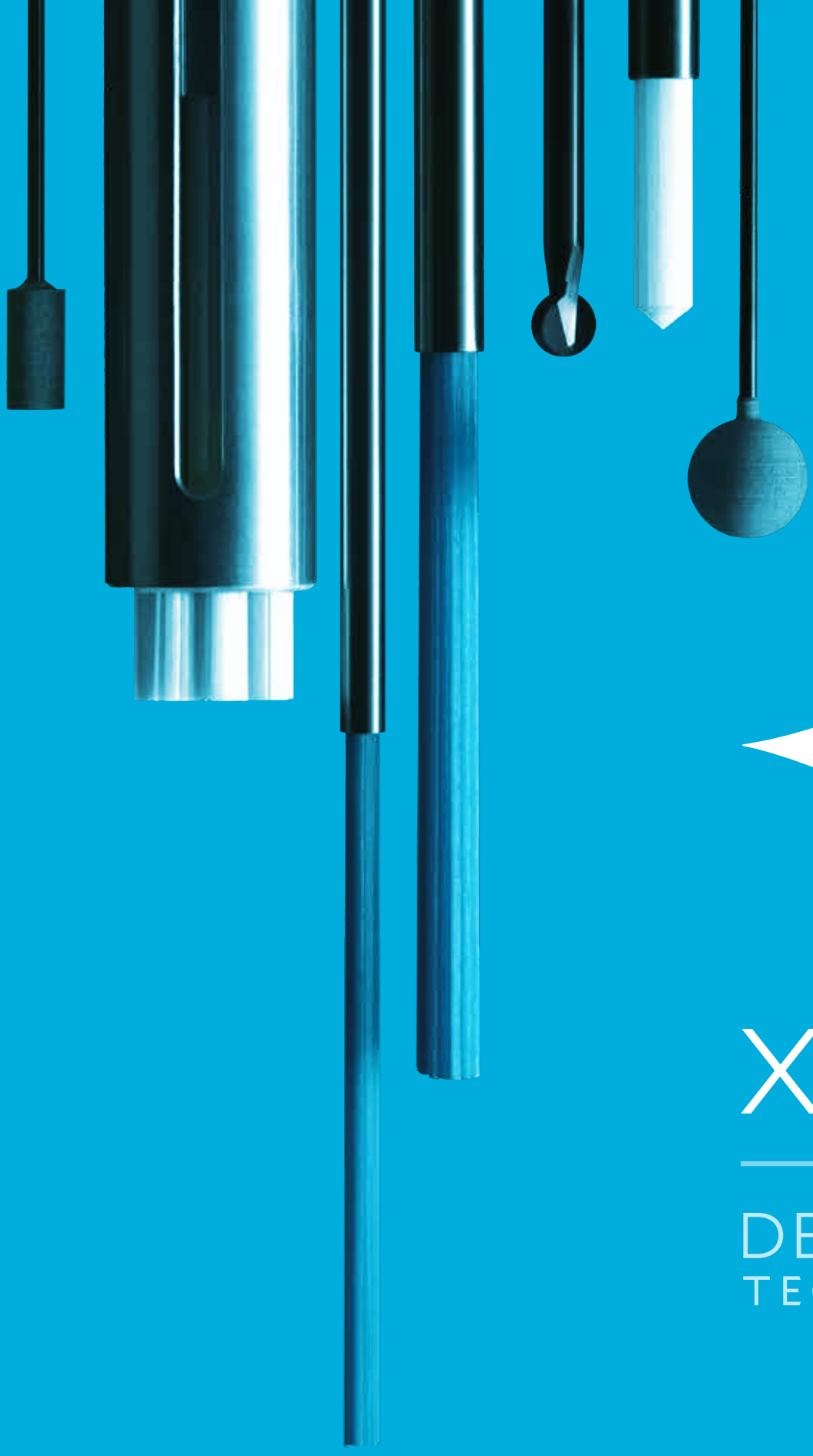

2019

XEBEC®

DEBURRING
TECHNOLOGIES

Innovative Deburring
& Surface Finishing Solutions

deburringtechnologies.com

XEBEC®

Innovative Deburring & Surface Finishing Solutions

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Surface Brush

Machining Center · Combined Lathe · Special Machine · Robot · Lathe with Milling · Drilling Machine

11 

Extra Large Surface Brush

Machining Center · Combined Lathe · Special Machine

12 

Wheel Brush

Machining Center · Combined Lathe · Special Machine · Robot · Lathe with Milling

13 

Self Adjusting Sleeve

Machining Center · Combined Lathe · Special Machine · Robot · Lathe with Milling

14 

Floating Holder

Machining Center · Combined Lathe · Special Machine · Robot · Lathe with Milling · Drilling Machine

14 

Brush Length Adjustment Tool

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16 Crosshole Brush

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Electric Rotary · Hand Finishing · Ultrasonic · Pneumatic Rotary

28 Flexible Shaft Stone

Electric Rotary · Machining Center · Combined Lathe · Robot · Lathe with Milling

Operating Parameters 29

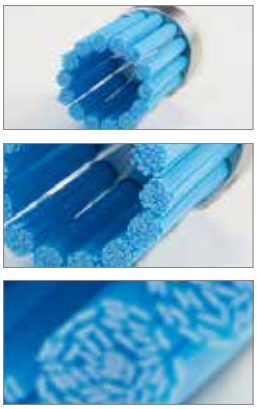
Xebec® Ceramic Fiber

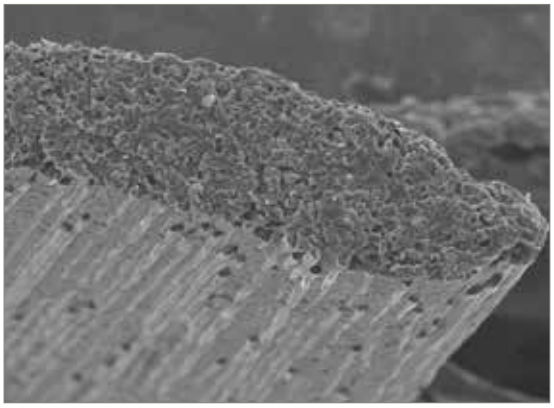
For use on materials up to 65Rc

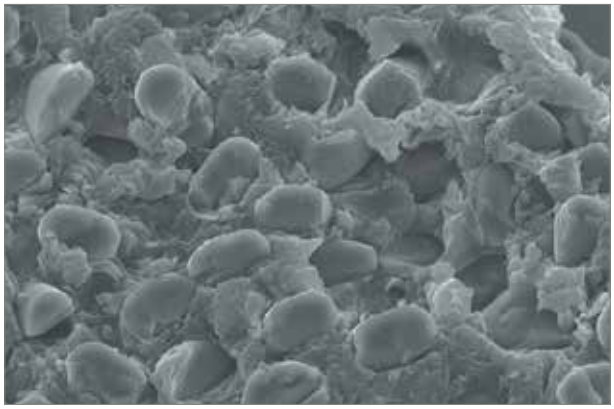
The ceramic fibers are woven to create self-sharpening filaments that maintain consistent cutting action on the tips. Unlike wire and abrasive impregnated nylon brush filaments, the unique design of the Xebec fiber rod maintains its shape with no deformation even after repeated use. This leads to consistent performance time after time.

FINE FINISHING
Up to 3.937 Ra

Continuous Ceramic Fibers



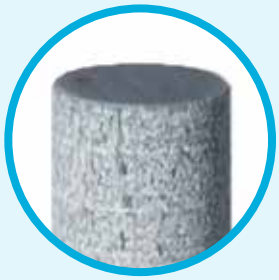




XEBEC Brush™

Ceramic Fibers are formed into bristles to produce tip cutting Brushes

Consistent cutting performance



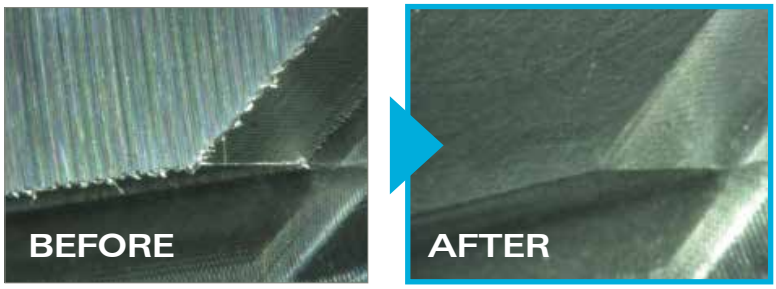
XEBEC Stone™

Ceramic Fibers are formed into Stones capable of cutting on all sides

Overwhelming grinding power

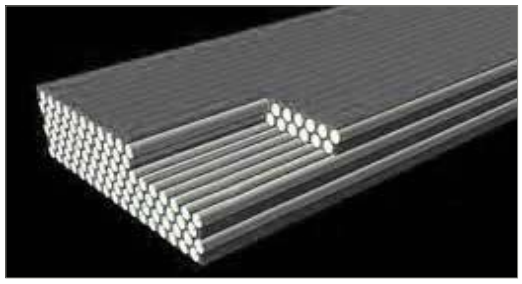
Tip-To-Tip Consistent Performance

Self-sharpening effect always exposes new cutting edges. Solid fiber materials never deform by repeated use.



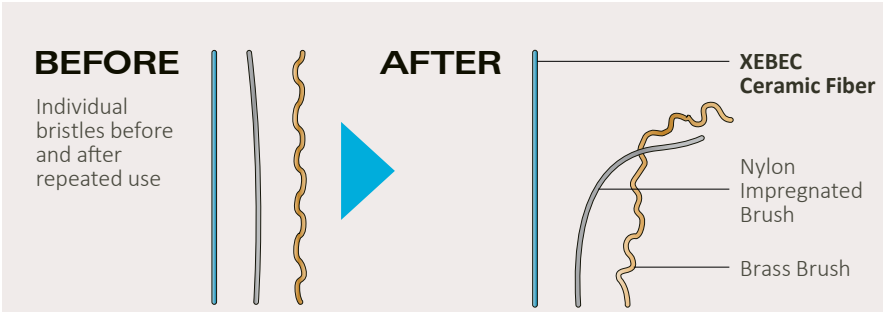
High Grinding Power

The tip of each Fiber works as abrasive. More than 80% of content is Ceramic Fiber.



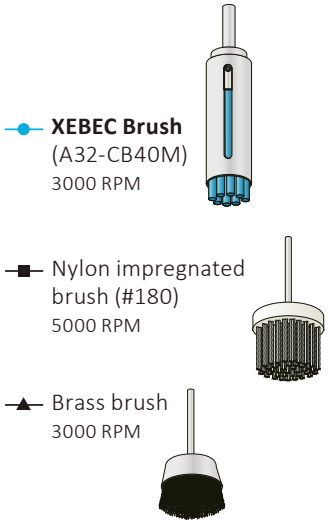
XEBEC Brush™

Ceramic Fiber bristles will not deform by repeated use.

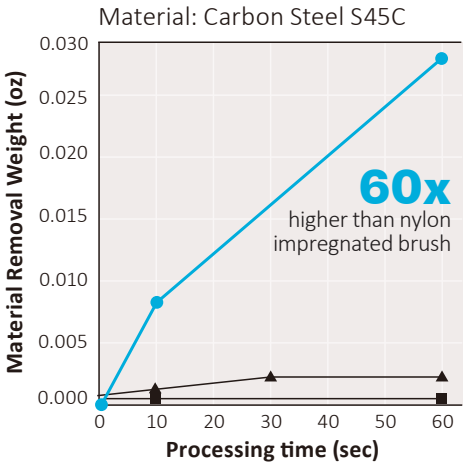


The Advantages of Ceramic Fiber

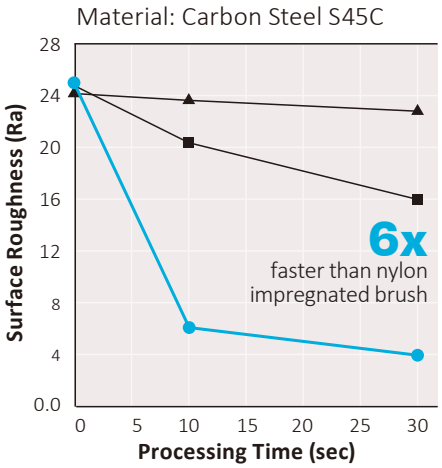
Xebec Ceramic Fiber brushes remove more material faster than nylon impregnated or brass finishing brushes.



Grinding power



Polishing capacity



Save time & money! Automate the deburring process.

Ceramic fiber products can be used in CNC, robotic or hand held devices

IMPROVE QUALITY

INCREASE PRODUCTIVITY

REDUCE COSTS

YouTube **@Xebec Deburring Technologies**

XEBEC®

Successful Applications

MAJOR MARKETS SERVED

We have proven successful in the following market segments:

Production

- Valves
- Mold & Die
- Fittings
- Precision Parts
- Swiss Machined
- Bushings

Powertrain

- Cylinder Blocks
- Head Covers
- Crankshafts
- Camshafts
- Connecting Rods
- Fuel Injection

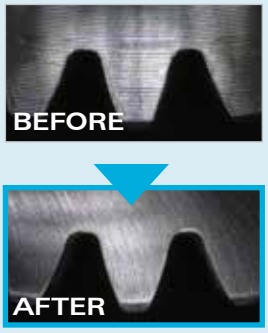
Medical

- Tibia Trays
- Bone Screws
- Spinal Implants
- Knees
- Hips
- Shoulders

Edge Deburring

Category	Machine Part
Workpiece	Spur Gear
Material	Carbon Steel S45C
Process Details	Edge deburring after gear cutting process

Precision parts that must be deburred while maintaining edge quality without secondary burrs.



XEBEC product used: A32-CB25M
Rotation Speed: 3500
Depth of Cut: 0.039 in
Feed: 98 IPM

Fine Deburring

Category	Automotive Part
Workpiece	Cooling Fins
Material	Carbon Steel Aluminum Alloy
Process Details	Edge deburring

Fine deburring of surfaces, edge radiuses and small diameter bores. Deburring of fine burrs where the base thickness is 1mm (.040") or less after machine processing and finishing of edges.

XEBEC product used: A32-CB25M
Rotation Speed: 3500
Depth of Cut: 0.039 in
Feed: 98 IPM

Cutter Mark Removal

Category	Medical Part
Workpiece	Artificial Hip Joint
Material	Titanium Alloy
Process Details	Cutter mark removal after ball end milling

Grinding and finishing of flat surfaces and uneven surfaces.

XEBEC product used: A21-CB25M
Rotation Speed: 1500
Depth of Cut: 0.039 in
Feed: 40 IPM

Innovative Deburring & Surface Finishing Solutions

Aerospace

- Landing Gear
- Blades
- Fuel Systems
- Engine Components
- Structural Parts
- Actuation Systems

Fine Surface Finishing

Category	Airplane Part
Workpiece	Body
Material	Aluminum Alloy
Process Details	Deburring of end milled surface

Fine surface finishing of large parts, deburring of edge radiuses after machine processing and finishing of edges.

XEBEC product used:
A11-CB100M
Rotation Speed: 960
Depth of Cut: 0.026 in
Feed: 134 IPM

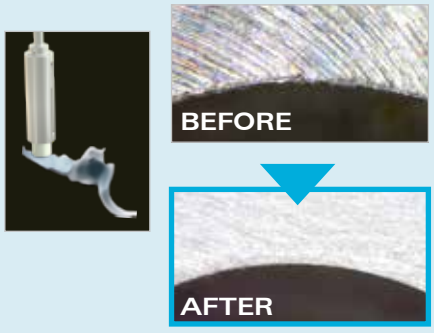
Firearms

- Slides
- Barrels
- Triggers
- Frame
- Hammers
- Cylinders

Detailed Surface Finishing

Category	Firearm Part
Workpiece	Trigger Assembly
Material	Stainless Steel
Process Details	Edge deburring and detailed surface finish

Fine surface finishing of detailed parts, deburring of edge radiuses and finishing of edges.



XEBEC product used:
A21-CB06M
Rotation Speed: 8100
Depth of Cut: 0.015 in
Feed: 40 IPM

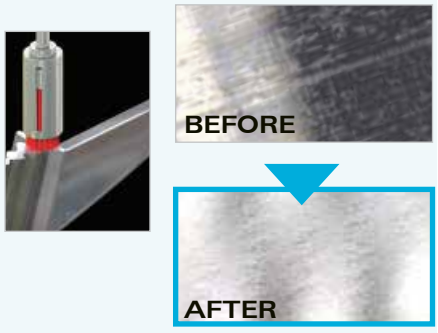
Energy

- Manifolds
- Blisks
- Turbine Blades
- Christmas Tree
- Rotor Blades End
- Rotor Blades Blend

Fine Surface Finishing

Category	Compressor Part
Workpiece	Turbine blade
Material	SUS316
Process Details	Deburring of ball end milled surface

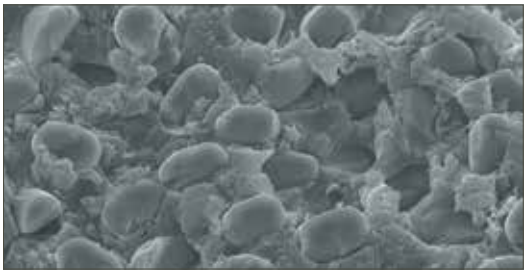
Fine surface finishing of parts, deburring of edge radiuses after machine processing and finishing of edges.



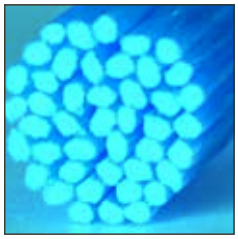
XEBEC product used:
A11-CB25M
Rotation Speed: 1000
Depth of Cut: 0.020 in
Feed: 94 IPM

Surface Deburring & Finishing

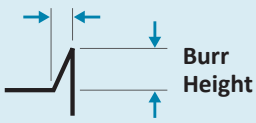
YouTube @Xebec Deburring Technologies



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.**

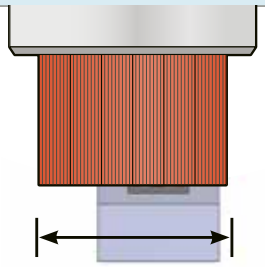
Brush Color Signifies the relative thickness of the bristles	 Will not change part dimensions or features	 Will conform to slight workpiece variations	 Able to run at higher speeds, extend tool life	 3-4 times more aggressive than white
Aggressiveness	**Least** ← → **Most**			
Flexibility Ability to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

Target Burr Size
Burr Root Thickness of **0.008”** or less (Burrs are bent with a fingernail)



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.

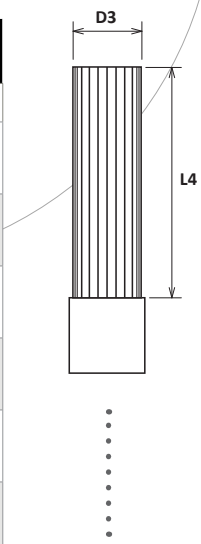
XEBEC BRUSH™ SURFACE

Surface Brush

Ideal for simultaneous deburring and edge finishing, cutter mark removal and surface polishing

Brush Requires Brush Sleeve to Operate

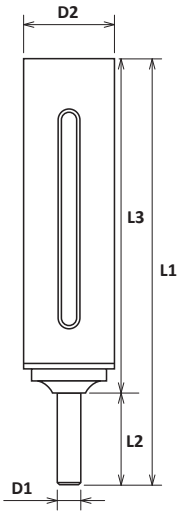
Brush Size (D3)		Aggressiveness Less ← → More				L4 Brush Length		Max RPM	Required Sleeve
MM	INCHES	Pink	Red	White	Blue	MM	INCHES		
6mm	0.236	30015 A13-CB06M	30006 A11-CB06M	30012 A21-CB06M	30045 A32-CB06M	30	1.181	10,000	40006
15mm	0.591	30013 A13-CB15M	30005 A11-CB15M	30011 A21-CB15M	30044 A32-CB15M	50	1.969	6,000	40005 or 40007*
25mm	0.984	-	30004 A11-CB25M	30010 A21-CB25M	30043 A32-CB25M	75	2.953	5,000	40004
40mm	1.575	-	30003 A11-CB40M	30009 A21-CB40M	30042 A32-CB40M	75	2.953	3,000	40003
60mm	2.362	-	30002 A11-CB60M	30008 A21-CB60M	30041 A32-CB60M	75	2.953	2,000	40002
100mm	3.937	-	30001 A11-CB100M	30007 A21-CB100M	30040 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	8	0.315	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

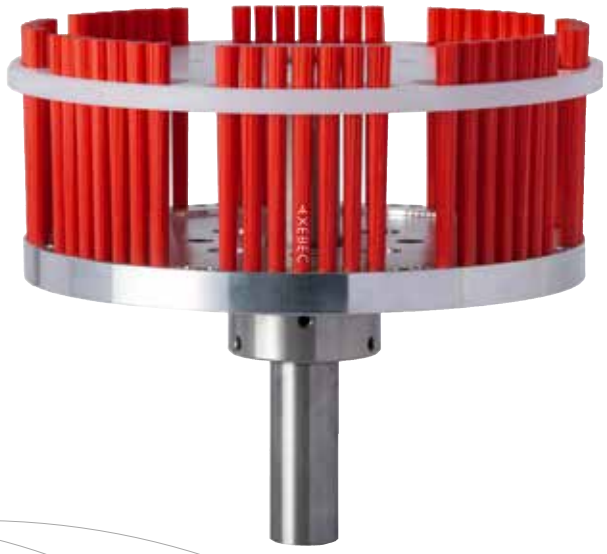


See Operating Parameters for Surface Brush page 30-31

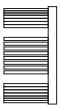
XEBEC BRUSH™ SURFACE

Extra-Large Brush

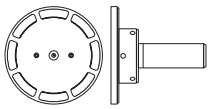
Ideal for deburring, cutter mark removal and surface polishing with a width of 4 inches or greater, such as cylinder heads, cylinder blocks and machinery beds.



Brush

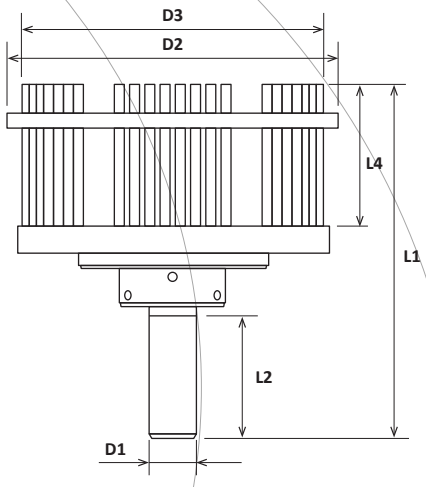


Slide Ring
Ring
Base holder
Shank



Brush Requires Slide Ring to Operate

Brush Size (D3)		Aggressiveness Less ⟷ More			L4 Brush Length		Max RPM
MM	INCHES	Red	White	Blue	MM	INCHES	
125mm	4.921	30025 A11-CB125M	30026 A21-CB125M	30046 A32-CB125M	102	4.016	1,000
165mm	6.496	30028 A11-CB165M	30029 A21-CB165M	30047 A32-CB165M	102	4.016	750
200mm	7.874	30031 A11-CB200M	30032 A21-CB200M	30048 A32-CB200M	102	4.016	600



Slide Ring for use with Extra-Large Surface Brush

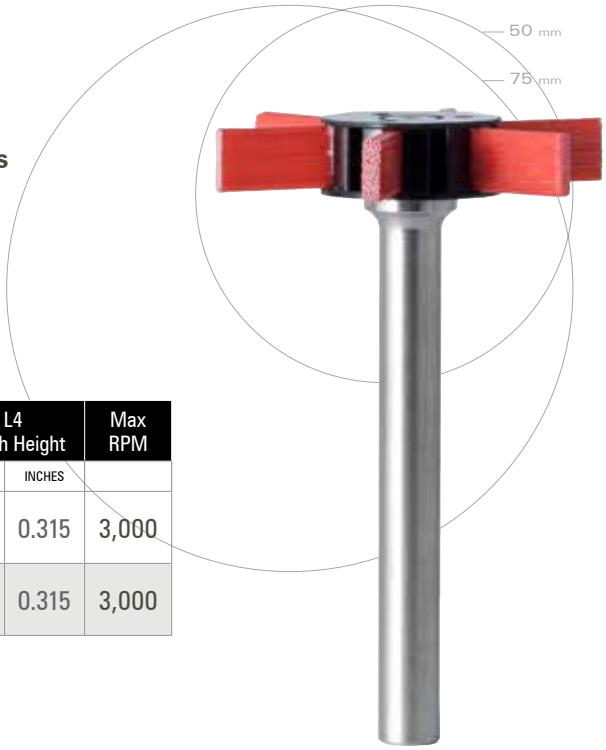
Size	EDP	Part No.	D1 Shank Diameter		D2 Ring Diameter		L1 Overall Length		L2 Shank Length	
			MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES
125mm	40010	SR125M	25	0.984	135	5.315	175	6.890	65	2.559
165mm	40011	SR165M			176	6.929				
200mm	40012	SR200M			211	8.307				

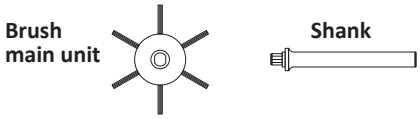
Brush Diameter (mm)	Depth of Cut (inches)					RPM		Feed Rate (mm/min)			Recommended Brush Projection (inches)
	Vertical Burr	Horizontal Burr	Cutter Mark Removal	Polishing	Max.	Initial	Max.	Burr Root Thickness 0.05 in	Burr Root Thickness 0.1 in	Cutter Mark Removal	
125	0.02	0.04	0.02 - 0.04	0.01 - 0.02	0.06	800	1000	160	100	15	0.6
165						600	750				
200						480	600				

XEBEC BRUSH™

Wheel Brush

Ideal for deburring and polishing of side surfaces and inner diameters





Wheel Brush Reusable Shank Sold Separately, See Below

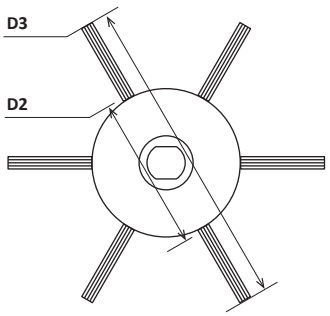
Size		EDP	Part No.	D2 Head Diameter		D3 Brush Diameter		L3 Head Thickness		L4 Brush Height		Max RPM
				MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	
50mm		**60007**	W-A11-50	23	0.906	50	1.969	9.6	0.378	8	0.315	3,000
75mm		**60008**	W-A11-75	23	0.906	75	2.953	9.6	0.378	8	0.315	3,000

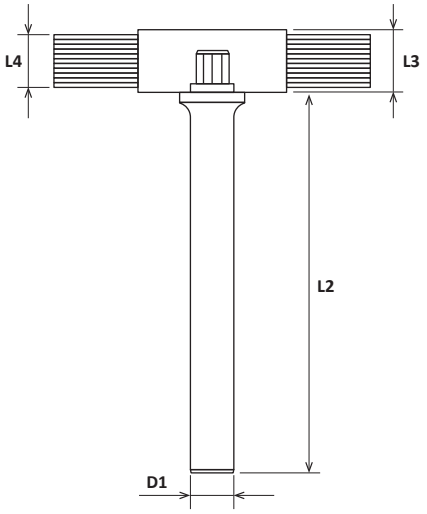
Insert shank into brush before use.

Shank Wheel Brush Required

Shank	EDP	Part No.	D1 Shank Diameter		L2 Shank Length	
			MM	INCHES	MM	INCHES
70 mm Shank	**60009**	WSM	8	0.315	70	2.756
150 mm Shank	**60010**	WSL	12	0.472	150	5.906

*Not suitable for use on hand held devices





Initial Processing Conditions

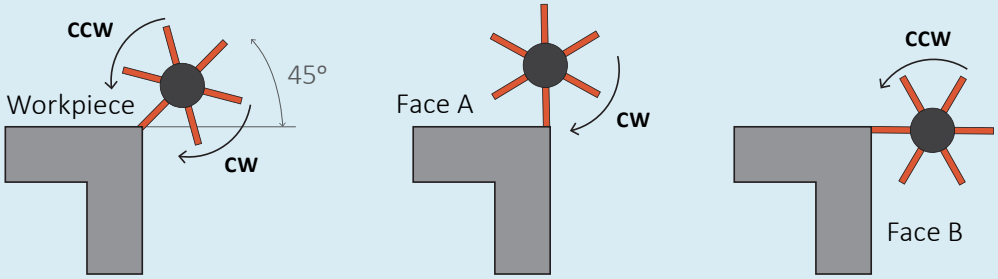
EDP	Minimum RPM	Depth of cut (inches)	Feed rate (in/min)
60007	1,600	0.008	190
60008	1,000	0.008	120

*As bristles wear, bristle length shortens and stiffness increases.
If bristle breakage occurs, decrease the depth of cut.

If burrs remain

1. Increase the number of passes
2. Decrease the feed rate in 10 to 20% increments
3. Increase Depth of Cut (up to 0.02 inches)

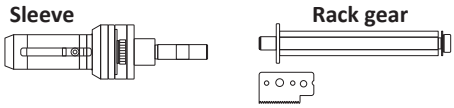
Rotational Direction

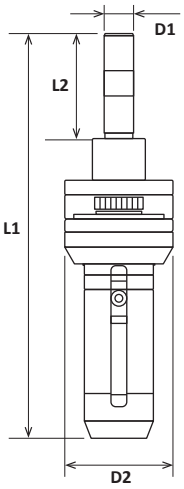


XEBEC BRUSH™

Self-Adjusting Sleeve™

Programmable brush length adjustment solution.
Completely automated allows for unmanned operations.
Maintains optimal cutting efficiency with reduced downtime.

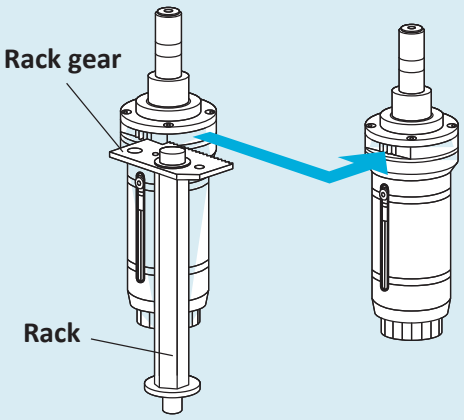




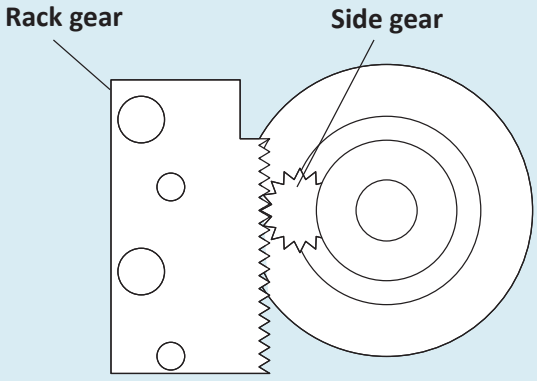
For Brush Diameter	EDP	Part No.	D1 Shank Diameter		D2 Neck Diameter		L1 Overall Length		L2 Shank Length		Weight (lbs)	Max RPM	Compatible Brush (EDP)
			MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES			
6 mm Brush	**50010**	XP-AUT06M	10	0.394	37	1.457	124.1	4.886	35.0	1.378	0.485	10,000	30015, 30006, 30012, 30045
15 mm Brush	**50011**	XP-AUT15M	10	0.394	37	1.457	136.3	5.366	35.0	1.378	0.595	6,000	30013, 30005, 30011, 30044
25 mm Brush	**50012**	XP-AUT25M	16	0.630	60	2.362	189.0	7.441	41.5	1.634	1.753	5,000	30004, 30010, 30043
40 mm Brush	**50013**	XP-AUT40M	16	0.630	60	2.362	189.0	7.441	41.5	1.634	2.006	3,000	30003, 30009, 30042

Automated Brush Length Projection

Predetermined brush length is automatically projected when the embedded side gear passes the rack gear which is mounted in a machine.



Pass the side gear of main body through the rack gear as shown above.

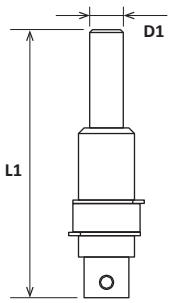


Mesh the side gear of main body and the rack gear.

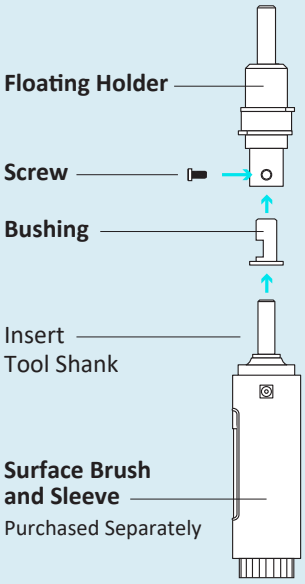
XEBEC BRUSH™

Floating Holder

Adjustable pressure control using a built-in spring.
Provides more consistent finish and longer brush life for heavy applications.



For Brush Diamter	EDP	Part No.	D1 Shank Diameter		L1 Overall Length		Axial Float		Gage Length		Compatible Sleeve (EDP)
			MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	
6 mm	**50002**	FH-ST12-SL10	12	0.472	95.5	3.760	6	0.236	60.5	2.282	40006
15 mm											40005, 40007
25 mm											40004
40 mm											40003
60 mm	**50006**	FH-ST20-60	20	0.787	96.4	3.795	6	0.236	51.5	2.028	40002
100 mm	**50005**	FH-ST20-100	20	0.787	96.4	3.795	6	0.236	51.5	2.028	40001



Floating Holder Operation

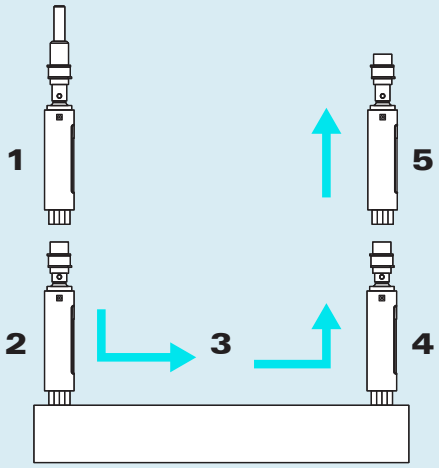
1. While Brush is not in motion, lower it vertically until contacting the workpiece. Do not contact side of Brush with workpiece as it will damage the bristles.

2. Set the depth of cut and contract the spring.

3. Begin rotation and start feeding.

4. When complete, stop rotation and feed.

5. Remove the tool upward

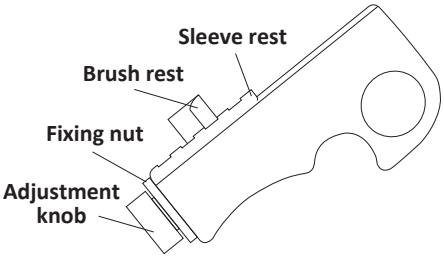


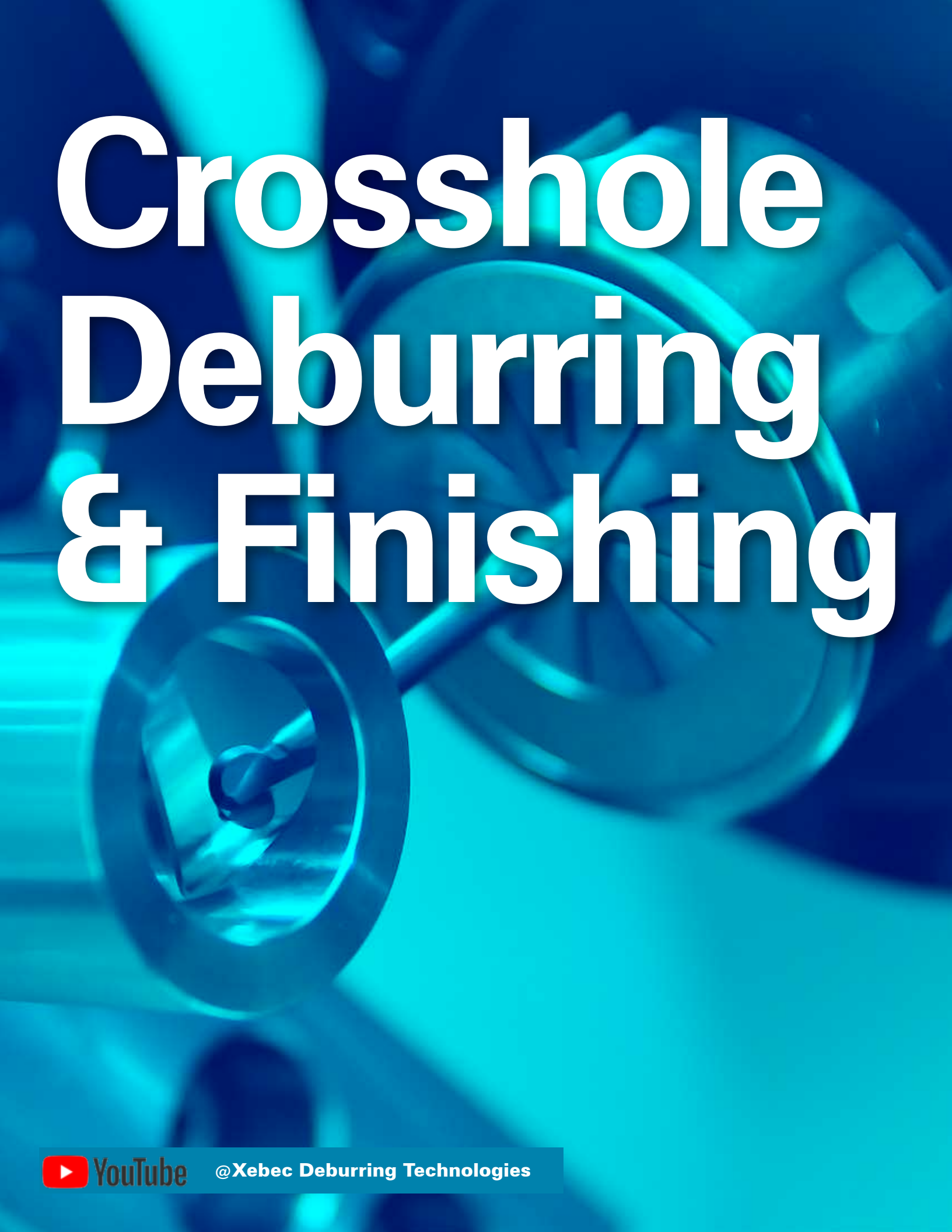
XEBEC BRUSH™

Length Adjustment Tool

Quickly measure and adjust brush length manually without removing Brush from the machine.

EDP	Item	Part No.
50004	Brush Length Adjustment Tool	XP-EZ-001




Crosshole
Deburring
& Finishing
YouTube
@Xebec Deburring Technologies

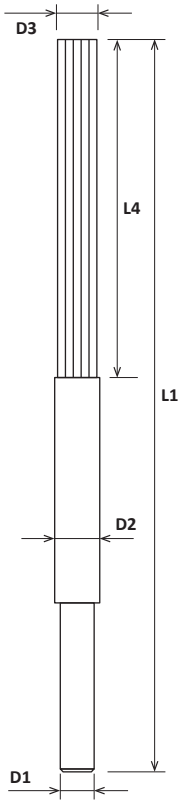
XEBEC BRUSH™ CROSSHOLE DEBURRING

Crosshole Brush

Crosshole diameter cannot exceed 50% of primary bore diameter.

- **Removal of fine burrs (base thickness is 0.1mm (.0039") or less) generated around cross-holes**
- **Polishing of inner wall surfaces of cylinders such as screw holes**
- **Polishing the bottom surface of dead-end holes**
- **Product is not well suited for interruptions and bores/cylinders with threads as the rapidly rotating fibers may break when abruptly meeting obstacles**

Target Bore Diameter	Brush Size (D3)		L1 Overall Length		L4 Brush Length		D1 Shank Diameter		D2 Neck Diameter		Aggressiveness Less ⟷ More		Max RPM
	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	Red	Blue	
0.140 - 0.197" (3.5 - 5 mm)	**1.5**mm	0.060	120	4.724	50	1.969	3	0.118	2.5	0.098	**20007** CH-A12-1.5M	-	20,000
0.197 - 0.315" (5 - 8 mm)	**3**mm	0.118	130	5.118	60	2.362	3	0.118	4	0.157	**20001** CH-A12-3M	-	12,000
			180	7.087			4	0.158			**20004** CH-A12-3L	-	
			130	5.118			3	0.118			-	**20008** CH-A33-3M	
			180	7.087			4	0.158			-	**20012** CH-A33-3L	
0.315 - 0.394" (8 - 10 mm)	**5**mm	0.197	130	5.118	60	2.362	6	0.232	6	0.236	**20002** CH-A12-5M	-	12,000
			180	7.087							**20005** CH-A12-5L	-	
			130	5.118							-	**20009** CH-A33-5M	
			180	7.087								**20013** CH-A33-5L	
0.394 - 0.551" (10 - 14 mm)	**7**mm	0.276	130	5.118	60	2.362	6	0.232	8	0.315	**20003** CH-A12-7M	-	12,000
			180	7.087			8	0.315			**20006** CH-A12-7L	-	
			130	5.118			6	0.232			-	**20010** CH-A33-7M	
			180	7.087			8	0.315			-	**20014** CH-A3 3-7L	
0.551 - 0.787" (14 - 20 mm)	**11**mm	0.433	130	5.118	60	2.362	12	0.472	12	0.472	**20018** CH-A12-11M		12,000
			180	7.087							**20017** CH-A12-11L		
			130	5.118			12	0.472			-	**20011** CH-A33-11M	
			180	7.087							-	**20015** CH-A33-11L	



For Target Bore Diameters larger than 0.8 inches use Surface Brush.

See Operating Parameters for Large Bore Crosshole page 29

Choosing Brush Diameter

Target Bore Diameter	0.140-0.197" (3.5 - 5 mm)	0.197-0.315" (5 - 8 mm)	0.315-0.394" (8 - 10 mm)	0.394-0.551" (10 - 14 mm)	0.551-0.787" (14 - 20 mm)
Brush Size	**1.5 mm**	**3 mm**	**5 mm**	**7 mm**	**11 mm**

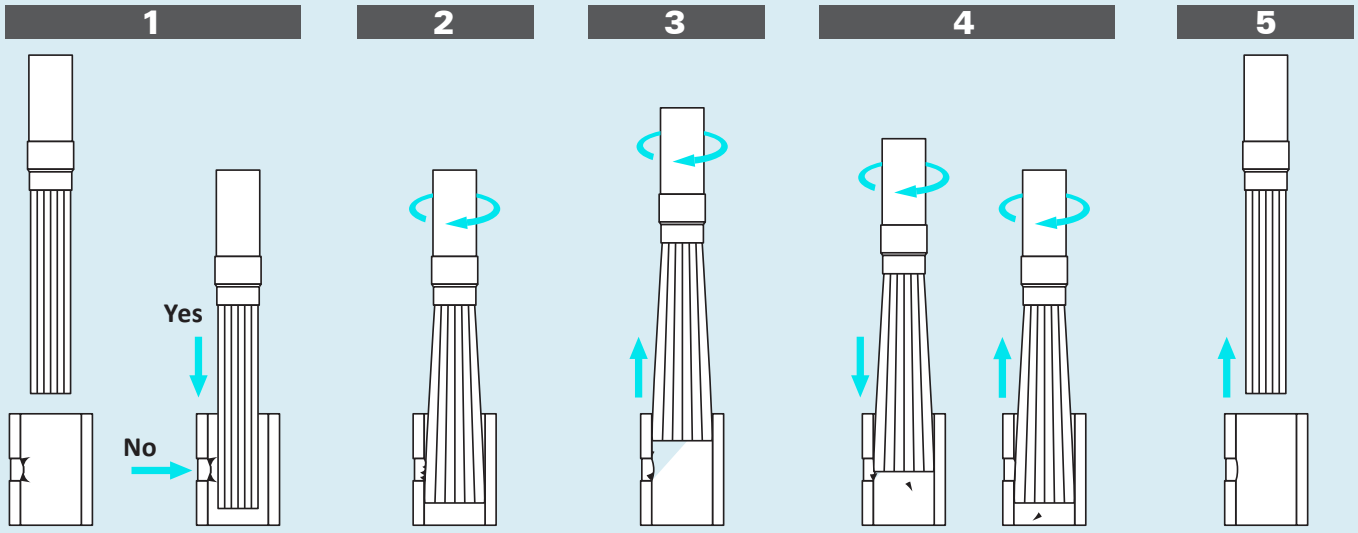
Choosing Brush Color

Brush Color	**Red**	**Blue**
Aggressiveness	**Least** ← → **Most**	
Workpiece Material	Resin	General steel
	Copper/Brass	Stainless steel
	Aluminum	
		Heat-resistant steel
		Cast-iron
		Hard-to-cut material
Burr Thickness	Micro fine burrs	
		Burr root thickness up to 0.004"
Target Finish	4 Ra or better	Up to 4 Ra

Suggested Starting Parameters

Rotational Speed RPM	Feed Rate (inches/min)
8,000-10,000 RPM	12 to 15 IPM

How to Operate

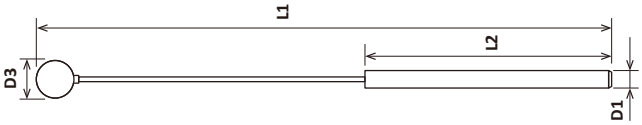


1. Insert the Brush while at rest. Rotating brush outside cylinder may damage brush or injure operator.
2. Rotate the tool past the crosshole. (Rotate in both CW and CCW directions for best results.)
3. Process, pulling the brush back past crosshole to prevent burrs from laying flat against the interior.
4. If required, process bore again, pushing the brush forward past the crosshole and then back.
5 Stop brush rotation. Remove the brush while at rest.

XEBEC STONE™

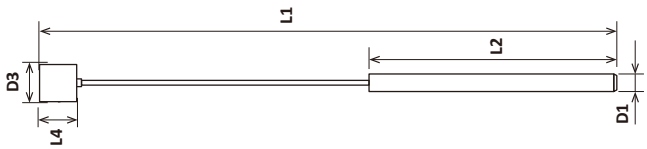
Flexible Shaft Stone

Soft contact abrasive ceramic fiber stone. Cutting edges exposed across the entire surface.
For deburring crossholes and detailed finishing of parts



Ball Type

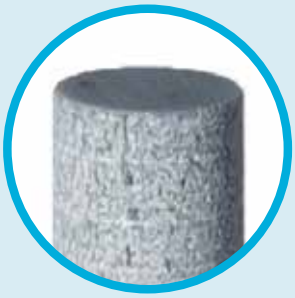
Ball Size (D3)		L1 Overall Length		D1 Shank Diameter		L2 Shank Length		Aggressiveness Less ⟷ More			Max RPM
MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	Blue - #800	Orange - #400	Gray - #220	
3mm	0.118	71.5	2.815	3	0.118	30	1.181	**10001** CH-PB-3B	**10008** CH-PO-3B	**10015** CH-PM-3B	15,000
4mm	0.157	151.5	5.965	3	0.118	30	1.181	**10002** CH-PB-4B	**10009** CH-PO-4B	**10016** CH-PM-4B	13,000
5mm	0.197	72	2.835	3	0.118	30	1.181	**10003** CH-PB-5B	**10010** CH-PO-5B	**10017** CH-PM-5B	12,000
6mm	0.236	152	5.984	2.3	0.091	148	5.827	**10004** CH-PB-6B	**10011** CH-PO-6B	**10018** CH-PM-6B	10,000
10mm	0.393	72.5	2.854	3	0.118	30	1.181	-	-	**10027** CH-PM-10B	7,000
3mm	0.118	152.5	6.004	2.3	0.091	147.5	5.807	-	-	**10080** CH-PM-3B-L	1,000
4mm	0.157	73	2.874	3	0.118	30	1.181	-	-	**10081** CH-PM-4B-L	3,000
5mm	0.197	153	6.024	2.3	0.091	147	5.787	-	-	**10082** CH-PM-5B-L	3,000
6mm	0.236	75	2.953	3	0.118	30	1.181	-	-	**10083** CH-PM-6B-L	3,000
10mm	0.393	155	6.102	2.3	0.091	145	5.709	-	-	**10084** CH-PM-10B-L	2,000



Cylinder Type

Cylinder Size (D3 x L4)		L1 Overall Length		D1 Shank Diameter		L2 Shank Length		Aggressiveness Less ⟷ More			Max RPM
MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	Blue - #800	Orange - #400	Gray - #220	
3 x 3	0.118 x 0.118	71.5	2.815	3	0.118	30	1.181	**10005** CH-PB-3R	**10012** CH-PO-3R	**10019** CH-PM-3R	15,000
4 x 4	0.157 x 0.157	72	2.835					**10006** CH-PB-4R	**10013** CH-PO-4R	**10020** CH-PM-4R	13,000
5 x 5	0.197 x 0.197	72.5	2.854					**10007** CH-PB-5R	**10014** CH-PO-5R	**10021** CH-PM-5R	12,000
5 x 10	0.197 x 0.393	75	2.953					-	-	**10022** CH-PM-5R-C01	12,000

Stone Color	Blue	Orange	Gray
Grit	#800	#400	#220



XEBEC Stone™

Ceramic Fibers are formed into Stones capable of cutting on all sides

Starting Operating Parameters

Stone should be about 25% larger than the crosshole, but smaller than the bore.

Do not flex the shaft of the tool more than 0.08 inches.

Material	Description	3mm Stone	4mm Stone	5mm Stone	6mm Stone
		RPM	RPM	RPM	RPM
Aluminum Castings	1000- 3000	12,000	9,100	7,000	6,100
Aluminum Castings	5052- 6061	13,000	9,900	7,600	6,600
Copper Brass	C93200- B- 148-52	12,000	9,100	7,000	6,100
Carbon Steel Alloys	1010- 1060	13,500	10,200	7,800	6,800
Low Alloy Steel	S1- O2- 4140- 5150	13,700	10,300	8,000	7,000
High Alloy Steel	H11- T15- M42	13,900	10,400	8,200	7,200
Stainless Steel/ Castings	403- 405- 17- 4 PH	13,500	10,200	8,000	7,000
300 Series Stainless	304- 316	12,200	9,300	7,200	6,200
Cast Iron - Gray & Nodular	All	13,200	9,900	7,600	6,600
White/Hardened Cast Iron	All	14,500	11,000	8,700	7,600
Titanium	TiAL6V4- 6V6AL2Sn	14,000	10,500	8,200	7,300
High Temp Alloys	Inconel- Hastelloy	14,500	11,000	8,700	7,600
	Maximum RPM	**15,000**	**13,000**	**12,000**	**10,000**

XEBEC™

Back Burr Cutter & Path

Spherical deburring Cutter with a custom-made tool Path. For CNC deburring of entry and exit holes in a single pass.

Spherical Cutting Tool

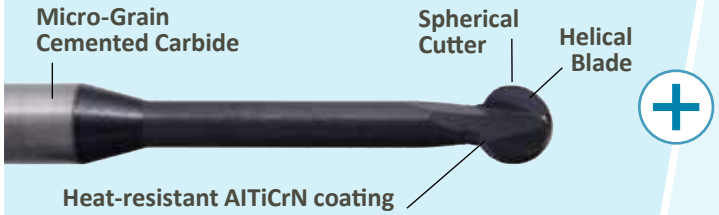
Custom Path Data

The tool can be mounted on machining center (XYZ-axis) or combined lathe (XZY or XZC-axis). 3-axis simultaneous control is required.

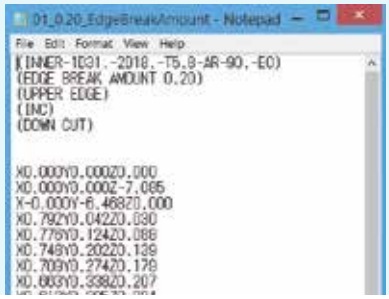

Machining Center


Combined Lathe

Xebec™ Back Burr Cutter



Xebec™ Generated Custom Tool Path



Custom Point Group Data

Up and Down Cutting Directions

Incremental and Absolute Modes

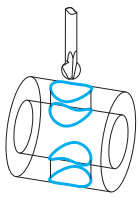
5 levels of Depth of Cut

Once approved, the Path Data is provided via email for immediate use on machine.

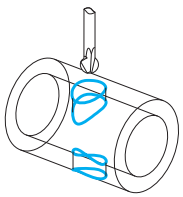
For a variety of edge shapes

One Cutter size supports various edges in different sizes and shapes.

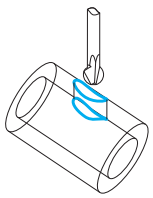
Orthogonal cross hole



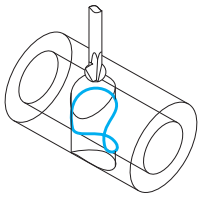
Off-center cross hole



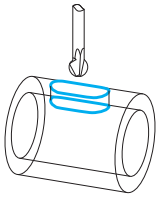
Angled cross hole



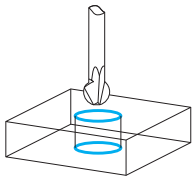
Broken cross hole



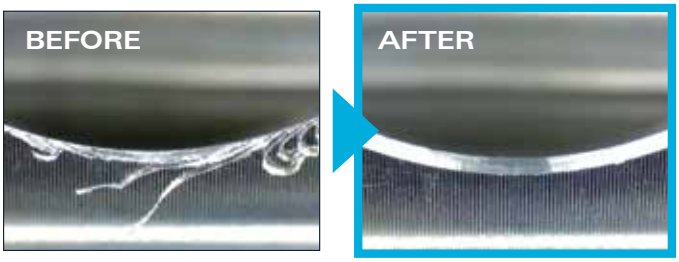
Slotted hole



Planar hole

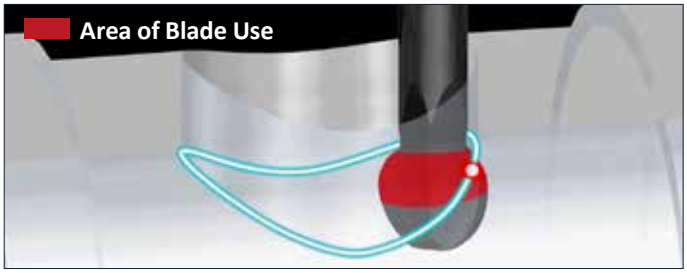


Stainless Steel

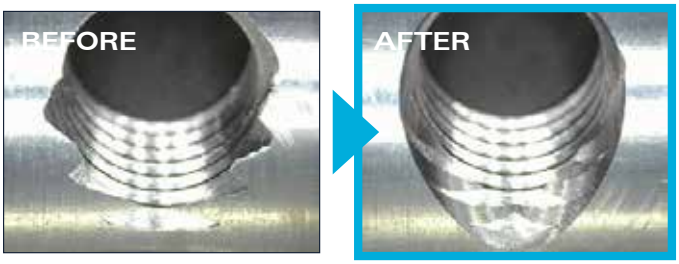


Longer Tool Life

Uses the entire cutting blade by constantly shifting the contact point

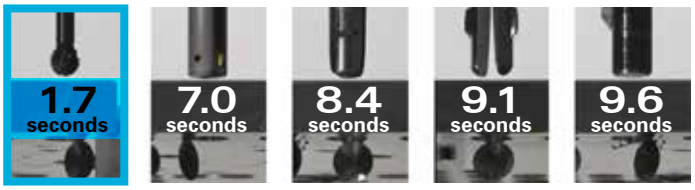


Tapped Holes



Uniform edge shape by consistent deburring amount

3 to 5 times Faster than Similar Tools



Back Burr Cutter & Path | Tool A | Tool B | Tool C | Tool D

YouTube Watch the video: **www.deburringtechnologies.com/learnmore**

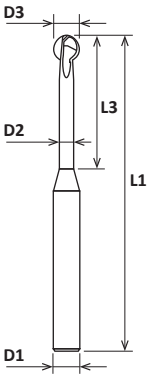
Try our online Application Tool

Determine if your Application is a fit.
The results are immediately available.

https://xebec-backburr-cutter.com/

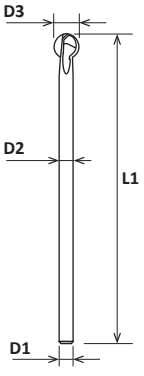
Neck Down Shank

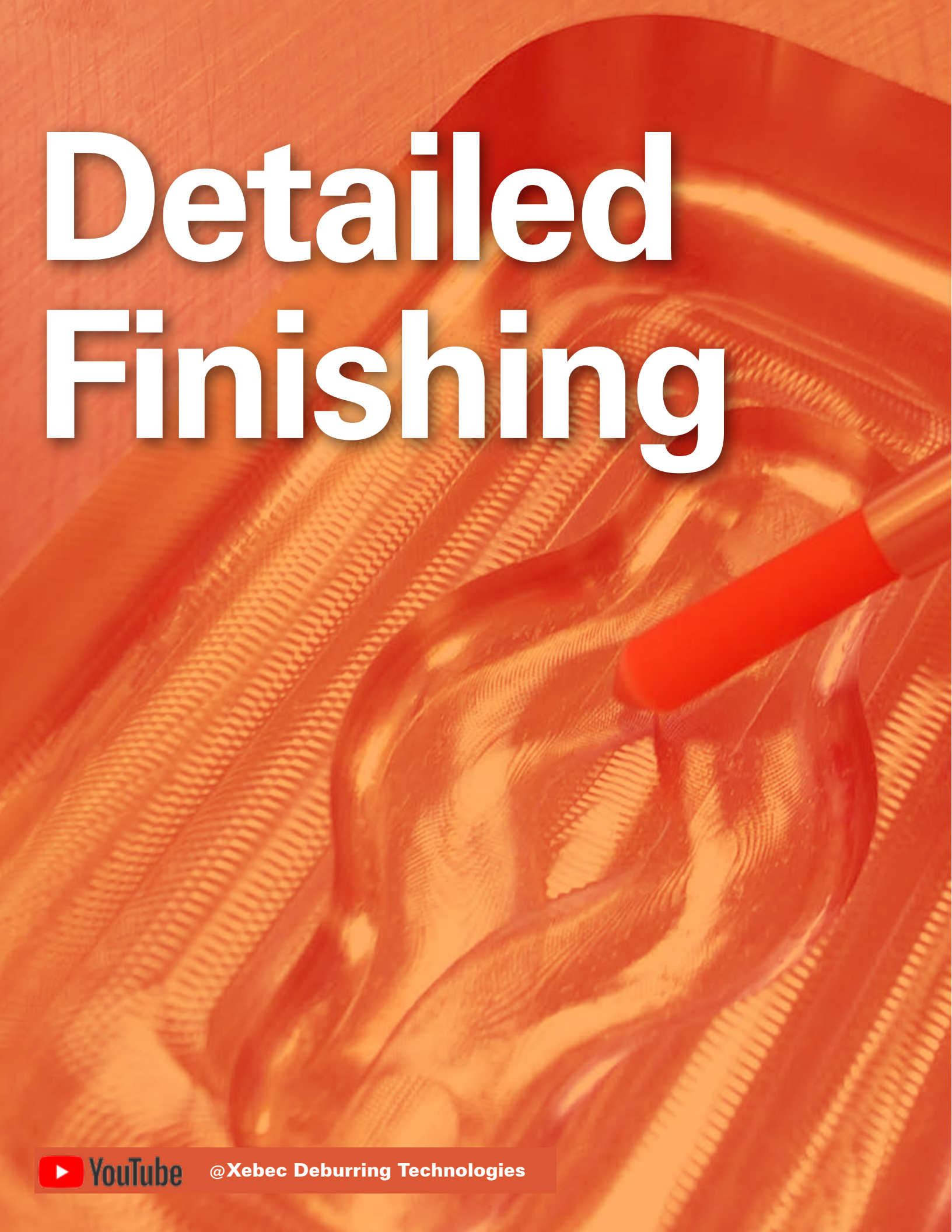
EDP	Part No.	D1 Shank Diameter		D2 Neck Diameter		D3 Cutter Diameter		L1 Overall Length		L3 Neck Length		Blades
		MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	
51000	XC-08-A	3	0.118	0.48	0.019	0.8	0.031	60	2.362	4.2	0.165	2
51001	XC-13-A	3	0.118	0.78	0.031	1.3	0.051	60	2.362	6.7	0.264	2
51002	XC-18-A	3	0.118	1.1	0.043	1.8	0.071	60	2.362	8.2	0.323	2
51013	XC-23-A	3	0.118	1.4	0.056	2.3	0.091	70	2.756	12.5	0.492	2
51003	XC-28-A	4	0.157	1.7	0.067	2.8	0.110	70	2.756	12.2	0.480	2
51014	XC-33-A	4	0.157	2	0.079	3.3	0.130	70	2.756	17.5	0.689	2
51004	XC-38-A	4	0.157	2.4	0.094	3.8	0.150	70	2.756	16.2	0.638	2
51005	XC-48-A	6	0.236	3	0.118	4.8	0.189	70	2.756	20.2	0.795	2
51006	XC-58-A	6	0.236	3.5	0.138	5.8	0.228	70	2.756	24.2	0.953	2
51015	XC-78-A	8	0.315	4.7	0.185	7.8	0.307	100	3.937	40	1.575	3
51016	XC-98-A	10	0.394	5.9	0.232	9.8	0.354	120	4.724	50	1.969	3



Straight Shank

EDP	Part No.	D1 Shank Diameter		D2 Shaft Diameter		D3 Cutter Diameter		L1 Overall Length		L3 Shaft Length		Blades
		MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	
51007	XC-18-B	1.1	0.043	1.1	0.043	1.8	0.071	50	1.969	48.2	1.898	2
51017	XC-23-B	1.4	0.056	1.4	0.056	2.3	0.091	60	2.362	57.7	2.272	2
51008	XC-28-B	1.7	0.067	1.7	0.067	2.8	0.110	70	2.756	67.2	2.646	2
51018	XC-33-B	2	0.079	2	0.079	3.3	0.130	80	3.149	76.7	3.020	2
51009	XC-38-B	2.4	0.094	2.4	0.094	0.38	0.015	85	3.346	84.62	3.331	2
51010	XC-48-B	3	0.118	3	0.118	4.8	0.189	105	4.134	100.2	3.945	2
51011	XC-58-B	3.5	0.138	3.5	0.118	5.8	0.228	120	4.724	114.2	4.496	2




Detailed
Finishing
YouTube
@Xebec Deburring Technologies

Xebec™ Micro Motor

Portable, battery-powered rotary tool

EDP	Item	Part No.
52000	Xebec Micro Motor	M2P33ST

Handpiece

Speed: 0-30,000

Maximum Torque: 3.5 Ncm

Weight: 0.3 lbs

Control Unit

Battery: Rechargeable Li-Ion

Operating time: approx. 5 hrs

Charge time: 3 hrs

Dimensions: 2.6” x 5” x 1.2”

Weight: 0.6 lbs

Easy To Use

Small-size, lightweight, and mobile system for quick manual deburring/polishing solutions.

Best solution for users who use XEBEC hand solutions, but require the productivity of machine tools on the shopfloor.

Digital RPM display supports safe use of XEBEC tools.

Stronger torque allows Xebec tools to cut freely under load.

Use with these XEBEC™ 3mm Shank Tools

XEBEC BRUSH™

End Type

XEBEC STONE™

Meister Rods

XEBEC STONE™

Flexible Shaft

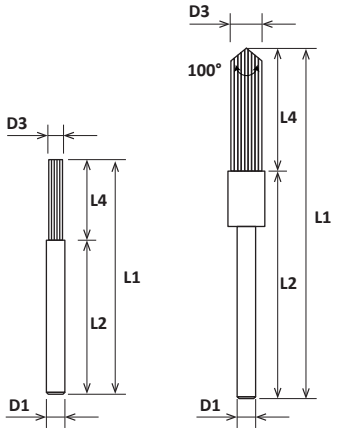
XEBEC STONE™

Mounted Point

XEBEC BRUSH™

End Type Brush

Ideal for cutter-mark removal, polishing and finishing of parts with narrow features.



Brush Size (D3)		Aggressiveness Less ⟷ More				D1 Shank Diameter		L1 Overall Length		L2 Shank Length		L4 Brush Length		Max RPM
MM	INCHES	Pink	Red	White	Blue	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	
1mm	0.039	**30050** A13-EB01S	**30054** A11-EB01S	-	-	3	0.118	52	2.047	37	1.457	15	0.591	15,000
1.5mm	0.059	**30051** A13-EB015S	**30055** A11-EB015S	-	-									
2mm	0.079	**30052** A13-EB02S	**30056** A11-EB02S	-	-									
2.5mm	0.098	**30053** A13-EB025S	**30057** A11-EB025S	-	-									
3mm	0.118	**30014** A13-EB03M	-	-	-	3	0.118	67	2.638	28	1.102	30	1.181	20,000
5mm	0.19	-	**60001** A11-EB06M	**60002** A21-EB06M	**60006** A31-EB06M	3	0.118	58	2.28	28	1.10	20	0.79	15,000

*60001, 60002 has 100 degree angled tip

Brush Color	Pink	Red	White	Blue
Aggressiveness	Least ⟷ Most			
Target Material	Resin	General steel	Stainless steel	
	Copper/Brass		Heat-resistant steel	
	Aluminum		Cast-iron	
				Hardest materials
Burr Thickness	Micro fine burrs	Burr root thickness up to 0.004”		
				Up to 0.008”
Target Finish	4 Ra or better		Up to 4 Ra	

XEBEC STONE™

Stone Mounted Point

Ideal for use with pneumatic tools at high rotational speed.
Cutting edges exposed across the entire surface.

Stone Color	Gray
Grit	#220

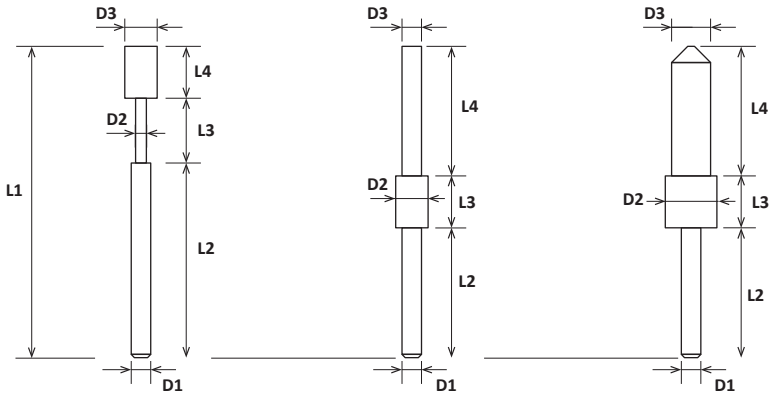

60003


60004


60005

Head	EDP	Part No.	D1 Shank Diameter		D2 Neck Diameter		D3 Stone Diameter		L1 Overall Length		L2 Shank Length		L3 Neck Length		L4 Stone Length		Max RPM
			MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	
Cylinder Shaft	**60003**	AX-PM-5RF	3	0.118	1.5	0.059	5	0.197	48	1.890	30	1.181	10	0.394	8	0.315	30,000
Solid Cylinder	**60004**	AX-PM-3R	3	0.118	5	0.197	3	0.118	48	1.890	20	0.787	8	0.315	20	0.787	60,000
Pointed tip	**60005**	AX-PM-6T	3	0.118	8	0.315	6	0.236	48	1.890	20	0.787	8	0.315	20	0.787	60,000

*60005 has 100 degree angled tip



XEBEC STONE™

Meister Finish

Additional sizes available. Please allow 2-3 week delivery on all Meister Finish products.

Stick Type

Tip cutting ceramic fiber stone

Dimension (mm) T	W	L	Red #1200	White #1000	Blue #800	Black #600	Orange #400	Light Brown #300	Dark Brown #220	Violet #120
0.5	4	100	**70043**	**70049**	**70017**	**70061**	**70067**	**70073**	**70010**	-
	6	100	**70045**	**70052**	**70057**	**70063**	**70069**	**70080**	**70085**	-
	10	100	**70047**	**70054**	**70059**	**70065**	**70071**	**70082**	**70087**	-
0.8	4	100	**70091**	**70096**	**70077**	**70105**	**70620**	**70076**	**70014**	-
1	1	100	**70127**	**70135**	**70141**	**70148**	**70155**	**70337**	**70167**	-
	2	100	**70128**	**70012**	**70142**	**70621**	**70019**	**70161**	**70050**	**70173**
	4	100	**70001**	**70002**	**70003**	**70004**	**70005**	**70006**	**70007**	**70008**
	6	100	**70025**	**70026**	**70027**	**70028**	**70029**	**70030**	**70031**	**70032**
	10	100	**70133**	**70018**	**70078**	**70153**	**70016**	**70013**	**70075**	**70178**
2	4	100	**70235**	**70242**	**70249**	**70256**	**70263**	**70270**	**70277**	**70283**
	6	100	**70237**	**70244**	**70251**	**70258**	**70265**	**70272**	**70279**	**70285**
3	4	100	**70289**	**70295**	**70301**	**70307**	**70313**	**70319**	**70325**	**70331**
	6	100	**70291**	**70297**	**70303**	**70309**	**70315**	**70321**	**70327**	**70333**

Heat Resistant

Stick will not soften, heat-resistant to 392 °F

Ultrasonic

Stick Type

Dimension (mm) T	W	L	Red #1200	Blue #800	Dark Brown #220	Violet #120
1	4	100	**70683**	**70705**	**70706**	**70690**
	6	100	**70684**	**70686**	**70688**	**70691**
	10	100	**70685**	**70687**	**70689**	**70692**
2	4	100	**70693**	**70696**	**70699**	**70702**
	6	100	**70694**	**70697**	**70700**	**70703**
	10	100	**70695**	**70698**	**70701**	**70704**

Diamond

Contains diamond abrasive fiber for materials harder than 57 HRc

For polishing and EDM scale removal

Ultrasonic

Stick Type

Dimension (mm) T	W	L	Black #200	Blue-Green #400	Gray #800
1	4	100	**70900**	**70901**	**70902**
	6	100	**70903**	**70905**	**70907**
	10	100	**70904**	**70906**	**70908**

Rod Type

Dimension (mm) D	L	Blue-Green #400
3	50	**70909**
	100	**70910**

Stick Holder

For manual use

EDP	Part	STICK WIDTH	
		MM	INCH
70962	SSH-4	4	0.157
70963	SSH-6	6	0.236
70964	SSH-10	10	0.393

Rod Holder

For manual use

EDP	Part	ROD DIAMETER	
		MM	INCH
70967	SNH-20	2-2.34	0.07-0.09
70968	SNH-30	3	0.118

Rod Type

Ceramic fiber cutting edges are exposed over the entire surface

Dimensions (mm)		Red #1200	White #1000	Blue #800	Black #600	Orange #400	Light Brown #300	Gray #220
D	L							
1	50	**70626**	**70628**	**70630**	**70632**	**70634**	**70636**	**70638**
	100	**70627**	**70629**	**70631**	**70633**	**70635**	**70637**	**70639**
1.5	50	**70614**	**70640**	**70642**	**70615**	**70644**	**70646**	**70648**
	100	**70625**	**70641**	**70643**	**70624**	**70645**	**70647**	**70649**
2	50	**70650**	**70652**	**70654**	**70656**	**70658**	**70660**	**70662**
	100	**70651**	**70653**	**70655**	**70657**	**70659**	**70661**	**70663**
2.34	50	**70616**	**70672**	**70617**	**70675**	**70677**	**70618**	**70619**
	100	**70671**	**70673**	**70674**	**70676**	**70678**	**70679**	**70680**
3	50	**70600**	**70601**	**70602**	**70603**	**70604**	**70605**	**70606**
	100	**70613**	**70612**	**70611**	**70610**	**70609**	**70607**	**70608**
	150	**70664**	**70665**	**70666**	**70667**	**70668**	**70669**	**70670**

Use 3mm Diameter Rods in Xebec Micro Motor

Pencil

EDP	Part	Color, Grit	T		W		L		Pencil Holder	Qty. Per Pack
			MM	IN	MM	IN	MM	IN		
70950	A-R-0505S	Red #1200	0.5	.019	0.5	.019	50	1.969	**70960**	3 stones
70952	A-B-0505S	Blue #800								
70951	A-R-0909S	Red #1200	0.9	.036	0.9	.036	50	1.969	**70961**	
70953	A-B-0909S	Blue #800								

Pencil Holder

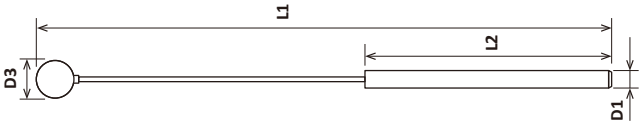
0.5 mm Holder
70960
PCL05

0.9 mm Holder
70961
PCL09

XEBEC STONE™

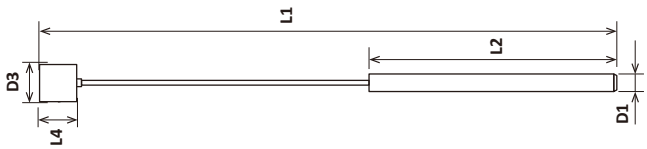
Flexible Shaft Stone

Soft contact abrasive ceramic fiber stone. Cutting edges exposed across the entire surface.
For deburring crossholes and detailed finishing of parts



Ball Type

Ball Size (D3)		L1 Overall Length		D1 Shank Diameter		L2 Shank Length		Aggressiveness Less ⟷ More			Max RPM
MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	Blue - #800	Orange - #400	Gray - #220	
3mm	0.118	71.5	2.815	3	0.118	30	1.181	**10001** CH-PB-3B	**10008** CH-PO-3B	**10015** CH-PM-3B	15,000
4mm	0.157	151.5	5.965	3	0.118	30	1.181	**10002** CH-PB-4B	**10009** CH-PO-4B	**10016** CH-PM-4B	13,000
5mm	0.197	72	2.835	3	0.118	30	1.181	**10003** CH-PB-5B	**10010** CH-PO-5B	**10017** CH-PM-5B	12,000
6mm	0.236	152	5.984	2.3	0.091	148	5.827	**10004** CH-PB-6B	**10011** CH-PO-6B	**10018** CH-PM-6B	10,000
10mm	0.393	72.5	2.854	3	0.118	30	1.181	-	-	**10027** CH-PM-10B	7,000
3mm	0.118	152.5	6.004	2.3	0.091	147.5	5.807	-	-	**10080** CH-PM-3B-L	1,000
4mm	0.157	73	2.874	3	0.118	30	1.181	-	-	**10081** CH-PM-4B-L	3,000
5mm	0.197	153	6.024	2.3	0.091	147	5.787	-	-	**10082** CH-PM-5B-L	3,000
6mm	0.236	75	2.953	3	0.118	30	1.181	-	-	**10083** CH-PM-6B-L	3,000
10mm	0.393	155	6.102	2.3	0.091	145	5.709	-	-	**10084** CH-PM-10B-L	2,000



Cylinder Type

Cylinder Size (D3 x L4)		L1 Overall Length		D1 Shank Diameter		L2 Shank Length		Aggressiveness Less ⟷ More			Max RPM
MM	INCHES	MM	INCHES	MM	INCHES	MM	INCHES	Blue - #800	Orange - #400	Gray - #220	
3 x 3	0.118 x 0.118	71.5	2.815	3	0.118	30	1.181	**10005** CH-PB-3R	**10012** CH-PO-3R	**10019** CH-PM-3R	15,000
4 x 4	0.157 x 0.157	72	2.835					**10006** CH-PB-4R	**10013** CH-PO-4R	**10020** CH-PM-4R	13,000
5 x 5	0.197 x 0.197	72.5	2.854					**10007** CH-PB-5R	**10014** CH-PO-5R	**10021** CH-PM-5R	12,000
5 x 10	0.197 x 0.393	75	2.953					-	-	**10022** CH-PM-5R-C01	12,000

See Operating Parameters for Surface Brush page 19

Operating Parameters

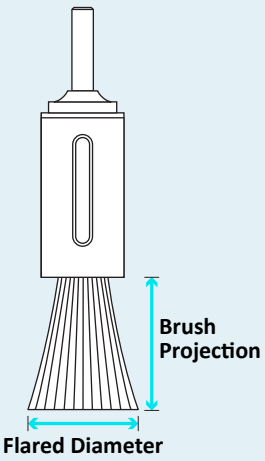
For help with applications and operating parameters,
call the Xebec Deburring Technologies Technical Hotline:

1-800-434-9775

More operating parameters and tech tips online at
deburringtechnologies.com

XEBEC BRUSH™ SURFACE

For Crosshole Deburring of Large Diameters

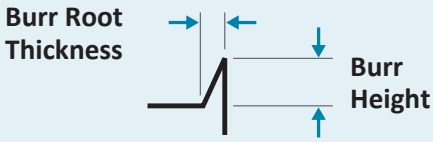


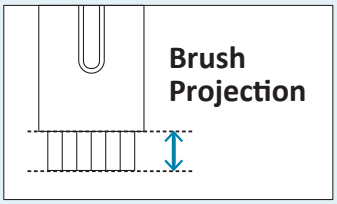
Brush Size	EDP	RPM	Brush Projection					
			1.181"	1.574"	1.771"	1.968"	2.362"	2.755"
			Flared Diameter					
15 mm	30005 A11-CB15M	6000 rpm	1.023"	1.771"	2.165"	2.362"	-	-
		5000 rpm	0.984"	1.417"	1.574"	1.968"	-	-
		4000 rpm	0.826"	1.062"	1.062"	1.062"	-	-
	30011 A21-CB15M	6000 rpm	0.984"	1.417"	1.811"	2.283"	-	-
		5000 rpm	0.866"	1.062"	1.062"	1.417"	-	-
		4000 rpm	0.826"	0.866"	0.866"	0.905"	-	-
25 mm	30004 A11-CB25M	5000 rpm	1.574"	2.519"	3.346"	4.173"	-	-
		4000 rpm	1.456"	1.771"	2.874"	3.385"	4.724"	-
		3000 rpm	1.377"	1.692"	2.204"	2.992"	4.094"	4.724"
	30010 A21-CB25M	5000 rpm	1.377"	1.771"	2.755"	2.755"	4.015"	-
		4000 rpm	1.299"	1.653"	2.244"	2.244"	2.992"	3.661"
		3000 rpm	1.259"	1.456"	1.811"	1.811"	2.362"	2.559"
40 mm	30003 A11-CB40M	4000 rpm	-	-	3.700"	4.330"	-	-
		3000 rpm	1.968"	2.401"	2.874"	3.346"	4.842"	-
		2000 rpm	1.811"	2.165"	2.283"	2.559"	3.425"	4.330"
		1000 rpm	1.771"	1.850"	1.929"	1.968"	2.047"	2.086"
	30009 A21-CB40M	4000 rpm	-	-	2.755"	3.267"	-	-
		3000 rpm	1.850"	2.125"	2.440"	2.716"	3.543"	4.527"
		2000 rpm	1.771"	1.929"	2.165"	2.244"	2.559"	2.834"
		1000 rpm	1.692"	1.732"	1.732"	1.732"	1.771"	1.811"

XEBEC BRUSH™ SURFACE
Operating Conditions

Target Burr Size

Burr Root Thickness of **0.008”** or less
(Burrs are bent with a fingernail)

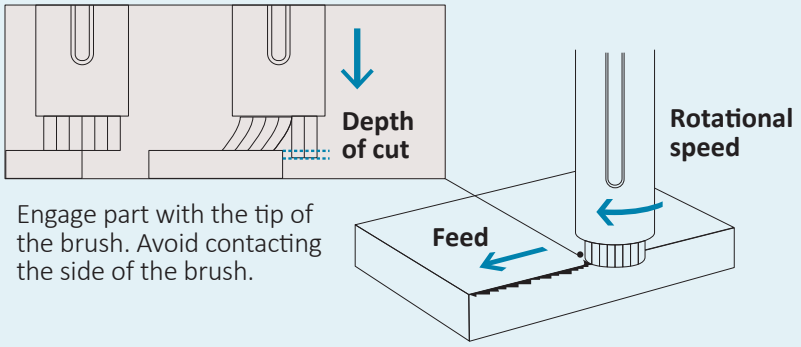




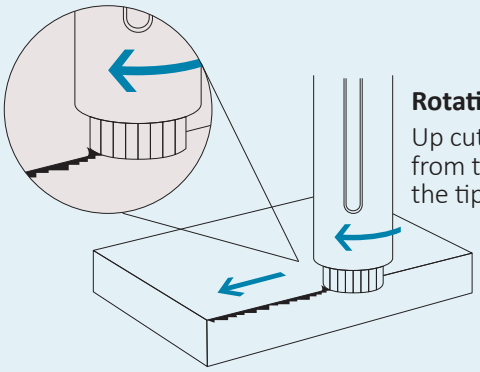
Brush Size Diameter	6 mm	15 mm	25 mm	40 mm	60 mm	100 mm
Brush Projection All Grades (in)	0.3125-0.375"	0.375-0.5625"	0.5-0.625"	0.5-0.625"	0.5-0.75"	0.5-0.75"

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

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

Use of Coolant/Oil will optimize results

- **It will Extend Tool Life**
- **Improves Surface Finish**

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, A31 Blue with the same parameters

XEBEC BRUSH™ SURFACE

Starting Operating Parameters for Automated Machining

		Brush Size (Diameter)		6 mm	15 mm	25 mm	40 mm	60 mm	100 mm	Feed Rate	
		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"		
		Maximum RPM		10,000	6,000	5,000	3,000	2,000	1,000	Finishing	Deburring
Material	SFPM	1st Choice	2nd Choice	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 the Number of Passes
Each pass will improve finish by approximately one half

2 Increase Rotational Speed
In increments of 25%, Do not exceed Maximum RPM

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

Rotational Speed	Depth of Cut	Feed Rate
^	^	^

Decrease Grinding Power

Rotational Speed	Depth of Cut	Feed Rate
v	v	v

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Now Available XEBEC™ Kits

Big savings on a selection of popular products. Kits come packed and labeled in a durable hardshell case with protective foam insert.

Case Dimensions: LENGTH: 12 in x WIDTH: 8 in x HEIGHT: 3 in

14-pc Basic Kit
#82001
Included EDP's will vary by availability

Kit includes:

- Wheel Brush (1)
- Wheel Brush Shaft (1)
- 15mm Brush Sleeve (1)
- 15mm Surface Brush (3)
- Stone Flexible Shaft (2)
- Meister Finish Stick (2)
- End-Type Brush (2)
- Crosshole Brush (2)

19-pc Premium Kit
#82000
Included EDP's will vary by availability

Kit includes all items from Basic Kit shown above PLUS:

- Floating Holder (1)
- Floating Holder Bushing (2)

TEST TOOL POLICY Due to the unique design of Xebec products, we have achieved optimal success when Deburring Technologies technical personnel assist in the selection of proper tool and operating parameters. Provided our representative has reviewed an application and provided processing recommendations, we are pleased to provide reasonable quantities of test product with a "Guaranteed Trial" purchase order. Such product will be invoiced and is payable per our normal NET – 30 DAY terms. Should the product not perform as promised, simply contact us for a return authorization within forty five (45) days of purchase with a written report of how the product failed to meet the promised performance. Once we have received and inspected the product, we will issue full credit for the returned product. All returns for other than guaranteed trial performance must be received within thirty (30) days from date of purchase and be received in new condition in the original packaging. Once we have received and inspected the product, we will issue full credit for the returned product.

SAFETY WARNING Cutting fiber brushes and stones are cutting tools and are often rotated at high speeds with a power tool or in a machine tool. They should never be operated at higher than the maximum speeds listed. When using these tools, safety glasses and gloves should be worn. Breathing the dust created by using these products for prolonged periods of time should be avoided.

ISA INDUSTRIAL SUPPLY ASSOCIATION