



XEBEC®

DEBURRING  
TECHNOLOGIES

# XEBEC BRUSH™ SURFACE

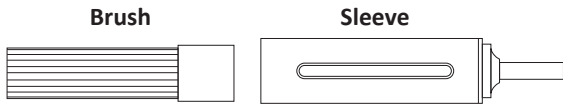
## FEATURES

- Ideal for simultaneous deburring and edge finishing, cutter mark removal and surface polishing
- Self-sharpening action on the cutting edge of the Ceramic Fiber tips of the Brush.
- Continuous cutting edge provides consistent grinding performance.
- Can be used in machining centers, robots, custom machines and drilling machines.
- Available in multiple sizes and colors for various applications.
- Easily automated.

## SPECIFICATIONS

Brush Color: **Pink, Red, White, Blue**

Recommended Materials: **Hard and Soft Metals**



Brush requires Brush Sleeve to operate

## FOR USE WITH THE FOLLOWING TOOLS:

Follow manufacturers instructions for proper mounting



Machining  
Center



Combined  
Lathe



Special  
Machine



Robot



Lathe with  
Milling



Drilling  
Machine



Always operate within the recommended range of maximum speed of rotation, depth of cut and feed rate.

## PRECAUTIONS FOR USE

Do not exceed the maximum rotation speed for use.

Operating above the maximum rotation speed may result in tool breakage.

Ensure any dust or debris generated during processing is collected, and work area is kept clean.

Even if there is no abnormal condition observed in the test run, stop use immediately if an abnormality is observed.

Do not use the tool at an unreasonable angle or under excessive pressure.

Do not use the tool in any place with risk of fire or explosion.

Do not grind with, alter or fabricate the shaft.

## CONDUCT A TEST

Conduct a test run for 1 minute or more before starting the operation and 3 minutes or more after changing a tool.

Check for any abnormality including excessive vibration or looseness in the mounting place of the tool.

## OPERATOR SAFETY MEASURES

**Use Protective Gear** Always wear protective goggles, gloves and masks when operating the tool or entering the work area. Wear long sleeves, tight cuffs, and clothing to minimize skin exposure.

**Take Precaution** Be cautious in surrounding area. Use of machines at high speed can cause flying debris within the work area. Dust or debris generated by operating process could be hazardous.



## WARNING!

Use caution and follow all safety measures at all times. Failure to do so could result in injury. A tool or a part of a tool may crack, drop off, distort or break. Broken pieces of a tool or grinding dust may stick into skin or eyes and cause injury.

# Setup And Test

## CUT, GRINDING LOAD

Usage under excessive depth of cut or grind load may not result in the desired results, as well as shortened tool-life, caused by pronounced wear and breakage of the fine ceramic fiber rods.

## TIP-CUTTING CERAMIC FIBER

Processing is the most effective using the tips of the ceramic fiber rod. For the depth of cut, use 0.5mm to 1.0mm as a guideline, up to 1.5mm.

## BRUSH PROJECTION ADJUSTMENTS

Attaching XEBEC Brush to XEBEC Brush Sleeve allows the projection of ceramic fiber rods to be adjusted for fine tuning, flexibility and trackability. Longer projection increases trackability and flexibility, while shorter projection decreases it. However, please keep projection range under 20mm for Brush diameters: 100, 60, 40 and 25mm, under 15mm for 15mm brush, and under 10mm for 6mm brush. Usage beyond the projection range may result in damage to the brush.

## BRISTLE LENGTH

With usage over time, the overall length of the ceramic fiber rods (bristle length) may shorten, resulting in more grinding power but less easy to fit; please adjust the grind and fit by dropping the rotation speed and depth of cut.

## TRUING /DRESSING

Brush can be gently dressed with sandpaper. If the brush deforms through usage, please stick some polishing paper onto a board and gently rub onto the tip to adjust the form of the brush. Please do the same for the dressing as well.

## DRY-WET PROCESSING

The brush can be used for both dry and wet processing, but please use a dust collecting device to collect the dust that is produced during dry processing.

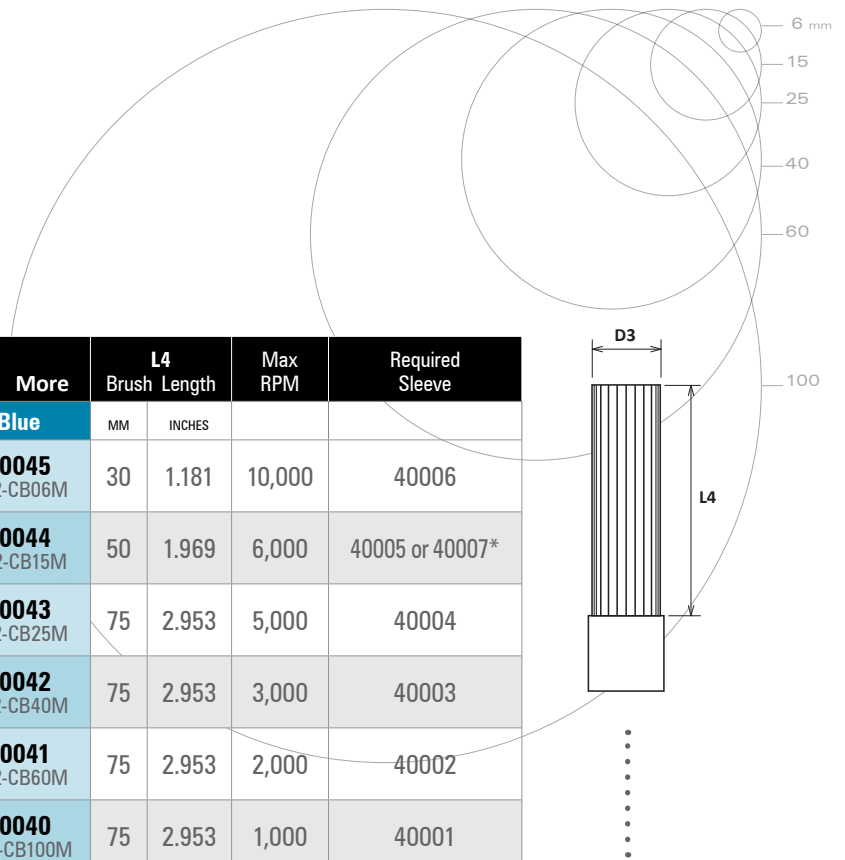
## USING WITH CNC

When using on high precision processing equipment, the abrasive powder may adversely affect the sliding parts, so please be sure to collect any dust and keep the equipment clean. Securely install the brush into the chuck (collet chuck, Floating Holder etc.) of the machine by inserting the sleeve shank into the chuck of the machine. Incorrect installation could break the sleeve shank from abnormal stresses during processing. Confirm there is no clearance between the end face of the sleeve flange and the chuck. For 100mm and 60mm diameter brushes: The brush can be used with a machine that can control revolutions and depth of cut. Output power of the mandrel motor in the machine requires 0.5kw.

## Selection

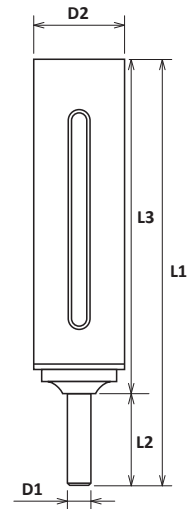
### Brush

Brush Size (D3)		Aggressiveness				L4 Brush Length		Max RPM	Required Sleeve
MM	INCHES	Less ←			→ More	MM	INCHES		
		Pink	Red	White	Blue				
6mm	0.236	<b>30015</b> A13-CB06M	<b>30006</b> A11-CB06M	<b>30012</b> A21-CB06M	<b>30045</b> A32-CB06M	30	1.181	10,000	40006
15mm	0.591	<b>30013</b> A13-CB15M	<b>30005</b> A11-CB15M	<b>30011</b> A21-CB15M	<b>30044</b> A32-CB15M	50	1.969	6,000	40005 or 40007*
25mm	0.984	-	<b>30004</b> A11-CB25M	<b>30010</b> A21-CB25M	<b>30043</b> A32-CB25M	75	2.953	5,000	40004
40mm	1.575	-	<b>30003</b> A11-CB40M	<b>30009</b> A21-CB40M	<b>30042</b> A32-CB40M	75	2.953	3,000	40003
60mm	2.362	-	<b>30002</b> A11-CB60M	<b>30008</b> A21-CB60M	<b>30041</b> A32-CB60M	75	2.953	2,000	40002
100mm	3.937	-	<b>30001</b> A11-CB100M	<b>30007</b> A21-CB100M	<b>30040</b> A32-CB100M	75	2.953	1,000	40001



### Sleeve for use with Xebec™ Brush Surface

Size	EDP	Material	Part No.	D1 Shank Diameter		D2 Sleeve Diameter		L1 Overall Length		L2 Shank Length		L3 Shaft Length	
				MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES
6mm	40006	Aluminum	S06M	6	0.236	10	0.394	70	2.756	29	1.142	41	1.614
15mm*	40005	Aluminum	S15M-A	6	0.236	18	0.709	90	3.543	29	1.142	61	2.402
15mm*	40007	Plastic	S15M-P	6	0.236	18.5	0.728	90	3.543	29	1.142	61	2.402
25mm	40004	Aluminum	S25M	8	0.315	30	1.181	140	5.512	30	1.181	110	4.331
40mm	40003	Aluminum	S40M	10	0.394	45	1.772	140	5.512	30	1.181	110	4.331
60mm	40002	Aluminum	S60M	12	0.472	65	2.559	150	5.906	35	1.378	115	4.528
100mm	40001	Aluminum	S100M	16	0.630	110	4.331	162	6.378	40	1.575	122	4.803



\*15mm Sleeve available in Aluminum or Plastic

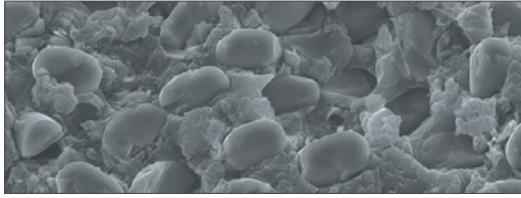
ADDITIONAL LEARNING RESOURCES AVAILABLE ON OUR WEBSITE

**3D Files (STEP, DXF), Dimensional Drawings and Safety Data Sheets (SDS)**  
[deburringtechnologies.com/technical](http://deburringtechnologies.com/technical)

**Product Demonstration Videos**  
[deburringtechnologies.com/video](http://deburringtechnologies.com/video)

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## Choosing Color and Size



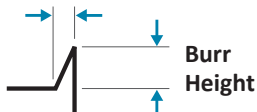
All Xebec brushes are made from the same proprietary ceramic fibers manufactured into rods, or bristles, of different thicknesses. **The greater the bristle thickness, the more aggressive the cutting action.**

<b>Brush Color</b> Signifies the relative thickness of the bristles	<p>Will not change part dimensions or features</p>	<p>Will conform to slight workpiece variations</p>	<p>Able to run at higher speeds, extend tool life</p>	<p>3-4 times more aggressive than white</p>
	← <b>Least</b> <b>Most</b> →			
<b>Flexibility</b> Ability to conform to the work piece				
<b>Target Material</b>	← <b>Softest</b>		<b>Hardest</b> →	
	Resins, Plastics		Aluminum, Copper, Brass, General Steel	
			Cast Metal, Stainless, Heat-Resistant Steel	
<b>Target Burr Size</b>	Micro Fine		up to 0.008"	
			up to 0.004"	
<b>Target Finish</b>	4 Ra or better		Finish up to 4 Ra	

### Target Burr Size

Burr Root Thickness of **0.008"** or less (Burs are bent with a fingernail)

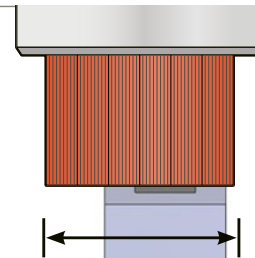
**Burr Root Thickness**



### Choosing the Ideal Brush Size

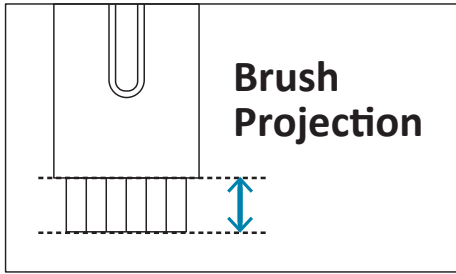
Choose a brush 1.5 to 2 times wider than the width of the work piece surface.

**1.5-2x larger than the surface width**



This allows the brush to engage the edge at 90° for optimal grinding power. Using a larger brush than the surface width will also require the fewest number of passes and minimize cycle time.

## How to Use

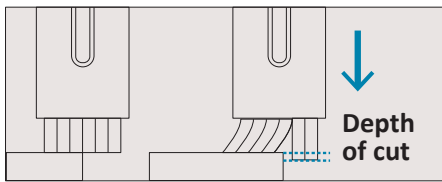


### Setting Brush Projection

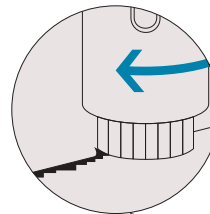
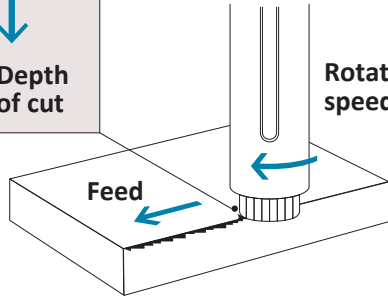
Brush Size Diameter	6 mm	15 mm	25 mm	40 mm	60 mm	100 mm
Brush Projection All Grades (in)	0.3125-0.375"	0.375-0.5625"	0.5-0.625"	0.5-0.625"	0.5-0.75"	0.5-0.75"

Brush projection below 0.2" increases grinding power and may affect finish

### Workpiece Engagement



Engage part with the tip of the brush. Avoid contacting the side of the brush.



**Rotation direction**  
Up cut against burrs from the bottom with the tip of the brush

### Starting Depth of Cut

All Brush Grades (Inches)

Polishing	Vertical Burr	Horizontal Burr	Heavy Burr
0.012"	0.020"	0.040"	0.060"

### Maximizing Performance

#### Maximizing Deburring Operation

- 1 Increase RPM to the maximum allowed
- 2 Decrease feed rate in 10% increments
- 3 Do not change original parameters, but increase number of passes
- 4 Try a more aggressive brush that will increase grinding power

#### Maximizing Tool Life

- 1 Decrease RPM in 10% increments
- 2 Increase feed rate by 10% increments
- 3 Try another brush color A13 Pink, A21 White, A11 Red, A32 Blue with the same parameters

#### Use of Coolant/Oil will optimize results

- It will Extend Tool Life
- Improves Surface Finish

## Starting Operating Parameters for Automated Machining

Material	SFPM	Brush Size (Diameter)		6 mm	15 mm	25 mm	40 mm	60 mm	100 mm	Feed Rate		
		1st Choice	2nd Choice	Initial Brush Projection	0.3125-0.375"	0.375-0.5625"	0.5-0.625"	0.5-0.625"	0.5-0.75"	0.5-0.75"	Finishing	Deburring
				Maximum RPM	10,000	6,000	5,000	3,000	2,000	1,000		
				RPM	RPM	RPM	RPM	RPM	RPM	IPM	IPM	
Low Carbon Steel	600	○ White	● Blue	9,707	3,883	2,330	1,456	971	582	47	94	
Medium Carbon Steel	550	○ White	● Blue	8,898	3,559	2,136	1,335	890	534	40	80	
High Carbon Steel	500	○ White	● Blue	8,089	3,236	1,941	1,213	809	485	34	67	
Cast Steel	450	● Blue	○ White	7,280	2,912	1,747	1,092	728	437	27	54	
300 Series Stainless	525	○ White	● Red	8,494	3,397	2,038	1,274	849	510	47	94	
400 Series Stainless	575	○ White	● Red	9,303	3,721	2,233	1,395	930	558	47	94	
Grey Cast Iron	400	● Blue	○ White	6,471	2,589	1,553	971	647	388	54	107	
Ductile Cast Iron	350	● Blue	○ White	5,662	2,265	1,359	849	566	340	47	94	
Alloy Cast Iron	300	● Blue	○ White	4,854	1,941	1,165	728	485	291	40	80	
Aluminum Cast Alloys	700	● Red	○ White	10,000	4,530	2,718	1,699	1,132	679	80	161	
Aluminum Diecast Alloys	800	● Red	○ White	10,000	5,177	3,106	1,941	1,294	777	74	147	
Aluminum Wrought Alloys	900	● Red	○ White	10,000	5,824	3,495	2,184	1,456	874	67	134	
Zinc Diecastings	800	● Red	○ White	10,000	5,177	3,106	1,941	1,294	777	67	134	
Copper	600	● Red	○ White	9,707	3,883	2,330	1,456	971	582	60	121	
Brass, Free Machining	600	● Red	○ White	9,707	3,883	2,330	1,456	971	582	74	148	
Cast Bronze	500	● Red	○ White	8,089	3,236	1,941	1,213	809	485	47	94	
Nickel Alloys	200	● Blue	○ White	3,236	1,294	777	485	324	194	40	80	
Titanium Alloys	200	● Blue	○ White	3,236	1,294	777	485	324	194	40	80	
Plastic, Thermosetting	500	○ Pink	● Red	8,089	3,236	1,941	1,213	809	485	80	161	
Plastic, Thermoplastic	800	○ Pink	● Red	10,000	5,177	3,106	1,941	1,294	777	80	161	

### Adjustments for Improved Results

If burrs or cutter marks remain

- 1 Increase Rotational Speed**  
In increments of 25%, Do not exceed Maximum RPM
- 2 Increase the Number of Passes**  
Each pass will improve finish by approximately one half
- 3 Decrease Feed Rate**  
In increments of 10 to 20%
- 4 Use more aggressive Color of Brush**  
(Pink=Least Aggressive, Blue=Most Aggressive)

**Increase Grinding Power**

Feed Rate	Rotational Speed	Depth of Cut
▼	▲	▲

**Decrease Grinding Power**

Feed Rate	Rotational Speed	Depth of Cut
▲	▼	▼