
<b>B-RHMD-80</b>	M8.0	1.25mm	25mm	9mm	<b>34.50</b>



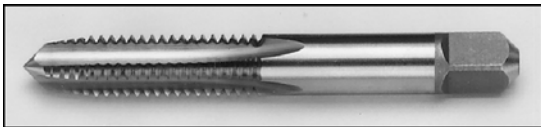
#### THREE-PRONG ADJUSTING DIES

These threading dies are recommended where precision is of prime importance. When chucked in a lathe, the threading can be adjusted and controlled to produce the exact result required.

#### CARBON STEEL — 7/32" Diameter

Part No.	Size/Thread	Price Each
<b>B-ACSRD-0090</b>	#00-90	<b>40.00</b>
<b>B-ACSRD-080</b>	#0-80	<b>40.00</b>
<b>B-ACSRD-172</b>	#1-72	<b>40.00</b>
<b>B-ACSRD-256</b>	#2-56	<b>40.00</b>

## SPECIALTY TAPS AND DIES — High Speed Steel



#### LEFT HAND TAPS — Plug Style

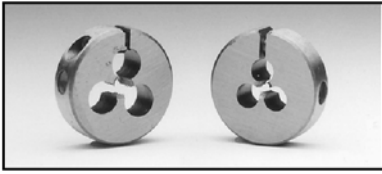
Use these Taps on designs that require an object to move in a counterclockwise rotation or where it is necessary for an object to move in opposite directions with the same drive rod, such as in the case of lifting jacks.

Made of High Speed Steel, these high quality, American made Plug Taps can be used with Left Hand Dies on page 344, or with Left Hand Stainless Steel Threaded Rod on page 200.

#### HIGH SPEED STEEL — Left Hand

Part No.	Size/Thread	Flutes	Price Each
<b>B-HSLT-080</b>	0-80	2	<b>35.00</b>
<b>B-HSLT-172</b>	1-72	2	<b>29.75</b>
<b>B-HSLT-256</b>	2-56	3	<b>32.35</b>
<b>B-HSLT-440</b>	4-40	3	<b>25.05</b>
<b>B-HSLT-632</b>	6-32	3	<b>7.05</b>
<b>B-HSLT-832</b>	8-32	4	<b>7.05</b>
<b>B-HSLT-1024</b>	10-24	4	<b>7.05</b>
<b>B-HSLT-1032</b>	10-32	4	<b>7.05</b>
<b>B-HSLT-1420</b>	1/4-20	4	<b>9.75</b>
<b>B-HSLT-5618</b>	5/16-18	4	<b>11.00</b>
<b>B-HSLT-3816</b>	3/8-16	4	<b>15.00</b>
<b>B-HSLT-1213</b>	1/2-13	4	<b>21.20</b>

## SPECIALTY TAPS AND DIES — High Speed Steel



### LEFT HAND DIES

Left Hand Dies are called for in designs that require objects to move in opposite directions on the same drive shaft. These dies give the engineer greater flexibility when designing prototypes. Left hand dies can be used to create left handed shafts, often used to lock wheels in place and prevent loosening during rotation. Use Left Handed Dies with Left Handed Taps. See also Left Hand Stainless Steel Threaded Rod on [page 200](#).

### HIGH SPEED STEEL — Left Hand

Part No.	Size/Thread	Die Diameter	Use Die Stock	Price Each
<b>B-ACSLD-080</b>	0-80	13/16"	DS-13	<b>10.25</b>
<b>B-ACSLD-172</b>	1-72	13/16"	DS-13	<b>10.25</b>
<b>B-ACSLD-256</b>	2-56	13/16"	DS-13	<b>10.25</b>
<b>B-ACSLD-440</b>	4-40	13/16"	DS-13	<b>10.25</b>
<b>B-ACSLD-632</b>	6-32	13/16"	DS-13	<b>10.25</b>
<b>B-ACSLD-832</b>	8-32	13/16"	DS-13	<b>10.25</b>
<b>B-ACSLD-1024</b>	10-24	13/16"	DS-13	<b>10.25</b>
<b>B-ACSLD-1032</b>	10-32	13/16"	DS-13	<b>10.25</b>
<b>B-ACSLD-1420</b>	1/4-20	1"	DS-25	<b>10.75</b>
<b>B-ACSLD-5618</b>	5/16-18	1"	DS-25	<b>10.75</b>
<b>B-ACSLD-3816</b>	3/8-16	1"	DS-25	<b>10.75</b>
<b>B-ACSLD-1213</b>	1/2-13	1"	DS-25	<b>10.75</b>



The precision quality of these tools provides an accurate clean-cut thread, desirable where liquids, steam or air under pressure is involved.

[See page 346](#) for sets of Taps and Dies.

### HIGH SPEED STEEL TAPS — Taper Pipe, National Pipe Thread

Part No.	Pipe Size	Tap Drill	Flutes	Price Each
<b>B-HSPT-1627</b>	1/16-27	"D"	4	<b>23.55</b>
<b>B-HSPT-1827</b>	1/8-27	"R"	4	<b>15.85</b>
<b>B-HSPT-1418</b>	1/4-18	7/16"	4	<b>17.75</b>
<b>B-HSPT-3818</b>	3/8-18	37/64"	4	<b>22.65</b>
<b>B-HSPT-1214</b>	1/2-14	45/64"	4	<b>37.90</b>
<b>B-HSPT-3414</b>	3/4-14	59/64"	5	<b>52.15</b>

### HIGH CARBON STEEL DIES — Round Adjustable, Pipe Threading, National Pipe Thread

Part No.	Pipe Size	Diameter	Price Each
<b>B-ACPD-1627</b>	1/16-27	13/16" (HSS)	<b>28.65</b>
<b>B-ACPD-1827</b>	1/8-27	1-1/2"	<b>13.50</b>
<b>B-ACPD-1418</b>	1/4-18	1-1/2"	<b>13.50</b>
<b>B-ACPD-3818</b>	3/8-18	1-1/2"	<b>13.50</b>
<b>B-ACPD-1214</b>	1/2-14	1-1/2"	<b>13.50</b>
<b>B-ACPD-3414</b>	3/4-14	2"	<b>26.55</b>



## SPECIALTY TAP AND DIE SETS — High Speed Steel



HST-500

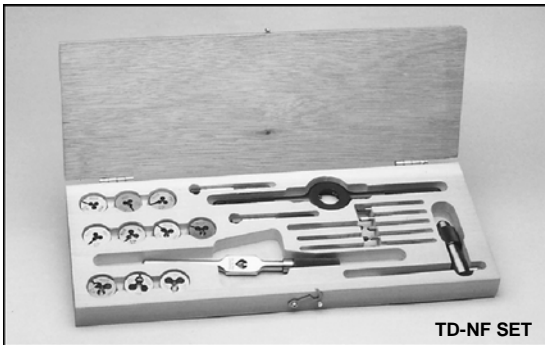
Our Specialty Tap and Die Sets sets offer a wide variety of sizes from which to choose, including hard to find sizes.

### PLUG STYLE TAPS — 19-Piece Set

This set contains 19 high speed steel ground thread plug style taps in sizes ranging down to 0-80. It also contains all of the fine thread tap sizes up to 12-28. Packaged in a protective plastic hinged box, each tap is marked with size, threads per inch, and tap drill size.

#0-80 NF, #1-64 NC, #1-72 NF, #2-56 NC, #2-64 NF, #3-48 NC, #3-56 NF, #4-40 NC, #4-48 NF, #5-40 NC, #5-44 NF, #6-32 NC, #6-40 NF, #8-32 NC, #8-36 NF, #10-24 NC, #10-32 NF, #12-24 NC, #12-28 NF

**B-HST-500 . . . . . 131.00**



TD-NF SET

### FINE THREADS — 23-Piece Set

*A Small Parts exclusive!* Ten sizes of fine thread taps and adjustable round dies, ranging from as small as 0-80 through 12-28. The set also includes a 13/16" die stock, a Starrett® tap wrench and a Starrett® T-Handle Tap Wrench. Packaged in a sturdy wooden box with a hinged cover.

**B-TD-NF . . . . . 187.50**



TD-NC SET

### COARSE THREADS — 23-Piece Set

23 PC Tap and die set. This handy set contains all coarse thread taps and adjustable round dies from 1-64 through 12-24, as well as a fine thread 0-80. It also includes a 13/16" die stock, Offset Handle Tap Wrench and a T-Handle Tap Wrench. Packaged in a sturdy wooden box with a hinged cover.

**B-TD-NC . . . . . 119.95**



### DRILLS, TAPS AND DIES

This soft cover book provides information on drills and drilled holes, threading with taps and dies. In this book, processes described are performed primarily by hand. Includes imperial and metric sizes and conversions, standard thread gauges, sharpening and much more. Fully illustrated.

**B-WPS-12 . . . . . 12.50**

## SPECIALTY TAP SETS — High Speed Steel (cont.)



### PLUG TAPS AND ADJUSTABLE DIES

#### HANSON — 39-Piece Set

For the craftsman who requires precision threading the adjustable dies in this set allow for over or under cutting the thread size slightly for precise fit. Plug Taps and 1" Adjustable Round dies (Pipe Die is solid round) are provided for the following thread sizes:

#4-40 NC	#12-24 NC	5/16-24 NF	7/16-20 NF
#6-32 NC	1/4-20 NC	3/8-16 NC	1/2-13 NC
#8-32 NC	1/4-28 NF	3/8-24 NC	1/2-20 NF
#10-24 NC	5/16-18 NC	7/16-14 NC	1/8-27 NPT
#10-32 NF			

Also included are Adjustable Die Stock, Adjustable Handle Tap Wrench, T-Handle Tap Wrench, Screw Pitch Gauge and Screw Driver.

Packed in a compact, attractive, self-hinged unbreakable plastic case with removable tray. Tap drill chart on inside lid.

**B-TD-ARD** ..... **166.40**



### METRIC

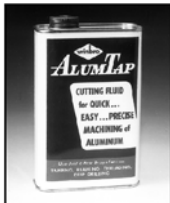
### PLUG TAPS AND ADJUSTABLE DIES

#### HANSON — 42-Piece Set

This set of thread cutting Taps and Dies provides for many metric threading requirements with the advantage of hexagon dies which allows the user to work in places a die stock cannot be used. Packed in a strong plastic box with removable tray, this set contains 5/8" and 1" Hex Die Stock, three Tap Wrenches, Screw Driver, Metric Screw Pitch Gauge and one each Tap and Hex Die in the sizes listed below. Metric tap drill chart on lid.

M3×0.50	M6×1.00	M9×1.00	M11×1.50
M4×0.70	M7×1.00	M9×1.25	M12×1.50
M4×0.75	M8×1.00	M10×1.25	M12×1.75
M5×0.80	M8×1.25	M10×1.50	1/8-28 BSP
M5×0.90			

**B-TD-MM** ..... **128.70**



See our cutting Fluids on page 349

# TAP WRENCHES AND DIE STOCKS



## T-HANDLE TAP WRENCH — Starrett®

Used for holding taps, drills, reamers and other small tools to be turned by hand. Four jaw tempered steel chuck holds the tap rigid. Center hold in body for better versatility depending upon application. Sliding/friction held handle permits positioning for leverage in close quarters. Handle can be removed entirely.

- B-HSTW-1** For 1/16" to 3/16" ..... **24.50**
- B-HSTW-2** For 7/32" to 7/16" ..... **26.75**
- B-HSTW-3** For 1/4" to 1/2" ..... **36.50**



HSTW-4B

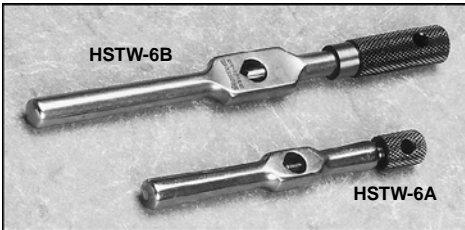
## ADJUSTABLE HANDLE

This wrench is adjusted to fit tap by turning the threaded handle. The two jaws are of hardened steel for longer wear.



HSTW-5

- B-HSTW-4B** For 1/4" to 1" (American) ..... **32.10**
- B-HSTW-5** For #0 to 1/2" (American) ..... **13.65**



HSTW-6B

HSTW-6A

## TAP WRENCHES — Starrett®

These tap wrenches are strong, well proportioned and easy to handle. They are highly finished with properly tempered gripping surfaces. Both wrenches adapt easily to square or round shanks. The smaller tap wrench (B-HSTW-6B) is designed to hold taps, drills and small tools up to 1/4" in diameter.

- B-HSTW-6A** ..... **16.10**  
Length: 3-5/8". Shank: 1/4". Tap Size: No. 0-14
- B-HSTW-6B** ..... **36.45**  
Length: 5-3/4". Shank: 1/16" - 1/4"  
Tap Size: 5/16" - 13/64"



DS-13

## PLAIN DIE STOCKS

Plain Die Stock for 13/16" Round Dies which are locked in with a single set screw. Cadmium plated.

- B-DS-13** ..... **10.05**



DS-25

## ADJUSTABLE GUIDE DIE STOCKS

Adjustable Guide Die Stock for Round Dies locks the die in place with a tapered set screw. Adjustment can be made while die remains in Die Stock.

- B-DS-25** For 1" Round Dies ..... **11.05**
- B-DS-28** For 1" Round Adjustable Dies ..... **13.90**
- B-DS-35** For 1-1/2" Round Adjustable Dies . . **22.40**

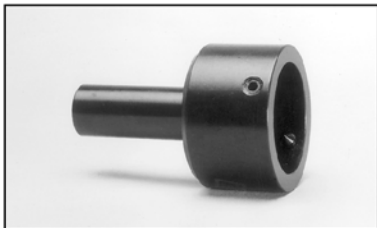


DMS-210

## METRIC

- B-DMS-160** For 16 mm Round Dies  
5 mm thick ..... **21.85**
- B-DMS-210** For 20 mm Round Dies  
5 mm thick ..... **22.20**
- B-DMS-203** For 20 mm Round Dies  
7 mm thick ..... **22.20**

## DIE HOLDERS — Round



Die Holders are great for safely threading shafts in the #0-80 to 3/8" range on lathes or milling machines. The main body is counterbored for chip clearance. Color: Black oxide. Available in three diameters.

Main body diameter: 1-1/2" by 1" length  
 Hold shank portion: 1/2" diameter by 1" length  
 Total length: 3"  
 Shank I.D.: 25/64"  
 Includes: #10-32 St/St set screw

**B-DIEH-13** 13/16" diameter ..... **19.75**  
**B-DIEH-16** 1" diameter ..... **21.25**  
**B-DIEH-24** 1-1/2" diameter ..... **38.65**

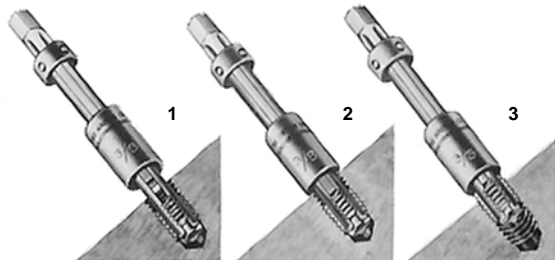
## TAP EXTRACTOR






The Walton Tap Extractor is a precision, high-quality tool used throughout the world for the removal of broken taps from valuable parts. Nothing quite takes its place!

### Remove Broken Taps The Easy Way

1. Thoroughly remove all chips of the broken tap. Insert the extractor fingers into the flutes of the broken tap, pushing them gently but firmly into position.
2. Push the holder down until it touches the broken tap. Slide the sleeve down until it touches the work. (Both are important.)
3. Apply a tap wrench to the square end of the holder. Twist forward and backward a few times to loosen, then back out the broken tap.



## TAP EXTRACTOR

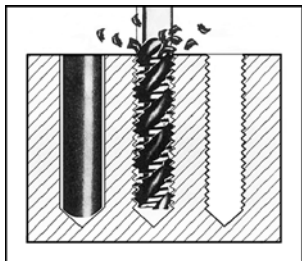
			Fits Tap Size:				
4-Flute	3-Flute	2-Flute	American	Metric	British	Price Each	
							
Part No.*	Part No.*	Part No.*					
—	<b>B-TE-43</b>	<b>B-TE-42</b>	#4	3mm	6BA	<b>9.90</b>	
—	<b>B-TE-53</b>	<b>B-TE-52</b>	#5	3.2mm	5BA	<b>9.90</b>	
<b>B-TE-64</b>	<b>B-TE-63</b>	<b>B-TE-62</b>	#6	3.5mm	4BA	<b>9.90</b>	
<b>B-TE-84</b>	<b>B-TE-83</b>	<b>B-TE-82</b>	#8	4mm	3BA	<b>9.90</b>	
<b>B-TE-104</b>	<b>B-TE-103</b>	<b>B-TE-102</b>	#10	5mm	2BA	<b>9.90</b>	
<b>B-TE-124</b>	<b>B-TE-123</b>	<b>B-TE-122</b>	#12	5.5mm	1BA	<b>10.25</b>	
<b>B-TE-144</b>	<b>B-TE-143</b>	<b>B-TE-142</b>	1/4"	6mm	0BA	<b>10.25</b>	

\* Part number shown indicates available flute style for each size.

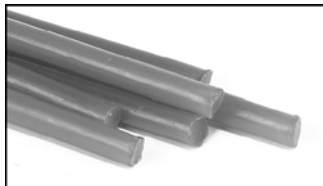
## ASSORTMENTS

Set Number	Description	Price Each
<b>B-TE-A1</b>	Includes all Extractors for sizes 4, 5, and 6 (7 pcs)	<b>62.40</b>
<b>B-TE-A2</b>	Includes all Extractors for sizes 8 and 10 (6 pcs)	<b>61.50</b>
<b>B-TE-A3</b>	Includes all Extractors for sizes 12 and 1/4" (6 pcs)	<b>59.60</b>
<b>B-TE-A4</b>	Includes all Extractors for sizes 4 thru 1/4" (19 pcs)	<b>171.20</b>

## TAPPING WAX



1 2 3



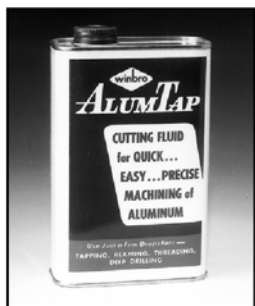
Tapping Wax is a solid form lubricating wax which contains EP (extra pressure) cutting lubricants to facilitate tapping of holes in both ferrous and non-ferrous metals. It provides a clean, fast, precision method for tapping blind holes while also extending tap life.

After the blind hole has been drilled (1) a solid piece of tapping wax of the proper diameter is placed in the hole. When the hole is tapped (2) the chips are entrapped by the wax and carried out through the tap flutes (the chips do not pack in the bottom of the threaded hole). The tapped hole (3) is then clean and ready to use — no blowing out is needed.

Order Example: **B-TWBT-8-50** is 1/2 lb. of 1/8" pieces

Part No.	Tap Size*	Wax Diameter	No. of Pieces per 1/4 Lb. (Approximately)	Price		
				-12 1/8 Lb.	-25 1/4 Lb.	-50 1/2Lb.
<b>B-TWBT-1</b>	1	16 Gauge - .051"	766	<b>6.00</b>	<b>10.05</b>	—
<b>B-TWBT-2</b>	2	14 Gauge - .064"	372	<b>6.00</b>	<b>10.05</b>	—
<b>B-TWBT-4</b>	4	12 Gauge - .080"	278	<b>6.00</b>	<b>10.05</b>	<b>16.75</b>
<b>B-TWBT-6</b>	6	3/32" - .093"	168	<b>6.00</b>	<b>10.05</b>	<b>16.75</b>
<b>B-TWBT-8</b>	8	1/8" - .125"	92	—	<b>10.05</b>	<b>16.75</b>
<b>B-TWBT-10</b>	10	9/64" - .140"	76	—	<b>10.05</b>	<b>16.75</b>
<b>B-TWBT-14</b>	1/4	3/16" - .185"	45	—	<b>10.05</b>	<b>16.75</b>

## TAPS CUTTING FLUIDS



### ALUMTAP

A chemical cutting fluid for better results with any aluminum or magnesium alloy when tapping, drilling, milling, broaching, boring or reaming. Exceptionally penetrating qualities carry Alumtap to the heart of the work, where it overcomes metal-to-metal friction and prevents broken tools. This is not a cutting oil; it contains no sulphur, fatty acids, wetting agents or carbon tetrachloride. Alumtap can be used on any metal, but is more suitable for lighter metals. It is nonstaining and nontoxic. Contains no ODCs. Flash point 275°F (135°C) open cup.

<b>B-DCA-1/2</b>	One half pint .....	<b>5.85</b>
<b>B-DCA-1</b>	One pint .....	<b>9.15</b>



### TAP MAGIC

A highly effective cutting fluid for all metals — aluminum, stainless steel, titanium... you name it! Tap Magic® penetrates right to the material's edge, where it remains to give you a smooth cut. Also helps reduce tool wear. Contains no ODC's. Flash Point 280°F (137°C) open cup.

<b>B-DCT-1/4</b>	4 fl. oz .....	<b>2.75</b>
<b>B-DCT-1</b>	One pint .....	<b>8.80</b>

®The Steco Corporation

# BI-METAL HOLE SAWS — Variable Pitch



HS-100



HS-1000



HOLE SAWS ARBOR



HOLE SAWS

## UTILITY HOLE SAW KIT — Starrett®

A good starting point for your tool collection, this kit contains six of the most commonly used Hole Saw sizes, plus an arbor for a 3/8" chuck, and a Quick-Hitch™ arbor for a 1/2" chuck, each complete with pilot drills. An arbor adaptor is included. This general purpose selection can be upgraded with other sizes, or replace worn saws and arbors as you need them. See chart. **Six Saws:** 3/4"; 7/8"; 1-1/8"; 1-1/2"; 1-3/4"; 2-1/2".

**B-HS-100** Utility Kit ..... 98.50

## INDUSTRIAL HOLE SAW KIT — Starrett®

Eleven Hole Saw sizes to handle a variety of jobs in the toolroom, and in production and maintenance areas. Equipped with an arbor for a 3/8" chuck, and a Quick-Hitch arbor for a 1/2" chuck, each complete with pilot drills, plus a 12" extension for the Quick-Hitch and an ejector spring. More sizes available, see chart. **Eleven Saws:** 3/4"; 7/8"; 1"; 1-1/4"; 1-3/8"; 1-1/2"; 1-3/4"; 2"; 2-1/4"; 2-1/2"; 3".

**B-HS-1000** Industrial Kit ..... 150.00

## ALL PURPOSE HOLE SAWS — Starrett®

Have variable-pitch teeth with a positive rake and a 1-5/8" depth for cutting through metal, plastic and wood — much faster than conventional saws. Used in production, maintenance, electrical and building trades, Hole Saws are made with hardened High Speed Steel teeth and a tough alloy body and cap for exceptional strength, durability and abrasion resistance. Arbors are sold separately, or can be obtained by selecting one of the Hole Saw Kits.

## HOLE SAW ARBORS — Starrett®

Are furnished with a 1/4" HSS pilot drill and are supplied with flats to fit a 5/8" wrench. A set screw in the body permits easy replacement of the pilot drill. For use with larger hole saws, the Quick-Hitch™ (B-HSA-2096) style permits instant change of saws without tools and without removing arbor from chuck.

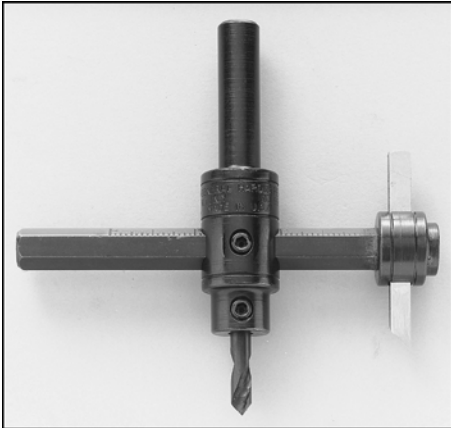
## BI-METAL HOLE SAWS High Speed Steel Teeth

Part No.	Diameter	Price Each
<b>B-HS-09</b>	9/16"	7.45
<b>B-HS-10</b>	5/8"	6.50
<b>B-HS-12</b>	3/4"	6.50
<b>B-HS-14</b>	7/8"	6.50
<b>B-HS-16</b>	1"	6.75
<b>B-HS-18</b>	1-1/8"	6.75
<b>B-HS-19</b>	1-3/16"	6.75
<b>B-HS-20</b>	1-1/4"	6.85
<b>B-HS-21</b>	1-15/16"	6.85
<b>B-HS-22</b>	1-3/8"	6.95
<b>B-HS-24</b>	1-1/2"	6.95
<b>B-HS-26</b>	1-5/8"	6.95
<b>B-HS-28</b>	1-3/4"	8.50
<b>B-HS-30</b>	1-7/8"	8.50
<b>B-HS-32</b>	2"	8.50
<b>B-HS-36</b>	2-1/4"	10.95
<b>B-HS-40</b>	2-1/2"	11.50
<b>B-HS-44</b>	2-3/4"	11.50
<b>B-HS-48</b>	3"	12.25

## HOLE SAW ARBORS

Part No.	Fits Hole Saw Diameters	Price Each
<b>B-HSA-0919</b>	9/16" to 1-3/16"	8.75
<b>B-HSA-2096</b>	1-1/4" to 6"	11.50

## CUTTERS — High Speed Steel



### HEAVY DUTY CIRCLE CUTTER

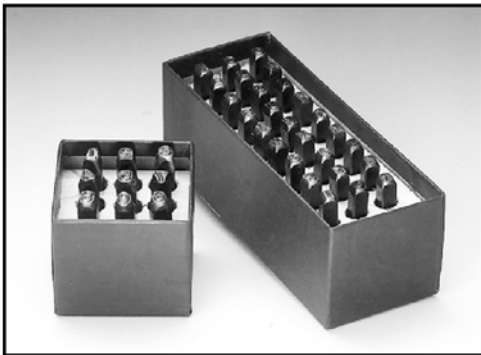
*Cut precise circles with variable diameters in many types of material.*

High Speed Steel Cutter blade makes precise, clean cuts in sheet metal, brass, copper, soft steel, aluminum, plastic, wood and composition materials. Adjustable for cutting diameters from 1-3/4" to 7-7/8", this industrial quality tool has a maximum safe speed of 500 rpm.

Made of heat-treated tool steel, the body slides on a beam for easy measurement and adjustment. Unit has a 1/2" round shank for drill press use, a replaceable 1/4" high-speed tool steel bit and replaceable 1/4" pilot drill. Hex wrench included for diameter and depth adjustments.

**B-HDCC-01** Heavy Duty Circle Cutter ..... **24.95**

## METAL STAMPS



### LETTER AND NUMERAL

These high alloy metal stamps are the fastest and most efficient way to identify metal parts. Letter sets are 27 pieces from A through Z plus "&" sign. Numeral sets are 9 pieces from 0 through 8 (6 and 9 are reversible). Heat-treated and rust-proofed. Sets are supplied in a heavy-duty box.

### LETTER AND NUMERAL METAL STAMPS

Part No.	Type	Character Size	Stamp Base (Square)	Shank Length	Price Set
<b>B-NSN-1</b>	Numeral	1/16"	1/4"	2-3/8"	<b>17.75</b>
<b>B-NSL-1</b>	Letter	1/16"	1/4"	2-3/8"	<b>53.15</b>
<b>B-NSN-2</b>	Numeral	1/8"	1/4"	2-3/8"	<b>17.75</b>
<b>B-NSL-2</b>	Letter	1/8"	1/4"	2-3/8"	<b>53.15</b>
<b>B-NSN-3</b>	Numeral	3/16"	5/16"	2-7/16"	<b>24.25</b>
<b>B-NSL-3</b>	Letter	3/16"	5/16"	2-7/16"	<b>71.95</b>
<b>B-NSN-4</b>	Numeral	1/4"	3/8"	2-9/16"	<b>26.50</b>
<b>B-NSL-4</b>	Letter	1/4"	3/8"	2-9/16"	<b>85.50</b>



## SWISS TOOLS WITH A REPUTATION FOR SUPERIOR QUALITY

Over the decades the PB Baumann Co. Ltd. has grown from a small craftsmen's business into a modern and innovative industrial firm. In the two factories in Wasen and Sumiswald, a workforce of 130 produces several million top-quality tools every year.



### RAW MATERIAL

**The PB special alloy** — As the result of decades of research and development, PB has perfected a special alloy that unites a consistently high degree of hardness with excellent qualities of toughness and elasticity. This is why PB tools are extremely durable and deform elastically and plastically if overstressed, which means that the user is warned in advance if there is a possibility that the tool might break.

**The PB handle material** — High-impact handles are made of CAB (cellulose-acetate-butyrate) to resist tension cracks, heat, moisture, oil and oil-based products. They have a slip-resistant texturized surface that is easy to clean and are translucent red-orange, which makes the tools easy to find. Optimally shaped for hand comfort, even during lengthy spells of work, the large-diameter handle insures delivery of highest torque transmission and offers a friendly, comfortable grip. Rounded, ridge-free ends enable strong pressure exertion lengthways without discomfort.

**PB heat treatment** — PB tools are treated in ultra-modern vacuum-tempering installations. The precisely programmable and supervised process, together with strict controls, guarantees optimal heat treatment. The oil- and salt-free quenching with nitrogen, a natural element of our air, enables an environmentally-friendly process.

### MANUFACTURE

**Everything produced at PB** — Both the manufacture of blades — from shaping to heat treatment, galvanization, laser inscription and tip-burnishing — and the manufacture of synthetic material components (handles, hammer inserts, holders) take place exclusively in the Wasen and Sumiswald factories. This means that all production stages are subject to internal controls and inspections, which ensures the consistently high quality of PB products.

**Automation in PB tool production** — In order to achieve the consistently high quality of PB tools, high-technology production processes have been developed. Numerous CNC machines, robot and laser equipment and other automated installations are used in PB production. This automation also makes a considerable contribution to the maintenance of competitive prices.

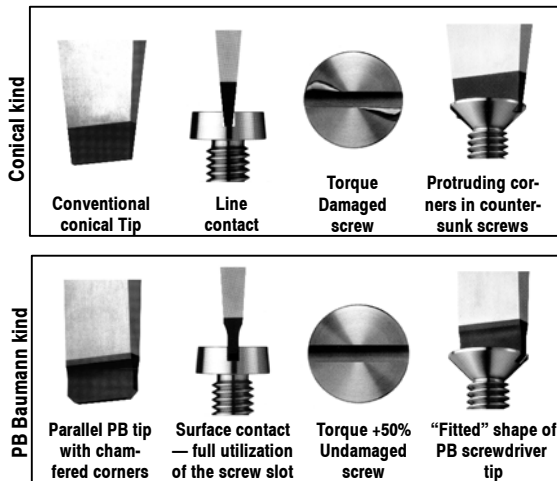
### PB QUALITY CONTROL

The exhaustive control of incoming raw materials and conscientious controls during every stage of production are essential components of the PB Quality Management System. In addition, each tool is checked again piece by piece at the end of the production process for possible defects in material or manufacture.

**There are various kinds of screwdrivers. For example, the usual, conical kind . . . and the PB Baumann, with parallel tip and chamfered corners.**

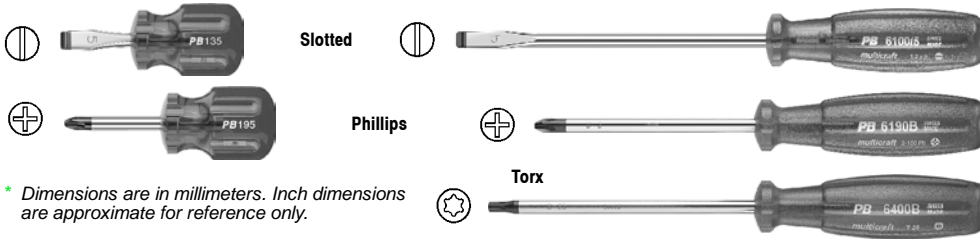
The parallel shape of the PB tip guarantees optimum transmission of force to the screw. Stress on the screw is therefore much lower than with a standard conical screwdriver tip. When torque is applied with a conical tip, ejection forces ("camout" effect) occur, pushing the screwdriver out of the screw, which results in damage to the fastener. With the same contact pressure, you get up to 50% higher torque with the parallel PB tip, without damage to the screw!

The chamfering of the PB tip alleviates the nuisance of protruding corners when used on countersunk screws. This means that the countersink does not get scratched and the screwdriver is not pushed out of the screw slot. High-impact handles made of CAB (cellulose-acetate-butyrate) to resist tension cracks, heat, moisture, oil and oil-based products.





## PB BAUMANN — Screw Drivers



\* Dimensions are in millimeters. Inch dimensions are approximate for reference only.

### SLOTTED SCREW DRIVERS — VSM Standard 35601 (Blade)

Part No.	Driver	Blade Width	Blade Thickness	Blade Length*	Total Length*	Price
B-PB-SD61020	00	2	0.3	70 (2-3/4")	140 (5-1/2")	<b>3.50</b>
B-PB-SD61010	0	2.5	0.4	80 (3-1/8")	160 (6-1/4")	<b>3.90</b>
B-PB-SD61001	1	3.5	0.5	90 (3-1/2")	180 (7")	<b>4.80</b>
B-PB-SD61002	2	4	0.6	100 (4")	195 (7-3/4")	<b>5.30</b>
B-PB-SD61003	3	5.5	0.8	120 (4-3/4")	220 (8-3/4")	<b>6.10</b>
B-PB-SD61004	4	6.5	1	140 (5-1/2")	245 (9-3/4")	<b>7.20</b>
B-PB-SD61005	5	8	1.2	160 (6-1/4")	270 (10-5/8")	<b>8.70</b>
B-PB-SD61006	6	10	1.6	180 (7")	300 (11-1/2")	<b>11.00</b>

### SLOTTED SCREW DRIVERS — Stubby

B-PB-SD1352	2	4	0.6	30 (1-1/8")	75 (3")	<b>4.80</b>
B-PB-SD1353	3	5.5	0.8	30 (1-1/8")	75 (3")	<b>4.80</b>
B-PB-SD1354	4	6.5	1	30 (1-1/8")	75 (3")	<b>5.50</b>

### PHILLIPS SCREW DRIVERS — ISO 8764 / DIN 5260, Type PH (Tip)

B-PB-PD61920	00	3	-	60 (2-3/8")	120 (4-3/4")	<b>4.90</b>
B-PB-PD61910	0	4	-	60 (2-3/8")	140 (5-1/2")	<b>5.20</b>
B-PB-PD61901	1	5	-	80 (3-1/8")	175 (7")	<b>6.00</b>
B-PB-PD61902	2	6	-	100 (4")	205 (8")	<b>7.60</b>
B-PB-PD61903	3	8	-	150 (6")	270 (10-5/8")	<b>10.60</b>
B-PB-PD61904	4	10	-	200 (7-7/8")	330 (13")	<b>16.70</b>

### PHILLIPS SCREW DRIVERS — Stubby

B-PB-PD1950	0	4	-	30 (1-1/8")	75 (3")	<b>5.10</b>
B-PB-PD1951	1	5	-	30 (1-1/8")	75 (3")	<b>5.20</b>
B-PB-PD1952	2	6	-	40 (1/2")	90 (3-1/2")	<b>7.40</b>

### TORX SCREW DRIVERS

B-PB-TD64003	T3	2.5	-	40 (1.5")	80 (3-1/8")	<b>6.00</b>
B-PB-TD64004	T4	2.5	-	40 (1.5")	80 (3-1/8")	<b>6.10</b>
B-PB-TD64005	T5	3	-	50 (2")	100 (4")	<b>6.20</b>
B-PB-TD64006	T6	3	-	50 (2")	100 (4")	<b>6.30</b>
B-PB-TD64007	T7	3	-	50 (2")	110 (4-1/4")	<b>6.60</b>
B-PB-TD64008	T8	3	-	60 (2-3/8")	130 (5")	<b>6.80</b>
B-PB-TD64009	T9	3.5	-	60 (2-3/8")	140 (5-1/2")	<b>7.10</b>
B-PB-TD64010	T10	3.5	-	70 (2-3/4")	160 (6-1/4")	<b>7.20</b>
B-PB-TD64015	T15	4	-	80 (3-1/8")	175 (7")	<b>7.80</b>
B-PB-TD64020	T20	5	-	100 (4")	200 (7-3/4")	<b>8.40</b>
B-PB-TD64025	T25	6	-	120 (4-3/4")	225 (8-7/8")	<b>11.60</b>

# PB BAUMANN — Screw Driver Sets



## SLOTTED SCREW DRIVERS 6-PIECE SET

Sizes: 1, 2, 3, 4, 5, 6  
Drivers on Wall Support

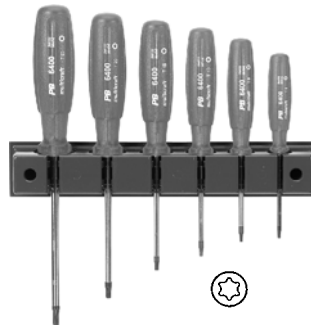
**B-PB-SD6240C . . . . 48.50**



## PHILLIPS SCREW DRIVERS 4-PIECE SET

Sizes: 0, 1, 2, 3  
Drivers on Wall Support

**B-PB-PD6242C . . . . 34.80**



## TORX SCREW DRIVERS 6-PIECE SET

Sizes: T8, T9, T10, T15, T20, T25  
Drivers on Wall Support

**B-PB-TD6440C . . . . 54.30**

## TELESCOPING TOOLS SET

*Twelve small drivers to keep in your pocket*

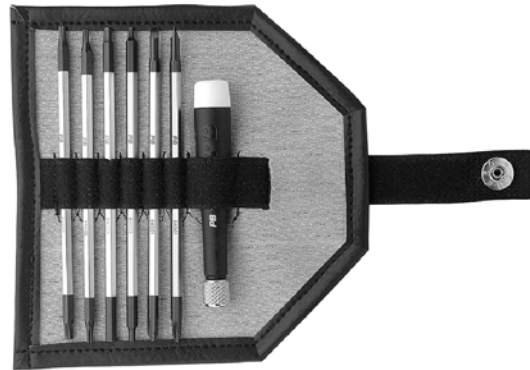
Swiss-made quality drivers in a compact roll up / snap shut wallet. Six double-ended tools give you twelve different blades. Knurled collet locks telescoping bit shafts into handle at any length from 1-3/4" to 3-3/4". Finger pivot top allows one-hand operation. Blades are laser-inscribed with lot number and bit size. Wallet dimensions: 5-1/2" L x 1" D.

Slotted/Phillips: #0 / #0 and #00 / #00.

Torx: T6/T7 and T8/T9

Hex: 2.5mm/3.0mm and 1.5mm/2.0mm.

**B-PB-513 . . . . . 37.90**



## ASSEMBLY TOOLS SET

*Nine first-class drivers in a compact case*

Take PB Baumann with you! This set secures all the Swiss-made beauty and quality of these precision tools in a handsome roll-up kit — handy for pocket, briefcase, car or tool box. Set contains:

Two Phillips blades #1 and #2; Four Slotted blades #2, #3, #4, #5; Two Slotted drivers #0 and #1 with permanently attached handles, plus a 6mm Reamer Bit. Blades snap firmly into the handle and have a 3/4" knurled area for easy gripping and blade removal. Case dimensions: 8-3/4" L x 2" D.

**B-PB-215IND . . . . . 54.50**



# PB BAUMANN — Drive Bit Sets and Tools



PB-TW6511

PB-TW6510



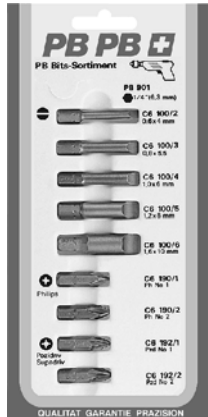
## P.B. TWISTER®

*Smooth, stepless, non-ratcheting and reversible*

At first glance it's just another reversible ratcheting screw driver handle, until you get it in your hands and experience the integrated free-run function that gives you smooth, quick fastening and loosening of screws with stepless, non-ratcheting torque transmission. Change direction with index finger and thumb, without releasing the handle. High-impact PB Baumann handle is easy on the hands, with optimally shaped, large diameter grip and slip-resistant texturized surface. Magnetic insert holds 1/4" hex bits securely. Blade length: 3-3/4". Overall length: 8-5/8" without bit. Twister® Set consists of two convenient pull-out bit blocks storing twenty (20) 1/4" hex drive bits, packed with the Twister® Tool in a sturdy Polyethylene storage box that latches securely, and has plenty of room for additional bits or other tools. Case measures: 9-1/4" x 7".

- B-PB-TW6511 Twister® Set ..... 90.00
- B-PB-TW6510 Twister® Tool only 44.00

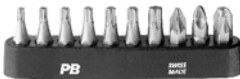
**Bits included with set:** Slotted: #2, #3, #4, #5 — Phillips: #1, #2, #3 Posidrive: #1, #2, #3 — Metric Hex: 2.5mm, 3mm, 4mm, 5mm, 6mm — Torx: T10, T15, T20, T25, T30



PB-BS901

## 1/4" HEX DRIVE-BIT SETS

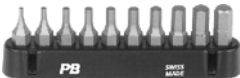
Choose an assortment that suits your use of the PB Baumann Twister and Universal Tool Holder. Made from the same special alloy as all Baumann blades, these bits also fit other popular brands and can be used in both power drills and hand drivers.



PB-BS975

**SLOTTED/PHILLIPS/POSIDRIVE® BITS — 9-Piece Set**  
Slotted: 2, 3, 4, 5 — Phillips: 1, 2 — Posidrive: 1, 2

B-PB-BS901 ..... 23.30



PB-BS972

**PHILLIPS/TORX/METRIC HEX BITS — 10-Piece Set**  
Torx: 15, 20, 25 — Phillips: 1, 2, 3 — Metric Hex: 3, 4, 5, 6

B-PB-BS975 ..... 22.40

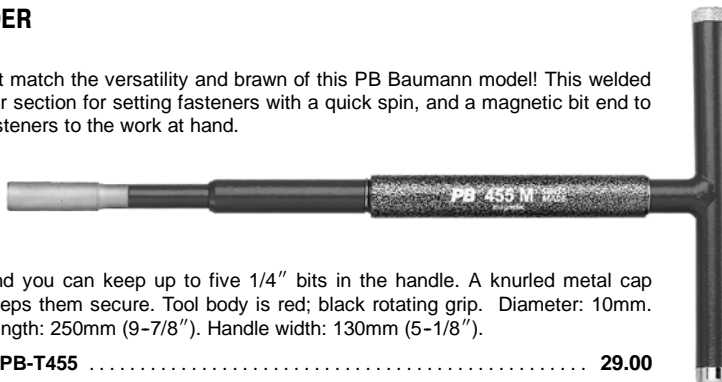
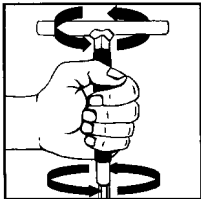
**INCH HEX BITS — 10-Piece Set**  
1/16", 5/64", 3/32", 7/64", 1/8", 9/64", 5/32", 2", 3/16", 7/32", 1/4"

B-PB-BS972 ..... 26.00

## UNIVERSAL TOOL HOLDER

*Bits store in the handle*

Other T-handle tools just can't match the versatility and brawn of this PB Baumann model! This welded steel tool has a rotating center section for setting fasteners with a quick spin, and a magnetic bit end to hold bits and ferrous metal fasteners to the work at hand.



And you can keep up to five 1/4" bits in the handle. A knurled metal cap keeps them secure. Tool body is red; black rotating grip. Diameter: 10mm. Length: 250mm (9-7/8"). Handle width: 130mm (5-1/8").

B-PB-T455 ..... 29.00

# WIHA® — Precision Screw Driver Sets



Slotted Driver



Phillips Driver



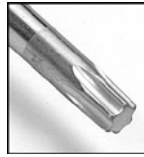
Hex Driver



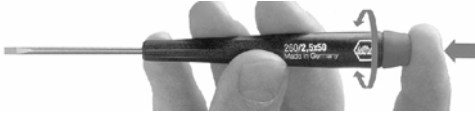
Ball End Hex



Nut Driver



Torx Driver



The feel, balance and control of these Wiha® tools make the assembly job easy. Precision ground tips on a hardened Chrome-Vanadium Molybdenum Steel blade. Tapered handle is molded to the blade and has a finger tip rotation end cup for added control.



## ELECTRONIC SET — Slotted/Phillips

Part No.	Drive	Blade Size	Blade Length	Price Each
B-WT-PS116	Slotted	1/16"	1.57"	4.70
B-WT-PS564	Slotted	5/64"	1.97"	4.30
B-WT-PS332	Slotted	3/32"	1.97"	4.00
B-WT-PS125	Slotted	1/8"	2.36"	4.20
B-WT-PS00	Phillips	#00	1.57"	4.90
B-WT-PS0	Phillips	#0	1.97"	4.30
B-WT-PS1	Phillips	#1	2.36"	4.80
B-WT-PS100	Set of 7			30.00



## ELECTRONIC SET — Slotted

Part No.	Blade Size	Blade Length	Price Each
B-WT-SD116	1/16" (1.5mm)	1.57" (40mm)	4.70
B-WT-SD564	5/64" (2.0mm)	1.57" (40mm)	4.30
B-WT-SD332	3/32" (2.5mm)	1.97" (50mm)	4.00
B-WT-SD125	1/8" (3.0mm)	1.97" (50mm)	4.20
B-WT-SD964	9/64" (3.5mm)	2.36" (60mm)	4.40
B-WT-SD532	5/32" (4.0mm)	2.36" (60mm)	4.50
B-WT-SD100	Set of 6		25.40



## HEXDRIVER SET — Straight

Part No.	Cap Screw Size	Set Screw Size	Key Size	Blade Length	Price Each
B-WT-H028	-	#0	.028"	1.57"	5.20
B-WT-H035	-	#1-2	.035"	1.57"	5.00
B-WT-H050	#0	#3-4	.050"	1.57"	4.40
B-WT-H116	#1	#5-6	1/16"	1.97"	4.10
B-WT-H564	#2, #3	#8	5/64"	1.97"	3.70
B-WT-H332	#4, #5	#10	3/32"	2.36"	3.70
B-WT-H764	#6	-	7/64"	2.36"	3.70
B-WT-H125	-	1/4	1/8"	2.36"	3.50
B-WT-H100	Set of 8				33.20



## METRIC HEXDRIVER SET

Part No.	Cap Screw Size	Set Screw Size	Key Size	Blade Length	Price Each
B-WT-HM07	-	M1.4, 1.6, 1.7	0.7mm	40mm	5.20
B-WT-HM09	-	M2, 2.3	0.9mm	40mm	5.00
B-WT-HM13	M1.4	M2.5, 2.6	1.3mm	40mm	4.40
B-WT-HM15	M1.6, 1.7, 2	M3	1.5mm	50mm	4.10
B-WT-HM20	M2.3, 2.5, 2.6	M4	2.0mm	50mm	3.70
B-WT-HM25	M3	M5	2.5mm	60mm	3.80
B-WT-HM30	M4	M6	3.0mm	60mm	3.50
B-WT-HM100	Set of 7				29.70

# WIHA® — Precision Screw Driver Sets (cont.)



## HEXDRIVER SET — Ball Point

Part No.	Cap Screw Size	Set Screw Size	Key Size	Blade Length	Price Each
B-WT-BP050	#0	#3-4	.050"	1.57"	4.90
B-WT-BP116	#1	#5-6	1/16"	1.57"	4.70
B-WT-BP564	#2, #3	#8	5/64"	1.57"	4.70
B-WT-BP332	#4, #5	#10	3/32"	1.97"	4.70
B-WT-BP764	#6	-	7/64"	1.97"	4.70
B-WT-BP125	-	1/4	1/8"	1.97"	4.70
B-WT-BP964	#8	-	9/64"	2.36"	5.00
B-WT-BP532	#10	5/16	5/32"	2.36"	4.90
B-WT-BP100	Set of 8				39.00



## METRIC HEXDRIVER SET — Ball Point

Part No.	Cap Screw Size	Set Screw Size	Key Size	Blade Length	Price Each
B-WT-BPM13	M1.4	M2.5, 2.6	1.3mm	40mm	4.90
B-WT-BPM15	M1.6, 1.7, 2	M3	1.5mm	50mm	4.70
B-WT-BPM20	M2.3, 2.5, 2.6	M4	2.0mm	50mm	4.70
B-WT-BPM25	M3	M5	2.5mm	60mm	4.90
B-WT-BPM30	M4	M6	3.0mm	60mm	4.90
B-WT-BPM100	Set of 5				24.00



## NUTDRIVER SET

Part No.	Driver Size	Hex Nut Size	Inside Depth	Blade Length	Price Each
B-WT-ND332	3/32"	#0	1/4"	2.36"	5.40
B-WT-ND764	7/64"	#1, #2	1/4"	2.36"	5.40
B-WT-ND125	1/8"	#0, #1, #2	1/4"	2.36"	5.80
B-WT-ND964	9/64"	-	1/4"	2.36"	5.80
B-WT-ND532	5/32"	#3, #4	1/4"	2.36"	6.00
B-WT-ND316	3/16"	#2, #3	1/4"	2.36"	6.00
B-WT-ND732	7/32"	#4	3/8"	2.36"	6.20
B-WT-ND250	1/4"	1/4	3/8"	2.36"	6.20
B-WT-ND100	Set of 8				46.90



## METRIC NUTDRIVER SET

Part No.	Nut Size	Inside Depth	Blade Length	Price Each
B-WT-NDM25	2.5mm	5mm	60mm	5.40
B-WT-NDM30	3.0mm	5mm	60mm	5.60
B-WT-NDM35	3.5mm	5mm	60mm	5.80
B-WT-NDM40	4.0mm	5mm	60mm	6.00
B-WT-NDM45	4.5mm	5mm	60mm	6.00
B-WT-NDM50	5.0mm	5mm	60mm	6.00
B-WT-NDM55	5.5mm	5mm	60mm	6.20
B-WT-NDM60	6.0mm	5mm	60mm	6.20
B-WT-NDM100	Set of 8			47.30



## TORX DRIVER SET

Part No.	Torx Size	Blade Length	Price Each
B-WT-TD06	T6	1.57"	5.90
B-WT-TD07	T7	1.57"	5.90
B-WT-TD08	T8	1.57"	5.90
B-WT-TD09	T9	1.97"	6.00
B-WT-TD10	T10	1.97"	6.20
B-WT-TD15	T15	2.36"	6.30
B-WT-TD100	Set of 6		36.20



**6-PIECE SLOTTED / PHILLIPS SET**

Ten miniature tip sizes for precision balance and control. This 6-piece set features five dual-ended blades with hardened vanadium steel tips and your choice of Slotted or Phillips driving options. The precision adjustable handle is comfortably tapered and secures blades with a locking nut that lets you set the blade length from 0.6" to 3.75" (15mm to 90mm). The handle tip features a fingertip rotation cup for added control. The hexagonal cross section of the blade won't slip in the chuck, and it helps keep the blade from rolling off your workbench. Kit includes a durable metallic case with one precision adjustable handle and five blades in these sizes:

- |                      |                     |
|----------------------|---------------------|
| <b>PHILLIPS TIPS</b> | <b>SLOTTED TIPS</b> |
| • #0, #1             | • 2.0mm, 3.5mm      |
| • #00, #000          | • 1.5mm, 3.0mm      |
|                      | • 2.5mm, 4.0mm      |

**B-WT-2 ..... 49.00**



**SLOTTED/PHILLIPS SET — 5-Pieces**

These blades have hardened vanadium steel tips on both ends. Hexagonal blade shafts won't slip in the chuck (or roll off the work bench). Precision Adjustable Handle lets you set length according to your needs. Packaged in a flip-top plastic box with room for up to four more blades.

- |                      |                     |
|----------------------|---------------------|
| <b>PHILLIPS TIPS</b> | <b>SLOTTED TIPS</b> |
| • #0, #1             | • 2.0mm, 3.5mm      |
| • #00, #000          | • 1.5mm, 3.0mm      |

**B-WT-1 ..... 32.00**



**PRECISION ADJUSTABLE HANDLE**

If you're not ready for a set, start with this sturdy handle and a couple of blades. Compatible with all driver blades listed above.

**B-WT-4 ..... 5.10**

**INTERCHANGEABLE DRIVERS**

Round out your personal set of tools. Or, purchase these varied types of reversible blades on an as-needed basis. Compatible with Precision Adjustable Handle, which can be ordered separately or in one of the sets above.

**SLOTTED BLADES — Double-Ended**

- |                   |              |      |
|-------------------|--------------|------|
| <b>B-WT-S1530</b> | 1.5mm, 3.0mm | 7.65 |
| <b>B-WT-S2035</b> | 2.0mm, 3.5mm | 7.20 |
| <b>B-WT-S2540</b> | 2.5mm, 4.0mm | 7.00 |

**PHILLIPS BLADES — Double-Ended**

- |                 |           |      |
|-----------------|-----------|------|
| <b>B-WT-P00</b> | #000, #00 | 7.10 |
| <b>B-WT-P01</b> | #0, #1    | 5.90 |

**METRIC**

**BALL AND HEX BLADES**

- |                  |                    |      |
|------------------|--------------------|------|
| <b>B-WT-BH13</b> | Ball & Hex - 1.3mm | 7.20 |
| <b>B-WT-BH15</b> | Ball & Hex - 1.5mm | 7.20 |
| <b>B-WT-BH20</b> | Ball & Hex - 2.0mm | 7.00 |
| <b>B-WT-BH25</b> | Ball & Hex - 2.5mm | 6.75 |
| <b>B-WT-BH30</b> | Ball & Hex - 3.0mm | 6.50 |

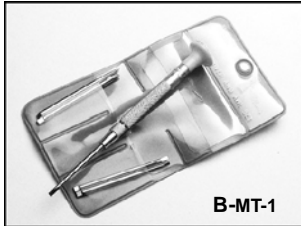
**HEX BLADES**

- |                 |               |      |
|-----------------|---------------|------|
| <b>B-WT-H79</b> | 0.7mm & 0.9mm | 7.00 |
|-----------------|---------------|------|

# MOODY® — Miniature Precision Tools

Handy and economical, Moody Precision Tools are designed for use in assembly and repair of miniature and subminiature equipment and fixtures. They are best suited for work on electronics, models and other areas where small fine tools are required. Blades, tips and sockets of tempered or hardened steel are mounted in deep-knurled Acu-Min® handles for easy single-handed use. Replacement blades, wrenches, sockets, etc...available on request!

© Moody Precision Tools



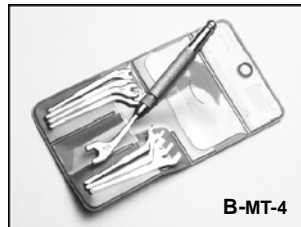
B-MT-1



B-MT-2



B-MT-3



B-MT-4



B-MT-HW500



B-MT-ND500

## SCREW DRIVER AND AWL SET

6-Piece set includes four black finished blades: 0.055", 0.070", 0.080", 0.100", one awl, and a solid-locking, chuck type knurled and plated steel handle with a 1/2" swivel top.

**B-MT-1** ..... 7.75

## CROSS RECESSED PHILLIPS DRIVER AND HEX WRENCH SET

Contains #0 and #1 Phillips Drivers (Cross Recessed) and #4, #6 and #8 Hex Wrenches. Chuck type, swivel top handle has torque hole.

**B-MT-2** ..... 11.95

## POCKET WRENCH SET

Five Socket wrench blades: 5/64", 3/32", 7/64", 1/8" and 5/32". All sizes fit the same nonmagnetic chuck type handle with swivel top.

**B-MT-3** ..... 14.95

## OPEN-END WRENCH SET

Eight blades sizes: 5/64", 3/32", 7/64", 1/8", 5/32", 3/16", 1/4" and 5/16". Heat treated steel. Chuck type ball end, solid lock handle. Secure closing vinyl pouch.

**B-MT-4** ..... 10.25

## HEX WRENCHES

Part No.	Key Size	Fits Set Screw	Fits Cap Screw	Price Each
<b>B-MT-HW28</b>	0.028"	#0	—	<b>4.00</b>
<b>B-MT-HW35</b>	0.035"	#1, #2	—	<b>4.00</b>
<b>B-MT-HW50</b>	0.050"	#3, #4	#0	<b>4.00</b>
<b>B-MT-HW62</b>	0.062"	#5, #6	#1	<b>4.00</b>
<b>B-MT-HW78</b>	0.078"	#8	#2, #3	<b>4.00</b>
<b>B-MT-HW93</b>	0.093"	#10	#4, #5	<b>4.00</b>

## ASSORTMENT

**B-MT-HW500** Set of above six wrenches in vinyl pouch ..... 22.95

## NUT DRIVER SOCKET WRENCHES

Part No.	Fits Nut Size	Fits Hex Nut	Price Each
<b>B-MT-ND1</b>	5/64"	#000, #00	<b>5.50</b>
<b>B-MT-ND2</b>	3/32"	#0	<b>5.50</b>
<b>B-MT-ND3</b>	7/64"	#1, #2	<b>5.50</b>
<b>B-MT-ND4</b>	1/8"	#0, #1, #2	<b>5.50</b>
<b>B-MT-ND5</b>	5/32"	#3, #4	<b>5.50</b>

## ASSORTMENT

**B-MT-ND500** Set of five socket wrenches in vinyl pouch ..... 23.25

# MOODY® — Miniature Precision Tools (cont.)



## SCREW DRIVERS — Slotted Drive

Part No.	Blade Width	Fits Screw Size	Price Each
B-MT-SD25	0.025"	—	3.50
B-MT-SD40	0.040"	#000, #00	3.05
B-MT-SD55	0.055"	#000, #00	3.00
B-MT-SD70	0.070"	#0	3.00
B-MT-SD80	0.080"	#0, #1	3.00
B-MT-SD100	0.100"	#1, #2	3.00

### ASSORTMENT

B-MT-SD500 Set of above six screwdrivers in vinyl pouch . . . . . 16.95



## SCREW DRIVERS — TORX® Drive

Part No.	Torx Size	Price Each
B-MT-TD3	T3	6.50
B-MT-TD4	T4	6.50
B-MT-TD5	T5	6.50
B-MT-TD6	T6	6.50
B-MT-TD8	T8	6.50
B-MT-TD10	T10	6.50
B-MT-TP8	TP8	6.50
B-MT-TP10	TP10	6.50

### ASSORTMENT

B-MT-TD800 Set of above eight Torx Drivers in vinyl pouch . . . . . 45.75



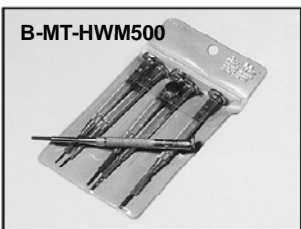
## SCREW DRIVERS — Phillips Drive

Part No.	Description	Price Each
B-MT-PSD03	#000	4.65
B-MT-PSD02	#00	3.90
B-MT-PSD0	#0	3.20
B-MT-PSD1	#1	4.40

### ASSORTMENT

B-MT-PSD500 Contains set of above four Drivers and four handles in vinyl pouch . . . . . 16.95

## METRIC



## HEX WRENCHES

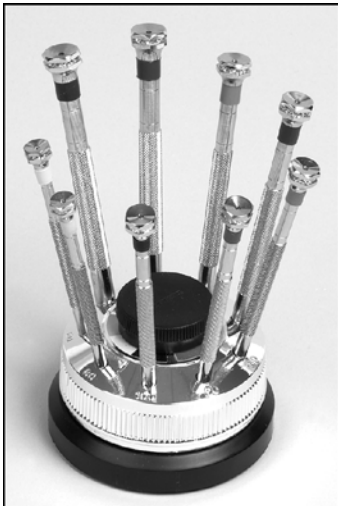
Part No.	Blade Size (mm)	Fits Set Screw	Fits Cap Screw	Price Each
B-MT-HWM07	0.7	M1.4 M1.7		4.00
B-MT-HWM09	0.9	M2 M2.3		4.00
B-MT-HWM12	1.27	M2.5 M2.6	M1.4	4.00
B-MT-HWM15	1.5	M3	M1.6 M1.7	4.00
B-MT-HWM20	2.0	M4	M2.3 M2.6	4.00
B-MT-HWM25	2.5	M5	M3	4.00

### ASSORTMENT

B-MT-HWM500 Set of above six wrenches in vinyl pouch . . . . . 22.95



## SCREW DRIVERS — Jeweler's



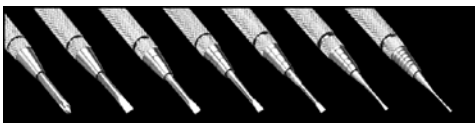
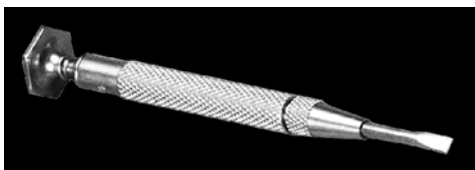
### WATCHMAKERS® SCREW DRIVERS

*Keep precision within arm's reach with this handsome set of miniature drivers*

A set of miniature screw drivers for precision work, compactly arranged in a nicely weighted carousel that looks great, and keeps tools where you can reach them. Color-coded for size, these traditional watchmakers' tools have knurled stainless steel handles, with hexagonal swivel heads to prevent rolling. A set screw holds the vanadium steel blade firmly.

Nine blade sizes: From 0.023" to 0.118" (0.6mm to 3mm). Chrome stand is indexed to driver sizes and stays put on a rubber base. Capped center compartment stores spare blades. 2-1/2" footprint. Total Height: 4-1/8".

**B-WSD-09S** ..... **47.95**

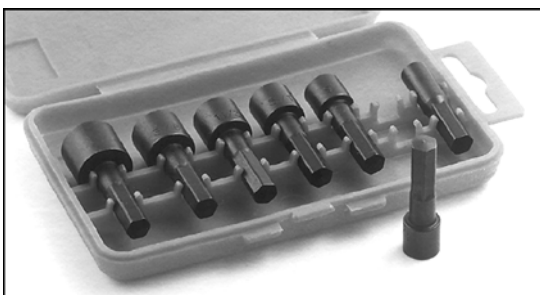


### STARRETT® SCREW DRIVERS

Technicians, toolmakers and others who perform fine, delicate work will appreciate this set of Jeweler's Screw Drivers. The blades are of best quality Steel, properly tempered and nickel plated for long life. Swivel Knobs are concave to fit the finger, and hexagonal shaped to prevent rolling. Replaceable blades lock securely with a slight turn of the knurled chuck. Blades can reverse into screwdriver body and be safely carried in pocket. Chucks are grooved to designate blade sizes. The set contains one #0 Phillips driver and six Slotted style screwdrivers in the following blade widths: 0.025", 0.040", 0.055", 0.070", 0.080" and 0.100". Comes in a vinyl case.

**B-MJD-500** ..... **53.50**

## NUT DRIVER — BITS



Rapidly tighten hex cap screws or hex nuts, using your electric drill, cordless tools, or a 1/4" hand driver. Insert-style 1/4" hex shank units can be powered by 1/2", 3/8" or 1/4" chucks.

Engineered for the toughest industrial applications, Power Nut Drivers are made of precision formed tool steel.

Seven sizes packaged in a durable, molded plastic case: 1/4" • 5/16" • 11/32" • 3/16" • 7/16" • 9/32" • 3/8"

**B-HHD-100** ..... **17.55**

## NUT DRIVERS



### NUT DRIVERS

Finest quality, standard color-coding with hollow shafts.

Part No.	Socket Size	Tip		Shaft		Color Code	Fits Hex Nuts	Price Each
		Max. Depth	Exposed Length	Max. Depth	Exposed Length			
<b>B-ND-3</b>	3/16"	0.250	3"	3-1/4"	3"	Black	#2-#3	<b>5.30</b>
<b>B-ND-4</b>	1/4"	0.250	3"	4-3/8"	3"	Red	#4	<b>5.30</b>
<b>B-ND-5</b>	5/16"	0.265	3-5/32"	6-7/8"	3"	Amber	#5-#6	<b>5.35</b>
<b>B-ND-55</b>	11/32"	0.250	3-1/16"	7"	3"	Green	#8	<b>5.40</b>
<b>B-ND-6</b>	3/8"	0.250	3-3/16"	4-1/2"	3"	Blue	#10	<b>5.60</b>
<b>B-ND-7</b>	7/16"	0.250	3-15/16"	5-1/8"	3"	Brown	#12-1/4"	<b>6.85</b>
<b>B-ND-8</b>	1/2"	0.350	3-7/8"	5-3/4"	3"	Red	5/16"	<b>6.95</b>

### NUT DRIVER KIT

**B-ND-700** Contains one Nut Driver in each of the above sizes in a metal stand ..... **39.25**

## METRIC

### NUT DRIVER

A hollow shaft from the socket to the handle accommodates the longest shaft. Sockets and shafts are machined from top grade nickel-chrome plated steel and heat treated for extra hardness. Handles are high impact, break resistant with high dielectric shaft. Black Handle.

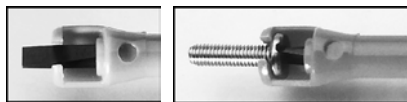
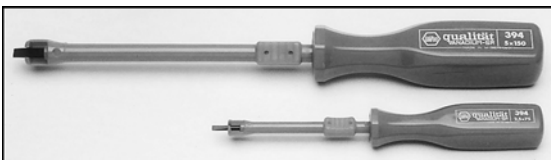
Part No.	Hex Size	Length	Shaft Size	Each
<b>B-MND-4M</b>	4mm	1.68cm	76mm	<b>5.10</b>
<b>B-MND-5M</b>	5mm	1.68cm	76mm	<b>5.10</b>
<b>B-MND-6M</b>	6mm	1.68cm	76mm	<b>5.10</b>

### LONG NUT DRIVER SET

Extra long 6" hollow shaft Nut Driver Set contains seven drivers including: 3/16", 1/4", 5/16", 11/32", 3/8", 7/16" and 1/2". An excellent choice when working with cage fans, grids and squirrel cages. The set comes in a sturdy, transparent pouch that features zip-locking closure and two grommets for secure hanging storage.

**B-NDXL-500** ..... **48.50**

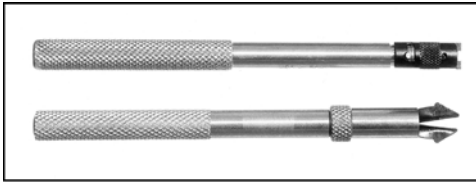
## SCREW STARTER / DRIVER — Thumb Control



These WIHA® Screw Starters/Drivers permit you to start and fully mount screws with the use of only one hand. Using thumb, push the plastic sleeve over the tip of the driver and insert screw. The sleeve holds the fastener securely. Once started, release screw from sleeve and complete threading.

Part No.	Blade Type	Tip Width	Fits	Blade Length	Overall Length	Price Each
<b>B-SDT-3S</b>	Slotted	3/32"	1, 2	3"	6-1/4"	<b>12.90</b>
<b>B-SDT-5S</b>	Slotted	3/16"	5, 6, 8, 10	5-7/8"	10-1/4"	<b>20.70</b>
<b>B-SDT-4P</b>	Phillips	#0	2, 4, 6, 8	4"	7-1/2"	<b>14.70</b>
<b>B-SDT-6P</b>	Phillips	#2	1/4	6-7/8"	11-1/4"	<b>24.70</b>

## STARTERS — Screw and Nut



### SCREW STARTERS

5-5/8" long Screw Starters have an aluminum handle and are excellent tools for generator, ignition and under dash work. Available with tips for Slotted or Phillips type screws. The Phillips Tip style has a spring-action tapered gripping blade.

**B-VSS-5** Slotted Tip ..... 6.60  
**B-VSS-5P** Phillips Tip ..... 7.30



### NUT STARTER

A unique tip design starts or removes nuts in tight or inaccessible places. Starter provides 15 lbs. pressure as the tool grips in the nut and releases it automatically as nut is started. Fits any nut with internal openings from 3/32" to 5/16" (2.5mm to 8mm). Aluminum handle with steel sleeve and tips. Overall length 5-1/8".

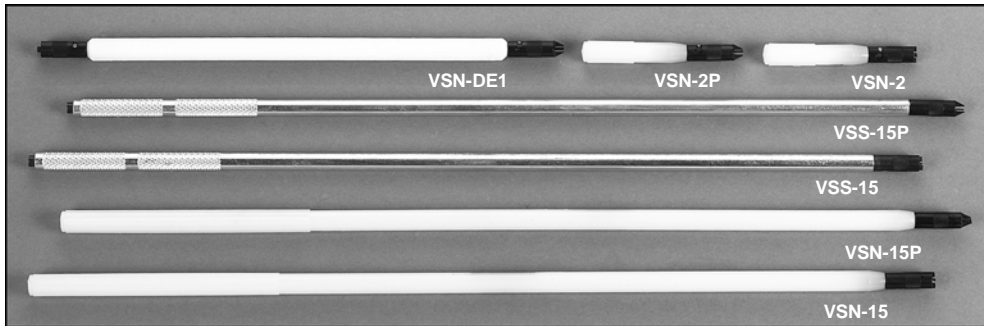
**B-VNS-5** ..... 6.80



### TORX® SCREW STARTER

Our universal recessed head Screw Starter grips the screw with 15 pounds of pressure. It releases automatically when screw-threads are started. Not to be used as a driver. Magnet on opposite end can be used to hold screws temporarily. Fits Torx screw sizes T-10, T-15, T-20, T-25, T-27 and T-30. Also fits most Hex and Phillips screws. Overall length 5-5/8".

**B-VRKSS-5** ..... 6.75



### SCREW STARTERS / NYLON HANDLES — Phillips or Slotted

Electric shock resistant, Screw Starters with Nylon handles are available with Slotted or Phillips style tips. Tool resets upon release. Available with short or long handles.

### DUAL SCREW STARTERS / NYLON HANDLES — Phillips/Slotted

One end for Phillips Head screws; opposite end for Slotted Head screws.

### ALUMINUM HANDLE SCREW STARTER / MAGNET — Phillips or Slotted

The Aluminum handle has a 1" permanent magnet at the opposite end of screw starter.



SLOTTED TIP



PHILLIPS TIP

### SCREW STARTERS — Nylon or Aluminum Handles

Part No.	Handles	Ends	Length	Price Each
<b>B-VSN-2</b>	Nylon	Slotted	2-11/16"	<b>6.45</b>
<b>B-VSN-2P</b>	Nylon	Phillips	2-13/16"	<b>6.85</b>
<b>B-VSN-15</b>	Nylon	Slotted	15-3/16"	<b>10.65</b>
<b>B-VSN-15P</b>	Nylon	Phillips	15-5/16"	<b>10.05</b>
<b>B-VSN-DE1</b>	Nylon	Phillips / Slotted	9"	<b>8.45</b>
<b>B-VSS-15</b>	Aluminum	Slotted / Magnet	15-1/8"	<b>9.95</b>
<b>B-VSS-15P</b>	Aluminum	Phillips / Magnet	15-1/4"	<b>9.95</b>

# HEX KEYS — Short Arm



Regular and Metric Internal Hex Keys are made from the finest alloy steel, heat-treated, oil-quenched and tempered, with burr-free ends and precision hex tolerances. The standard (inch) sizes meet specifications of ANSI B18.3 and GGG-K-275. Charts show length of arms on both sides of tool. Cap Screws start on [page 189](#) and Set Screws on [page 208](#).

Part No.	Nominal Key Size	Fits Cap Size	Fits Set Screw Size	Max. Length		Price Per Package		
				Short Arm	Long Arm	5	10	25
<b>B-HW-028</b>	0.028"	—	0	0.31"	1.31"	<b>2.50</b>	<b>4.55</b>	<b>10.30</b>
<b>B-HW-035</b>	0.035"	—	1-2	0.44"	1.31"	<b>2.45</b>	<b>4.40</b>	<b>9.90</b>
<b>B-HW-050</b>	0.050"	#0	3-4	0.62"	1.75"	<b>1.15</b>	<b>2.00</b>	<b>4.45</b>
<b>B-HW-062</b>	1/16"	#1	5-6	0.66"	1.84"	<b>1.15</b>	<b>2.00</b>	<b>4.55</b>
<b>B-HW-078</b>	5/64"	#2-3	8	0.70"	1.97"	<b>1.25</b>	<b>2.10</b>	<b>4.75</b>
<b>B-HW-093</b>	3/32"	#4-5	10	0.75"	2.09"	<b>1.30</b>	<b>2.35</b>	<b>5.30</b>
<b>B-HW-109</b>	7/64"	#6	—	0.80"	2.22"	<b>1.55</b>	<b>2.80</b>	<b>6.30</b>
<b>B-HW-125</b>	1/8"	—	1/4	0.84"	2.34"	<b>1.80</b>	<b>3.25</b>	<b>7.40</b>
<b>B-HW-141</b>	9/64"	#8	—	0.89"	2.47"	<b>2.15</b>	<b>3.90</b>	<b>8.85</b>
<b>B-HW-156</b>	5/32"	#10	5/16	0.94"	2.59"	<b>2.40</b>	<b>4.35</b>	<b>9.85</b>
<b>B-HW-187</b>	3/16"	1/4	3/8	1.03"	2.84"	<b>3.15</b>	<b>5.75</b>	<b>13.05</b>
<b>B-HW-219</b>	7/32"	—	7/16	1.12"	3.09"	<b>4.25</b>	<b>7.75</b>	<b>17.55</b>
<b>B-HW-250</b>	1/4"	5/16	1/2	1.22"	3.34"	<b>6.15</b>	<b>11.15</b>	<b>25.30</b>
<b>B-HW-312</b>	5/16"	3/8	5/8	1.34"	3.84"	<b>10.35</b>	<b>18.80</b>	<b>42.65</b>
<b>B-HW-375</b>	3/8"	1/2	3/4	1.47"	4.34"	<b>16.25</b>	<b>29.50</b>	<b>67.00</b>

## METRIC

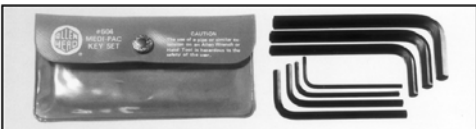
Part No.	Dimensions in Millimeters			Fits Cap Screw Size	Fits Set Screw Size	Price Per Package		
	Nominal Key Size	Arm Length Short	Long			5	10	25
<b>B-HWM-07</b>	0.7	8	34	—	M1.4, M1.6, M1.7	<b>2.40</b>	<b>4.30</b>	<b>9.75</b>
<b>B-HWM-09</b>	0.9	11	34	—	M2, M2.3	<b>2.35</b>	<b>4.20</b>	<b>9.50</b>
<b>B-HWM-13</b>	1.3	16	44	M1.4	M2.5, M2.6	<b>1.65</b>	<b>2.95</b>	<b>6.65</b>
<b>B-HWM-15</b>	1.5	14	45	M1.6, M1.7, M2	M3	<b>2.20</b>	<b>4.00</b>	<b>9.05</b>
<b>B-HWM-2</b>	2	16	50	M2.3, M2.5, M2.6	M4	<b>2.50</b>	<b>4.50</b>	<b>10.25</b>
<b>B-HWM-25</b>	2.5	18	56	M3	M5	<b>2.65</b>	<b>4.85</b>	<b>10.95</b>
<b>B-HWM-3</b>	3	20	63	M4	M6	<b>3.00</b>	<b>5.40</b>	<b>12.25</b>
<b>B-HWM-4</b>	4	25	70	M5	M8	<b>3.45</b>	<b>6.20</b>	<b>14.05</b>
<b>B-HWM-5</b>	5	28	80	M6	M10	<b>4.15</b>	<b>7.55</b>	<b>17.15</b>



### 6-PIECE HEX KEY SET

Six genuine Allen Keys packed in easy-access vinyl envelope. Includes the following sizes: 0.028", 0.035", 0.050", 1/16", 5/64", 3/32".

**B-HW-6AKS** ..... **4.95**



### 7-PIECE HEX KEY SET

Seven keys in vinyl pouch include the following sizes: 5/64", 3/32", 1/8", 5/32", 3/16", 7/32", 1/4".

**B-HW-7AKS** ..... **5.80**

## HEX KEYS — Short Arm (cont.)



### METRIC HEX KEY SET — 9 Pieces

Nine Allen keys in vinyl envelope. Includes the following metric sizes: 1.5, 2, 2.5, 3, 4, 5, 6, 8 and 10mm.

**B-HWM-9AKS** ..... **9.80**



### FOLD UP HEX KEY SET — 9 Pieces

Contains nine Allen bits in these sizes: 5/64", 3/32", 7/64", 1/8", 9/64", 5/32", 3/16", 7/32", 1/4".

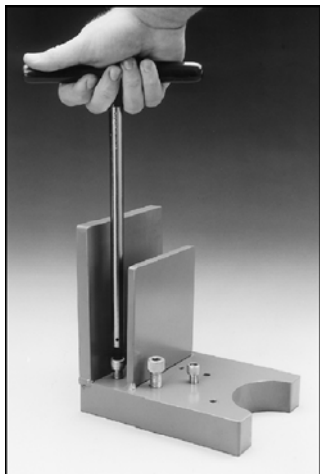
**B-HW-9AKH** ..... **11.60**

### METRIC FOLD UP HEX KEY SET — 7 Pieces

Contains seven Allen bits in metric sizes: 1.5, 2, 2.5, 3, 4, 5, 6mm.

**B-HWM-7AKH** ..... **11.90**

## HEX DRIVERS — Long Arm, Chrom-Moly



### T-HANDLE HEX DRIVERS

Extra long Hex Drivers reach deep into tight pockets and other areas where a normal sized hex wrench just can't go. They are useful for tightening set screws in pulleys and larger gears. Strong and durable, the 12" main shank (30.48 cm. on metric sizes) is made from 4130 aircraft quality steel, zinc plated for corrosion resistance. The replaceable straight hex key is of premium quality heat treated 8650 steel. A T-shaped handle with plastic-cushioned grip prevents slippage and adds torquing power. Cap Screws start on [page 189](#) and Set Screws on [page 208](#).

### HEX DRIVERS

Part No.	Key Size	Handle Length	Shank Diameter	Price Each
<b>B-HXD-1094</b>	7/64"	4"	1/4"	<b>18.65</b>
<b>B-HXD-1250</b>	1/8"	4"	1/4"	<b>19.45</b>
<b>B-HXD-1406</b>	9/64"	4"	5/16"	<b>20.35</b>
<b>B-HXD-1563</b>	5/32"	4"	5/16"	<b>21.40</b>
<b>B-HXD-1875</b>	3/16"	4-1/2"	3/8"	<b>22.40</b>
<b>B-HXD-2188</b>	7/32"	4-1/2"	3/8"	<b>23.60</b>
<b>B-HXD-2500</b>	1/4"	5"	7/16"	<b>24.65</b>
<b>B-HXD-3125</b>	5/16"	6"	1/2"	<b>25.85</b>
<b>B-HXD-3750</b>	3/8"	7"	9/16"	<b>26.95</b>

### METRIC

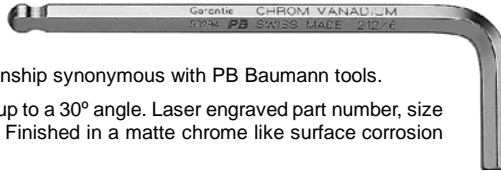
Part No.	Key Size	Handle Length	Shank Diameter	Price Each
<b>B-HXDM-200</b>	2 mm	9.76 cm	6.35 mm	<b>19.45</b>
<b>B-HXDM-250</b>	2.5 mm	9.76 cm	6.35 mm	<b>20.35</b>
<b>B-HXDM-300</b>	3 mm	9.76 cm	6.35 mm	<b>21.25</b>
<b>B-HXDM-400</b>	4 mm	9.76 cm	7.94 mm	<b>22.40</b>
<b>B-HXDM-500</b>	5 mm	11.43 cm	9.52 mm	<b>23.65</b>
<b>B-HXDM-600</b>	6 mm	12.70 cm	11.11 mm	<b>24.85</b>
<b>B-HXDM-800</b>	8 mm	15.24 cm	12.70 mm	<b>26.95</b>
<b>B-HXDM-1000</b>	10 mm	25.40 cm	14.29 mm	<b>30.20</b>

## HEX KEY SETS — Long Arm Series

### PB BAUMANN CHROME VANADIUM

A cut above the rest, these Chrome Vanadium hex key sets exemplify the Swiss Quality and craftsmanship synonymous with PB Baumann tools.

Ball End Sets allow angled access to bolt/screw heads up to a 30° angle. Laser engraved part number, size number, and lot code traceability are on each hex key. Finished in a matte chrome like surface corrosion resistant and easy to clean.



### BALL END SETS

#### 12-PIECE SET — INCH

Sizes include: .050", 1/16", 5/64", 3/32", 7/64", 1/8", 9/64", 5/32", 3/16", 7/32", 1/4", 5/16", with a Red plastic holder.

**B-PB-BE212** ..... **61.45**

#### 9-PIECE — METRIC

Sizes include: 1.5mm, 2mm, 2.5mm, 3mm, 4mm, 5mm, 6mm, 8mm, 10mm. Blue plastic holder.

**B-PB-BE212M** ..... **49.95**

### HEX END SETS

#### 12-PIECE SET — INCH

Sizes include: .050", 1/16", 5/64", 3/32", 7/64", 1/8", 9/64", 5/32", 3/16", 7/32", 1/4", 5/16", with a Red plastic holder.

**B-PB-HE211** ..... **38.40**

#### 9-PIECE — METRIC

Sizes include: 1.5mm, 2mm, 2.5mm, 3mm, 4mm, 5mm, 6mm, 8mm, 10mm. Blue plastic holder.

**B-PB-HE211M** ..... **33.05**

### BONDHUS BRITEGUARD<sup>TM</sup> FINISH

An exclusive plating process imparts a chrome-like finish that provides a contamination-free barrier as well as corrosion resistance. The finish cleans and polishes easily. Made from alloyed steel. Ball end sets allow angled access to bolt/screw heads up to a 25° angle. Available in Metric and Inch Sets.



### BALL END SETS

#### 12-PIECE SET — INCH

Sizes include: .050", 1/16", 5/64", 3/32", 7/64", 1/8", 9/64", 5/32", 3/16", 7/32", 1/4", 5/16". Yellow plastic holder.

**B-BT-BE212** ..... **16.25**

#### 9-PIECE SET — METRIC

Sizes include: 1.5mm, 2mm, 2.5mm, 3mm, 4mm, 5mm, 6mm, 8mm, 10mm. Red plastic holder.

**B-BT-BE212M** ..... **19.95**

### HEX END SETS

#### 12-PIECE SET — INCH

Sizes include: .050", 1/16", 5/64", 3/32", 7/64", 1/8", 9/64", 5/32", 3/16", 7/32", 1/4", 5/16". Yellow plastic holder.

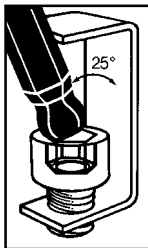
**B-BT-HE211** ..... **10.95**

#### 9-PIECE SET — METRIC

Sizes include: 1.5mm, 2mm, 2.5mm, 3mm, 4mm, 5mm, 6mm, 8mm, 10mm. Red plastic holder.

**B-BT-HE211M** ..... **12.95**

## HEX DRIVERS — Ball End



BONDHUS Hex Drivers, also known as ball drivers, are every bit as useful as you have heard. With up to a 25° angled entry, this type of hex driver allows faster tunnel entry, easier tool removal and, more rapid assembly of parts. The tool works in hard-to-reach areas not accessible to an ordinary hex wrench and has a plastic handle formed for good torque. Molded case.

Kits include sizes to match every Cap Screw supplied by SMALL PARTS. See charts below.

Size	0.050"	1/16"	5/64"	3/32"	7/64"	1/8"	9/64"	5/32"	3/16"	7/32"	1/4"	5/16"	3/8"
Fits Cap Screw	#0	#1	#2	#4	#6	-	#8	#10	1/4	-	5/16	3/8	7/16-12

**B-BT-BD200** ..... **37.75**

<b>METRIC</b>	Size	1.5	2	2.5	3	4	5	6	8	10
	Fits Cap Screw	M2	M2.5	M3	M4	M5	M6	M8	M10	M12

**B-BT-BDM200** ..... **29.75**

## WRENCH — Adjustable



### CHANNELLOCK<sup>®</sup>

An infinite number of adjustments to help fasten and torque small hex nuts and bolts are provided with this well made tool. Chromium plated.

<b>B-AW-CL04</b>	Overall length: 4" Opening: 1/2"	.....	<b>11.50</b>
<b>B-AW-CL06</b>	Overall length: 6" Opening: 1-5/16"	.....	<b>11.80</b>
<b>B-AW-CL08</b>	Overall length: 8" Opening: 1-1/8"	.....	<b>13.65</b>
<b>B-AW-CL10</b>	Overall length: 10" Opening: 1-5/16"	.....	<b>16.75</b>
<b>B-AW-CL12</b>	Overall length: 12" Opening: 1-1/2"	.....	<b>24.10</b>

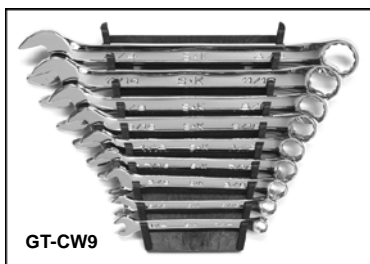
## WRENCH SETS — Combination



### SK<sup>®</sup> COMBINATION WRENCHES

These wrenches are drop forged, heat treated, oil quenched and tempered to uniform hardness. They are precision broached, polished and chrome plated for that very special S-K<sup>®</sup> finish.

<sup>®</sup>Dresser Industries, Inc.



### 9-PIECE SET — SK<sup>®</sup>

Packed in a rack, these Wrenches have a 15° offset. The set contains the following 6-point fractional sizes: 1/4", 5/16", 3/8", 7/16"; and 12-point sizes: 1/2", 9/16", 5/8", 11/16" and 3/4".

**B-GT-CW9** ..... **85.70**

GT-CW9

## WRENCH SETS — Combination (cont.)



### GEARWRENCH® 20-PIECE RATCHETING COMBINATION SETS

*Easy access in tight spots.*

Speed, access, strength and safety are the most important factor when it comes to the performance of a wrench. GearWrench® gives you all four! These wrenches need as little as 5° of sweep to turn fasteners, compared to 30° for a standard 12-point box end. The thin head and shank fits in the tightest spaces. GearWrenches are made of fully hardened chrome vanadium steel and have a nickel chrome plating and a mirror finish. Wrenches meet or exceed ANSI, DIN and federal torque specifications.

**Each set contains:** Seven Ratcheting Combination Wrenches; Drive Adaptors 1/4", 3/8", 1/2"; Bit Adaptor; Phillips Bits: #1, #2, #3; Slotted Bits: 4mm, 5.5mm, 6.5mm; Torx Bits: T10, T15, T20.

**Note:** *Not intended for breaking loose frozen bolts.*

**B-GWS-07S** S.A.E. Set / Wrench Sizes (Inches): 5/16, 3/8, 7/16, 1/2, 9/16, 5/8, 3/4 ..... **59.95**  
**B-GWS-07M** Metric Set / Wrench Sizes (Millimeters): 8, 10, 12, 13, 14, 15, 18 ..... **59.95**

## METRIC



GT-CWM15

### 15-PIECE SET — SK®

Packed in a pouch, this set contains fifteen 12-point Wrenches with 15° offset in the following sizes: 7mm to 19mm inclusive, and 21mm and 22mm.

**B-GT-CWM15** ..... **129.50**

## RATCHET DRIVER SET — Offset



### *For working in close-quarters*

Achieve the leverage you need when screws are hard to get at! The ratchet driver instantly adjusts for right or left hand use, and is made of nickel plated Steel. This set gives you 1/4" and 3/8" straight blades, plus #1 and #2 Phillips blades, all made of hardened alloy tool steel. Drive end is 1/4" hex. Conforms to government specifications GGG-S-1408.

**B-MR-50** ..... **10.45**



## RATCHET KIT — Midget



MR-100

**Kit contains:**

- Midget Ratchet
- 3-5/8" Extension
- Screw Driver Handle
- 12 Allen Hex Type Adapters, sized across flats:  
0.050", 1/16", 5/64", 3/32", 7/64", 1/8", 9/64",  
5/32", 3/16", 7/32", 1/4", 5/16"
- 2 Slotted Head Adapters: 1/4" and 3/8"  
blade widths
- 2 Phillips Head Adapters: #1 and #2
- 1/4" Square Drive Adapter



MR-01

### 20-PIECE MIDGET RATCHET KIT

*A compact ratchet/bit set you can keep in your pocket!*

This miniature ratchet drives almost every style of bit, and comes in a pocket-sized kit with phillips, hex, slotted and square drive adaptors. Versatile and fast-acting, it has a short working arc of 18° for maneuvering in confined areas. Minimum movement gets the job done. For reverse action turn the ratchet over. Chrome nickel molybdenum alloy steel adaptors are precision made, with dual purpose, knurled "spinner tops" for quick finger fastening of threads or instant push down removal of adapter from ratchet. Drive end is 1/4" hex. Polyethylene case measures 4-1/2" x 6-1/2".

**B-MR-100** ..... 24.15

### MIDGET RATCHET WITH ADAPTER

The 20-tooth Midget Ratchet is made of stainless steel and far exceeds the torque standards set by Military Specifications. Its short working arc of 18° lets you use it where other tools won't work — minimum movement of the handle gets the job done fast. Simply turn the ratchet over for reverse action. Drive end is 1/4" hex. Comes with a 1/4" square drive adaptor for 1/4" square drive sockets.

**B-MR-01** ..... 4.50

## RATCHET KIT — Miniature



**44 Bits, up to 400 inch pounds of torque in the palm of your hand! High quality, precision fit, sturdy control.**

This Mini-Ratchet works in smaller, tighter spots than almost any ratcheting tool we've seen. Its drive system engages uniquely splined bits to produce unusually high torque for such a tiny little tool. With its short swing arc of just 12 degrees, it can actually produce up to 400 inch pounds of torque for driving and removing all types of fasteners. Yet it requires comparatively little strength while providing a delicate feel. Ratchet is made of solid, high quality polished Stainless Steel; bits are hardened and tempered tool steel. Limited lifetime warranty. Molded Polypropylene case measures: 1-3/8" x 2-15/16" x 4-7/8". Color: Red

- 12 Hex Bits (in Inches) 0.050", 1/16", 5/64", 3/32",  
7/64", 1/8", 9/64", 5/32", 3/16", 7/32", 1/4", 5/16"
- 8 Metric Hex Bits: 1.5, 2, 2.5, 3, 4, 5, 6, 8
- 9 Slotted Screw Bits: #0, #1, #2, #3, #4, #5, #8, #10, .  
1/4"
- 5 Phillips Screw Bits: #0, #1, #2, #3, #4 —
- 8 Torx Bits: T9, T10, T15, T20, T25, T27, T30, T40
- Reed + Prince 1/4" Bit and 1/4" Socket Adaptor

**B-MR-SDS4** ..... 59.95

## SOCKET SETS

High-quality S-K® Tools, beautifully designed and finished for work involving small fasteners, will contribute immeasurably to the speed and efficiency of any shop or laboratory. All Sockets are 1/4" drive, 6 point.

©Dresser Industries, Inc.



GT-4R13

### STANDARD SOCKET SET — 1/4" Drive

Nine sockets in fractional sizes, plus a spinner handle, 2" extension, a 6" extension, and a reversible ratchet, all stored in a durable plastic box. Refer to chart for socket depths.

Socket sizes: 3/16", 7/32", 1/4", 9/32", 5/16", 11/32", 3/8", 7/16", 1/2".

**B-GT-4R13** ..... **62.80**

### METRIC SOCKET SET — 1/4" Drive

Chrome-plated Sockets are 1/4" drive, 6 point. Refer to chart for socket depths.

Set includes: 4mm, 5mm, 6mm, 7mm, 8mm, 9mm, 10 mm, 11mm, 12mm, 13mm, plus reversible ratchet, 2" extension, 6" extension and a spinner handle in plastic box (1-1/8" x 6-1/2" x 2-5/16").

**B-GT-4R14M** ..... **65.15**



GT-4DS10

### SOCKET DEPTHS CHART

Hex Size	Standard Socket Depth	Deep Socket Depth	Metric Hex Size	Socket Depth
3/16"	.. 0.51"	... 1.51"	4 mm	.. 13 mm
7/32"	.. 0.51"	... 1.57"	6 mm	.. 13 mm
1/4"	.. 0.51"	... 1.50"	7 mm	.. 13 mm
9/32"	.. 0.51"	... 1.50"	8 mm	.. 13 mm
5/16"	.. 0.51"	... 1.50"	9 mm	.. 14 mm
11/32"	.. 0.51"	... 1.57"	10 mm	.. 14 mm
3/8"	.. 0.36"	... 1.40"	11 mm	.. 14 mm
7/16"	.. 0.37"	... 1.47"	12 mm	.. 14 mm
1/2"	.. 0.57"	... 1.47"	13 mm	.. 14 mm
9/16"	-	1.70"		

### DEEP SOCKET SET — 1/4" Drive

Ten fractional sizes: 3/16", 7/32", 1/4", 9/32", 5/16", 11/32", 3/8", 7/16", 1/2" and 9/16" in a metal tray that can be attached to work bench or tool box. Refer to chart for socket depths.

**B-GT-4DS10** ..... **48.85**



### THUMB WHEEL RATCHET

When you are in a tight spot and don't have room to swing a handle, reach for this useful S-K® 1/4" drive tool.

Head diameter 1-1/2".

**B-GT-4WR1** ..... **22.15**

# HAMMERS



SH-AP20T

SH-DP20B SH-PHO

## LIXIE® BRONZE HAMMERS

The special high tin-lead bronze alloy gives these three hammers a relative softness while delivering a solid positive blow with minimum damage to most materials. Each retains its shape far longer than lead or brass, and all are sparkproof. Hickory handles.

### ALL-PURPOSE BRONZE/URETHANE HAMMER

Do two jobs with a flip of the wrist. Switch from the machinist head of soft sparkproof bronze to the opposite side which incorporates a replaceable screw-in urethane face in your choice of four grades, soft to hard. Unless you choose another face we will ship this hammer with a tough grade (red) urethane face. See face chart below for options. Weight - 1 lb. 10 oz.; handle - 13", grooved. Head diameters - 1-1/4"; head length - 4-3/8".

**B-SH-AP20T** ..... 38.75

### DUAL-PURPOSE BRONZE HAMMER

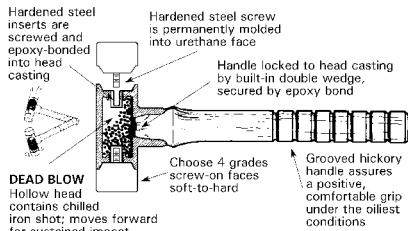
A finely balanced soft hammer with a machinist face on one end and tapered extended nose on the opposite end for reaching into deeper areas. Excellent for adjusting, assembling & toolmaking. Weight - 1-1/4 lbs.; handle - 12-1/2" grooved hickory. Head diameters - 1" and 1/2" x 1/2"; head length - 4".

**B-SH-DP20B** ..... 19.50

### PIN HEAD BRONZE HAMMER — Small

A machinist face on one end and a needle nose on the other for small fussy tapping and for adjusting involved in precision and bench work. The head is designed for optimum visibility in limited working areas. Weight - 6 oz.; handle - 10-1/2" smooth. Head diameters - 9/16" and 7/32"; head length - 3".

**B-SH-PHO** ..... 14.50



**DEAD BLOW**  
Hollow head contains chilled iron shot; moves forward for sustained impact

**Head Dimensions: Diameter: 1-1/4", Length: 4-7/8"**  
**Weight: 14 ounces. Handle: 12" grooved.**

## LIXIE® DEAD BLOW HAMMER With 2 Urethane Faces

The rugged head of this Dead Blow Hammer is hi-tensile sparkproof cast aluminum. Dampening depends on hardness of the work and the urethane faces selected. Unless you choose other faces we will ship this hammer complete with one hard face (black) and one medium face (green). See Face Chart for options.

The Dead Blow Hammer is effective for seating work in vise or fixture, straightening castings, forming sheet metal, assembling and disassembling machinery.

**B-SH-DB20H** ..... 30.95

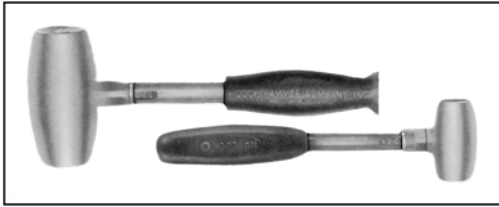


## REPLACEABLE URETHANE SCREW-IN FACES

Enlarge the scope of your LIXIE Hammer! Impervious to oils and most solvents, Replaceable Urethane Screw-In Faces will not mar,peen or deform surfaces of work when properly applied.

Part No.	Hardness	Color	Use equivalent urethane faced hammers instead of:	Price Each
<b>B-SH-F20S</b>	Soft	Brown	Soft Rubber, Wooden Mallet	<b>7.00</b>
<b>B-SH-F20M</b>	Medium	Green	Rubber, Rawhide, Lead, Hardwood, Plastic	<b>7.00</b>
<b>B-SH-F20T</b>	Tough	Red	Nylon, Rawhide, Lead, Hardwood, Plastic	<b>7.00</b>
<b>B-SH-F20H</b>	Hard	Black	Copper, Bronze, Fibre, Micarte, Hard Plastic	<b>9.00</b>

## HAMMERS (cont.)



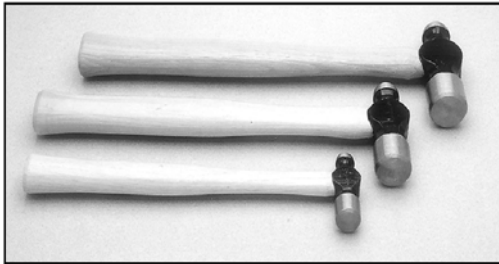
### LEAD HAMMERS

Lead Hammers have steel handles with rubber grips. Each size provides a hefty dead weight blow with minimum bounce and without marring the surface.

<b>B-SH-LH1</b>	1 lb. head	10.50
<b>B-SH-LH2</b>	2 lb. head	15.95
<b>B-SH-LH3</b>	3 lb. head	17.50
<b>B-SH-LH6</b>	6 lb. head	29.95

**REPLACEMENT HEADS** are available for all sizes. Original Handle must be returned and a replacement head will be mounted for you.

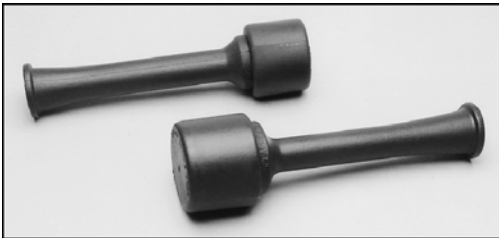
<b>B-SHR-LH1</b>	1 lb. head	5.25	<b>B-SHR-LH3</b>	3 lb. head	8.75
<b>B-SHR-LH2</b>	2 lb. head	7.00	<b>B-SHR-LH6</b>	6 lb. head	10.50



### BALL PEEN HAMMERS

The heads are forged of hardened and tempered high carbon steel. An exclusively designed face minimizes chipping and assures extra safety. The standard hammer head is used for setting rivets. The peen end also sets rivets, forms unhardened metal and taps a punch to cut sheet metal gaskets. An excellent choice for shop work.

<b>B-SH-BP4</b>	4 oz.	14.50
<b>B-SH-BP12</b>	12 oz.	15.25
<b>B-SH-BP16</b>	16 oz.	15.95
<b>B-SH-BP24</b>	24 oz.	18.25



### CYLINDRICAL MALLETS

These cylindrical, non-marring mallets are made of tough hot cast urethane. Loaded with metal shot to transmit impact force to the impact point, with almost no recoil. The 360° surface area also eliminates the torque caused by miss-hits. The cylindrical head design distributes and slows surface wear which is another reason these hammers outlast conventional hammers. Impervious to oil and most chemicals. Available in two sizes.

<b>B-SPD-32</b>	9-7/8" length	2 lbs.	53.30
<b>B-SPD-48</b>	10-3/16" length	3 lbs.	63.70

## MALLET — Brass



### BRASS HEAD MALLET

A nicely balanced Mallet with brass head that will not mar soft or delicate parts. The hardwood handle is 9" long with a 2" long head. Just the right tool for delicate work.

<b>B-HM-602</b>		10.50
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# TOOL ORGANIZERS



TOT-5WS      TOT-4US      TOT-5SS  
TOT-5HS      TOT-6WS

Tools not included

## TOOL SHADOWS

*Are misplaced tools costing you time and money?*

Keep track of the tools you expect to have handy, and create visual reminders for users to return them. Shaped to actual tool sizes, these heavy-duty vinyl decals adhere to backboards and bench areas to organize storage of wrenches, pliers, cutters, hammers and screw drivers. The master set contains all items shown in the smaller kits.

<b>B-TOT-25S</b>	(25)	Master Set Tool Shadows (All other sets)	<b>14.95</b>
<b>B-TOT-6WS</b>	(6)	Combination Wrench Shadows — 1/4", 5/16", 3/8", 7/16", 1/2", 9/16"	<b>3.25</b>
<b>B-TOT-5WS</b>	(5)	Combination Wrench Shadows — 5/8", 11/16", 3/4", 13/16", 7/8"	<b>3.25</b>
<b>B-TOT-5HS</b>	(5)	Hand Tools Shadows — Pliers: Needlenose, 8" Slip Joint, 8" Groove Joint, 7" Diagonal Cutter, 8" Adjustable Wrench	<b>3.25</b>
<b>B-TOT-5SS</b>	(5)	Screw Driver Shadows Assorted Sizes	<b>3.25</b>
<b>B-TOT-4US</b>	(4)	Utility Shadows — 10" Adjustable Wrench, 10" Pipe Wrench, Claw Hammer, 10" Groove Joint Pliers.	<b>3.25</b>



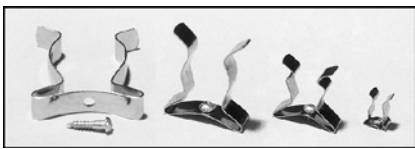
## TOOL TAGS

*Find the correct sized tool...FAST!*

Don't lose valuable time trying to read raised or indented size markings on your tools. Put Tool Tags on your wrench sockets, wrenches, nutdrivers and other tools. Or mark storage locations on the wall, bench, or inside tool drawers. Each plastic strip is 4-1/4" long; width varies from 3/8" to 1/2" on the larger sizes. Metric is red, Inch is white.

The tag's base layer is made of strong polyester material, with a second layer of clear polyester film laminated over the base layer for abrasive protection. An Acrylic adhesive that resists solvents (same as that used on license plate renewal stickers) holds strip to the tool.

<b>B-TOT-1</b>	Inches — Sizes 3/16" to 7/8" in 15 steps	<b>2.50</b>
<b>B-TOT-2</b>	Metric — Sizes 5mm to 19mm in 15 steps	<b>2.50</b>



## ADJUSTABLE CLIPS

A great way to create wall storage for loose tools. With a turn of a screwdriver you can adjust the tension and holding capacities of these Adjustable Clips. Each Clip accommodates several diameters. Made of high quality spring steel, tempered and chrome plated. Furnished with mounting screws.

## SPRING STEEL, TEMPERED AND CHROME PLATED

Part No.	Holding Capacity	Each	Price	
			10	25
<b>B-HC-28</b>	3/16" to 3/8"	—	<b>4.65</b>	<b>9.60</b>
<b>B-HC-0B</b>	5/16" to 3/4"	—	<b>6.80</b>	<b>14.10</b>
<b>B-HC-1B</b>	5/8" to 1-1/4"	<b>1.35</b>	<b>9.60</b>	<b>20.00</b>
<b>B-HC-2B</b>	1" to 1-7/8"	<b>1.65</b>	<b>12.00</b>	<b>25.00</b>

## ASSORTMENT

<b>B-HC-100</b>	10 each size B-HC-28 through B-HC-2B — 40 pieces	<b>29.75</b>
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## TOOL ORGANIZERS (cont.)



### MAGNETIC TOOL BAR

This useful tool holds and organizes a variety of tools in the shop, garage, kitchens and even inside trucks and vans. The powerful magnets hold up to 20 pounds per inch, allowing you to store heavy objects such as wrenches, shovels and garden tools. They are held in place by welded tabs with 1/4" holes for screws. MTB-06 is all black, MTB-12 and MTB-24 have a black finish with a yellow stripe. Mounting hardware included for easy installation on the wall or workbench.

<b>B-MTB-06</b>	6" Tool Bar	9.00
<b>B-MTB-12</b>	18" Tool Bar	13.00
<b>B-MTB-24</b>	24" Tool Bar	17.00

## PLIERS



### TRIGGER RELEASE LOCK GRIP PLIERS

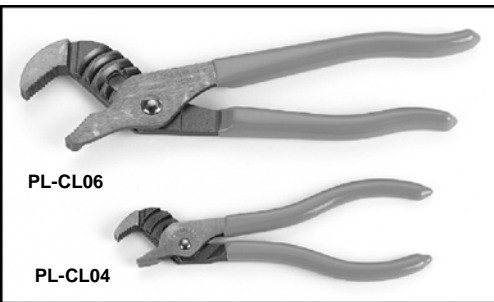
FACOM'S locking pliers are the ultimate in lock grip tools. A unique trigger provides one-handed, shock-free release of clamping pressure when simultaneously squeezing the trigger and handles. These pliers are suited for all applications, from gentle handling for fitting a component, to powerful clamping for immobilizing a workpiece. The pliers can be clamped in a vise or balanced on a workbench during use. Body has an aluminum coating. A feature of these pliers is that the articulated jaw is the upper one, allowing a better approach to the workpiece. The thumb-wheel adjuster, which sets the clamping pressure, operates a fine-pitch screw that is totally enclosed within the body. Overall length: 9-3/4".

<b>B-PL-TRLG</b>	38.25
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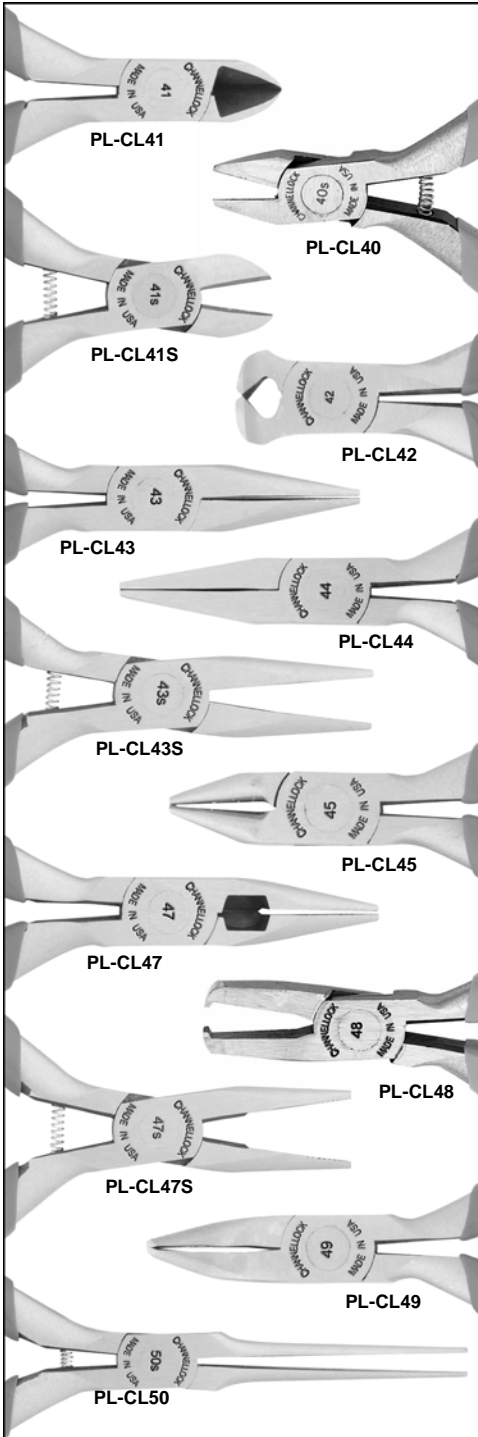
### CHANNELLOCK® PLIERS

Right angle teeth grip in all directions for maximum bite, minimum wear. ChannelLock® Pliers are designed for strength, with undercut jaws to prevent slippage, reinforced edges to minimize stress breakage, and a smooth-working fastener that is stronger and safer than a nut and bolt. Forged from high carbon forged Tool Steel with plastic dipped handles. Made in the U.S.A.

PartNo.	Capacity	Length	Price
<b>B-PL-CL04</b>	1/2"	4-1/2"	11.95
<b>B-PL-CL06</b>	7/8"	6-1/2"	10.25
<b>B-PL-CL10</b>	2"	10"	12.75
<b>B-PL-CL12</b>	2-1/4"	12"	13.95
<b>B-PL-CL16</b>	4-1/4"	6"	22.95



# PLIERS — Miniature, Channellock®



## CHANNELLOCK® PLIERS — Miniature

CHANNELLOCK® quality in a small package. These well made pliers are forged from high carbon steel and polished to a bright finish. Cutters are perfectly mated and heat-treated to hold their edge. Each plier comes with the familiar CHANNELLOCK blue comfort grips.

© CHANNELLOCK, Inc.

### SHARP NOSE DIAGONAL CUTTER

Flush cutter with coiled spring opener

**B-PL-CL40S** Mesures: 4-1/4" ..... **22.35**

### DIAGONAL CUTTER

Flush cutter

**B-PL-CL41** Mesures: 4-1/4" ..... **17.15**

**B-PL-CL41S\*** Mesures: 4-1/4" ..... **19.15**

\* Same as PL-CL41 with coiled spring opener.

### NIPPER

End cutting nipper

**B-PL-CL42** Mesures: 4" ..... **18.90**

### NEEDLE NOSE

Plain needle nose plier without side cutter

**B-PL-CL43** Mesures: 4-3/4" ..... **14.65**

**B-PL-CL43S\*** Mesures: 4-3/4" ..... **16.80**

\* Same as PL-CL43 with coiled spring opener.

### FLAT NOSE

Plain Flat nose plier

**B-PL-CL44** Mesures: 4-3/4" ..... **14.10**

### ROUND NOSE

Plain Round nose plier

**B-PL-CL45** Mesures: 4-3/4" ..... **14.90**

### NEEDLE NOSE

Needle nose plier with side cutter and serrated jaws

**B-PL-CL47** Mesures: 4-3/4" ..... **18.40**

**B-PL-CL47S\*** Mesures: 4-3/4" ..... **19.95**

\* Same as PL-CL47 with coiled spring opener.

### TRANSVERSE END CUTTER

Transverse End Cutter

**B-PL-CL48** Mesures: 4-3/4" ..... **14.70**

### CURVED NOSE

Plain Curved nose plier

**B-PL-CL49** Mesures: 4-1/2" ..... **16.35**

### EXTRA LONG NEEDLE NOSE

Extra Long needle nose plier with coiled spring opener. No side cutter.

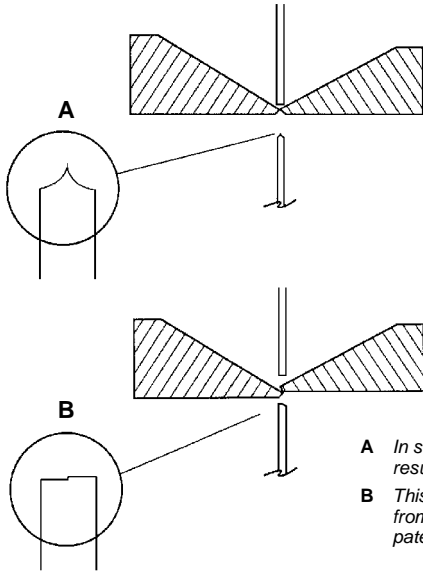
**B-PL-CL50S** Mesures: 5-3/4" ..... **18.10**

## MICRO-SHEAR® FLUSH CUTTERS

*Experience the Xuron difference.*

**Conventional wire cutters utilize a compression type cut, with the advancing cutting edges forcing the wire or other material out of the way.**

Micro-Shear® flush cutters utilize a shearing cut, with the by-pass cutting edges slicing cleanly through the material being cut. Shear cutting greatly reduces mechanical shock to the component being cut, while requiring only about half the physical effort compared to conventional type wire cutters. Made from tough alloy steel, they are heat treated, and are precisely ground to create the ultimate cutter. They come with ergonomically designed grips made from Xuron's exclusive Xuro-Rubber™, have Light-Touch™ return springs, and have a black finish to eliminate glare.



- A** In standard compression type cutters, the blade edges collide, resulting in a spiked cut and an eventual dulling of the tool.
- B** This is a cross section view of the Xuron Micro-Shear®, flush cutter from the tip end. Note how the blades by-pass — this is a very important patented feature that results in a clean square cut with no spikes.

## OVAL HEAD FLUSH CUTTER

Flush cuts soft wire up to 14 AWG (1.6mm)

**B-XMS-9100** Measures: 1.7" × 4.9" . . . . . **19.75**

## MICRO-SHEAR® FLUSH CUTTER

The subminiature (Extra Tapered) head size provide easy access to restricted areas. Cuts wire from less than 1 mil up to 18 AWG (1.02mm)

**B-XMS-9250ET** Measures: 1.7" × 4.9" . . . . . **29.75**

## KEVLAR® FIBER CUTTER

Perfect for fiber optic cable. Serrated edge prevents fibers from sliding out the front of the shear while cutting.

**B-XMS-9180** Measures: 1.97" × 5.76" . . . . . **21.75**

## MUSIC WIRE SHEAR

Self-adjusting clamping fixture holds the material being cut perpendicular to the cutter jaws, increasing the precision of the cut as well as the cutting capacity. Cuts music wire to 0.060".

**B-XMS-2193F** Measures: 2.15" × 5.45" . . . . . **28.00**

## TWEezer NOSE™ PLIER

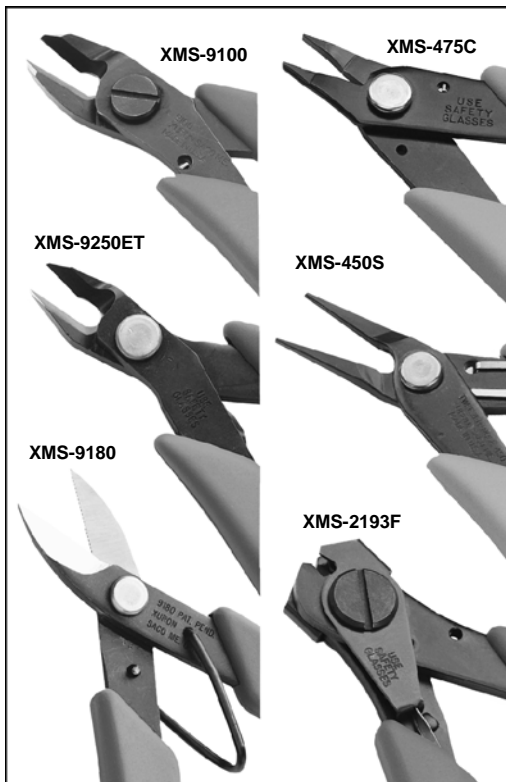
Ultra precise needle nose plier, capable of holding wires less than 1 mil thick. Jaws are finely serrated for extra holding power.

**B-XMS-450S** Measures: 1.92" × 5" . . . . . **18.00**

## COMBINATION SHEAR/PLIER

A multi-purpose tool, combines Xuron's full by-pass shear with a precise short nose plier. Cuts up to 12 AWG copper wire. (2.05 mm)

**B-XMS-475C** Measures: 1.85" × 5.07" . . . . . **15.50**



Micro-Shear®, Xuro-Rubber™, and Light-Touch™ are registered trademarks of Xuron Corp.

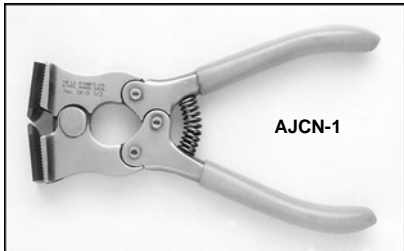




## END CUTTING NIPPERS

Wide throat clearance and high leverage. End Cutting Nippers are drop forged from tough Diamalloy steel with handles and jaws extremely increased in strength and toughness. Cutting edges are electronically hardened. Polished head with plastic dipped gun metal handles. 6" long. Not for cutting Music Wire.

**B-ECN-G6** ..... **21.50**



## ADJUSTABLE JAW CUT NIPPERS — Starrett®

These Nippers have a powerful compound leverage of 25:1 for cutting through music wire — a process that will damage most other jaw types. Jaw tips are made with tungsten carbide for extra-long life. The jaws are detachable and may be reground and adjusted. Length - 5". Cuts up to 3/32".

**B-AJCN-1** Cut Nipper ..... **145.00**

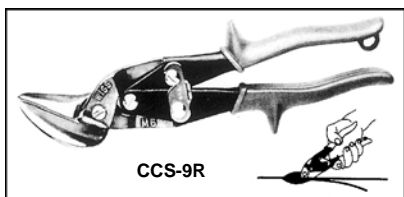
**B-AJCN-JTC** Replacement Jaws ..... **60.65**



## TIN SNIPS

These metal snips are back by popular demand. Head configuration permits smooth curve cutting on hard or soft sheet metal. Heat treated steel tempered for high strength and toughness. Plastic handle grips provide hand comfort. Overall length 7".

**B-CCS-DC7** ..... **15.50**



## TIN SNIPS, CIRCLE CUTTING

Offset blades keep material away from hands and allows straight or circular cuts to be made easily. Maximum capacity in Cold Rolled Steel is 18 GA. (.049").

**B-CCS-9R** (circle right) ..... **22.50**

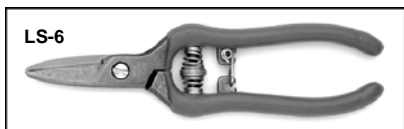
**B-CCS-9L** (circle left) ..... **22.50**



## JEWELERS SNIPS

Jewelers Snips are handy for cutting fine wires or snipping through foil, light metals and plastic. Curved blades are formed from double hardened drop forged steel to stay sharp longer. Blade length: 1-3/8". Overall length: 7".

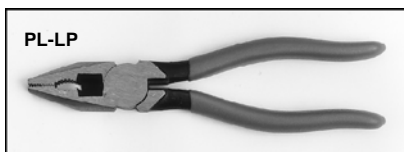
**B-APS-01JS** ..... **13.50**



## LIGHTWEIGHT TIN SNIPS

Small and sharp, lightweight Tin Snips have plastic coated handles with flip-lock for safety...only 6-1/2" long.

**B-LS-6** ..... **23.95**



## LINEMAN'S PLIERS

Our 7" Lineman's Pliers have durable, sharp and induction hardened side cutting edges for general purpose work. Made of forged alloy tool steel with a polished head, the Pliers have a 1/2" flat nose with teeth and pipe grip. Red cushioned handle grips offer non-slip stability and longer wear.

**B-PL-LP** ..... **24.95**

## CUTTERS, STRIPPERS, CRIMPERS — Cable and Wire



### CABLE CUTTER

This fine Swiss-made genuine Felco tool cuts wire rope without deformation and the unique triangular jaws never leave a frayed end. (See Nylon Coated Stainless Steel Wire Cable, [page 168](#)). Red plastic grips.

**B-MCTL-7** — 7-1/2", 11 oz.  
Cable dia. up to 3/16" ..... **69.50**

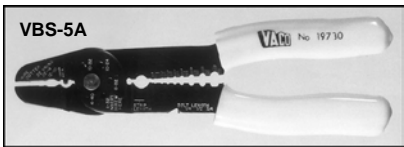
**B-MCTL-8** — 16", 4lbs. Cable dia. 1/4" ..... **123.00**



### BOLT SHEARS

Cuts five popular bolt sizes: 4-40, 6-32, 8-32, 10-24 and 10-32. Nose mounted wire cutter gets into tight places. Crimps both insulated and noninsulated solderless terminals, 22 to 8 gauge wire. Stripping dies will handle from 22 to 6 gauge cable. Measuring guides from strip and bolt length. Jumbo cushion grip handles for more comfort and power.

**B-VBS-5A** (Inch) ..... **22.30**



### BOLT SHEAR AND WIRING TOOL

Lighter in weight and construction, this tool is most suitable for brass and copper wire and screws. It is a combination wire cutter, skinner, stripper, crimper and bolt shear. It will handle screw sizes 4-40, 5-40, 6-32, 8-32, 10-24 and 10-32 and wire sizes 22 thru 10.

**B-APBS-4** ..... **18.95**



### WIRE STRIPPER

Accurate, fast and easy to use. One light squeeze cleanly strips insulated wire without nicks, cuts or frays. In just one motion the Automatic Wire Stripper grips wire securely, cleanly cuts insulation, and removes the insulation slug without crushing wire end. Two activations will strip clear nylon-jacketed conductors. An adjustable wire stop assures uniform, precise strip lengths up to 1". Seven precision form-ground, knife-type holes accommodate wire gauges of 10, 12, 14, 16, 18, 20 and 22 (0.6, 1.0, 1.5, 2.5, 4.0 and 6.0 mm<sup>2</sup> metric wire sizes). Strong yet lightweight, this tool is constructed of die cast zinc and has comfortable plastic hand grips. Length: 6-1/2".

**B-AWS-16** Wire Stripper ..... **41.90**

**B-AWS-16BL** Replacement Blades (2) ..... **15.50**



### CRIMPER-STRIPPER

A lightweight electrical wiring tool. It cuts, strips and crimps connectors for copper wire size Awg.20 thru 10. Length: 6".

**B-APBS-3** ..... **12.25**

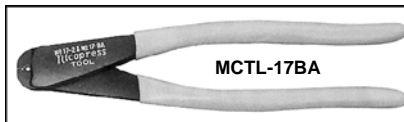


### SLEEVE PRESSING TOOL

Crimping Diameters: .045", .090"

See cables, connectors, ties and other accessories, starting on [page 168](#).

**B-MCTL-17BA** — 8-1/4" ..... **75.00**



## CRIMPING TOOLS



MCTL-185



MCTL-188

### PRECISION COMPOUND HAND CRIMPING TOOL

Gives compound leverage of at least 15 to 1. The jaws of this plier-type tool are made of a tough chrome steel alloy with other components hardened and tempered. When crimped properly it gives full strength on Loop/Sleeve Connectors (See Cable and Cable Fittings, beginning on page 168). Useful in many other crimping applications.

**B-MCTL-185** — 8-1/2"  
Crimping Diameters: .076", .089", .123", .162" . . . **115.00**

**B-MCTL-188** — 18"  
Crimping Diameters: .112", .145", .225", .312", .350", .432" . . . . . **163.00**

## PINCERS



STANDARD

SIDE-JAW

### HOSE CLAMP PINCERS

Hose Clamp Pincers are used to install and remove ear clamps. For those hard-to-get-at areas, use Side Jaw Pincers, which can be used like standard pincers.

#### How to use:

To obtain a proper seal, each ear must be crimped as recommended. Incorrect installation may impair the best connection. If a clamp ear can be closed all the way, the clamp size selected is probably too big and the next smaller clamp should be used.

1. Position clamp on hose. Use clamp size nearest to but larger than hose O.D. Firmly squeeze ear with pincers.
2. When access to ear is difficult, use Side Jaw Pincers.



1

2

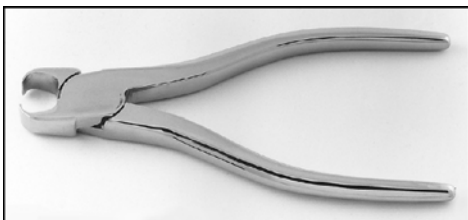
**B-CHT-1** Standard Jaw Pincers . . . . . **26.10**  
**B-CHT-2** Side Jaw Pincers . . . . . **30.45**

### MINIATURE CLAMP PINCERS

#### Stainless Steel Type 302

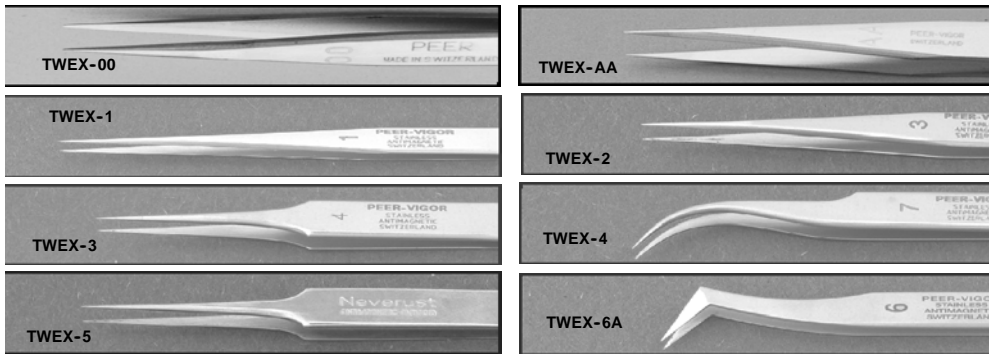
Sized just right for firm grip and for access to tight spots, Miniature Clamp Pincers from Oetiker® reach into confined areas to crimp or remove ear clamps. Autoclavable Pincers can be used with Clamps that have closed diameters ranging from 0.098" to 0.204".

**B-CHT-3** Miniature Clamp Pincers . . . . . **51.90**



See Oetiker® Clamps on page 130

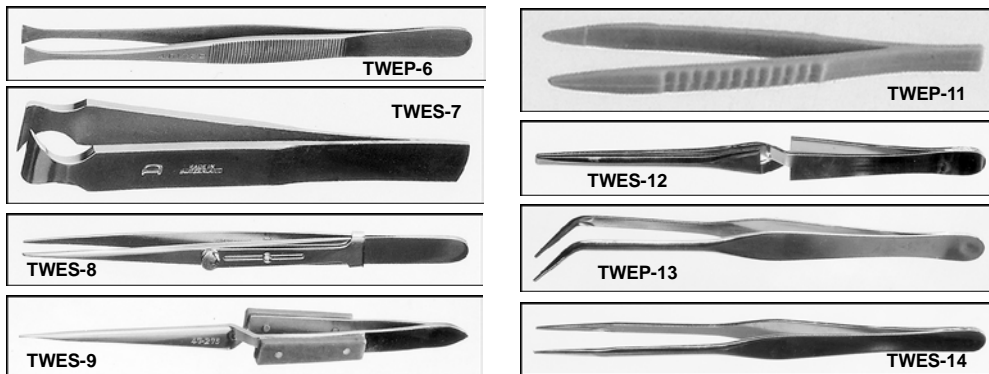
# TWEEZERS



## PREMIUM SWISS GRADE TWEEZERS

Our highest quality premium grade Tweezers are manufactured in Switzerland. They offer a precision finish and ultra-fine points for handling miniature and micro-miniature parts. Made from non-magnetic, anti-acid stainless steel.

Part No.	Pattern No.	Description	Length	Price
<b>B-TWEX-00</b>	00-SA	Thick shank, flat edge, honed blunt tip.	4-3/4"	<b>24.40</b>
<b>B-TWEX-AA</b>	AA-SA	Tapered shank, beveled edge, sharp tip.	4-3/4"	<b>17.70</b>
<b>B-TWEX-1</b>	1-SA	Tapered shank, beveled edge, sharp plain tip.	4-3/4"	<b>21.85</b>
<b>B-TWEX-2</b>	3-SA	Tapered shank, beveled edge, very sharp tip.	4-3/4"	<b>23.50</b>
<b>B-TWEX-3</b>	4-SA	Indented shank, beveled edge, needle sharp tip.	4-1/2"	<b>22.95</b>
<b>B-TWEX-4</b>	7-SA	Curved shank, beveled edge, sharp plain tip.	4-1/2"	<b>27.50</b>
<b>B-TWEX-5</b>	5-SA	Indented shank, beveled edge, very narrow needle sharp tip.	4-1/2"	<b>24.40</b>
<b>B-TWEX-6A</b>	6-SA	Sharp hooked points.	4-1/2"	<b>19.70</b>



## GENERAL PURPOSE TWEEZERS

Part No.	Description	Length	Price
<b>B-TWES-6</b>	Thin 1/4" wide points, honed flat to slide under. Non-magnetic. Stainless Steel	3-3/4"	<b>24.20</b>
<b>B-TWES-7</b>	Fine cutting broad blade. Pattern D. Nickel Plated Steel.	3-3/4"	<b>24.20</b>
<b>B-TWES-8</b>	Slide-lock release, with fine serrated point. Chromium Plated.	5-1/2"	<b>20.90</b>
<b>B-TWES-9</b>	Long tapered shanks, self-locking jaws, heat resistant fiber grips. Polish. Steel	6-1/2"	<b>14.40</b>
<b>B-TWEP-11</b>	Strong glass-filled plastic with flat tips. Easy to sterilized. Non-magnetic.	4-5/8"	<b>2.00</b>
<b>B-TWES-12</b>	Cross locking, self closing, serrated blunts tips. Nickel Plated.	6-1/2"	<b>5.40</b>
<b>B-TWES-13</b>	Sorting/Assembling curved tips, sharp and smooth edges. Nickel Plated.	6-7/8"	<b>5.40</b>
<b>B-TWES-14</b>	Sorting/Assembling straight tips, sharp and smooth edges. Nickel Plated.	7"	<b>5.40</b>

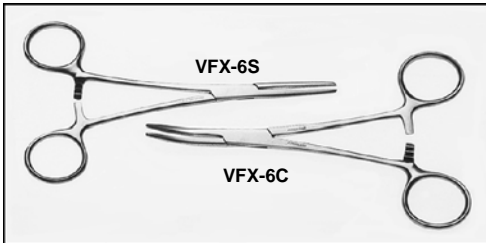
## MISCELLANEOUS TOOLS



### COPPER TONGS

With curved tips for lifting objects from pickling and other acid type solutions where a ferrous tong would poison the chemical system.

**B-TWEC-10** Measures: 9" ..... 8.55

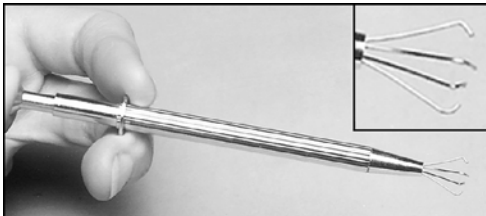


### FORCEPS

Whether you call them heat sink forceps or mosquito clamps, handy pincers are almost as useful as a second pair of hands. These tempered Stainless Steel precision machined Forceps feature finely serrated jaws with box joint pivot and a three-position ratchet lock.

**B-VFX-6S** Straight — 6" ..... 18.95

**B-VFX-6C** Curved — 6" ..... 19.95



### WIRE PRONG HOLDER

Press the top of the Wire Prong Holder and four slim stainless steel prongs emerge from the tip. Release pressure and prongs close around an object, gripping it tightly. Screws, small parts, nuts, precious stones and other objects may be inspected, retrieved, positioned and inserted. 4-5/8" long. Prongs will open to 5/8".

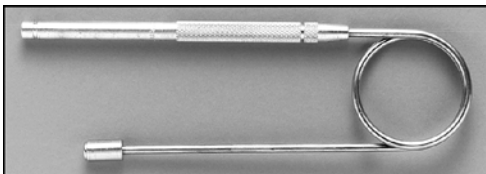
**B-HM-204** ..... 7.00



### MAGNETIC PICK-UP

Here is the slim size magnet tool that fumbling fingers greatly need. Only 5/16" diameter and a full 8-1/2" long. The powerfully magnetized head removes small parts from narrow areas that defy the fingers. Head is adjustable.

**B-GT-MP9** ..... 7.10



### BENDABLE MAGNETIC PICK UP

*Lifts up to two pounds!*

You form the Bendable Magnetic Pick Up to snake around tricky corners and retrieve iron screws, nuts, tools and other magnetic parts in hard to reach places. 13" of flexible Aluminum wire is capped with a high-power neodymium magnet with two pounds of pull — six times stronger than a cobalt magnet of the same size and density. Knurled Aluminum handle is 6" long, giving you an overall reach of 18".

**B-GT-MP20** ..... 5.95



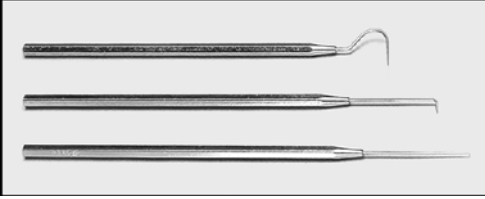
### MECHANICAL PICKUP

*Flexible retrieving and holding tool*

Extremely flexible, with almost tactile pincers that grasp small objects securely. The 1/2" jaws of the Mechanical Pickup are composed of four steel prongs, actuated by a spring-loaded plunger. The flexible shaft wraps around obstacles to help you retrieve or position small items in hard-to-reach places, with a total reach of up to 24". Chrome finish on steel shaft prevents rust.

**B-GT-MF24** ..... 6.95

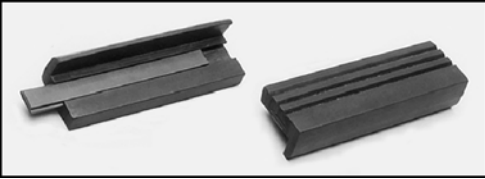
## MISCELLANEOUS TOOLS



### 3-PIECE PROBE SET

Three types of stainless steel Probe instruments with strong yet flexible tips. Useful for positioning, scribing, adjusting, attaching and detaching small springs, testing tensions, and inspecting. Includes hook probe, straight probe with angled tip, and a straight sharp pointed probe. Hex-shaped shaft enhances grip and prevents rolling. Overall length approximately 4-3/8".

**B-HM-303** ..... 11.25



### MAGNETIC VISE JAWS

Magnetic Vise Jaws incorporate magnetic strips mechanically fixed to tough, oil resistant rubber material. Useful for a "sure grip" on any workpiece, especially when gripping delicate or irregularly shaped components. They can be quickly and easily attached to the steel or iron jaws of any vise.

Length: 4".

**B-MVJ-4** 1 pair ..... 7.50

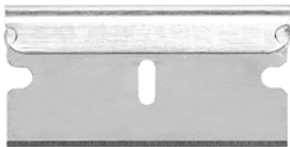


### MAGNETIZER / DEMAGNETIZER

Magnetize screw drivers, tweezers, tool bits and other steel objects as needed. When your work is finished, use the demagnetizer to remove the magnetic field. Also useful for demagnetizing tools before use on magnetically sensitive surfaces, i.e. for electronics work. 2" x 1-31/32" x 1-9/64".

**B-DMAG-1** ..... 8.90

## RAZOR BLADES — Stainless Steel



### SINGLE-EDGE RAZOR BLADES — Stainless Steel

*Dryfilm Coated Industrial quality blades for critical cuts*

Often used in pathology labs, medical device manufacturing, and in film and food industries, these Stainless Steel blades cut cleanly, are highly corrosion resistant, and are coated with DuPont Dryfilm®, the active ingredient of which is PTFE (Polytetrafluoroethylene).

This coating adds high lubricity and non-stick qualities and enhances the metal's natural resistance to chemicals and other sources of corrosion. Aluminum backing. Individually packaged 0.009" blades have protective paper for safe handling and storage.



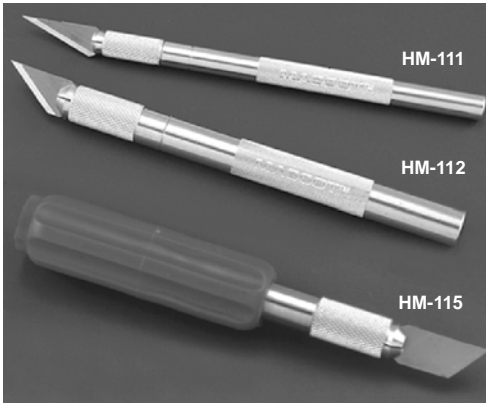
Part No.	10 pcs.	25 pcs.	50 pcs.	100 pcs.
<b>B-RBSS</b>	<b>3.00</b>	<b>5.75</b>	<b>9.50</b>	<b>18.95</b>

### SINGLE-EDGE BLADE HOLDER

Contoured to fit the hand, this holder has a locking blade for safety. Comes with five carbon steel single-edge blades that store in the handle. Use with Stainless Steel blades above.

**B-RB-RK5** Blade Holder — Color: Putty Length: 6" ..... 2.00

## PRECISION KNIVES AND ACCESSORIES



*A collection of precision cutting tools to satisfy even the most demanding craftsman.*

### PRECISION KNIVES

**LIGHTWEIGHT KNIFE** — #1 handle accepts all popular knife blades. Four jaw chuck. Handle length: 4-3/4". Includes 2 blades, #11 and #16.

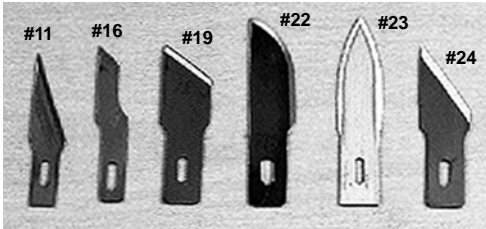
**B-HM-111** ..... 4.80

**MEDIUM WEIGHT KNIFE** — Heavier version of the #1 knife. Handle length: 5". Includes one #24 blade.

**B-HM-112** ..... 3.60

**HEAVY DUTY KNIFE** — Extra sturdy grip. Hollow handle for storage of extra blades. Handle length: 4-1/2". Includes one #19 blade.

**B-HM-115** ..... 4.15



### PRECISION BLADES

Pack of 5 blades, stored in a plastic vial.

**B-HM-11** #11 Blades ..... 2.50

**B-HM-16** #16 Blades ..... 2.35

**B-HM-19** #19 Blades ..... 2.30

**B-HM-22** #22 Blades ..... 3.30

**B-HM-23** #23 Blades ..... 5.30

**B-HM-24** #24 Blades ..... 2.20



### CRAFTSMENS' KNIFE AND TOOL SET

*Find the right cutting tool every time*

Every cutting tool you'll need for many types of projects, in a compact, handsome kit. This 28-piece set includes three knife collets in lightweight, medium weight, and heavy-duty sizes, plus 20 assorted blades for cutting, slicing, chipping and chiseling. It even has a miter box, along with a razor saw, a sander, and an awl, plus a 3/32" flat screwdriver. Wood box has molded storage trays.

Measures: 9-3/4" x 4-1/4" x 2-3/8".

**B-HM-866** ..... 39.00



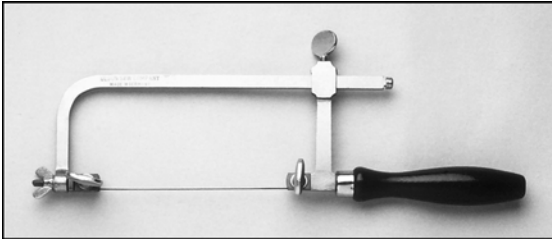
### DELUXE KNIFE SET

*Precision cutting tools needed most often by hobbyists, craftsmen and artists*

Contains three knife blade collets mentioned above. Ten assorted extra blades, packed in a plastic vial are included: One each #16, #19, #24 and #25; Two each #11, #22 and #23. Packaged in a deluxe wooden box. Measures: 6-3/4" x 3" x 1-5/8".

**B-HM-865** ..... 18.75

## JEWELER'S SAW

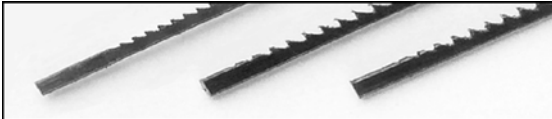


### SAW FRAMES

Jeweler's Saw Frames permit close, accurate sawing. In addition to the sizing screw there is a unique end screw that adjusts the blade tension and the frame simultaneously.

The frame can be adjusted to hold blades up to 6" long.

Part No.	Throat Depth	Price Each
<b>B-HMJS-25</b> .....	2-1/2"	<b>16.70</b>
<b>B-HMJS-30</b> .....	3"	<b>19.00</b>
<b>B-HMJS-40</b> .....	4"	<b>19.90</b>
<b>B-HMJS-50</b> .....	5"	<b>19.50</b>



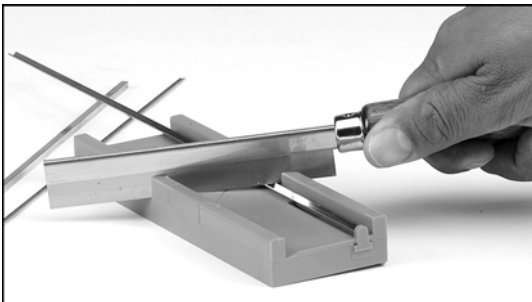
### SAW BLADES — Pull Cut

Jeweler's Saw Blades are made of hardened and tempered steel. Excellent for sawing metal and other materials. Blade length: 5". Sold in packages of 12.

### BLADES

Part No.	Universal No.	Teeth Per Inch	Dimensions		Price Pkg of 12
			Width	Thickness	
<b>B-HMJB-19</b>	3/0	61	0.019"	0.0095"	<b>3.90</b>
<b>B-HMJB-20</b>	2/0	56	0.020"	0.010"	<b>3.90</b>
<b>B-HMJB-22</b>	0	51	0.022"	0.011"	<b>3.90</b>
<b>B-HMJB-24</b>	1	48	0.024"	0.012"	<b>3.90</b>
<b>B-HMJB-28</b>	2	43	0.028"	0.013"	<b>3.90</b>
<b>B-HMJB-30</b>	3	41	0.030"	0.014"	<b>3.90</b>
<b>B-HMJB-31</b>	4	38	0.031"	0.015"	<b>3.90</b>

## RAZOR SAW AND MITER BOX — ZONA®



### ZONA® 52 RAZOR SAW

The ZONA® 52 Razor Saw has the finest teeth of all Zona® Razor Saws. The ultra thin 0.008" thick blade, cuts tubes, rods and miniature profiles in soft metals, wood and plastics. The comfortable wooden handle with an extra stiff steel back, provides maximum control when cutting miniature shapes. Use as a pull saw.

#### Specifications:

Teeth per Inch .....	52
Thickness .....	0.008"
Cutting Depth .....	1/2"
Blade Length .....	4-1/2"
Overall Length .....	9"

**B-RS-52** ..... **4.95**

### ZONA® MINI-MITER BOX

The Mini-Miter Box is used with the Zona® 52 Razor Saw to cut square ends, and angled or mitered corners. It has an adjustable stop and beveled channel for tubing and dowels and holds material up to 1-1/2" wide and 1/4" thick for 90°, 45°, 60° and 30° cuts. Made of high impact Polystyrene.

**B-RS-MMB** ..... **4.75**



## SPECIALTY KNIVES — Multitools



### SPYDERCO® — SpydeRench

**A Small Parts Favorite! An elite multi-tool with knife, screwdriver, bits, adjustable wrench, slip-joint pliers and a diamond file!**

Known in the custom knife industry for quality and innovation, Spyderco has sustained its reputation by uniting custom designs with high performance materials. Unlike any we've encountered, this multi-tool integrates a locking, full sized knife blade with slip joint pliers, screwdriver bits, a sharpening tool and adjustable wrench. Made of tough, investment-cast Stainless Steel 17-4ph, the body is just 4-1/2" long. Extremely sharp, the 2-1/2" plain edge knife blade is well constructed of corrosion resistant Stainless Steel 440C, and it opens and closes fluidly with one hand, using the Spyderco trademark "round hole".

Four different screw driver bits (Phillips #2, #3 and Slotted #1, #2) store inside the joint pliers and a special long-length bit with both Phillips and Slotted ends stows alongside. The extended bit doubles as a diamond coated file with concave, convex and flat sharpening surfaces. The adjustable wrench opens to 9/16". Durable pocket clip. Weight: 7.9 ounces. *Note: Read instructions carefully before you use this tool.*

**B-MLT-SSR ..... 119.00**



### GERBER® LEGEND — Multi-Tool

Sturdy, compact, and loaded with useful tools, the Legend promises a lifetime of reliable use. It has a secure, comfortable grip, it's lightweight, and the primary components are completely accessible without opening the tool to its full size. Furthermore, any component can be replaced when individual tools get worn or broken, so you never have to buy another multi-tool. The pliers have Stainless Steel jaws, plus unique three-sided cutting inserts made of Nickel-finished Tungsten Carbide that you can rotate to the sharpest edge or replace when worn. Special "thumb studs" make it easy to grasp and retract the various tools, and a sturdy locking feature keeps them in place. Both the super-sharp, drop-point / serrated knife blade and Fiskars scissors deploy with just one hand. Fastening tools include a #2 phillips screwdriver; a bottle opener that doubles as a 3/16" slotted screwdriver; two slotted screwdrivers, 1/16" and 1/4". You also get a single cut / double cut file and a RemGrit blade in a 1/4" shaft saw coupler that is replaceable with any standard 2-3/4 jigsaw blade. Nylon sheath. Open length: 6-5/8". Closed Length: 5-1/8". Weight: 8.6 oz.

**B-MLT-GLM ..... 99.95**



### BUCK® KNIFE — Shop and Field

This heavy duty fixed blade Buck® Brand knife makes a great shop tool or may be worn in the hip when in the field. The blade is constructed of 420HC Stainless Steel, and the handle is black rubber with Diamondback® skin pattern. Sheath is black nylon with braided nylon belt loop. Blade Length: 4-1/2". Overall length: 9-1/2". Weight: 7 oz.

**B-MLT-BK47 ..... 28.00**

# SPECIALTY CUTTERS

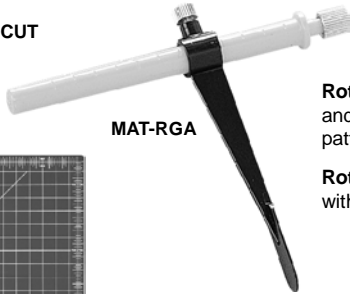
## ERGONOMIC ROTARY CUTTER AND ACCESSORIES

*Rapidly cuts patterns and shapes in paper, delicate fabrics, or leather!*

If your hand gets tired or cramped from holding scissors too long, you'll like this "rolling razor" for quick cuts in cloth, screen, leather, paper, vinyl, films, etc. Those who spend a lot of time cutting will find it handy, and it's a particularly useful aid for arthritic and disabled persons. Make curved or patterned cuts freehand, or use a straight edge for precise cuts. For many tasks this rolling / cutting technique is faster than scissors and more efficient than scalpel-style knives. Squeeze the cushioned-grip handle and the tungsten steel blade swings out for use, then retracts upon release. A dual-action safety lock keeps the blade open for comfort and closed for safety. Easily operated by both right and left hand users. Length: 6-3/4". Blade diameter: 1-3/4". Replacement blades can be obtained by special order.



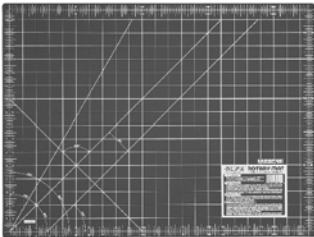
ROT-CUT



MAT-RGA

**Rotary Guide Arm** attaches to the Rotary Cutter and easily adjusts to set uniform margins during pattern cutting.

**Rotary Mats** protect work surface. Self-healing with inch grid on both sides. Thickness: 0.06".



MAT-1824

- B-ROT-CUT** Ergonomic Rotary Cutter . . . . . **21.95**
- B-ROT-RGA** Rotary Guide Arm . . . . . **5.30**
- B-MAT-1824** Self Healing Mat — 18" x 24" . . . . . **23.00**
- B-MAT-2436** Self Healing Mat — 24" x 36" . . . . . **44.00**

## DESK TOP CORNEROUNDER

*Swift, clean corner-cuts in paper, plastic and other thin materials*

Rounded corners clean up sharp edges, prevent fraying in laminated products and other encapsulated materials, and give a finished look to products made of paper, thin plastics and metal shim, including badges, printed cards and signs, presentations and awards.

Sized just right for light duty applications, this desk top model quickly produces accurate corners using a steel die with the cutting radius of your choice — from 1/8" to 1/2". Best results are achieved when cutting small stacks, but with some materials it can handle up to a 1/2" stack. Open the "table leaf" extension to accommodate sheets measuring 8-1/2" x 11" and larger. Base footprint: 5" x 10-1/2".



### Cornerounder

Part No.	Die Size	Price
<b>B-DTCR-02</b>	1/8"	<b>170.00</b>
<b>B-DTCR-04</b>	1/4"	<b>170.00</b>
<b>B-DTCR-06</b>	3/8"	<b>170.00</b>
<b>B-DTCR-08</b>	1/2"	<b>170.00</b>

### Optional Dies

Part No.	Size	Price
<b>B-DTCR-D1/8</b>	1/8"	<b>95.00</b>
<b>B-DTCR-D1/4</b>	1/4"	<b>95.00</b>
<b>B-DTCR-D3/8</b>	3/8"	<b>95.00</b>
<b>B-DTCR-D1/2</b>	1/2"	<b>95.00</b>



### CORNER RADIUS



## SCISSORS



### MULTI-PURPOSE SCISSORS

#### Stainless Steel — Fiskars®

These quality right-hand scissors feature Stainless Steel blades with precision ground and hardened edges for a sharp and longer lifetime. Adjustable screw joint enables the blade tension to be modified to suit the task at hand. Orange fiberglass reinforced plastic handles are durable and comfortable to use.

<b>B-APS-105</b> .....	<b>18.35</b>
<b>B-APS-8</b> .....	<b>12.95</b>



### HEAVY DUTY SCISSORS

#### Nickel Plated Steel

Keep these Heavy Duty Scissors handy in your shop or work station. Their precision ground blades cut a variety of materials including rubber, leather and tough plastic. Nickel-plated drop forged steel with forged steel handles. Blade length: 4-5/8". Overall length: 10". Available in both right and left hand styles.

<b>B-APS-10R</b> Right-Hand .....	<b>38.95</b>
<b>B-APS-10L</b> Left-Hand .....	<b>38.95</b>



## PUNCH TOOL



### REVOLVING PUNCH TOOL

This quality tool comes with six individually tempered tool steel tubes. Use these punches on soft materials such as leather, plastics, fabrics, etc. Hole punch sizes: 3/32", 7/64", 1/8", 5/32", 11/64", 3/16".

The frame is highly polished forged steel. The reach from cutting tube to the back of the jaw is 1-1/2".

Not recommended for use on metals.

<b>B-RPO-6</b> .....	<b>70.00</b>
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### REPLACEMENT PUNCH SET

<b>B-RPO-16</b> 3/32", 7/64", 1/8" .....	<b>18.75</b>
<b>B-RPO-26</b> 5/32", 11/64", 3/16" .....	<b>18.75</b>

## PUNCHES AND ACCESSORIES — Arch and Belt Arc



### Quick, easy and precise.

Cut a round hole or create a disc from a soft or fibrous material. Use on rubber, plastic, fabric, fiber, cork, leather or paper.

Our Punches are made to exacting specifications. Belt style Punches are made from steel bar and Arch Punches are made from one-piece tool steel drop forging. The forming processes used to make these punches make them stronger than fabricated, two-piece welded punches. Finely honed cutting edges make clean, smooth cuts from any soft material, while the inside taper of the barrel automatically clears punchings.

The special arch structure of these punches provides a smooth path for the flow of the impact force from the handle to the cutting barrel. Other arch punches force the load through two corners, creating large material stresses, which eventually leads to cracking. Use our resilient Punch Pad for more impact absorption and protection of cutting edges.

### BELT PUNCHES

Part No.	Diameter	Price Each
<b>B-ARCH-1</b>	1/16"	<b>9.30</b>
<b>B-ARCH-2</b>	1/8"	<b>9.50</b>
<b>B-ARCH-3</b>	3/16"	<b>9.30</b>

### METRIC BELT PUNCHES

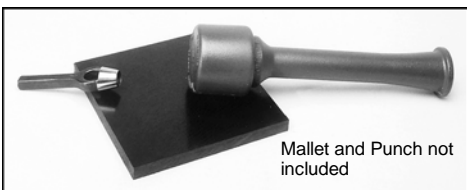
Part No.	Diameter	Price Each
<b>B-ARCH-4M</b>	4mm	<b>10.35</b>
<b>B-ARCH-5M</b>	5mm	<b>10.35</b>

### ARCH PUNCHES

Part No.	Diameter	Price Each
<b>B-ARCH-4</b>	1/4"	<b>9.30</b>
<b>B-ARCH-5</b>	5/16"	<b>9.50</b>
<b>B-ARCH-6</b>	3/8"	<b>9.50</b>
<b>B-ARCH-7</b>	7/16"	<b>10.75</b>
<b>B-ARCH-8</b>	1/2"	<b>10.75</b>
<b>B-ARCH-9</b>	9/16"	<b>11.85</b>
<b>B-ARCH-10</b>	5/8"	<b>11.85</b>
<b>B-ARCH-11</b>	11/16"	<b>12.90</b>
<b>B-ARCH-12</b>	3/4"	<b>12.90</b>
<b>B-ARCH-13</b>	13/16"	<b>14.95</b>
<b>B-ARCH-14</b>	7/8"	<b>14.95</b>
<b>B-ARCH-15</b>	15/16"	<b>16.55</b>
<b>B-ARCH-16</b>	1"	<b>16.55</b>
<b>B-ARCH-20</b>	1-1/4"	<b>22.75</b>
<b>B-ARCH-24</b>	1-1/2"	<b>37.50</b>

### METRIC ARCH PUNCHES

Part No.	Diameter	Price Each
<b>B-ARCH-6M</b>	6mm	<b>13.75</b>
<b>B-ARCH-7M</b>	7mm	<b>14.15</b>
<b>B-ARCH-8M</b>	8mm	<b>14.15</b>
<b>B-ARCH-9M</b>	9mm	<b>14.15</b>
<b>B-ARCH-10M</b>	10mm	<b>15.20</b>
<b>B-ARCH-11M</b>	11mm	<b>15.20</b>
<b>B-ARCH-12M</b>	12mm	<b>15.20</b>
<b>B-ARCH-13M</b>	13mm	<b>17.65</b>
<b>B-ARCH-15M</b>	15mm	<b>17.65</b>
<b>B-ARCH-18M</b>	18mm	<b>20.15</b>
<b>B-ARCH-20M</b>	20mm	<b>22.55</b>
<b>B-ARCH-25M</b>	25mm	<b>24.65</b>
<b>B-ARCH-30M</b>	30mm	<b>20.53</b>
<b>B-ARCH-35M</b>	35mm	<b>33.00</b>



Mallet and Punch not included

### PUNCH PAD

Designed for long life, this 1/2" thick punch vinyl plastic pad will absorb impact force and eliminate any bounce, without significant dulling of your punch's cutting edges.

**B-CP-10** 10" x 10" ..... **29.95**

See Mallets and Hammers starting on page 371

## PUNCH KITS



HP-K1



HP-K2

### HAND PUNCH KITS

Portable, light duty Hand Punch Kits give you quality and simplicity for those one-at-a-time metal punching tasks. Each kit comes with a standard assortment of round punches and dies and a tool steel punch with hardened, machined bearing surfaces for dependable long life. An adjustable stop gauge controls the distance between the material's edge and punched hole.

The Junior Hand Punch reaches up to 1-3/4" deep. Our Deep Throat model reaches up to 3-1/4" from the edge, and may be used to punch light channels with 1" minimum inside dimension and 1-3/8" maximum flange.

### HAND PUNCH KITS

Part No.	Description	Punch / Die Sizes (In Inches)	Price Each
<b>B-HP-K1</b>	Junior Hand Punch Kit	3/32, 1/8, 5/32, 3/16, 7/32, 1/4, 9/32	<b>75.00</b>
<b>B-HP-K2</b>	Deep Throat Hand Punch Kit	5/32, 7/32, 9/32, 11/32, 13/32, 15/32, 17/32	<b>200.00</b>



HPK-1500

HPK-2500

### HOLLOW PUNCH KITS

**Precise inner and outer diameters with one punch!**

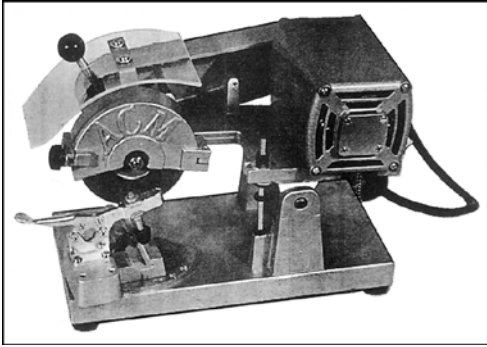
Quickly punch out washers and sealing rings in hundreds of sizes and make dual diameter cuts in ranges from 1/8" to 2" with the 25-Punch Kit, and from 1/8" to 13/16" with the 15-Punch Kit. Interchangeable heads quickly lock into place for accurate cutting in foam, cardboard, leather, rubber, fiber, plastic, gasket material and lead. High Carbon Steel cutting edges.

Steel Alloy handle included with each set. HPK-2500 also has a chuck for adjusting larger punch sizes. Kits store in a molded polypropylene case for protection and convenience.

### HOLLOW PUNCH TOOL KITS

Part No.	Description	Punch Sizes (Dimension in Inches)	Price Each
<b>B-HPK-1500</b>	15-Punch Kit with Handle and Carry Case	1/8, 3/16, 1/4, 5/16, 3/8, 7/16, 1/2, 9/16, 5/8, 3/4, 7/8, 1, 1-1/16, 1-1/8, 1-3/16	<b>165.00</b>
<b>B-HPK-2500</b>	25-Punch Kit with Handle, Chuck, and Carry Case	1/8, 3/16, 1/4, 5/16, 3/8, 7/16, 1/2, 9/16, 5/8, 3/4, 7/8, 1, 1-1/16, 1-1/8, 1-3/16, 1-1/4, 1-5/16, 1-3/8, 1-7/16, 1-1/2, 1-5/8, 1-11/16, 1-3/4, 1-7/8, 2	<b>325.00</b>

## CUTTERS — Power Cut-Off Saw

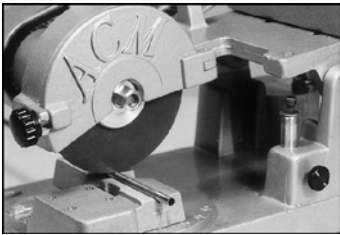


### CUT-OFF POWER SAW

A fast, economical, precision tool for cutting a wide variety of metals under wet or dry conditions. The 4" wheel gives clearance for cutting up to 3/4" diameters. The portable Cut-Off Power Saw can be connected to any 115V outlet and measures just 14"×7-5/8"×9". Belt and wheel guards plus a transparent shield protect the worker. An adjustable stop and indexable work table (0°, 15°, 30°, and 45°) help you achieve precision cuts on most of our metals with the least possible burrs. One rubber bonded aluminum oxide Abrasive Wheel and a pair of safety goggles are supplied with the saw. 1/2 HP universal motor rated at 1.9 amps full load. Operating speed — 10,000 rpm.

Shipped FOB Miami Lakes, FL. Weight: 22 lbs.

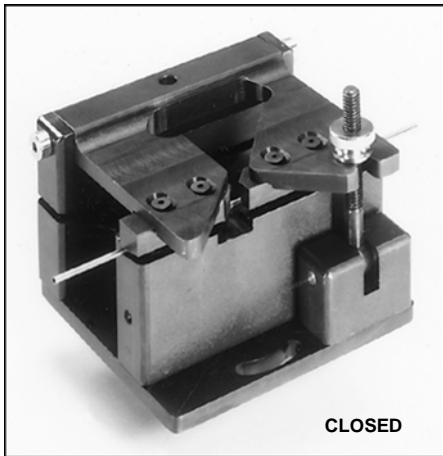
**B-CUT-4** ..... **795.00**



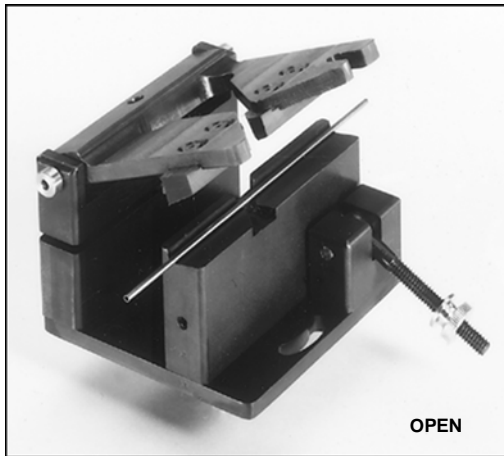
### CUT-OFF POWER SAW ABRASIVE WHEEL

Rubber bonded aluminum oxide wheels offer the highest quality metal cutting possible, particularly suited to operations where accuracy of cut, work piece integrity and finish are essential. This 180-grit Abrasive Wheel is recommended for cutting stainless steel, high-speed steel, aluminum, brass and copper tubing and metals under wet or dry conditions. 1/2" center hole. Wheel measures 4" × 0.016".

**B-CW-4** ..... Each **7.25**      Ten .... **58.50**



**CLOSED**



**OPEN**

### HOLD DOWN UNIT

For use with Cut-Off Saw on small gauge Hypodermic Tubing or rod up to 1/8" diameter. This unit yields square cut material by clamping both sides of the cut to prevent movement. More than one piece of tubing or rod may be cut simultaneously, depending upon material diameter. The unique arrangement of the clamping plate allows it to remain horizontal while it moves vertically, so that it adjusts to the diameter of the clamped tube or rod.

**B-CD-1** ..... **395.00**

## CUTTERS, TUBING

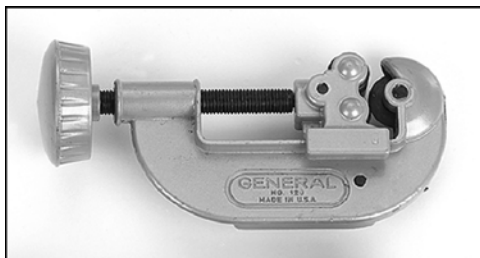


### CAPILLARY TUBING CUTTER

A swift single action cuts through stainless steel capillary tubing. Cut diameters up to 1/16" with inside diameters of 0.005" to 0.040" without deforming tube or creating burrs, so no filing or polishing is needed after cut. Also cuts Teflon and PEEK tubing easily.

**B-CTC-80** ..... **68.25**

*NOTE: The precision ground surfaces of this tool are intended to cut annealed tubing or plastic tubing only. Using it to cut Stainless Steel hypodermic tubing and wire damages both the cutter and the material. For such use, we recommend our Cut-Off Saw (previous page).*



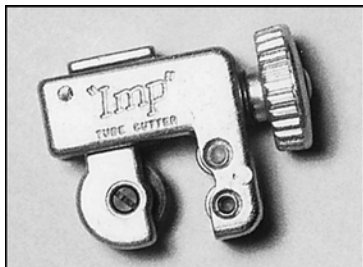
### STANDARD PIPE CUTTER

Cut copper, aluminum and other thin-wall tubing and pipe with diameters up to 1-1/8" or as small as 1/8". The economical Standard Pipe Cutter features anti-friction, flare groove rollers that let you cut tubing close to the flared ends, thus avoiding tubing replacements in existing installations.

Hardened steel reamer slides and locks in place; retracts for safety when not in use. Cast Steel frame with replaceable hardened Alloy Steel Cutting Wheel.

**B-PTC-120** Standard Pipe Cutter ..... **8.95**

**B-PTC-CW2** Replacement Cutting Wheels  
2-Pack ..... **4.00**



### METAL TUBE CUTTER — Tight Quarters

The IMP® Metal Tube Cutter for 1/8" to 5/8" O.D. metal tubing is designed for use in tight quarters and requires only 1-3/8" swing radius. Satin finish, nickel-chrome plated aluminum alloy body. Size: 1-11/16" x 1-5/16" x 7/8". Weight: 2-1/2 oz.

**B-RTC-127** ..... **17.30**

Replacement Steel Cutting Wheel and Screw

**B-RTC-128** ..... **8.00**



### METAL TUBE CUTTER — Hi-Duty®

The Hi-Duty® Metal Tube Cutter for 1/4" to 1-5/8" O.D. metal tubing is 5-1/2" long and weighs 7 oz. The body is constructed of rugged aluminum alloy with satin finish nickel-chrome plating. Roller type with flare cut-off groove. Spare cutting wheel stores beneath the fold-away reamer.

**B-RTC-312** ..... **46.80**

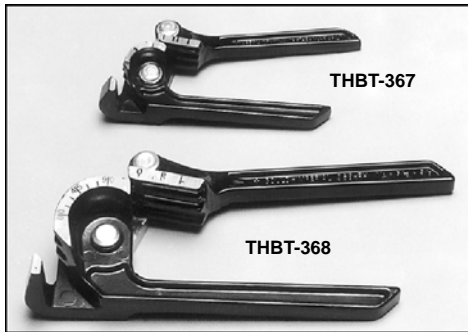


### GLASS TUBING CUTTER

Cuts glass tubing up to 1-1/2" (38mm) diameter. Made of nickel plated zinc alloy and spring-loaded to stay open until used.

**B-YT-GTC-A** ..... **12.95**

## BENDERS, TUBING



### METAL TUBE BENDER

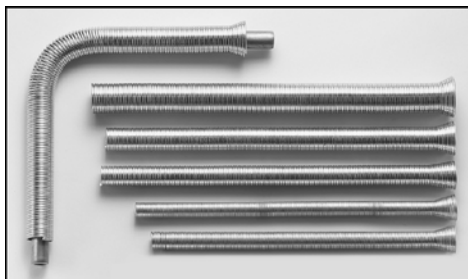
Three-in-one Tube Benders can be used with most types of annealed tubing including, copper, aluminum, steel and stainless steel. Accurate reference markings on the tools enable user to make precision centerline and offset bends. 180° return can be accomplished by repositioning the tube. Rugged all metal construction. Instructions included.

**For 1/8", 3/16" and 1/4" O.D. tubing**  
(minimum bending radius = 5/8")

**B-THTB-367** ..... 36.75

**For 1/4", 5/16" and 3/8" O.D. tubing**  
(minimum bending radius = 1")

**B-THTB-368** ..... 44.10



### TUBING BENDERS

An effective and simple way to bend thin wall tubing. Tubing Benders protect against crimping and collapsing when you are working with copper and other thin walled, malleable tubes. Made of oil hardened and tempered spring steel, they can be used with most annealed tubing, including brass, aluminum and stainless steel.

Part No.	Fits Tubing O.D.	Price Each
<b>B-STB-01</b>	1/16"	1.10
<b>B-STB-015</b>	3/32"	1.10
<b>B-STB-02</b>	1/8"	1.10
<b>B-STB-025</b>	5/32"	1.10
<b>B-STB-03</b>	3/16"	1.10
<b>B-STB-04</b>	1/4"	1.75
<b>B-STB-05</b>	5/16"	1.95
<b>B-STB-06</b>	3/8"	2.15
<b>B-STB-600</b>	Set (One each B-STB-01 through B-STB-06)	16.05

**NOTE:** Tubing Benders can be used to bend Stainless Steel Hypodermic Tubing, only after it has been annealed. See Fusible Metals, for bending technique, page 33.

## DEBURRERS AND REAMERS



### DEBURRING TOOL

Deburs both inside and outside edges of a tube with three hollow ground tool steel cutters. Fits comfortably in hand. Suitable for high-grade stainless steel tubing, hard or soft coppers, brass and steel tubing. High speed steel cutters. Black finish. Weight: 10 oz. Deburrs from 3/16" to 1-1/2" tubing.

**B-TDT-1** ..... 77.50



### HAND REAMER AND COUNTERSINK

Five-flutes on this 3/4" Tool Steel cutter make fast work of countersinking wood, plastic, formica, and sheetrock. Also deburrs plastic, copper, iron pipe, and sheet metal. Cutter has a 45° angle. Heavy duty, ergonomically designed handle. Overall length: 5-1/8".

**B-TDT-4** ..... 9.85



## DEBURRERS AND REAMERS (cont.)

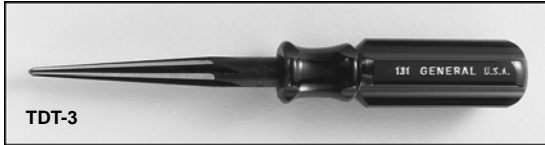


### CONICAL REAMERS — PB Baumann

Part No.	Diameter Range	Overall Length	Reamer Length	Price
<b>B-PB-RM-62812</b>	2.5–12 (0.10–0.47")	235(9–1/4")	116 (4–1/2")	<b>21.80</b>
<b>B-PB-RM-62820</b>	5–20 (0.20–0.79")	295(11–5/8")	170 (6–3/4")	<b>39.00</b>
<b>B-PB-RM-62825</b>	15–25 (0.59–0.98")	210(8–1/4")	85 (3–3/8")	<b>45.00</b>

#### **Easy on the hand, sharp, durable**

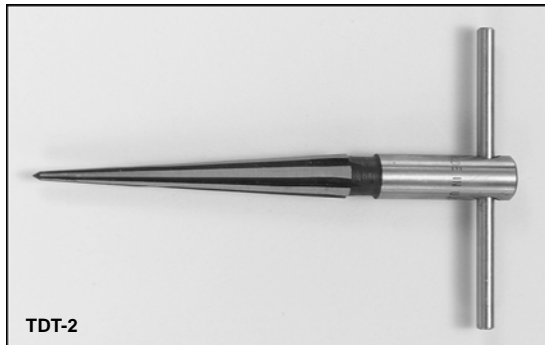
Large, rounded, ridge-free ends on the handles of PB Baumann Reamers let you apply strong pressure without discomfort to your hand. Handle sides have a textured surface for good grip. Hardened steel flutes cut in one direction. Reverse direction for easy withdrawal.



### HAND REAMER

Good grip with *Screw Driver Handle* Reamer. It tapers from 1/8" to 3/8", for removing burrs in pipe and tubing, and for enlarging or countersinking holes in wood, metal, plastics, and wall board. There are six flutes on this cutter made of hardened Tool Steel, machined and ground. Plastic handle. Cutter length: 3-1/8". Overall length: 6-3/8".

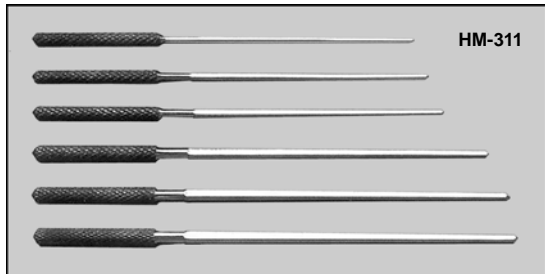
**B-TDT-3** ..... **13.10**



### T-HANDLE REAMER

Get the leverage you need when removing burrs, enlarging or countersinking holes in metals, plastics, or wood. It has six flutes, tapering from 1/8" to 1/2". Made of hardened and tempered Tool Steel with precision ground cutting edges. Cutter length: 3-3/4". Overall length: 5-3/4".

**B-TDT-2** ..... **15.25**



### MINIATURE REAMERS

Set of Reamers useful for enlarging and shaping small holes in metal, wood, or plastic. Handles comfortably shaped for easy gripping.

**Six sizes:** . 0.028"/0.018", 0.040"/0.026", . 0.048"/0.032", 0.080"/0.050", 0.085"/0.053", 0.104"/0.062"

**B-HM-311** ..... **17.30**



### SCRAPER

All-purpose Scraper useful for cleaning, smoothing, or deburring. Hollow-sided, triangular shape blade with three sharp edges, mounted in a hardwood handle.

**B-HM-297** ..... **8.95**

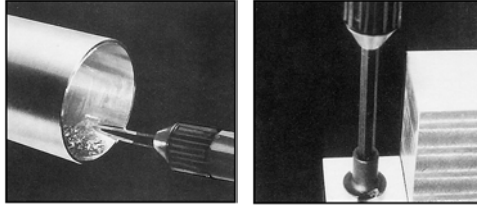
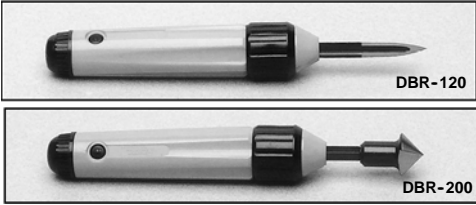


### BURNISHER, CURVED BLADE

This is the tool to reach for when smoothing and finishing soft metals, setting edges on knives or scrapers, or when setting gemstones. Burnisher has oval-shaped, tool steel 1-1/2" long blade. Wood handle.

**B-HM-296** ..... **7.00**

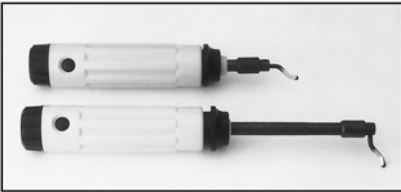
## DEBURRING TOOLS



### HAND DEBURRING TOOLS

Hand Deburring Tools find wide application in general shop use to deburr cavities, holes and recesses. Scraper can be used to deburr a hole as small as 1/16" in diameter. Counter sink has a 90° angle.

<b>B-DBR-120</b> Scraper .....	<b>22.50</b>
<b>B-DBR-200</b> Counter Sink .....	<b>29.70</b>



### HAND TOOL — Telescoping

This versatile tool has an adjustable, narrow blade holder that extends from 1/2" to 5". The blades are only 3/32" in diameter, can be inserted from the top or at 90° (for cross holes), and can be used on steel, aluminum, brass and cast iron. The handle has a storage compartment for spare blades. Includes one each DTB-10 and DTB-20. Overall length: Min. 5-3/4", Max. 9-1/8".

<b>B-DBR-100</b> .....	<b>10.95</b>
------------------------	--------------



DTB-10



DTB-20

### REPLACEMENT BLADES

<b>B-DTB-10</b> 3 - for steel and aluminum .....	<b>3.95</b>
<b>B-DTB-20</b> 3 - for brass and cast iron .....	<b>3.95</b>

## DEBURRING TOOL KITS



### BASIC DEBURRING KIT

A versatile set of tools to fit most deburring applications at a modest price. Everything fits neatly in a sturdy plastic case.

#### Contains:

Double Burr; Zip/Burr Handle; Zip/Burr B Holder with Blades B-10 and B-20; Zip/Burr E Holder with Blades E-100, E-200, E-300; Zip/Burr K Holder; Standard Keyway Blade for slots 1/8" to 1/4" wide; Zip/Burr C Holder with 1/2" Countersink C-12 and 3/4" Countersink C-20; Two Zip/Burr D Holders with D-50 HSS Mini Scraper and D-66 HSS Internal Scraper.

<b>B-DBR-1</b> .....	<b>120.00</b>
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### DELUXE DEBURRING KIT

Augment your machine shop facilities with the Deluxe Deburring Kit. Fitted case for finding, toting and storage.

#### Contains:

Half-Round Riffler File; Round Riffler File; Flat Riffler File, Keyway Burr, Double Burr; C Holder with 3/4" Countersink (C-20); J Holder with Mini-Scraper (J-50) J Holder with Internal Scraper (J-66); Double Header B/E Holder; Chamfering Tool, L Holder and L-1 Blade Handle; 1/2" Countersink (C-12); Scraper T-120; 4 Different Blades.

<b>B-DBR-2</b> .....	<b>200.00</b>
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## DEBURRING AND FINISHING



### INDUSTRIAL TUMBLER — Heavy Duty Drive

Vibratory Machines are used to deburr or finish irregularly shaped parts, since the vibrating action works the media at blind or hidden areas. Part size is not a problem in a vibratory machine. If the part fits in the channel and rotates, it will finish. Our Industrial Model is equipped with a heavy duty drive and suspension combined with a tough, cross-linked polyethylene bowl. The capacity of the bowl is .10 cu. ft., which will hold about 8 lbs. of ceramic media. The bowl is supplied with a noise dampening cover and a drain. 16" height, 110V/60Hz.

For 220V/50Hz unit, please **call Purchasing Services — 1-888-455-9712**.  
Shipped FOB Miami Lakes, FL. Weight: 20 lbs.

**B-TUM-10** Tumbler ..... Each ..... **240.75**  
**B-TUM-B50** Replacement Bowl ..... Each ..... **63.95**

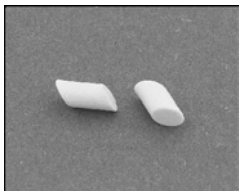
### CERAMIC MEDIA

**"C" MEDIA** — This media contains coarse grained abrasives. It works harder and faster in the removal of heavy burrs and flash thus saving valuable time. Dimensions: 1/8" diameter, 11/32" length, 30° angle cut.

**B-TUM-C50** Color: Gray ..... **35.00**

**"F" MEDIA** — This media is designed for light deburring. When used with burnishing compounds the desired burnished finish can be obtained. Dimensions: 1/8" diameter, 11/32" length, 30° angle cut.

**B-TUM-F50** Color: White ..... **35.00**



*For years, we have been using these Tumblers in our Machine Shop — sometimes we run them continuously over a weekend **polishing and deburring** metals with little or no maintenance problems.*



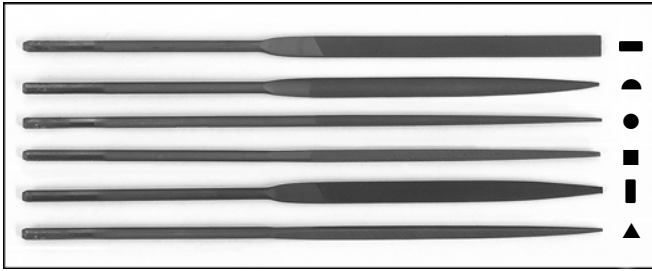
### PORTABLE VACU-VISE WITH SWIVEL BASE

#### *Non-marring rubber base*

This portable vise grips any smooth non-porous surface without the use of clamps or screws. Large 3" (76mm) wide "V" grooved iron jaws open to 3" with precision screw action. Protective rubber jaw covers are included. Universal ball joint rotates vise to any desired working angle. Move it around your lab, shop, or attach it to your kitchen table with its non-marring rubber vacuum pad. Lightweight cast aluminum base with iron jaws. 6" triangular base. Stands approx. 6" high.

**B-VV-400** ..... **51.00**

## NEEDLE FILES — Chrome Steel



Six different shapes, sold by the set or individually.

### SWISS SINGLE CUT FILES — Fine Cut

*Cuts faster...lasts longer!*

Less clogging and easier to clean, these single cut miniature files (5-1/2" long) have handles shaped for firm gripping. Files are made of hard Chrome Steel with a FINE cut. Use for smoothing, deburring and shaping work in metal, wood, rubber and plastics.

### SWISS SINGLE CUT FILES — Fine Cut

Part No.	Shape	Description	Price	
			Each	6
B-FSC-770	▬	Pointed Flat	4.50	22.50
B-FSC-771	◐	Half Round	4.50	22.50
B-FSC-772	●	Round	4.50	22.50
B-FSC-773	■	Square	4.50	22.50
B-FSC-774	▬	Equalling	4.50	22.50
B-FSC-775	▲	Triangular - 3 Square	4.50	22.50
B-FSC-778	Set of Six different shapes, with vinyl pouch			22.50



Five different shapes, sold by the set or individually.

Be sure to specify cut when ordering: #00 Coarse (B) or #1 Medium (S).

### SWISS PRECISION FILES

For the in-between jobs that are too large for the Needle File, but require the finer control that a heavier file can't deliver. Swiss made, these precision files have a built-in handle that gives you strong, secure control. Five different shapes in each set. 8-1/2" long, two different cuts.

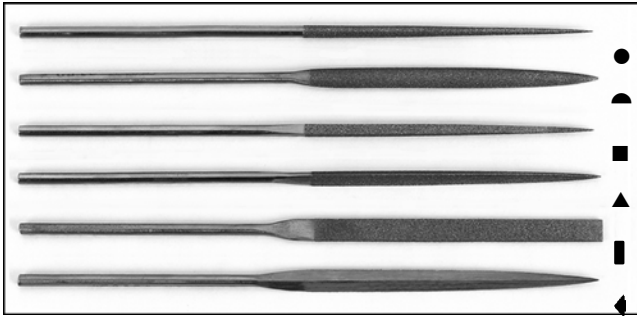
### SWISS PRECISION FILES

Order Example: B-FPC-780-B is a Flat File Coarse Cut

Part No.	Shape	Description	Price	
			Each	5
B-FPC-780	▬	Hand (Flat)	10.90	55.60
B-FPC-781	◐	Half Round	14.50	73.95
B-FPC-782	●	Round	10.55	53.80
B-FPC-783	■	Square	10.55	53.80
B-FPC-784	▲	Triangular - 3 Square	11.50	58.65
B-FPC-785-B	Set of Five different shapes — Cut #00, Coarse			55.00
B-FPC-785-S	Set of Five different shapes — Cut #1, Medium			55.00

**Abrasive Cords and Tapes — See page 401**

## NEEDLE FILES — Diamond



### DIAMOND NEEDLE FILES

Get sharp and even cutting action, durability and long life with Diamond Needle Files. Great for consistent filing of hardened steels, carbide, ceramics and hard plastics. Round shanks are 5-1/2" long with a coating of medium 150-grit synthetic diamonds — more consistent in shape than natural diamond. 0.118" diameter shanks are made of high carbon steel with high density, wear resistant plating achieved with electro-chemical and electroless nickel flash processing.

### DIAMOND NEEDLE FILES — Coarse Grit

Part No.	Shape	Description	Size	Price Each
B-FDA-162	●	Round	1/8"	<b>29.75</b>
B-FDA-152	◐	Half Round	13/64" × 5/64"	<b>40.90</b>
B-FDA-142	■	Square	7/64"	<b>48.00</b>
B-FDA-132	▲	Three-Square	9/64"	<b>49.00</b>
B-FDA-112	▮	Equalling	15/64" × 1/16"	<b>36.85</b>
B-FDA-102*	◄	Barrette	13/64"	<b>32.00</b>
B-FDA-200	Set of Six different shapes			<b>210.00</b>

\*Coated Flat Side Only

## FILES — Aluminum



For use with aluminum, these files have specific tooth construction to avoid clogging. A smooth finish can be readily obtained by using a shear cut towards the left. Double cut.

*HINT: Use chalk to prevent jamming the file. See next page.*

All Files can be used with the Skroo-Zon Handle size indicated. See page 399.

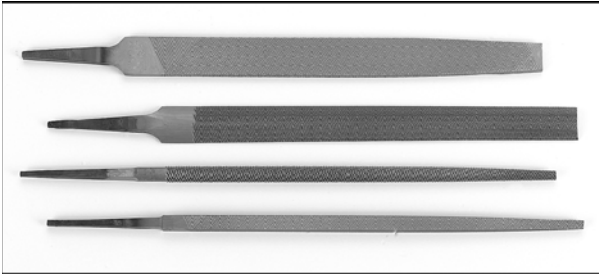
### ALUMINUM FILES

Part No.	Description	Length	"Skroo-Zon" Handle #	Price Each
B-FAC-8F	Flat	8"	5	<b>14.80</b>
B-FAC-12F	Flat	12"	7	<b>21.35</b>
B-FAC-8HR	1/2 Round	8"	5	<b>23.40</b>
B-FAC-12HR	1/2 Round	12"	7	<b>29.70</b>

Skroo-Zon Handles for Aluminum Files

See page 399

# FILES — General Purpose



**TYPE OF CUT:**  
**BASTARD** (Coarse): **B**  
**SECOND** (Medium): **SC**  
**SEMI-SMOOTH** (Fine): **SM**

*Be sure to add the appropriate suffix (B, SC, or SM) to the part number when ordering.*

® Nicholson

**FLAT** Use when rapid removal of metal is required. Double Cut on both sides; single cut on edges.

**HALF ROUND** Use on concave and convex surfaces as well as on Flat surfaces Double Cut.

**ROUND** Use to file circular openings or concave surfaces. Tapered slightly towards the point. Single cut.

**SQUARE** Use for filing slots, keyways and general surface filing. Tapered slightly towards point. Double cut.

*All Files can be used with the Skroo-Zon Handle size indicated. See page 399.*

## GENERAL PURPOSE FILES

Order Example: **B-FGP-12F-SC** is 12" Flat, Medium

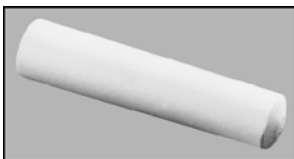
Part No.	Description	Length	"Skroo-Zon" Handle #	Price Each		
				Coarse (B)	Medium (SC)	Fine (SM)
<b>B-FGP-4F</b>	Flat	4"	2	<b>5.90</b>	<b>6.15</b>	<b>7.35</b>
<b>B-FGP-6F</b>	Flat	6"	4	<b>6.25</b>	<b>6.55</b>	<b>7.85</b>
<b>B-FGP-8F</b>	Flat	8"	5	<b>7.75</b>	<b>8.50</b>	<b>9.10</b>
<b>B-FGP-12F</b>	Flat	12"	7	<b>13.10</b>	<b>14.80</b>	<b>16.40</b>
<b>B-FGP-4HR</b>	Half Round	4"	2	<b>9.00</b>	<b>10.05</b>	<b>10.55</b>
<b>B-FGP-6HR</b>	Half Round	6"	4	<b>9.35</b>	<b>10.65</b>	<b>11.05</b>
<b>B-FGP-8HR</b>	Half Round	8"	5	<b>11.40</b>	<b>12.50</b>	<b>13.45</b>
<b>B-FGP-12HR</b>	Half Round	12"	7	<b>18.30</b>	<b>19.75</b>	<b>20.85</b>
<b>B-FGP-4R</b>	Round	4"	2	<b>5.30</b>	<b>5.70</b>	<b>6.20</b>
<b>B-FGP-6R</b>	Round	6"	4	<b>5.30</b>	<b>5.95</b>	<b>6.55</b>
<b>B-FGP-8R</b>	Round	8"	5	<b>6.05</b>	<b>6.95</b>	<b>7.70</b>
<b>B-FGP-12R</b>	Round	12"	7	<b>10.65</b>	<b>12.10</b>	<b>13.20</b>
<b>B-FGP-4S</b>	Square	4"	2	<b>6.60</b>	<b>7.15</b>	<b>7.75</b>
<b>B-FGP-6S</b>	Square	6"	4	<b>6.95</b>	<b>7.75</b>	<b>8.20</b>
<b>B-FGP-8S</b>	Square	8"	5	<b>8.25</b>	<b>9.30</b>	<b>10.20</b>
<b>B-FGP-12S</b>	Square	12"	7	<b>15.40</b>	<b>17.20</b>	<b>18.90</b>



## FILE CARD AND BRUSH

Combination file teeth cleaner for use with general purpose files (one side) and finer cut files (other side).

**B-FCB-1** ..... **12.95**



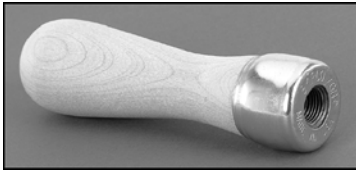
## FILE CHALK

This top quality white "Railroad Chalk" doesn't crumble and fits nicely in the palm of your hand. Also useful for marking metals, wood, concrete, cardboard and plastic. Shape tapers from 1" to 7/8".

*Tip: Filing Aluminum typically loads up the file face and is difficult to remove. A liberal application of chalk prior to filing will significantly reduce built-up.*

**B-CHK-1W** ..... Each Pack of 6 **3.25**

## FILE HANDLES



### “SKROO-ZON” FILE HANDLES

We believe these “Skroo-Zon” handles to be the best on the market. The hardened steel die in the handle cuts a thread on the file tang; holding it firmly. The comfortably shaped hardwood handle is never touched by the tang and therefore does not split. Handles fit a series of sizes, from small files up to 14”.

Part No.	File Handle No.	For File Size	Each	Price	10
<b>B-SKRZ-1</b>	1	Small Files	<b>2.00</b>		<b>16.60</b>
<b>B-SKRZ-2</b>	2	4”	<b>2.00</b>		<b>16.60</b>
<b>B-SKRZ-3</b>	3	5”	<b>2.15</b>		<b>17.80</b>
<b>B-SKRZ-4</b>	4	6”	<b>2.15</b>		<b>17.80</b>
<b>B-SKRZ-5</b>	5	8”	<b>2.45</b>		<b>20.20</b>
<b>B-SKRZ-6</b>	6	10”	<b>2.45</b>		<b>20.20</b>
<b>B-SKRZ-7</b>	7	12”	<b>2.65</b>		<b>22.00</b>
<b>B-SKRZ-8</b>	8	14”	<b>2.65</b>		<b>22.00</b>

### ASSORTMENTS

<b>B-SKRZ-150</b>	Contains 2 each of #1, #2, #3, #4 - 8 pieces	<b>14.95</b>
<b>B-SKRZ-250</b>	Contains 2 each of #5, #6, #7, #8 - 8 pieces	<b>18.35</b>

## LAPPERS — Diamond



### DIAMOND HAND LAPPERS

Effectively hone the edges of your carbide cutting tools or finish other types of metal with our Diamond Hand Lappers. Designed for accurate control and a comfortable hold, Lappers offer excellent abrasion resistance for superior finishing results. Plastic-handle, color-coded Lappers are 6” long by 3/4” wide, with a 2” x 3/4” face area coated with synthetic diamonds.

Part No.	Grit	Price Each
<b>B-DHL-012</b>	Medium - 325	<b>9.25</b>
<b>B-DHL-018</b>	Superfine - 1500	<b>7.15</b>

Choose medium or superfine grit.

## SHARPENING STEELS — Diamond

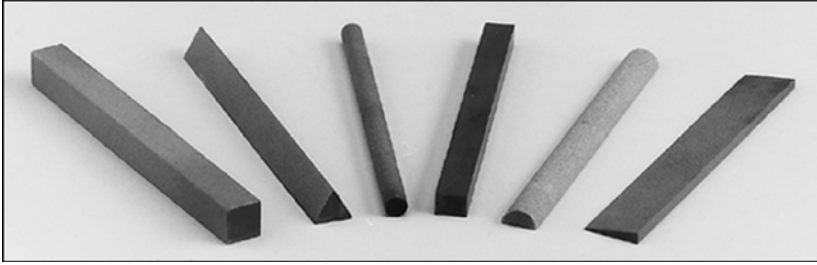


Equally at home in workshop or kitchen, these sharpening instruments combine microcrystalline synthetic diamonds bonded with nickel to a light weight oval steel shaft. The unit sharpens and realigns at the same time while quickly producing a hi-grade cutting edge.

The diamond mesh is equivalent to 600 grit; you can sharpen without oil or water and the units also sharpen serrated knives. Can be used to remove small imperfections or chips in china, crystal and glass. The DSS-10 size fits most standard home cutting blocks.

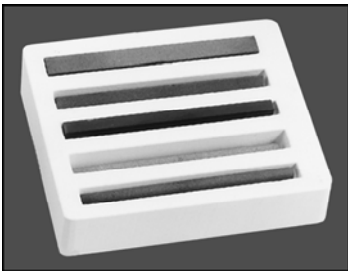
Part No.	Description	Price Each
<b>B-DSS-05</b>	Companion	<b>13.50</b>
<b>B-DSS-10</b>	Standard (fits home cutting blocks)	<b>25.00</b>
<b>B-DSS-12</b>	Professional	<b>38.00</b>

# ABRASIVE RUBY STONES



Hone carbide and cut the hardest steels. Use dry or with honing oil to grind, touch-up or deburr steel and carbide parts. Made from pure, sintered crystals of synthetic ruby. No bonding material is used; therefore, these stones are resistant to changes in shape and are extremely hard. Also recommended for use with glass, quartz and porcelain. Outstanding resistance to wear, leave very little grit on sharpened blade, more economical to use than other comparable tools.

Part No.	Shape	Type	Size	Grit	Price Each
<b>B-ARS-TM4</b>	▲	Triangular	4" × 1/4"	Medium	<b>34.25</b>
<b>B-ARS-TM6</b>	▲	Triangular	4" × 3/8"	Medium	<b>48.55</b>
<b>B-ARS-TF6</b>	▲	Triangular	4" × 3/8"	Fine	<b>63.15</b>
<b>B-ARS-SM4</b>	■	Square	4" × 1/4"	Medium	<b>37.50</b>
<b>B-ARS-SM6</b>	■	Square	4" × 3/8"	Medium	<b>54.10</b>
<b>B-ARS-SF6</b>	■	Square	4" × 3/8"	Fine	<b>55.20</b>
<b>B-ARS-HC6</b>	◐	Half Round	4" × 3/8"	Coarse	<b>39.25</b>
<b>B-ARS-RM4</b>	●	Round	4" × 1/4"	Medium	<b>41.45</b>
<b>B-ARS-RM6</b>	●	Round	4" × 3/8"	Medium	<b>49.95</b>
<b>B-ARS-RF6</b>	●	Round	4" × 3/8"	Fine	<b>52.95</b>
<b>B-ARS-KM2</b>	◄	Knife	4" × 5/8" × 1/8"	Medium	<b>72.55</b>
<b>B-ARS-KF2</b>	◄	Knife	4" × 5/8" × 1/8"	Fine	<b>72.55</b>



## ASSORTMENT Ruby Stones Kit

Contains one each of the Ruby Stones listed below. Packed neatly in a plastic case.

Shape	Type	Size	Grit
▲	Triangular	4" × 3/8"	Medium
■	Square	4" × 3/8"	Medium
▬	Flat	4" × 5/16" × 1/4"	Fine
◐	Half Round	4" × 3/8"	Coarse
●	Round	4" × 1/4"	Medium

**B-ARS-100** ..... **161.05**

## COMBINATION RUBY BENCH STONE

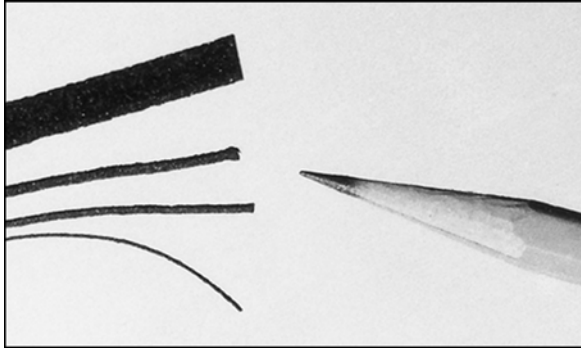
Finished on two sides with pure, sintered crystals of synthetic ruby. One side is medium, the other is fine. Neatly packaged in a wooden box. Measures 4-3/4" × 2" × 3/8".

**B-ARS-CBS** ..... **153.75**





## ABRASIVE CORDS AND TAPES



Round Cords and flat Tapes will polish and deburr small holes, slots, radii, bearing surfaces, etc.

**Aluminum Oxide** is used for deburring plain or alloyed steel (soft or hardened).

**Silicon Carbide** works best for cast iron, non-ferrous metals and non-metallic materials.

**Crocus** has an ultrafine grit of 600 or finer for that final polished finish.

Order Example: **B-AC-51A-25** is Aluminum Oxide Abrasive Cord, 25 Ft.

### ABRASIVE CORD — Aluminum Oxide

Part No.	Approx. Dia.	Grain	Price	
			-25 Ft.	-50 Ft.
<b>B-AC-48A</b>	0.093"	150	<b>20.25</b>	<b>31.00</b>
<b>B-AC-49A</b>	0.082"	120	<b>12.75</b>	<b>20.00</b>
<b>B-AC-50A</b>	0.070"	180	<b>12.25</b>	<b>19.00</b>
<b>B-AC-51A</b>	0.055"	120	<b>8.25</b>	<b>13.00</b>
<b>B-AC-52A</b>	0.055"	150	<b>8.25</b>	<b>13.00</b>
<b>B-AC-53A</b>	0.040"	180	<b>8.25</b>	<b>13.00</b>
<b>B-AC-54A</b>	0.030"	200	<b>8.25</b>	<b>13.00</b>

### ABRASIVE TAPE — Aluminum Oxide

Part No.	Approx. Width	Grain	Price	
			-25 Ft.	-50 Ft.
<b>B-AC-01A</b>	1/16"	180	<b>9.25</b>	<b>15.50</b>
<b>B-AC-56A</b>	3/32"	180	<b>8.25</b>	<b>13.25</b>
<b>B-AC-57A</b>	1/8"	180	<b>8.50</b>	<b>13.50</b>
<b>B-AC-58A</b>	3/16"	150	<b>8.25</b>	<b>14.00</b>
<b>B-AC-59A</b>	1/4"	150	<b>11.25</b>	<b>18.00</b>

### ABRASIVE CORD — Silicon Carbide

Part No.	Approx. Dia.	Grain	Price	
			-25 Ft.	-50 Ft.
<b>B-AC-49S</b>	0.082"	120	<b>16.00</b>	<b>25.00</b>
<b>B-AC-50S</b>	0.070"	180	<b>15.75</b>	<b>25.00</b>
<b>B-AC-51S</b>	0.055"	120	<b>11.75</b>	<b>19.50</b>
<b>B-AC-52S</b>	0.055"	150	<b>11.75</b>	<b>19.50</b>
<b>B-AC-53S</b>	0.040"	180	<b>11.75</b>	<b>19.50</b>
<b>B-AC-54S</b>	0.030"	200	<b>12.75</b>	<b>21.00</b>
<b>B-AC-55S</b>	0.018"	200	<b>8.75</b>	<b>13.50</b>
<b>B-AC-60S</b>	0.015"	200	<b>9.00</b>	<b>13.75</b>

### ABRASIVE TAPE — Silicon Carbide

Part No.	Approx. Width	Grain	Price	
			-25 Ft.	-50 Ft.
<b>B-AC-01S</b>	1/16"	180	<b>13.00</b>	<b>21.00</b>
<b>B-AC-56S</b>	3/32"	180	<b>11.75</b>	<b>19.50</b>
<b>B-AC-57S</b>	1/8"	180	<b>12.25</b>	<b>20.00</b>
<b>B-AC-58S</b>	3/16"	150	<b>13.00</b>	<b>20.50</b>
<b>B-AC-59S</b>	1/4"	150	<b>14.50</b>	<b>23.00</b>

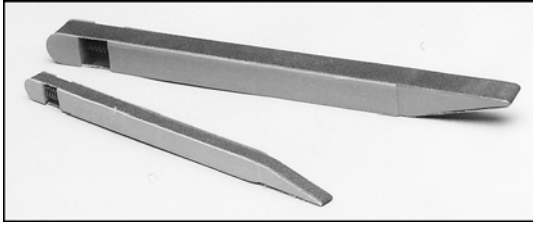
### POLISHING CORD — Crocus

Part No.	Approx. Dia.	-25 Ft.	Price	
			-50 Ft.	
<b>B-AC-49C</b>	0.082"	<b>13.50</b>	<b>21.00</b>	
<b>B-AC-50C</b>	0.070"	<b>11.25</b>	<b>18.50</b>	
<b>B-AC-52C</b>	0.055"	<b>10.00</b>	<b>15.50</b>	
<b>B-AC-53C</b>	0.040"	<b>10.00</b>	<b>15.50</b>	
<b>B-AC-54C</b>	0.030"	<b>10.00</b>	<b>15.50</b>	
<b>B-AC-55C</b>	0.018"	<b>11.00</b>	<b>17.25</b>	
<b>B-AC-60C</b>	0.015"	<b>11.00</b>	<b>17.25</b>	
<b>B-AC-66C</b>	0.012"	<b>17.75</b>	<b>27.50</b>	

### POLISHING TAPE — Crocus

Part No.	Approx. Width	-25 Ft.	Price	
			-50 Ft.	
<b>B-AC-56C</b>	3/32"	<b>10.00</b>	<b>16.00</b>	
<b>B-AC-59C</b>	1/4"	<b>14.00</b>	<b>22.00</b>	

## SANDING TOOLS



### SANDING STICKS

A Sanding Stick helps you smooth and shape detailed surfaces and get to those hard-to-reach areas. Sleek and simple to use; hobbyists, technicians and machinists will appreciate its versatility. Plastic Handles are color coordinated for easy identification of the desired grit size. Belts can be indexed a full 360° with just the push of your thumb to insure maximum utilization of each belt. Chemical and impact resistant, this exceptional tool can be used with water, acetone, kerosene or oil.

### HANDLES (One belt included)

Part No.	Color	Length	Width	Abrasive Belt	Price Each
B-PS-46R	Red	6"	1/4"	120 (coarse)	<b>4.50</b>
B-PS-88R	Red	8"	1/2"	120 (coarse)	<b>5.95</b>
B-PS-46G	Green	6"	1/4"	320 (fine)	<b>4.50</b>
B-PS-88G	Green	8"	1/2"	320 (fine)	<b>5.95</b>
B-PS-46B	Black	6"	1/4"	600 (xx fine)	<b>4.50</b>
B-PS-88B	Black	8"	1/2"	600 (xx fine)	<b>5.95</b>

### ASSORTMENTS

**B-PS-100** 6" x 1/4" handles. One each: B-PS-46 B-PS-46G & B-PS-46B — 3 pieces ..... **15.05**  
**B-PS-200** 8" x 1/2" handles. One each: B-PS-88 B-PS-88G & B-PS-88B — 3 pieces ..... **18.95**

### ABRASIVE BELTS (Sold in Packs of 5)

Part No.	Length	Width	Grit	Price Per Pack
B-AB-120-46	6"	1/4"	120 (coarse)	<b>3.30</b>
B-AB-120-88	8"	1/2"	120 (coarse)	<b>4.50</b>
B-AB-320-46	6"	1/4"	320 (fine)	<b>3.30</b>
B-AB-320-88	8"	1/2"	320 (fine)	<b>4.50</b>
B-AB-600-46	6"	1/4"	600 (xx fine)	<b>3.30</b>
B-AB-600-88	8"	1/2"	600 (xx fine)	<b>4.50</b>

### ASSORTMENTS

**B-AB-100** 6" x 1/4" belts. 5 each B-AB-120-46 B-AB-320-46 & B-AB-600-46 — 15 pieces ..... **12.50**  
**B-AB-200** 8" x 1/2" belts. 5 each B-AB-120-88 B-AB-320-88 & B-AB-600-88 — 15 pieces ..... **19.25**



### SANDING BLOCKS — Sandflex®

Sanding Blocks remove rust and discoloration from tarnished metal, corrosion from outdoor equipment and mineral deposits from ceramic tile and toilets. Use them to clean power tools and woodworking equipment, stainless steel sink, pots, pans, golf clubs and hand tools; deburr metal and plastic surfaces; clean electrical contacts to a bright shiny surface.

Available in three grits: Coarse, Medium and Fine.

<b>B-AHB-1C</b> .....	<b>3.95</b>
<b>B-AHB-1M</b> .....	<b>3.95</b>
<b>B-AHB-1F</b> .....	<b>3.95</b>

### ASSORTMENT

Five Sanding Blocks: 1 Coarse, 2 Medium and 2 Fine

**B-AHB-100** ..... **16.50**

# POLISHING AND LAPPING AGENTS



## POLISHING ALUMINA POWDER

This dry, levigated Alumina (aluminum oxide) Powder has an average particle size of 5 microns with 95% of the particles being finer than 10 microns. Alumina Grit can be used for buffing and polishing, and for lapping metallographic specimens. For best results when polishing, use a cloth with a small amount of oil or water.

**B-LCA-1** Jar - 2 oz. .... **7.65**

**NOTE:** A dust mask should be worn when using Alumina Powder. See page 460.



ABW-3



ABW-16

## POLISHING BRONZE WOOL

Get superior finishing results for hardwoods like teak and mahogany, or use Bronze Wool as a cleaning and polishing agent for various metals. As a finishing medium, it cuts better and faster than sandpaper and other abrasives. It resists shedding, and unlike iron-based products, any fibers left behind won't cause rust deposits. Use it to clean aluminum, as a rust remover, and for polishing brass and stainless steel. It can be rinsed and reused, and it resists corrosion.

**FINE** grade is best for polishing tasks. **MEDIUM** or **COARSE** for removing dirt and grime. **Be sure to specify grade when ordering:**

**Fine (F); Medium (M); Coarse (C). Otherwise Medium (M) will be shipped.**

**B-ABW-3** Three 3" x 4" pads per pack. .... **4.40**

**B-ABW-16** 16 Oz. Roll ..... **20.25**



## LAPPING COMPOUND — Silicon Carbide

These oil-suspended Silicon Carbide abrasive pastes are used for lapping, smoothing and finishing of metal surfaces. Excellent for mechanics, tool and die makers, and machine builders who need precision, silky-smooth fits in machine parts, valve seats and gear teeth. Can be used for the precision mating of metal parts. Sets include grits from coarse to extremely fine.

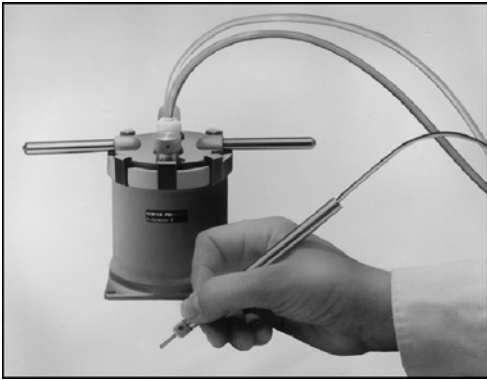
**B-LC-1A** Six 4-ounce cans  
Contains grits 800, 600, 320, 240, 180, 120 ..... **66.95**

**B-LC-2** Twelve 4-ounce cans  
Contains all grits listed below ..... **140.00**

## SILICON CARBIDE — 4-Ounce Cans

Part No.	Grit	Description	Price Per Can
<b>B-LC-1200EF</b>	1200		<b>22.50</b>
<b>B-LC-1000EF</b>	1000	<i>Extremely Fine</i> polishing, high precision lapping	<b>16.35</b>
<b>B-LC-0800EF</b>	800		<b>17.00</b>
<b>B-LC-0600VF</b>	600		<b>17.00</b>
<b>B-LC-0500VF</b>	500	<i>Very Fine</i> for fine polishing and lapping	<b>10.50</b>
<b>B-LC-0400VF</b>	400		<b>10.50</b>
<b>B-LC-0320F</b>	320		<b>10.50</b>
<b>B-LC-0280F</b>	280	<i>Fine</i> for finishing valve lapping, bearings, dies and gauges	<b>8.60</b>
<b>B-LC-0240MF</b>	240		<b>8.60</b>
<b>B-LC-0220MF</b>	220	<i>Medium Fine</i> for cylinder lapping	<b>8.60</b>
<b>B-LC-0180M</b>	180	<i>Medium</i> — General purpose for controlled metal removal	<b>8.60</b>
<b>B-LC-0120C</b>	120	<i>Coarse</i> for the initial "Cut", fast removal of metal	<b>8.60</b>

## ABRASIVE DEVICE — Air



### AIR-ABRASIVE DEVICE

Now you can perform various abrasion and cleaning tasks on extremely hard and/or fragile materials, using a high velocity air stream device that is simple to operate.

Hold the cutting tool in your hand, or machine mount it to cut, drill and shape many materials, including silicon wafers, glass, gemstones, ceramics, carbides and quartz. Use it for etching and marking glass, metals and ceramics; for micro-burring and deflashing fragile precision parts; for easy and positive cleaning of anything from electrical contacts to fine art pieces. It is also valuable for surface finishing when you wish to improve appearance or adhesion.

The Air-Abrasive Device is a highly effective pneumatic abrasive feed system which utilizes full incoming line pressure at the discharge nozzle. A one-pint canister made of Type 304 Stainless Steel uses any abrasive powder in the size range of 10-70 microns (220 to 1000 mesh) and has a self-venting safety lock for de-pressurizing the canister.

The Stainless Steel hand piece has a 3/8" diameter and is 5-3/4" long with the Tungsten Carbide Nozzle attached. The 1/4" diameter inlet air line includes a check valve; a foot-operated pinch valve controls the 1/8" diameter discharge air-abrasive line. The inlet and discharge air lines are six feet long and are made of Polyurethane Tubing. The 0.030" diameter Tungsten Carbide Nozzle with a Brass chuck is supplied as standard. If you wish to employ the 0.020" nozzle (purchased separately), a corresponding chuck is required.

To operate the Air-Abrasive Device you will need an air supply that provides 5 standard cubic feet per minute of clean, moisture free air at 100-125 psi, 12 HP or larger. When using in a Blast cabinet, make sure the vacuum has two stages of filtration — a built in filter and very fine dust adaptor. See the Abrasive Blast Cabinet, [page 405](#).

**B-ADC-01** Air-Abrasive Device System . . . . . **465.00**

### ACCESSORIES AND REPLACEMENT PARTS

**B-ADNA-020** 0.020" Tungsten Carbide Nozzle & Brass Chuck . . . . **12.75**  
**B-ADTN-020** 0.020" Tungsten Carbide Nozzle . . . . . **9.25**  
**B-ADNA-030** 0.030" Tungsten Carbide Nozzle  
 and Brass Chuck . . . . . **12.75**  
**B-ADTN-030** 0.030" Tungsten Carbide Nozzle . . . . . **12.75**

**NOTE:** Air-abrasive tools and materials should be used in a properly vented cabinet or outdoors. Do not breathe abrasive dust. Always use an appropriate dust mask and eye safety equipment. See [page 460](#).

### MICRO-GRAIN ABRASIVES

Get the best results for your air-abrasion projects by choosing the right abrasive material. Many types and grades are available, so we have selected some commonly used materials that you can use with the Air-Abrasive Device. *Never use these materials without proper ventilation.*

**Aluminum Oxide** can be used for many air-abrasive purposes: cutting, drilling, shaping, etching and marking, micro-deburring and flashing, cleaning and surface finishing. Available in extra fine and super fine.

**Silicon Carbide** is a very "vigorous" abrasive, generally used for extra hard materials. It is a fast cutting material, used for drilling and shaping, roughing, scoring, etching and marking, and for removing burrs and flash.

**Glass Beads** are less intrusive than Aluminum Oxide or Silicon Carbide abrasives, and are most frequently used to clean and polish delicate surfaces.

### MICRO-GRAIN ABRASIVES

\*Super Fine grades are best used with the 0.020" Nozzle

Part No.	Type	Grade	Qty.	Price
<b>B-ADAO-XF</b>	Aluminum Oxide - Extra Fine	220 (65μ)	5 lb. can	<b>29.70</b>
<b>B-ADAO-SF*</b>	Aluminum Oxide - Super Fine	320 (35μ)	5 lb. can	<b>38.50</b>
<b>B-ADSC-XF</b>	Silicon Carbide - Extra Fine	220 (65μ)	5 lb. can	<b>38.50</b>
<b>B-ADSC-SF*</b>	Silicon Carbide - Super Fine	320 (35μ)	5 lb. can	<b>44.00</b>
<b>B-ADGB-SF*</b>	Glass Beads - Super Fine	(10-20μ)	5 lb. can	<b>22.00</b>

## CABINET, ABRASIVE BLAST



The Abrasive Blast Cabinet helps keep dangerous airborne particles confined and gives you a lighted work space for all your air-abrasive finishing and cleaning tasks.

Access the work piece through two hand ports, furnished with Nitrile vinyl gloves held in place by rubber cuffs. The Blast Cabinet can sit right on your bench top and measures 26" x 18" x 22" high. It has an accommodating hinged cover and base formed of impact proof ABS plastic. (Acrylonitrile Butadiene Styrene). A standard tubular light bulb is located in the top of the cover, so it shines right on your work. A de-fogging air flow pattern helps keep the 6" x 14" viewing window clear. The window is made of high-tempered safety glass.

To exhaust and capture the spent abrasive, the Blast Cabinet has built-in vacuum connections that can be hooked up to a vacuum unit equipped with two stages of filtration — a built in filter and a very fine dust adaptor — to trap the fine abrasive powders, as well as the even finer products of abrasion. A separate port for the blasting hose is lined with a Neoprene grommet to protect your hose against wear and tear.

**B-ADC-02** Blast Cabinet ..... **525.00**

Shipped FOB Bridgewater, NJ. Weight: 27 lbs.

**NOTE:** Do not breathe abrasive dust. Always use an appropriate dust mask and eye safety equipment. See page 460.

## ETCHING AND ERASER KIT, AIR



### GLASS ETCHING AND ERASER KIT

If you are looking for a new art form or hobby consider etching glass. Create an intricate design or monogram on wineglasses, windows, front door glass, or a unique back or edge lighted creation.

Restore intricate objects by removing corrosion, rust and discoloration. Clean up soldered and brazed joints for a professional finish. Select the abrasive required from aggressive to mild to achieve the desired results. Air Eraser has a steel tip with carbide insert and a two-ounce cup assembly.

Kit includes 4 feet of 1/8" air hose with moisture trap, a six-ounce jar of Fast Cutting Aluminum Oxide, a wrench and hangar, plus five disposable respirators. Recommended operating pressure 30-65 psi. Consumes 2CFM at 60 psi.

**B-AEK-01** Kit..... **66.00**

### ABRASIVE COMPOUNDS

**B-AEK-06** Fast Cutting — Aluminum Oxide — 6 oz. Plastic Jar ..... **3.75**

**B-AEK-MCC** Medium Cutting — Pumice — 6 oz. Plastic Jar ..... **3.95**

**B-AEK-SCC** Slow Cutting — Starch — 6 oz. Plastic Jar ..... **3.50**

**NOTE:** Air-abrasive tools and materials should be used outdoors or in a properly vented cabinet. Do not breathe abrasive dust. Always use an appropriate dust mask and eye safety equipment. See page 460.



# FLEXIBLE SHAFT POWER TOOLS



## FOREDOM® POWER UNITS

Grind, polish, drill, mark, cut, deburr, sand, carve, and perform other tasks that demand precision — all with flexible control. Built for long life, the 1/10 horsepower, 110-130V ball-bearing motor gives you quiet, smooth operation, with speeds to 18,000 RPM. The 39" flexible shaft has a 0.150 diameter, and is enclosed in a protective neoprene sheath with a steel liner and silencer. Fully grounded wiring. U.L. listed. Handpiece must be ordered separately.

**Hang-Up Model Power Unit** is the standard for jewelers and for professionals in many other industries as well. It gives you versatility for relocating work areas and for shared access. Electronic foot operated control.

**Bench Model Power Unit** is mounted on a heavy cast iron base and yoke swivel assembly. Manual, electronic speed control is mounted in base of unit.

**Motor Hanger** clamps or bolts right onto your bench or table, so you can suspend your Hang-Up Model Power Unit or other tools above any work area in your shop. Features six-position swivel and adjustable hand piece rest. C-Clamp included.

**B-FT-MCO** Hang Up Model / Foot Control . . . . . **196.00**

**B-FT-MMO** Bench Model / Manual Control . . . . . **215.00**

**B-FT-MH** Motor Hanger . . . . . **42.95**



## FOREDOM® QUICK CHANGE HANDPIECE

Now you can change accessories quickly and easily with just a push to open the chuck and a pull to lock the accessory in. This smooth running, permanently lubricated ball bearing handpiece has a lightweight, comfortable plastic barrel and grip and accepts accessories with a 3/32" shank.

**B-FT-52D** . . . . . **158.00**



## FOREDOM® HAND PIECE WITH GEARED CHUCK

Light and easy to control. Excellent for general use, this geared chuck takes accessory shank sizes up to 5/32". Prelubricated, sealed ball bearings require no maintenance. 1" diameter, 5-1/4" long. Complete with Chuck Key. Weight: 6 oz.

**B-FT-H30** . . . . . **75.80**



## FOREDOM® HAND PIECE WITH COLLET TYPE CHUCK

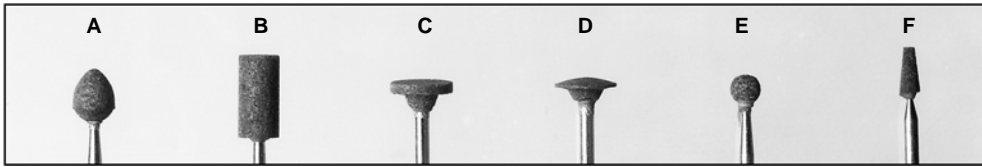
Similar to Hand Piece above but accommodating larger shank accessories, this hand piece comes with three collets, 3/32", 1/8", 1/4", and one Pin and Chuck Wrench for changing collets. Prelubricated sealed ball bearings need no maintenance. 1" Dia., 5-1/2" long. Weight: 7 oz.

**B-FT-H44A** . . . . . **60.95**

### Individual Collets to fit B-FT-H44A

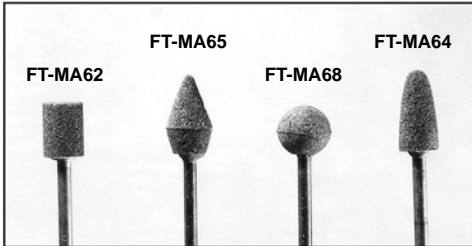
<b>B-FT-C441</b> 1/16" . . . . .	<b>7.00</b>	<b>B-FT-C445</b> 3/16" . . . . .	<b>7.00</b>
<b>B-FT-C442</b> 3/32" . . . . .	<b>7.00</b>	<b>B-FT-C446</b> 7/32" . . . . .	<b>7.00</b>
<b>B-FT-C443</b> 1/8" . . . . .	<b>7.00</b>	<b>B-FT-C447</b> 1/4" . . . . .	<b>7.00</b>
<b>B-FT-C444</b> 5/32" . . . . .	<b>7.00</b>	<b>B-FT-CS440</b> Assortment — One of each	<b>45.00</b>

## MINIATURE POWER TOOL ACCESSORIES



### MOUNTED ABRASIVE AND POLISHING POINTS

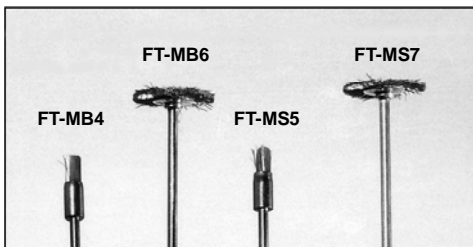
Part No.	Shape	Color	Description	Price	
				Each	10
<b>B-FT-MA4</b>	<b>A</b>	Red	<b>ABRASIVE ALUMINUM OXIDE</b>	<b>1.95</b>	<b>17.75</b>
<b>B-FT-MA5</b>	<b>B</b>		For fast cutting on high tensile tough materials:	<b>1.95</b>	<b>17.75</b>
<b>B-FT-MA7</b>	<b>C</b>		steel, malleable iron; also porcelain and glass.	<b>1.95</b>	<b>17.75</b>
<b>B-FT-MA9</b>	<b>D</b>		3/32" shank. Maximum Speed Rating-35,000	<b>1.95</b>	<b>17.75</b>
<b>B-FT-MA12</b>	<b>E</b>		RPM.	<b>1.95</b>	<b>17.75</b>
<b>B-FT-MA17</b>	<b>F</b>			<b>1.95</b>	<b>17.75</b>
<b>B-FT-MS34</b>	<b>A</b>	Green	<b>ABRASIVE SILICON CARBIDE</b>	<b>2.40</b>	<b>21.90</b>
<b>B-FT-MS35</b>	<b>B</b>		For low tensile, brittle or smeary type materials	<b>2.40</b>	<b>21.90</b>
<b>B-FT-MS37</b>	<b>C</b>		like aluminum and brass. Also used for stainless	<b>2.40</b>	<b>21.90</b>
<b>B-FT-MS39</b>	<b>D</b>		steel, glass and gemstones. 3/32" shank. Maxi-	<b>2.40</b>	<b>21.90</b>
<b>B-FT-MS42</b>	<b>E</b>		mum Speed Rating-35,000 RPM.	<b>2.40</b>	<b>21.90</b>
<b>B-FT-MS47</b>	<b>F</b>			<b>2.40</b>	<b>21.90</b>
<b>B-FT-MA74</b>	<b>A</b>	White	<b>POLISHING POINTS, ALUMINUM OXIDE</b>	<b>2.60</b>	<b>23.70</b>
<b>B-FT-MA75</b>	<b>B</b>		With an extremely fine (400) grit for producing a	<b>2.60</b>	<b>23.70</b>
<b>B-FT-MA77</b>	<b>C</b>		high finish on tensile, tough materials including	<b>2.60</b>	<b>23.70</b>
<b>B-FT-MA79</b>	<b>D</b>		gemstones, stainless steel and glass. Fast	<b>2.60</b>	<b>23.70</b>
<b>B-FT-MA82</b>	<b>E</b>		cutting. 3/32" shank. Maximum Speed Rat-	<b>2.60</b>	<b>23.70</b>
<b>B-FT-MA87</b>	<b>F</b>		ing-35,000 RPM.	<b>2.60</b>	<b>23.70</b>



### HEAVY-DUTY ABRASIVE POINTS

**Aluminum Oxide (Red)** For rough work on high tensile materials like steel, malleable iron, etc. 1/8" shanks. Maximum Speed Rating-35,000 RPM.

Part No.	Color	Price	
		Each	10
<b>B-FT-MA62</b>	Red	<b>2.55</b>	<b>23.10</b>
<b>B-FT-MA64</b>	Red	<b>2.55</b>	<b>23.10</b>
<b>B-FT-MA65</b>	Red	<b>2.55</b>	<b>23.10</b>
<b>B-FT-MA68</b>	Red	<b>2.55</b>	<b>23.10</b>

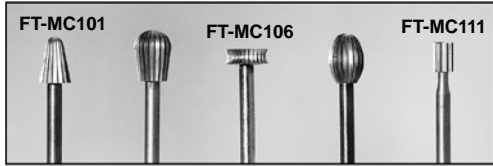


### MOUNTED BRUSHES, STEEL AND BRASS

Two configurations, two wire sizes on 3/32" shanks. Rated for use at up to 25,000 RPM.

Part No.	Material	Wire Diameter	Price	
			Each	10
<b>B-FT-MB4</b>	Brass	.0025"	<b>1.70</b>	<b>15.35</b>
<b>B-FT-MB6</b>	Brass	.005"	<b>2.10</b>	<b>18.95</b>
<b>B-FT-MS5</b>	Steel	.0025"	<b>1.70</b>	<b>15.35</b>
<b>B-FT-MS7</b>	Steel	.005"	<b>2.10</b>	<b>18.95</b>

## MINIATURE POWER TOOL ACCESSORIES (cont.)

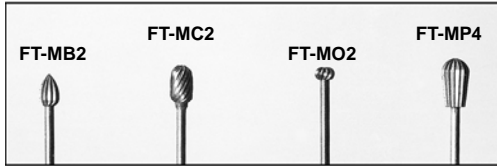


FT-MC103 FT-MC109

### CUTTERS, HIGH-SPEED VANADIUM STEEL

Suitable for use on all materials except hardened steel and glass. 1/8" shanks. Maximum Speed Rating-35,000 RPM.

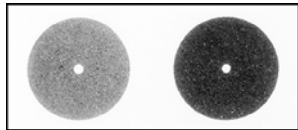
Part No.	Price	
	Each	10
<b>B-FT-MC103</b>	5.25	47.45
<b>B-FT-MC106</b>	5.25	47.45
<b>B-FT-MC109</b>	5.25	47.45
<b>B-FT-MC111</b>	5.25	47.45



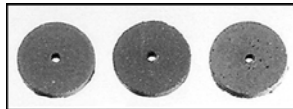
### BURRS, HIGH-SPEED VANADIUM STEEL

May also be used on all materials except hardened steel and glass. 3/32" shanks. Maximum Speed Rating-35,000 RPM.

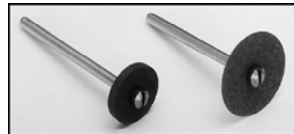
Part No.	Price	
	Each	10
<b>B-FT-MB2</b>	5.25	47.45
<b>B-FT-MC2</b>	5.25	47.45
<b>B-FT-MO2</b>	5.25	47.45
<b>B-FT-MP4</b>	5.25	47.45



ABRASIVE DISCS



ABRASIVE WHEELS



MOUNTED WITH MANDREL

### UNMOUNTED ABRASIVE DISCS

FT-D1 and FT-D2 are rubber bonded and are suitable for grinding, smoothing and cleaning glass, high speed steel and other hard materials. FT-D3 is electrically bonded abrasive on very thin Swedish steel. It is used for cleaning, smoothing and grinding hard to reach areas. FT-D6 is a Fiberglass reinforced cut-off wheel used to cut-off, groove and trim metal, wood and ceramics. All discs have 1/16" arbor hole. Maximum Speed Rating: FT-D1 & FT-D2-30,000 RPM. FT-D3 & FT-D6-45,000 RPM.

Part No.	Diameter	Thickness	Recommended Mandrel	Each	Price		
					10	25	100
<b>B-FT-D1</b>	7/8"	.023"	M1, M6	—	2.45	5.10	16.95
<b>B-FT-D2</b>	1-1/4"	.062"	M6, M15	—	5.50	11.45	38.05
<b>B-FT-D3</b>	7/8"	.010"	M13	3.25	26.75	55.75	185.90
<b>B-FT-D6</b>	1-1/4"	.050"	M15, M6	2.25	18.40	38.35	127.85

### UNMOUNTED ABRASIVE WHEELS, RUBBER BONDED

For polishing, removing rust, etc. Offered in three grits: coarse, medium, fine. All are 5/8" diameter and 3/32" thick. Use with FT-M1 or FT-M6 on next page. Sold separately. Maximum Speed Rating-25,000 RPM.

Part No.	Grit	Color	Each	Price		
				10	25	100
<b>B-FT-A2F</b>	Fine	Reddish Brown	—	7.00	14.60	48.65
<b>B-FT-A2M</b>	Medium	Brown	—	7.00	14.60	48.65
<b>B-FT-A2C</b>	Coarse	Green	—	7.00	14.60	48.65



## MINIATURE POWER TOOL ACCESSORIES (cont.)



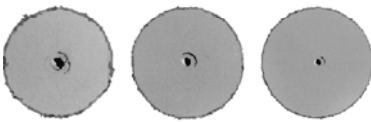
### MANDRELS

Part No.	Shank Size	Arbor Hole	Price	
			Each	10
<b>B-FT-M1</b>	3/32"	1/16"	<b>1.45</b>	<b>12.00</b>
<b>B-FT-M3</b>	3/32"	3/32"	<b>1.10</b>	<b>9.00</b>
<b>B-FT-M6</b>	1/8"	1/16"	<b>2.10</b>	<b>18.95</b>
<b>B-FT-M13</b>	3/32"	1/16"	<b>2.90</b>	<b>24.00</b>
<b>B-FT-M15</b>	1/8"	1/16"	<b>2.15</b>	<b>18.00</b>

### SMALL DIAMETER BUFFS

These small diameter buffs are made from wool felt and are used for polishing and lapping. They can be used with all of our Polishing Compounds, below. Recommended mandrels are B-FT-M1, B-FT-M6, B-FT-M13 and B-FT-M15. Maximum Speed Rating-25,000 RPM.

**HARDNESS:** M: Medium / H: Hard / RH: Rock Hard. Specify M, H, or RH when ordering.



Part No.	Diameter	Thickness	Package of 10
<b>B-FT-SE1</b>	1/2"	1/8"	<b>4.40</b>
<b>B-FT-SE2</b>	3/4"	1/8"	<b>6.25</b>
<b>B-FT-SE3</b>	1"	1/8"	<b>8.00</b>

### POLISHING COMPOUNDS

Suitable for polishing metals and plastics such as acrylic.



**B-FT-PCE** . . . . . **EMERY (Black)** 4 oz. . . . . **2.50**  
Contains coarse grit to remove surface imperfections, scratches, rust, corrosion and burrs from iron, steel and other hard metals.

**B-FT-PCT** . . . . . **TRIPOLI (Brown)** 4 oz. . . . . **2.50**  
Used for general cutting down, scratch removal, buffing and coloring. Suitable for use on metal such as zinc die castings, sheet and cast brass, copper plating and aluminum castings and stampings.

**B-FT-PCR** . . . . . **RED ROUGE (Red)** 4 oz. . . . . **2.50**  
Made with super fine abrasive powder to produce a high luster on precious metals and plastics for final polishing.

**B-FT-PCW** . . . . . **WHITE ROUGE (White)** 4 oz. . . . . **2.50**  
Made with a fine, soft abrasive powder to produce a clear mirror finish on chrome, stainless steel, carbon steel, brass and aluminum.

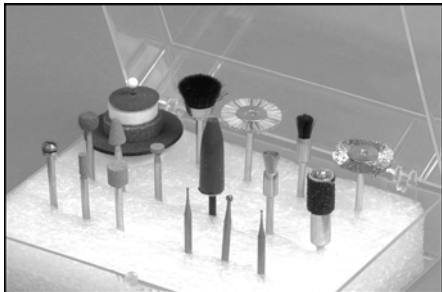
**B-FT-PCK** . . . . . One of each — 16 oz. . . . . **8.50**



### DRESSING STONE

A silicon carbide block for dressing and cleaning mounted abrasive points. Running the point in the groove that is comparable in size cleans the point, exposes fresh abrasive particles and reshapes to perfect concentricity. Measures: 3-3/8" x 1-1/4" x 1/2". Grit: 60.

**B-FT-10333** . . . . . **6.00**



## ABRASIVE ACCESSORIES

Two 3/32" mandrels plus a well-rounded assortment of accessories, including steel cutters and burrs, mounted abrasive points, wire and bristle brushes, rubber bonded abrasive wheels, sanding drums and a felt wheel.

**B-FT-K20** ..... **22.95**

## ABRASIVE ACCESSORIES — 20-Piece Assortment Contents:

### ABRASIVE POINTS    SIZES

Aluminum Oxide . . . . .	1-1/64"OD×3/16"L
Silicon Carbide . . . . .	1/4" OD×11/32"L; 3/16"OD× 3/64"L; 5/64"OD×7/64"L; 1/4"OD×9/32"L
Rubber Bonded	
Abrasive/Medium . . .	5/8"OD × 1/8"L; 9/32"OD × 1"L
Cotton Buff . . . . .	1"OD × 3/16"Thick
Abrasive Disc . . . . .	1-1/4"OD × 0.062"Thick
Felt Buff / Hard . . . . .	5/8"OD × 3/16"Thick
Grinding Stone . . . . .	3/4"OD
Mounted Brushes . . . . .	9/16"OD×5/32"L; 3/4"OD × 3/16"L; 3/16"OD × 1/4"L; 1/8"OD × 1/4"L; 3/4"OD × 3/16"L
Vanadium Steel	
Engraving Burrs . . . .	1/32"OD × 1/32"L; 3/32"OD × 3/32"L; 3/64"OD × 3/64"L
Sanding	
Drum-Medium . . . . .	7/16"OD×3/32"Shank.



## CERAMCUT BLUE™ STONES KITS

Ceramic and aluminum oxide abrasive grain structure gives these CeramCut Blue™ Stones superior performance, longer life than standard aluminum oxide or silicon carbide. They are widely used on hard metals, including hardened and mild steel, steel alloys, chrome, cobalt, titanium, and other ferrous metals. They are also suitable for porcelain and wood. Maximum Speed rating-45,000 RPM.

## CeramCut Blue™ Stones Kits Contents:

<u>SHAPE</u>	<u>GRIT</u>	<u>FT-HK29</u>	<u>FT-HK30</u>
Large Ball Nose . . . . .	M . . . . .	● . . . . .	● . . . . .
Medium Ball Nose . . . .	F . . . . .	● . . . . .	. . . . .
Small Ball Nose . . . . .	F . . . . .	● . . . . .	. . . . .
Flame . . . . .	M . . . . .	● . . . . .	. . . . .
Inverted Cone . . . . .	F . . . . .	. . . . .	● . . . . .
Ball . . . . .	F . . . . .	● . . . . .	● . . . . .
Tapered Cone . . . . .	F . . . . .	● . . . . .	● . . . . .
Large Cylinder . . . . .	F . . . . .	. . . . .	● . . . . .
Small Cylinder . . . . .	F . . . . .	● . . . . .	● . . . . .
Large Cylinder . . . . .	C . . . . .	. . . . .	● . . . . .
Wheel . . . . .	M . . . . .	. . . . .	● . . . . .
Large Flat Taper . . . . .	F . . . . .	. . . . .	● . . . . .
Small Flat Taper . . . . .	F . . . . .	● . . . . .	. . . . .

**GRIT:** F: Fine / M: Medium / C: Coarse

**B-FT-HK29** ..... **19.95**  
**B-FT-HK30** ..... **19.95**

## ROTATING BUR HOLDER

*This rotating bur holder stores and organizes up to 126 accessories.*

This compact unit measures 7" wide by 4" high and holds 69-3/32" or 1/8" burs (in 2-step holes), 12-1/4" burs and 45-1/16" burs. (burs not included).

**B-FT-10080** ..... **13.95**



## MULTI-GRINDER — Vigor®



### VIGOR® MULTI-GRINDER

*A handful of high-speed power!*

This excellent tool carves, grinds, sands, polishes, smooths, cuts and buffs. It's compact. It's powerful. It works with many types of accessories to give you maximum versatility at the work bench.

This is a multi-purpose 1/8 HP machine that offers variable speeds from 0 to 10,000 RPM. It has a 36" long flexible shaft, and a comfortable handpiece that accepts many types of accessories with 3/32" or 1/8" shanks. It functions as a bench grinder/polisher using the 2-3/4"×3" wheels provided with the unit. Bolt it right to your bench for greater stability. Arbor Size: 3/8". Weight: 7 lbs.

**B-VMG-1000** 7"W×4-3/4"D×6-1/2"H . . . **129.00**

#### REPLACEMENT ACCESSORIES

<b>B-VMG-0806</b>	Grinding Wheel . . . . .	<b>4.50</b>
<b>B-VMG-0807</b>	Polishing Wheel . . . . .	<b>4.50</b>
<b>B-VMG-1220</b>	Extra Fine Muslin Buff . . . . .	<b>2.10</b>
<b>B-VMG-1221</b>	Cotton Flannel Buff . . . . .	<b>1.95</b>
<b>B-VMG-1222</b>	Felt Buff . . . . .	<b>6.40</b>

## BELT SANDER — Vertical



### VERTICAL BELT SANDER

*Sand and shape materials, sharpen tools fast*

There are lots of ways to sharpen edge tools, but the Kalamazoo Belt Sander does an impressive job in just a couple of minutes. You can also sand and shape many kinds of materials on the 1" wide belt surface, including metal, wood, plastics and composites. Bolt it down or move it around as needed. It weighs just 32 pounds, so it is portable, but it is very well built. Spring tensioned rollers maintain consistent belt tension and tracking. Chisels, knives and other tools sharpen up nicely on the 42" long Aluminum Oxide belt that comes with the unit, and you can change and track belts in about 30 seconds. Adjustable 3" × 3" tilt table / tool rest, and a hefty 1/3 HP 115 volt motor, single phase, 1725 rpm. On / off switch, 8-feet of cord.

Shipped FOB Miami Lakes, FL.

**B-BLT-SND16** Belt Sander Unit . . . . . **199.00**

### NORZON® ZIRCONIA ALUMINA BELTS

*Sand hard materials faster!*

The unique self-sharpening characteristic of Zirconia Alumina gives these belts long life, making them well-suited for fast stock removal on hard metals and wood. The controlled fracturing of the grain continuously produces sharp, new abrading points, so they remove material more aggressively than aluminum oxide and last longer too.

<b>B-ZAB-080</b>	1" × 42" — Color: Blue — Grit: 80 . . . . .	<b>2.95</b>
<b>B-ZAB-100</b>	1" × 42" — Color: Blue — Grit: 100 . . . . .	<b>2.95</b>
<b>B-ZAB-120</b>	1" × 42" — Color: Blue — Grit: 120 . . . . .	<b>2.95</b>
<b>B-ZAB-180</b>	1" × 42" — Color: Blue — Grit: 180 . . . . .	<b>2.95</b>



**MICRO TORCH — Butane Blazer®**

Just press the ignition button and the Blazer Micro Torch fires up with an instant flame that endures for up to two hours, depending on the size flame used. The adjustable gas volume delivers a fixed or variable flame with a maximum length of 100mm (+20mm). Needle valves control temperature settings up to 2350°F (1288°C). Shipped unfilled, this hand torch has a tank capacity of 26 grams (1.58 fluid ounces) and uses any multiple head butane gas lighter refill.

Equipped with a removable stand for hands-free operation, the 1-3/8" diameter tank is made of non-corrosive chrome plated brass, and is cushioned with a grid patterned rubber grip for firmness, safety, and ease of handling.

A handy tool for small wire work, jewelry making, workshop, wood graining, tile laying removing old paint, bending glass, plastic, metal tubing, thawing frozen locks, bolts, sweating and thawing light pipe, ski waxing and for camping chores. Overall height: 5-1/2".

**B-TOR-2L** Micro Torch, Unfilled ..... **65.00**  
 ©Blazer Corp



**ALL-PURPOSE TORCH KIT — Cordless**

This all-purpose torch kit is used for many light brazing and soldering applications. The cordless Butane powered torch refills in 20 seconds using any standard butane lighter fuel. The blow torch heats up to 2370°F (1300°C) and can be used continuously for up to 45 minutes. The soldering iron, hot knife and hot blower attachments heat up to 850°F (455°C) and can be used continuously for up to 90 minutes. Packaged in a sturdy plastic storage case.

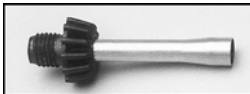
Kit contains a Soldering Tool and four tips: a 3/32" iron-plated Soldering Tip; Blow Torch Tip; Hot Blower Tip; and a Hot Knife Tip. Plus a flint igniter, safety stand and cleaning sponge.

**B-BST-1000** Butane Kit ..... **67.00**

**REPLACEMENT TIPS**



**Soldering Tip**  
**B-BST-ST** ..... **12.00**



**Blow Torch Tip**  
**B-BST-BTT** ..... **12.00**



**Hot Blower Tip**  
**B-BST-HBT** ..... **12.00**



**Hot Knife Tip**  
**B-BST-HKT** ..... **12.00**

## BRAZING / SOLDERING — Torches (cont.)



### GAS TORCH

#### Butane and Oxidizer, High Heat (5000° F)\*

The Gas Torch is a quality brazing and soldering tool which develops a 5000° F (2760° C) pinpoint flame using a combination of butane gases and Micronox™ (compressed nitrous oxide) as an oxidizer.

This compact torch weighs only 3/4 lb. and is most useful for lightweight brazing, silver-soldering, and general soldering projects. The gas torch gives instantaneous and precise heat only where needed, with minimum risk to adjacent areas.

Kit contains a Gas Torch, 6 Micronox™ Cylinders, 3 Butane Cylinders, 6 Silver/Solder Rods, a 1/4 oz. tube of Solder Flux, 2 Flame Tips, 1 Butane Tip, Spark Lighter and Instructions. Butane cylinders last up to one half hour each; Micronox Cylinders provide 15 minutes each. Cylinders are compact and disposable.

\* Hazardous Material. Shipped FOB Ground, Miami Lakes, FL. A Hazardous Materials charge of \$15 for each line item ordered will be added to FOB shipping charges.

**B-TOR-1H** Gas Torch Kit ..... **60.50**



### MINIATURE WELDING TORCH — 7-Piece Kit

*Thread-thin flames for welding, brazing, soldering and heating*

The Little Torch goes where conventional torches just won't reach! Its size is perfect for easy manipulation when performing intricate tasks. The rugged aluminum body is just 6" long, 1/2" in diameter, and weighs only 1.5 ounces. It produces a controlled, stable flame that is easy to adjust and can deliver thread-thin flames up to 6300° F (3482° C), hot enough to melt metals, glass and ceramics. It will weld an almost limitless range of metals — from less than 0.001" copper to 18-gauge steel, and it brazes and solders even the tiniest wires and filaments with ease and versatility.

The seven-piece kit includes two preset regulators for Oxygen, Propane, MAPP, and Propylene based fuel gases: a size 4 Curved Tip; two six-foot hose assemblies, color coded for oxygen and fuel gas lines, plus a tank rest and an instruction booklet for use/safety. (Gas cylinders are not included).

**B-TOR-60M** Miniature Welding Torch Kit ..... **209.95**

### ACCESSORIES — Miniature Welding Torch

Enhance your torch equipment with Tip Extensions, and/or other tip sizes. If you ever need to replace Hose Assemblies and Regulators, just call **Purchasing Services toll-free — 1-888-455-9712**.

<b>B-TOR-63</b>	Size 3 — Curved Tip .....	<b>20.00</b>
<b>B-TOR-64</b>	Size 4 — Curved Tip .....	<b>20.00</b>
<b>B-TOR-65</b>	Size 5 — Curved Tip .....	<b>20.00</b>
<b>B-TOR-66</b>	Size 6 — Curved Tip .....	<b>20.00</b>
<b>B-TOR-6XT3</b>	3" Tip Extension .....	<b>38.40</b>
<b>B-TOR-6XT6</b>	6" Tip Extension .....	<b>38.40</b>



**TORCH KIT**



### WEIGHTED STAND —

*Don't sacrifice safety!*

Balanced support for your Miniature Welding Torch. Texturized Cast Iron base and Stainless Steel rod ensure easy placement and removal. Doubles as storage for extra tips.

**B-TOR-6WS** ..... **12.95**

Visit [www.smallparts.com](http://www.smallparts.com) E-mail [parts@smallparts.com](mailto:parts@smallparts.com)

## SOLDERING GUN AND IRON



### SOLDERING GUN KIT — Heavy Duty

This professional quality Soldering Gun Kit quickly delivers both high and low tip temperatures, but it is heavy duty enough for many big jobs. The pre-tinned copper tip reaches soldering temperature in approximately six seconds. The dual heat gun produces 260 or 200 watts and features trigger-select heat control, a pistol grip and two built-in work lights. 120V, 50/60 hz. Hefty gun with solid feel weighs 1 lb. 6 oz.

Kit includes a soldering gun in a durable plastic carrying case, 1 Soldering Tip, 1 Smoothing Tip, 1 Cutting Tip, flux brush, soldering aid tool and a coil of lead-free solder. Replacement tips available.

<b>B-SI-GK</b>	.....	<b>75.00</b>
<b>B-SI-GK-15</b>	Cutting Tip .....	<b>5.00</b>
<b>B-SI-GK-18</b>	Soldering Tip .....	<b>5.00</b>
<b>B-SI-GK-22</b>	Smoothing Tip .....	<b>5.00</b>



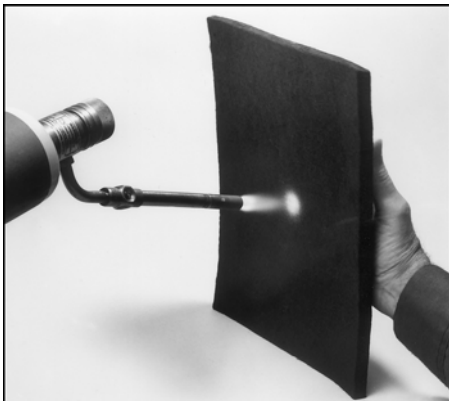
### SOLDERING IRON — Pencil Type

Use the Pencil Type Soldering Iron for your light duty soldering projects. It takes only about two minutes to reach soldering temperature (970°F [521°C] maximum tip temperature) and is especially suited for soldering miniature and small electrical connections, printed circuit board work and integrated circuits.

Element is Nickel-Chrome wound on stainless steel spool, mica insulated; stainless steel casing; Minlon handle; clear Butyrate finger grip. Plug-type chisel point tip. 3 Wire Cordset, grounded, type HPN standard. 100-120V AC 60 hz, 30 watts. Other Tips and a Stand are also available.

<b>B-SI-LD</b>	2 oz., 7-1/2" long (including tip) .....	<b>58.95</b>
<b>B-SI-LD-02</b>	Replacement Chisel Point Tip .....	<b>10.50</b>
<b>B-SI-LD-05</b>	Diamond Point Tip .....	<b>12.60</b>
<b>B-SI-LD-10</b>	Flat Tip .....	<b>12.60</b>
<b>B-SI-LDS</b>	Stand .....	<b>8.40</b>

## HEAT SHIELD — Fibrous Felt



Shield studs, walls, floors and other surfaces from flames, sparks and molten splash during soldering and brazing operations. Just 1/2" thick, the Heat Shield is formed from high-strength, asbestos-free carbon and graphite fibrous felt to deliver heat resistance up to 2500°F (1371°C). The fibers in this material actually increase in heat resistance with repeated use. It is more heat resistant than most ceramic and fiberglass heat shields and outperforms aluminum backed silica felt and woven ceramic products. Use it wet or dry, with propane, acetylene/air or MAPP gas torches — whenever high temperature protection is required.

<b>B-FFHS-0609</b>	6" × 9" Heat Shield .....	<b>21.35</b>
<b>B-FFHS-0912</b>	9" × 12" Heat Shield .....	<b>35.65</b>

## BRAZING AND SOLDERING MATERIALS



### COMMON WIRE SOLDERS — Harris

For soldering, tin/lead solders are the most widely used type. These solders are suitable in most cases for copper, most copper alloys, lead, high nickel alloys, and steel. Use with Stay-Clean soldering flux except for electronic and electrical applications where the 50/50 Rosin Core listed below is recommended. Sold in 1-pound spools.

Part No.	Wire Diameter	Chemical Composition/Description	Melting Temp.	Price 1 lb. Spool
<b>B-SO-CS55</b>	1/8"	50% Tin, 50% Lead The most popular general purpose solder.	360°-460°F (182°-273°C)	<b>15.25</b>
<b>B-SO-CSR55</b>	1/16"	50% Tin, 50% Lead, Rosin Core Recommended for light electrical wiring.	360°-420°F (182°-215°C)	<b>17.95</b>

### SAFETY-SILV® — Harris

This group of high quality silver brazing alloys is nontoxic and cadmium free, completely eliminating the danger of poisoning caused by cadmium oxide fumes. Safety-Silv alloys are for use with both ferrous and nonferrous materials.



**SAFETY-SILV 1200** - This very high quality silver brazing alloy is free flowing with unequalled capillary attraction, deep penetration, high ductility and very high corrosion resistance. Use with Harris Stay-Silv flux, white or black.

**SAFETY-SILV 1375** - This low temperature, low silver content, cadmium free brazing alloy with a medium plastic range is suitable for use on steel, copper and most brasses. Use with Harris Stay-Silv flux, white or black.

**SAFETY-SILV 1410** - This alloy has high strength and ductility. It flows in a sluggish manner making it especially good for loose fits and fillet forming. It requires additional heat and careful attention to insure optimum results. Use with Stay-Silv flux, white or black.

### SPECIFICATIONS AND PROPERTIES

Harris Alloy	Chemical Composition %				Melting Range °F/°C		Color of Brazed Joint
	Silver	Copper	Zinc	Tin	Solid	Liquid	
1200	56	22	17	5	1145/618	1200/648	Bright Silver
1375	25	43	30	2	1265/685	1430/777	Brassy Yellow
1410	30	38	32	0	1250/677	1410/765	Yellow

### SAFETY-SILV

Part No.	Safety Silv Alloy - Package Type	Wire Dia.	Approx. Length	Price Each
<b>B-SO-SC228</b>	#1200 Coil - 1 oz.* Wire	1/32"	260"	<b>30.25</b>
<b>B-SO-SC248</b>	#1200 Coil - 1 oz.* Wire	1/16"	65"	<b>28.75</b>
<b>B-SO-SC348</b>	#1375 Coil - 1 oz.* Wire	1/16"	65"	<b>18.95</b>
<b>B-SO-SC448</b>	#1410 Coil - 1 oz.* Wire	1/16"	65"	<b>19.95</b>
<b>B-SO-SK24</b>	#1200 Kit - 1 oz. Wire**, 1.75 oz. white Flux	1/16"	58"	<b>36.15</b>
<b>B-SO-SK44</b>	#1410 Kit - 1 oz. Wire**, 1.75 oz. white Flux	1/16"	58"	<b>21.65</b>

\*troy

\*\*avoidupois

1 troy ounce = 1.09714 avoidupois ounces

Continued →

## BRAZING AND SOLDERING MATERIALS (cont.)



### STAY-BRITE TIN/SILVER SOLDER AND FLUX KIT

Versatile and non toxic, this solder offers low cost, great strength and low working temperature. It has excellent affinity to bond with most brass, copper, steel and stainless steel alloys. Provides higher than necessary elongation for sound dissimilar metal joints and vibration applications. Provides approximately five times the strength of ordinary tin/lead solders. Finished joint color: Bright Silver.

**Kit includes:** 1/2 oz. solder (1/16" dia. wire) and 1/2 oz. flux. Packaged in a resealable container.

Composition 96% Tin, 4% Silver  
Melting Point 430°F (221°C)

*Note: We recommend this low temperature solder for most miniature profiles.*

**B-SO-BK4** ..... **9.00**



### ALSOLDER 500 ALUMINUM SOLDER AND FLUX KIT

**Kit includes:** 1 oz. solder, (1/16" dia. wire) and 1 oz. flux. Finished joint color: Silver. Packaged in a resealable container.

Composition 85% Tin, 15% Zinc  
Melting Range 482°F (250°C)

**B-SO-AS5K** ..... **22.00**

### BRAZING MATERIALS SILVER BRAZING ALLOY, FLUX COATED

This nontoxic, cadmium free, flux coated brazing material is composed of 56% silver. The remainder is 22% copper, 17% zinc, and 5% tin. It's ductile, free-flowing and exhibits strong, penetrating capillary attraction. High corrosion resistance makes this product suitable for all but strong chemical applications. The psi wire tensile strength is 79,000 and the melting range is 1145°F (618°C) to 1200°F (619°C). The color is an excellent match for stainless steel.

**B-SO-BR1-2** 2 rods — 1/16" diameter × 18" (with flux) ..... **22.80**

**B-SO-BR1-7** 7 rods — 1/16" diameter × 18" (with flux) ..... **63.20**

### SOLDER FLUX

Exclusively formulated for use with solder like the SO-GSA, this flux has an outstanding wetting and cleaning action that produces joints of superior strength.

**B-SO-GFLUX** 6 fluid ounce bottle ..... **23.90**

### SILVER-TIN SOLDERING ALLOY, ACID FLUX CORE

With an acid flux core, this product can be used for soldering stainless steel, copper, bronze, brass, cast iron, nickel and all alloys (except white metals: aluminum and zinc die cast). It melts at a lower temperature, 430°F (221°C) and has a psi tensile strength of 16,000. This solder-like material produces corrosion resistant, high-strength joints and remains bright with a stainless steel color match.

**B-SO-GSA** 1/16" diameter × 1.5 oz. in a clear tube ..... **41.75**

### STAY-SILV BRAZING FLUX-WHITE

For use with all silver brazing alloys and all metals other than aluminum, magnesium and titanium. Effective to 1600°F (871°C). Meets federal specification OF499C, type B.

**B-SO-FLUX-2** 4 oz. .... **5.60**



## BRAZING AND SOLDERING MATERIALS (cont.)

### STAY-SILV BRAZING FLUX-BLACK

For use with silver or other brazing alloys liquid below 1800°F (982°C). Recommended for stainless steel, heavy parts, and whenever heating cycle is prolonged. For all metals other than aluminum, magnesium and titanium.

**B-SO-FLUX-4** 8 oz. .... **7.85**

### STAY-CLEAN SOLDERING FLUX

For virtually all metals other than aluminum, magnesium and titanium, use this flux with Stay-Brite and common wire solders. For electrical applications a 50/50 Tin-Lead solder with a rosin core flux is recommended. See SO-CSR55 on page 415. Commercial spec. A-A-S1145C.

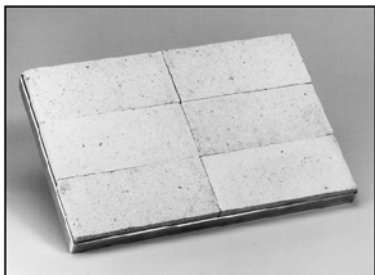
**B-SO-FLUX-6** 4 oz. .... **4.95**

### STAY-CLEAN ALUMINUM SOLDERING FLUX

Use with ALSOLDER 500 to join aluminum to aluminum and most other metals, including stainless steel.

**B-SO-FLUX-8** 4 oz. .... **10.15**

## HEARTH, FIREBRICKS



### HEARTH KIT FOR BRAZING OR SOLDERING WORK

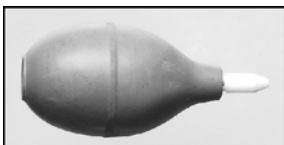
Excellent protection for work table or laboratory bench during soldering or brazing operations. Hearth Kit contains six firebricks and a welded aluminum frame. Assembly is simple. Firebricks can also be purchased separately to construct a back (splash) plate if needed. Firebricks are: 4" x 9" x 1-1/4". Frame is: 12" x 18".

**B-HRT-216** Hearth Kit - Weight: 30 lbs. .... **68.00**

**B-HRT-3BR** 3 Replacement Bricks - Weight: 13 lbs. ... **6.35**

Shipped FOB Miami Lakes, FL.

## SOLDER BLOWER BULB

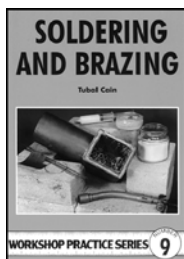


### BLOWER BULB

Blow away dust or speed up drying or cooling. May be used as a solder off bulb to remove excess molten solder. Blower Bulb has replaceable brass tip.

**B-HM-915** .... **7.50**

**B-HM-916** Replacement tip ..... **2.50**



### SOLDERING AND BRAZING

A thorough and comprehensive study of the how's and why's of soft and hard soldering and brazing. The author examines in detail the processes, equipment and materials required. Printed in England. Soft cover, fully illustrated.

**B-WPS-09** ..... **12.50**

## HEAT GUN



### Adjustable temperature range

Suitable for most shrink tube projects and for other pin-point flow applications, the Heat Gun offers an adjustable temperature range of 212° to 1000°F at 120 volts.

A thermocouple maintains the temperature and holds heat output to  $\pm 3^\circ$  tolerance. Includes circular end stand to keep unit in upright position. Reflector and reduction nozzle attachments available.

**B-HG-1800** ..... 132.50

#### Specifications:

Variable Temp: ..... 212° to 1100°F  
 Max. Heat Up Time: ..... 20 sec  
 Air Flow: ..... 14.3 CFM  
 Max. Watts: ..... 1550  
 Volts: ..... 120V  
 Max/Amps: ..... 12.5  
 Net Weight: ..... 1.75 lbs.

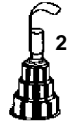
## NOZZLE ATTACHMENTS



### 1. REDUCTION 9MM

Provides a totally concentrated pin point air flow.

**B-HG-7060** ..... 10.50



### 2. REFLECTOR 9MM

For small diameter shrink tube applications.

**B-HG-7061** ..... 15.30



### 3. REFLECTOR 14MM

Designed tip to provide efficient and quick heat to solder sink wire connectors. A totally enclosed nozzle with no vents to deflect hot air into the work area.

**B-HG-7460** ..... 13.30



### 4. REFLECTOR 39MM

Reflects heat around a surface such as soldering copper pipe, bending PVC pipe, and heat shrink tubing.

**B-HG-7050** ..... 10.50



### 5. REFLECTOR 75MM

Reflects heat around a surface such as soldering copper pipe, bending PVC pipe and heat shrink tubing. Excellent for large diameter shrink tube applications.

**B-HG-7300** ..... 17.65

### ASSORTMENTS

5 nozzles listed above.

**B-HG-7000** ..... 60.55

Heat Shrink Tubing begins on page 105.

## TORCH LIGHTER — Electronic



### ELECTRONIC TORCH LIGHTER — Safe and Quick

This nicely weighted torch lighter produces a continuous pulsing spark when activated. Powered by (2) AA batteries (not included), the lighter produces a potent spark when the activator bar (switch) is depressed by the torch tip. Color: Gloss Black.

**B-TOR-ETL** 2" W x 3-1/4" L x 2-1/2" H ..... 26.50

## VACUUM TOOLS

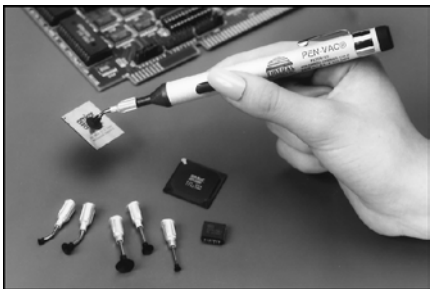


**B-VHT-2000** ..... **152.30**

### VACUUM POWER UNIT — SMD-Vac™

The Vacuum Power Unit is whisper quiet and electrostatic discharge safe, with seven vacuum tips for lots of versatility when picking and placing small objects. Tips mount with quick-change luer locks and feature 1/2" probes with high temperature silicone vacuum cups. The main unit has durable metal construction with a three-wire power cord and a small footprint — measures just 3" x 6". Vacuum to 6 in. Hg.

Comes complete with 110 volt vacuum source, four feet of 1/8" flexible vacuum hose, a vacuum handle with internal filter, and seven vacuum tips, including three straight probes with 1/8", 1/4", and 3/8" cups; and four angled probes with 0.050", 1/8", 1/4" and 3/8" cups.



**B-VHT-70** Standard ..... **49.95**  
**B-VHT-50** Junior ..... **42.95**

### VACUUM PENS — Pen-Vac®

Our Vacuum Pens are a lightweight, convenient, low-cost alternative to other vacuum handling systems. The self-contained vacuum works without hoses and never needs batteries. Lift many types of small parts and components during assembly or placement operations, using your choice of six different probes with vacuum cups. Quick-change luer locks attach probes securely to the pen shaped instrument, and let you switch among 1/2" probes in straight or angled styles. Probes are equipped with high temperature silicone pads in three sizes: 1/4", 1/8" and 3/8".

The Standard Pen features an end cap for storing probes and cups. Both Standard and Junior sizes have pocket-style clips for handy access. Brushed aluminum, 1/2" diameter body.

## VACUUM-PRESSURE STATION



### Quiet, portable, and affordable

Portable, lightweight, and small, the Vacuum-Pressure Station delivers quiet, reliable performance for many applications. It requires no vacuum oil, so it's clean and easy to transfer from one work area to another. Measures 7-5/8"L x 4-1/2"W x 7-1/2"H. The low-friction piston motor has a service life of 2,000 to 3,000 hours. Applications include air/gas sampling; pressure/vacuum filtration; precious metal recovery; process control; suction units; analysis instrumentation; aerating equipment; pneumatic controls; film making; environmental safety monitoring.

#### FEATURES

- Vacuum to 21.3 in. Hg. • UL & CSA listed for 115VAC, 60 Hz
- Pressure to 35 psi intermittent; 10 psi continuous
- Maximum operating temperature: 104°F (40°C)
- CE approved for 230VAC, 50Hz • On/Off Switch
- Convenient power cord compartment for 6-foot cord
- US plug for 115VAC, European plug for 230 VAC
- Weighs just 5 pounds and has molded carrying handle

#### MEDIA CONTACT PARTS:

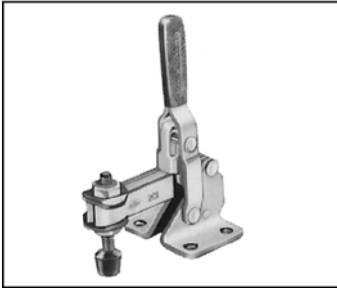
Glass-filled Polyester piston cup retainer and head, Ryton cylinder sleeve, Viton valves, PTFE piston cup, Silicone tubing and Delrin fittings. Port Size: 1/4" Hose Barb, Motor: 1/25 HP, shaded pole.

*NOTE: Do not pump liquids or immerse pump. Avoid organic, basic and acidic vapors.*

Part No.	Description	Free Capacity	Amps	Price
<b>B-VPS-3910</b>	115V, 60Hz	0.39 (11L)	1.6	<b>195.00</b>
<b>B-VPS-3912</b>	230V, 50Hz	0.32 (9.2L)	0.8	<b>210.00</b>

## HOLD DOWN CLAMPS — Stainless Steel DE-STA-CO®

Hold Down Clamps provide instant holding pressure for a variety of shop production needs. Compact toggle clamps can be installed on jigs, tool fixtures or movable bases so they can be quickly set and engaged to hold your work.



Vertical handle hold-down clamp with flanged base has a U-shaped hold down bar with bonded neoprene tipped 10-32 spindle. Flanged washers and lock nuts provided. Handle moves 56°, bar moves 100°.

Material .....	Stainless Steel - 18-8
Holding Capacity .....	100 lbs. maximum
Overall Width .....	1-5/16"
Overall Height .....	3"
Overall Length .....	2-1/8"
Clamping Height .....	0"-5/8"
Weight .....	2 oz.
<b>B-DSC-201</b> .....	<b>21.50</b>



Vertical-handle stainless steel hold down clamp with flanged base and neoprene 1/4-20 spindle. Handle moves 69°, bar moves 100°.

Material .....	Stainless Steel - 18-8
Holding Capacity .....	200 lbs. maximum
Overall Width .....	1-9/16"
Overall Height .....	3-3/4"
Overall Length .....	2-3/8"
Clamping Height .....	15/16"
Weight .....	5-1/2oz.
<b>B-DSC-202</b> .....	<b>24.50</b>



Horizontal hold-down clamp is supplied with nylon spindle assembly and a flanged base. Solid holding bar. Handle moves 80°, bar moves 90°.

Material .....	Stainless Steel - 18-8
Holding Capacity .....	60 lbs.
Overall Width .....	15/16"
Overall Height .....	3/4"
Overall Length .....	2-3/4"
Clamping Height .....	0"-13/32"
Weight .....	1 oz.
<b>B-DSC-205</b> .....	<b>16.50</b>



Provides good clearance height under the bar while maintaining a low profile. Stainless steel construction including spindle. Flanged base. Handle moves 45°, bar moves 90°.

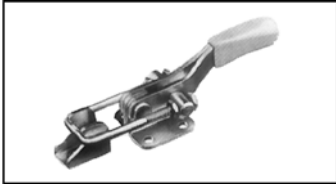
Material .....	Stainless Steel - 18-8
Holding Capacity .....	100 lbs.
Overall Width .....	15/16"
Overall Height .....	1-9/32"
Overall Length .....	2-3/4"
Clamping Height .....	0"-7/16"
<b>B-DSC-206</b> .....	<b>18.60</b>



A low silhouette hold-down clamp features a handle that can be operated from either side or from behind. This compact unit provides considerable holding capacity in a small size. Handle moves 175°, bar moves 92°.

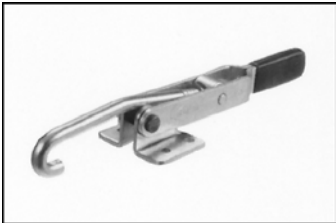
Material .....	Stainless Steel - 18-8
Overall Width .....	1"
Overall Height .....	1-3/8"
Overall Length .....	2-1/4"
Clamping Height .....	0"-1/2"
<b>B-DSC-305</b> .....	<b>19.15</b>

## HOLD DOWN CLAMPS — Stainless Steel DE-STA-CO® (cont.)



The over-center toggle locking action of this stainless steel clamp provides well defined exertion against heavy forces. Threaded U-bolts permit easy adjustment.

Material .....	Stainless Steel - 18-8
Holding Capacity .....	360 lbs. maximum
Overall Width .....	1-7/64"
Overall Height .....	1-5/32"
Overall Length .....	3-15/32"
Drawing Movement .....	1-3/16"
Weight .....	2.5 oz.
<b>B-DSC-323 .....</b>	<b>27.55</b>



The pull action of this stainless steel clamp makes it a useful tool for many latching operations. Threaded pull bar for convenient adjustment.

Material .....	Stainless Steel - 18-8
Holding Capacity .....	375 lbs. maximum
Overall Width .....	1-15/16"
Overall Height .....	8-5/8"
Weight .....	12 oz.
Drawing Movement .....	4"
<b>B-DSC-351 .....</b>	<b>22.50</b>



A straight-line toggle clamp is handy for electronic applications and similar small fixturing. Provided with an 8-32 nylon spindle.

Material .....	Stainless Steel - 18-8
Holding Capacity .....	100 lbs.
Overall Width .....	1-1/16"
Overall Height .....	1-1/4"
Overall Length .....	2-19/32"
Plunger travel .....	5/8"
<b>B-DSC-601 .....</b>	<b>19.95</b>

## HOLD DOWN CLAMPS — Steel, DE-STA-CO®



This Toggle-Lock Plus™ clamp has a release lever catch which allows the clamp to lock in the closed position only, giving it extra holding capacity.

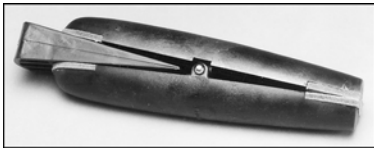
Material .....	Zinc Plated Steel - C-1008
Holding Capacity .....	700 lbs. maximum
Overall Width .....	1-39/64"
Overall Height .....	1-5/8"
Overall Length .....	5-5/8"
Weight .....	9 oz.
Drawing Movement .....	2"
Adjustment .....	11/64"
<b>B-DSC-331 .....</b>	<b>29.95</b>



This forged alloy steel squeeze action clamp has two adjustable 1/4-20 thread spindles to permit additional versatility.

Material .....	Carbon Steel - C-1040
Holding Capacity .....	200 lbs. maximum
Overall Width .....	1/2"
Overall Height .....	1-15/16"
Overall Length .....	4-1/2"
Weight .....	5 oz.
<b>B-DSC-424 .....</b>	<b>19.10</b>

## CLAMPS — Miscellaneous



### WEDGE CLAMP — Non-mar

Jewelers have known of and used this ring Wedge Clamp for many years and it has numerous applications for the ingenious technician, hobbyist or model maker. Leather lined jaws firmly hold small pieces for polishing, gluing, or shaping when wedge is driven in opposite end. Solid body and wedge made from DuPont Minlon.

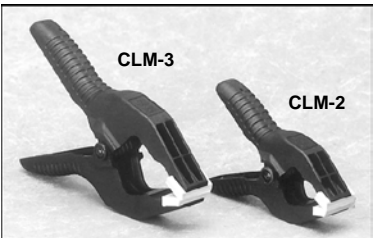
**B-HM-202** ..... 12.25



### MINI CLAMP SET

Handy "C" type Mini Clamps Set includes a T-handle that provides a 1" opening with 3/4" depth and a knurled handle that opens to 3/4" with 5/8" depth. A must for the well-equipped laboratory or shop.

**B-HM-210** ..... 6.50



### SPRING CLAMPS

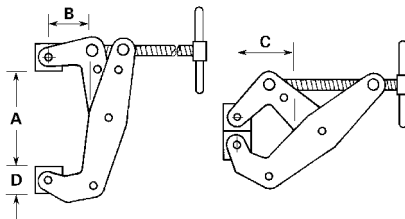
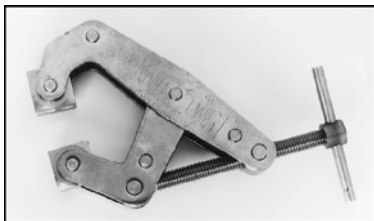
Immediate gripping power where you need an extra hand for gluing or holding. Available in three sizes to provide the proper direct pressure: 1", 2" and 3" jaw openings. Also can be used for odd-shaped objects. Comfortable handles are grooved to prevent slipping. Made of lightweight glass-reinforced nylon, clamp is unaffected by moderate heat and cold. Internal spring is coated with black oxide for rust resistant performance. Soft, pliable and removable pads of thermoplastic rubber let you clamp delicate or finished materials without marring the work surface.

### SPRING CLAMPS

Part No.	Description	Price Each
<b>B-CLM-1</b>	1" clamping capacity	<b>3.70</b>
<b>B-CLM-2</b>	2" clamping capacity	<b>4.70</b>
<b>B-CLM-3</b>	3" clamping capacity	<b>9.05</b>

### ASSORTMENT

**B-CLM-100** One each **B-CLM-1**, **B-CLM-2** and **B-CLM-3** ..... 15.70



### KANT-TWIST® CLAMPS

The cantilever clamping action of these Clamps keeps the closure handle out of your work area, for secure clamping in otherwise inaccessible positions. The floating jaws stay parallel in any location, with full support to reduce distortion and twisting action. And there are no loose pads to walk off center. Kant-Twist® Clamps have built-in pads with "V" cut blocks to firmly hold round stock. Stainless Steel Type 303 construction makes these clamps a good choice where corrosion is a problem. Also can be used for grinding work around magnetic chucks.

### KANT-TWIST® CLAMPS — Stainless Steel Type 303

Part No.	Maximum Opening	Throat Depth		Pad	Price Each
	(A)	(B)	(C)	(D)	
<b>B-KTCX-32</b>	2"	1-1/8"	1-1/4"	1/2"	<b>31.95</b>
<b>B-KTCX-48</b>	3"	1-1/4"	1-3/4"	7/8"	<b>41.50</b>
<b>B-KTCX-72</b>	4-1/2"	2-1/4"	3"	7/8"	<b>46.50</b>

# MEASURING — Calipers



**Starrett® ELECTRONIC DIGITAL CALIPER — Metric / Inch Conversion**  
*The only American-made Electronic Digital Caliper!*

Get high-resolution measurements with basic function Electronic Digital Caliper. Battery-operated caliper converts between inch and metric readouts. Clear, easy-to-read numbers on an LCD display, with both zero and hold readout at any position. Unit shuts off automatically after 15 minutes of inactivity. Two 3-Volt Batteries and instructions included.

- B-CAL-01D** 6" (150mm) range / 0.0005" (0.01mm) graduations ..... **165.00**  
**B-BAT-2032** Replacement Battery ..... Each **5.00**



**B-CAL-2**

**Starrett® DIAL CALIPER**

*For inside or outside measurements.*

Four-way Dial Caliper with knife-edge contacts.

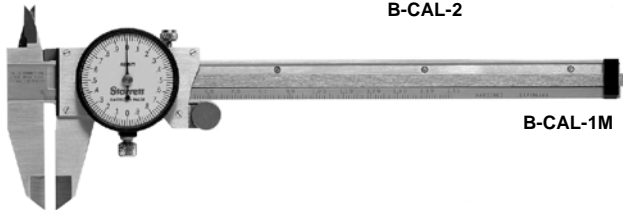
Measurement ranges in inches or metric scales. Thumb screw lock, adjustable indicator dial. Stainless Steel. Includes holding case.

6" range / 0.001" graduations  
**B-CAL-1** ..... **128.50**

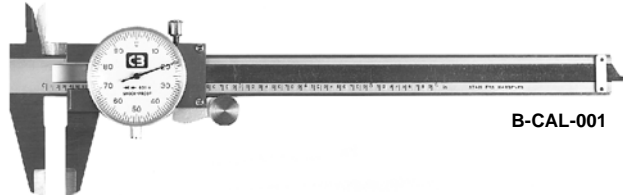
9" range / 0.001" graduations  
**B-CAL-2** ..... **196.95**

**METRIC**

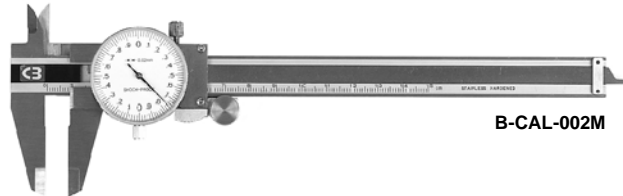
0 to 150 mm range / 0.02 mm graduations  
**B-CAL-1M** ..... **128.50**



**B-CAL-1M**



**B-CAL-001**



**B-CAL-002M**

**UTILITY DIAL CALIPER**

*An economical tool for measuring outside, inside, step and depth dimensions.*

Utility Dial Caliper preserves setting with covered screw-on rack gears, thumb rollers, jaw locking screws, and knife-edge contacts. Made of hardened Stainless Steel with crisp rulings on bar scale and adjustable dial. Choose metric or regular. Includes wood storage case.

**B-CAL-001** 6" range / 0.001" graduations ..... **31.55**

**METRIC**

**B-CAL-002M** 150mm range / 0.02mm graduations ..... **33.10**

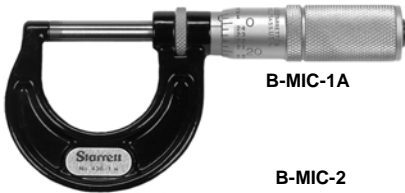
## MEASURING — Micrometers



B-MIC-001D



B-MIC-0025M



B-MIC-1A



B-MIC-2



B-MIC-1M

### DIGITAL OUTSIDE MICROMETER

Increase accuracy and take measurements right from the mechanical counter. Easy to use Digital Outside Micrometers cut the chances for miscalculation with clear, easy to read numbers that do not require interpolation. A vernier scale on the handle provides even more defined measurement. A knurled lock nut secures the one-piece spindle at any reading and a friction thimble assures repeat accuracy. The one-piece frame has a black finish and is gracefully tapered for use in narrow slots and other tight spaces. Made of drop forged steel with micro-lapped carbide measuring faces for long tool life. Satin chrome finish on thimble and sleeve.

0" to 1" range / 0.001" graduations

**B-MIC-001D** ..... 155.00

### METRIC

0 to 25mm range / 0.01mm graduations

**B-MIC-0025M** ..... 155.00

### OUTSIDE MICROMETER

Our 0" to 1" range Outside Micrometers are made of one-piece drop forged steel. Tungsten Carbide measuring faces and the friction thimble and lock nut assure accurate and fast measurements. Sturdy, protective case.

0" to 1" range / 0.001" graduations

**B-MIC-1A** ..... 95.00

0" to 1" range / 0.0001" graduations

**B-MIC-2** ..... 105.00

### METRIC

0 to 25 mm range /  
0.002mm graduations

**B-MIC-1M** ..... 100.00

## MEASURING — Feeler Gauges



GFS-20



GFS-25

### FEELER GAUGE SETS

Quickly identify thickness, or set close spacing to tight tolerances with Feeler Gauge Sets. Made from Spring Steel stock, all blades have rounded ends and smooth edges for safety.

#### 20-Blade Set — Inch and Metric Conversions

Contains twenty 5" x 1/2" blades in a folding vinyl case with individual blade pockets to prevent rust and extend the life of blades. Decimal thicknesses from 0.001" to 0.025" with conversions to metric etched on each blade (0.025 to 0.635 mm).

**B-GFS-20** 20-Blade Feeler Gauge Set ..... 37.75

#### 25-Blade Set — Fan Style, Inch and Metric Conversions

Features a heavy duty swivel holder that keeps the set together and helps you quickly access any of the twenty-five blades. Blades are 3-5/16" L x 1/2" W. Decimal measurements ranging from 0.0015" to 0.035". Metric conversions are clearly etched on each blade.

**B-GFS-25** 25-Blade Feeler Gauge Set ..... 27.75

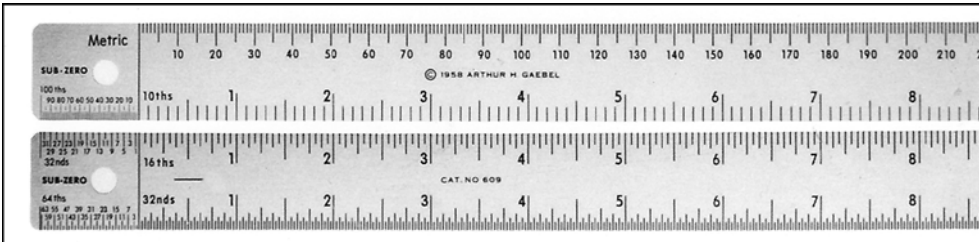


## RULERS — Stainless Steel



**ONE-SIDED:** 24" x 7/8" x 0.020" narrow and flexible ruler. Indented starts. Made of Stainless Steel Type 410.  
**Top:** Inches (16ths)/sub-zero scale (32nds). **Bottom:** Inches (32nds)/sub-zero scale (64ths).

**B-RUX-1** 1/4" Hole for hanging . . . . . **10.25**



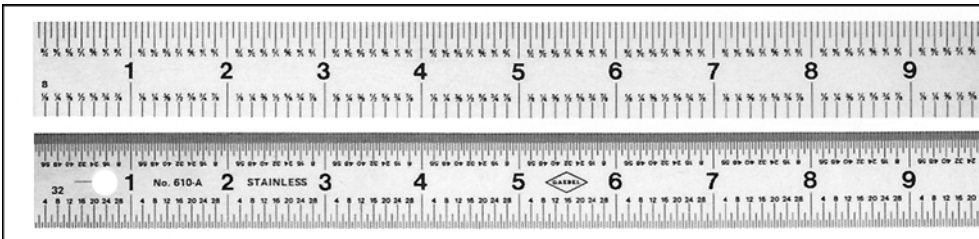
**TWO-SIDED:** 1" x 0.020" rulers with sub-zero scales and indented starts on both ends.  
 Two-Sided Rulers are available in three lengths, and are made of Stainless Steel Type 410.

**One Side:** **Top:** Inches (16ths)/sub-zero scale (32nds). **Bottom:** Inches (32nds)/sub-zero scale (64ths)  
**Other Side:** **Top:** Metric (mm). **Bottom:** Inches (10ths)/sub-zero scale (2/100ths).

**B-RUX-2** 6" length . . . . . **6.85**

**B-RUX-212** 12" length - 1/4" Hole for hanging . . . . . **7.90**

**B-RUX-3** 24" length - 1/4" Hole for hanging . . . . . **11.50**



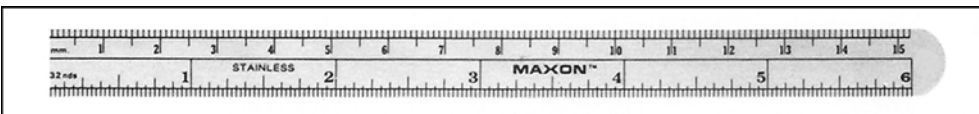
**TWO-SIDED:** 1" x 0.032" ruler available in two lengths. An old standard for mechanics with sharp, thin division lines and easy read numbers throughout. When ruler is held on edge, lines touch the surface, preventing parallax. Flush start on both ends. Made of Stainless Steel Type 410.

**One Side:** **Top:** Inches (16ths). **Bottom:** Inches (8ths)

**Other Side:** **Top:** Inches (64ths). **Bottom:** Inches (32nds)

**B-RUX-4** 12" length . . . . . **10.00**

**B-RUX-5** 24" length - 1/4" Hole for hanging . . . . . **13.15**



**ONE-SIDED:** 6" or 150 mm flexible ruler with easy to read numbers and division lines. Flush start on one end. Other end is rounded. Made of Stainless Steel 18-8.

**Top:** Metric (mm). **Bottom:** Inches (32nds)

**B-RUX-6** . . . . . **4.00**

## RULERS — Steel



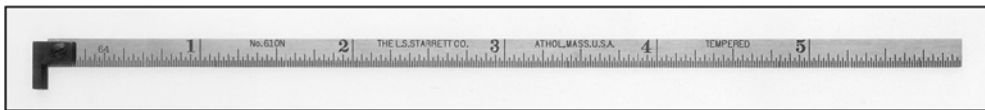
**TWO-SIDED:** Starrett® 6" × 3/4" × 0.043" ruler with hook permits accurate measurements even when the user cannot see if the ruler is even with the measuring edge. Useful for measuring around corners, through hubs, for setting inside calipers, etc. Hook may be reversed or removed. Flush start on both sides. Spring tempered steel with satin chrome finish.

**One Side:** Top: Inches (64ths). Bottom: Inches (32nds).

**Other Side:** Top: Inches (8ths). Bottom: Inches (16ths).

**B-HRU-6** ..... 17.50

**B-HRU-12** Same as HRU-6 except 12" long × 1" wide ..... 27.50

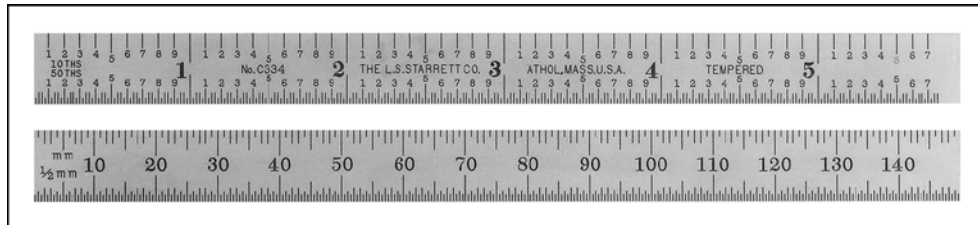


**TWO-SIDED:** Starrett® 6" × 3/16" × 0.044" ruler with narrow hook for holding when measuring; can be used in holes as small as 11/32". The hook is reversible and removable by a partial turn of the eccentric stud, providing flush starts on both ends. Spring tempered steel with satin chrome finish.

**One Side:** Inches (64ths).

**Other Side:** Inches (32nds).

**B-HRU-36** ..... 19.00

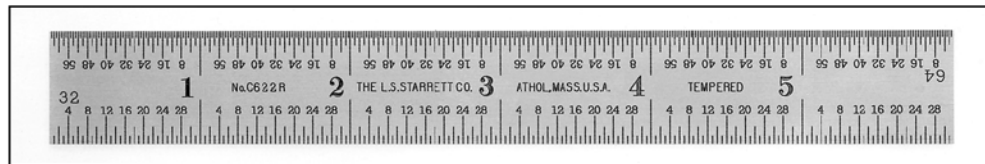


**TWO-SIDED:** Starrett® 6" × 1/2" × 0.04" (150 mm × 12.7 mm) flexible ruler. Flush start on both sides. Spring tempered steel with satin chrome finish.

**One Side:** Top: Inches (10ths). Bottom: Inches (50ths).

**Other Side:** Top: Metric (mm). Bottom: Metric (1/2 mm).

**B-RU-8** ..... 17.75



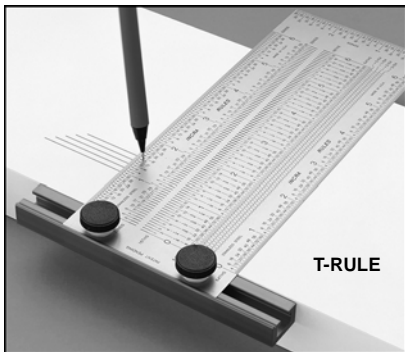
**TWO-SIDED:** Starrett® 6" × 3/4" × 3/64" ruler with highly legible divisions on one side. Spring tempered steel with satin chrome finish.

**One Side:** Top: Inches (64ths). Bottom: Inches (32nds), flush start.

**Other Side:** Fractional Table (1/64" increments up to 1") with decimal equivalents.

**B-RU-10** ..... 17.75

# RULERS — Precision Marking, Stainless Steel



T-RULE

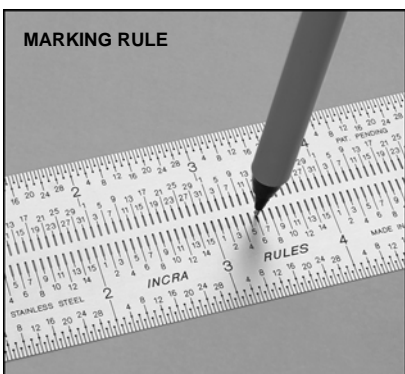
## INCRA® RULES

*Zero uncertainty and no eye-strain!*

Mark your measurements with dead-on accuracy! Incra Rules make layout, measurement, and marking tasks much easier and so much more precise! These ultra-thin Stainless Steel rules have micro-fine guide holes at every scale position to eliminate uncertainty and let you locate your mark precisely. Individually numbered guide slots are identified with engraved lettering on a low glare, matte textured background for high contrast and easy legibility. Just mark a fine dot with a sharp pencil or metal scribe.

### T-RULES — 1/64" increments

- B-MTG-06T 6" length ..... 19.95
- B-MTG-12T 12" length ..... 34.95



MARKING RULE

### MARKING RULE — 1/32" increments

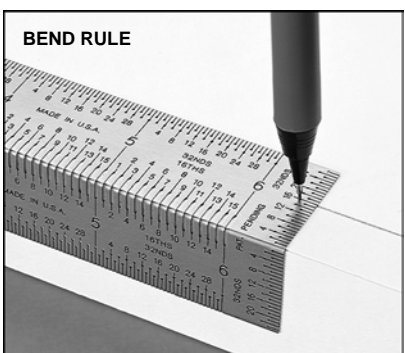
Measure from two perpendicular edges in one operation. One or both T-Bars can be removed for single edge referencing or flat work. Micro-fine guide holes locate your mark exactly.

- B-MTG-M12 12" length ..... 12.75

### BEND RULE — 1/32" increments

Right-angle shape gives you quick, easy edge measurements. Two scaled surfaces let you mark and measure top, edge, and corners simultaneously. Plus two vertical end scales with marking holes for drawing precision lines relative to the edge of your work.

- B-MTG-B12 12" length ..... 24.95



BEND RULE

### X-Y MARKER — 1/16" increments

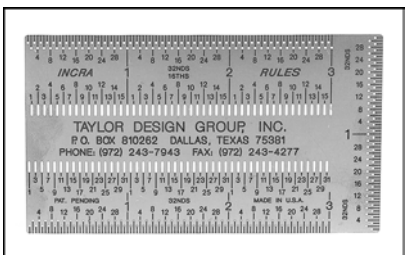
- B-MTG-06XY 6" x 3" ..... 28.95

### POCKET RULE — 1/32" increments

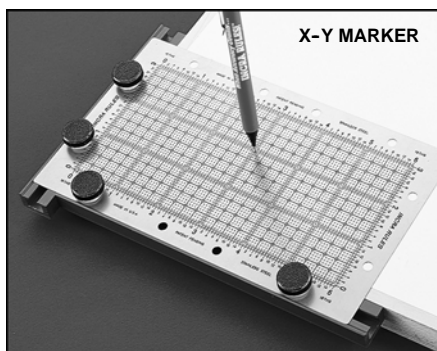
- B-MTG-0302 3" x 2" ..... 9.95

### PRECISION MARKING PENCIL

- B-MTG-MP 0.5mm Mechanical Pencil ..... 1.00



POCKET RULE

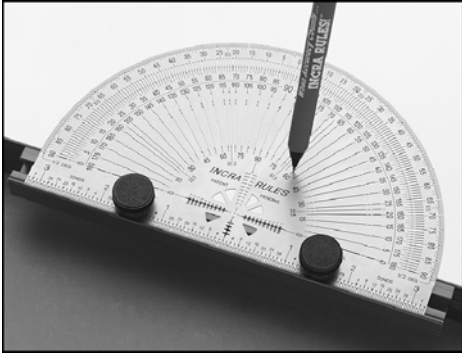


X-Y MARKER

MARKING PENCIL



## PROTRACTORS — Angles



### MARKING PROTRACTOR — Stainless Steel

*With removable T-Bar and Centering Rule*

Micro fine guide holes at every 45°, 30°, 22.5°, 5°, 1°, and 0.5° interval lets you plot any angle with ease and absolute accuracy. A removable metal T-bar and see-through crosshairs provide exact alignment against the edge of workpiece. It is equipped with four angle scales: 0° left to 180° right, 180° left to 0° right, 0° top to 90° left and right, and 90° top to 0° left and right, plus a 6" centering scale. Includes a 0.5mm Mechanical Marking Pencil.

Increments at every 1/2" and 1/32"

**B-MTG-096** ..... **29.95**

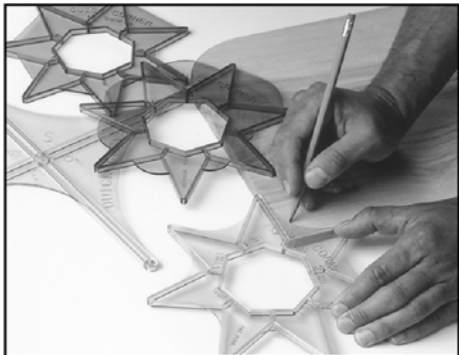


### ADJUSTABLE PROTRACTOR — Lexan

More than a protractor or mitre angle tool, this Lexan molded device can measure or lay out all types of angles, outside and inside. Useful to check corners for squareness, check alignment of radial arm or table saws; accurate to 1/2 degree; locks in any position to transfer the exact angle direct to the stock to be cut. Flexible and versatile. Length: 12". Width: 3-1/2".

**B-MTG-10** ..... **17.75**

## TEMPLATES — Radius



### RADIUS TEMPLATE

*Scribing a corner made easy*

Make fast work out of the tedious chore of marking out a chamfer, radius or concave corner. These four templates, made of polycarbonate plastic, allow you to draw convex arcs, concave arcs and 45° chamfers. Three smaller templates cover seven different sizes in 1/4" increments from 1/2" to 2". The larger convex template draws 3", 4", 5" and 6" arcs. The rib on the template aligns the curve or chamfer with the corner of the stock.

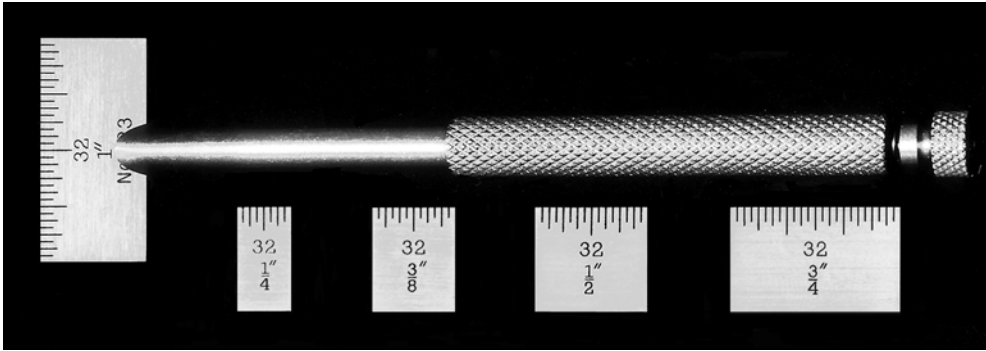
### RADIUS TEMPLATES

Part No.		Description	Price Each
<b>B-LCF-7NR</b>	1/2" to 2"	Concave arcs (inside radius)	<b>6.60</b>
<b>B-LCF-7PR</b>	1/2" to 2"	Convex arcs (outside radius)	<b>6.60</b>
<b>B-LCF-4PR</b>	3" to 6"	Convex arcs (outside radius)	<b>6.60</b>
<b>B-LCF-7CH</b>	1/2" to 2"	45° Chamfer	<b>6.60</b>

### ASSORTMENT

**B-LCF-100** Set of four tools - all of the above ..... **21.00**

## GAUGES — Depth / Angle



### STICK SCALE — Spring-Tempered Steel

The Stick Scale reaches into confined spaces to perform quick, highly accurate measurements of keyways, grooves, short shoulders, recesses, and many other restricted locations. Especially useful in tool and die work, the set contains a 4" long steel holder and five miniature rulers with 32nds of an inch graduations on one side and 64ths on the reverse. Thin, spring-tempered steel scales have a bright finish and come in lengths of 1/4", 3/8", 1/2", 3/4", and 1".

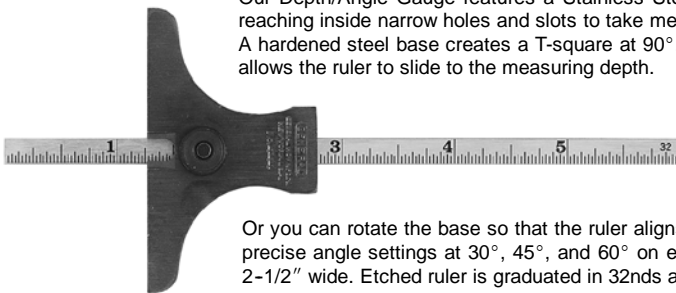
Scales insert easily into either of two holder slots that allow for 30° and 45° angling. A slight turn of the knurled nut in the handle rigidly clamps the scales square in the slot or tipped to one side. Thicknesses up to 1/16" can be clamped in either slot. Protective case included.

**B-RUX-SS1** ..... **44.00**

### DEPTH / ANGLE GAUGE —

*Narrow ruler measures depth and doubles as protractor*

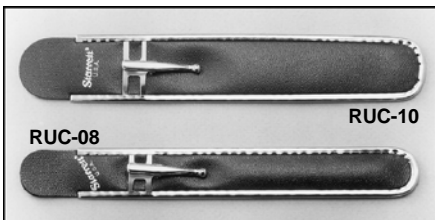
Our Depth/Angle Gauge features a Stainless Steel ruler that is just 1/4" wide, for reaching inside narrow holes and slots to take measurements up to six inches deep. A hardened steel base creates a T-square at 90°, and has a spring-tension nut that allows the ruler to slide to the measuring depth.



Or you can rotate the base so that the ruler aligns with scribed markings, permitting precise angle settings at 30°, 45°, and 60° on either side of the ruler. Base is just 2-1/2" wide. Etched ruler is graduated in 32nds and 64ths and measures 6" x 1/4".

**B-MTG-04** ..... **15.85**

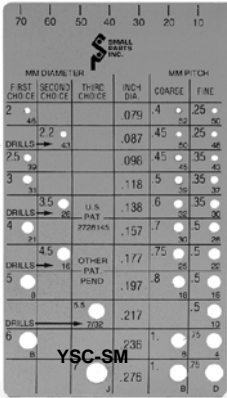
## POCKET CLIPS



Pocket Clips have rounded edges with metal-bound protection to keep your pockets from getting torn or worn by rule corners. The leather-like case attaches to your clothes or briefcase just like a pen clip, and your rulers stay handy without constantly falling out. Use them with the 1/2" wide B-RU-8 or the 3/4" wide B-RU-10 shown on [page 425](#).

**B-RUC-08** Pocket Clip for 1/2" x 6" Ruler ..... **4.25**  
**B-RUC-10** Pocket Clip for 3/4" x 6" Ruler ..... **3.75**

# GAUGES — Screws and Drills



## SCREW CHECKERS — Pocket Size

*Quick and Accurate*

Anyone who spends time identifying and sorting screws and other threaded components appreciates the ease and utility of this pocket-size handy tool. Both the inch and metric versions are vividly marked with screw size, tap series, clearance tap and drill sizes, as well as the basic diameter and a length scale for quick sizing. Satin-chrome plated heavy duty steel for precision accuracy.

**B-YSC-SI INCHES** ..... 15.50  
 Sizes: #1 through 5/16" — Measures: 3" x 5"

**B-YSC-SM METRIC** ..... 16.25  
 Sizes: 2mm through 7mm — Measures: 3" x 5-1/8"



## SCREW PITCH GAUGE — Inch

American (SAE) threads. Identifies "pitch" or number of threads per inch on 18 cadmium plated leaves from 8 to 44.

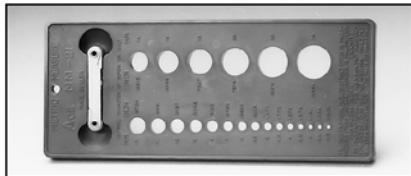
**B-SPG-18** ..... 7.50



## METRIC SCREW PITCH GAUGE

16 brass leaves identify "pitch" or distance between threads in millimeters in the range from 0.35 mm to 3.00 mm

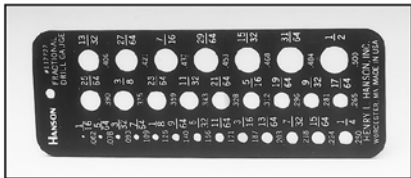
**B-SPG-16** ..... 7.25



## METRIC SCREW GAUGE

Ace Metric Measure Set. A quick way to identify metric screws and bolts. Immediately shows the metric diameter of 21 screw sizes and has a screw pitch gauge to identify the thread. Size range from 2.3 mm to 24.0 mm.

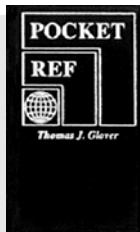
**B-AMM-21** ..... 9.75



## INCH DRILL GAUGE

Made of tempered steel, this Drill Gauge provides a convenient way to identify fractional drill sizes ranging from 1/16" thru 1/2" in increments of 1/64". Easy to read white lettering on flat black corrosion resistant finish.

**B-DG-F** ..... 5.50



## POCKET REF

*Get quick reference to specs, gauges, conversions, scales and facts!*

And it really does fit in your pocket! 542 pages of useful information. Includes steel specification tables, torque specs for bolts, wire gauges, drill conversions, plus information on glues and solvents, paints and finishes. All this is packed into a 5.4" x 3.2" x 0.6" soft cover book that puts countless other conversions, scales, and factual references at your finger tips. Sequoia Publishing, Inc., 1989.

**B-BCK-30** ..... 9.95

## MEASURING TAPES



**Push a button for instant conversions from inch to metric. Another button sets a new zero reading at any blade position.**

This tape remembers your measurements too, even after the blade is retracted! Your measurement “freezes” in the screen for convenient recall. Digitape also functions as a conventional tape measure. 16 feet of tempered, high carbon Steel blade is graduated in 1/16” increments on both edges. The 3/4” blade retracts into a high-impact resistant case and the self-adjusting end hook is notched for easy marking. Comes with a long-life Duracell DL1/3N battery. Blade is 3/4” wide.

**B-RU-16D 16 Feet ..... 35.00**

### CENTERPOINT® — Center Finding Rule

**Quickly divides a measured distance**

Layout work, installation, location of bores, you name it — any job goes faster when you don’t have to divide odd numbers or fractions. The CenterPoint® Center Finding Rule helps you avoid costly mistakes, using all the standard markings, plus a center finding scale. Just measure the distance (like 33–7/8), then find the same number on the lower scale to accurately indicate your midpoint.

Made to last, with a 3/4” wide heavy-duty Steel locking blade coated with non-glare acrylic-nylon; heavy duty spring; triple rivet hook connection; reinforced tip; and tough yellow ABS housing with metal belt clip.

**B-RU-725C 25 Feet ..... 18.00**



### ADHESIVE MEASURING TAPE — Inch / Metric

Steel precision tape measure that sticks to almost any surface. Lies flat, cuts to size with scissors. Useful on a Work Bench, Butcher Block, Drafting Table, Radial Arm Saw...wherever repetitive measurements are required. Available in two widths, 1/2” and 3/4”.

- 1/2” width has an inch/foot face (1/16” divisions).
- 3/4” width comes in two face styles:
  - (1) metric (mm/cm/m) and inch/foot (1/16” divisions)
  - (2) inch/foot (1/16” divisions)

**B-RUA-4 1/2” x 4’ (Inch) ..... 6.50**

**B-RUA-6M 3/4” x 6’ / 2M (Inch/Metric) .... 7.20**

**B-RUA-6 3/4” x 6’ (Inch) ..... 7.20**

## MEASURING TAPES (cont.)



### TWO-SIDED TAPE — Inch / Metric

Automatic Power Tapes with rigid replaceable steel blades are lightweight and small enough to keep handy in pocket or clipped to belt. Two-sided tape measures in 1/32" increments or in millimeters. Tape has a clear yellow coating for ease of reading and long life with no-draft locking action.

**B-RU-710** 10 Feet / 3 Meters ..... **7.50**



### HEAVY-DUTY TAPE — Starrett®

Available in two lengths, our 3/4" wide Precision Tape Measure has a rugged, impact resistant case, with reliable positive lock to prevent blade shift and a Stainless Steel blade protector for the heavy duty Steel blade. The hook self adjusts for inside and outside measurements.

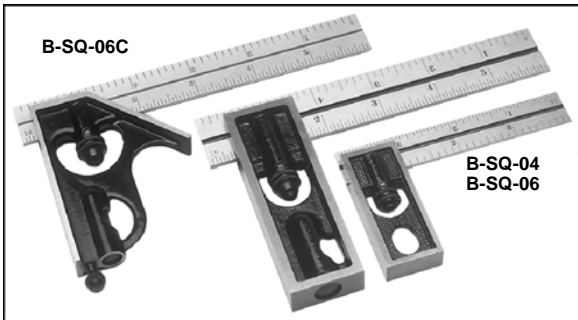
**B-RU-S712** 12 Feet ..... **12.95**

**B-RU-725S** 25 Feet ..... **17.50**

## MEASURING — Squares

### HARDENED STEEL SQUARES — Starrett®

Starrett® Hardened Steel Squares are recommended when accuracy is required. Beams and chrome plated blades are hardened, ground and lapped to insure parallelism and straightness. Beam is grooved at inner corner for clearance of burr or dirt. Faces of the head are ground square. Tempered steel, machine divided blades in 1/8", 1/6", 1/32" and 1/64" divisions.



### 4" SQUARE

1/16" x 5/8" x 4" Blade with 2-1/4" Long Beam — Smallest Starrett Square we offer. Faces of beam are 7/16" wide. A useful tool that is small enough to take anywhere!

**B-SQ-04** ..... Each **41.50**

### 6" SQUARE

3/32" x 1" x 6" Blade with 3-1/2" long beam — Simple and elegant. Equipped with a level. Faces of beam are 19/32" wide.

**B-SQ-06** ..... Each **53.50**

### 6" COMBINATION SQUARE HEAD

3/32" x 3/4" x 6" Blade with 3" long beam and 45° Face — Equipped with reversible lock bolt, spirit level and scribe. Forged and hardened head, smooth black enamel finish. Faces are 1/2" wide.

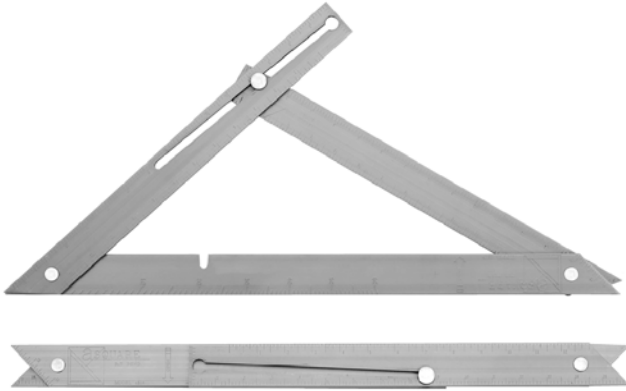
**B-SQ-06C** ..... Each .... **66.50**



## MEASURING — Square, Precision Angles

*This folding triangle fits right in your Tool box.*

Replaces two tools, and storage is no problem! One square for all types of tasks! Angles are marked in degrees on a full 16" x 16" square, which offers much greater accuracy than smaller graduated scales. It has a precision mechanism for positive locking of fixed angles — 45° and 90° — and folds to 2" wide by 17" long for storage in the top tray of your toolbox or in the drawer of your workbench.



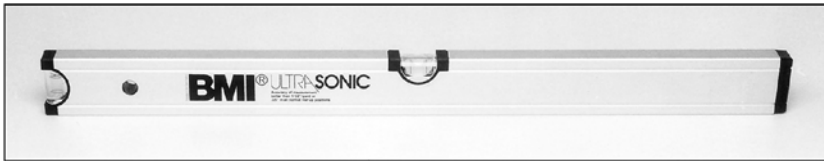
Larger than most squares, the precision made Asquare performs most of the functions of common utility squares. It makes a great saw guide, and when fully open one leg lips positively along the edge of the work surface, so you get true, steady hold while measuring or cutting.

Made of 3/16" thick aircraft quality aluminum with a gold anodized finish and engraved markings, it gives you accurate angles in degrees, 1/16" increment scales on each 16" leg, and a 45-degree leg for the most common layout angle.

**B-SQ-FFU**

**24.95**

## MEASURING — Levels



### ALUMINUM ALLOY LEVEL

One horizontal and one vertical barrel-shaped magnifying bubble vial, both precise to 0.046° in vial up position. Electronically anodized surface. Lightweight. Gray. 24" x 2" x 1".

**B-LV-2** ..... **28.75**



### POCKET LEVEL — Starrett®

Hexagonal shape for level viewing at any position. Pocket size to go into the smallest spaces. Convex ends. Satin nickel-plated finish. Measures: 3-1/2" x 1/2".

**B-LV-3** ..... **21.15**



### ABS LEVEL

Constructed of high impact ABS. Break resistant barrel-shaped plexiglas horizontal vial mounted into the level. For determining angle of inclination, the vial can be adjusted through 180°. Black. Measures: 9-7/8" x 2-3/16" x 3/4".

**B-LV-1** ..... **16.80**

## STROBOSCOPE — Motion Digital Measuring



Observe and measure many types of rotating, reciprocating or linear movement with the microprocessor-controlled Digital Stroboscope. This continuous duty instrument examines the speed of almost any machinery exhibiting repetitive motion: motor rotors under various loads, gear movement and engagement, cams, propellers, fan blades, centrifuges, spindles, turbines, etc. The illusion of "stopped" or "slow" motion is obtained by adjusting the flash rate of the Stroboscope, enabling the operator to study processes in action. Useful in quality control, it can provide pertinent information on motion of vibrating parts, oil leaks, liquid spray patterns and many other industrial and scientific operations.

Compact with a removable handle, this device features automatic brightness control with an operating range of 54 to 33,000 flashes per minute and drift-free reading accuracy of  $\pm 0.01\%$ . In combination with a parabolic reflector for maximum natural light output, the Xenon Flashtube provides ten watts of flash power with flash durations of 10-40 microseconds.

This unit also has external trigger capability, synchronous signal output, push-button select for flashes per minute and flash rate doubler, phase shift capacity, and an easy-to-read five-digit LED with three modes of display: flashes per minute; phase shift in degrees; and time delay in milliseconds. Updates every 0.2 seconds. Housed in impact-resistant die-cast aluminum, this Stroboscope performs reliably in temperatures ranging from 32° to 104°F (0° to 40°C). Should traceable documentation be required, it is available with NIST certification.

Power requirements: 115VAC  $\pm 10\%$  60/50Hz, 30VA. Units for 220VAC available by special order.

Size: 4.72" W  $\times$  4.72" H  $\times$  7.19" L. Protective Case made of shock resistant Polypropylene is sold separately.

<b>B-DS-5433</b>	Digital Stroboscope . . . . .	<b>595.00</b>
<b>B-DS-5433-NIST</b>	Digital Stroboscope with NIST certification . . . . .	<b>685.00</b>
<b>B-DS-ACC1</b>	Protective Case . . . . .	<b>70.00</b>
<b>B-DS-ACC2</b>	Replacement Flashtube — Xenon 10W Maximum . . . . .	<b>55.00</b>

## CONVERSION CALCULATOR PRO™



### NEXT GENERATION 1-STEP METRIC NOW™

#### Instant conversions of U.S. and Metric units

*Enter the known quantity and unit of measurement to be converted, then press the key with the measurement you need.*

Quickly find metric or U.S. equivalents for pressure, temperature, weight, length, area, volume, and cubic measures. Switch from decimals to fractions — displays in fraction format to the nearest 1/64". Powerful enough to meet the everyday demands of engineers and scientists, this Conversion Calculator is widely used by educators, students, travelers, architects, and by professionals in many industries. Just press a few keys to convert U.S. to Metric or vice versa!

Ounces and pounds to milligrams, grams, and kilograms / Liquid ounces, pints, quarts, and gallons to milliliters and liters / Inches, feet, yards, and miles to millimeters, meters, and kilometers / Acres and square miles, yards, feet, and inches to hectares and square kilometers, meters, centimeters, and millimeters / Cubic yards, feet, and inches to cubic meters, centimeters, and millimeters / Degrees Fahrenheit to degrees Celsius / psi to kpa, back space key for error correction.

Also functions as a standard calculator. Solar or battery operation. The finger-friendly, color-coded keyboard quickly identifies units of measure, and the 3/8" LCD display is easy to see. Fitted with a sliding cover to help keep the unit clean during storage or field use. Includes two 1.55-Volt batteries (44, 76, 357 Series).

<b>B-MCAL-100</b>	Size: 5-1/2" $\times$ 3-3/4" $\times$ 3/4" . . . . .	<b>39.50</b>
<b>B-BAT-0044</b>	Replacement Battery . . . . .	Each <b>3.50</b>

## BINOCULAR LOUPES



### Superior Optics with Titanium Frames

*A crisp field of view and true color from edge to edge!*

New wide angle coated optics provide a larger field of view for surgery, watch-making, model work, jewelry fabrication and other work requiring sharp magnification. Makes possible long performance of extremely delicate work without fatigue. The loupe is attached to the frame by a hinge, enabling the wearer to flip up the loupe when normal vision is required. Magnifies 1.8X to 2.5X. Image appears at same distance as when viewed with naked eye. Working distance 12" to 14". Supplied on light weight, corrosion resistant titanium frame with cable temples. Frames may be fitted with prescriptive lenses. Includes sturdy hard case with padded lining.

**B-BOL-23RP** Binocular Loupes with leather case ..... **399.95**

## MAGNIFIERS — Head Visor



### HEADBAND MAGNIFIER

*For hands-free inspection*

Precision binocular viewing with optical glass prismatic lenses, ground, polished, bevel edged and mounted in interchangeable frames. High impact visor with genuine leather comfort band tilts out of the way when not needed. Can be worn over safety glasses.

**B-OPTV-3** 1-3/4X at 14" ..... **31.95**  
**B-OPTV-4** 2X at 10" ..... **31.95**  
**B-OPTV-5** 2-1/2X at 8" ..... **31.95**  
**B-OPTV-7** 2-3/4X at 6" ..... **31.95**  
**B-OPTV-10** 3-1/2X at 4" ..... **31.95**



### MAGNIFYING LOUPE — 2.5X Magnification

The monocular lens attaches easily to either temple side and provides an additional 2.5 times magnification of the workpiece when needed. Provides that extra enlargement at the crucial point. Swings out of the way when not needed.

**B-OPM-25** ..... **8.00**

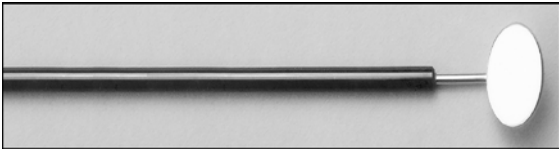


### REPLACEMENT LENS PLATES

Use these replacement lenses to easily replace scratched or damaged lenses or use them interchangeably to vary the magnification of your existing unit.

**B-OPL-3** Magnifies 1-3/4X at a distance of 14" ..... **19.50**  
**B-OPL-4** Magnifies 2X at a distance of 10" ..... **19.50**  
**B-OPL-5** Magnifies 2-1/2X at a distance of 8" ..... **19.50**  
**B-OPL-7** Magnifies 2-3/4X at a distance of 6" ..... **19.50**  
**B-OPL-10** Magnifies 3-1/2X at a distance of 4" ..... **19.50**

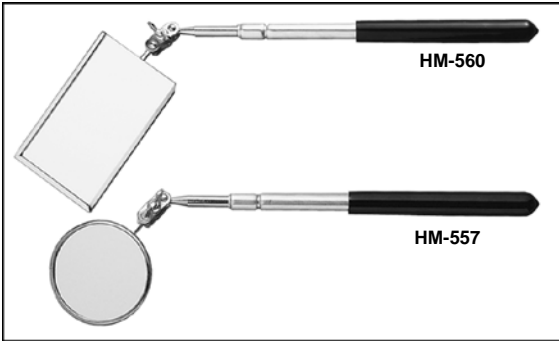
## MAGNIFIERS — Mirrors and Lenses



### MAGNIFYING INSPECTION MIRROR

One of the best ways to access those hard-to-see places. Magnifying Inspection Mirrors measure 1" in diameter, and are mounted on a Stainless Steel shank in non-conductive 8" long plastic handles. Mirror shanks detach. Total length: 9-1/2".

**B-HM-906** ..... 8.00



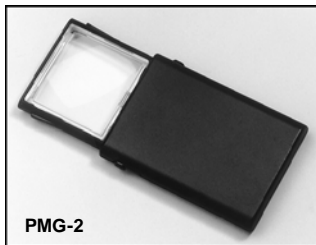
### TELESCOPING MIRRORS

*Reach up to 16" with adjustable mirror positions*

See both sides of the workpiece, or get accurate positioning when inspecting hard-to-reach areas. Work Mirrors are equipped with a Stainless Steel arm that telescopes to a reach of up to 16" on the round mirror and up to 15" on the rectangular style. Mirrors attach with ball and socket joints for easy viewing adjustments. The fully polished mirror is enclosed in a nickel plated holder. Vinyl-coated handle. Overall Length: 10-1/2".

**B-HM-557** 2-1/4" Dia. .... 8.15

**B-HM-560** 3-1/2" x 2" ..... 9.25



### 2X MAGNIFIER ILLUMINATED LENS

Retractable Lens Magnifier also provides illumination in low light or night situations. Stores in its own protective case. Especially helpful to read maps, directories, menus, etc. 2 AAA cells included.

**B-PMG-2** 3-5/8" x 2-5/8" x 1/2" ..... 10.50



### 4X FOLDING POCKET MAGNIFIER

So small and lightweight, it's easy to keep this Pocket Magnifier handy. Swing-away case of durable plastic serves as a handle and protects the lens when not in use.

**B-PMG-4** 2-1/8" x 1-3/4" x 3/8" ..... 17.50



### 5X - 12X FOLDING POCKET MAGNIFIER

A versatile magnification tool that fits right in your pocket. Use the two lenses singly or in combination to provide a range of magnification for inspection and pin point enlargement. Magnification range: 5X - 12X. Plastic case.

**B-PMG-5/12** 1-3/8" x 1" x 1/2" ..... 23.95



### 2.5X LENS, 5X BIFOCAL INSERT

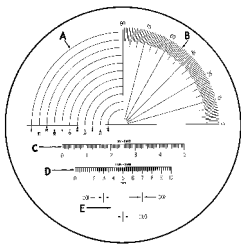
For reading small print, this lightweight, handheld magnifier has a clear shatterproof lens with a 5X power bifocal insert for spot enlargement. Molded 1-piece frame permanently locks in 4" lens. 9" x 4-1/2" x 1/2".

**B-HMG-25/5** ..... 12.80

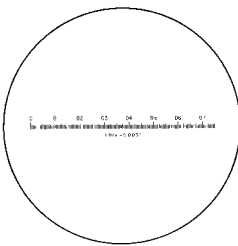
## MAGNIFIERS — Measuring



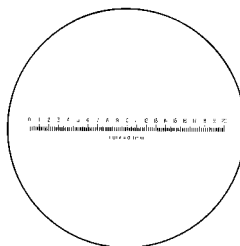
Truly versatile and precise, the Measuring Magnifier from Baush & Lomb® uses a highly corrected 7× Hastings Triplet lens to provide sharp, very distinct magnified images, with no color distortion. Adjustable for individual focus, the lens is mounted in a transparent body that allows illumination to fall on the magnified area. This magnifier accepts four separate accessory scale lenses that offer measuring patterns for inch and metric systems, radii, angles, and line widths of 0.001", 0.002" and 0.003". The Measuring Magnifier comes with a handsome leather case, and can be purchased alone or at a package price when you buy it with a General Purpose Scales Lens. Additional scale lenses are sold separately.



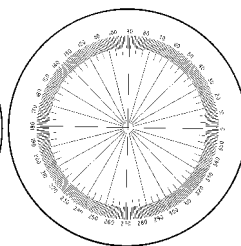
MG-GPS



MG-012



MG-20M



MG-360

### MEASURING MAGNIFIER

Part No.	Item	Lens	Price Each
<b>B-MG-7XG</b>	7× Magnifier with General Purpose Scales Lens and Leather Case	0.005" Scales; 0.1mm Scales Angles in single degrees to 90° Radii from 1/16" to 3/8" Line Widths of .001", .002", .003"	<b>107.95</b>
<b>B-MG-7X</b>	7× Magnifier with Leather Case - No Scales	Hastings Triplet	<b>71.00</b>
<b>B-MG-GPS</b>	General Purpose Scales Lens	Lens Only - See MG-7XG	<b>40.95</b>
<b>B-MG-012</b>	3/4" Scale Lens	0.005" intervals	<b>40.95</b>
<b>B-MG-20M</b>	20mm Scale Lens	0.1mm intervals	<b>40.95</b>
<b>B-MG-360</b>	360° Protractor Scale Lens	Angles in single degrees	<b>40.95</b>

## LENS CLEANING TOOL



**B-LP-1** ..... **9.95**

### LENS CLEANING PEN

**An excellent field tool!** The Lens Cleaning Pen fits right inside your pocket protector for handy, effective removal of dust, lint, oily fingerprints and smudges on your photographic, video, and binocular lenses. Its retractable brush whisks away dust and other particles.

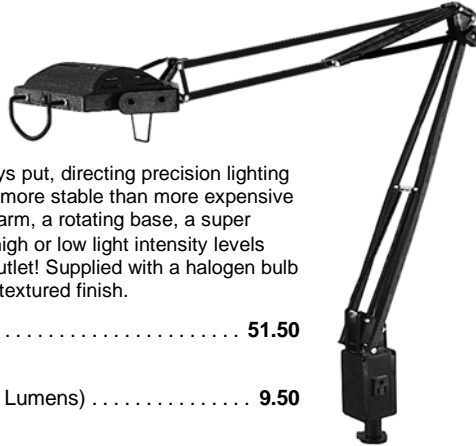
The capped end holds a soft, self-replenishing chamois tip that dispenses a nonliquid cleaning compound for removing harmful oils and other contaminants. The reusable Lens Pen will not spill or dry out.

## LIGHTING — Halogen Lamps

### HALOGEN TASK LIGHT — 45" Reach

*A stable, affordable light with the clarity and intensity of halogen. An outstanding light source for the serious workbench, as well as for the office or home.*

This lamp easily pivots to the position you want, then stays put, directing precision lighting onto the work at hand. Its practical design is significantly more stable than more expensive models, and it is wonderfully flexible, with an articulating arm, a rotating base, a super responsive head joint, and 45" stretch. You can choose high or low light intensity levels and the C-clamp base even has a convenient electrical outlet! Supplied with a halogen bulb rated at 150-watts, protected by a UV filter. Color: Black, textured finish.



**B-WL-248** Halogen Task Light ..... **51.50**

#### Replacement Bulb

**B-WLB-150** 120V/150W (Rated for 2000 hours, 2800 Lumens) ..... **9.50**



### GOOSENECK LAMPS— 20" Reach

*High-intensity light where you need it*

Aim your Gooseneck Lamp toward the work bench or your machine tools for a flexible, compact and unobstructed source of illumination. Rugged gooseneck is covered with PVC sleeving and flexes to almost any angle, delivering a narrow beam of efficient, bright light from a low voltage 20-watt halogen bulb.

Three base styles are available: Magnetic, C-Clamp and Circular. The C-Clamp will accommodate most working surfaces, opening to 1-5/8" for stable positioning. The Magnetic Base offers a convenient mount for use in machine tooling zones and other areas where frequent relocation of the light source is needed. For versatile desktop positioning, the Circular base model has an 8" diameter. Lamp housing measures 2-1/2" x 2-1/8" and is made from high impact polyamide plastic. Color: Black.

**B-WL-220** C-clamp — 1-5/8" opening ..... **155.00**

**B-WL-120** Magnetic base — 3-1/2" diameter ..... **160.00**

**B-WL-320** Circular base — 8" diameter ..... **159.00**

**B-WLB-1** . . Replacement Bulb 12V/20W  
Rated for 2,000 hours, 320 lumens) ..... **9.50**

## LIGHTING — Sapphire Light

### SAPPHIRE LIGHT — A Life Time of Light™



This handy little light can be attached to your key chain, belt loop, jacket zipper or purse. It can be used every day or for emergency situations. This sapphire light provides illumination with 180° viewing radius that is visible over a mile. Two Lithium power cells provide an incredible shelf life of approximately 10 years, with lifetime replacement of both batteries and crystal guaranteed by the manufacturer.

Its shockproof aluminum body protects the high-intensity crystal semiconductor. It switches On and Off with a snap dome switch encased in thermoplastic molded rubber. 2.67"L x 0.95"W x 0.34"T. Specify color by adding the letter after the part number when ordering.

**B-HL-SL1** Red (R), Blue (B), Violet (V), Pewter (P), Black (K) ..... **15.95**

**B-HL-SL18K** 18K Gold only ..... **24.95**



**THE ULTRABRIGHT LIGHT OF WHITE LED'S**

*Never worry about burned out bulbs again!*

Get more light per watt with the solid state technology of white LED bulbs. **Light Emitting Diodes** are not new, but white ones are. The Expedition 300 and Trek2 LED flashlights represent one of the latest breakthroughs in lighting technology.

Characterized by power efficiency and long life, these lamps give out light with very little heat — unlike standard incandescent bulbs that produce 2% light and 98% heat. LED's do not have breakable filaments, so dropping these lights won't break the bulbs.

**EXPEDITION 300™** — Serious light source with seven white LED's that assure up to 10,000 hours bulb life. Three new "C" cell alkaline batteries give you up to 40 hours of fully-bright light, and as much as 60 more hours of useful light at reduced brightness. Depth rated to 1,000 feet, this civilian version of a U.S. Navy flashlight is made of tough polymers to resist shock and vibration. Turns on with a twist. Measures: 7.75" x 1.9". Batteries included. Color: Black.

**TREK-2 LED™** — This lightweight version has two white LEDs providing enough light to move about in darkness and is a good choice when minimal or non-glare light is required. Materials of construction and service life are the same as the **Expedition 300**. Measures: 7-1/2" x 1". Color: Black. Three-AA batteries included.

<b>B-HL-LED7</b> Expedition 300™ .....	<b>69.95</b>
<b>B-HL-LED2</b> Trek 2 LED™ .....	<b>34.95</b>



**STREAMLIGHT SCORPION® — Lithium Powered**

*A compact personal light source with spot-to-flood focus*

One of the lightest, brightest personal lights you'll find! The secret is twin 3V lithium batteries and a Xenon gas bi-pin bulb that provide up to 6,500 candlepower for up to one hour. This little flashlight makes an excellent backup light or emergency unit — it could be stored for 10 years and give you the same performance!

The rotating face cap lets you adjust focus for customized beam patterns, from long-range pinpoint for distance work, to a wider, softer, flood effect for close up use. Tail-cap switch lets you turn light on or off without awkward twisting or turning. Machined aluminum body is armored with rubber grip and includes a bulb-holder assembly with an extra bulb inside. O-ring seal protects the unbreakable Lexan® lens against moisture. High energy, high capacity retention batteries operate in temperatures from -40° to 140°F (4° to 60°C).

Bulbs should last through three to five sets of batteries with continuous use, less with intermittent usage. Measures 4.9" x 1".

<b>B-HL-SCRP</b> Streamlight Scorpion .....	<b>37.50</b>
<b>B-HL-SCRPLB</b> Replacement Bulb .....	<b>4.50</b>
<b>B-BAT-L3V</b> Replacement Battery .....	<b>6.00</b>

## STORAGE — Portable



### ORGANIZING BOXES — Polypropylene

*A practical solution to workshop clutter!*

Flambeau Organizing Boxes keep your small parts secure and visible. Translucent Polypropylene lets you see what's inside, and provides a durable storage center that resists solvents and most chemicals. Hinged lids have sturdy double clips that lock in place for tight closure during transit or storage.

**Fixed Compartment Boxes** are a great solution for organizing many objects of similar size, and for assembling kits. Four sizes for storing everything from small fasteners to hobby parts and lab supplies.

**Infinite Divider Boxes** accommodate items with various lengths and sizes, letting you customize storage by placing dividers at any point desired. Order additional movable Dividers from the chart below.

#### FIXED COMPARTMENT BOXES

Part No.	Outside Dimensions - Box	Compartments / Size	Price Each
<b>B-POB-04F</b>	4-5/8" × 3" × 1-1/8"	(4) 2-1/8" × 1-1/4"	<b>2.35</b>
<b>B-POB-06F</b>	4-5/8" × 3" × 1-1/8"	(6) 1-7/16" × 1-1/4"	<b>2.35</b>
<b>B-POB-12F</b>	11" × 6-3/4" × 1-3/4"	(12) 1-5/8" × 3"	<b>5.25</b>
<b>B-POB-24F</b>	13-1/8" × 9" × 2-5/16"	(24) 2" × 2"	<b>6.85</b>

#### INFINITE DIVIDER BOXES

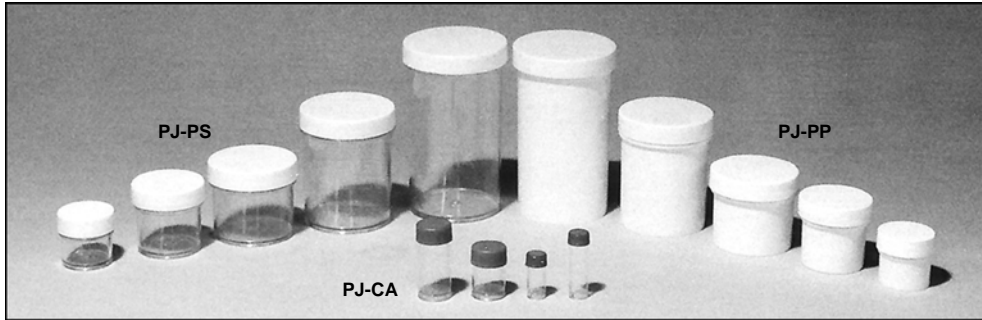
Part No.	Outside Dimensions - Box	Compartments / Size	Dividers		Price Each
			(Max. Compartments)		
<b>B-POB-03-06</b>	7" × 4-1/16" × 1-7/16"	(3) 1-1/2" × 6-5/8"	6	(9)	<b>4.10</b>
<b>B-POB-06-06</b>	11" × 6-3/4" × 1-3/4"	(6) 1-5/8" × 6-1/8"	6	(12)	<b>6.80</b>
<b>B-POB-04-16</b>	13-1/2" × 9-1/2" × 2-3/16"	(4) 2" × 13-1/8"	16	(20)	<b>11.30</b>

#### DIVIDERS

Part No.	Fits	Price Per Ten Pack
<b>B-POB-DV01</b>	B-POB-03-06	<b>1.00</b>
<b>B-POB-DV02</b>	B-POB-06-06	<b>1.00</b>
<b>B-POB-DV03</b>	B-POB-04-16	<b>1.00</b>



## STORAGE CONTAINERS — Plastic



### JARS AND VIALS

Tiny, elusive parts and pieces stay secure in Jars and Vials sized to your needs. The larger clear Polystyrene Jars and white Polypropylene Jars come with white Polypropylene screw caps. The small, tubular Vials made of clear, semi-flexible Cellulose Acetate are provided with slip-on-caps.

#### JARS — Clear Polystyrene with White Polypropylene Screw Caps

Part No.	Capacity	Diameter	Inside Height	Price		
				10	25	100
<b>B-PJ-PS16</b>	1/4 oz.	1"	1"	<b>3.30</b>	<b>6.85</b>	<b>22.80</b>
<b>B-PJ-PS22</b>	1 oz.	1-3/8"	1-7/16"	<b>4.65</b>	<b>9.70</b>	<b>32.30</b>
<b>B-PJ-PS28</b>	2 oz.	1-13/16"	1-11/16"	<b>6.00</b>	<b>12.50</b>	<b>41.65</b>
<b>B-PJ-PS30</b>	4 oz.	1-15/16"	2-5/8"	<b>7.85</b>	<b>16.35</b>	<b>54.45</b>
<b>B-PJ-PS32</b>	8 oz.	2-1/8"	4-1/8"	<b>12.35</b>	<b>25.75</b>	<b>85.85</b>

#### ASSORTMENTS

**B-PJ-PSA25** Five of each size (25 Containers with Caps) ..... **16.95**

#### JARS — White Polypropylene with White Polypropylene Screw Caps

Part No.	Capacity	Diameter	Inside Height	Price		
				10	25	100
<b>B-PJ-PP16</b>	1/4 oz.	1"	1"	<b>3.30</b>	<b>6.85</b>	<b>22.80</b>
<b>B-PJ-PP22</b>	1 oz.	1-3/8"	1-7/16"	<b>4.65</b>	<b>9.70</b>	<b>32.30</b>
<b>B-PJ-PP28</b>	2 oz.	1-13/16"	1-11/16"	<b>6.00</b>	<b>12.50</b>	<b>41.65</b>
<b>B-PJ-PP30</b>	4 oz.	1-15/16"	2-5/8"	<b>7.85</b>	<b>16.35</b>	<b>54.45</b>
<b>B-PJ-PP32</b>	8 oz.	2-1/8"	4-1/8"	<b>12.35</b>	<b>25.75</b>	<b>85.85</b>

#### ASSORTMENTS

**B-PJ-PP25** Five of each size (25 Containers with Caps) ..... **16.95**

#### VIALS — Clear Semi-Flexible Cellulose Acetate with Slip-On Caps

Part No.	Diameter	Inside Height	Price		
			10	25	100
<b>B-PJ-CA6-14</b>	3/8"	7/8"	<b>2.80</b>	<b>5.80</b>	<b>19.25</b>
<b>B-PJ-CA6-24</b>	3/8"	1-1/2"	<b>3.95</b>	<b>8.15</b>	<b>27.05</b>
<b>B-PJ-CA12-14</b>	3/4"	7/8"	<b>3.40</b>	<b>7.10</b>	<b>23.60</b>
<b>B-PJ-CA12-24</b>	3/4"	1-1/2"	<b>4.75</b>	<b>9.85</b>	<b>32.85</b>

#### ASSORTMENTS

**B-PJ-CAA40** Ten of each size (40 Vials with Caps) ..... **13.45**

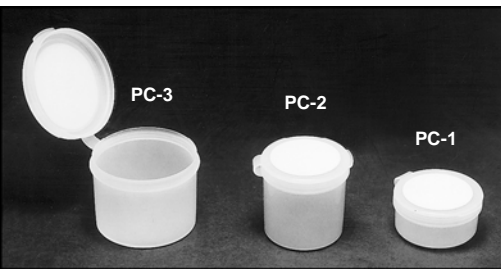
## STORAGE CONTAINERS — Plastic (cont.)



### VIALS WITH LIDS — Polypropylene

Sort and store small items and components using Vials made of sturdy, translucent, non-toxic Polypropylene. The hinged snap-on lid prevents loss.

Part No.	Capacity	Height	Diameter	Price		
				10	25	100
<b>B-LHV-1</b>	2 oz.	3"	1-1/8"	<b>3.15</b>	<b>5.75</b>	<b>19.15</b>
<b>B-LHV-2</b>	4 oz.	1-7/8"	2-3/8"	<b>5.15</b>	<b>9.75</b>	<b>31.00</b>



### CONTAINERS WITH LIDS — Polyethylene

Miniature parts and components can be readily found when stored in our handy circular Polyethylene Containers. Featherweight, unbreakable, moisture proof and translucent, these containers have hinged, snap-on lids that won't get lost. White self-adhesive labels provided for easy content identification. Available in three sizes.

Part No.	Capacity	Height	Diameter	Price		
				10	25	100
<b>B-PC-1</b>	1/2 oz.	3/4"	1-1/2"	<b>7.60</b>	<b>13.95</b>	<b>46.40</b>
<b>B-PC-2</b>	1 oz.	1-1/2"	1-1/2"	<b>8.45</b>	<b>15.50</b>	<b>51.60</b>
<b>B-PC-3</b>	2 oz.	1-1/2"	2"	<b>12.30</b>	<b>22.55</b>	<b>75.20</b>

### ASSORTMENT

**B-PC-100** Contains 10 each B-PC-1 through B-PC-3 — 30 pcs. . . . . **25.50**

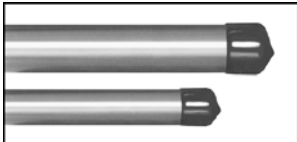


### BOX WITH HINGED COVER, LATCH — Polystyrene

Even your heaviest small parts and components will stay put in this versatile, well-designed container. Unbreakable, see-through and outfitted with a molded-in safety hanging tab, these tough plastic storage Boxes have a 1-3/4" wide front closure latch that helps to keep contents secure.

Part No.	Compartments	Inside Dimensions	Price		
			10	25	100
<b>B-LHB-52</b>	One	3-3/8" x 3-3/16" x 1-3/8"	<b>8.20</b>	<b>15.00</b>	<b>50.00</b>

## STORAGE CONTAINERS — Plastic (cont.)



### TUBES WITH SLIP-ON CAP — Clear Cellulose Acetate Propionate

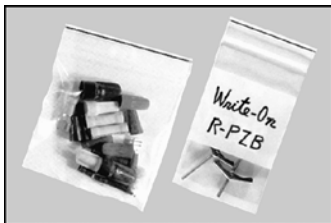
Each clear, plastic Tube comes with two Slip-On-Caps. 24" Tubes easily cut to desired length with knife or scissors and are particularly useful for storage and identification of hypodermic or other fine tubing, wire and rods. Additional Caps may be purchased separately. Lengths up to 72" available in 12" increments. **Call Purchasing Services toll free — 1-888-455-9712.**

### TUBES — Cellulose Acetate Propionate

Part No.	Nominal I.D.	Length	Each	Price		
				10	25	100
<b>B-RPT-4</b>	1/4"	24"	<b>1.00</b>	<b>7.15</b>	<b>14.90</b>	<b>49.55</b>
<b>B-RPT-6</b>	3/8"	24"	<b>1.20</b>	<b>9.90</b>	<b>20.55</b>	<b>68.50</b>
<b>B-RPT-8</b>	1/2"	24"	<b>1.55</b>	<b>12.85</b>	<b>26.75</b>	<b>89.05</b>
<b>B-RPT-12</b>	3/4"	24"	<b>1.85</b>	<b>15.40</b>	<b>32.05</b>	<b>106.75</b>
<b>B-RPT-16</b>	1"	24"	<b>2.15</b>	<b>17.55</b>	<b>36.55</b>	<b>121.80</b>

### CAPS — Polyvinylchloride (PVC)

Part No.	Description	Price		
		10	25	100
<b>B-RPTC-4</b>	Fits 1/4" I.D. Tube (B-RPT-4)	<b>1.15</b>	<b>2.35</b>	<b>7.80</b>
<b>B-RPTC-6</b>	Fits 3/8" I.D. Tube (B-RPT-6)	<b>1.30</b>	<b>2.70</b>	<b>8.90</b>
<b>B-RPTC-8</b>	Fits 1/2" I.D. Tube (B-RPT-8)	<b>1.45</b>	<b>2.95</b>	<b>9.75</b>
<b>B-RPTC-12</b>	Fits 3/4" I.D. Tube (B-RPT-12)	<b>1.65</b>	<b>3.40</b>	<b>11.25</b>
<b>B-RPTC-16</b>	Fits 1" I.D. Tube (B-RPT-16)	<b>1.70</b>	<b>3.55</b>	<b>11.75</b>



### POLY BAGS WITH PRESS CLOSURE — Polyethylene

Poly Bags can be finger sealed and opened numerous times. They provide clean, safe storage for all kinds of small parts. Transparent style gives you see-through storage, or choose Write-On style. The "write-on" area takes pencil or ball point ink for dating or description.

Keep all six sizes handy and economize with Assortments. Both Transparent and Write-On styles are available, with your choice of 10 or 25 bags in each size.

### WRITE-ON

Part No.	Size	Thickness	Price		
			10	25	100
<b>B-PZB-2/3</b>	2" x 3"	0.002"	—	<b>1.50</b>	<b>5.00</b>
<b>B-PZB-25/3</b>	2-1/2" x 3"	0.004"	<b>1.10</b>	<b>2.25</b>	<b>7.50</b>
<b>B-PZB-3/4</b>	3" x 4"	0.004"	<b>1.25</b>	<b>2.55</b>	<b>8.50</b>
<b>B-PZB-4/6</b>	4" x 6"	0.004"	<b>1.60</b>	<b>3.30</b>	<b>11.00</b>
<b>B-PZB-5/8</b>	5" x 8"	0.004"	<b>1.80</b>	<b>3.75</b>	<b>12.50</b>
<b>B-PZB-9/12</b>	9" x 12"	0.004"	<b>3.85</b>	<b>8.05</b>	<b>26.75</b>

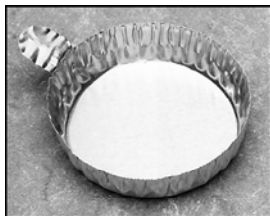
### TRANSPARENT

<b>B-PZBT-2/3</b>	2" x 3"	0.002"	—	<b>1.05</b>	<b>3.50</b>
<b>B-PZBT-25/3</b>	2-1/2" x 3"	0.004"	<b>1.15</b>	<b>2.35</b>	<b>7.75</b>
<b>B-PZBT-3/4</b>	3" x 4"	0.004"	<b>1.20</b>	<b>2.45</b>	<b>8.25</b>
<b>B-PZBT-4/6</b>	4" x 6"	0.004"	<b>1.30</b>	<b>2.65</b>	<b>8.75</b>
<b>B-PZBT-5/8</b>	5" x 8"	0.004"	<b>1.65</b>	<b>3.45</b>	<b>11.50</b>
<b>B-PZBT-9/12</b>	9" x 12"	0.004"	<b>3.25</b>	<b>6.70</b>	<b>22.25</b>

### ASSORTMENTS

<b>B-PZB-100</b>	Contains 10 Write-On Poly Bags each size: B-PZB-2/3 through B-PZB-9/12 . . . . .	<b>9.20</b>
<b>B-PZB-200</b>	Contains 25 Write-On Poly Bags each size: B-PZB-2/3 through B-PZB-9/12 . . . . .	<b>19.25</b>
<b>B-PZBT-100</b>	Contains 10 Transparent Poly Bags each size: B-PZBT-2/3 through B-PZBT-9/12 . . . . .	<b>8.05</b>
<b>B-PZBT-200</b>	Contains 25 Transparent Poly Bags each size: B-PZBT-2/3 through B-PZBT-9/12 . . . . .	<b>16.80</b>

## CONTAINERS, DISPOSABLE — Weighing and Mixing



### ROUND ALUMINUM DISH WITH TAB

You will find multiple uses for this dish when evaporating/weighing specimens or holding small parts. In addition, it can be used as a dust cover. Crimped sides and heavy gauge provide stability and angled sides enable easy separation. Place sample numbers on the large tab for easy identification.

Part No.	Diameter	10	Price	
			25	100
<b>B-WM-D20</b>	1-3/4"	<b>1.05</b>	<b>2.10</b>	<b>6.90</b>
<b>B-WM-D50</b>	2-1/4"	<b>1.10</b>	<b>2.30</b>	<b>7.60</b>
<b>B-WM-D70</b>	2-3/4"	<b>1.65</b>	<b>3.45</b>	<b>11.45</b>



### ALUMINUM WEIGHING/DRYING PANS

This 4" general purpose pan can be used for weighing, dispensing, storing and drying. It is compatible with most balances and dryers. Pan weighs approximately 2 grams and is 5/16" deep. A slight taper allows stacking.

Part No.	Diameter	10	Price	
			25	100
<b>B-WM-D100</b>	4"	<b>6.75</b>	<b>14.10</b>	<b>46.90</b>



### ALUMINUM PAN LINERS

Uncoated and oil free, Aluminum Pan Liners are for use with all flat-top balances and Ohaus moisture balances. Bottoms are flat and smooth, with a 4-3/4" diameter and 3/16" walls. Each pan weighs 3.2 grams.

Part No.	Diameter	10	Price	
			25	100
<b>B-WM-D125</b>	4-3/4"	<b>4.25</b>	<b>8.85</b>	<b>29.40</b>



### POLYSTYRENE WEIGHING DISHES

Translucent, rubberized polystyrene dishes can withstand temperatures up to 200°F (93°C). They can be used with balances and microwave moisture analyzers. Polystyrene flexes for easy pouring. Contour sides provide easy handling and a flat bottom resists tipping. <sup>\*</sup>1/8" Tolerance

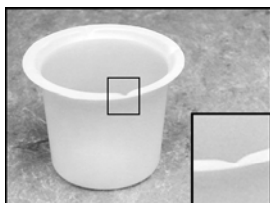
Part No.	W × L × H	10	Price	
			25	100
<b>B-WM-W350*</b>	3-1/2" × 3-1/2" × 1"	<b>1.05</b>	<b>2.05</b>	<b>6.80</b>
<b>B-WM-W550</b>	5-1/2" × 5-1/2" × 7/8"	<b>1.85</b>	<b>3.85</b>	<b>12.75</b>



### POUR-BOAT — Polystyrene Dish With Pour Spout

Pouring and dispensing are made easy with this built-in pour spout. Stability is increased with a 20-30% thicker material and a round flat-bottom design. Material will withstand 200°F (93°C).

Part No.	W × L × H	10	Price	
			25	100
<b>B-WM-PB100</b>	1-5/8" × 2-1/4" × 5/16"	<b>1.35</b>	<b>2.80</b>	<b>9.25</b>
<b>B-WM-PB300</b>	3-1/2" × 5-3/8" × 1"	<b>1.60</b>	<b>3.30</b>	<b>11.00</b>



### POLYSTYRENE BEAKERS

These general purpose, sample containers can withstand temperatures to 200°F (93°C). The 20 ml and 50 ml beakers are sized just right for use with atomic absorption, flame photometers and blood cell counters. Polystyrene beakers provide excellent chemical resistance to dilute or weak acids, aqueous solutions, alcohols and bases. Each has four-way pour spout. The 150 ml beaker offers dual graduations for measuring milliliters or ounces.

Part No.	Capacity	10	Price	
			25	100
<b>B-WM-B020</b>	20 ml	<b>1.10</b>	<b>2.25</b>	<b>7.45</b>
<b>B-WM-B050</b>	50 ml	<b>1.50</b>	<b>3.15</b>	<b>10.50</b>
<b>B-WM-B150</b>	150 ml	<b>4.65</b>	<b>9.65</b>	<b>32.15</b>

## CONTAINERS, DISPOSABLE — Weighing and Mixing (cont.)



### TRI-POUR® GRADUATED DISPOSABLE BEAKERS Polypropylene, with Graduations in Milliliters

Three spouts allow convenient pouring and are shaped to help reduce dripping. Transparent Polypropylene Beakers resist strong acids and bases, organic solvents, and commonly used laboratory reagents. Each size has 10mm graduations and is autoclavable at temperatures up to 250°F (121°C). Identify samples and ensure spillproof, leak-resistant closure with optional Write-On Caps. Wax-impregnated cardboard lids have lift tabs for easy use.

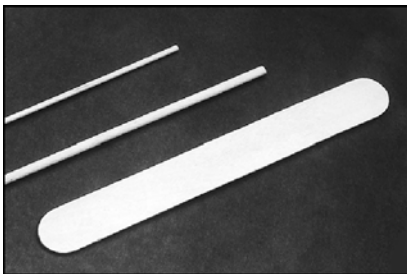
#### TRI-POUR BEAKERS

Part No.	Size	Height	Diameter	Price		
				10	25	100
<b>B-TPB-0050</b>	50ml	55mm	44mm	<b>5.25</b>	<b>10.50</b>	<b>31.50</b>
<b>B-TPB-0100</b>	100ml	73mm	53mm	<b>6.25</b>	<b>12.50</b>	<b>37.50</b>
<b>B-TPB-0250</b>	250ml	90mm	72mm	<b>9.50</b>	<b>19.00</b>	<b>57.00</b>
<b>B-TPB-0400</b>	400ml	110mm	80mm	<b>10.20</b>	<b>20.35</b>	<b>61.00</b>
<b>B-TPB-0800</b>	800ml	134mm	107mm	<b>11.20</b>	<b>22.35</b>	<b>67.00</b>
<b>B-TPB-1000</b>	1000ml	147mm	112mm	<b>15.00</b>	<b>30.00</b>	<b>90.00</b>

#### WRITE-ON CAPS

Part No.	Fits	Price		
		10	25	100
<b>B-TBC-0050</b>	B-TPB-0050	<b>1.00</b>	<b>1.85</b>	<b>5.50</b>
<b>B-TBC-0100</b>	B-TPB-0100	<b>1.25</b>	<b>2.45</b>	<b>7.35</b>
<b>B-TBC-0250</b>	B-TPB-0250	<b>1.60</b>	<b>3.20</b>	<b>9.50</b>
<b>B-TBC-0400</b>	B-TPB-0400	<b>1.75</b>	<b>3.50</b>	<b>10.25</b>
<b>B-TBC-0800</b>	B-TPB-0800	<b>2.45</b>	<b>4.85</b>	<b>14.50</b>
<b>B-TBC-1000</b>	B-TPB-1000	<b>2.55</b>	<b>5.10</b>	<b>15.25</b>

## APPLICATORS



### WOODEN APPLICATORS

You'll find hundreds of uses for wooden tongue blades and mixing Applicators. They can be used as instant shims, spacers, paint stirrs and glue spreaders, or to protect the surface of work being held between clamping jaws. Applicators may be flagged with a swab of cotton to clean small areas or to apply solutions. Sharpen the end to point pin a dot of oil or paint where it is needed. You can even apply flux when soldering silver or gold jewelry. Easily painted or sanded. Applicators also make good dowels, shafting or rods.

Part No.	Type	Dimensions in Inches	Price		
			50	100	500
<b>B-APTD-50</b>	Tongue Blade	5-1/2 × 5/8 Flat	<b>2.60</b>	<b>3.70</b>	<b>12.95</b>
<b>B-APTD-80</b>	Applicator Stick	12 × 1/12 Round	<b>3.00</b>	<b>4.25</b>	<b>13.95</b>
<b>B-APTD-90</b>	Applicator Stick	12 × 1/8 Round	<b>4.10</b>	<b>5.85</b>	<b>20.50</b>

## COMPACT SCALES



### Portable and reliable with high-contrast display

When cost matters and dependable results are a must, Ohaus® Compact Scales offer excellent performance, for light-duty applications in lab, office, or field. We offer two portable models, both featuring a sleek, low-profile design. Weigh in grams or pounds/ounces, with full capacity taring and readability to 0.1g on the CS-200 Model and to 1.0g on the CS-2000 model. Large weighing pan accommodates a variety of samples. The LCD display is easy to see, with 0.4" high readings that convert from U.S. to metric units.

Dimensions, either unit: 7.6"L x 5.3" W x 1.5"H.

The unit automatically shuts down after five minutes with no activity (battery mode only), and has low battery indicator, overload and underload indicators. Rugged plastic construction. Three AAA batteries are included, or use with the optional power adaptor.

Part No.	Item	Description	Price
<b>B-SCL-200</b>	CS-200 Scales	200g / 7.50 oz	<b>110.00</b>
<b>B-SCL-2000</b>	CS-2000 Scales	2000g / 4 lb. 6.55 oz	<b>110.00</b>
<b>B-SCL-075</b>	Plastic Weighing Bowl	1050 ml	<b>19.95</b>
<b>B-SCL-076</b>	Weighing Pan Cover	Stainless Steel	<b>21.00</b>
<b>B-SCL-077</b>	Postal Rate Chart	Laminated	<b>7.50</b>
<b>B-SCL-457</b>	Power Adaptor	120VAC	<b>20.75</b>

## CERAMIC HOT PLATES



Ceramic Hot Plates from Corning® are equipped with high quality components and electronic sensitivity for consistent performance and reliability.

The white Pyroceram™ top is easy to clean, and is highly resistant to scratches, corrosion, and chemical attack. Plus, it's nice and flat for uniform heating, and very white for high contrast in color monitoring applications.

Oversized knobs with large numbers give you more control when adjusting settings, and the "hot top" indicator light on the 10" x 10" size operates even after heat is turned off. A separate temperature sensor provides foolproof power cutoff in catastrophic situations. The low profile requires less space, and there are both internal and external spill troughs to deflect liquids and other materials away from electronics and control knobs.

The 10" x 10" units include a socket for an external temperature controller. Also available in a 4" x 5" micro-chemistry size, all models feature a back mount for a standard support rod and operate at 120V - 60Hz, with temperature ranges of 77° to 1022°F (25° to 550°C).

### CERAMIC HOT PLATES

Part No.	Model	Top Size	Dimensions (H x W x D)	Wattage	Weight	Price Each
<b>B-CHP-0200</b>	Hot Plate	4" x 5"	4.4" x 5.8" x 7.3"	253	4 lbs.	<b>186.10</b>
<b>B-CHP-0600</b>	Hot Plate	10" x 10"	4.8" x 10.5" x 14.4"	1043	11 lbs.	<b>354.20</b>

## LABORATORY EQUIPMENT — Stainless Steel

Whether in the shop or laboratory, you need durable containers in a variety of sizes and shapes for mixing solutions, holding materials and parts, or organizing small tools and components. Passivated Stainless Steel construction assures corrosion resistance and durability.



### GRADUATED MEASURING CUP

The Graduated Measuring Cup has multiple scales on the inside with graduations to 2 fluid ounces, 4 tablespoons, 3 teaspoons, 60 mls.

**B-LE-22** ..... **10.75**

### CUP

Hand-size Cup is easy to grasp and holds small parts, materials or solutions. 6 fluid ounces, no markings.

**B-LE-26** ..... **9.00**



### BASIN

The flat bottom and straight sides of this 32-ounce Basin provide additional stability when mixing solutions.

5-3/4" diameter. 2-1/2" depth.

**B-LE-32** ..... **16.50**



### FLAT TRAYS

Keep track of small parts or group tools with multipurpose Flat Trays. The two deeper trays (B-LE-42 and B-LE-48) can be used as a bath for soaking components — for example, to remove a finish.

**B-LE-48** 8-7/8" x 5" x 2" ..... **23.50**

**B-LE-42** 12-1/4" x 7-5/8" x 2-1/8" ..... **37.50**

**B-LE-43** 15-1/8" x 10-1/2" x 5/8" ..... **32.15**



### FUNNELS

Transfer or combine liquids and/or powders without spilling or overflow. B-LE-5313 has an overall height of 5" and a maximum funnel diameter of 5". B-LE-5238 has an overall height of 3-1/2" and measures 3" at the widest part of the bowl. Both Funnel taper to a 7/16" opening. Convenient supporting bail for hanging. Stainless Steel Type 304.

**B-LE-5238** 2-3/8 oz. capacity ..... **31.60**

**B-LE-5313** 13 oz. capacity ..... **35.20**



### TONGS

These Tongs are convenient in situations where handling the object is necessary yet physical contact is undesirable. Curved tip design assures a firm grip. Includes a pull-out hanger. Stainless Steel Type 430. Available in three lengths.

**B-LE-909** 9" overall length ..... **7.15**

**B-LE-912** 12" overall length ..... **9.65**

**B-LE-916** 16" overall length ..... **11.25**

## LABORATORY EQUIPMENT.... — Luer Hub, Polyethylene



### POLYETHYLENE TAPER TIPS

Free-flow Taper Tips provide an unrestricted channel for high viscosity material such as solder paste. Luer hub enables use with syringes and squeeze bottles. Color-coded for easy identification of sizes. 1-1/4" length.

Part No.	Gauge	I.D.	Color	Price		
				5	25	50
<b>B-FFT-22</b>	22	0.016"	Blue	<b>3.65</b>	<b>15.25</b>	<b>25.40</b>
<b>B-FFT-20</b>	20	0.023"	Purple	<b>3.65</b>	<b>15.25</b>	<b>25.40</b>
<b>B-FFT-18</b>	18	0.033"	Green	<b>3.65</b>	<b>15.25</b>	<b>25.40</b>
<b>B-FFT-16</b>	16	0.047"	Gray	<b>3.65</b>	<b>15.25</b>	<b>25.40</b>
<b>B-FFT-14</b>	14	0.063"	Clear	<b>3.65</b>	<b>15.25</b>	<b>25.40</b>



### TAPER TIP SYRINGES

These syringes have a molded-on taper tip that can be cut back to create the desired orifice size. No dispensing needle necessary. Slip tubing over taper tip when an extension is needed for dispensing.

Part No.	Body Material	Plunger Tip	Capacity	Dimensions in Inches				Price		
				Taper Tip I.D.		Taper Tip O.D.		Each	5	10
				Min.	Max.	Min.	Max.			
<b>B-TTS-06</b>	Polyethylene	Neoprene	6 cc	.023	.070	.100	.205	<b>1.70</b>	<b>6.95</b>	<b>11.55</b>
<b>B-TTS-10</b>	Polypropylene	Neoprene	10 cc	.027	.060	.147	.260	<b>1.80</b>	<b>7.50</b>	<b>12.50</b>
<b>B-TTS-30</b>	Polyethylene	Neoprene	30 cc	.036	.105	.165	.280	<b>2.35</b>	<b>9.75</b>	<b>16.25</b>
<b>B-TTS-50</b>	Polypropylene	Thermoplastic	50 cc	.156	.255	.320	.435	<b>3.50</b>	<b>14.55</b>	<b>24.25</b>



### POLYETHYLENE SQUEEZE BOTTLES

Get "one drop at a time" dispensing of fluxes, inks, solvents, oils, etc. with durable Polyethylene Squeeze Bottles. Furnished with 18 mm screw-on cap with luer taper for use with needles. Compatible with the Stainless Steel Needles [on page 117](#).

Part No.	Capacity	Each	Price	
			5	10
<b>B-SQB-01</b>	1 oz.	<b>2.40</b>	<b>9.95</b>	<b>16.55</b>
<b>B-SQB-02</b>	2 oz.	<b>2.50</b>	<b>10.35</b>	<b>17.25</b>



### DROPPERS — POLYETHYLENE

A nonsterile, plastic pipette for the transfer of liquids. Made of low-density (conventional) Polyethylene, droppers are nontoxic, inert, and not easily broken. The tip can be sealed to form a container simply by placing it in an open flame or against a hot surface such as a hot plate. A simple device of many uses, these Droppers draw approximately 3.5 milliliters (30-40 drops), nearly filling with a single squeeze. Disposable.

Part No.	Cylinder Diameter	Capacity	Price		
			10	25	100
<b>B-DPP-1</b>	2.5mm	4+ ml	<b>2.45</b>	<b>5.10</b>	<b>16.95</b>
<b>B-DPP-2</b>	5 mm	5+ ml	<b>4.05</b>	<b>8.45</b>	<b>28.10</b>



## BARRIER FILM — Parafilm M®



### Flexible, moldable, self-sealing

Prevent loss of moisture, mask surfaces, protect against breakage, seal plant materials — the unique properties of Parafilm M offer hundreds of uses. Odorless, colorless, and moldable, this thermoplastic self-sealing film creates a barrier that holds moisture loss to a minimum. Resistant to many common reagents, Parafilm is used in laboratories to protect contents of broth tubes, flasks, culture tubes and petri dishes. (Permeable by Oxygen and CO<sub>2</sub>.) This semi-transparent film is used medically as a bandage cover, and in storage applications as a tray or shelf liner where bottles, containers and instruments need protection against slippage and breakage.

It is well known as a budding tape for horticultural uses, preventing dry-out and protecting against rain, dust and fog. In the shop, use it to mask surfaces to be treated or worked. It conforms to almost any substrate, shape, or angle, fills even the tightest corners, adheres well, yet leaves no residue and comes up easily. It can even be used as fingertip covering to guard against prints, smears, and other deposits when working on sensitive surfaces. Conveniently offered in strips, 4-inches wide by 10-feet long, and packaged in a plastic jar.

**B-PF-6410** 4 Inches × 10 Feet ..... **5.00**

## PROTECTIVE NETTING SLEEVES



Extruded mesh made from Polyethylene provides form fitting security and keeps highly finished objects separated during process, handling, shipping or storage. Durable and reusable, Protective Netting Sleeves promote the flow of liquids and air around parts during cleaning, degreasing and drying operations, and they won't trap or absorb moisture. The diamond mesh conforms to even the most irregular shapes, and it will not slip while in transit. Excellent for layering or individual packing, lightweight Sleeves guard against scratches and other damage. Just cut to the length you need for fast, easy application.

### PROTECTIVE NETTING — Polyethylene

Order Example: **B-PNS-0610-25** is 3/8" - 5/8" dia., orange color, 25 feet

Part No.	Diameter Range of Sleeve	Color	Price		
			5 Feet	25 Feet	50 Feet
<b>B-PNS-0406</b>	1/4" - 3/8"	Red	<b>1.50</b>	<b>6.25</b>	<b>10.40</b>
<b>B-PNS-0610</b>	3/8" - 5/8"	Orange	<b>1.60</b>	<b>6.70</b>	<b>11.15</b>
<b>B-PNS-1016</b>	5/8" - 1"	Blue	<b>2.25</b>	<b>9.35</b>	<b>15.60</b>
<b>B-PNS-1632</b>	1" - 2"	Yellow	<b>4.70</b>	<b>19.55</b>	<b>32.55</b>

### PROTECTIVE POLYPROPYLENE CASE

#### Shock Resistant



This tough, shock resistant case transports or stores your small delicate instruments and prototypes. A polypropylene shell with thick convoluted foam padding protects contents against bumping and jarring while in transit. Two-piece handle. Case color: Black. Inside Dimensions: 14" × 8-1/8" × 2-1/2". Outside Dimensions: 15" × 9-1/2" × 2-3/4". *May be subject to dimensional weight restrictions.*

**B-EC-8080** ..... **11.25**

## BRUSHES — Miscellaneous



**B-BRU-284**

### WIRE SCRATCH BRUSH — Stainless Steel Bristles

Here is one of the best Wire Scratch Brushes we've found. You will find it especially useful to help remove rust, scale and paint from a workpiece or tool, to unclog and clean files, etc. The convenient offset plastic handle with molded finger grips keeps your knuckles off the workpiece while you're working. The 3 x 16 rows of 1" stiff bristles are stainless steel to avoid the rusting problem after scaling. A scraper is mounted on the tip. 11-1/2" overall length, brush 4-3/4"

**B-BRU-284** ..... 10.00

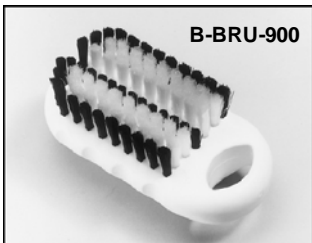


**B-BRU-6309**

### PLASTIC HANDLE BRUSH — 100% Fine Horse Hair

The Plastic Block Brush is especially effective where extra fine dusting is required. Clean-up won't frustrate you by scattering the material, since this brush softly moves even the finest particles. Laquered plastic handle with hang-up hole. 14" overall length, 9" brush length, 2-1/2" bristle trim.

**B-BRU-6309** ..... 9.50



**B-BRU-900**

### HAND AND NAIL BRUSH — Sparlon Bristles

Eight rows of medium firm bristles surround a center line of firm shorter bristles. The softer perimeter bristles clean the hands, while the firmer bristles on the center line really get at and remove the dirt, bacteria and contaminants that may be trapped beneath fingernails and cuticles.

The 5" x 2" structural foam handle (with keyhole) is durable, yet comfortable and easy to grip when wet. Heavily filled with Sparlon bristles.

**B-BRU-900** ..... 7.40



**ANGLE BRUSH**



**TUBE BRUSH**

### ANGLED BRUSHES

Flat Angled Brushes are most useful for model and general laboratory work. The camel hair brush provides the softness essential for enamel and other applications requiring a gentle touch. The black bristle type offers greater stiffness for cleaning and other general uses. Brush angles from 7/16" to 1/4". Wood handle.

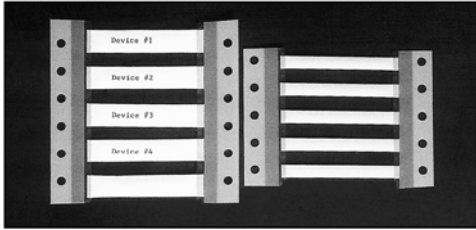
Part No.	Description	Overall Length	Brush Width	Each	Price	
					10	25
<b>B-BRU-A5C</b>	Camel Hair	5-1/4"	5/16"	<b>4.30</b>	<b>35.75</b>	<b>74.50</b>
<b>B-BRU-A5B</b>	Black Bristle	5-1/4"	5/16"	<b>3.65</b>	<b>30.50</b>	<b>63.50</b>

### TUBE BRUSHES

A selection of small round Brushes are sized just right for cleaning small gauge tubes. Brush diameters from the useful 1/4" size to the unbelievably tiny 0.020", which is the inside diameter of a 21-gauge hypodermic needle. The handles are twisted stainless steel. Brushes have nylon bristles.

Part No.	Brush Diameter	Overall Length	Each	Price	
				10	25
<b>B-BRU-02</b>	0.020"	3"	<b>5.15</b>	<b>43.00</b>	<b>89.60</b>
<b>B-BRU-03</b>	0.030"	3"	<b>5.05</b>	<b>42.10</b>	<b>87.70</b>
<b>B-BRU-04</b>	0.040"	4"	<b>4.90</b>	<b>40.65</b>	<b>84.70</b>
<b>B-BRU-05</b>	0.050"	4"	<b>4.35</b>	<b>36.35</b>	<b>75.70</b>
<b>B-BRU-06</b>	0.060"	6"	<b>5.25</b>	<b>43.80</b>	<b>91.20</b>
<b>B-BRU-07</b>	0.070"	6"	<b>5.00</b>	<b>41.35</b>	<b>86.10</b>
<b>B-BRU-09</b>	0.090"	6"	<b>4.35</b>	<b>36.00</b>	<b>75.00</b>
<b>B-BRU-12</b>	0.125"	6"	<b>4.00</b>	<b>33.00</b>	<b>68.70</b>
<b>B-BRU-20</b>	0.200"	6"	<b>2.45</b>	<b>20.50</b>	<b>42.70</b>
<b>B-BRU-25</b>	0.250"	6"	<b>1.85</b>	<b>15.45</b>	<b>32.20</b>

## WIRE MARKERS — Tags and Labels



### WIRE MARKERS — Shrink-Tag

Shrink-Tags are one of the most versatile and easy to use 'heat-shrink' systems available today. Shrink-Tags are supplied flat between two pin-fed polyester strips in continuous lengths of adhesive tape that can be adapted to most printers and typewriters. Whether you use a pen, a typewriter or a printer, this is an easy solution to wire marking needs. Shrink-Tags come in Yellow or White, and have a 3:1 shrink ratio.

Part No.	Color	Min. Exp.	Diameter in Inches		Price			
			Min. Recv.	Size	25	50	100	250
<b>B-WM-2W</b>	White	0.125	0.042	2-5/32 × 1/4	<b>26.10</b>	<b>43.50</b>	<b>72.45</b>	<b>150.90</b>
<b>B-WM-4W</b>	White	0.250	0.083	2-5/32 × 7/16	<b>29.95</b>	<b>49.95</b>	<b>83.25</b>	<b>173.35</b>
<b>B-WM-2Y</b>	Yellow	0.125	0.042	2-5/32 × 1/4	<b>25.75</b>	<b>42.95</b>	<b>71.60</b>	<b>149.15</b>
<b>B-WM-4Y</b>	Yellow	0.250	0.083	2-5/32 × 7/16	<b>28.15</b>	<b>46.90</b>	<b>78.10</b>	<b>162.70</b>

### MINIATURE WIRE MARKERS — Reinforced Plastic, Brady®

Miniature wire markers with label dimensions of 3/16" × 1/2" are consecutively numbered as the standard markers shown above. Supplied on reinforced plastic, they are useful in confined spaces where smaller numbers are desirable.

Part No.	Consecutively Numbered Sets	Price Per Set	
		Each	10
<b>B-BWMM-49</b>	1 Through 49	<b>4.90</b>	<b>39.20</b>
<b>B-BWMM-99</b>	50 Through 99	<b>4.75</b>	<b>38.00</b>

### MICRO-MARKERS — Self-Sticking, Reinforced Plastic

For permanent or temporary identification of extra small wires, #28 or smaller, and for marking miniature components in prototype work. Self-stick, reinforced plastic Micro Markers adhere to any type of wire. Micro Markers stick to Teflon, even in extremely oily atmospheres. Only 2 mm thick, they will not bulk up on wire or component. Each 5/16" × 5/64" Micro-Marker bears a double black-on-white legend and each card provides five completely consecutive sets of miniature numbers.

Part No.	Consecutively Numbered Sets	Price Per Set	
		Each	10
<b>B-BWM-049</b>	1 Through 49	<b>4.90</b>	<b>39.20</b>
<b>B-BWM-5099</b>	50 Through 99	<b>4.75</b>	<b>38.00</b>

## MARKERS — Ink Pens



### PERMANENT INK MARKERS

Choose fine point or extra fine point. Permanent markers in red or black. Extra strong tip; will not spread or mush. Smear resistant, fast drying. Long lasting and water resistant.

Use on a variety of surfaces including metal, wood, cardboard, paper, plastic and glass. Six per pack.

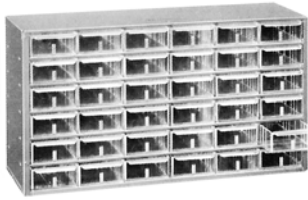
### PERMANENT INK MARKERS

Part No.	Color	Point Tip	Price Per Pack of Six
<b>B-MI-1R-F</b>	Red	Fine	<b>7.50</b>
<b>B-MI-1R-XF</b>	Red	Extra Fine	<b>7.50</b>
<b>B-MI-1B-F</b>	Black	Fine	<b>7.50</b>
<b>B-MI-1B-XF</b>	Black	Extra Fine	<b>7.50</b>

# CABINETS

Organize all the small components used in your laboratory or shop with these handsome Cabinets. They can stack like building blocks or mount on a wall. The welded steel construction has an attractive charcoal-colored baked enamel finish. Drawers are virtually spill-proof, and either drawer style allows visible access to contents. Drawer front labels and Cross Dividers are included.

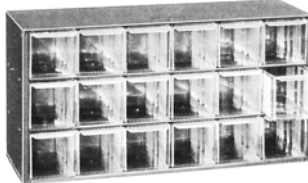
Manufactured by AKRO-MILLS, INC.



### 36 DRAWER CABINET\*

Frame: 18" W x 9-1/2" H x 6" D  
 Transparent Drawers  
 Drawer: 2-5/8" W x 1-1/8" H x 5-3/4" D  
 One Cross Divider per Drawer.  
 Actual Weight: 12 lbs.

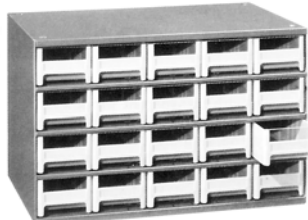
**B-CA-17-136** ..... 77.85



### 18 DRAWER CABINET\*

Frame: 18" W x 9" H x 6" D  
 Transparent Drawers  
 Drawer: 2-5/8" W x 2-1/2" H x 5-3/4" D  
 One Cross Divider per Drawer.  
 Actual Weight: 10 lbs.

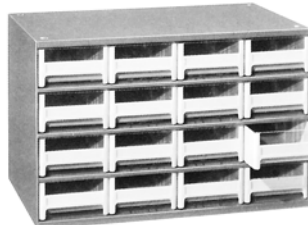
**B-CA-17-018** ..... 77.85



### 20 DRAWER CABINET\*

Frame: 17" W x 11" H x 11" D  
 Transparent Windows, Heavy Duty Gray Drawers  
 Drawer: 3-5/16" W x 2-1/4" H x 11" D  
 Two Cross Dividers per Drawer.  
 Actual Weight: 20 lbs.

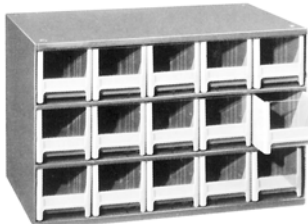
**B-CA-19-320** ..... 112.70



### 16 DRAWER CABINET\*

Frame: 17" W x 11" H x 11" D  
 Transparent Windows, Heavy Duty Gray Drawers  
 Drawer: 4-3/16" W x 2-1/4" H x 11" D  
 Two Cross Dividers per Drawer.  
 Actual Weight: 20 lbs.

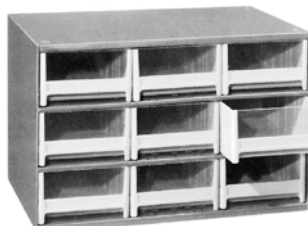
**B-CA-19-416** ..... 112.70



### 15 DRAWER CABINET\*

Frame: 17" W x 11" H x 11" D  
 Transparent Windows, Heavy Duty Gray Drawers  
 Drawer: 3-3/8" W x 3-3/16" H x 11" D  
 Two Cross Dividers per Drawer.  
 Actual Weight: 19 lbs.

**B-CA-19-715** ..... 112.70



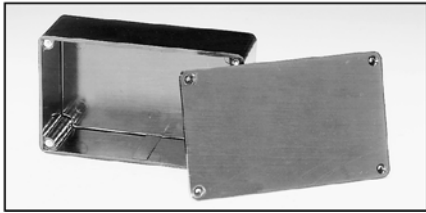
### 9 DRAWER CABINET\*

Frame: 17" W x 11" H x 11" D  
 Transparent Windows, Heavy Duty Gray Drawers  
 Drawer: 5-9/16" W x 3-3/16" H x 11" D  
 Two Cross Dividers per Drawer.  
 Actual Weight: 18 lbs.

**B-CA-19-909** ..... 112.70

\*Shipped F.O.B. Miami Lakes, FL.

## CASES AND COVERS — Instrument Protection

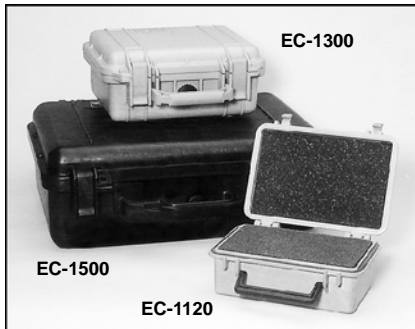


### PHENOLIC INSTRUMENT CASES AND COVER

These black phenolic cases and covers provide an easy, inexpensive way to enclose and protect small instruments and components. The case or cover can be easily drilled to provide for control knobs, switches or shafts. Box cover nests inside case and is fastened on each corner with standard machine screws supplied for each case and cover.

\*B-ICC-260 does not sit flush in case.

Part No.	Item	Outside Length	Dimensions Width	Inside Depth	Cover Thickness	Screw Size	Each	Price	
								10	25
<b>B-IC-210</b>	Case Only	3.50	2.50	1.19	—	4-40	<b>2.80</b>	<b>23.45</b>	<b>48.85</b>
<b>B-IC-220</b>	Case Only	4.00	2.87	1.40	—	4-40	<b>3.25</b>	<b>26.90</b>	<b>56.05</b>
<b>B-IC-230</b>	Case Only	5.00	4.25	1.62	—	6-32	<b>6.20</b>	<b>51.65</b>	<b>107.55</b>
<b>B-IC-240</b>	Case Only	6.25	3.73	1.88	—	6-32	<b>6.90</b>	<b>57.35</b>	<b>119.45</b>
<b>B-IC-260</b>	Case Only	6.81	5.28	2.16	—	6-32	<b>8.80</b>	<b>73.15</b>	<b>152.40</b>
<b>B-IC-280</b>	Case Only	8.44	7.44	2.88	—	6-32	<b>15.20</b>	<b>126.60</b>	<b>263.75</b>
<b>B-ICC-210</b>	Case & Cover	3.50	2.50	1.13	0.063	4-40	<b>4.45</b>	<b>37.20</b>	<b>77.50</b>
<b>B-ICC-220</b>	Case & Cover	4.00	2.87	1.34	0.063	4-40	<b>4.60</b>	<b>38.30</b>	<b>79.75</b>
<b>B-ICC-230</b>	Case & Cover	5.00	4.25	1.56	0.063	6-32	<b>8.40</b>	<b>69.95</b>	<b>145.75</b>
<b>B-ICC-240</b>	Case & Cover	6.25	3.73	1.88	0.133	6-32	<b>10.60</b>	<b>88.10</b>	<b>183.50</b>
<b>B-ICC-260*</b>	Case & Cover	6.81	5.28	2.16	0.133	6-32	<b>13.25</b>	<b>110.30</b>	<b>229.75</b>
<b>B-ICC-280</b>	Case & Cover	8.44	7.44	2.75	0.133	6-32	<b>20.70</b>	<b>172.50</b>	<b>359.35</b>



### WATERTIGHT FOAM RESIN CASES

Protect your most delicate precision tools and instruments from almost any hazard. Constructed of lightweight structural foam resin, these cases are virtually unbreakable. A neoprene "O" ring seal makes cases watertight to 30 feet. A pressure purge valve compensates for changes in temperature and altitude. Pre-scored pick n' pluck foam provides a clean custom fit for your changing needs. Heavy duty molded latches won't easily break or open accidentally. Cases seal out moisture, airborne chemicals and dust. Cases are rustproof.

*May be subject to dimensional weight restrictions.*

Part No.	Color	Outside Dimensions	Inside Dimensions	Weight	Price
<b>B-EC-1120</b>	Blue	8-1/2" × 6-1/2" × 3-1/4"	7-1/2" × 4-3/4" × 3"	1 lbs.	<b>32.00</b>
<b>B-EC-1300</b>	Black	10-3/4" × 9-3/4" × 7"	9-1/2" × 7-1/2" × 6-1/2"	5 lbs.	<b>65.00</b>
<b>B-EC-1500</b>	Black	18-1/2" × 15-1/4" × 6-7/8"	17" × 11-3/4" × 6"	9 lbs.	<b>140.00</b>



### SHOCK-RESISTANT POLYPROPYLENE CASE

This tough, shock resistant case transports or stores your small delicate instruments and prototypes. A polypropylene shell with thick convoluted foam padding protects contents against bumping and jarring while in transit. Two-piece handle. Case color: Black.

Inside Dimensions: 14" × 8-1/8" × 2-1/2"

Outside Dimensions: 15" × 9-1/2" × 2-3/4"

*May be subject to dimensional weight restrictions.*

**B-EC-8080** ..... **11.25**

# BINS — Tilt-Out Access



All bin units are 23-5/8" wide.

## Take items to your work space

Just tilt the bin and lift it out. Bin sits squarely on the bench top, in easy reach during assembly.

## See and reach everything you've organized!

- Immediately access stored parts and materials.
- Keep sensitive components dust free.
- Bins tilt outward with a touch of your hand.
- Bins won't tip over.
- Each bin is an individual compartment that gives you a crystal clear view of its contents.
- Five bin sizes, with varying heights and widths.
- Each size is grouped in a modular "bin unit" made of sturdy, injection molded high impact Polystyrene.
- All bin units are 23-5/8" wide, so they can be used alone or stacked according to your needs.
- Transparent bins are made of Phillips K-Resin, a specially formulated Styrene-Butadiene copolymer with glass-like clarity.
- Built-in label slot on front of each bin.



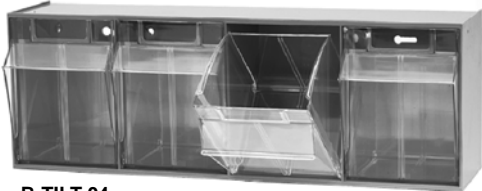
**B-TILT-09**  
9-Bin Unit O.D.: 2-1/2"D × 3-1/8"H  
Bin Size: 1-3/4"D × 2-3/16"W × 2-1/2"H



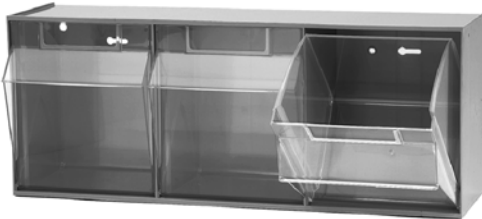
**B-TILT-06**  
6-Bin Unit O.D.: 3-5/8"D × 4-1/2"H  
Bin Size: 2-5/8"D × 3-1/2"W × 3-3/4"H



**B-TILT-05**  
5-Bin Unit O.D.: 5-1/4"D × 6-1/2"H  
Bin Size: 3-3/4"D × 4-1/4"W × 5-3/4"H



**B-TILT-04**  
4-Bin Unit O.D.: 6-5/8"D × 8-1/8"H  
Bin Size: 5"D × 5-5/8"W × 7-1/2"H



**B-TILT-03**  
3-Bin Unit O.D.: 7-3/4"D × 9-1/2"H  
Bin Size: 5-7/8"D × 7-3/8"W × 8-5/8"H

## TILT-OUT ACCESS BINS

<b>B-TILT-09</b> 9-Bin Unit	..... Each	<b>11.60</b>
	6	<b>60.00</b>
<b>B-TILT-06</b> 6-Bin Unit	..... Each	<b>13.20</b>
	6	<b>72.00</b>
<b>B-TILT-05</b> 5-Bin Unit	..... Each	<b>20.90</b>
	6	<b>114.00</b>
<b>B-TILT-04</b> 4-Bin Unit	..... Each	<b>31.90</b>
	6	<b>174.00</b>
<b>B-TILT-03</b> 3-Bin Unit	..... Each	<b>33.00</b>
	6	<b>180.00</b>

Be sure to indicate cabinet color when ordering:  
Grey (G), Putty (P) or White (W).

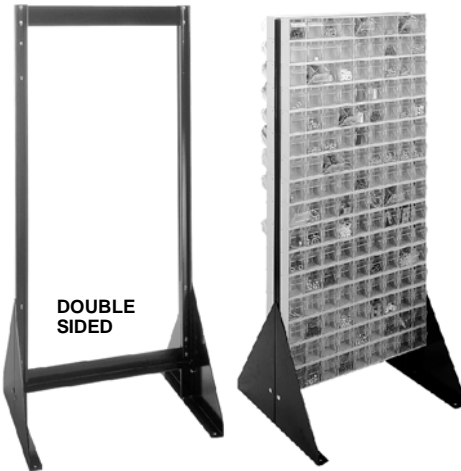
Shipped FOB Miami Lakes, FL.

## FLOOR STANDS — Tilt-Out Access Bins



### Maximize available space with high capacity storage

- A quick solution for storage that is accessible, easily moved, and space efficient.
- Put storage centers or work stations wherever you need them.
- Three Floor Stand models, Single Sided, Double Sided or Mobile, each available in three sizes.
- Mobile Double Sided Floor Stands have four 3" casters rated at 500 pound capacity. A convenient side-mounted polyethylene handle helps you control movement.
- All Floor Stands are made of 18-gauge Steel, with Black baked enamel finish. Bases support up to 750 pounds (maximum recommended load weight).



### FLOOR STANDS — Mobile and Stationary

#### MOBILE — Double Sided

<b>B-STAT-24M</b>	24" H (30" with casters) . . . .	<b>219.50</b>
<b>B-STAT-48M</b>	48" H (54" with casters) . . . .	<b>257.95</b>
<b>B-STAT-70M</b>	70" H (76" with casters) . . . .	<b>277.70</b>

#### STATIONARY — Double Sided

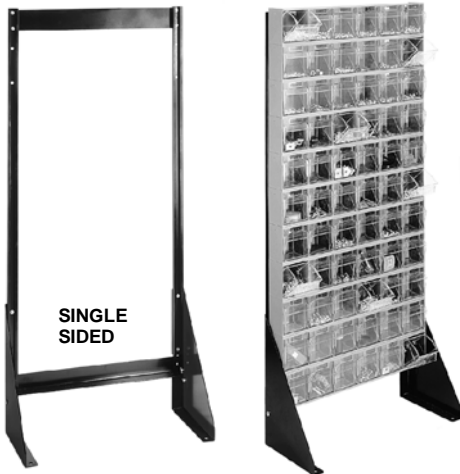
<b>B-STAT-24D</b>	24" H . . . . .	<b>169.50</b>
<b>B-STAT-48D</b>	48" H . . . . .	<b>197.50</b>
<b>B-STAT-70D</b>	70" H . . . . .	<b>277.70</b>

#### STATIONARY — Single Sided

<b>B-STAT-24S</b>	24" H . . . . .	<b>115.00</b>
<b>B-STAT-48S</b>	48" H . . . . .	<b>125.00</b>
<b>B-STAT-70S</b>	70" H . . . . .	<b>132.50</b>

*Bin units are sold separately.*

Shipped FOB Miami Lakes, FL.



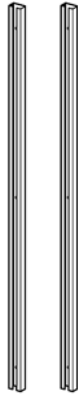
*Compact and lightweight, the 24" Single Sided Floor Stand will fit right on your bench top for easy access to supplies and materials.*



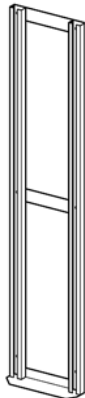
## RAILS AND FRAMES — Tilt-Out Access Bins

### Wall mounted storage systems are expandable

- Rails and Frames let you put Tilt-Out Access Bins right on the wall, to create floor-based fixtures or hanging systems.
- Rails are used for floor-based systems and for custom framework designs. Each piece has three pre-drilled 3/16" bolt holes for mounting.
- Frames are used for hanging systems. Frames have a ledge at the bottom to support loaded bins above ground level. Frames are fully assembled, with three pre-drilled 3/16" bolt holes on each side.
- Rails and Frames are made of 18-gauge Steel with Black baked enamel finish.



RAILS



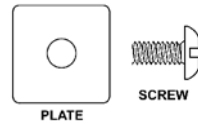
FRAME

### ATTACHING BIN UNITS TO RAILS AND FRAMES

*Tilt-Out Access Bin units come with two sets of Stainless Steel plates and screws. Plates fasten to screws inserted through back of bin housing.*

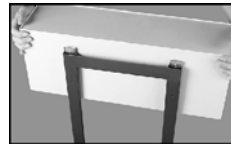
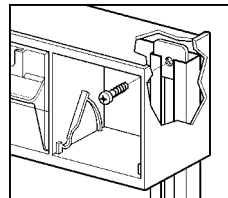
*Special U-shaped channels are built into Frames, Rails and Floor Stands to accept the square plates, allowing bin units to slide right into place.*

*Easily tightened or height adjusted with a screwdriver and adjustable wrench.*



PLATE

SCREW



**Bin units are sold separately.**

Shipped FOB Miami Lakes, FL.

### RAILS — 18-Gauge Steel

Part No.	Description	Price Each
<b>B-RAIL-24</b>	Two 24" H Rails	<b>12.85</b>
<b>B-RAIL-48</b>	Two 48" H Rails	<b>21.50</b>
<b>B-RAIL-70</b>	Two 70" H Rails	<b>31.75</b>

### FRAMES — 18-Gauge Steel

<b>B-FRM-24</b>	24" H Frame Unit	<b>23.95</b>
<b>B-FRM-48</b>	48" H Frame Unit	<b>41.75</b>
<b>B-FRM-70</b>	70" H Frame Unit	<b>59.95</b>



## PORTABLE FRAMES — Tilt-Out Access Bins

### Take parts and supplies right to the work site

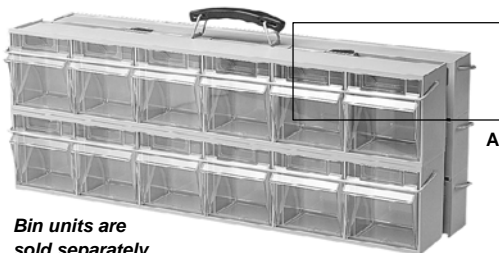
- Carry as many as 54 different items in one handy organizer.
- Customized to carry five-bin, six-bin, and nine-bin units.
- 18-gauge Steel, with easy-grip polyethylene handle.

**B-FRM-1224** 12"H x 24"W ..... 48.25

### Bins lock for in-transit protection

- Special Locking Rods keep bin fronts securely closed.
- 20-gauge Steel with Black baked enamel finish.

**B-TILT-ROD** 24" Locking Rod ..... 5.00



Bin units are sold separately.

One rod size fits all bin units.

### It's Easy To Order TILT-OUT ACCESS BINS

**Choose bin sizes** that fit your storage needs, then decide how many bin units you'll need of each size.

**Select the appropriate** mounting system. Mobile and Stationary Floor Stands offer flexibility for locating bins at work stations and in aisles. Wall-mounted Rails let you base the bin load on the floor and stack to the ceiling if desired. Or use Frames to mount bins on wall at eye level. Portable Frames are handy when easy transport is needed.

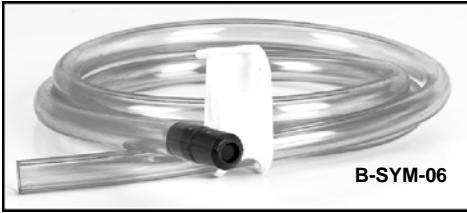
**Determine Rail, Frame or Floor Stand** height according to the number of bins you wish to use. This chart is useful when assembling storage systems with one bin size only. If you plan to customize using various bin sizes, just add heights of bin units to figure the right size Rails, Frames and Stands.

#### Maximum Number of Tilt-Out Access Bin Units to fit Rails, Frames and Floor Stands

Part No.	TILT-03	TILT-04	TILT-05	TILT-06	TILT-09
<b>B-RAIL-24</b>	2	3	3	5	7
<b>B-RAIL-48</b>	5	6	7	11	16
<b>B-RAIL-70</b>	7	8	10	15	22
<b>B-FRM-24</b>	2	3	3	5	7
<b>B-FRM-48</b>	5	6	7	11	16
<b>B-FRM-70</b>	7	8	10	15	22
<b>B-FRM-1224</b>	—	—	4	4	6
<b>B-STAT-24S</b>	2	3	3	5	7
<b>B-STAT-48S</b>	5	6	7	11	16
<b>B-STAT-70S</b>	7	8	10	15	22
<b>B-STAT-24D</b>	4	6	6	10	14
<b>B-STAT-48D</b>	10	12	14	22	32
<b>B-STAT-70D</b>	14	16	20	30	44
<b>B-STAT-24M</b>	4	6	6	10	14
<b>B-STAT-48M</b>	10	12	14	22	32
<b>B-STAT-70M</b>	14	16	20	30	44

Be sure to specify color of cabinet when ordering bin units. Add color code to part number:  
Grey (G), Putty (P), White (W).

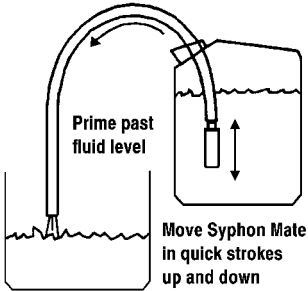
## SYPHON MATE™ — Liquid Trasfer



**B-SYM-06**



**B-SYM-08**



### Safe and simple — reduces hazards of liquid transfer

The Syphon Mate lets you safely transfer many types of liquid, from mild solutions to aggressive chemicals. This simple tool eliminates the most unpleasant aspects of siphoning, decreasing the risk of injury from swallowing, inhalation, funnel splash or overflow. Prime it with quick up and down strokes, and watch as the fluid flows up and “over the top” to start your siphon. For long service life, choose the material that is compatible with the liquids you transfer.

The 1/2” metal version is made of Copper, with a glass ball check valve. The Copper unit is tapered to fit inside tubing diameters of 1/2” or 3/4”. The 3/8” plastic model and its ball check valve is made from Acetal. Both units are furnished with six feet of anti-static PVC tubing for use with most liquids, including water, gasoline, diesel fuel, kerosene, and paint.

Part No.	Description	Price
<b>B-SYM-08</b>	1/2” Copper Valve with 6-feet of PVC 1/2” I.D. tubing plus Garden Hose Adaptor and Acetal Clamp	<b>16.00</b>
<b>B-SYM-06</b>	3/8” Acetal Valve with 6-feet of PVC 3/8” I.D. tubing plus Acetal Clamp	<b>14.50</b>

## BATTERY MAINTENANCE



### BATTERY TENDER<sup>™</sup>

Don't risk damage to seldom used batteries for boats, motorcycles, collectible cars and other vehicles due to boiling or overcharging. The Super Smart Battery Tender connects to your battery for unlimited amounts of time, keeping it safely and constantly charged for instant use.

Unlike trickle chargers that require careful monitoring, the Battery Tender prevents excessive gassing action that is detrimental to the life of batteries. Using just 1.25 amps, the system employs a constant current charging method that works quickly and maintains the battery at proper storage voltage. The Battery Tender brings the battery to an accurately sensed full charge in the initial charge cycle, then switches automatically to a float charging mode, dropping both current and voltage. The battery is then maintained at 13.2 volts — safely under the gassing point of the battery.

Unit comes complete with clips and a quick-disconnect harness. Aluminum construction with a 5-year manufacturer's warranty.

**B-BAT-12** 12-Volt - Weight: 3 lbs ..... **59.50**

# MATERIAL HANDLING

## FOLD-FLAT™ CART — Medium Duty

Lightweight, rugged, and very practical, the Fold-Flat Cart totes up to 275 pounds, but folds to a compact 28" × 19" × 2-1/2" for storage. Folded, this medium duty hand truck goes anywhere — it weighs just 11-1/4 pounds.

This cart has lots of stability for maneuvering bulky loads without spilling. Cushioned, 7-1/2" puncture-proof tires set on a 19" wheelbase support a cast aluminum platform that measures 28" W × 15-1/2" D.

The frame opens to a full height of 44" and is made of steel. Side-locking components made of strong, fiber-reinforced plastic secure the extended frame and keep it rigid while transporting. The same mechanisms hold the cart in its folded position. Equipped with bungee cord and tie-bar for safer loading.

®RuXXac

**B-UFC-761** ..... **129.00**



## CASTERS

Moving large loads is easier with these large wheel diameter Casters. Gray thermoplastic rubber tire with 1-1/4" tread is long-wearing and easy-rolling, and it won't leave marks on your floor. Large wheels protect floor and loads better than small wheels. The swivel plate casters move freely and improve maneuverability of your truck, cart or pallet. Hub is polypropylene; Delrin seal on 1/4" steel ball bearings in swivel unit.

Each caster can support up to 215 pounds. Mounting plate measures 2-3/4" × 3-3/4". Bolt hole spacing is 1-3/4" × 3".

## STAINLESS STEEL — Type 304

Part No.	Type Mount	Wheel Diameter	Height to top of Mounting Plate	Swivel Radius	Price Each
<b>B-CSX-35FP</b>	Fixed Plate	3-1/2"	5"	n/a	<b>28.20</b>
<b>B-CSX-35SW</b>	Swivel Plate	3-1/2"	5"	2-15/16"	<b>45.65</b>
<b>B-CSX-50FP</b>	Fixed Plate	5"	6-5/8"	n/a	<b>33.25</b>
<b>B-CSX-50SW</b>	Swivel Plate	5"	6-5/8"	3-11/16"	<b>49.20</b>



## FLOOR LOCK BRAKES

Wheeled equipment and other movable loads stay put with Floor Lock Brakes.

Intended for use on level surfaces, floor lock is activated by toe pressure on the extension pedal or released by toe touching one of the dual retractable plates. The large non-skid molded rubber brake pad, under high compression, holds the load in place until locks are released. For best results, units should be used in pairs. Corrosion resistant zinc plated steel.

**B-CSFL-50** Extended lock height, 6-7/8" ..... Each ... **62.70**

## PROTECTIVE GEAR



### FACE SHIELD

Excellent all-face protection in a drop down head gear with good all around visibility. Anti-warp design resists dimensional distortion from heat and moisture exposure.

**B-SS-3** ..... **42.50**

**NOTE:** Face shields are secondary protection and should only be used with primary ANSI protectors. See eye protection products, below.



### AVIATOR TYPE

Rugged polycarbonate lenses for UV and maximum impact protection. Molded-in-sideshields and browguard fit nicely with a reinforced hinge design (patented). Lock-a-Lens design helps prevent lens push-through. Easy-fitting universal bridge complete a pair of well made safety glasses. Mocha colored frame; lens, clear. Meets ANSI standard Z87.1.1989.

**B-SG-3** ..... Each ... **5.95**  
10 .. **52.50**



### VISOR TYPE

Lens visor protects eyes from flying particles or liquids while the opaque top blocks the glare from overhead light. Screen ventilation in the top keeps out dirt and dust, and maintains fog free cool ventilation.

Unobstructed, clear, polycarbonate visor lens fits over large frame glasses. The blocked overhead glare from the top reduces eye strain and fatigue. Head band suspension for added comfort. Meets ANSI standard Z87.1.1989. Elastic Headbands have an expected life span of one-year with normal use, six months or less with heavy or rough use.

**B-SG-1** Visor ..... Each ... **8.90**  
10 .. **74.50**

**B-SG-1B** Elastic Headbands — Two per pack ..... **1.25**



### DUST MASK

This lightweight disposable mask, designed for a comfortable fit, provides an inexpensive relief from nuisance dust and non-toxic particles. The large filter area provides easy breathing and speaking. Glasses or safety goggles can be worn comfortably. Mask should not be used for asbestos, silica, graindust, spray paints or other harmful substances.

**B-SM-1** ..... 10 ... **7.50**  
50 .. **30.00**



### EAR PLUGS — Foam

Creates an effective move-resistant seal against noise. Easy to insert. Comfortable, non-irritating foam. Combined with earmuffs, substantially increases noise reduction. Laboratory tested NRR 32.

**B-EAP-P1** Taper Fit Ear Plugs ..... Pkg of 50 .. **12.95**  
Pkg of 100 .. **21.50**

## PROTECTIVE GEAR (cont.)



### EARMUFFS — Plastic and Foam

Exposure to noise levels of 85 dB or higher for a period of time can cause hearing damage. The extent and seriousness of the damage is a direct result of the noise level and its duration. Earmuffs provide protection.

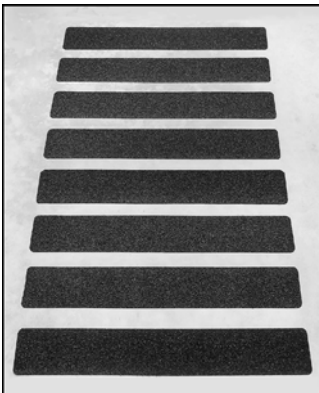
Earmuffs seal around the ear, instead of within the ear canal. Favored by many users over earplugs, earmuffs can be quickly put on and taken off. If additional protection is desired, use foam earplugs in conjunction with earmuffs.

Plastic construction with soft foam filled cushions, universal fit headband. Pivoting earcup connection provides comfortable seal while maintaining alignment with head.

Part No.	Description	NRR*	Price Each
<b>B-EAP-10</b>	Earmuffs, Plastic & Foam with Headband	22/24	<b>10.00</b>
<b>B-EAP-30</b>	Earmuffs, Plastic & Foam with Headband	25/26	<b>23.15</b>
<b>B-EAP-50'</b>	Earmuffs, Plastic & Foam with Wide Headband	29	<b>32.35</b>

\* Noise Reduction Rating (NRR) data is based on testing in a laboratory accredited by the National Institute of Standards and Technology. Testing is done to ANSI protocol (ANSI S3.19.1974). Protectors with higher NRR's have greater noise reduction capabilities. If additional protection is desired use foam earplugs in conjunction with earmuffs.

## ANTI-SLIP STRIPS



### ANTI-SLIP STRIPS

Prevent accidents and reduce injury to workers in slippery entrances and aisles, at work stations or on ramps and stairways. Abrasive grit surface with pre-cut rounded corners grips foot traffic and helps prevent slipping. Easy to apply, Anti-Slip Strips have a pressure sensitive backing that adheres to marble, terrazo, wood and other surfaces. Use indoors or out — the tough mineral-coated non-slip surface is waterproof and withstands even high traffic use. Use Adhesive when these strips are applied to porous surfaces, such as wood or concrete.

Part No.	Description	Price Each
<b>B-ASC-4824</b>	3" × 24"	<b>1.95</b>
<b>B-ASC-4836</b>	3" × 36"	<b>2.85</b>

# PRODUCT IDEAS...

## Where do our new product ideas come from?

A surprising number of them are the result of suggestions submitted by our customers. To encourage the flow of your product suggestions, we will award you a \$50 Gift Certificate if we use your idea in our next catalog. The gift certificate can be applied to any catalog purchase. To help us review your idea, please list only one item per letter and include as much information as possible about the product. Tell us the application or benefit of the product, the most useful sizes, and the manufacturer, if possible.

All of your suggestions are greatly appreciated. To keep the playing field level, awards are made on a first come - first serve basis. Please contact us at: *New Products c/o Small Parts Inc., 13980 N.W. 58th Ct., P.O. Box. 4650, Miami Lakes, FL 33014-0650.*

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*This Gift certificate is non transferable. Good for one order only.*

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# DEMONSTRATION KITS



## FERROFLUIDIC® SCIENCE KIT

*Explore and demonstrate magnetic fields - dramatic and fascinating!*

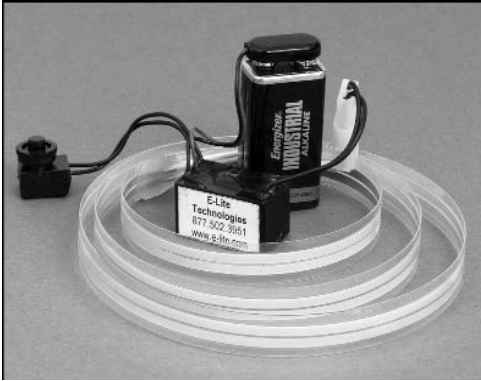
A unique magnetic liquid that can be manipulated by an external magnetic field, Ferrofluid is the only known material in which magnetism and fluidity coexist. First patented by NASA in 1965, it was explored as a way to orient liquid rocket propellant in a zero gravity environment through magnetic force. It now has a variety of industrial uses, including rotary vacuum seals, audio loudspeakers, sensors, biomedical applications and material separation processes for recycling. This kit helps users visualize invisible magnetic flux patterns, and illustrates "spiking" phenomenon created

by magnetic forces. Easy-to-follow instructions take you through several experiments, while describing the magnetic principles involved.

Kit includes a 50cc bottle of reusable Ferrofluid; two blue-button magnets, a ring magnet and a "Letter A" magnet; a unique Ferrofluid display cell; Latex gloves; two 1.5cc pipettes; five aluminum dishes; a 3cc syringe; and instruction booklet. Additional quantities of Ferrofluid may be purchased separately. *Call Purchasing Services - 1-888-455-9712.*

U-DK-FF100 .....49.00

## DEMONSTRATION KITS (CONT...)



### FLATLITE® KIT

*Electroluminescent lighting kit demonstrates phosphor crystal technology*

The Flatlite lighting concept offers creative solutions for applying uniform illumination on almost any surface, contour, or object, with the bonus of low current consumption. Thin, flexible composite sheets contain phosphor crystals which light up upon introduction of electric current.

A Flatlite system can be used in almost any environment: industrial, marine, entertainment areas, proprietary products, and in retail displays to apply architectural features, practical illumination, graphics or sign lighting, or safety and path markers with life-saving potential.

Create expressive designs, logos, and messages by cutting shapes desired, using tools, dies, or other pattern cutting machines. Further enhance your ideas with vinyl graphics, transparencies, colors, masks or overlays.

This electroluminescent lighting source generates no heat or UV light, and consumes only 0.5 mA of current per square inch. Its potential has been known for over sixty years, but lamps and power supplies have been costly and limited in size. Flatlite is now affordably manufactured in 1200-foot lengths and standard widths up to 241 wide, and can be cut to any length using appropriate tools. Our Kit is for demonstration purposes only. Do not modify Flatlite. Kit contains a 1/4I 5 36I 5 0.025I thick strip of blue/green Flatlite lamp (1/4I lighted width), plus a potted transformer module and 9V battery with on/off switch. Soft zippered pouch.

U-DK-FL100 .....35.20

For information on purchasing Flatlite to your specifications, contact **Purchasing Services - 888-455-9712**.



### THERMOELECTRIC COOLING

*Demonstration Device*

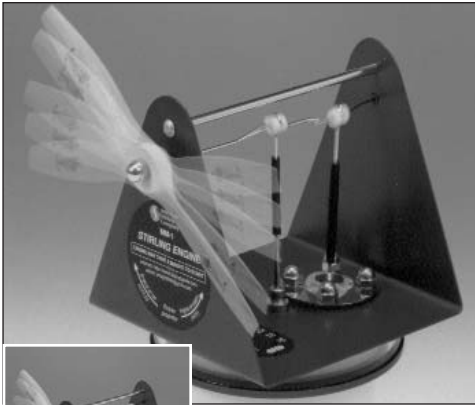
The phenomenon of thermoelectric cooling was discovered by a French watchmaker in the early 19th century. This solid state method of heat transfer generated primarily through the use of dissimilar conductor materials is now known as the "Peltier Effect", after its discoverer.

Applications include cooling heat-sensitive electronic components; mobile refrigeration and air-to-liquid/liquid-to-air cooling; temperature control for chambers, display cases, greenhouses, etc. and simple air conditioning systems; and in medical/laboratory cooling equipment.

This kit demonstrates how semiconductor materials with dissimilar characteristics are connected electrically in series and thermally in parallel, so that two junctions are created. When current flows through the junction, the "cold" junction becomes cold through absorption of energy by the electrons and the heat absorbed is then pumped to the "hot" junction, where heat is conducted away with a heat sink. Cooling is achieved directly from DC electric current.

The Thermoelectric Cooling Demonstration Device has a thermoelectric module bonded to an aluminum plate. To demonstrate, simply place a finger on top of the ceramic plate and set the toggle switch to cool or heat. Four AA batteries are included. Overall dimensions: 4IW 5 3-1/4IL 5 1-1/4IH.

U-DK-TE100 .....69.00



**COFFEE CUP STIRLING ENGINE KIT**

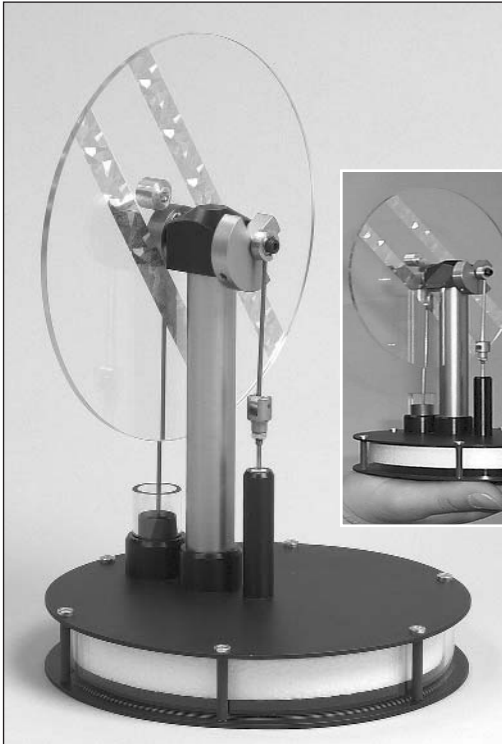
Power this Stirling Engine at speeds up to 250 rpm with a cup of your favorite steaming hot coffee, or set it on ice cubes and watch it go. A great kit to build with your kids or for students in general science, physics or thermodynamics lab. This “zero” pollution engine takes approximately 4-5 hours to construct, and comes complete with all components and instructions. Measures: 4-1/4” Base, 6-1/8” High (to blade tip).

SE-KIT1 Coffee Engine Kit .....99.00

**Cyanacrylate Adhesive, Loctite 262** (Permanent) or equivalent, and a **30-Min. Clear Epoxy** are required to

assemble. These products sold separately.

<b>ORBK-ADS</b>	<b>Cyanacrylate</b> .....	<b>3.85</b>
<b>AL-TH-10</b>	<b>Loctite 262</b> .....	<b>12.60</b>
<b>EPX-PT39</b>	<b>Clear Epoxy</b> .....	<b>14.95</b>
<b>Note:</b>	<b>Teachers, Buy 10 and get 1 free</b>	



**A conversation starter and a great teaching tool!**

**STIRLING CYCLE ENGINE**

**Powered By The Heat Of Your Hand!**



**It's true!** The heat from your warm hand is enough to power this jewel-like engine when room temperature is 72°F (22°C) or below. Carefully constructed with precision components, this is quite an efficient engine that can run on a temperature differential as small as 4°C (7.2°F).

Its sealed system is comprised of a bottom plate, an acrylic cylinder enclosing a styrofoam displacer, a top plate and a graphite power piston. Operation can begin when either the bottom plate or the top plate is heated or cooled to a temperature at least

4°C warmer or colder than the other plate. A gentle spin on the 6-1/4” acrylic flywheel gets the engine going. Overall Height: 9-5/8”. Base Diameter: 6-3/8”. Base Height: 1-1/8”. Weight: 17.5 oz.

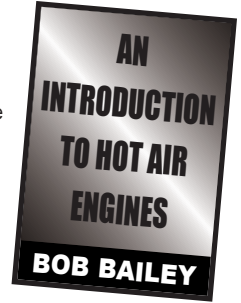
SE-MOD1 .....299.00



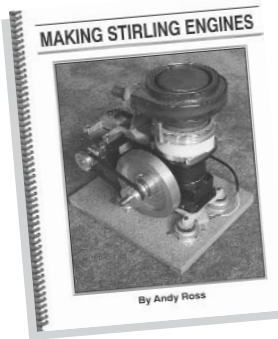
**AN INTRODUCTION TO HOT AIR ENGINES — (VIDEO)**

For anyone who has an interest in hot air engines, or anyone who just wants to see what all the fuss is about, producer and host Bob Bailey has put together an excellent and informative video. Using charts, demonstration models and computer generated graphics, Mr. Bailey explains some of the principles of Stirling cycle and other hot air engines. Following the introduction, the viewer is taken on a grand tour of hot air engines and engine builders.

From simple demonstration engines to multicylinder high tech, from a version that can be completely torn down in two minutes to an engine being developed for full sized aircraft use, Mr. Bailey introduces the viewer to many hot air engines past and present. VHS 80 min.



**SE-VHAE** ..... **35.95**



**MAKING STIRLING ENGINES BY ANDY ROSS**

This interesting little book chronicles the author's extensive experience designing and building Stirling Engines. From the simple to the complex, the author tells of his successful and not so successful experiments. This book is full of photographs and drawings, and is an excellent place to start for anyone who is interested in learning about or building small Stirling Engines. Soft cover, 60 pages, 8-1/2"x11". 1993.

**SE-07**.....**16.95**

**THE STIRLING ENGINE MANUAL**

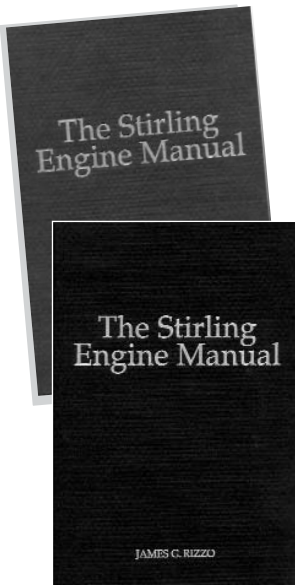
James G. Rizzo gives us an uncomplicated but informative approach to the thermodynamics of the Stirling Cycle engine. Both of these hardcover volumes are beautifully bound, 8-1/2"x12". Published by Camden Miniature Steam Services.

**VOLUME ONE** — Build model Stirling cycle engines in a simple home workshop. Historical background and current developments, with a look at the future for Stirling engines. Complete descriptions and illustrations for building more than ten different model engines. 183 pages. 1995.

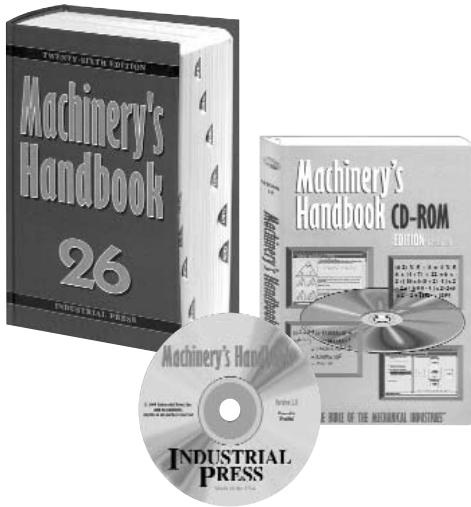
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*Each volume sold separately.*



**MACHINERY'S HANDBOOK**

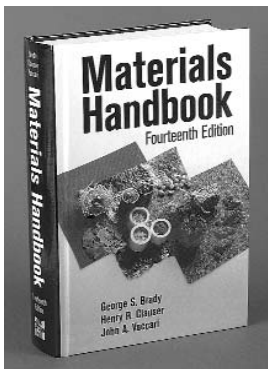
*A vital reference manual for more than 75 years*

Standard for engineers, machinery and tool designers, mechanics, machinists, hobbyists and students. From abrasives to zirconium, you'll find the information you need within this 2500+ page book. Hard cover. 26 Edition, 2000.

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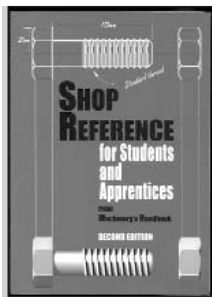


"Brady's" one-volume encyclopedia contains over 13,000 concise entries, describing the primary characteristics of chemicals, metals, minerals, fuels, plastics, textiles, finishes, woods, pharmaceuticals, elastomers, ceramics, coatings, composites, industrial substances, foodstuffs, plant and animal products — almost anything that derives from natural elements. Descriptions include properties, production methods, applications and commercial designations, detailed in language that is scientifically specific, but easily understood by almost any reader.

Alphabetically organized and thoroughly indexed. Recommended for engineers, executives, purchasing and manufacturing managers, production supervisors, and students — anyone requiring a comprehensive resource with reliable, up-to-date information. Fourteenth Edition, 1997. George S. Brady, Henry R. Clauser, John A. Vaccari. Published by McGraw-Hill. Hard cover, 1136 pages.

<b>BCK-MH .....</b>	<b>89.50</b>
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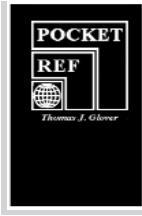
**SHOP REFERENCE FOR STUDENTS AND APPRENTICES - 2ND EDITION**



This affordable and dependable reference is now in its second edition. It is designed to provide the information needed by machinists, toolmakers, diemakers, drafters and other shop personnel in a clear and concise fashion. It includes material from Machinery's Handbook and other authoritative sources and contains a wide range of useful formulas and extensive text. Industrial Press, Inc., 2001. Soft cover, 544 pages. 5" x 7-1/4".

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## BOOKS (CONT...)



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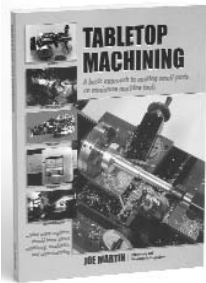
*Get quick reference to specs, gauges, conversions, scales and facts!*

And it really does fit in your pocket! 542 pages of useful information. Includes steel specification tables, torque specs for bolts, wire gauges, drill conversions, plus information on glues and solvents, paints and finishes. All this is packed into a 5.4"×3.2"×0.6" soft cover book that puts countless other conversions, scales, and factual references at your finger tips. Sequoia Publishing, Inc., 1989.

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*The "hows" and "whys" of machining — Simple, practical methods everyone really uses!*



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### FIVE HUNDRED AND SEVEN MECHANICAL MOVEMENTS

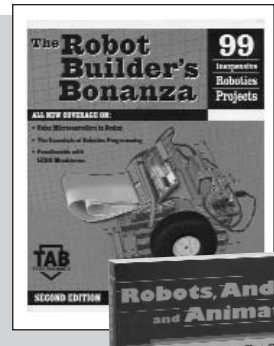
*Fascinating, informative, and still a valuable resource!*

Originally published in 1868, Henry Brown's collection of Mechanical Movements embraces all those which are most important in dynamics, hydraulics, pneumatics, steam engines, mill and other gearing, presses, horology, and miscellaneous machinery. Simple, descriptive language with clear, concise drawings to survey the technology and mechanics that existed in the early phases of America's industrial revolution. The Astragal Press, 1981. Soft cover, 122 pages. 6"×9".

**REF-507** ..... **13.95**



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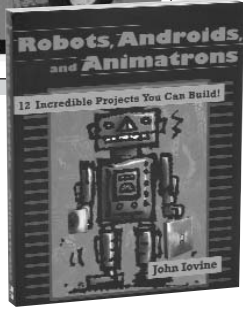


## ROBOT BUILDER'S BONANZA —2ND EDITION

*Ninety Nine inexpensive robotics projects!*

Robots that walk, talk, listen, see, feel, and think. Remote-controlled robots, or robots that find their own way. You can build them all from plans in this updated edition of Gordon McComb's best-selling book, featuring fascinating science tidbits and field-tested projects that make it easy to invent and build your own designs. It includes tips on buying parts, working with materials and avoiding mistakes. A must for the amateur robotics lover. McGraw-Hill, 2001. Soft cover, 753 pages. 7"×9".

BCK-28 .....24.95

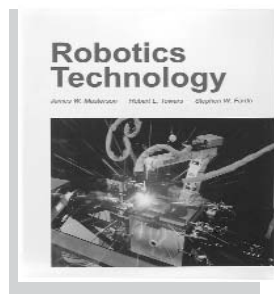


## ROBOTS, ANDROIDS AND ANIMATRONS

*Ever wish you had a robot to wait on you? Create your own robotic servant!*

By following the plans and instructions in this book, you can construct a state-of-the-art working robot that will obey your orders! Step-by-step instructions for this and 11 other projects are included in this book. There is also information on robotics technology, such as locomotion, sensing and control, and a list of robotics organizations and parts suppliers. By John Iovine. McGraw-Hill, 1998, Soft cover, 270 pages. 7-1/2"×9".

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## ROBOTICS TECHNOLOGY

*A comprehensive approach to presenting the technical aspects of robotics!*

Covers the basic principles of industrial robotics, power supplies and movement systems, sensing and end-of-arm tooling, and control systems. The text format is easy-to-follow and highly illustrated, making this an outstanding choice for introductory level robotics courses and robotics technician training. James W. Masterson, Robert L. Towers, Stephen W. Fardo. Published by The Goodheart-Willcox Company, Inc. 1996.

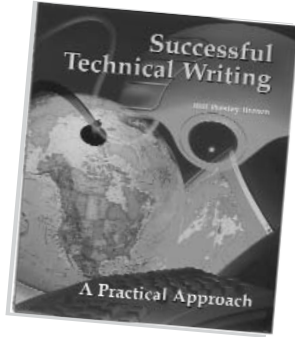
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*Filled with practical "real-world" examples*

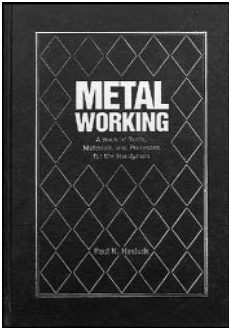
Designed to help both students and professionals write effective documents in business and industry settings. A variety of samples and techniques, from letters and memos to detailed operation manuals, grant proposals and research reports. New chapters provide details on writing maintenance manuals and various types of accident and safety documents. Published by The Goodheart-Willcox Company, Inc. Bill Wesley Brown, 2000. Soft cover, 394 pages 8"×10".



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# BOOKS (CONT...)

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*Abok of Tools, Materials and Processes for the Handyman by Paul N. Hasluck*

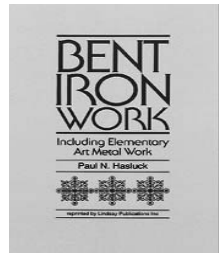
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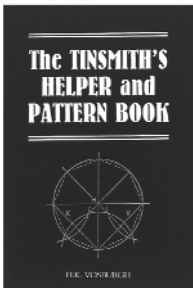
*by Paul N. Hasluck*

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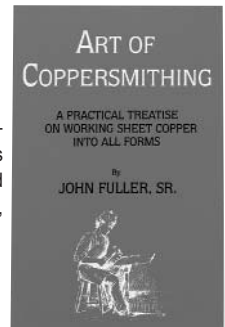
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*by John Fuller, Sr.*

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