BRM

BRUSH RESEARCH
MANUFACTURING

INDUSTRIAL BRUSHES & FLEX-HONE® TOOLS

55 YEARS EXCELLENCE

THE FLEX-HONE® SOLUTION

Brush Research Manufacturing has a long history of solving difficult finishing problems with brushing technology. Established in 1958, our tradition of research, innovation and manufacturing excellence has helped solve problems in the sophisticated environments of nuclear energy, aerospace and computer technology as well as industrial applications.

BRM has long been a leader in the art and science of abrasive surface finishing culminating in the Flex-Hone® Tool. BRM was one of the first companies to advocate the critical need for finer surface finishes to optimize machine performance.

Today BRM remains at the forefront of abrasive finishing technology. Our commitment to the advancement of surface finishing remains as strong as ever and we are constantly experimenting with new materials and applications.

As a full line manufacturer of power brushes, twisted in wire brushes and the Flex-Hone® Tool we stand ready to assist you in finding the best solution to your finishing needs.

Our extensive network of both domestic and foreign stocking distributors and our trained staff of customer service specialists assures you of instant access to world wide solutions tailored to your individual needs.

The Flex-Hone® is used in many different industries including:

- AUTOMOTIVE
- AEROSPACE
- MARINE
- GENERAL INDUSTRIAL
- MANUFACTURING
- OIL AND GAS APPLICATIONS
- FIREARMS
- MUSICAL INSTRUMENTS
- FLUID AND POWER APPLICATIONS

Brush Research Manufacturing is proud to be an ISO 9001:2008 certified company. Registration to ISO 9001:2008 demonstrates compatibility to an international set of standards for quality and continuous improvement. BRM is committed to meeting or exceeding our customer's expectations, this goes for the quality of our products as well as our service.

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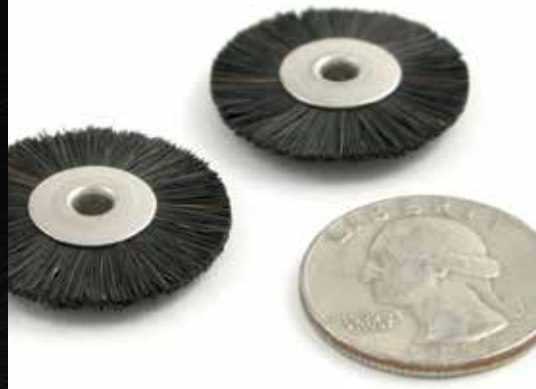


BRUSH RESEARCH
MANUFACTURING CO., INC.

4642 Floral Drive

Los Angeles, CA 90022

T: 323.261.2193
F: 323.268.6587

www.brushresearch.com
www.flex-hone.com

sales@brushresearch.com

BRUSH INFORMATION & TERMINOLOGY

Note: Safety information is located in the back of the catalog.

TERMINOLOGY

A Outside Brush Diameter
B Trim Length
C Arbor Hole
D Face Width
E Number of Rows
F Shank Diameter
G Cup Diameter
H Brush Part Length
I Stem Diameter
J Overall Length

HOW TO ORDER CATALOG ITEMS

+ Flex-Hone® Tools

The Flex-Hone® Tool is trademarked and registered in all major trading countries of the world.

The Flex-Hone® Tool is always used in an oversized condition. Our sizes are listed by the nominal bore in which the hone is intended to be used.

Example:

If you have a 4" bore, order a 4" Flex-Hone®

How to Create a Part Number: GBD-4" 120 S/C - GBD=style, 4"=Diameter, 120=Grit Size, S/C=Silicon Carbide Abrasive

These selections will create the part number GBD40012.

+ Power Brushes

Order by catalog number and specify wire size and arbor hole.

Example:

BTS-6 .014 1/2" AH
add "S" for stainless steel:
BTS-6S .014SS 1/2" AH

If an arbor, keyway or threaded nut other than those shown is required, please contact factory for availability.

+ Twisted-in Wire Brushes

Order by Catalog Number and if required please specify stem type, i.e., cut end, ring handle, pipe nipple, wood handle.

Example:

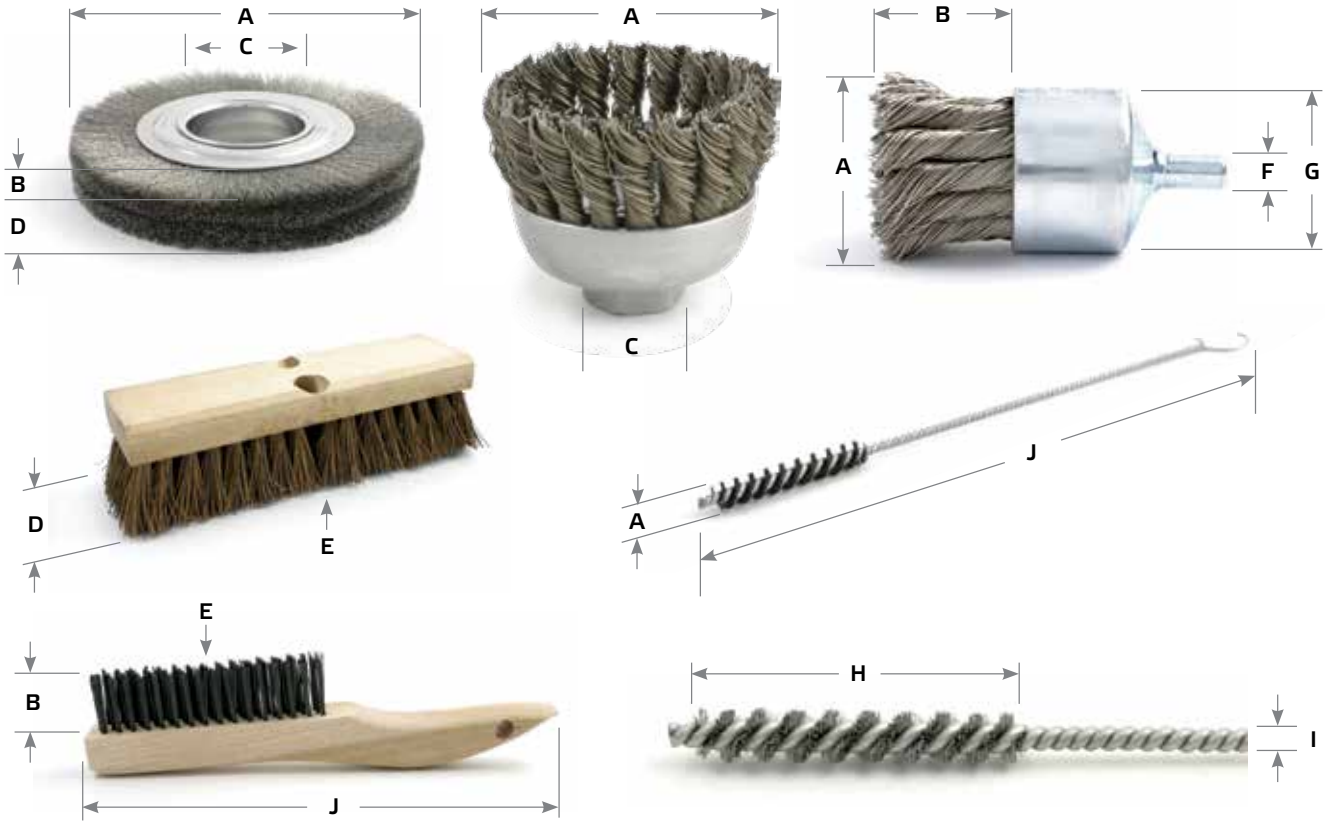
For plastic handle 85-N-500WH
For ring handle 85-N-500RH

+ Specials

Any item which is not shown in the Catalog will be considered a Special Order item. To order such an item:

1. Describe item fully
2. Furnish complete, detailed specifications
3. Send sample or blueprint

Please see our Price List for Terms and Conditions of Sale.



CUSTOMIZE YOUR PART & THE BRM DIFFERENCE

Brush Research provides cost-effective solutions for all of your application needs. With our many years of experience as brush manufacturers, we know that sometimes your application calls for brush tools with specific requirements and that is why we offer custom industrial brushes and brush tools. Our brush tools include the original Flex-Hone® Tool, twisted-in-wire brushes, automotive brushes and more! Custom brushes can be made to your exact specifications to ensure the perfect solution for your application.

There are a variety of ways to order your custom product:

CONTACT US OR PLACE AN ORDER ONLINE

Visit **http://www.brushresearch.com/custom-brushes.php** and choose one of the brush categories to fill out a custom order form online. You may also call our office at **(323) 261-2193** to place an order over the phone. Our team is available to assist you and help you determine the best product for your needs. Our office hours are Monday–Friday, from 8:00 to 4:30 p.m. PST. You may also email us at **info@brushresearch.com**.

FILL OUT A CUSTOM PART FORM

Brush Research has custom forms available for several brush categories including Flex-Hones, Twisted-in-Wire, Strip Brushes, Radial Coil and Spiral Wound. Please fill out one of the forms located on pages 58-59 (custom Flex-Hone form located on page 9) to provide us with the exact specifications for your product. These forms may also be found online at the link above.

SEND IN YOUR PART

Brush Research Manufacturing also offers the option of sending us your components in order for us to evaluate them in our lab and determine the best custom tool for your needs. This allows us to test various elements and address issues such as cycle time and product lifespan without interrupting your production schedule.

OUR COMMITMENT TO EXCELLENCE

For over 55 years, BRM has been given the opportunity to help our customers with their polishing, metal surface finishing and deburring needs. At Brush Research, we understand that Quality and Performance are not a given. These are goals that we work towards everyday, with the primary focus being happy customers.

This Commitment to Excellence radiates all through the company, from our customer service to our production, to accounts receivable departments and on throughout our organization and distributors. We have always maintained the importance of keeping our manufacturing in the United States where we can ensure that our processes are followed exactly as they were designed. We also feel pride for supporting our local communities. We continually improve our systems through the implementation of our ISO quality program. Our customer service and tech support are available to our distributors and customers around the world and have their clientele's best interests at heart. BRM is continually reinvesting in ourselves by improving our tools and machinery as well as exploring new products that can be of benefit to our customers. We thank you for the past 55 years and look forward to making the next 55 even better.

NEED MORE INFORMATION?

VISIT US ONLINE!

www.brushresearch.com

We have a wide array of resources and training videos available to assist you. Follow our blog here: **www.flexhoneblog.com**

- **http://www.facebook.com/BrushResearch**
- **http://www.twitter.com/brushresearch**
- **http://www.linkedin.com/company/225267**
- **http://www.youtube.com/user/BrushResearch**
- **http://www.pinterest.com/brushresearch**
- **https://plus.google.com/+Brushresearch/posts**

Order your Instructional DVD on the Flex-Hone® Tools!

The Following Booklets Are Available Upon Request at No Charge

The Use of Industrial Brushes

The most informative literature available on the use of industrial brushes for deburring, edge blending, edge radiusing, oxide or scale removal, weld cleaning, surface finishing, polishing or roughening.

Brush Research's Gold Booklet

Our first booklet on some common practices in Cylinder Boring, Honing and Wall Finishing. An educational comparison of various rigid honed and Flex-Honed cylinder wall surfaces.

NEED MORE INFORMATION?

DOWNLOAD AND VIEW VIDEOS ONLINE!

www.brushresearch.com

Check out our **instructional videos** on **YouTube®** to learn tips and procedures for proper equipment use!

How To Use The Flex-Hone® Tool Step-by-Step Instructions

Flex-Hone for Firearms Instruction Video-Polish and Finish Barrels, Chambers & Cylinders

Flex-Hone®- In Machine Setup for Surface Finishing and Deburring

How To Automate Deburring & Finishing- Nampower Abrasive Disc Brushes

The Following Booklets Are Available Upon Request at No Charge

The Necessity Of A Plateaued Cylinder Wall Finish

A detailed presentation of several test run engines with performance results of lower blow-by, increased compression, less ring and cylinder wall wear with the Flex-Hone® Process.

A Study of Cylinder Wall Micro-Structure

An extensive study using a Scanning Electron Microscope to examine and compare the results of cylinder honing using rigid hones versus the Flex-Hone® Tool. Truly an expóse of what the honed cylinder wall surface should and should not look like. Three different studies are presented USA, UK and France for comparison.

FLEX-HONE®

FLEX-HONE® TOOL

For Any Type and Size of Cylinder

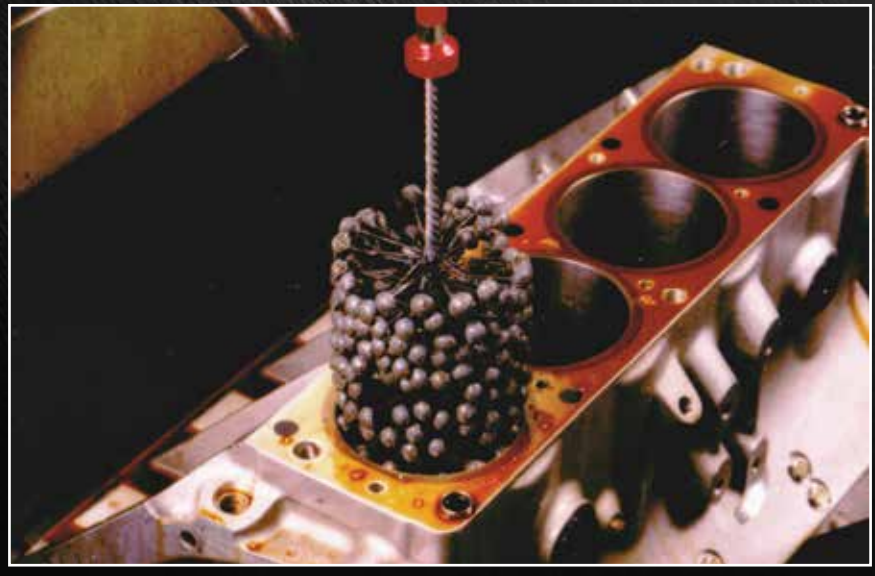
The Flex-Hone® Process (Super finishing) produces a controlled surface condition unobtainable by any other method. It involves finish, geometry and metallurgical structure. A high percentage plateaued surface is produced free of cut, torn and folded metal.

The Flex-Hone® Tool is a resilient, flexible, honing tool with a soft cutting action. The abrasive globules each have independent suspension that assures the Flex-Hone® to be self-centering, self aligning to the bore, and self-compensating for wear.

Specifically, it is a low-temperature abrading process that exposes the undistributed base metal structure to produce a long wearing surface. It is a method of developing a surface on a metal part which is optically smooth and metallurgically free of any fragmented, amorphous or smeared metal from previous operations. It is accomplished at a low pressure where the "stones" float.

See and read the various booklets of actual tests covering almost every situation that will ensure a superior performance in situations depending on surface finish.

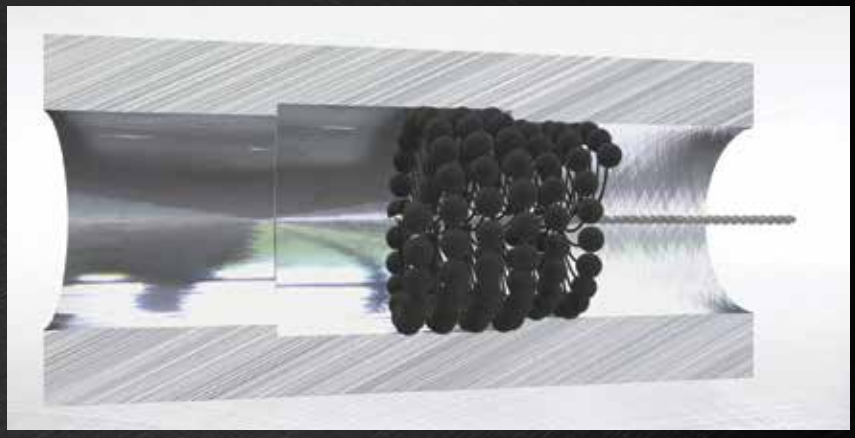
The particular type of Flex-Hone® crosshatch is extremely efficient in providing a multiplicity of oil grooves or valleys for oil retention as opposed to the often unidirectional or uneven valleys common to the conventional type rigid hone. A crosshatch remains as the cylinder wall has been wear-reduced by the Flex-Hone®.



Flex-Hone® Benefits Include:

+ **Surface Finishing**

The Flex-Hone® Tool is available in a variety of abrasive types and grit selections to provide the optimum surface finish on any base material. The Flex-Hone® is commonly used to reduce Ra, Rk and Rpk values while maintaining Rvk and Vo volume for oil retention. Using the Flex-Hone® Tool for surface finishing allows the sizing tools to do their jobs quickly and accurately without fighting surface finish. The Flex-Hone® is also used in adhesive bonding applications where a rougher surface is desired for bonding integrity.



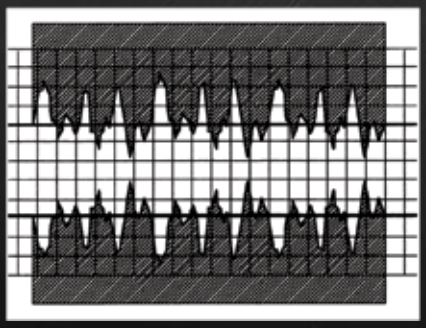
+ **Deburring**

Deburring of cross drilled holes is an expensive, time-consuming operation. The Flex-Hone® Tool can be used to remove burrs from cross drilled holes leaving a clean, radiused intersection. Because of its unique construction, the Flex-Hone® can be used online in machine tool applications or offline as a secondary operation.

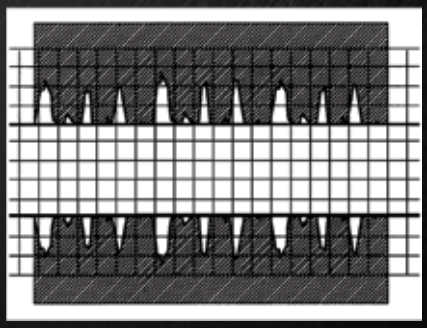
The tool is self-centering and self-aligning to the bore so elaborate, rigid set-ups are not required. It is advisable to use the tool in the main bore into which the cross holes break. Best results are obtained by rotating and stroking the tool a few strokes in a clockwise direction, removing the tool from the part, reversing the spindle and then rotating and stroking the tool in a counter-clockwise direction for a few more strokes. This forward and reverse rotation creates a more symmetrical deburring pattern.

+ **Plateau Finishing**

Brush Research pioneered the concept of a plateau finish and is a strong proponent of the benefits of a cross hatch, plateaued finish. The concept involves removing the peaks produced by prior machining operations and creating a substantially flat or plateau finish. A plateau finish created by the elimination of peaks allows rings and seals to seat without damaging their edges. The cross hatch pattern will aid in lubrication control and retention, reduce seepage in hydraulic and pneumatic applications and promote longer seal life.



A: Before Flex-Hone®



B: After Flex-Hone®

If Your Specifications Call For:
Developing a surface plateau of over 60%,
Producing an oil holding cross-hatch pattern, Reducing Ra, Rpk and Rvk values,
Increased bearing area...

If You Want Benefits of:
Lowered oil consumption,
Less blow-by,
Less friction,
Improved sealing surface...

Then Flex-Hone® it!

INDUSTRY APPLICATIONS

The Flex-Hone® Tool provides the ideal surface finish in any type or size of cylinder. The benefits of the Flex-Hone® Tool are enjoyed across an extensive range of applications including:

+ AUTOMOTIVE
+ MILITARY
+ AEROSPACE
+ MARINE
+ GENERAL INDUSTRIAL
+ MANUFACTURING
+ OIL AND GAS APPLICATIONS
+ FIREARMS
+ MUSICAL INSTRUMENTS
+ FLUID AND POWER APPLICATIONS
+ HYDRAULICS
+ ALUMINUM EXTRUSIONS
+ EARTH MOVING EQUIPMENT
+ ...AND MORE!





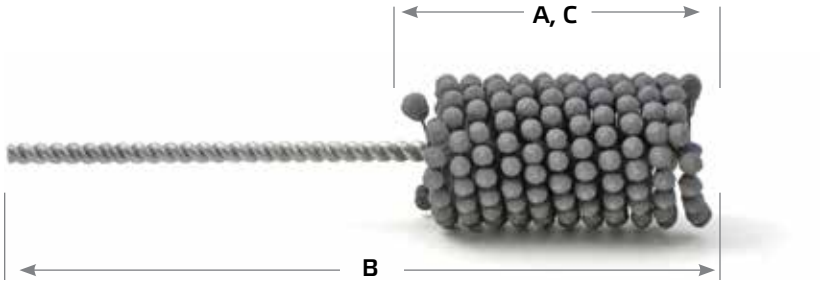






BE CREATIVE!

At Brush Research Manufacturing, we understand that some of your deburring and surface finishing applications require non-standard Flex-Hones. This is why we're happy to provide you with custom Flex-Hone® Tools. With the outstanding reputation our standard Flex-Hones have received, you can be sure that your custom Flex-Hone® will live up to that reputation as well. We will gladly manufacture Flex-Hone® Tools according to your exact specifications. To get started, fill out the project information below to supply us with the details we need to manufacture your custom Flex-Hone®.



Please Provide All Dimensions

Bore Diameter: _____

Abrasive Type:

☐ SC (Silicon Carbide) ☐ AO (Aluminum Oxide) ☐ BC (Boron Carbide)
☐ WC (Tungsten Carbide 50/50) ☐ WC (Tungsten Carbide 100%)
☐ Z Grain 1525 (Alumina Zirconia) ☐ Z Grain 1549 (Alumina Zirconia)
☐ LA (Levigated Alumina) ☐ Diamond

Grit Selection:

☐ 20 ☐ 40 ☐ 60 ☐ 80 ☐120 ☐ 180 ☐ 240 ☐ 320 ☐ 400 ☐ 600 ☐ 800

A. Brush Part Length: _____ B. Overall Length: _____

C. Form: ☐ Cylindrical ☐ Tapered ☐ Stepped ☐ Segmented

Company: _____

Attention: _____

Mailing Address: _____

_____

Phone Number: _____ Fax Number: _____

Email: _____

Flex-Hones for Adhesion Applications

Flex-Hones can be manufactured in grits as coarse as 20. This is a fast and effective solution to roughen the surface for adhesive bonding.

CUSTOM FLEX-HONE® SPECIFICATIONS

FLEX-HONE® TOOL

FLEX-HONE® APPLICATIONS

The Flex-Hone® Tool is always used in an oversized condition. Our sizes are listed by the nominal bore in which the hone is intended to be used. Order by bore size. For more information, please see the bottom of pg. 13.

Typical Applications Include:

Automotive Applications
+ Piston Pin Bore
+ Engine Cylinders
+ Block Liners
+ Valve Guides
+ Cam Bearing Bore
+ Crank Bores
+ Brake Cylinders
+ Clutch and Brake Master Cylinders
+ Brake Rotors
+ Connecting Rods

Marine Applications
+ Main Engines
+ Generator Engines
+ Hydraulic Cylinders
+ Air Intake Lines

Firearms Applications
+ Barrels
+ Chambers
+ Forcing Cones
+ Paintball Barrels

Industrial Applications
+ Air Compressors
+ Hydraulic Ram Cylinders
+ Hydraulic Motor Bodies
+ Pneumatic Cylinders
+ Valve Housings
+ Pump Housings
+ Surface Finishing of Boiler Components
+ Compressed Air Tool Bodies
+ Finishing of Stainless Steel Tubing
+ Mechanical Decontamination of Nuclear Tube Sheets
+ Roughening Hossel Holes in Golf Clubs for Adhesion

Musical Instruments
Oil and Gas Applications
Fluid and Power Applications
Aerospace Applications

NEW

FLEX-HONE® ABRASIVE OPTIONS

Flex-Hone® now available in DIAMOND!

Abrasive Types	20	40	60	80	120	180	240	320	400	600	800
SC = Silicon Carbide	x	x	x	x	Standard				x	x	x
AO = Aluminum Oxide	x	x	x	x	x	x	x	x	x	x	x
BC = Boron Carbide	x	x	x	x	x	x	x	x	x	x	x
WC = Tungsten Carbide either 100% or 50/50	x	x	x	x	x	x	x	x			
Z Grain - Alumina Zirconia No. 1525 (25% Zirconia / 75% Alumina)			x	x	x	x	x				
Z Grain - Alumina Zirconia No. 1549 (40% Zirconia / 60% Alumina)					x	x	x	x			
Levigated Alumina	Available in extra fine grit only										
Diamond	Available in mesh 170/200, 800, 2500										
CBN AND Ceramic	Available on special order										

FLEX-HONE® KITS

Flex-Hone® Brake Cylinder Kits

+ **For Japanese and European Cars**

BC Kit A (18, 22, 29 mm)	320 Aluminum Oxide
BC Kit B (25, 29, 35 mm)	320 Aluminum Oxide
BC Kit C (41, 51, 60 mm)	240 Silicon Carbide

+ **For Compact, Medium and Large Cars**

BC Kit D (18, 20, 22, 25, 29 mm)	180 Silicon Carbide
BC Kit (22, 29, 35 mm)	120, 180, 240 Silicon Carbide

Flex-Hone® Disc Brake Caliper Kit

+ **For Japanese and European Cars and Light Trucks**

DBC Kit E (38, 45, 54, 64 mm)	320 Silicon Carbide
DBC Kit (45, 54, 64, 70, 79 mm)	180 Silicon Carbide

+ **Valve Guide Kits-Transmission Bodies**

VGF Kit (6.4, 7, 8, 9, 9.5, 10, 11 mm)	240 Silicon Carbide

**Kit has a savings of 10% over individual purchases.*

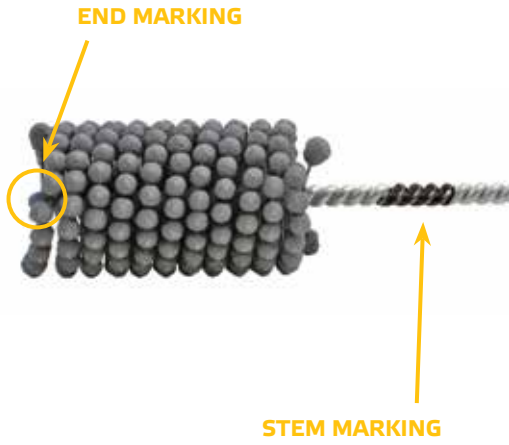
COLOR GUIDE

Stem Marking	Type of Abrasive	
No Color	Silicon Carbide	(SC)
Black	Aluminum Oxide	(AO)
Gold	Boron Carbide	(BC)
Tan	Tungsten Carbide	(WC)
Red	Zirconia Alumina	(Z-Grain #1525)
White	Zirconia Alumina	(Z-Grain #1549)
No Color	Levigated Alumina	(LA)
Yellow	Diamond	

**Order by actual cylinder I.D. All Flex-Hone® are produced oversized.*

End Marking	Grit Sizes	Mesh Sizes (Diamond)
Brown	20	
Purple	40	
Grey	60	
Orange	80	
Silver (no color)	120	
Cardinal Red	180	170/200
Navy Blue	240	
White	320	
Yellow	400	800
Pink	600	
Light Blue	800	2500
Green	Levigated Alumina available in extra fine grit only	

FLEX-HONE® COLOR GUIDE



FLEX-HONE® INSTRUCTIONS

Instructions For Use

The Flex-Hone® Tool should be securely held in a collet, chuck, or similar holding device. It is best to use the shortest shank possible for your application. Always wear eye protection. The Flex-Hone® Tool should be well coated with a good quality cutting oil or honing fluid and rotating prior to entry and should continue rotating until fully removed from the part. RPM from 60 to 1200 depending on diameter. Never exceed 1200 RPM. Start with a spindle speed between 350-800 RPM. You may need to experiment to find the optimum speed for your application. The Flex-Hone® Tool should have a continuous stroke rate between 120 to 180 inches per minute. Final stroking may be accelerated to develop a 45º crosshatch finish. Use the minimum honing time needed to achieve the required finish. Average honing time is 10-45 seconds, (5-60 strokes). DO NOT over hone. Clean the cylinder after honing using hot, soapy water and brush the cylinder walls with a cleaning brush. Dry the cylinder and continue to clean with a lint free cloth coated with a light oil or mineral spirits. Continue to clean until the lint free cloth remains clean.

SEE OUR FLEX-HONE® RESOURCE GUIDE FOR MORE RPM RECOMMENDATIONS.

HOW TO ORDER

Ordering a Flex-Hone®

You can place an order by telephone, fax or direct from our website.

PHONE: (323) 261-2193
FAX: (323) 268-6587

Be sure to check out our video tutorial on the proper use of the Flex-Hone® Tool!

http://www.brushresearch.com/videos.php

SMALL DIAMETER STANDARD DUTY FLEX-HONES

Order by Bore Size

FLEX-HONE® TOOL

4mm - 3/16" are 6" OAL
Balance 8" OAL

Catalog Number		Catalog Number		Catalog Number	
BC 4mm	(.157")	BC ½"	(12.7mm)	BC 1¾"	(45mm)
BC 4.5mm	(.177")	BC 14mm	(.552")	BC 1⅞"	(48mm)
BC 3/16"	(4.75mm)	BC ⅝"	(16mm)	BC 2"	(51mm)
BC 5mm	(.197")	BC 18mm	(.709")	BC 2⅛"	(54mm)
BC 5.5mm	(.217")	BC ¾"	(19mm)	BC 2¼"	(57mm)
BC 6mm	(.234")	BC 20mm	(.787")	BC 2⅜"	(60mm)
BC 6.4mm	(.250")	BC ⅞"	(22mm)	BC 2½"	(64mm)
BC 7mm	(.276")	BC 15/16"	(23.8mm)	BC 2⅝"	(67mm)
BC 8mm	(.315")	BC 1"	(25.4mm)	BC 2¾"	(70mm)
BC 9mm	(.354")	BC 1⅛"	(29mm)	BC 2⅞"	(73mm)
BC 9.5mm	(.375")	BC 1¼"	(31.8mm)	BC 3"	(76mm)
BC 10mm	(.394")	BC 1⅜"	(35mm)		
BC 11mm	(.433")	BC 1½"	(38mm)		
BC 12mm	(.472")	BC 1⅝"	(41mm)		

SOLUTION SHOWCASE

CROSS HOLE DEBURRING

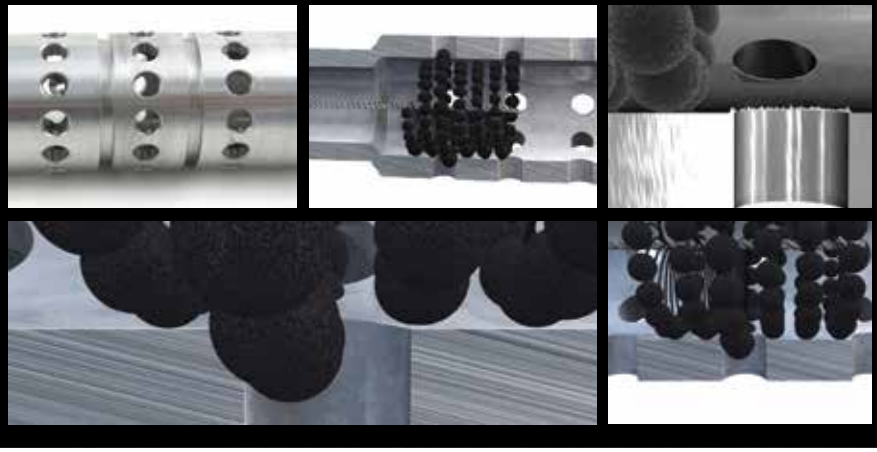
Before Deburring

After Deburring

PROBLEM: Efficiently deburr dozens of cross drilled holes
SOLUTION: Standard Flex-Hones deburr cross drilled holes simultaneously in a single set by inserting the tool through the main bore

Cross hole deburring has become a common set-back when finishing parts. Time is money and the deburring of each individual cross drilled hole can be very labor intensive. The Flex-Hone® can effectively deburr numerous crossed drilled holes in a single set up through the main bore.

TIP: Rotate the tool clockwise for several strokes, reverse the spindle, and then rotate the tool counter-clockwise. This will quickly and efficiently achieve a symmetrical deburring pattern.



STANDARD DUTY FLEX-HONES

Order by Bore Size

13½" OAL

Catalog Number		For Bore Sizes
GB 3¼"	(83mm)	3¼" to 3"
GB 3½"	(89mm)	3½" to 3¼"
GB 3¾"	(95mm)	3¾" to 3½"
GB 4⅛"	(105mm)	4⅛" to 3¾"
GB 4⅝"	(118mm)	4⅝" to 4⅛"

HEAVY DUTY FLEX-HONES

Order by Bore Size

3 Thru 4½" Diameter are 13½" OAL Bal. 17½" OAL

Catalog Number		For Bore Sizes
GBD 3"	(76mm)	3" to 2¾"
GBD 3¼"	(83mm)	3¼" to 3"
GBD 3½"	(89mm)	3½" to 3¼"
GBD 3¾"	(95mm)	3¾" to 3½"
GBD 4"	(101mm)	4" to 3¾"
GBD 4¼"	(108mm)	4¼" to 4"
GBD 4½"	(114mm)	4½" to 4¼"
GBD 5"	(127mm)	5" to 4½"
GBD 5½"	(140mm)	5½" to 5"
GBD 6"	(152mm)	6" to 5½"
GBD 6½"	(165mm)	6½" to 6"
GBD 7"	(178mm)	7" to 6½"
GBD 7½"	(190mm)	7½" to 7"
GBD 8"	(203mm)	8" to 7½"

SOLUTION SHOWCASE

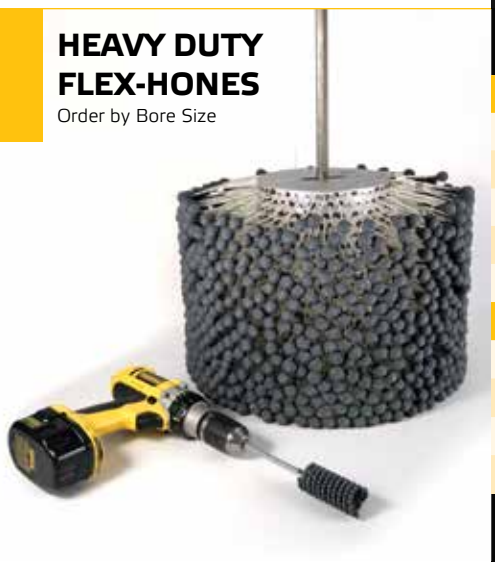
FLEX-HONE® COOL TIPS

+ Tool diameter is determined by bore size. The Flex-Hone® is always produced and used in an oversize condition. For example, a 1" Flex-Hone® is ordered if a 1" bore is to be finished and the tool is provided oversized. If the bore size is between standard Flex-Hone® sizes, the next larger standard Flex-Hone® should be selected.
+ The Flex-Hone® MUST be used with a lubricant.
+ For visual step-by-step instructions on how to properly use a Flex-Hone®, please check out our How-To Video located on our website.
+ For more detailed information on abrasive and grit selections, operating RPMs, potential applications and much more, please download a copy of our Flex-Hone® Resource Guide located in the literature section of our website.
+ Flex-Hone® Accessories-Extensions are an easy way to reach long bore applications.

FLEX-HONE® TOOLS

HEAVY DUTY FLEX-HONES

Order by Bore Size



34" OAL STOCKED IN 120 & 180 SC

Catalog Number	3" Core (½" Hex Shaft)
GBDH 8"	(203mm)
GBD 8½"	(216mm)
GBD 9"	(228mm)
GBD 9½"	(241mm)
GBD 10"	(254mm)
	4" Core (½" Hex Shaft)
GBD 10½"	(267mm)
GBD 11"	(280mm)
GBD 11½"	(292mm)
GBD 12"	(305mm)

Catalog Number	5" Core (⅝" Hex Shaft)
GBD 12½"	(318mm)
GBD 13"	(330mm)
GBD 13½"	(344mm)
GBD 14"	(355mm)
	6" Core (⅝" Hex Shaft)
GBD 15"	(381mm)
GBD 16"	(406mm)
	8" Core (⅝" Hex Shaft)
GBD 17"	(432mm)
GBD 18"	(457mm)

All Heavy Duty Wood Core Flex-Hones (GBDH 8"-18") feature a steel hex drive shaft that is 34" OAL.

SOLUTION SHOWCASE

LARGE DIAMETER Flex-Hones

PROBLEM: Servicing large diameter bores in the field
SOLUTION: Large diameter Flex-Hones are an affordable and portable solution

When it comes to servicing big bore diesel engines, the Flex-Hone® is a portable and low-cost tool that can be used to speed up cylinder servicing in the shop or in the field - deglazing, de-burring and cross-hatching in one smooth operation.

Clarence Mayers, coordinator for Diesel Supply Company (Odessa, Texas) says, "Getting top-to-bottom cylinder or liner wall coverage is difficult to do with other tools. The Flex-Hones that we sell are approximately 12-18 inches wide. So, if the hone is ran two or three inches past the bottom of the liner, that's not a problem. Most of the hone is still inside the cylinder, so it can go down and complete the bottom of the piston travel area. The same applies to the top of the liner, where it gets chamfered because of where the top ring travel ends. The Flex-Hone® can blend that area quite easily."

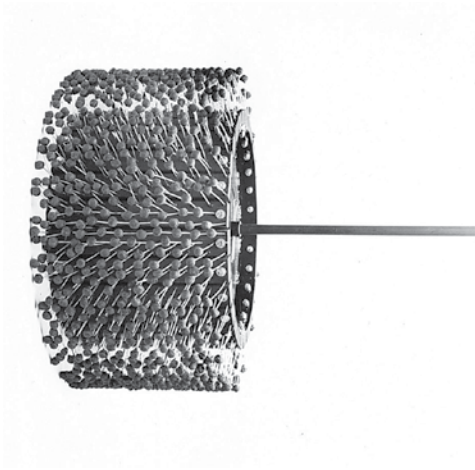
In addition to diesel engines, large diameter hones are often used for decontamination of large pipes, finishing and cleaning of pumps, valves and generators. Flex-Hones are available up to 36" standard.

EXTRA HEAVY DUTY FLEX-HONES

Order by Bore Size

Available with ¾" - 1¼" Shafts. All 120 SC

Catalog Number	Drum Dia.	Section	# of Sections on Drum	Shaft Dia.
GBDX 19" (483mm)	11½"	A	22	¾"
GBDX 20" (508mm)	11½"	B	22	¾"
GBDX 21" (533mm)	11½"	C	22	¾"
GBDX 22" (559mm)	11½"	D	22	¾"
GBDX 23" (584mm)	15½"	A	29	¾"
GBDX 24" (610mm)	15½"	B	29	¾"
GBDX 25" (635mm)	15½"	C	29	¾"
GBDX 26" (660mm)	15½"	D	29	¾"
GBDX 27" (686mm)	19½"	A	36	1"
GBDX 28" (711mm)	19½"	B	36	1"
GBDX 29" (737mm)	19½"	C	36	1"
GBDX 30" (762mm)	19½"	D	36	1"
GBDX 31" (787mm)	19½"	E	36	1"
GBDX 32" (813mm)	24½"	A	44	1¼"
GBDX 33" (838mm)	24½"	B	44	1¼"
GBDX 34" (864mm)	24½"	C	44	1¼"
GBDX 35" (889mm)	24½"	D	44	1¼"
GBDX 36" (914mm)	24½"	E	44	1¼"



GBDX Replacement Sections Available for Above GBDX Flex-Hone®

Catalog Number		Grit Size	Overall Trim
GBDX–A	Section	120SC	4⅛" (105mm)
GBDX–B	Section	120SC	4⅝" (118mm)
GBDX–C	Section	120SC	5¼" (133mm)
GBDX–D	Section	120SC	5¾" (146mm)
GBDX–E	Section	120SC	6⅜" (162mm)

FLEX-HONE® FOR ROTORS

Flex-Hone® for Rotors utilizes the Flex-Hone® technology to produce the ideal surface finish on automotive and motorcycle disc brakes rotors, automotive fly wheels and clutch plates.

More rotors per hone than abrasive pads
+ Lowers Harmonic vibrations
+ Produces a non-directional pattern
+ Ideal for new and re-turned rotors and flywheels

Part Number	Item	Grit
RMFH60Z25	Flex-Hone® for Rotors	Course
RMFH120Z25	Flex-Hone® for Rotors	Medium
RMFH240Z25	Flex-Hone® for Rotors	Fine

FLEX-HONE® TOOLS FOR FIREARMS

SHOTGUN FLEX-HONE® TOOLS

Gauge	Barrel Hones		
	180SC	400SC	800AO
10 Ga	00607	08260	00608
12 Ga	00048	05397	00049
16 Ga	00050	08261	00051
20 Ga	00052	08262	00053
28 Ga	11000	08362	11641
.410	00609	08263	00610

All Barrel Flex-Hones are 34"OAL. The stem wire is covered with a protective shrink tube coating to protect the barrel.

Gauge	Forcing Cone Hones		
	180SC	400SC	800SC
12 Ga	02985	08004	02986
16 Ga	05611	08264	05612
20 Ga	05613	08265	05614
28 Ga		12241	12242

All Forcing Cone Flex-Hones have a 1-5/8" abrasive part and are 10"OAL. Coarse, medium and fine grits are offered in each gauge (180SC/ 400SC/ 800AO)

Chamber Hones	
400SC	800AO
08301	00611
06459	00054
08302	00055
08303	00056
09828	03341
08304	00612

All Chamber Flex-Hones are 12"OAL. The stem wire is covered with a protective shrink tube coating to protect the barrel.

Shotgun Port Cleaning Brush
1/8" 6" OAL - 06632
3/16" 7" OAL - 06633

Shotgun Handled Chamber Brush
12Ga - 06629
20Ga - 06630

Gas Ring Brush
06631

AUTO PISTOL FLEX-HONE® TOOLS

	400SC	800SC	OAL
1911 Main Spring Housing	00909	00910	4"
1911 Main Lug Area		BC18M800	8"
S&W, Beretta, SIG Internal Slide		BC12800	8"

SOLUTION SHOWCASE

FLEX-HONE® FOR FIREARMS

PROBLEM: Efficiently finish ammunition loading dies
SOLUTION: Flex-Hones increase efficiency by an estimated 60-70%

For decades, our firearms tools have been trusted by hobbyist, gunsmiths and manufacturers worldwide. These honing tools have become a standard for finishing and polishing chambers, cylinders and shotgun barrels. The result is reduced jamming, sticking and brass scarring. In recent years, we have discovered the potential for this tool in other areas of the firearms industry.

RCBS, a member of ATK's Security & Sporting Group and a leading producer of high-quality ammunition reloading equipment for over 60 years, came to Brush Research for assistance in finishing their reloading dies. After incorporating the Flex-Hone® into their CNC equipment, Tim Taylor, a RCBS engineer said "the new automated process is a real game changer. It is probably 60-70% more efficient than doing it by hand. Also, there was a substantial increase in quality."

FLEX-HONE® TOOLS FOR FIREARMS

PISTOL FLEX-HONE® TOOLS

	Pistol Chamber Hones		
	400SC	800SC	OAL
.32	05470	05471	3"
.357 MAG/.38	00899	00900	3"
.41 MAG	00901	00902	3"
.44 MAG	00903	00904	3"
.45 ACP	00905	00906	3"
.45 COLT	00907	00908	3"
9MM	07584	08309	3"

All Pistol Flex-Hones have a 1 5/8" abrasive part and are 3" OAL.
Universal Bolt Brush - 06627

RIFLE CHAMBER FLEX-HONE® TOOLS

	400SC	800SC	OAL
.17 CAL/.22 MAG	06380	08305	6"
.223 Remington	06262	06263	8"
.243	07643	08306	12"
.308	06498	08041	12"
.357 MAG	08310	03309	14"
25-06	07647	08307	12"
30-06	07409	08308	12"
.44 MAG	08312	03310	14"
.44 CAL	06381	08311	6"
.45 COLT	08313	03311	14"
50 BMG	07410	07411	12"
5.56 NATO	09246	09247	12"
6.8MM	09478	09479	8"
7.62x39MM SAAMI	08949	08950	8"
7.62x51MM NATO	09259	09260	12"
338 LAPUA	09435	09436	12"
316 BARRETT	11142	11143	16"
22 LR	12158	12159	6"
AR15	12256	12257	12"

HAND TOOLS

Handle Material	Handle Width	Rows	.006 Stainless	.018 Nylon	.006 Brass
No. 93-A Laminated	3/8"	2	93A-S250	93A-N250	93A-B250
Hardwood Plywood	7/16"	3	93A-S375	93A-N375	93A-B375
	1/2"	4	93A-S500	93A-N500	93A-B500

Staple Set (Poly Handle- 7 1/4" OAL)

No. 93-AP	.006 Stainless Wire Fill
No. 93-APB	.006 Brass Fill
No. 93-APH	Horsehair Fill
No. 93-APP	.006 Phosphor Bronze Fill
No. 93-APN	.012 Nylon Fill

Staple Set (Wire fill in Wood Handle)
No. 93-AW .006SS Fill

M-16 Cleaning Brush - 93DSN
Flex-Hone® Oil - Pint, Quart, Gallon

Acid Brushes (Throw AwayType)		
#1	3/8"	6" OAL
#2	1/2"	6" OAL

Finest horse hair fill, tinned metal handle. Nylon available.

FLEX-HONE® TOOL ACCESSORIES

FLEX-HONE® OIL

TIP NOTE:
The Flex-Hone® Tool **always** requires the use of a lubricant. Solvents should be avoided.

Specifically formulated for use with the Flex-Hone® in honing all types of metals. Contains a blend of honing and lapping oils, a lard oil to prevent galling of aluminum, a moisture dispersant, a non ionic surfactant wetting agent to assure complete lubrication of the surface and a special additive to help keep the metal cuttings and containments in suspension. Emulsided, anti-bacteria agent.

Use sparingly, only a small amount needed on cylinder walls to create a slurry.

Clean the cylinder after honing with cloth or rags and clean motor oil until the cloth stays clean, then thoroughly wash cylinders with hot water and soap. Oil lightly afterwards to prevent rusting.

On hydraulic cylinders use only hydraulic brake fluid or a non-petroleum water-soluble lubricant.

Available In:

Part Number	
FHP	½ Pint Bottle
FHQ	1 Quart Bottle
FHG	1 Gallon Bottle
FH5G	5 Gallon Bottle

CYLINDER WASHING BRUSH

Made with 6-12 Nylon for efficient cleaning of cylinder walls after honing. Use with detergent and warm/hot water as recommended by Caterpillar, etc. Special diameters to 14".

Part Number	Diameter
03390	2" Dia.
03391	2½" Dia.
02640	3" Dia.
10A312	3½" Dia.
10A4	4" Dia.
10A412	4½" Dia.
10A5	5" Dia.
10A512	5½" Dia.
10A6	6" Dia.
10A612	6½" Dia.

PIPE NIPPLE ADAPTERS & EXTENSIONS

Available for Flex-Hones. Must be designated on order. Although available separately they are intended to be factory attached when ordered.

Part Number	Diameter	Flex-Hone® Sizes
832A	8-32 Adapters	8mm - 11mm
18NPT	⅛" NPT	12mm - 3"
14NPT	¼" NPT	3" - 5½"
38NPT	⅜" NPT	6" - 8"
12NPT	½" NPT	8" - 12"
34NPT	¾" NPT	12½" - 18"
Extensions for use with pipe nipple adapters		
18 x 18	⅛" NPT x 18" w/coupling	
18 x 36	⅛" NPT x 36" w/coupling	
14 x 18	¼" NPT x 18" w/coupling	
14 x 36	¼" NPT x 36" w/coupling	

ABRASIVE NYLON FILAMENT BRUSHES

WHAT IS ABRASIVE NYLON?

The cutting action of the filaments of abrasive nylon brushes are unique compared to traditional metal filaments that are designed to cut on the filament tips. Abrasive grains encapsulated in the nylon are exposed on all surfaces of the brush filament. Abrasive action occurs on both the tip of the nylon brush filament as well as the nylon filament sides. In application, the lateral surface of the nylon filament is often drawn across the work surface, functioning much like a flexible abrasive file. Filaments of abrasive nylon brushes are composed of heat stabilized nylon and abrasive grain that are coextruded into monofilament brushes. The results are flexible, homogeneous nylon abrasive brushes that have approximately 30% abrasive loading by weight. Common abrasives used in this material include aluminum oxide, silicon carbide and diamond.

Filaments of nylon abrasive brushes are produced in a variety of filament diameters, abrasive grain types, abrasive grain sizes and abrasive loading. As abrasive grain size increases so does nylon filament diameter. Larger nylon diameter filament is required to effectively bond larger abrasive grains. Larger nylon diameter filaments are less flexible which make them more susceptible to brush filament fatigue and fracture. Smaller diameter filaments bend and recover more easily and more filaments can occupy a given area putting more brush abrasive in contact with the workpiece. Brushes made from abrasive nylon should not be run faster than 3500 SFM to avoid overheating and material transference. Abrasive nylon brushes are ideal for light deburring, surface finishing and finishing of irregular profiles.

When Should I use Abrasive Nylon Brushes?

+ Smooth internal surface finish
+ Light to medium deburring on internal diameter (ID) and outside diameter (OD) applications
+ Internal thread cleaning
+ External thread cleaning
+ Cleaning and light edge blending
+ Polishing

What are the Advantages of Abrasive Nylon Brushes?

+ These brushes are non oxidizing...so there is no reaction with metal
+ They are safer - No bristle fly out
+ They are fast working
+ They do not load
+ Unlike Wire Brushes where the tips of the wire do all the work, Abrasive Nylon Brushes use both the tips and the sides of the filament to do the work
+ Abrasive Nylon Brushes have flexible filaments that conform to part geometry
+ You have the ability to change cutting properties by changing grits
+ They can be run wet or dry....however, certain conditions may require the use of a coolant if the brush is put under stress resulting in heat. If the brush is exposed to excess heat, this can result in smearing of the nylon filament.
+ You have the ability to deburr and finish in one step
+ Abrasive Nylon Brushes are ideal for automated processes!

NAMPOWER™ BRUSHES

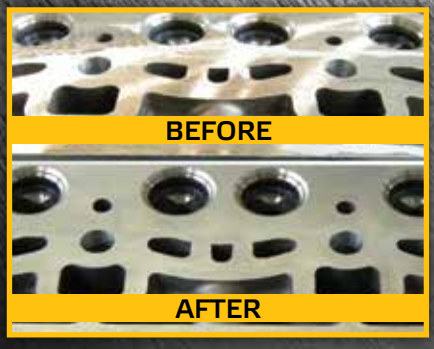
NEW

NAMPOWER™ ABRASIVE DOT STYLE COMBINATION DISC BRUSH

Dot style disc brushes are general purpose tools used for edge deburring and surface finishing applications. Dot style brushes are excellent for light deburring applications when short cycle times are important. Dot style brushes provide greater flexibility and allow entry into small holes and spaces with ease.

Brush Diameter	Trim Length	Grit	MSFS	Part Number
100mm	18mm	80	2,200	ADD1001880
100mm	18mm	120	2,200	ADD10018120
100mm	18mm	180	2,200	ADD10018180
100mm	18mm	320	2,200	ADD10018320
100mm	38mm	80	2,200	ADD1003880
100mm	38mm	120	2,200	ADD10038120
100mm	38mm	180	2,200	ADD10038180
100mm	38mm	320	2,200	ADD10038320
125mm	18mm	80	2,000	ADD1251880
125mm	18mm	120	2,000	ADD12518120
125mm	18mm	180	2,000	ADD12518180
125mm	18mm	320	2,000	ADD12518320
125mm	38mm	80	2,000	ADD1253880
125mm	38mm	120	2,000	ADD12538120
125mm	38mm	180	2,000	ADD12538180
125mm	38mm	320	2,000	ADD12538320
150mm	18mm	80	1,800	ADD1501880
150mm	18mm	120	1,800	ADD15018120
150mm	18mm	180	1,800	ADD15018180
150mm	18mm	320	1,800	ADD15018320
150mm	38mm	80	1,800	ADD1503880
150mm	38mm	120	1,800	ADD15038120
150mm	38mm	180	1,800	ADD15038180
150mm	38mm	320	1,800	ADD15038320

For more detailed information on Nampower™ Tools, Download a copy of the **Nampower Resource Guide** located in the literature section of our website.



The highest quality abrasive brush products in the market!

NAMPOWER™ BRUSHES

Turbine style disc brushes are ideal for performing medium to heavy deburring applications. These brushes contain a combination of Silicon Carbide and Ceramic filaments allowing them to cut faster and last longer than any other brush on the market.

Brush Diameter	Trim Length	Grit	MSFS	Part Number
100mm	18mm	80	2,200	ADT1001880
100mm	18mm	120	2,200	ADT10018120
100mm	18mm	180	2,200	ADT10018180
100mm	18mm	320	2,200	ADT10018320
100mm	38mm	80	2,200	ADT1003880
100mm	38mm	120	2,200	ADT10038120
100mm	38mm	180	2,200	ADT10038180
100mm	38mm	320	2,200	ADT10038320
125mm	18mm	80	2,000	ADT1251880
125mm	18mm	120	2,000	ADT12518120
125mm	18mm	180	2,000	ADT12518180
125mm	18mm	320	2,000	ADT12518320
125mm	38mm	80	2,000	ADT1253880
125mm	38mm	120	2,000	ADT12538120
125mm	38mm	180	2,000	ADT12538180
125mm	38mm	320	2,000	ADT12538320
150mm	18mm	80	1,800	ADT1501880
150mm	18mm	120	1,800	ADT15018120
150mm	18mm	180	1,800	ADT15018180
150mm	18mm	320	1,800	ADT15018320
150mm	38mm	80	1,800	ADT1503880
150mm	38mm	120	1,800	ADT15038120
150mm	38mm	180	1,800	ADT15038180
150mm	38mm	320	1,800	ADT15038320

NAMPOWER™ TURBINE STYLE ABRASIVE DISC BRUSH

NEW

Our new patent pending lightweight tool holders are designed to be used with all sizes of our Nampower combination filament disc brushing tools. Designed to be used with flow through coolant systems, holders have a standard 25mm shank. Made using a carbon fiber reinforced thermoplastic material bonded to a hardened and ground steel shank results in a more rigid, well balanced and light weight holder. Reducing tool holder weight produces less stress on machine spindle bearings and improves brush performance. The carbon fiber material is highly damping and significantly reduces vibration producing more consistent brushing action and longer brush life.

Part Number	Shank Diameter	Holder Type
ADHLWMP	25mm	Standard Collet
ADHLWMSL	25mm	Standard Side Lock

HOLDERS FOR NAMPOWER™ DISC BRUSHES

NEW

NAMPOWER™ BRUSHES

NAMPOWER™ ABRASIVE HEX-DRIVE™ TOOLS

These tools are designed for use in semi-automatic and fully automatic machinery, including NC, CNC and robotic machine tools. The unique Hex-Drive™ system allows the tools to be turned in both directions for 360 finishing. Typical applications include deburring, edge radiusing and general surface finishing.

Part Number	Dia.	Fil. Dia./Grit	Arbor	Trim Length	Max Safe RPM
AHX2046	2″	.060/46SC	¼″	¾″	10,000
AHX2060		.045/60SC		1″	
AHX2080		.040/80SC		1″	
AHX2120		.028/120SC		1″	
AHX2180		.035/180SC		1″	
AHX3046	3″	.060/46SC	¼″	¾″	10,000
AHX3060		.045/60SC	or	1″	
AHX3080		.040/80SC	⅜″	1″	
AHX3120		.028/120SC		1″	
AHX3180		.035/180SC		1″	
AHX4060	4″	.045/60SC	¼″	1″	10,000
AHX4080		.040/80SC	or	1″	
AHX4120		.028/120SC	⅜″	1″	
AHX4180		.035/180SC			
AHX5060	5″	.045/60SC	⅜″	1″	6,000
AHX5080		.040/80SC		1″	
AHX5120		.028/120SC		1″	
AHX5180		.035/180SC		1″	

APPLICATIONS:

+ Deburring
+ Rust Removal
+ Gasket Cleaning & Removal
+ Roughing
+ Finishing prior to painting and plating
+ Removal of silicon glue, paper gaskets and flash from rubber and plastic
+ Pre-cast concrete mold cleaning
+ Spot finishing
+ Improve surface finish
+ Weld cleaning
+ Clean fiberglass
+ Plastic automotive parts

DRIVE ARBORS FOR NAMPOWER™ HEX-DRIVE TOOLS

Part Number	Shank Arbor	Shank Dia.	Max Brush Dia.	Max Safe RPM
AHXD250	½″	¼″	4″	10,000
AHXD375	½″	⅜″	5″	10,000

NAMPOWER™ BRUSHES

For machine based or off-hand deburring processes, Nampower™ Composite Hub radial wheels offer a safe, durable alternative to wire wheels or non-woven abrasives. Their construction and flexibility provide a long lasting wheel with less filament breakage and superior performance.

+ Higher filament density for longer brush life
+ Shorter parts cycle time and increased aggression
+ Less filament breakage because they are not pre-stressed
+ A virtually indestructible core
+ Wider hub thickness with uniformly distributed filaments
+ Balanced construction that reduces machine fatigue

Diameter	Part Number	Face Width	Trim Length	Arbor Hole	Grit
6"	CW61280SC	½"	1 - ½"	2"	40/80 SC
6"	CW612022120SC	½"	1 - ½"	2"	22/120 SC
6"	CW612040120SC	½"	1 - ½"	2"	40/120 SC
6"	CW612180SC	½"	1 - ½"	2"	35/180 SC
6"	CW612320SC	½"	1 - ½"	2"	22/320 SC
6"	CW612500SC	½"	1 - ½"	2"	18/500 SC
6"	CW6180SC	1"	1 - ½"	2"	40/80 SC
6"	CW61022120SC	1"	1 - ½"	2"	22/120 SC
6"	CW61040120SC	1"	1 - ½"	2"	40/120 SC
6"	CW61180SC	1"	1 - ½"	2"	35/180 SC
6"	CW61320SC	1"	1 - ½"	2"	22/320 SC
6"	CW61500SC	1"	1 - ½"	2"	18/500 SC
8"	CW81280SC	½"	2 - ½"	2"	40/80 SC
8"	CW812022120SC	½"	2 - ½"	2"	22/120 SC
8"	CW812040120SC	½"	2 - ½"	2"	40/120 SC
8"	CW812180SC	½"	2 - ½"	2"	35/180 SC
8"	CW812320SC	½"	2 - ½"	2"	22/320 SC
8"	CW812500SC	½"	2 - ½"	2"	18/500 SC
8"	CW8180SC	1"	2 - ½"	2"	40/80 SC
8"	CW81022120SC	1"	2 - ½"	2"	22/120 SC
8"	CW81040120SC	1"	2 - ½"	2"	40/120 SC
8"	CW81180SC	1"	2 - ½"	2"	35/180 SC
8"	CW81320SC	1"	2 - ½"	2"	22/320 SC
8"	CW81500SC	1"	2 - ½"	2"	18/500 SC

Note: MSFS is 3,600

NAMPOWER™ COMPOSITE HUB ABRASIVE NYLON WHEELS

NEW

Brush Research produces machined arbor adapters in a variety of sizes. These adapters are designed to offer increased brush support, less brush vibration and longer brush life.

Part Number	Part Description
CWA2-12	COMPOSITE WHEEL ADAPTER 2" - 1/2"
CWA2-58	COMPOSITE WHEEL ADAPTER 2" - 5/8"
CWA2-34	COMPOSITE WHEEL ADAPTER 2" - 3/4"
CWA2-78	COMPOSITE WHEEL ADAPTER 2" - 7/8"
CWA2-1	COMPOSITE WHEEL ADAPTER 2" - 1"
CWA2-114	COMPOSITE WHEEL ADAPTER 2" - 1-1/4"
CWA2-112	COMPOSITE WHEEL ADAPTER 2" - 1-1/2"

COMPOSITE WHEEL ADAPTERS

NEW

ABRASIVE NYLON BRUSHES

SOLID END BRUSHES

Catalog Number	Brush Diameter	Trim Length	Shank Dia.	Stocked Abrasive	Max. Safe Free Speed (RPM)
BNS-4AY	½″	7/8″	¼″	180AO	20,000
BNS-6AY	¾″	7/8″	¼″	180AO	20,000
BNS-10AY	1″	7/8″	¼″	180AO	20,000

COPPER CENTER WHEEL BRUSHES

Catalog Number	Brush Diameter	Trim Length	Arbor Hole	Stocked Abrasive	Max. Safe Free Speed (RPM)
CY-1″	1″	⅛″	⅜″	600AO	20,000
CY-1¼″	1¼″	¼″	⅜″	600AO	20,000
CY-1½″	1½″	⅜″	⅜″	600AO	20,000
CY-2″	2″	½″	½″	500AO	20,000
CY-2½″	2½″	¾″	½″	500AO	20,000
CY-3″	3″	1″	½″	500AO	20,000
CY-3½″	3½″	1 3/16″	⅝″	320AO	20,000
CY-4″	4″	1 7/16″	⅝″	320AO	20,000

MANDREL MOUNTED COPPER CENTER WHEEL BRUSHES

Catalog Number	Brush Diameter	Trim Length	Shank Dia.	Stocked Abrasive	Max. Safe Free Speed (RPM)
BMC-12AY	1¼″	⅛″	¼"	500AO	25,000
BMC-13AY	1⅜″	3/16″	¼"	500AO	25,000
BMC-14AY	1½″	¼"	¼"	500AO	25,000
BMC-16AY	1¾″	⅜″	¼"	500AO	25,000
BMC-20AY	2″	½"	¼"	500AO	25,000
BMC-25AY	2½″	11/16″	¼"	500AO	25,000
BMC-30AY	3″	13/16″	¼"	500AO	25,000
BMF-14AY	1½″	¼"	¼"	500AO	25,000
BMF-16AY	1¾"	⅜″	¼"	500AO	25,000
BMF-20AY	2″	½"	¼"	500AO	25,000
BMF-25AY	2½″	11/16″	¼"	500AO	25,000
BMF-30AY	3″	13/16″	¼"	500AO	25,000

FILAMENTS ON SPECIAL ORDER

Available for ALL Abrasive Nylon tools

	.012/ 600	.018/ 500	.022/ 320	.035/ 180	.040/ 120	.022/ 120	.040/ 80
Aluminum Oxide	X	X	X	X	X		X
Silicon Carbide		X	X	X	X	X	X
Silicate	Mild Abrasive; .008 LV Filament						

ABRASIVE NYLON BRUSHES

WHEEL BRUSHES

Catalog Number	Brush Diameter	Trim Length	Arbor Hole	Abrasive Options	Max. Safe Free Speed (RPM)
NY-6	6″	1½"	2"	80-500AO&SC	6,000
NY-8	8″	1 ⅞″	3¼"	80-500AO&SC	5,000

Note: Use ALA type adapters for NY-6". Use MA3 adapter for NY-8". For more information, see pg. 55.

CUP BRUSHES

Catalog Number	Cup Diameter	Trim Length	Shank Dia.	Stocked Abrasive	Max. Safe Free Speed (RPM)
BNH-16AY	1¾″	½″	¼″	320AO	10,000
BNH-26AY	2¾″	¾″	¼″	320AO	8,000

Operator Safety:

1. Always wear eye protection.
2. Observe maximum safe speed requirements.
3. Keep machine guards in place.
4. Wear appropriate safety clothing.

SOLUTION SHOWCASE

NYLON BRUSH TIPS

Is your brush not aggressive enough? Try one of these options:

+ Increase surface speed by increasing spindle RPM
+ Use a coarser grit abrasive
+ Increase brush diameter
+ Increase fill density
+ Decrease trim/filament length
+ Increase pressure

Is your brush too aggressive? Try one of these options:

+ Decrease surface speed by decreasing spindle RPM
+ Use a finer grit abrasive
+ Increase trim/filament length
+ Decrease filament diameter
+ Reduce pressure

ABRASIVE NYLON TWISTED-IN-WIRE

SERIES 81–AY MINIATURE ABRASIVE NYLON DEBURRING BRUSHES

For through hole applications

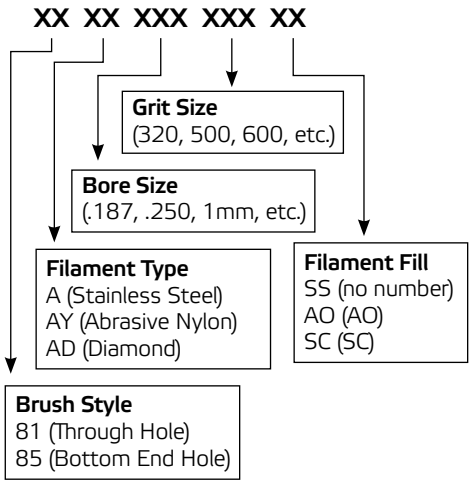
Miniature Cross Hole Deburring System

+ Stainless Steel Stem Wire
+ Abrasive Nylon
+ Single Stem-Single Spiral

Catalog Number	Hole Dia.	Brush Dia.	Brush Part	Overall Length	Stem Diameter	Stocked Abrasive
*81-AY .032"	.032	.035	⅝"	3"	.016	Silicate
*81-AY .047"	.047	.052	¾"	3"	.026	Silicate
*81-AY .054"	.054	.059	¾"	3"	.026	Silicate
*81-AY .063"	.063	.069	¾"	3"	.034	600 A0
*81-AY .079"	.079	.087	¾"	3"	.034	600 A0
*81-AY .094"	.094	.103	¾"	3"	.043	600 A0
*81-AY .109"	.109	.120	¾"	3"	.055	600 A0
*81-AY .125"	.125	.138	1"	3"	.055	600 A0
*81-AY .142"	.142	.156	1"	3"	.072	600 A0
*81-AY .156"	.156	.172	1"	3"	.072	600 A0
*81-AY .172"	.172	.189	1"	3"	.083	600 A0
*81-AY .189"	.189	.208	1"	3"	.083	600 A0
*81-AY 7/32"	.219	.241	1½"	3"	.097	600 A0
*81-AY ¼"	.250	.275	1½"	3"	.110	500 A0
81-AY 5/16"	.313	.344	1½"	3"	.125	500 A0
81-AY ⅜"	.375	.413	1½"	3"	.140	500 A0
81-AY 7/16"	.438	.481	1½"	3"	.140	500 A0
81-AY ½"	.500	.550	1½"	3"	.168	500 A0
Metric Series						
*81-AY 1mm	.039	.043	⅝"	3"	.016	Silicate
*81-AY 1.5mm	.059	.065	⅝"	3"	.026	Silicate
*81-AY 2mm	.079	.087	¾"	3"	.034	600 A0
*81-AY 2.5mm	.098	.108	¾"	3"	.043	600 A0
*81-AY 3mm	.118	.130	1"	3"	.055	600 A0
*81-AY 3.5mm	.138	.152	1"	3"	.055	600 A0
*81-AY 4mm	.157	.173	1"	3"	.072	600 A0
*81-AY 4.5mm	.177	.195	1"	3"	.072	600 A0
*81-AY 5mm	.197	.217	1"	3"	.072	600 A0
*81-AY 5.5mm	.217	.238	1"	3"	.097	600 A0
*81-AY 6mm	.236	.260	1"	3"	.110	600 A0
*81-AY 6.5mm	.256	.281	1"	3"	.110	600 A0

Refer to Safety Instructions on pg. 61

How to Order BRM Miniature Brushes:



Examples: 81AY250500A0
81AY25M600AO

NEW

SERIES 81-AD IN DIAMOND

NEW! Diamond Filament Brushes Available
***Stocked in 800 mesh diamond. Available in other sizes upon request. Please see Series 81 AY chart for available sizes for Diamond Abrasive Nylon brushes.**

FILAMENTS ON SPECIAL ORDER

Available for ALL Abrasive Nylon tools

	.012/ 600	.018/ 500	.022/ 320	.035/ 180	.040/ 120	.022/ 120	.040/ 80
Aluminum Oxide	X	X	X	X	X		X
Silicon Carbide		X	X	X	X	X	X
Silicate	Mild Abrasive; .008 LV Filament						
Diamond	Stocked in 800 grit (.010/800); other grits avail. upon request						

ABRASIVE NYLON TWISTED-IN-WIRE

Regular Deburring Tools

Catalog Number	Hole Dia.	Brush Dia.	Brush Part	Overall Length	Stem Dia. Inches	Stocked Abrasive
*85-AY125	.125	.138	1"	4"	.073	600 A0
*85-AY156	.156	.172	1"	4"	.097	600 A0
*85-AY187	.187	.206	1"	4"	.097	600 A0
*85-AY219	.219	.241	1"	4"	.112	600 A0
*85-AY250	.250	.275	1¼"	4½"	.112	500 A0
*85-AY281	.281	.309	1¼"	4½"	.125	500 A0
*85-AY312	.312	.343	1¼"	4½"	.140	500 A0
*85-AY344	.344	.378	1¼"	4½"	.140	500 A0
*85-AY375	.375	.413	1¼"	4½"	.140	500 A0
85-AY406	.406	.447	1¼"	4½"	.168	500 A0
85-AY437	.437	.481	1¼"	4½"	.168	500 A0
85-AY469	.469	.516	1¼"	4½"	.168	500 A0
85-AY500	.500	.550	1½"	5"	.168	500 A0
85-AY562	.562	.618	1½"	5"	.190	500 A0
85-AY625	.625	.688	1½"	5"	.190	500 A0
85-AY687	.687	.756	1½"	5"	.220	500 A0
85-AY750	.750	.825	1½"	5"	.220	500 A0
85-AY812	.812	.893	1½"	6"	.220	500 A0
85-AY875	.875	.963	1½"	6"	.220	500 A0
85-AY937	.937	1.031	1½"	6"	.220	500 A0
85-AY1000	1.000	1.100	2"	6"	.220	500 A0
85-AY1250	1.250	1.375	2½"	6½"	.245	500 A0
85-AY1500	1.500	1.650	2½"	6½"	.245	500 A0
85-AY1750	1.750	1.925	3"	7"	.292	500 A0
85-AY2000	2.000	2.200	3"	8"	.292	320 A0
85-AY2500	2.500	2.750	3½"	9"	.292	320 A0
85-AY3000	3.000	3.300	4"	10"	.292	320 A0

NEW! Diamond Filament Brushes Available
***Stocked in 800 mesh diamond. Available in other sizes upon request. Please see Series 85 AY chart for available sizes for Diamond Abrasive Nylon brushes.**

Heavy Duty Deburring Tools

Catalog Number	Hole Dia.	Brush Dia.	Brush Part	Overall Length	Stem Dia. Inches	Stocked Abrasive
90-AY750	0.750	0.825	1½"	6"	.280	500 A0
90-AY875	0.875	0.963	1½"	6"	.280	500 A0
90-AY1000	1.000	1.100	2"	8"	.280	500 A0
90-AY1250	1.250	1.375	2"	8"	.310	500 A0
90-AY1500	1.500	1.650	2"	8"	.310	500 A0
90-AY1750	1.750	1.925	2"	8"	.310	500 A0
90-AY2000	2.000	2.200	3"	10"	.310	320 A0
90-AY2250	2.250	2.475	3"	10"	.310	320 A0
90-AY2500	2.500	2.750	3"	10"	.310	320 A0
90-AY2750	2.750	3.025	3"	10"	.310	320 A0
90-AY3000	3.000	3.300	4"	10"	.310	320 A0
90-AY3500	3.500	3.850	4"	10"	.310	320 A0

SERIES 85–AY ABRASIVE NYLON

+ Galvanized Steel Stem Wire
+ Abrasive Nylon Fill
+ Single Stem-Single Spiral
+ Bottom End Construction
+ Specify grit type and size when ordering

See page 26 for abrasive nylon chart

TOOL TIP:

Abrasive Nylon Twisted-in-Wire brushes are an excellent solution to mild surface finishing and thread deburring. For diameters over 4mm, the Flex-Hone® is a faster, more efficient solution for finishing and crosshole deburring. Flex-Hones are not recommended for threaded applications.

SERIES 85–AD ABRASIVE NYLON IN DIAMOND

NEW

SERIES 90–AY ABRASIVE NYLON

+ Galvanized Steel Stem Wire
+ Rigid Double Stem-Double Spiral

METRIC CONVERSION TABLES

Fractional Inches to Decimal Inches and Millimeters

in.	in. decimi.	mm	in.	in. decimi.	mm
1/64	0.015625	0.397	41/64	0.640625	16.272
1/32	0.03125	0.794	21/32	0.65626	16.669
3/64	0.046875	1.191	43/64	0.671875	17.066
1/16	0.0625	1.588	11/16	0.6875	17.462
5/64	0.078125	1.984	45/64	0.703125	17.859
3/32	0.09375	2.381	23/32	0.71875	18.256
7/64	0.109375	2.778	47/64	0.734375	18.653
1/8	0.125	3.175	¾	0.75	19.050
9/64	0.140625	3.572	49/64	0.765625	19.447
5/32	0.15625	3.969	25/32	0.78125	19.844
11/64	0.171875	4.366	51/64	0.796875	20.241
3/16	0.203125	4.762	13/16	0.8125	20.638
13/64	0.21875	5.159	53/64	0.828125	21.034
7/32	0.234375	5.556	27/32	0.84375	21.431
15/64	0.234375	5.953	55/64	0.859375	21.828
¼	0.25	6.350	7/8	0.875	22.225
17/64	0.265625	6.747	57/64	0.890625	22.622
9/32	0.28125	7.144	29/32	0.90625	23.019
19/64	0.296875	7.541	59/64	0.921875	23.416
5/16	0.3125	7.938	15/16	0.9375	23.819
21/64	0.328125	8.334	61/64	0.953125	24.209
11/32	0.34375	8.731	31/32	0.96875	24.606
23/64	0.359375	9.128	63/64	0.984375	25.003
3/8	0.375	9.525	1	1.0	25.400
25/64	0.390625	9.922			
13/32	0.40625	10.319			
27/64	0.421875	10.716			
7/16	0.4375	11.112			
28/64	.0453125	11.509			
31/32	.046875	11.906			
29/64	0.484375	12.303			
½	0.5	12.700			
33/64	0.515625	13.097			
17/32	0.53125	13.494			
35/64	0.546875	13.891			
9/16	0.5625	14.288			
37/64	0.578125	14.684			
19/32	0.59375	15.081			
39/64	0.609375	15.478			
5/8	0.625	15.875			

Inches to Millimeters

in.	mm	in.	mm
1 1/32	26.194	2 9/32	57.944
1 1/16	26.988	2 5/16	58.738
1 3/32	27.781	2 11/32	59.531
1 1/8	28.575	2 3/8	60.325
1 5/32	29.369	2 13/32	61.119
1 3/16	30.162	2 7/16	61.912
1 7/32	30.956	2 15/32	62.706
1¼	31.750	2 ½	63.500
1 9/32	32.544	2 17/32	64.294
1 5/16	33.338	2 9/16	65.088
1 11/32	34.131	2 19/32	65.881
1 3/8	34.925	2 5/8	66.675
1 13/32	35.719	2 21/32	67.469
1 7/16	36.512	2 11/16	68.262
1 15/32	37.306	2 23/32	69.056
1½	38.100	2¾	69.850
1 17/32	38.894	2 25/32	70.644
1 9/16	38.688	2 13/16	71.438
1 19/32	40.481	2 27/32	72.231
1 5/8	41.275	2 7/8	73.025
1 21/32	42.069	2 29/32	73.819
1 11/16	42.862	2 15/16	74.612
1 23/32	43.656	2 31/32	75.406
1¾	44.450	3	76.200
1 25/32	45.244		
1 13/16	46.038		
1 27/32	46.831		
1 7/8	47.625		
1 29/32	48.419		
1 15/16	49.212		
1 31/32	50.006		
2	50.800		
2 1/32	51.594		
2 1/16	52.388		
2 3/32	53.181		
2 1/8	53.975		
2 5/32	54.769		
2 3/16	55.562		
2 7/32	56.356		
2¼	57.150		

Millimeters to Inches

mm	inches	mm	inches
¼	0.0098	38	1.4961
½	0.0197	39	1.5354
¾	0.0295	40	1.5748
1	0.0394	41	1.6142
2	0.0787	42	1.6535
3	0.1181	43	1.6929
4	0.1575	44	1.7323
5	0.1969	45	1.7717
6	0.2362	46	1.8110
7	0.2756	47	1.8504
8	0.3150	48	1.8898
9	0.3543	49	1.9291
10	0.3937	50	1.9685
11	0.4331	51	2.0079
12	0.4724	52	2.0472
13	0.5118	53	2.0866
14	0.5512	54	2.1260
15	0.5906	55	2.1654
16	0.6299	56	2.2047
17	0.6693	57	2.2441
18	0.7087	58	2.2835
19	0.7480	59	2.3228
20	0.7874	60	2.3622
21	0.8268	61	2.4016
22	0.8661	62	2.4409
23	0.9055	63	2.4803
24	0.9449	64	2.5197
25	0.9843	65	2.5591
26	1.0236	66	2.5984
27	1.0630	67	2.6378
28	1.1024	68	2.6772
29	1.1417	69	2.7165
30	0.0098	70	2.7559
31	1.2205	71	2.7953
32	1.2598	72	2.8346
33	1.2992	73	2.8740
34	1.338	74	2.9134
35	1.3780	75	2.9528
36	1.4173	76	2.9921
37	1.4567	77	3.0315

MINIATURE CROSSHOLE DEBURRING BRUSHES

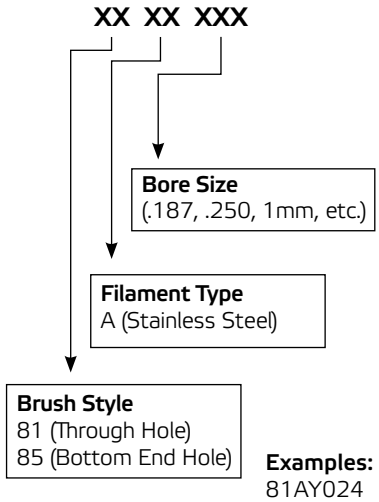
Catalog No. (Diameter)	Wire Size	Brush Part	Stem Diameter	Overall Length
81-A .024	.003	¼"	.015	3"
81-A .032	.002	⅝"	.016	3"
81-A .047	.002	¾"	.026	3"
81-A .054	.002	¾"	.026	3"
81-A .063	.003	¾"	.034	3"
81-A .079	.003	¾"	.034	3"
81-A .094	.003	¾"	.043	3"
81-A .109	.003	¾"	.055	3"
81-A .125	.003	1"	.055	3"
81-A .142	.003	1"	.072	3"
81-A .156	.003	1"	.072	3"
81-A .172	.003	1"	.083	3"
81-A .189	.003	1"	.083	3"
81-A 1mm	.002	⅝"	.016	3"
81-A 1.5mm	.002	⅝"	.026	3"
81-A 2mm	.003	¾"	.034	3"
81-A 2.5mm	.003	¾"	.043	3"
81-A 3mm	.003	1"	.055	3"
81-A 3.5mm	.003	1"	.055	3"
81-A 4mm	.003	1"	.072	3"
81-A 4.5mm	.003	1"	.083	3"
81-A 5mm	.003	1"	.083	3"
81-A 5.5mm	.003	1"	.097	3"
81-A 6mm	.003	1"	.110	3"
81-A 6.5mm	.003	1"	.110	3"
81-B 7/32	.003	1½"	.097	3"
81-B ¼	.003	1½"	.110	3"
81-B 5/16	.004	1½"	.125	3"
81-B ⅜	.004	1½"	.140	3"
81-B 7/16	.004	1½"	.140	3"
81-B ½	.005	1½"	.168	3"

SERIES 81A STAINLESS STEEL

For through hole applications

Miniature Cross Hole Deburring System

How to Order BRM Miniature Wire Brushes:



Examples:
81AY024
81A25M

BRM pin vises offer a secure method of holding small diameter miniature deburring brushes when stem diameters are too small for automated machining. Using pin vises reduces operator fatigue and improves efficiency. Model PV460 is double ended, has a hexagonal locking collet and comes with 2 reversible 4-jaw chucks for ultimate versatility. Model PV467 offers a unique swivel action that allows for precise and consistent control during deburring and finishing. Our high quality pin vises are made from chrome plated brass and have a solid feel.

PIN VISES - TOOL HOLDERS FOR MINIATURE BRUSHES

NEW

Catalog Number	Type	Stem Diameters	Brush Diameters
PV460	Pin Vise - Hexagonal Type	0.109 Max. to any Min.	up to 7/32"
PV467	Pin Vise - Swivel Type	0.125 Max. to any Min.	up to 5/16"

TUBE BRUSHES

SERIES 83

These brushes can be used for thread deburring, tube cleaning, de-scaling and rust removal. They are cut for power and can be made with carbon steel, stainless steel, brass or nylon filament to provide a solution to a variety of cleaning applications.

	Fill Sizes						Catalog Numbers			
Brush Dia.	C.S.	S.S.	Brass	Nylon	Brush Part	Overall Length	Stainless	Carbon	Brass	Nylon
¼"	.006	.004	.005	.008	1½"	4½"	83-S250	83-C250	83-B250	83-N250
5/16"	.006	.004	.005	.010	1½"	4½"	83-S312	83-C312	83-B312	83-N312
3/8"	.006	.005	.005	.010	1½"	4½"	83-S375	83-C375	83-B375	83-N375
7/16"	.006	.005	.005	.010	1½"	5"	83-S437	83-C437	83-B437	83-N437
½"	.006	.006	.005	.010	1½"	5"	83-S500	83-C500	83-B500	83-N500
9/16"	.006	.006	.005	.010	1½"	5"	83-S562	83-C562	83-B562	83-N562
5/8"	.008	.008	.008	.012	1¾"	5"	83-S625	83-C625	83-B625	83-N625
¾"	.008	.008	.008	.014	1¾"	5"	83-S750	83-C750	83-B750	83-N750
7/8"	.008	.008	.008	.014	2"	6"	83-S875	83-C875	83-B875	83-N875
1"	.008	.008	.008	.017	2"	6"	83-S1000	83-C1000	83-B1000	83-N1000
1¼"	.010	.010	.010	.022	2½"	6"	83-S1250	83-C1250	83-B1250	83-N1250
1½"	.010	.010	.010	.022	2½"	6"	83-S1500	83-C1500	83-B1500	83-N1500
1¾"	.010	.010	.010	.022	3"	7"	83-S1750	83-C1750	83-B1750	83-N1750
2"	.010	.012	.012	.028	3"	7"	83-S2000	83-C2000	83-B2000	83-N2000

SOLUTION SHOWCASE

MINIATURE BRUSHES

Small parts requiring deburring, edge blending or other surface finishing operations can present particular production challenges to manufacturers. Often production is taken off-stream resulting in reduced productivity and inconsistent product quality.

A miniature deburring brush can solve both the productivity and quality challenges involved when manufacturing parts of various small sizes, contours and materials. Precision Planting, Inc. (Tremont, IL), an industry leader in agricultural seed planting equipment, manufactures a variety of systems that are designed to solve exact seed spacing and placement issues.

"One of our newest systems has tubes that are injection molded, and we had great concern about removing the residual flash that was created by the molding process," explains Precision Planting engineer Derek Sauder. "It may only be only .002 to .005 in. Using BRM's miniature brushes have "allowed our products to become the most accurate planting equipment in the market," he says. "Our product is well-known and has a fine reputation in the marketplace. And this process helps us attain that. It is economical and gives us good results."

TUBE BRUSHES

SERIES 84 - FOR THRU HOLES

Ring handles may be cut off for power applications.

	Fill Sizes						Catalog Numbers				
Dia.	Brass	C.S.	6-12 Nylon	S.S.	Brush Part	Overall Length	Type 302 Stainless	Hi-Temp. Carbon	Brass	6-12 Nylon	Natural Bristle
1/8"	.003	.003	.005	.003	1¼"	8"	84-S125	84-C125	84-B125	84-N125	84-H125
3/16"	.003	.003	.005	.003	1½"	8"	84-S187	84-C187	84-B187	84-N187	84-H187
¼"	.005	.006	.008	.004	2"	8"	84-S250	84-C250	84-B250	84-N250	84-H250
5/16"	.005	.006	.008	.004	2"	8"	84-S312	84-C312	84-B312	84-N312	84-H312
3/8"	.005	.006	.010	.004	2"	8"	84-S375	84-C375	84-B375	84-N375	84-H375
7/16"	.005	.006	.010	.004	2½"	10"	84-S437	84-C437	84-B437	84-N437	84-H437
½"	.005	.006	.012	.005	2½"	10"	84-S500	84-C500	84-B500	84-N500	84-H500
9/16"	.005	.006	.012	.006	2½"	10"	84-S562	84-C562	84-B562	84-N562	84-H562
5/8"	.008	.008	.014	.008	2½"	10"	84-S625	84-C625	84-B625	84-N625	84-H625
¾"	.008	.008	.017	.008	2½"	10"	84-S750	84-C750	84-B750	84-N750	84-H750
7/8"	.010	.010	.017	.010	3"	12"	84-S875	84-C875	84-B875	84-N875	84-H875
1"	.010	.010	.017	.010	3"	12"	84-S1000	84-C1000	84-B1000	84-N1000	84-H1000
1 1/8"	.010	.010	.017	.010	3"	12"	84-S1125	84-C1125	84-B1125	84-N1125	84-H1125
1¼"	.010	.010	.022	.010	3"	12"	84-S1250	84-C1250	84-B1250	84-N1250	84-H1250
1 3/8"	.010	.010	.022	.010	3"	12"	84-1375	84-C1375	84-B1375	84-N1375	84-H1375
1½"	.010	.010	.022	.010	3"	12"	84-S1500	84-C1500	84-B1500	84-N1500	84-H1500
1 5/8"	.010	.010	.022	.010	3½"	18"	84-S1625	84-C1625	84-B1625	84-N1625	84-H1625
1¾"	.012	.012	.022	.012	3½"	18"	84-S1750	84-C1750	84-B1750	84-N1750	84-H1750
2"	.012	.012	.022	.012	3½"	18"	84-S2000	84-C2000	84-B2000	84-N2000	84-H2000
2¼"	.012	.012	.025	.012	4"	18"	84-S2250	84-C2250	84-B2250	84-N2250	84-H2250
2½"	.012	.012	.025	.012	4"	18"	84-S2500	84-C2500	84-B2500	84-N2500	84-H2500
2¾"	.012	.012	.025	.012	4"	18"	84-S2750	84-C2750	84-B2750	84-N2750	84-H2750
3"	.012	.012	.025	.012	4"	18"	84-S3000	84-C3000	84-B3000	84-N3000	84-H3000

SOLUTION SHOWCASE

TUBE BRUSH TIPS

+ Never reverse a twisted in wire brush while in the bore. This will result in filament unraveling
+ Change the handle–most tube brushes can be manufactured with various handle types. If looped or wooden handles are not providing the proper cleaning, request cutting the handles for power.

Turned End vs. Cut End

Turned ends are for bottom end or closed hole applications. The turned end protects the part from being damaged.

Available Turned End Brushes:
Series 85, 90 and 92

Cut ends are used for through hole applications.

Available Cut End
Series 81, 83 and 84

TUBE BRUSHES

SERIES 85 BOTTOM END - FOR CLOSED HOLES

Available in Carbon Steel, Stainless Steel, Brass, Nylon and Natural Bristle

+ Usually cut for power
+ Add "RH" to Cat. No. for Ring Handle
+ Add "WH" to Cat. No. for Plastic Handle
+ Heavy Duty Style Available on Request
+ Consult factory for Price and Availability

							Catalog Numbers				
Dia.	Carbon Steel	Brass	S.S.	6-12 Nylon	Brush Part	Overall	Type 302 Stainless	Hi Temp. Carbon	Brass	6-12 Nylon	Natural Bristle
1/8"			.002		1"	4"	85-S2-125				
1/8"		.003	.003	.005	1"	4"	85-S3-125		85-B125	85-N125	85-H125
5/32"		.003	.003	.005	1"	4"	85-S156		85-B156	85-N156	85-H156
3/16"		.003	.003	.005	1"	4"	85-S187		85-B187	85-N187	85-H187
7/32"		.003	.003	.008	1"	4"	85-S219		85-B219	85-N219	85-H219
1/4"	.006	.005	.004	.008	1¼"	4½"	85-S250	85-C250	85-B250	85-N250	85-H250
9/32"	.006	.005	.004	.008	1¼"	4½"	85-S281	85-C281	85-B281	85-N281	85-H281
5/16"	.006	.005	.004	.008	1¼"	4½"	85-S312	85-C312	85-B312	85-N312	85-H312
11/32"	.006	.005	.004	.008	1¼"	4½"	85-S344	85-C344	85-B344	85-N344	85-H344
3/8"	.006	.005	.004	.010	1¼"	4½"	85-S375	85-C375	85-B375	85-N375	85-H375
13/32"	.006	.005	.004	.010	1¼"	4½"	85-S406	85-C406	85-B406	85-N406	85-H406
7/16"	.006	.005	.004	.012	1¼"	4½"	85-S437	85-C437	85-B437	85-N437	85-H437
15/32"	.006	.005	.005	.012	1¼"	4½"	85-S469	85-C469	85-B469	85-N469	85-H469
1/2"	.006	.005	.005	.012	1½"	5"	85-S500	85-C500	85-B500	85-N500	85-H500
9/16"	.006	.005	.006	.014	1½"	5"	85-S562	85-C562	85-B562	85-N562	85-H562
5/8"	.008	.008	.008	.014	1½"	5"	85-S625	85-C625	85-B625	85-N625	85-H625
11/16"	.008	.008	.008	.014	1½"	5"	85-S687	85-C687	85-B687	85-N687	85-H687
3/4"	.008	.008	.008	.017	1½"	5"	85-S750	85-C750	85-B750	85-N750	85-H750
13/16"	.010	.010	.010	.017	1½"	6"	85-S812	85-C812	85-B812	85-N812	85-H812
7/8"	.010	.010	.010	.017	1½"	6"	85-S875	85-C875	85-B875	85-N875	85-H875
15/16"	.010	.010	.010	.017	1½"	6"	85-S937	85-C937	85-B937	85-N937	85-H937
1"	.010	.010	.010	.017	2"	6"	85-S1000	85-C1000	85-B1000	85-N1000	85-H1000
1¼"	.010	.010	.010	.022	2½"	6½"	85-S1250	85-C1250	85-B1250	85-N1250	
1½"	.010	.010	.010	.022	2½"	6½"	85-S1500	85-C1500	85-B1500	85-N1500	
1¾"	.012	.012	.012	.022	3"	7"	85-S1750	85-C1750	85-B1750	85-N1750	
2"	.012	.012	.012	.022	3"	8"	85-S2000	85-C2000	85-B2000	85-N2000	
2½"	.012	.012	.012	.025	3½"	9"	85-S2500	85-C2500	85-B2500	85-N2500	
3"	.012	.012	.012	.025	4"	10"	85-S3000	85-C3000	85-B3000	85-N3000	

SERIES 86 - TUFTED END BRUSHES

Available on Special Order.

+ Used in clean-room operations.
+ Made with loop handles and stainless steel or nylon fill.
+ Tied tufts prevent scratches by the stem ends.
+ Contact factory with your specifications.

SERIES 87 - CENTER BRUSHES

Available on Special Order.

+ Power one end - Bearing the other.
+ Use in automated set-ups.
+ Contact factory with your specifications.

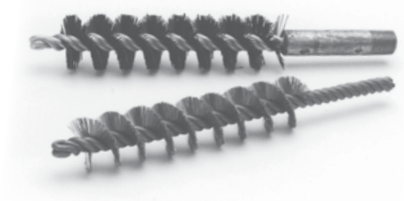
TUBE & FLUE BRUSHES

SERIES 88 - TAPERED BRUSHES

Available on Special Order.

+ Custom made to your tapered requirements.
+ For power operation or handle may be added for hand use.
+ Contact factory with your specifications.

SERIES 89 - CONDENSER TUBE



½" to 4" diameters

Four wire single spiral with or without pipe nipple. Recommended for removing soft deposits (mud, algae, etc.) in straight tubes. Available in Stainless Steel, Carbon Steel, 6-12 Nylon and Brass.

+ 5/16" - 18 I.D. threaded nipple on ½" to 5/8" diameter.
+ 1/8" Pipe Nipple on ¾" diameter.
+ ¼" Pipe Nipple on 7/8" diameter and larger.

Nipples will be attached unless otherwise specified.

SERIES 90 - FLUE BRUSHES

Four wire, Double Spiral, with or without nipple.

+ 1/8" Pipe Nipple on ½" to ¾" diameter.
+ ¼" Pipe Nipple on 7/8" diameter and larger.

Nipples will be attached unless otherwise specified.

Brush Dia.	BP	OAL	All 302 Stainless	Stainless Fill	Hi-Temp. Carbon St.	Wire Size	6-12 Nylon	Nylon Size	Brass Fill	Wire Size
½"	4"	7"	90-SS500	90-S500	90-C500	.008	90-N500	.018	90-B500	.008
5/8"	4"	7"	90-SS625	90-S625	90-C625	.010	90-N625	.018	90-B625	.010
¾	4"	7"	90-SS750	90-S750	90-C750	.010	90-N750	.018	90-B750	.010
7/8"	4"	7"	90-SS875	90-S875	90-C875	.010	90-N875	.018	90-B875	.010
1"	4½"	7½"	90-SS1000	90-S1000	90-C1000	.012	90-N1000	.022	90-B1000	.012
1¼"	4½"	7½"	90-SS1250	90-S1250	90-C1250	.012	90-N1250	.022	90-B1250	.012
1½"	4½"	7½"	90-SS1500	90-S1500	90-C1500	.012	90-N1500	.028	90-B1500	.012
1¾"	4½"	7½"	90-SS1750	90-S1750	90-C1750	.012	90-N1750	.028	90-B1750	.012
2"	4½"	7½"	90-SS2000	90-S2000	90-C2000	.012	90-N2000	.028	90-B2000	.012
2¼"	4½"	7½"	90-SS2250	90-S2250	90-C2250	.012	90-N2250	.032	90-B2250	.012
2½"	4½"	7½"	90-SS2500	90-S2500	90-C2500	.012	90-N2500	.032	90-B2500	.012
2¾"	4½"	7½"	90-SS2750	90-S2750	90-C2750	.012	90-N2750	.032	90-B2750	.012
3"	4½"	7½"	90-SS3000	90-S3000	90-C3000	.014	90-N3000	.032	90-B3000	.012
3½"	4½"	7½"	90-SS3500	90-S3500	90-C3500	.014	90-N3500	.045	90-B3500	.018
4"	5"	8"	90-SS4000	90-S4000	90-C4000	.016	90-N4000	.045	90-B4000	.018

SERIES 92 - ADAPTER TYPE

8-32 Thread

Brush Dia.	Stainless Fill	Hi-Temp. Carbon St.	6-12 Nylon	Brass Fill
5/16"	92-S312	92-C312	92-N312	92-B312
11/32"	92-S344	92-C344	92-N344	92-B344
3/8"	92-S375	92-C375	92-N375	92-B375
7/16"	92-S437	92-C437	92-N437	92-B437
½"	92-S500	92-C500	92-N500	92-B500
9/16"	92-S562	92-C562	92-N562	92-B562
19/32"	92-S594	92-C594	92-N594	92-B594

THREAD CLEANING BRUSHES

BUTTERFLY TYPE

More Product Description:

Available for all popular screw thread sizes from ¼" thru 1¼" diameters, these butterfly type brushes are made in carbon steel, stainless steel, brass and nylon filaments. These brushes are ideal for thread cleaning and deburring and can be used on tapered screw threads.

Carbon Steel Wire Fill

Catalog Number	Dia.	Fill Size	Brush Part	Stem Dia.
BR–¼	¼"	.003	9/16"	3/32"
		.006		
BR–9/32	9/32"	.003	9/16"	3/32"
		.006		
BR–5/16	5/16"	.003	9/16"	3/32"
		.006		
BR–11/32	11/32"	.003	9/16"	3/32"
		.006		
BR–⅜	⅜"	.003	9/16"	3/32"
		.006		
		.008		
BR–13/32	13/32"	.003	9/16"	3/32"
		.006		
		.008		
BR–7/16	7/16"	.003	9/16"	3/32"
		.006		
		.008		
BR–15/32	15/32"	.003	9/16"	3/32"
		.006		
		.008		
BR–½	½"	.003	9/16"	3/32"
		.006		
		.008		
BR–9/16	9/16"	.003	⅝"	⅛"
		.006		
		.008		

Catalog Number	Dia.	Fill Size	Brush Part	Stem Dia.
BR–⅝	⅝"	.003	⅝"	⅛"
		.006		
		.008		
BR–¾	¾"	.003	⅝"	⅛"
		.006		
		.008		
BR–⅞	⅞"	.006	⅝"	⅛"
		.008		
BR–15/16	15/16"	.006	⅝"	⅛"
		.008		
BR–1	1"	.006	⅝"	⅛"
		.008		
BR–1 1/16	1 1/16"	.006	⅝"	⅛"
		.008		
BR–1⅛	1⅛"	.006	⅝"	⅛"
		.008		
BR–1 3/16	1 3/16"	.006	⅝"	⅛"
		.008		
BR–1¼	1¼"	.006	⅝"	⅛"
		.008		
BRR–⅜	⅜"	.006	⅝"	⅛"
BRR–7/16	7/16"	.006	⅝"	⅛"
BRR–½	½"	.006	⅝"	⅛"
		.008		

BUTTERFLY ADAPTERS

Adapters:
BR-8H Adapter for 3/32" stem.
BR-12H Adapter for 1/8" stem.
Order by Catalog Number + Fill Size

Stainless Steel Wire Fill

Catalog Number	Dia.	Fill Size	Brush Part	Stem Dia.
BS–¼	¼"	.005	9/16"	3/32"
BS–15/16	15/16"	.005	9/16"	3/32"
BS–⅜	⅜"	.005	9/16"	3/32"
BS–7/16	7/16"	.005	9/16"	3/32"
BS–½	½"	.005	9/16"	3/32"
BS–9/16	9/16"	.005	⅝"	⅛"
BS–⅝	⅝"	.005	⅝"	⅛"
BS–¾	¾"	.005	⅝"	⅛"
BS–⅞	⅞"	.005	⅝"	⅛"
BS–1	1"	.005	⅝"	⅛"
BS–1¼	1¼"	.005	⅝"	⅛"

Brass Wire Fill

Catalog Number	Dia.	Fill Size	Brush Part	Stem Dia.
BB–¼	¼"	.003	9/16"	3/32"
BB–5/16	5/16"	.003	9/16"	3/32"
		.005		
BB–⅜	⅜"	.003	9/16"	3/32"
		.005		
BB–7/16	7/16"	.005	9/16"	3/32"
BB–½	1/2"	.005	9/16"	3/32"
BB–⅞	⅞"	.005	⅝"	⅛"

Nylon Fill

Catalog Number	Dia.	Fill Size	Brush Part	Stem Dia.
BN–¼	¼"	.010	9/16"	3/32"
BN–⅜	⅜"	.010	9/16"	3/32"
BN–½	½"	.010	9/16"	3/32"
BN–¾	¾"	.010	⅝"	⅛"
BN–⅞	⅞"	.010	⅝"	⅛"

MINIATURE DEBURRING BRUSHES

Miniature brushes are ideal for a variety of small, precision deburring and finishing applications. Suitable for use in a Dremel-type tool.

Miniature Wheels

Catalog Number	Brush Dia.	Fill	Hole Dia.
82A-401	¾"	medium bristle	⅛"
82A-401-1	1"	medium bristle	⅛"
82A-402-1	1"	stiff bristle	⅛"
82A-402-125	1¼"	stiff bristle	⅛"

Miniature Cups

Catalog Number	Approx Dia. at flared end	Fill	Shank Dia.
82B-403	9/16"	.005 crimped steel	3/32"
82B-404	½"	.003 crimped steel	3/32"
82B-405	⅝"	.003 crimped steel	⅛"
82B-407-1	9/16"	stiff bristle	⅛"
82B-407-3	½"	stiff bristle	3/32"

Mandrel Mounted

Catalog Number	Dia.	Fill	Shank	Thick-ness
82C-408	¾"	.003 cr. steel	⅛"	single
82C-411	1"	.003 lv. steel	3/32"	single
82C-412	1"	.003 cr. steel	⅛"	single
82C-413	1"	.005 cr. steel	3/32"	single
82C-414	1"	.005 cr. steel	⅛"	single
82C-415	¾"	.003 cr. brass	3/32"	single
82C-416	¾"	.005 cr. brass	⅛"	single
82C-417	1"	.003 lv. brass	3/32"	single
82C-418	1"	.005 cr. brass	3/32"	double
82C-419	1"	.005 cr. brass	⅛"	single
82C-420	¾"	stiff bristle	3/32"	single
82C-421	¾"	stiff bristle	⅛"	single
82C-422	1"	stiff bristle	3/32"	single
82C-427	¾"	.005 cr. stainless	⅛"	single
82C-428	1"	.005 cr. stainless	⅛"	double

Miniature End

Catalog Number	Dia.	Fill	Shank	OAL
82D-429	3/16"	.003 straight steel	1/8"	2"
82D-430	3/16"	.003 straight brass	1/8"	2"
82D-431	3/16"	stiff bristle	1/8"	2"
82D-432	3/16"	soft bristle	1/8"	2"

PARTS WASH BRUSHES

PARTS WASH BRUSHES

PW-A with Tube

PW-ANT

PW-C

PW-6P

PW-6PNT

PW-1P with Tube

PW-1PNT

PW-4P with Tube

PW-4PNT

PW-34

Brush Research Mfg. is proud to offer the best parts wash brush on the market today. Injection molded Polypropylene handles, synthetic filaments for resistance to most solvent cleaners. Designed to be used in either petroleum-based or water based cleaning solutions. All metal parts are either stainless steel or brass for corrosion resistance. These are superior tools that will make each and every job easier and faster, saving both time and money. All tube fittings are manufactured to allow use on the most popular recirculating parts washers such as Enco, KleerFlo, Safety Kleen and others. The ergonomic styles will reduce any wrist strain and allow for increased pressure during cleaning.

+ Non-Slip Grip
+ Guaranteed not to mushroom
+ Heavy Duty Construction
+ Penetrating Tip

Part No.

PW-A	Flow thru with tube
PW-ANT	Flow thru without tube
PW-C	Non flow thru

The absolute best parts wash brush on the market today! Designed with the professional in mind. Made with synthetic filaments to resist most solvent type cleaners. Supplied with or without a 28" nitrite rubber tubing designed to fit 0.500 to 0.600 O.D. parts washer nozzles.

Part No.

PW-6P	Flow thru with tube
PW-6PNT	Flow thru without tube

A totally new concept in parts washing brushes. The ergonomic handle design reduces wrist fatigue. Made with Polypropylene handles with synthetic filaments to resist most solvent type cleaners.

Part No.

PW-1P	Flow thru with valve and tube
PW-1PNT	Flow thru valve and without tube
PW-4P	Flow thru with valve and tube
PW-4PNT	Flow thru valve and without tube

Both brushes incorporate a unique flow control system that allows you to control the amount of cleaning fluid desired. The large brushing area of the PW-1P makes the cleaning of large areas faster and easier than ever before. The PW-4P is designed for the automotive brake mechanics.

Part No.

PW- ¾	¾" diameter aluminum handle Non flow thru scraper end

Our most popular selling parts wash brush, the PW-34, comes with polypropylene fill.

PWT	28" tubing made of nitrite rubber

CUSTOM BRUSHES FOR DIESEL

Cummins Group
Stainless Steel wire with plastic handle to be used when changing injector while in truck.

Part Number	Wire Size	Major Dia.	Brush Part	Overall Length
NH1	.005 SS	1.175	1½"	14½"
V861	.006 SS	1.155	2 ⅛"	10½"
JC1	.006 SS	1.200	2 ⅛"	10½"
L1	.006 SS	2.050	3 ⅝"	12"

Stainless Steel wire cleans or polishes entire copper. Best used as a bench tool. Cut for power.

Part Number	Wire Size	Major Dia.	Brush Part	Overall Length
NH2	.006 SS	1.625	4 ¼"	10"
V862	.006 SS	1.125	2 ⅛"	10"
JC2	.006 SS	1.350	3 ⅜"	10"
L2	.006 SS	2.250	6 ½"	12"

Carbon Steel wire to be used as a seat brush to insure perfect seating of newly installed coppers. Cut for power.

Part Number	Wire Size	Major Dia.	Brush Part	Overall Length
NH3N	.005 SS	1.175	1 ½"	8 ½"
L3N	.008 SS	2.125	1 ¾"	10"
V863	.010 C/S	1.250	2 ⅛"	10"
JC3	.012 C/S	1.500	3 ¼"	10"
L30	.012 C/S	2.500	6 ½"	12"

Cummins Injector Cup Retainer PTD cleaner brush, of .005 SS fill, shaped to fit ID.
Part No. PTD-1

Cummins Injector Cup for PTD (diameter 5/16" by 1/2" trim length). Tapered-Brass Bridle
Part No. PTD- 2

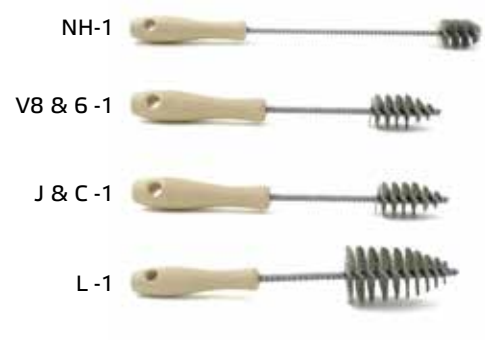
Cummins Injector Cup for PTB 3/8" dia. by 5/8" trim. Tapered-Brass-Bridle

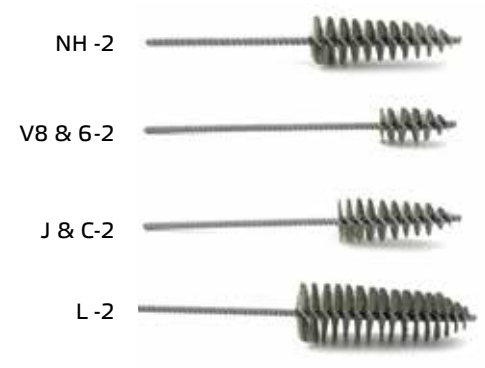
Part No. PTB- 1
Cummins Plunger Bore cleaner brush of medium soft 6-12 type nylon with handle.

Part No. PB
PB then specify diameter wanted. Diameters .400, .450, .500, .550, .850, 1".

Part Number	Wire Size	Major Dia.	Brush Part	Overall Length
PTD1	.006 SS	0.975	2"	10 ½"
PTD2	.005 SS	0.312	1"	6 ½"
PTB1	.005 SS	0.375	1 ¼"	6 ½"

COPPER CLEANING AND SEATING





AUTOMOTIVE BRUSHES

DETROIT DIESEL

DD-1 (149)

DD-1 (53/71/92)

SPECIALS FOR DIESEL OVERHAUL

Stainless Steel wire with plastic handle to be used when changing injector while in truck.

Part Number	Wire Size	Major Dia.	Brush Part	Overall Length
DD1 (149)	.006 SS	1.400	2 ¾"	10½"
DD1 (53/71/92)	.006 SS	1.000	2 3/16"	10½"

Stainless Steel wire cleans or polishes entire copper. Best use as a bench tool. Cut for power.

Part Number	Wire Size	Major Dia.	Brush Part	Overall Length
DD2 (149)	.006 SS	1.625	4 ¾"	10"
DD2 (53/71/92)	.006 SS	1.200	3 ¾"	10"

DD-3 (149)

DD-3 (53/71/92)

DD-3/ NEW STYLE

Carbon Steel wire to be used as a seat brush to insure perfect seating of newly installed coppers. Cut for power.

Part Number	Wire Size	Major Dia.	Brush Part	Overall Length
DD3 (149)	.012 C/S	1.675	5"	10"
DD3 (53/71/92)	.012 C/S	1.300	3 5/8"	10"

CATERPILLAR

For Direct Injection Nozzles
Clean Pre-Combustion Chambers of 1693, 333, 342, 345, 348, 353

Part Number	Wire Size	Major Dia.	Brush Part	Overall Length
CAT 1	.005 SS	0.900	7/8"	10 ½"
CAT 2	.005 SS	0.625	5/8"	10 ½"

INJECTOR CAVITY SEATING BRUSH

To clean the shoulder/washer area. Two small diameter end brushes with .005 stainless steel wire with a brass bridle.

Part Number	Diameter	Brush Part
SB1	¼"	½"
SB2	5/16"	5/8"

DIESEL ENGINE OVERHAUL

Part Number	Diameter	Wire Size	Description
FB5	½"	.005 SS	Flat Bottom
FB75	¾"	.005 SS	Flat Bottom

CSN Set of 1 each 6-12 Nylon 5/16" and 7/32 x 2 x 10
CSS Same set in stainless steel wire

INTERNATIONAL HARVESTER

CRANKSHAFT OIL HOLES

5 1/2" diameter brush of extra heavy .079 nylon filaments for fast and efficient cleaning of "O"-Ring grooves. Comes with small stainless steel hand tool for removing old "O"-Ring and scraping groove when replacing wet sleeves. (John Deere) Other sizes available (consult factory for pricing).

Catalog Number 10-SJD

BLOCK "O" RING GROOVE CLEANER

3" Diameter crimped polypropylene fibers.

Catalog Number SPOKE

SPOKE BRUSH

New style using a 7/32" shank for cleaning valve guides and other small holes.

Part Number	Fill Material	Brush Dia.	Brush Part	Overall Length
VGC312	.008 CS	5/16"	2 ½"	9 ½"
VGC344	.008 CS	11/32"	2 ½"	9 ½"
VGC375	.008 CS	3/8"	2 ½"	9 ½"
VGC438	.008 CS	7/16"	2 ½"	9 ½"

Nylon and stainless steel available on special request.

VALVE GUIDE BRUSHES

Interested in Valve Guide Kits?
Please see our available kits on page 40.

AUTOMOTIVE BRUSHES AND KITS

DEEP WELL END BRUSHES

The Deep Well End Brushes are excellent for detailing. They have been designed so that when the end wears away, the body may be cut back to expose a new brush surface.

Part Number	Size	Brush Part	Fill Material	Body
DEB-1	¼"	4"	.012 Stainless Steel	Brass Tube
DEB-2	⅜"	6"	.017 Stainless Steel	Brass Tube
DEB-5	½"	2 ½"	.020 Carbon Steel	Spring Cup

Do not use on high speed drill motors. 1200 M.S.F. S.

KITS

OIL LINE KIT BRUSHES:
A kit of 9 brushes made in 6-12 Nylon for cleaning the Oil Lines.
Each kit contains:
+ 1 ea. - #1 (1/4" dia.)
+ 2 ea. - #2 (5/16" dia.)
+ 6 ea. - #3 (3/8" dia.).

1 Oil Gallery Kit Contains:
A Kit of 5 brushes made in 6-12 Nylon for cleaning the Oil Galleries.
Each kit contains:
+ 1 ea. - 5 (5/8" x 3" x 34")
+ 1 ea. - 7 (3/4" x 3" x 34")
+ 1 ea. - 8 (3/4" x 3" x 40")
+ 1 ea. - 38 (3/8" x 3" x 34")
+ 1 ea. - 42 (1/2" x 2 3/4" x 34")

1 E Kit Contains:

+ 3 ea. - #1, 1a, 2, 2a / 6 ea. -#3
+ 1 ea. - #4, 5, 6, 7, 8, 9, 38, 41, 42, 46, 10a(5")
+ Total of 29 brushes (Savings on reg. price)

VGNK (Nylon Valve Guide Kit) Contains: 1, 2, 3, 44N, 47N, 48N, 49N

VGCK (Carbon Steel Valve Guide Kit) Contains: 11C, 13C, 14C, 44C, 47C, 48C, 49C

OIL LINE, GALLERY BRUSHES

You can't have a clean engine with just a hot tank and an air hose with water. You need something to take out the old metal chips, the grinding compounds, the sludge and the dirt from the parts you can't see - the oil passageways. We use the finest-quality high-density 6-12 Nylon in our Nylon Brushes.

NYLON

Catalog Number	Dia.	x	Brush Part	x	OAL	Description: 6-12 Nylon
1	¼		x 2		x 10	Small Stiff Brush for Feed Line Holes
1a						Same as #1 but with light fill and flexible stem
2	5/16		x 2 ½		x 12	Stiff Brush for Crankshaft Holes and Valve Guides
2a						Same as #2 but with light fill and flexible stem
3	3/8		x 2 ½		x 12	Same as #2
4	5/8		x 3		x 12	For Feed Lines and Main Bearings
5	5/8		x 3		x 34	Same as #4, but with extra length
6	¾		x 3		x 12	For larger size of Lifter Holes
7	¾		x 3		x 34	For Main Oil Galleries
8	¾		x 3		x 40	For Main Oil Galleries
9	1 1/8		x 3		x 14	For Lifter Holes
38	3/8		x 3		x 34	For Oil Galleries
41	½		x 2 ½		x 12	For Valve Guides
42	½		x 2 ½		x 34	For Main Oil Galleries
44	½		x 2 ½		x 12	Same as #41 but with light fill and flexible stem
46	1¼		x 4		x 12	For Tapered Pin Fitter
47	11/32		x 2 ½		x 12	For Valve Guides
48	13/32		x 2 ½		x 12	For Valve Guides
49	7/16		x 2 ½		x 12	For Valve Guides

CARBON STEEL (FOR THE ROUGH SPOTS)

Catalog Number	Dia.	x	Brush Part	x	OAL	Description: Carbon Steel
11-C	¼		x 2		x 10	Same as #1, but in Carbon Steel Wire
13-C	5/16		x 2 ½		x 12	For Cam Bearing Feed Lines and Valve Guides
14-C	3/8		x 2 ½		x 12	For Cam Bearing Feed Lines and Valve Guides
15	5/8		x 3		x 12	For Push Rod Holes
16	5/8		x 3		x 30	For Oil Galleries
6-C	¾		x 3		x 12	For Larger size Lifter Holes
7-C	¾		x 3		x 34	For Main Oil Galleries
8-C	¾		x 3		x 40	For Main Oil Galleries
18	1 1/8		x 3		x 14	For Lifter Holes
38-C	3/8		x 3		x 34	For Oil Galleries
44-C	½		x 2 ½		x 12	Same as #41, but in Carbon Steel Wire
45	½		x 2 ½		x 34	Same as #42, but in Carbon Steel Wire
46-C	1¼		x 4		x 12	For Tapered Pin Fitter
47-C	11/32		x 2 ½		x 12	For Valve Guides
48-C	13/32		x 2 ½		x 12	For Valve Guides
49-C	7/16		x 2 ½		x 12	For Valve Guides

KNOTTED WIRE WHEEL BRUSHES

MEDIUM FACE - STANDARD TWIST

B-464 Keyway

Common Applications:

+ Rust and Scale Removal
+ Edge Blending
+ Deburring
+ Surface Preparation Before Painting and Plating
+ Finishing
+ Polishing

		Wire Size					
Catalog Number	Dia.	Carbon Steel	Stainless Steel	Arbor Holes	Trim Length	Approx. Running Face Width	Maximum Safe Free Speed (RPM)
BTS-3	3"	.0118 .014 .020	.0118SS .014SS .020SS	3/8", 1/2"	1/2"	7/16"	20,000
BTS-4	4"	.0118 .014 .016 .020	.0118SS .014SS .016SS .020SS	3/8", 1/2" or 5/8" -11"	13/16"	1/2"	20,000
BTS-6	6"	.0118 .014 .016 .023 .030	.0118SS .014SS .016SS	1/2", 5/8"	1 7/16"	5/8"	8,000
BTS-7	7"	.014	.016	1/2", 5/8"	1 11/16"	5/8"	8,000
BTS-8	8"	.0118 .014 .016 .023 .030	.0118SS .014SS .016SS	1/2", 5/8" 3/4"	1 11/16"	3/4"	6,000
B-462	6"	.016		1" w/ 2 keyways (similar to BTS-6)			8,000
B-464	8"	.016		1" w/ 2 keyways (similar to BTS-8)			6,000

WIDE FACE - STANDARD TWIST

		Wire Size			
Catalog Number	Dia.	Carbon Steel	Arbor Holes	Trim Length	Approx. Running Face Width	Maximum Safe Free Speed (RPM)
TW-8	8"	.0118 .016 .025	2"	1 3/4"	1 1/8"	6,000
TW-10	10"	.0118 .016	2"	2 1/4"	1 3/8"	4,500

Note: For TW-8" - TW-10" use ALA adapters. For more information, see pg. 55.

KNOTTED WIRE WHEEL BRUSHES

MEDIUM FACE - CABLE TWIST

Catalog Number	Dia.	Wire Size: Carbon Steel	Wire Size: Stainless Steel	Arbor Holes	Trim Length	Approx. Running Face Width	Maximum Safe Free Speed (RPM)
BTC-4	4"	.014 .020	.014SS .020SS	3/8", 1/2" or 5/8" -11"	13/16"	3/8"	20,000
BTC-6	6"	.023 .030	.023SS .030SS	1/2", 5/8"	1 7/16"	7/16"	8,000
BTC-7	7"	.023 .030		1/2", 5/8"	1 11/16"	1/2"	7,000
BTC-8	8"	.023 .030		1/2", 5/8" 3/4"	1 11/16"	9/16"	6,000

STRINGER BEAD - CABLE TWIST

Catalog Number	Dia.	Wire Size: Carbon Steel	Wire Size: Stainless Steel	Arbor Holes	Trim Length	Approx. Running Face Width	Maximum Safe Free Speed (RPM)
BSTCM-102	4"	.020	.020SS	5/8" -11"	7/8"	3/16"	20,000
BSTCM-115	4 1/2"	.020		5/8" -11"	13/16"	3/16"	12,500
BSTCM-170	6 7/8"	.020	.020SS	5/8" -11"	1 1/4"	3/16"	9,000

Add S to Cat. No. for Stainless Steel

Operator Safety:

1. Always wear eye protection.
2. Observe maximum safe free speed requirements.
3. Keep machine guards in place.
4. Wear appropriate safety clothing.

Specific Applications:

+ Machined Parts
+ Gears
+ Turbine Blades
+ Weld Slag Removal

TOOL TIPS

WIRE BRUSHES

Are you noticing that your brush action/marks are not uniform?

+ Increase trim length/wire length
+ Decrease fill density and brush face
+ Automate the process to eliminate irregularities produced by human error

Are you looking for longer brush life?

+ Increase fill density or brush face width
+ Decrease wire size
+ Use less pressure - Wire Brushes SHOULD NOT BE PUT UNDER EXCESSIVE PRESSURE

Are you having trouble with wire breakage?

+ Use less pressure - Wire Brushes SHOULD NOT BE PUT UNDER EXCESSIVE PRESSURE
+ Decrease wire size

Troubleshooting:

If you're encountering any of these challenges with your wire brushes, try one of these recommended options

(cont'd on page 45)

CRIMPED WIRE WHEEL BRUSHES

MULTI-DUTY NARROW FACE

Brush Characteristics

+ Narrow brushing face
+ High flexibility - long trim
+ Highest quality oil tempered crimped wire
+ Fine to medium coarse brushing action

		Wire Size					
Catalog Number	Dia.	Carbon Steel	Stainless Steel	Arbor Holes	Trim Length	Approx. Running Face Width	Maximum Safe Free Speed (RPM)
BDM-3	3"	.006 .0104 .0118	.006SS .0118SS	⅜" - ½"	½"	⅜"	6,000
BDM-4	4"	.006 .008 .0104 .0118 .014	.006SS .008SS .0104SS .0118SS .014SS	⅜" - ½"	⅞"	⅜"	6,000
BDM-6	6"	.006 .008 .0104 .0118 .014	.006SS .008SS .0104SS .0118SS .014SS	2"	1 ⅛"	½"	4,500
BDM-6B	6"	.005 Brass		⅝" - ½"	1 1/16"	½"	6,000
BDM-8	8"	.006 .008 .0104 .0118 .014	.006SS .0104SS .014SS	2"	1 ½"	½"	4,500

Use AL type adapters for BDM-6" and BDM-8". For more information, see pg. 55.

STANDARD DUTY MEDIUM FACE

Brush Characteristics

+ Premier of medium face wire wheels
+ Absolute lowest end-of-service cost
+ Maximum desirable wire points at brush face
+ Highest quality oil tempered crimped wire
+ Low flexibility
  – fast cutting action
  – long life
+ Uniform brushing action

		Wire Size					
Catalog Number	Dia.	Carbon Steel	Stainless Steel	Arbor Holes	Trim Length	Approx. Running Face Width	Maximum Safe Free Speed (RPM)
BDA-6	6"	.006 .008 .0104 .0118 .014	.006SS .008SS .0118SS .014SS	2"	1⅛"	⅞"	4,500
BDA-7	7"	.006 .0118 .014	 .014SS	2"	1 ⅝"	⅞"	4,500
BDA-8	8"	.006 .0104 .0118 .014	.006SS .0104SS .0118SS .014SS	2"	1 ½"	⅞"	4,500
BDA-10	10"	.006 .0104 .0118 .014 .020	 .014SS	2"	2"	1⅛"	3,600
BDA-12	12"	.0118 .014 .020		2"	3"	1¼"	3,000

Note: BDA-6" - BDA-8" use AL adapters. For BDA-10" - BDA-12" use ALA adapters. For more information, see pg. 55.

CRIMPED WIRE WHEEL BRUSHES

Catalog Number	Dia.	Wire Size: Carbon Steel	Wire Size: Stainless Steel	Arbor Holes	Trim Length	Approx. Running Face Width	Maximum Safe Free Speed (RPM)
BDH-6	6"	.006 .008 .0104 .0118 .014	.006SS .0118SS .014SS	2"	1 1/8"	1 3/8"	4,500
BDH-7	7"	.0118 .014		2"	1 5/8"	1 3/8"	4,500
BDH-8	8"	.006 .0104 .0118 .014 .020	.006SS .014SS	2"	1 ½"	1 3/8"	4,500
BDH-10	10"	.0104 .014 .020		2"	2 1/8"	1 ¾"	3,600
BDH-12	12"	.0118 .014 .020		2"	3"	2"	3,000

Note: BDH-6" - BDH-8" use AL adapters. For BDH-10" - BDH-12" use ALA adapters. For more information, see pg. 55.

Order by catalog number and specify wire size and arbor hole. When ordering stainless steel wire be sure to add the letter S to the catalog number.

Operator Safety:

1. Always wear eye protection.
2. Observe maximum safe free speed requirements.
3. Keep machine guards in place.
4. Wear appropriate safety clothing.

HEAVY DUTY WIDE FACE

Brush Characteristics

+ Wide brushing face
+ Low flexibility
  – fast cutting action
  – long life
+ Highest quality oil tempered crimped wire
+ Heavily filled
+ Uniform brushing action

TOOL TIPS

WIRE BRUSHES

Is your brush not aggressive enough?
+ Increase surface speed
+ Increase wire size
+ Decrease trim length
+ Increase fill density or brush face width

Is your brush too aggressive?
+ Decrease wire size
+ Decrease RPM
+ Decrease face width and fill density
+ Choose a brush with longer wire length

Are you looking for a smoother finish?
+ Switch to an Abrasive Nylon Brush
+ Decrease wire size
+ Choose a brush with longer wire length
+ Increase RPM
+ Increase fill density or brush face width

Are you looking for a rougher finish?
+ Increase wire size
+ Decrease RPM
+ Decrease face width and fill density
+ Decrease trim length

Are you having problems with rolling or peening burrs instead of removing them?
+ Switch to an Abrasive Nylon Brush
+ Increase brush diameter
+ Increase wire size

Are you noticing that your brush action/ marks are not uniform?
+ Increase trim length/wire length
+ Decrease fill density and brush face.
+ Automate the process to eliminate irregularities produced by human error

Troubleshooting:

If you're encountering any of these challenges with your wire brushes, try one of these recommended options

(cont'd from page 43)

TAMPICO & NYLON WHEEL BRUSHES

TAMPICO WHEEL BRUSHES

Catalog Number	Diameter	Arbor Holes	Face Width	Maximum Safe Free Speed (RPM)
CT-2	2"	½"	3/8"	20,000
CT-2½	2½"	½"	3/8"	20,000
CT-3	3"	½"	3/8"	20,000
CT-3½	3½"	½"	½"	20,000
TWA-6	6"	2"	17/32"	6,000
TWA-8	8"	3¼"	17/32"	5,000
TWA-10	10"	3¼"	17/32"	4,500

Note: TWA-6" use ALA adapters. For TWA-"8 -TWA-10" use MA adapters. For more information, see pg. 55.

1. Used for polishing chrome and decorative surfaces
2. Oil and heat resistant
3. Can be used wet or dry
4. Often used in conjunction with a grease-type abrasive or polishing compounds.

NYLON WHEEL BRUSHES

Catalog Number	Diameter	Arbor Holes	Nylon Size	Face Width	Maximum Safe Free Speed (RPM)
CN-1	1"	¼"	.006	¼"	20,000
CN-1 3/8	1 3/8"	¼" or 3/8"	.010	¼"	20,000
CN-1½	1½"	¼" or 3/8"	.010	¼"	20,000
CN-1¾	1¾"	¼" or 3/8"	.006 .010 .016	¼"	20,000
CN-2	2"	½" or 5/8"	.006 .010 .016	3/8"	20,000
CN-2½	2½"	½" or 5/8"	.006 .010 .016	½"	20,000
CN-3	3"	½" or 5/8"	.006 .010 .016	½"	20,000
CN-3½	3½"	½" or 5/8"	.006 .010 .016 .020	½"	20,000
CN-4	4"	½" or 5/8"	.006 .010 .016 .020	½"	20,000
NWA-6	6"	2"	.006 .016 .022	½"	6,000
NWA-8	8"	2"	.006 .016 .022	½"	4,800

Note: For NWA-6" and 8" use ALA adapters. For more information, see pg. 55.

+ Used for light deburring, brushing, cleaning, polishing and surface finishing
+ Excellent fatigue life and resistance to most solvents

Specify catalog number, filament size and arbor hole when ordering.

Operator Safety:

1. Always wear eye protection.
2. Observe maximum safe free speed requirements.
3. Keep machine guards in place.
4. Wear appropriate safety clothing.

WIRE COPPER CENTER WHEEL BRUSHES

			Wire Size		
Catalog Number	Diameter	Arbor Hole	Carbon Steel	Stainless Steel	Maximum Safe Free Speed (RPM)
C-1 ¼	1 ¼"	³⁄₈"	.006 .008		20,000
C-1 ³⁄₈	1 ³⁄₈"	³⁄₈"	.006 .008 .0104 .0118 .014		20,000
C-1 ½	1 ½"	³⁄₈"	.006 .008 .0104 .0118	.006SS	20,000
C-2	2"	½"	.006 .008 .0104 .0118 .014 .020	.006SS .008SS .0104SS .0118SS .014SS	20,000
C-2 ½	2 ½"	½"	.006 .008 .0104 .0118 .014 .020	.006SS .0104SS .0118SS .014SS	20,000
C-2 ½	2 ½"	⁵⁄₈"	.006 .008 .0104 .0118 .014 .020	.006SS .0104SS .0118SS .014SS	20,000
C-3	3"	½"	.006 .008 .0104 .0118 .014 .020	.006SS .008SS .0118SS .014SS	20,000
C-3	3"	⁵⁄₈"	.006 .008 .0104 .0118 .014 .020	.006SS .008SS .0118SS .014SS	20,000
C-3 ½	3 ½"	½"	.006 .008 .0104 .0118 .014 .020	.006SS .008SS .0104SS .0118SS .014SS	20,000
C-4	4"	½"	.006 .008 .0104 .0118 .014 .020	.006SS .008SS .0104SS .0118SS .014SS	20,000
C-4	4"	⁵⁄₈"	.006 .008 .0104 .0118 .014 .020	.006SS .008SS .0104SS .0118SS .014SS	20,000

Copper center wheels are also available in nylon, tampico, abrasive nylon and encapsulation (see pages 24, 46 & 53).

COPPER CENTER WHEEL BRUSHES

Brush Characteristics

+ Small diameter brushing tools
+ Narrow brushing faces
+ Can be mounted in multiples
+ Designed to operate at high speeds
+ Light duty applications

Popular Applications

+ Deburring
+ Edge blending
+ Cleaning - Rust removal
+ Roughing for adhesion
+ Finishing for appearance

WIRE CUP BRUSHES

CRIMPED (LIGHT DUTY USE)

Catalog Number	Dia.	Wire Size: Carbon Steel	Wire Size: Stainless Steel	Arbor Hole	Trim Length	Maximum Safe Free Speed (RPM)
BUC-3	3"	.014	.014SS	5/8" - 11	1"	14,000
BUC-4	4"	.0118 .014 .020	.0118SS	5/8" - 11	1 1/4"	9,000
BUC-5	5"	.014 .020		5/8" - 11	1 1/4"	9,000
BUC-6	6"	.014 .020	.014SS	5/8" - 11	1 3/8"	6,600

KNOT TYPE - SINGLE ROW

Catalog Number	Dia.	Wire Size: Carbon Steel	Wire Size: Stainless Steel	Arbor Hole	Trim Length	Maximum Safe Free Speed (RPM)
BUS-3	2 3/4"	.014		5/8" - 11	7/8"	14,000
BUS-4	4"	.0118 .014 .020	.0118SS .014SS	5/8" - 11	1 1/4"	9,000
BUS-5	5"	.014 .020		5/8" - 11	1 1/4"	7,000
BUS-6	6"	.014 .020 .025	.014SS	5/8" - 11	1 3/8"	6,600

KNOT TYPE - CABLE TWIST

Catalog Number	Dia.	Wire Size: Carbon Steel	Wire Size: Stainless Steel	Arbor Hole	Trim Length	Maximum Safe Free Speed (RPM)
BUSC-3	2 3/4"	.020	.020SS	5/8" - 11	1"	14,000

KNOT TYPE - DOUBLE ROW

Catalog Number	Dia.	Wire Size: Carbon Steel	Wire Size: Stainless Steel	Arbor Hole	Trim Length	Maximum Safe Free Speed (RPM)
BUDX-4	4"	.014 .020	.020SS	5/8" - 11	1 1/4"	9,000

Operator Safety:

1. Always wear eye protection.
2. Observe maximum safe free speed requirements.
3. Keep machine guards in place.
4. Wear appropriate safety clothing.

WIRE END BRUSHES

SOLID END

Catalog Number	Diameter	Wire Size: Carbon Steel	Wire Size: Stainless Steel	Trim Length	Maximum Safe Free Speed (RPM)
BNS-4	½"	.006 .0104 .014 .020	.006SS .0104SS .014SS .020SS	⅞"	20,000
BNS-6	¾"	.006 .0104 .014 .020	.006SS .0104SS .014SS .020SS	⅞"	20,000
BNS-10	1"	.006 .0104 .014 .020	.006SS .0104SS .014SS .020SS	⅞"	20,000

General purpose end brushes used for cleaning castings, blending, polishing dies and removing carbon deposits on piston heads, cylinders and valve seats.

Also available with Nylon, or Brass Fill Material. For Abrasive Nylon see pg. 24.

SOLID END - BANDED

Catalog Number	Diameter	Wire Size: Carbon Steel	Wire Size: Stainless Steel	Trim Length	Maximum Safe Free Speed (RPM)
BNS-4T	½"	.006 .0104 .014 .020	.006SS .0104SS .014SS .020SS	⅞"	20,000
BNS-6T	¾"	.006 .0104 .014 .020	.006SS .0104SS .014SS .020SS	⅞"	20,000
BNS-10T	1"	.006 .0104 .014 .020	.006SS .0104SS .014SS .020SS	⅞"	20,000

SOLID END - COATED CUP PROTECTOR

Catalog Number	Diameter	Wire Size: Carbon Steel	Wire Size: Stainless Steel	Trim Length	Maximum Safe Free Speed (RPM)
BNS-4C	½"	.006 .0104 .014 .020	.006SS .0104SS .014SS .020SS	⅞"	20,000
BNS-6C	¾"	.006 .0104 .014 .020	.006SS .0104SS .014SS .020SS	⅞"	20,000
BNS-10C	1"	.006 .0104 .014 .020	.006SS .0104SS .014SS .020SS	⅞"	20,000

WIRE END BRUSHES

KNOT TYPE END

Catalog Number	Dia.	Wire Size: Carbon Steel	Wire Size: Stainless Steel	Trim Length	Maximum Safe Free Speed (RPM)
BNH-6	¾"	.014 .020	.014SS .020SS	⅞"	20,000
BNH-12	1 1/8"	.014 .020	.014SS .020SS	⅞"	20,000

KNOT TYPE END - BANDED

Catalog Number	Dia.	Wire Size: Carbon Steel	Wire Size: Stainless Steel	Trim Length	Maximum Safe Free Speed (RPM)
BNH-6T	¾"	.014 .020	.014SS .020SS	⅞"	20,000
BNH-12T	1 1/8"	.014 .020	.014SS .020SS	⅞"	20,000

Cup protectors available on knotted end brushes on special request.

SMALL DIAMETER CUP

Catalog Number	Dia.	Wire Size: Carbon Steel	Wire Size: Stainless Steel	Maximum Safe Free Speed (RPM)
BNH-16	1¾"	.006 .0104 .0118	.006SS .0118SS	10,000
BNH-26	2¾"	.0118		8,000

Add S to Cat. No. for Stainless Steel.
Also available in Nylon or Brass fill material. For Abrasive Nylon see pg. 24.

Operator Safety:

1. Always wear eye protection.
2. Observe maximum safe free speed requirements.
3. Keep machine guards in place.
4. Wear appropriate safety clothing.

Brush Characteristics

+ Wide range of sizes and shapes
+ Densely filled
+ Long life
+ Safe high speed operation

Typical Applications

+ Weld cleaning
+ Mold cleaning
+ Polishing tools, discs and molds
+ Spot facing

CIRCULAR END & FLARED BRUSHES

Catalog Number	Dia.	Wire Size: Carbon Steel	Wire Size: Stainless Steel	Maximum Safe Free Speed (RPM)
BNF-10	1"	.006 .008 .020	.006SS .008SS	20,000
BNF-12	1¼"	.006 .008 .020	.006SS	20,000
BNF-14	1½"	.006 .008 .014 .020	.006SS .008SS .020SS	20,000
BNF-26	2¾"	.008 .014 .020	.008SS	15,000
BNF-30	3"	.006 .008 .0104 .014 .020	.006SS .008SS .020SS	15,000
BNF-40	4"	.008	.008SS	15,000

CIRCULAR END

Product Description:

Available in sizes from 1 inch to 4 inches. The circular end type brush provides side cutting action. Will not score the bottom of blind holes. Ideal for use on a drill press or high speed portable tools.

FLARE BRUSHES

The DEB-3, 3x, 4 and 4x Flare Brushes have a cobalt base hard facing which is flame-coated to the ends of stainless steel aircraft cable.

DEB-3

+ 3-Prong Heavy Duty
+ Use with slow RPM drill motor for chipping operation. Suitable for carbon removal from ports, etc.
+ Will cover IDs up to 1 ½"

DEB-4

+ 5-Prong Light Duty.
+ Will flare out at 2,000 RMP for rust and scale removal from pipe IDs. Long life as it does not get hung-up, which will twist cables.
+ Will cover IDs up to 5"

DEB-3x

+ Similar to DEB-3 except with longer prongs up to 4" IDs.
+ For rust removal from pipe IDs at 2,000 RPM.

DEB-4x

+ Similar to DEB-4 except made with longer prongs up to 7" IDs.

Note: Available with threaded stem on special request.

DEB 3

DEB 4

MANDREL MOUNTED COPPER CENTER WHEEL BRUSHES

MANDREL MOUNTED COPPER CENTER

General Applications:

+ Slug and Scale Removal
+ Flash Removal
+ Rust and Paint Removal
+ Carbon Cleaning
+ Weld Cleaning

		Wire Size			
Catalog Number	Dia.	Carbon Steel	Stainless Steel	Approx. Running Face Width	Maximum Safe Free Speed (RPM)
BMC-12	1 ¼"	.006 .008	.006SS .008SS	3/16"	25,000
BMC-13	1 3/8"	.006 .008 .0104	.006SS .008SS .0104SS	3/16"	25,000
BMC-14	1 ½"	.006 .008 .0104	.006SS .008SS .0104SS	¼"	25,000
BMC-16	1 ¾"	.006 .008 .0118 .014	.006SS .008SS .0118SS	5/16"	25,000
BMC-20	2"	.006 .008 .0104 .0118 .014	.006SS .008SS .0104SS	5/16"	25,000
BMC-25	2 ½"	.008 .0104 .0118 .014		5/16"	25,000
BMC-30	3"	.008 .0104 .0118 .014		5/16"	25,000

Note: Speeds greater than 8,000 RPM do not enhance operation of brushes rated at 25,000 max. safe free speed.

MANDREL MOUNTED FLARED

Constructed on ¼" diameter stems. Eliminates the need for separate adapters when installing in chucks or collects of portable tools or drill presses. These brushes are ideal for internal pipe cleaning, carbon removal, and light rust and scale removal.

		Wire Size		
Catalog Number	Dia.	Carbon Steel	Stainless Steel	Maximum Safe Free Speed (RPM)
BMF-14	1 ½"	.006 .008 .0104	.006SS .008SS .0104SS	25,000
BMF-16	1 ¾"	.006 .008 .0118 .014	.006SS .008SS .0118SS	25,000
BMF-20	2"	.006 .008 .0104 .0118 .014	.006SS .008SS .0104SS	25,000
BMF-25	2 ½"	.008 .0104 .0118 .014		25,000
BMF-30	3"	.008 .0104 .0118 .014		25,000

Note: Speeds greater than 8,000 RPM do not enhance operation of brushes rated at 25,000 max. safe free speed.

PILOT BONDING AND ENCAPSULATED BRUSHES

PILOT BONDING

Used for cleaning paint, dirt, rust, and varnish from around rivet and bolt holes. By placing the pilot pin in the rivet or bolt hole the cleaning action is confined. Assures a positive electrical contact to eliminate static electricity buildup.

Catalog Number	Pilot Diameter	Brush Diameter	Wire Size	Brush Part Length
06721	3/32"	½"	.005SS	3/8"
06741	1/8"	½"	.005SS	3/8"
06761	5/32"	½"	.005SS	3/8"
06781	3/16"	½"	.005SS	3/8"
06801	¼"	½"	.005SS	3/8"

Stem Diameter - ¼" max. safe free speed 20,000 RPM.

ENCAPSULATED BRUSHES

Encapsulated wire wheel and end brushes provide remarkably strong brushing action for fast burr removal and uniform surface blending. The encapsulation material creates the short wire trim configuration that gives the fast cutting action characteristic with minimum pressure. Substantially increased safety factor.

Avoid application to surfaces over 180º F. Excessive temperature will soften or melt the encapsulation material.

Type	Catalog Number	Diameter	Wire Size	Arbor Holes	Approx. Running Face Width	Maximum Safe Free Speed (RPM)
End	BNS-6E	¾"	.0104 .020	1/4"		20,000
Wheel	CE-1½	1½"	.008 .0118	3/8"	7/32"	20,000
Wheel	CE-2	2"	.0104 .014	½"	9/32"	20,000
Wheel	CE-3	3"	.0118 .014	5/8"	5/16"	20,000

SOLUTION SHOWCASE

END BRUSH TIPS

End brushes are an excellent solution for applications where space is an issue. An end brush is typically used with a high speed hand-held tool for applications including cleaning, polishing, deburring and surface preparation.

Looking for a more aggressive solution?
Try our Banded End Brushes

Concerned about marring and scratching your work piece?
Try our End Brushes With Cup Protectors. These protectors eliminate the marring and scratching of adjoining surfaces in deep well applications.

MINI-GRINDER CUP & WHEEL BRUSHES

Every major tool company has a series of mini grinders. Most of these have metric threaded spindles and the distributor has been required to carry an extensive inventory of mini grinder brushes. Not anymore. Brush Research Manufacturing has a method to reduce this unnecessary inventory. An adapter nut which fits any combination of mini brushes to mini grinders. All you need to carry are mini grinder brushes with a 5/8" -11 threaded arbor. Reduce your inventory and capital invested. Simply carry a few of the reusable adapter nuts and make life easier.

KNOT TYPE CUP - STANDARD TWIST, SINGLE ROW

Catalog Number	Dia.	Wire Size: Carbon Steel	Arbor Hole	Trim Length	Maximum Safe Free Speed (RPM)
BUS-3	2¾"	.014	5/8" - 11	7/8"	14,000

KNOT TYPE CUP - CABLE TWIST, SINGLE ROW

Catalog Number	Dia.	Wire Size: Carbon Steel	Arbor Hole	Trim Length	Maximum Safe Free Speed (RPM)
BUSC-3	2¾"	.020	5/8" - 11	1"	14,000

KNOTTED WHEEL - STANDARD TWIST

Catalog Number	Dia.	Wire Size: Carbon Steel	Wire Size: Stainless Steel	Arbor Hole	Trim Length	Maximum Safe Free Speed (RPM)
BTS-4	4"	.014	.014SS	5/8" - 11	13/16"	20,000
		.020	.020SS	5/8" - 11	13/16"	20,000

KNOTTED WHEEL - CABLE TWIST TWIST

Catalog Number	Dia.	Wire Size: Carbon Steel	Wire Size: Stainless Steel	Arbor Hole	Trim Length	Maximum Safe Free Speed (RPM)
BTC-4	4"	.014	.014SS	5/8" - 11	13/16"	20,000
		.020	.020SS	5/8" - 11	13/16"	20,000

KNOTTED WHEEL - STRINGER BEAD

Catalog Number	Dia.	Wire Size: Carbon Steel	Wire Size: Stainless Steel	Arbor Hole	Trim Length	Maximum Safe Free Speed (RPM)
BSTCM-102	4"	.020	.020SS	5/8" - 11	7/8"	20,000
BSTCM-115	4½"	.020		5/8" - 11	13/16"	12,500

POWER BRUSH ADAPTERS

THREADED ADAPTERS

Catalog Number	Arbor Adapter	OAL	Stem Dia.	Adapter Type	Max. Brush Diameter
1300	½"	1 7/8"	¼"	Left Hand Threaded	4"
AT1	½"	2 1/2"	¼"	Right Hand Threaded	4"
UA1	½"	2 5/16"	¼"	Left Hand Threaded	4"
UA2	3/8"	2 1/8"	¼"	Chuck Type Mandrel	4"
UA3	¼"	2 1/8"	¼"	Chuck Type Mandrel	2"
UA4	3/8"	1 5/8"	¼"	Left Hand Threaded	4"

METAL ADAPTERS

AL Type: For use with BDM-6" – 8", BDA-6" – 8" and BDH-6" - 8"

Catalog Number	Diameter	Arbor Hole
AL ½	2"	½"
AL 5/8	2"	5/8"
AL 5/8 - ½	2"	5/8 - ½"
AL ¾	2"	¾"
AL 7/8	2"	7/8"
AL1	2"	1"
AL1¼	2"	1¼"
AL1½	2"	1½"

AL

ALA Type: For use with BDA-10" – 12", BDH-10" – 12", TWA-6", TW-8" – 10", NWA-6" -8" and NY-6"

Catalog Number	Diameter	Arbor Hole
AL12A	2"	½"
AL1A	2"	1"
AL34A	2"	¾"
AL5812A	2"	5/8 - ½"
AL58A	2"	5/8"
AL78A	2"	7/8"

ALA

MA Type: For use with TWA-8", TWA-10" and NY-8"

Catalog Number	Fits Inside Diameter	Stocked Arbor Hole	Maximum Arbor Hole
MA3	3¼"	5/8"	2"

MA

SNAP-OUT ADAPTERS

Specify arbor hole size on Plastic Snap-Out Adapters

Catalog Number	Diameter	Arbor Hole	For Use with Single Section Brushes
SA-1214	½"	¼"	Copper Center Brushes
SA-1238	½"	3/8"	Copper Center Brushes Knot type 3" and 4" dia.
SA-5812	5/8"	½"	Copper Center and Wheel thru 8" dia. Knot type 6" thru 8" dia.

THREADED NUT ADAPTERS

Catalog Number	O.D. Thread	"Adapt To" Thread
TNA-3824	5/8" - 11	3/8" - 24
TNA-10125	5/8" - 11	M-10 x 1.25
TNA-10150	5/8" - 11	M-10 x 1.50

HAND SCRATCH BRUSHES

CURVED HANDLE

Catalog Number	Number of Rows	Block Width	Overall Length	Trim Length
Carbon Steel Wire				
B-40	3 x 19	1"	13¾"	1 1/8"
B-41	4 x 19	1 1/8"	13¾"	1 1/8"
B-47 w/ scraper	4 x 19	1 1/8"	14"	1 1/8"
Stainless Steel Wire				
B-740	3 x 19	1"	13¾"	1 1/8"
B-741	4 x 19	1 1/8"	13¾"	1 1/8"
Bronze Wire				
B-840	3 x 19	1"	13¾"	1 1/8"
Nylon				
BN-49	4 x 19	1 1/8"	13¾"	1"
Tampico Fibre				
BT-49	4 x 18	1 1/8"	13¾"	1"
Platers Fine Wire Brushes .006 Stainless Steel Wire				
B-49S	4 x 19	1 1/8"	14"	1"
.006 Brass Wire				
B-39B	3 x 19		13¾"	1 1/8"
B-49B	4 x 19		13¾"	1 1/8"

BLOCK BRUSH

B-200 Chip Removal Brush

Catalog Number	Number of Rows	Block Width	Overall Length	Trim Length
Fine Brass Scrub Brush				
B-210	4 x 11	1 1/8"	3¼"	9/16"
Stiff Brass Scrub Brush, paddle handle				
B-61	9 x 10	2 5/8"	8 7/8"	5/8"
Chip Removal Brush, carbon steel wire, loop handle				
B-200		1 ¼"	5 ½"	1 ½"

SHOE HANDLE

Catalog Number	Number of Rows	Block Width	Overall Length	Trim Length
Carbon Steel Wire				
B-44	4 x 16	1 1/8"	10¼"	1 1/8"
Bronze Wire				
B-844	4 x 16	1 1/8"	10¼"	1 1/8"
Platers Fine Wire Brushes .006 Stainless Steel Wire				
B-46S	4 x 16	1 1/8"	10"	1"
.006 Brass Wire				
B-46B	4 x 16		10¼"	1 1/8"
Carbon Steel Scrub Brush				
B-52	2 x 17	½"	10"	1 ¼"

TOOTH BRUSH STYLE

Hand-Drawn-Wire Fill

Handle Material	Handle Width	Rows	.006 Stainless	.018 Nylon	.006 Brass
No. 93-A Laminated	3/8"	2	93A-S250	93A-N250	93A-B250
Hardwood Plywood	7/16"	3	93A-S375	93A-N375	93A-B375
	½"	4	93A-S500	93A-N500	93A-B500

Staple Set in Poly Handle-7 ¼" OAL		Staple Set in Wood Handle	
No. 93-AP	.006 Stainless Wire fill	No. 93-AW	.006SS Fill
No. 93 APB	.006 Brass fill		
No. 93 APH	Horsehair fill		
No. 93-APP	.006 Phosphor Bronze fill		
No. 93 APN	.012 Nylon fill		

NOTE: Toothbrushes available in standard packages of 12 or 100.

HAND SCRATCH BRUSHES

GARAGE & PATIO SWEEPING

Catalog Number	Block Size	Fill Material	Trim Length	Suggested Handle
Ruffneck-18	18"	Palmyra	4"	H-19

All Handles Sold Separately - Handles suggested are 5"

Catalog Number	Diameter	Length	Handle Finish	Handle End
H-250	15/16"	5'	clear lacquered	threaded metal tip
H-19	15/16"	5'	clear lacquered	threaded end

Handles Available

SCRUB BRUSHES

Catalog Number Prolene Plastic Fill Scrub Brushes	Block Size	Fill Material	Trim Length	Handle Style
622-S/H	5 x 5"	Prolene Plastic	2"	Short Handle
622-L/H	5 x 5"	Prolene Plastic	2"	Long Handle

COUNTER BRUSH

Catalog Number	Block Size	Fill Material	Trim Length
King-8	8"	Horsehair blend	2 ½"

NATURAL BRISTLE VARNISH BRUSHES

Catalog No.	Size	Length	Width	Pack	Trim Style	Handle	Ferrule
601W	*½"	1 ¾"	5/16"	36	Square	Unfinished Wood	Bright Tin
	*3"	1 11/16"	5/16"	24			
	*4"	2"	11/16"	6			
601G	½"	1 ½"	¼"	36	Square	Unfinished Wood	Bright Tin
	1"	1 5/8"	5/16"	36			
	1 ½"	1 5/8"	5/16"	36			
	2"	1 5/8"	5/16"	36			
	2 ½"	1 ¾"	3/8"	12			
	3"	1 ¾"	3/8"	12			
	4"	1 ¾"	3/8"	12			

ACID BRUSH, THROW-AWAY TYPE

#1	3/8"	6" OAL
#2	½"	6" OAL

Finest horse hair fill, tinned metal handle. Nylon available.

ECONOMY PAINT TOUCH-UP

Style 4843 / Size ¼" Flat Camel Hair
Style 1091 / Size 1 Camel Hair

Style 4835

Style 1091

ELECTRONICS APPLICATOR BRUSH

.003 Natural Nylon Fill
1/8" SS Stem with Delrin Handle
5130-2 90 Degree

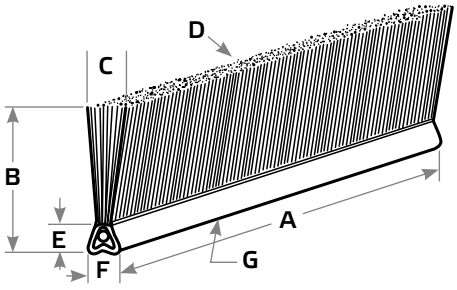
STRIP BRUSHES

STRIP BRUSHES

Catalog Number	Overall Trim	Fill Material	Length	Channel
S-15-06	1½"	.006 Crimped Steel Wire	72"	7
S-15-08	1½"	.008 Crimped Steel Wire	72"	7
S-15-10	1½"	.010 Crimped Steel Wire	72"	7
S-15-14	1½"	.014 Crimped Steel Wire	72"	7
S-25-06	2½"	.006 Crimped Steel Wire	72"	7
S-25-10	2½"	.010 Crimped Steel Wire	72"	7
S-25-14	2½"	.014 Crimped Steel Wire	72"	7
S-2-T	2"	Tampico	72"	7
S-3-T	3"	Tampico	72"	7
S-2-08N	2"	.008 Crimped Black Nylon	72"	7
S-2-10N	2"	.010 Crimped Black Nylon	72"	7
S-2-12N	2"	.012 Crimped Black Nylon	72"	7
S-2-14N	2"	.014 Crimped Black Nylon	72"	7
S-3-20N	3"	.022 Crimped Black Nylon	72"	7
S-1-HH	1"	Stiff Black Horsehair	72"	7
S-25-HH	2½"	Stiff Black Horsehair	72"	7
S-35-Poly Mix	3½"	.014 / .030 Polypropylene Mix	46½"	7
S-5-Poly	5"	.035 Crimped Polypropylene	60"	12

Minimums may apply

CUSTOM STRIP BRUSH SPECIFICATIONS



Please Provide All Dimensions

Application: _____

_____

Quantity: _____

A. Brush Length: _____ E. Backing Height: _____

B. Brush Overall Trim: _____ F. Backing Width: _____

C. Brush Face (if applicable): _____ G. Backing Material: _____

D. Fill Material

Type: _____ (nylon, poly, wire, etc.) Diameter: ____ H. Backing Ends Deburred: _____ (Yes or No)

Color: _____ Style: _____ (crimped or level)

Strip Sizes Available

Approx. Formed Dimensions

Channel Number	Unformed Strip Width	Width	Height
12	1½"	$^{35}/_{64}$"	$^{9}/_{16}$"
10	1¼"	$^{7}/_{16}$"	$^{5}/_{32}$"
8	1"	$^{5}/_{16}$"	$^{3}/_{8}$"
7	$^{7}/_{8}$"	$^{5}/_{16}$"	$^{5}/_{16}$"
5	$^{5}/_{8}$"	$^{7}/_{32}$"	¼"
4	½"	$^{3}/_{16}$"	$^{3}/_{16}$"
3	$^{3}/_{8}$"	$^{5}/_{32}$"	$^{5}/_{32}$"

RADIAL COIL BRUSHES

Please Provide All Dimensions

Application: _____

_____

Quantity: _____

A. Brush Face: _____ I. End Fixtures: ☐ Steel ☐ Aluminum

B. Brush O.D.: _____ ☐ Stainless ☐ Other

C. Fill Material

Type: _____ Diameter: _____ (nylon, poly, wire, etc.)

Color: _____ Style: _____ (crimped or level)

J. Set back (if required): _____

K. Method Brush is Fastened to Core:
☐ Tangs ☐ J-Bolts ☐ Weld
☐ Other

L. Operating RPM: _____

D. Coil Spacing

M. Wet or Dry Application: _____

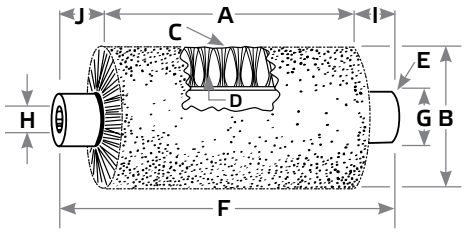
E. Core Material: ☐ Steel ☐ Aluminum ☐ Stainless ☐ Other

N. Additional Information: _____

F. Core Length: _____

G. Core O.D.: _____

H. Bore & Key Size: _____



SPIRAL WOUND BRUSH - COIL ONLY

Application: _____

_____

Quantity: _____

A. Brush Face: _____ C. Brush I.D.: _____

B. Brush O.D.: _____ G. Operating RPM: _____

E. Fill Material

H. Wet or Dry Application: _____

Type: _____ Diameter: _____ (nylon, poly, wire, etc.)

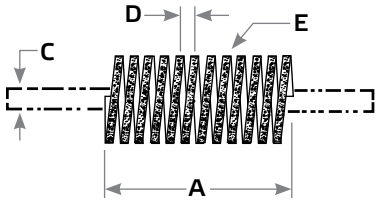
Color: _____ Style: _____ (crimped or level)

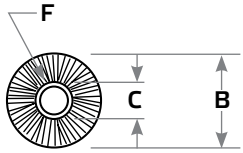
I. Additional Information: _____

D. Coil Spacing: _____

F. Backing Strip Size & Material: _____

_____





POWER BRUSH ENGINEERING GUIDE

Horsepower Required To Drive Brushes

Four Common Factors Governing the Horsepower Necessary to Drive a Power Brush

1. Brushing pressure required.
2. Resistance between work surface and brush (trim length).
3. Speed of the brush.
4. Brush face width.

Horsepower Approximation Guide
(Based upon the medium brushing action for 1″ brush face)

Brush Dia.	Motor Size	RPM
4″	1/4 hp	3450
6″	1/2 hp	3450
8″	3/4 hp	3450
10″	1 hp	1750
12″	1 hp	1750
15″	1½ hp	1750

Wider face brushes require additional horsepower dependent upon the relative brush load. Long trim brushes can usually be operated with less horsepower than short trim brushes.

Recommended Surface Speeds for Brushing Applications

Application	Surface Ft. / Minute
Removing Burrs	5500 to 7500
Removing Scale	7500 to 10000
Cleaning Welds	7200 to 9400
Edging Blending	4700 to 7500
Cleaning DRY	4000 to 5000
Cleaning WET	1900 to 4000
Surface Polishing	6400 to 8000
Surface Blending	8000 to 10000

Brushing Action

There are many variables in Power Brushing conditions. In many cases, one or more Power Brushes may accomplish the same results; however, if one brush does not accomplish the desired results, follow the suggestions below:

Desired Change in Results
+ Suggested Change in Brush

Faster Action
+ Run brush faster
+ Use heavier wire or filament
+ Use brush with shorter trim length
+ Use larger diameter brush

Finer Finish
+ Use finer wire or filament
+ Try tampico or abrasive nylon filament brush

Reach Irregular Surface Area
+ Use Brush with longer trim length for greater flexibility

Longer Life
+ Use finer wire and longer trim

Remove Burr Instead Of Roughing or Preening It
+ Increase brush speed
+ Use brush with shorter trim
+ Check brushing pressure to determine if tips are cutting not wiping.

Note: The speed at which the brush rotates is an extremely important factor.
(See Table of Surface Speeds).

Portable Tools
The maximum recommended diameter brush to use with electric or air portable tools is 6″.

Table of Surface Speeds (Peripheral Speed in Ft./Min.)

RPM	1" Dia	2" Dia	3" Dia	4" Dia	6" Dia	7" Dia	8" Dia	10" Dia	12" Dia	14" Dia	15" Dia
900	236	471	707	942	1414	1649	1885	2356	2827	3299	3534
1150	301	602	903	1204	1806	2107	2409	3011	3613	4215	4516
1200	314	628	942	1257	1885	2199	2513	3142	3770	4398	4712
1500	393	785	1178	1571	2356	2749	3142	3927	4712	5498	5891
1750	458	916	1374	1833	2749	3207	3665	4582	5498	6414	6872
2000	524	1047	1571	2094	3142	3665	4189	5236	6283	7330	7854
2400	628	1257	1885	2513	3770	4398	5027	6283	7540	8796	9425
2800	733	1466	2199	2932	4398	5131	5864	7330	8796	10263	10996
3000	785	1571	2356	3142	4712	5498	6283	7854	9425	10996	11781
3200	838	1676	2513	3351	5027	5864	6702	8378	10053	11729	12566
3400	890	1780	2670	3560	5341	6231	7121	8901	10681	12462	13352
3750	982	1964	2945	3927	5891	6872	7854	9818	11781	13745	
4000	1047	2094	3142	4189	6283	7330	8378	10472	12566		
4500	1178	2536	3534	4712	7069	8247	9425	11781	14137		
5000	1309	2618	3927	5236	7854	9163	10472	13090			
5400	1414	2827	4241	5655	8482	9896	11310				
6000	1571	3142	4712	6283	9425	10996	12566				

Power Brush Safety Requirements

Warning In normal power brushing operations, the material being removed, such as burrs, scale, dirt, weld slag, or other residue, will fly off the brush with considerable force along with brush filaments which break off due to fatigue.

The potential for serious injury exists for both the brush operator and others in the work area (possible 50 or more feet from the brush). To protect against this hazard, ***wear safety goggles or full face shields worn over safety glasses with side shields, along with protective clothing.***

You must follow all operator and safety instructions, as well as all common safety practices which reduce the likelihood of physical injury, or reduce its severity.

Summary of Power Brush Safety Requirements

Safety Goggles Safety goggles or full face shields worn over safety glasses with side shields ***must be worn by ALL operators and others in the area*** of power brush operations. Comply with the requirements of ANS Z87.1-1979 "Occupational Eye and Face Protection"

Guards Keep all machine guards in place.

Speeds Observe all speed restrictions indicated on brushes, containers, labels, or printed in pertinent literature. "MSFS" means Maximum Safe Free Speed (RPM) - spinning free with no work applied. For reasons of safety "MSFS" should not be exceeded under any circumstances.

Safety Standard Comply with the Safety Standards of the Industrial Division of the American Brush Manufactures Association and the American National Standards Institute ANSI B165.1 - 1985 - Safety Requirements - Power Brushes and ANSI B165.2 - 1982 "Safety Requirements - Power Brushes - Wood, Plastic, or Composition Hubs."

Protective Equipment Appropriate protective clothing and equipment must be used where there is a possibility of injury that can be prevented by such clothing or equipment.

***Warning!** Failure to observe safety precautions may result in injury.

Brush Usage Recommendations

Pressure Avoid excessive pressure when using a power brush. Excessive pressure causes over-bending of the filaments and heat build up resulting in filament breakage, rapid dulling, and reduced brush life. Instead of greater pressure on a brush, it is suggested that you try:

1) a brush with a more aggressive cutting action (increased wire size decrease filament length, change to a different brush type, i.e., knot type instead of crimped wire type), or
2) higher speed (increased R.P.M., increased brush diameter.)

***Important Note:** Never exceed the recommended Maximum Safe Free Speed R.P.M. (MSFS) rating of the brush.

Brushing Problems ***Do Not Allow Unsafe Conditions To Continue.*** Occasionally, due to worn bearings, a bent spindle, an unusual application, operator abuse, or inappropriate use, a brush may fail. A brush which is not received in acceptable condition for trouble-free operation may also fail. Do not use or continue to use a failed brush or one which is functioning improperly (i.e., throwing filaments, out-of balance etc.) as this increases the possibility for further brush failure and hazard of injury. The cause of the failure should be evaluated and corrected.

This information is based on the collective experience of the ABMA Industrial Division members and provided solely as a public service for the guidance of the users of the members' products. These recommendations are not necessarily complete with respect to any particular application and common sense safety considerations should be adhered to generally. Any applicable federal, state, local law or regulation, must be strictly adhered to, and is controlling over any recommendation contained herein.

Safety Instructions for Flex-Hone® and Twisted-In-Wire Brushes

The Flex-Hones® and Twisted-In-Wire brushes, used under power, shall be securely held in a collet, chuck or similar holding device.

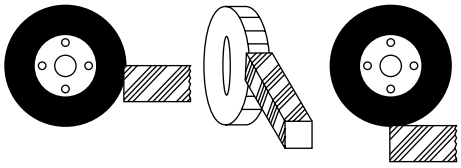
The operator shall secure the unit being honed or brushed and position all guards before starting the tool. The arrangement of the workplace shall ensure rotation of the brush on the true centerline to avoid deflection that may instantly multiply to destructive bending.

The shank of a Twisted-In-Wire brush and/or Flex-Hone®, because of its basic construction, is not inherently as strong as the shank on most other brushes.

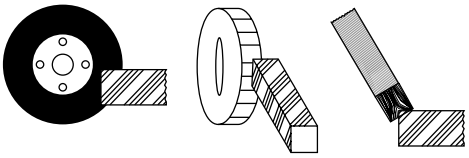
Therefore, it is even more important that the tool length be no longer than necessary to perform the work, and that other conditions of use avoid load applications and speed of rotation that will cause the shank to deflect, and therefore bend, instantly resulting in total destruction of the brush and creating an unsafe condition for the operator.

Failure to observe any requirements shown in the safety section will create safety hazards and can cause injury.

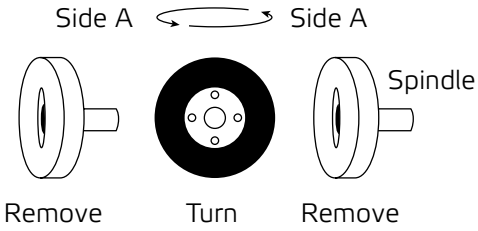
Correct
Tips doing the work



Incorrect
Excessive pressure can cause wire breakage



Self-Sharpening
When using wire wheel brushes, periodically reverse the direction of rotation to take advantage of the self-sharpening action that will result. This may be accomplished by removing the brush from the spindle and turning it side for side, and remounting securely.



WWW.BRUSHRESEARCH.COM

4642 FLORAL DRIVE, LOS ANGELES, CA 90022

P: 323-261-2193 F: 323-268-6587 EMAIL:SALES@BRUSHRESEARCH.COM