

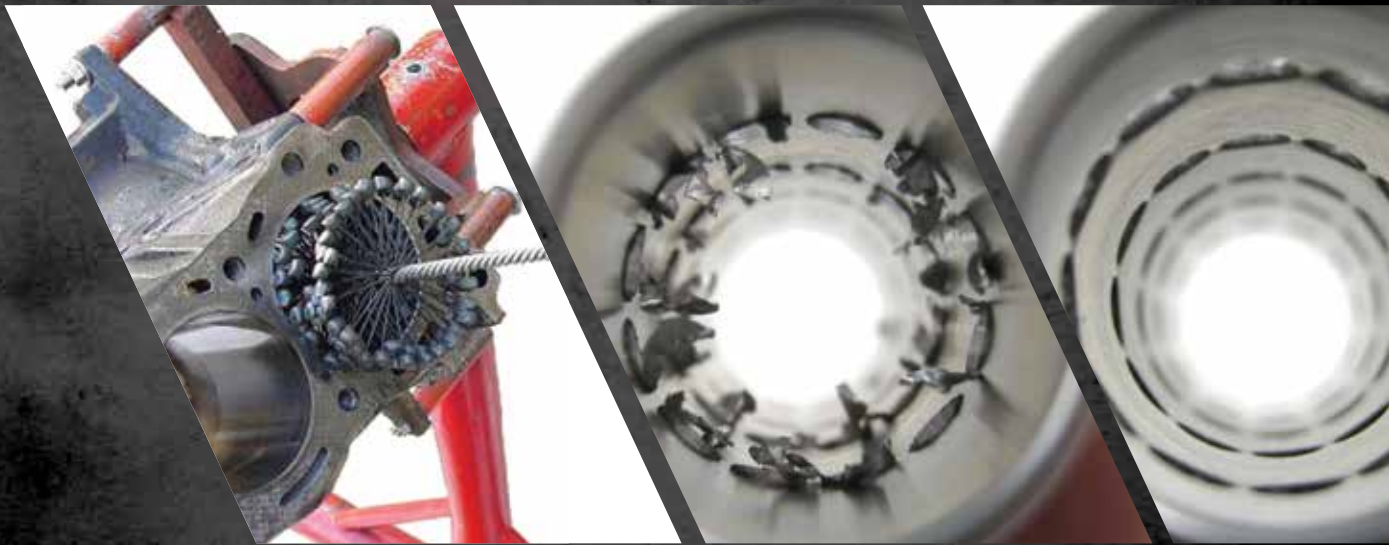
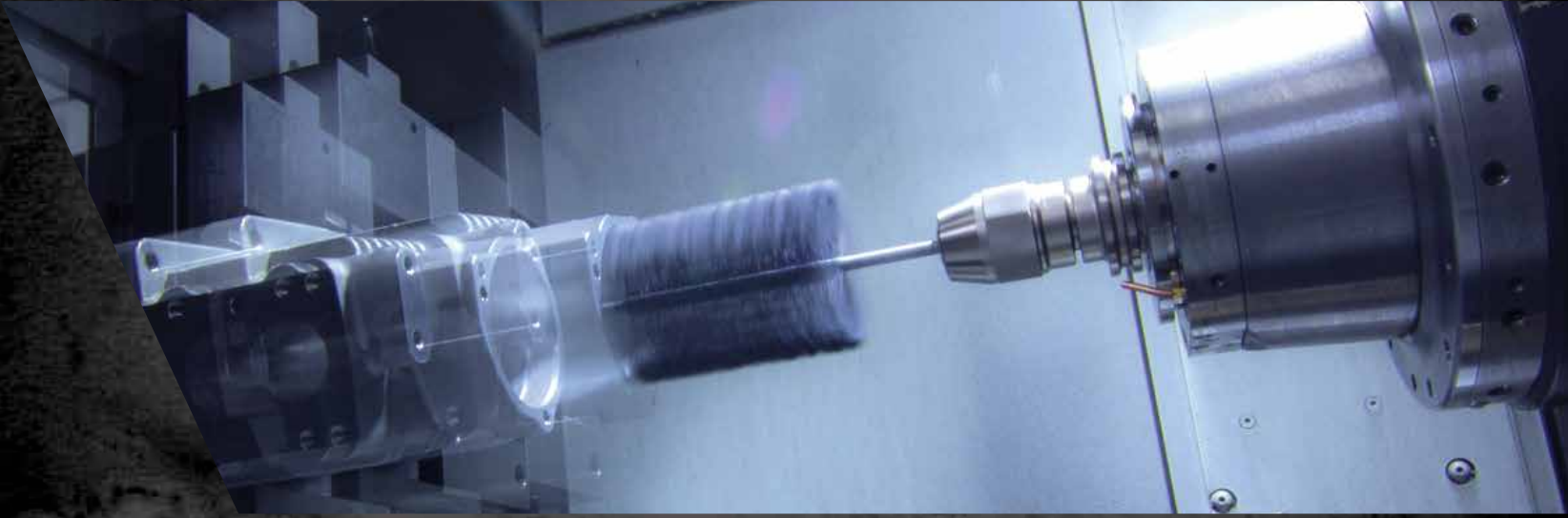
# FLEX-HONE®

FOR ANY TYPE OR SIZE OF CYLINDER

INNOVATORS IN  
BRUSH TECHNOLOGY



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BRUSH RESEARCH  
MANUFACTURING

The Flex-Hone® Tool is a resilient, flexible honing tool with a soft cutting action. Whether it's deburring a hole or blending an edge, the Flex-Hone will provide a superior surface finish with a non-directional or crosshatched pattern. This results in increased product performance and longer product life. The Flex-Hone is designed for a variety of automotive, hydraulic, pneumatic and industrial applications in sizes from 4mm- 36".



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# FLEX-HONE®

The Flex-Hone® Tool produces a controlled surface condition unobtainable by any other method. The process involves finish, geometry and metallurgical structure. A high percentage plateaued surface is free of cut, torn and folded metal.

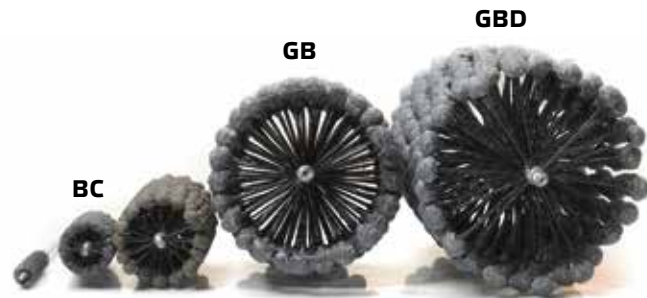
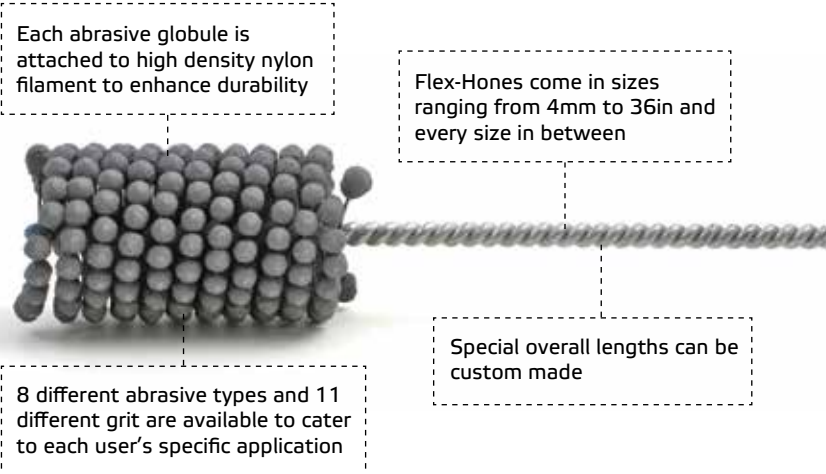
Specifically, the process is a low-temperature, low-pressure abrading system that exposes the undisturbed base metal structure to produce a long wearing surface; one that is metallurgically free of fragmented, amorphous or smeared metal from previous machining operations. A non-directional or crosshatched pattern is created on the surface that contains valuable valleys between the plateaus for oil retention.

The Flex-Hone® Tool is a resilient, flexible honing tool with a soft cutting action. Its unique construction allows the abrasive globules or "stones" to float, assuring the tool will be self-centering, self-aligning to the bore and self-compensating for wear.

Whether your need is cross hole deburring, surface finishing or edge blending, there is a Flex-Hone® Tool designed for you. In Automotive, Hydraulic, Pneumatic or Industrial applications, The Flex-Hone® Tool will provide a superior surface finish bringing increased product performance, longer product life and less product reject.

The Flex-Hone® Tool removes peaks and other imperfections in cylinder walls, creating a desirable plateaued finish.

The result is reduction in localized heat and friction and improved performance.

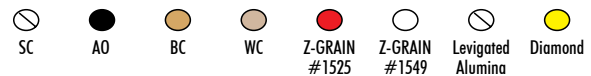


## Grit Type



## Color Marked on Tip of Hone

## Abrasive Type



## Color Marked on Stem of Hone

## APPLICATIONS

AIR COMPRESSORS  
 HYDRAULIC RAM CYLINDERS  
 HYDRAULIC VALVE BODIES & VALVE GUIDES  
 HYDRAULIC MOTOR BODIES  
 PNEUMATIC CYLINDERS  
 SURFACE FINISHING OF BOILER COMPONENTS  
 COMPRESSED AIR TOOL BODIES  
 BRAKE CYLINDERS (WHEEL)

CLUTCH AND BRAKE MASTER CYLINDERS  
 FINISHING OF STAINLESS STEEL TUBING  
 BRAKE ROTORS  
 ENGINE CYLINDERS AND BLOCK LINERS  
 BARRELS AND CHAMBERS FOR FIREARMS  
 MUSICAL INSTRUMENTS  
 AND MANY MORE



# FLEX-HONE BENEFITS

## SURFACE FINISHING



Abrasive Types	Grit Sizes										
	20	40	60	80	120	180	240	320	400	600	800
SC = Silicon Carbide	X	X	X	X	X		STANDARD			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											
Diamond											
CBN and Ceramic											

Available in extra fine grit only  
Diamond is available in mesh 170/200, 800 and 2500  
Available on special order

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.

## NEED HELP SELECTING THE RIGHT FLEX-HONE®?

We have technical assistance available during our regular business hours. Please call (323)261-2193 or email [technical@brushresearch.com](mailto:technical@brushresearch.com) to get assistance with any of your applications. Also, see our How to Order a Flex-Hone® section on the [www.brushresearch.com](http://www.brushresearch.com) website.

## 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. The Flex-Hone Tool should be well coated with lubricant and rotating prior to entry and should continue rotating until fully removed from the part. The tool can be run from 60 to 1200 RPM, depending on tool diameter. The smaller the diameter, the higher the spindle speeds. Start with a spindle speed between 500-800RPM. You may need to experiment to find the optimum speed for your application. Never exceed 1200 RPM.

The Flex-Hone Tool must always be used with a good quality cutting oil or honing fluid to keep heat to a minimum, prevent the tool from

loading and to suspend the material being removed. 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 45° crosshatch finish.

Use the minimum honing time needed to achieve the required finish. Average honing time is 10-25 seconds, (5-15 strokes). Clean the cylinder using hot, soapy water and brush the cylinder wall 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.

# FLEX-HONE SIZES

## BC FLEX-HONE®

STANDARD DUTY  
4MM - 3/16" ARE 6"  
OAL  
BAL. 8" OAL



### Order by Bore Size

Catalog Number	Catalog Number	Catalog Number
BC 4mm (.157")	BC 12mm (.472")	BC 1 1/2" (38mm)
BC 4.5mm (.177")	BC 1/2" (12.7mm)	BC 1 5/8" (41mm)
BC 3/16" (4.75mm)	BC 14mm (.552")	BC 1 3/4" (45mm)
BC 5mm (.197")	BC 5/8" (16mm)	BC 1 7/8" (48mm)
BC 5.5mm (.217")	BC 18mm (.709")	BC 2" (51mm)
BC 6mm (.234")	BC 3/4" (19mm)	BC 2 1/8" (54mm)
BC 6.4mm (.250")	BC 20mm (.787")	BC 2 1/4" (57mm)
BC 7mm (.276")	BC 7/8" (22mm)	BC 2 3/8" (60mm)
BC 8mm (.315")	BC 15/16" (23.8mm)	BC 2 1/2" (64mm)
BC 9mm (.354")	BC 1" (25.4mm)	BC 2 5/8" (67mm)
BC 9.5mm (.375")	BC 1 1/8" (29mm)	BC 2 3/4" (70mm)
BC 10mm (.394")	BC 1 1/4" (31.8mm)	BC 2 7/8" (73mm)
BC 11mm (.433")	BC 1 3/8" (35mm)	BC 3" (76mm)

## DBC FLEX-HONE®

STANDARD DUTY  
5" OAL

### Order by Bore Size

Catalog Number	Catalog Number
DBC 1 1/2" (38mm)	DBC 2 1/2" (64mm)
DBC 1 3/4" (45mm)	DBC 2 3/4" (70mm)
DBC 2 1/8" (54mm)	DBC 3 1/8" (79mm)



## GB FLEX-HONE®

STANDARD DUTY  
13 1/2" OAL

### Order by Bore Size

Catalog Number	Catalog Number
GB 3 1/4" (83mm)	GB 4 1/8" (105mm)
GB 3 1/2" (89mm)	GB 4 5/8" (118mm)
GB 3 3/4" (95mm)	



## GBD FLEX-HONE®

HEAVY DUTY  
3 - 4 1/2" DIA. ARE  
13 1/2" OAL  
BAL. 17 1/2" OAL

### Order by Bore Size

Catalog Number	Catalog Number
GBD 3" (76mm)	GBD 5" (127mm)
GBD 3 1/4" (83mm)	GBD 5 1/2" (140mm)
GBD 3 1/2" (89mm)	GBD 6" (152mm)
GBD 3 3/4" (95mm)	GBD 6 1/2" (165mm)
GBD 4" (101mm)	GBD 7" (178mm)
GBD 4 1/4" (108mm)	GBD 7 1/2" (190mm)
GBD 4 1/2" (114mm)	GBD 8" (203mm)



AVAILABLE IN SIZES UP TO 36" STANDARD

## FLEX-HONE® FOR ROTORS

Produce the ideal surface finish on automotive and motorcycle disc brake rotors, automotive flywheels and clutch plates.

### Order by Bore Size

Catalog Number	Grit
RMFH240Z25	Fine
RMFH120Z25	Medium
RMFH60Z25	Coarse

