

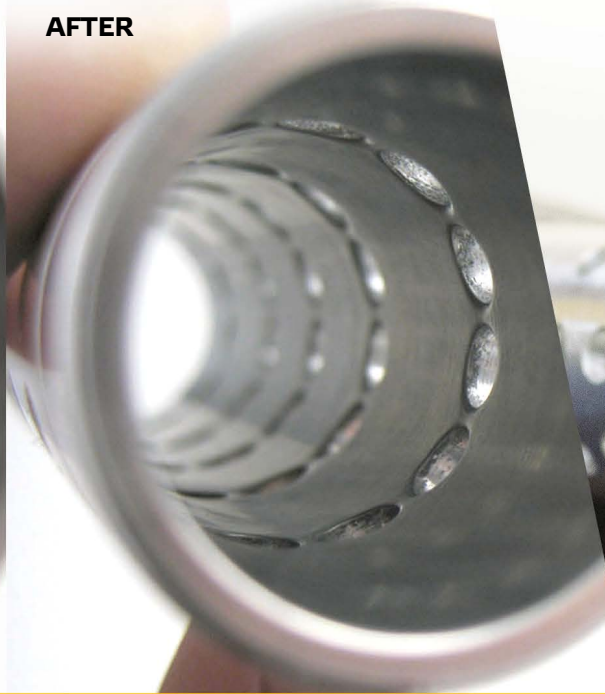
# FLEX-HONE® CROSSHOLE DEBURRING



**BEFORE**



**AFTER**



## THE FLEX-HONE DEBURRED 48 CROSS HOLES IN 12 SECONDS!

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 and finish numerous crossed drilled holes simultaneously in a single set up through the main bore. This 7/8" aluminum tube had 48 drilled cross holes that were 7/32" in diameter. The Flex-Hone deburred this ID removing torn and folded metal with minimal time or effort while creating an optimal finish. With any deburring operation using the Flex-Hone, always use the tool in one direction for a few strokes, remove the tool from the bore, reverse the spindle and then stroke the tool for a few more passes in the opposite direction. This creates a symmetrical deburring pattern.

For more information see: [info.brushresearch.com/download-flex-hone-resource-guide](http://info.brushresearch.com/download-flex-hone-resource-guide)

### PRODUCT

### DETAILS

### OPERATING

### PARAMETERS

**BRUSH PART ID**

BC78120AO

**DESCRIPTION**

7/8" DIAMETER 120 GRIT ALUMINUM OXIDE FLEX-HONE

**ADDITIONAL EQUIPMENT**

- VIRTUALLY ANY ROTATING SPINDLE
- FLEX-HONE OIL

- SPEED - 1000 RPM
- FEED - 240 IPM
- 3 PASSES CLOCKWISE
- 3 PASSES COUNTER CLOCKWISE



### BENEFITS

#### DIRECT BENEFITS

- ONLY 12 SECONDS PER PART/.25 SECONDS PER CROSSHOLE
- LESS THAN .0005" OF MATERIAL REMOVED
- DEBURRS ALL CROSS HOLES SIMULTANEOUSLY
- REMOVE TORN AND FOLDED METAL WHILE CREATING A PLATEAUED FINISH
- PROVIDES RADIUS ON CROSSHOLES

#### INDIRECT BENEFITS

- AUTOMATE DEBURRING
- INCREASE THROUGHPUT
- INCREASE QUALITY AND CONSISTENCY
- REDUCE SCRAP FROM MANUAL DEBURR ERRORS
- REDUCE MANUAL AND SECONDARY DEBURRING PROCESS



BRM

APPLICATIONS





## CARBIDE RINGS

## DIAMOND FLEX-HONE®



BEFORE FLEX-HONE®

AFTER FLEX-HONE®

**Ideal for for carbide, ceramic and hardened tool steel.** We have engineered our Diamond Flex-Hone using resin bond diamond crystals that have high friability. A crystal with high friability creates self sharpening edges. The result is a tool that is free cutting with a rapid cut-rate that produces an optimal finish. Brush Research has been in the business of solving difficult finishing and deburring problems with brushing technology since 1958. You can count on Brush Research to develop innovative solutions.

**A manufacturer of carbide wear rings was having difficulty achieving their required surface finish. In this instance, the Diamond Flex-Hone was used in progressively finer grits to create a near mirror finish lowering Ra from 0.7 to 0.05 µm.**

## QUALITY TOOLS - MADE IN USA

### DIAMOND PART NUMBERS

### CBN PART NUMBERS

BORE DIAMETER	OAL	DIAMOND PART NUMBERS			CBN PART NUMBERS		
		170/200 MESH	800 MESH	2500 MESH	170/200 MESH	800 MESH	2500 MESH
4MM (.157")	6"	5HXT3	337WD5	337VG7	352LN7	352LN9	352LN8
4.5MM (.177")	6"	337VX9	337WF5	337WE1	352LN4	352LN6	352LN5
3/16" (4.75MM)	6"	5HXT9	337VF1	337VD3	352LM8	352LN0	352LM9
5MM (.197")	8"	337VE8	337VD9	337VX7	352LP6	352LP8	352LP7
5.5MM (.217")	8"	337VF0	337VZ2	337VG2	352LP0	352LP2	352LP1
6MM (.236")	8"	337WD2	337VC7	337WE7	352LR2	352LR4	352LR3
6.4MM (.250")	8"	5HXV1	337VF3	337WM8	352LP9	352LR1	352LR0
7MM (.276")	8"	337WE6	337VC8	337VX8	352LR6	352LR8	352LR7
8MM (.315")	8"	5HXV7	5HXV8	5HXV9	352LR9	352LT1	352LT0
9MM (.354")	8"	337VD5	337WE5	5HXW2	352LT5	352LT7	352LT6
9.5MM (.375")	8"	337VZ4	337VE7	337WF3	352LT2	352LT4	352LT3
10MM (.394")	8"	337VE4	337WE0	337VY7	352LK1	352LK3	352LK2
11MM (.433")	8"	337VF4	337VG8	337WE2	352LK7	352LK9	352LK8
12MM (.472")	8"	337VF6	337WF6	337VC2	352LL3	352LL5	352LL4
1/2" (12.7MM)	8"	5HXX5	5HXX6	5HXX7	352LL0	352LL2	352LL1
14MM (.552")	8"	337VG0	337VG5	337VC3	352LL7	352LL9	352LL8
5/8" (16MM)	8"	337VY3	337VD0	337WF0	352LP3	352LP5	352LM1
18MM (.709")	8"	337VC5	337VF2	337WF0	352LM0	352LM2	352LM1
3/4" (19MM)	8"	5HXY7	337VE1	337VE6	352LN1	352LN3	352LN2
20MM (.787")	8"	337VG4	5HXZ1	337WE4	352LM3	352LM5	352LM4
7/8" (22.2MM)	8"	337WF7	337VE2	337WE9			
15/16" (23.8MM)	8"	337WD9	337VG6	337VF8			
1" (25.4MM)	8"	337WF2	337VZ0	337VY2			
1-1/8" (29MM)	8"	337VY4	337VY9	337WF1			
1-1/4" (31.8MM)	8"	337VE3	337VZ1	337VY8			
1-3/8" (35MM)	8"	337VD8	337VD7	337VG3			
1-1/2" (38MM)	8"	337VE9	337VF9	337VY1			

\*Order by bore diameter. Other sizes available on special order. Items listed above are Grainger Part Numbers.



## CBN FLEX-HONE®

**Ideal for high nickel alloy steels.** Nickel alloy steels, or Superalloys, offer a combination of excellent corrosion resistance, strength, toughness, metallurgical stability and weldability. They offer outstanding heat and corrosion properties making them an ideal choice for applications requiring chemical resistance and strength at elevated temperatures. The machining characteristics of these materials vary but all have properties in common which affect their machinability. Nickel alloy steels exhibit properties of high ductility and work hardening that produce a gummy machining behavior. Common suggestions include keeping cutting pressure and temperature low to avoid work hardening. **CBN Flex-Hones combines the highest hardness with excellent toughness to provide the optimum surface finish.**



\* Also available in Silicon Carbide, Aluminum Oxide, Boron Carbide, Z-Grain and Levigated Alumina in 11 grits to tackle different materials.

FOR MORE INFORMATION CONTACT YOUR GRAINGER REPRESENTATIVE OR VISIT [GRAINGER.COM](http://GRAINGER.COM)®

AVAILABLE THROUGH

**GRAINGER**  
FOR THE ONES WHO GET IT DONE

# GRIT SELECTION

# FLEX-HONE®

The amount of work to be performed and the degree of surface finish improvement required govern grit selection. Coarse finishes may require progressively finer Flex-Hones to meet final surface finish requirements. In very general terms, final finish will be in the following ranges. This chart is intended to offer a starting point in selecting a grit but the final selection must be verified by actual trial.

GRIT	FINISH RANGE
800-LA (2500 MESH)	Ra 3-10 (.05 – .2 Micrometer)
600	Ra 8-12 (.2 – .3 Micrometer)
400 (800 MESH)	Ra 10-20 (.3 – .6 Micrometer)
320	Ra 18-30 (.5 – .7 Micrometer)
240	Ra 24-32 (.6 – .8 Micrometer)
180 (170/200 MESH)	Ra 30-40 (.7 – 1.0 Micrometer)
120	Ra 35-50 (.9 – 1.4 Micrometer)
80	Ra 45-64 (1.2 – 1.6 Micrometer)
60	Ra 60-80 (1.5 – 2 Micrometer)
40	Ra 70-125 (1.7 – 3.2 Micrometer)
20	Ra 125-250 (3.2 – 6.3 Micrometer)

**Grit Type**

Color Marked on Tip of Hone

# ABRASIVE/GRIT OPTIONS

## GRIT SIZES

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

# SUGGESTED RPM

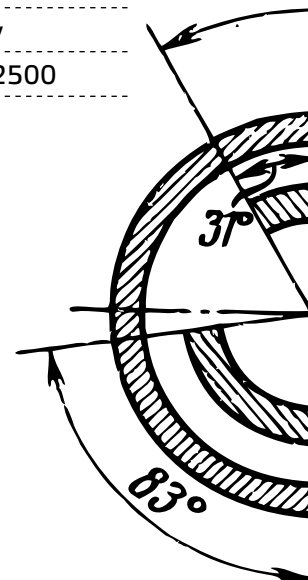
The Flex-Hone Tool is a low RPM tool. Specific RPM is dependent on the diameter of the tool and the application. General speed ranges are given but, again, machine trials are required to verify the parameters.

The smaller the hone, the faster the speed.  
The larger the hone, the slower the speed.

## HONE DIA.

## RPM

Hone Dia.	RPM
19" to 36"	60 – 120 RPM
12" to 18"	125 – 200 RPM
8" to 11"	225 – 300 RPM
4" to 7 ½"	350 – 600 RPM
2" to 3 ¾"	600 – 900 RPM
½" to 2"	900 – 1,000 RPM
4mm to ½"	1,000 – 1,200 RPM



**\*Additional sizes (4mm-36"), abrasives and grits sold individually upon request.**

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 tool should be well coated with lubricant and rotating prior to entry and should continue rotating until fully removed from the part. When deburring cross drilled holes using the Flex-Hone, it is helpful to first stroke and rotate the tool in a clockwise direction and then remove the tool from the bore, reverse the spindle and then stroke and rotate in a counterclockwise direction. This promotes a symmetrical deburring pattern.

AVAILABLE THROUGH

**GRAINGER**<sup>®</sup>

||| **FOR THE ONES WHO GET IT DONE**

