

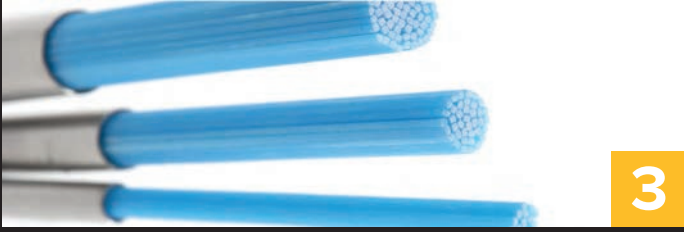
# DEBURRING



**CERAMIC FIBRE  
DEBURRING & SURFACE  
FINISH SOLUTIONS**



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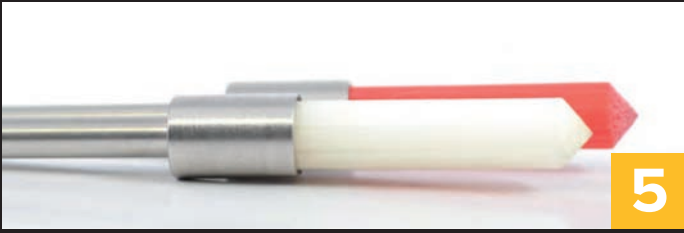
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Strengths of XEBEC Brushes



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Strengths of XEBEC Brushes – deburring & finishing



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Strengths of XEBEC Brushes – deburring & finishing



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XEBEC Brush™ Surface Accessories



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XEBEC Stone™ Flexible Shaft – cross-hole deburring



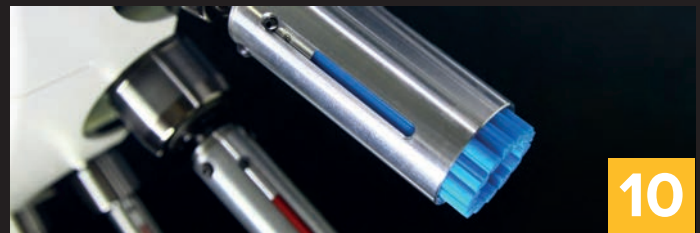
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XEBEC Stone™ Mounted Point – for high speed rotating tool



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XEBEC Ceramic Stone™ Meister Finish – polishing & finishing

# Xebec Beats the Competition

## 1 Save time & money! Automate the deburring process.

Xebec Technology Co LTD offers a wide range of deburring and surface finishing solutions that dramatically improve manufacturing productivity and greatly reduce costs. Xebec products utilize a unique, patented process to produce brushes, sticks and stones of solid ceramic fibres that simply outperform older technologies.

The ceramic fibres 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 fibre rod maintains its shape with no deformation even after repeated use. This leads to consistent performance time after time. Ceramic fibre products can be used in CNC, robotic or hand held devices on materials up to 65Rc for:

- Surface deburring, finishing and polishing
- Cross hole deburring and bore finishing
- Polishing of moulds and other detailed parts

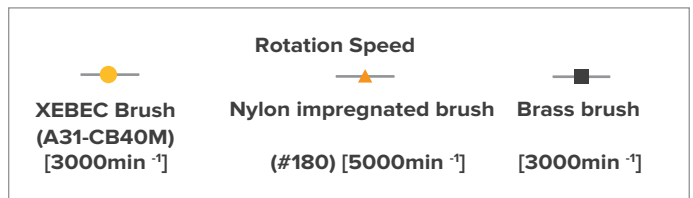
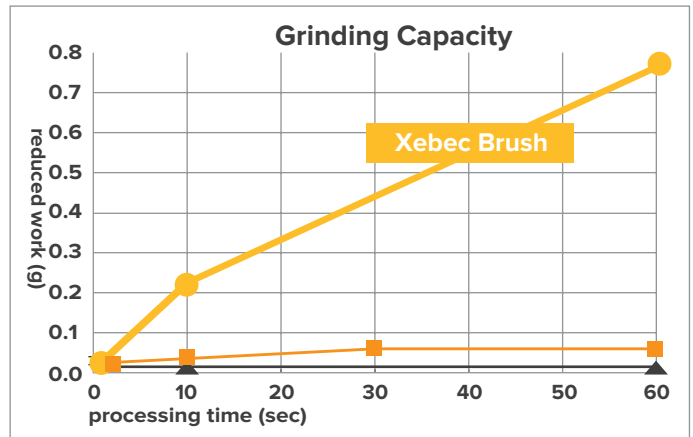
Even after repeated use, the brushes do not become distorted.

### Comparison of brush filament shapes after use.

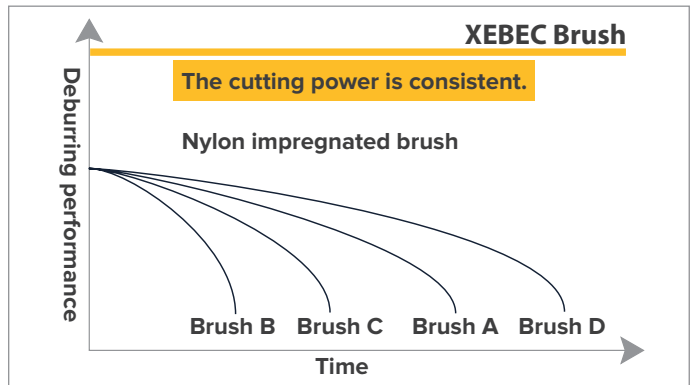
- 1 Brass Wire
- 2 Steel Wire
- 3 Abrasive impregnated nylon brush filament
- 4 XEBEC ceramic fibre bristle (A11:Red)

**They maintain their straight shape, and do not spread out like a toothbrush.**

Through the self-sharpening of cutting edges on the fibre ends, the brushes do not become clogged, and new, fresh cutting edges are always exposed.

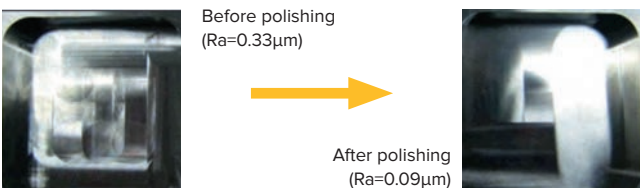


The stability of performance makes true automation possible. Particularly since this “controllable brush” constantly maintains its stable cutting power, it is possible to automate the deburring and polishing process.

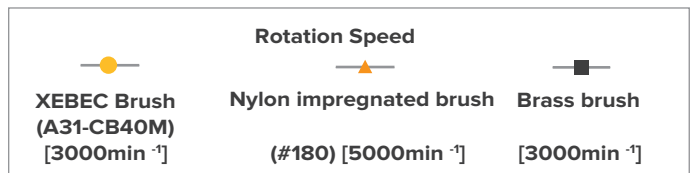
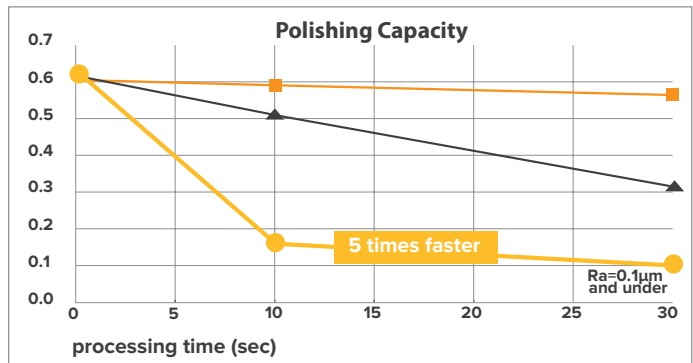


## 3 Amazing Polishing Ability

Best achievable surface smoothness: Ra=0.1µm The superfine fibres, measured in micrometers, can improve surface roughness in a short time.

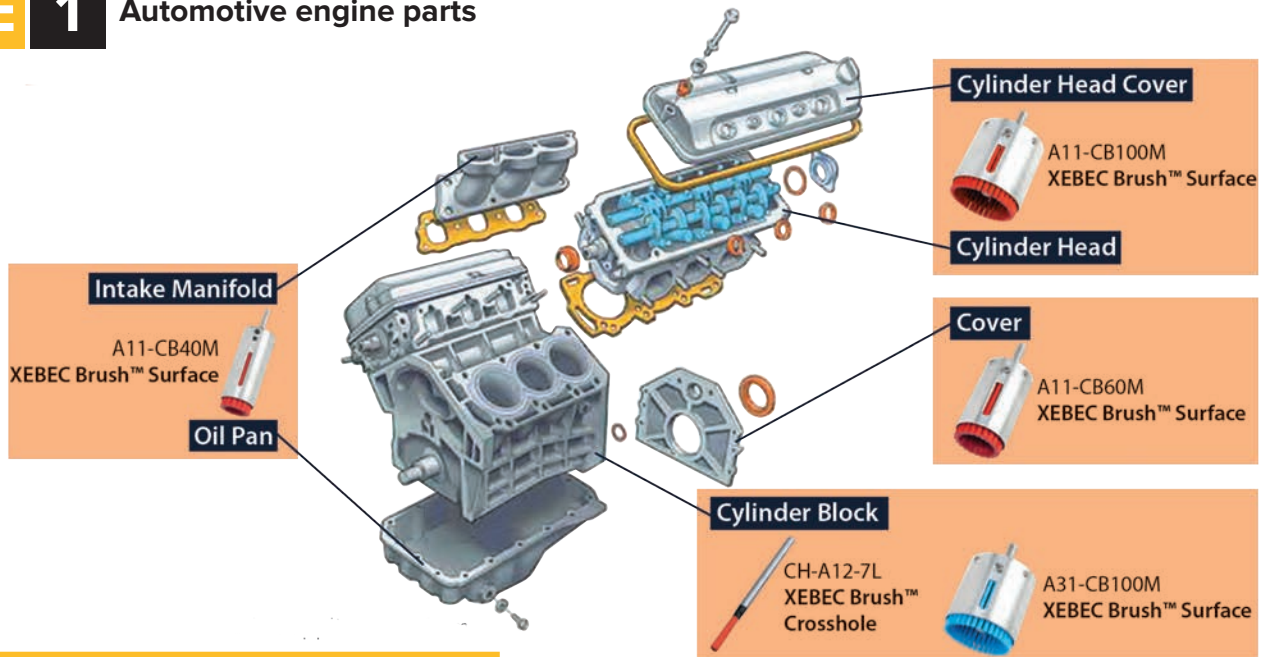


- Material/NAK80
- XEBEC tool used/A31-CB15M, S5000/F300
- XEBEC Brush™ Surface - Improving approx. 0.5µm in 10 sec
- Nylon impregnated brush - Improving approx. 0.1µm in 10 sec.
- Brass brush - Surface roughness is not improved



# Xebec Brush™ Successful Applications

## CASE 1 Automotive engine parts



Can be used for many other applications, from powertrain parts to fuel injection mechanism parts

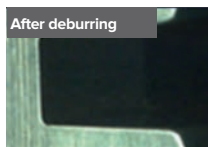
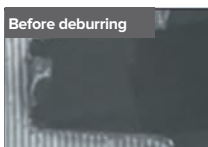
## CASE 2 Automated Deburring and Polishing Applications

### Deburring



<b>Category</b>	Aerospace part
<b>Workplace</b>	Turbine disk
<b>Material</b>	Turbine Inconel
<b>Process details</b>	Deburring of gear edge surface after grinding process

XEBEC product used:  
A31-CB40M  
Rotation speed:  
1500min<sup>-1</sup>  
Depth of cut: 0.5mm  
Processing time:  
N/A Feed: 2400mm/min

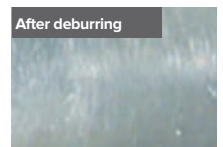
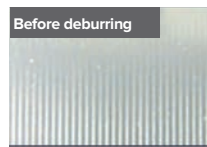


### Cutter Mark Removal



<b>Category</b>	Medical part
<b>Workplace</b>	Artificial hip joint
<b>Material</b>	Titanium alloy
<b>Process details</b>	Cutter mark removal after ball end milling process

XEBEC product used:  
A21-CB25M  
Rotation speed:  
1500min<sup>-1</sup>  
Depth of cut: 1mm  
Processing time:  
N/A Feed: 100mm/min

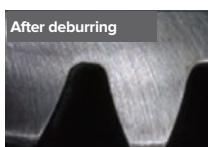
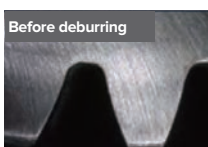


### Edge Deburring



<b>Category</b>	Machine part
<b>Workplace</b>	Spur gear
<b>Material</b>	Carbon steel S45C
<b>Process details</b>	Edge deburring after gear cutting process

XEBEC product used:  
A31-CB25M  
Rotation speed:  
3500min<sup>-1</sup>  
Depth of cut: 1mm  
Processing time: N/A  
Feed: 2500mm/min

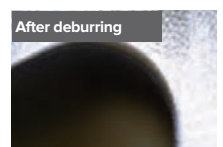
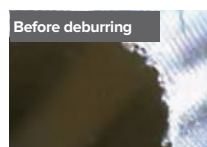


### Fine Deburring



<b>Category</b>	Automotive part, semiconductor device part
<b>Workplace</b>	Cooling fins
<b>Material</b>	Carbon steel Aluminium alloy
<b>Process details</b>	Edge deburring

XEBEC product used:  
A21-CB25M  
Rotation speed:  
1500min<sup>-1</sup>  
Depth of cut: 1mm  
Processing time:  
N/A Feed: 100mm/min



# Xebec Brush™ Surface & End Type



## XEBEC Brush™ Surface

Brush Dimensions		Aggressiveness								Sleeve size	Max RPM
		Less <<<<<<<<>>>>>> More									
Ø mm	LENGTH mm	PINK		RED		WHITE		BLUE			
6	30	A13-CB06M XCBM-06A13	£43.14	A11-CB06M XCBM-06A11	£34.52	A21-CB06M XCBM-06A21	£34.52	A31-CB06M XCBM-06A31	£36.68	S06M XSM-06	10,000
15	50	A13-CB15M XCBM-15A13	£98.63	A11-CB15M XCBM-15A11	£80.13	A21-CB15M XCBM-15A21	£80.13	A31-CB15M XCBM-15A31	£84.75	S15M XSM-	6,000
25	75			A11-CB25M XCBM-25A11	£178.74	A21-CB25M XCBM-25A21	£178.74	A31-CB25M XCBM-25A31	£188.76	S25M XSM-	5,000
40	75			A11-CB40M XCBM-40A11	£283.53	A21-CB40M XCBM-40A21	£283.53	A31-CB40M XCBM-40A31	£299.76	S40M XSM-	3,000
60	75			A11-CB60M XCBM-60A11	£468.44	A21-CB60M XCBM-60A21	£468.44	A31-CB60M XCBM-60A31	£468.44	S60M XSM-	2,000
100	75			A11-CB100M XCBM-100A11	£838.26	A21-CB100M XCBM-100A21	£838.26	A31-CB100M XCBM-100A31	£838.26	S100M XSM-	1,000

## XEBEC Brush™ Sleeve

Sleeve Description	DS part Number	Dimensions				Price
		Shank		Sleeve external		
		Ø MM	LENGTH MM	Ø MM	OAL MM	
S06M	XSM-06	6	29	10	70	£30.83
S15M-P	XSM-15	6	29	18.5	90	£38.52
S25M	XSM-25	8	30	30	140	£97.08
S40M	XSM-40	8	30	45	140	£107.87
S60M	XSM-60	12	35	65	150	£215.73
S100M	XSM-100	16	40	110	162	£323.60



## XEBEC Brush™ End Type

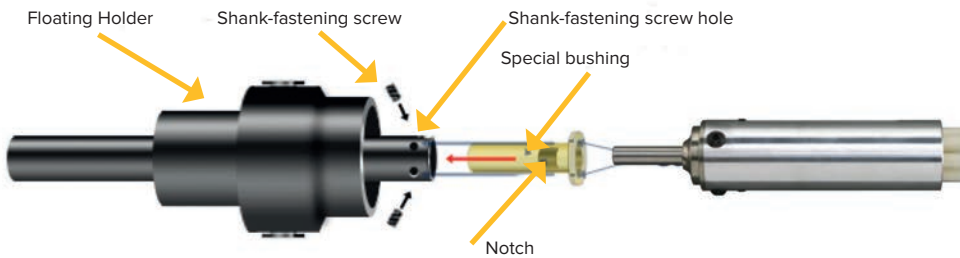


Shank		Overall Length MM	Less <<<<<<<>>>>>> More				Max		
Ø MM	LENGTH MM		PINK	RED	WHITE		RPM		
3	37	67	A13-EB03M XEEM-03A13	£21.57			20,000		
6	28	58			A11-EB06M XEEM-06A11	£18.50	A21-EBO6M XEEM-06A21	£18.50	12,000

# Xebec Brush™ Surface Accessories

## XEBEC Floating Holder™

- Improves brush life and surface finish
- Provides consistently higher quality, automated process control and longer tool life.
- The maximum stroke length of the holder is 0.236 (6mm).
- Excellent choice for CNC milling operations.
- The deburring & surface finishing brush floats on the work piece under constant pressure (depth of cut) due to an internal spring in the floating holder. The pressure can be adjusted by using various spring tensions.
- Floating holder can be used (with included bushing) on brushes ranging from 6mm to 40mm in size. (Currently not available for 60mm & 100mm)



DS CODE	XEBEC CODE	SHANK	AXIAL FLOAT MM	BORE MM	MATCHING BRUSH SLEEVE	PRICE
XFH	FH-ST12	12mm	6	8	S06M, S15M-P, S25M, S40M	£261.00
XFH-ST20-60	FH-ST20-60	20mm	6	12	S60M	£482.80
XFH-ST20-100	FH-ST20-100	20mm	6	16	S100M	£482.80
XFH-BT30	FH-BT30	BT30	6	8	S06M, S15M-P, S25M, S40M	£436.27
XFH-BT40	FH-BT40	BT40	6	8	S06M, S15M-P, S25M, S40M	POA
XFH-BT40-16	FH-BT40-16	BT40	6	16	S100M	POA

## XEBEC Brush Length Adjustment Tool™

Part Number: XP-EZ-001 EDP: 50004

- Allows quick in-machine brush adjustment
- No need to take the Cutting Fibre out Brush of the machine
- No need to measure brush projection length each time
- Ideal for use in mass production lines

### How to Use Brush Length Adjustment Tool

1. Move brush rest using adjustment knob to set the amount of brush projection.
2. Tighten the locking nut.
3. Hold the unit in one hand, and align sleeve rest with sleeve tip.
4. Loosen the screws to allow the brush to drop to the brush rest.
5. Tighten the screws to secure brush in place.

BRUSH LENGTH TOOL		
DS CODE	XEBEC CODE	PRICE
XBLA	XP-EZ-001	£65.25





# XEBEC Brush™ Crosshole Deburring

## Successful Applications

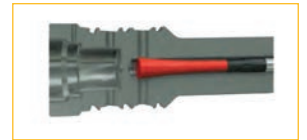
<b>Category</b>	Automotive part
<b>Workplace</b>	Screw
<b>Material</b>	Stainless steel SUS304
<b>Process details</b>	Machining center/Crosshole deburring of internal diameter

XEBEC product used:  
 CH-A33-5M  
 Rotation speed:  
 10000min-1  
 Depth of cut: 1mm  
 Feed: 300mm/min



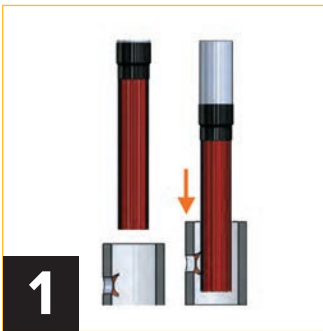
<b>Category</b>	Automotive transmission part
<b>Workplace</b>	Input shaft
<b>Material</b>	SCM
<b>Process details</b>	Custom machine/Crosshole deburring of internal diameter

XEBEC product used:  
 CH-A 12-7M  
 Rotation speed:  
 10000min-1  
 Feed:  
 800mm/min



## How to Use –

The tip of the rod effectively removes burrs under centrifugal force creating a finished edge



**1**  
 Insert brush while not in motion.  
 \*If you rotate the brush outside the cylinder, the bristles may be damaged or scattered.



**2**  
 Rotate brush past the crosshole.



**3**  
 Work brush back and then forward.  
 \*Pulling the brush back past the crossholes prevents burrs from being laid flat against the interior surface of the cylinder.



**4**  
 Stop brush rotation and remove brush while it is at rest.  
 \*Working the brush both clockwise and counter clockwise will increase the deburring effect and result in a more uniform edge.

### RED

TARGET BORE Ø	DS CODE	XEBEC CODE	BRUSH Ø	OAL	SHANK LENGTH	SHANK Ø	MAX RPM	PRICE
MM			MM	MM	MM	MM		
3.5 - 5Ø	XCHM-01.5A12	CH-A12-1.5M	1.5	120	70	3	20,000	£33.06
5 - 8Ø	XCHM-03A12	CH-A12-3M	3	120	70	3	12,000	£33.06
	XCHL-03A12	CH-A12-3L		170	120	4	12,000	£58.10
8 - 10Ø	XCHM-05A12	CH-A12-5M	5	120	70	6	12,000	£45.08
	XCHL-05A12	CH-A12-5L		170	120	6	12,000	£74.12
8 - 10Ø	XCHM-07A12	CH-A12-7M	7	120	70	6	12,000	£65.10
	XCHL-07A12	CH-A12-7L		170	120	8	12,000	£98.46



Suggested starting operating parameters are 6,000 to 10,000 RPM at 12 to 15 inches per minute feed rate

### BLUE

TARGET BORE Ø	DS CODE	XEBEC CODE	BRUSH Ø	OAL	SHANK LENGTH	SHANK Ø	MAX RPM	PRICE
MM			MM	MM	MM	MM		
5 - 8Ø	XCHM-03A33	CH-A33-3M	3	130	70	3	12000	£37.44
8 - 10Ø	XCHL-03A33	CH-A33-3L	5	180	120	4	12000	£66.08
	XCHM-05A33	CH-A33-5M		130	70	6	12000	£51.26
10 - 14Ø	XCHL-05A33	CH-A33-5L	7	180	120	6	12000	£84.39
	XCHM-07A33	CH-A33-7M		130	70	6	12000	£73.9
14 - 20Ø	XCHL-07A33	CH-A33-7L	11	180	120	8	12000	£111.36
	XCHM-011A33	CH-A33-11M		130	70	10	10000	£85.21





# XEBEC Brush™ Surface for Crosshole Deburring Large Diameters

Deburring brush flare. Maximum bore diameter & brush projection



p = brush projection

15MM BRUSH	A11-CB15M RED	BRUSH PROJECTION (P)	30MM	40MM	45MM	50MM	SLEEVE REQUIRED
		6,000 RPM	25.98	44.98	54.99	59.99	
A21-CB15M WHITE	A11-CB15M RED	5,000 RPM	24.99	35.99	39.98	49.99	S15M-P
		4,000 RPM	20.98	26.97	26.97	26.97	
		6,000 RPM	24.99	35.99	46.00	57.99	
		5,000 RPM	22.00	26.97	26.97	35.99	
		4,000 RPM	20.98	22.00	22.00	22.99	

25MM BRUSH	A11-CB25M RED	BRUSH PROJECTION (P)	30MM	40MM	45MM	50MM	60MM	70MM	SLEEVE REQUIRED
		5,000 RPM	39.98	63.98	84.99	105.99			
A21-CB25M WHITE	A11-CB25M RED	4,000 RPM	36.98	44.98	73.00	85.98	119.99	119.99	S25M
		3,000 RPM	34.98	42.98	55.98	76.00	103.99		
		5,000 RPM	34.98	44.98	69.98	69.98	101.98		
		4,000 RPM	32.99	41.99	57.00	57.00	76.00	92.99	
		3,000 RPM	31.98	36.98	46.00	46.00	59.99	65.00	

40MM BRUSH	A11-CB40M RED	BRUSH PROJECTION (P)	30MM	40MM	45MM	50MM	60MM	70MM	SLEEVE REQUIRED
		4,000 RPM			93.98	109.98		0	
A21-CB40M WHITE	A11-CB40M RED	3,000 RPM	49.99	60.99	73.00	84.99	122.99	0	S40M
		2,000 RPM	46.00	54.99	57.99	65.00	87.00	109.98	
		1,000 RPM	44.98	46.99	49.00	49.99	51.99	52.98	
		4,000 RPM			69.98	82.98		0	
		3,000 RPM	46.99	53.98	61.98	68.99	89.99	114.99	
		2,000 RPM	44.98	49.00	54.99	57.00	65.00	71.98	
		1,000 RPM	42.98	43.99	43.99	43.99	44.98	46	

# Operating Parameters

## How to Change Parameters

- If burrs remain, increase rotation speed to the maximum
- If the edge is too rounded after removing the burrs:
  - Decrease the rotation speed in increments of 40"/min
  - If you want to shorten cycle time, increase the feed rate in increments of 40"/min

	Rotation Speed	Depth of cut	Feed
To increase grinding power	↑	↑	↓
To decrease grinding power	↓	↓	↑

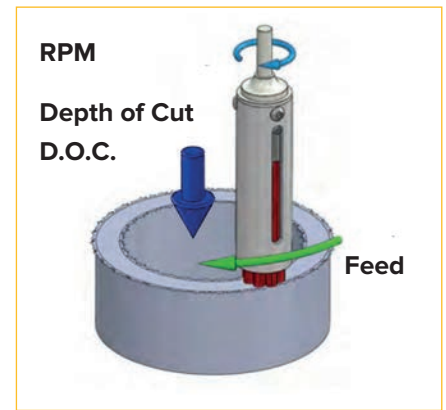
## Maximizing Performance

### Maximizing Deburring Operation

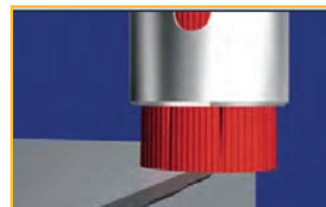
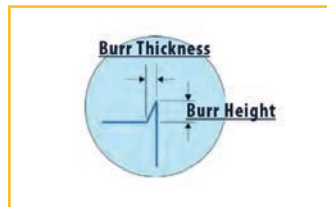
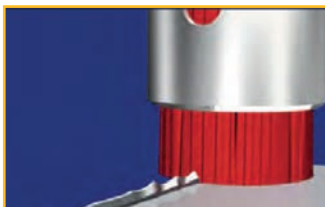
- 1) Increase RPM to the maximum allowed.
- 2) Decrease feed rate in 10% increments.
- 3) Do not change original parameters but increase number of passes.
- 4) You can try a more rigid brush that will increase grinding power.

### Maximizing Tool Life

- 1) Decrease RPM in 10% increments.
- 2) Increase feed rate by 10% increments.
- 3) You can try another brush colour A21 White, A11 Red, A31 Blue with the same parameters.



Depth of Cut - All Brush Grades			
polishing	vertical burr	horizontal burr	heavy burr
0.012"	0.020"	0.040"	0.060"



### Vertical Burr

Burr that is upwardly generated on edge after end milling or drilling. In this case, tip of a brush can contact the burr vertically.

### Horizontal Burr

Burr that is sideways generated on edge after face milling. In this case, tip of a brush can contact the burr horizontally.

# Application Tips

## Brush Color

All Xebec brushes are made from the same proprietary ceramic fibres manufactured into rods, or bristles, of different thicknesses. The greater the bristle thickness, the more aggressive the cutting action of the brush and therefore the more material removed. The brush colour signifies the relative thickness of the bristles.

### PINK:

Softer and more flexible than the white and red versions. It results in no change in part dimensions or features. It is best used for detailed deburring of smaller more intricate parts or soft metals without breaking edges. Ideal for deburring small bores Ø0.3MM.

### RED:

More flexible and will conform to slight work piece variations. It is best used on burrs that are ≤ 0.1mm (.0039") in thickness or materials that are < 45 Rc.

### WHITE:

More rigid and has more aggressive grinding action that will provide longer tool life, run at higher speeds and it is best suited for harder materials. Because of its rigidity, it is not best suited for interruptions and uneven surfaces.

### BLUE:

Most aggressive cutting fibre, three to four times more aggressive than white. It can handle burrs up to 0.5mm when the burr is vertical to the brush tip and 1mm when the burr is horizontal to the brush tip.

## Bristles and Grinding Power

	End milling process (vertical burrs)	Milling process (Horizontal burrs)	End milling process (vertical burrs)	Gear cut processing fine blanking (Vertical burrs)	Grinding power ↑	Targeted burrs, root thickness
Casted metal hard-to-cut material	A31				A31 0.1 0.2mm	0.1-0.2mm
General steel	A21				A21 0.1 mm	0.1 mm
Aluminium	A11				A11 to 0.1mm	0.1 mm
Resin engineering plastics	A13				A13 Micro fine burrs	Micro fine burrs

## Brush Selection

When selecting a deburring brush, first take into consideration the size of the burr and the work piece material. Blue is the most aggressive & can handle the largest burrs. White is the next aggressive followed by red and pink. Because each application is unique, final choice in selection of deburring brush is dependent upon burr size & your surface finish requirement.

## Choosing the Correct Brush Size

### Use a smaller brush...

for those that prefer a less expensive tool that requires multiple passes.



### Use a bigger brush...

for those that are most concerned about minimizing cycle time.

Choose a brush size which is 1.5 to 2 times wider than the width of the surface of the work piece. This allows the brush to engage the work piece edge by 90o for optimal grinding power.



= 1 : 1.5 - 2

## Workpiece Engagement

The brush cuts on the end, not the side. Cutting on the side of the brush will cause damage to the brush..

### Correct usage

Cutting with the end of the brush.



### Wrong usage

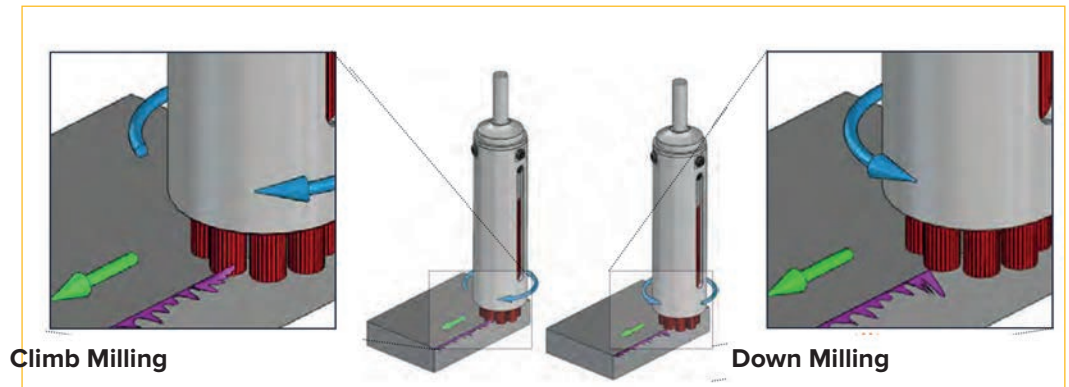
Contacting the side of the brush.



# Application Tips

## Climb Milling versus Down Milling

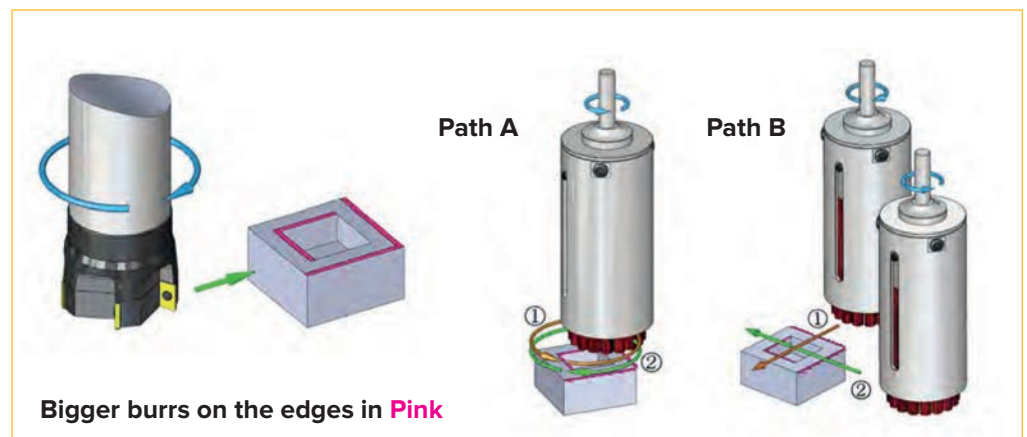
Rotation direction should be up cutting. Grinding power is greater when the rotation direction of the front side of traveling is against the burr generation, known as climb milling.



The burr size and burr location change depending on the rotation & travel of the cutting tool while face milling. In this example, either path A or B works well because you are lifting the burr which improves removal. For example the edges in pink have been rolled over by the face mill while other edges may have a much smaller burr to remove.

### Cutting process

### Climb milling toward bigger burr



## Compensating for tool wear

After running a series of parts, calculate approximate tool wear and program an automatic offset.

- **Set depth of cut (0.020")**
- **After running a series of parts, measure the brush length to calculate tool wear. For example, when it wears 0.004" after 100 pcs.**
- **Offset 0.004" per 100 pcs. When you offset at shorter intervals as 0.039 inch/pc, you can expect longer tool life.**
- **Projection length from a sleeve needs to be adjusted, when it**

### Unused condition

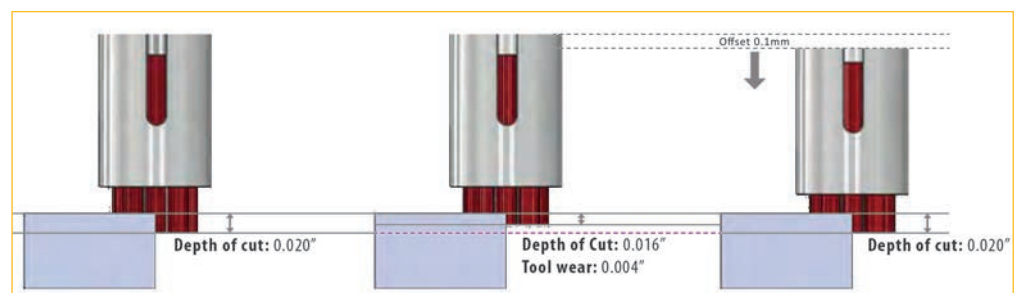
Depth of cut: 0.020"

### After 100pcs deburring

Tool wear: 0.004" Depth of cut: 0.016"

### Offset program setting

Offset cut: 0.004 per 100pcs Depth of cut 0.020"



# Operating Parameters

## Xebec Brush Surface Starting Operating Parameters for Automated Machining

Material	SFPM	Brush Diameter (mm)		6	15	25	40	60	100	FEED RATE	
		Maximum RPM		10,000	6,000	5,000	3,000	2,000	1,000	finishing	deburring
		Brush Choice		RPM	RPM	RPM	RPM	RPM	RPM	IPM	IPM
		1st	2nd								
Low Carbon Steel	600	WHITE	BLUE	9707	3883	2330	1456	971	582	47	94
Medium Carbon Steel	550	WHITE	BLUE	8898	3559	2136	1335	890	534	40	80
High Carbon Steel	500	WHITE	BLUE	8089	3236	1941	1213	809	485	34	67
Cast Steel	450	BLUE	WHITE	7280	2912	1747	1092	728	437	27	54
300 Series Stainless	525	WHITE	RED	8494	3397	2038	1274	849	510	47	94
300 Series Stainless	575	WHITE	RED	9303	3721	2233	1395	930	558	47	94
Grey Cast Iron	400	BLUE	WHITE	6471	2589	1553	971	647	388	54	107
Ductile Cast Iron	350	BLUE	WHITE	5662	2265	1359	849	566	340	47	94
Alloy Cast Iron	300	BLUE	WHITE	4854	1941	1165	728	485	291	40	80
Aluminium Cast Alloys	700	RED	WHITE	10000	4530	2718	1699	1132	679	80	161
Aluminium Diecast Alloys	800	RED	WHITE	10000	5177	3106	1941	1294	777	74	147
Aluminium Wrought Alloys	900	RED	WHITE	10000	5824	3495	2184	1456	874	67	134
Zinc Diecastings	800	RED	WHITE	10000	5177	3106	1941	1294	777	67	134
Copper	600	RED	WHITE	9707	3883	2330	1456	971	582	60	121
Brass, Free Machining	600	RED	WHITE	9707	3883	2330	1456	971	582	74	148
Cast Bronze	500	RED	WHITE	8089	3236	1941	1213	809	485	47	94
Nickel Alloys	200	BLUE	WHITE	3236	1294	777	485	324	194	40	80
Titanium Alloys	200	BLUE	WHITE	3236	1294	777	485	324	194	40	80
Plastic, Thermosetting	500	PINK	RED	8089	3236	1941	1213	809	485	80	161
Plastic, Thermoplastic	800	PINK	RED	10000	5177	3106	1941	1294	777	80	161

## Starting parameters for deburring and polishing

### Deburring Parameters

RPM: **80% of the maximum speed**  
 D.O.C : **0.020" for vertical burr, 0.040" horizontal burr**  
 Feed Rate: **160 inches/min when burr thickness**  
 is less than 0.004" \*1 100 inches/min more than 0.004" \*2

### Polishing Parameters

RPM: **80% of the maximum speed**  
 D.O.C : **0.012"**  
 Feed Rate: **20 inches/min**  
 \*1 Burr can be bent by fingernail \*2 Burr CANNOT be bent by fingernail

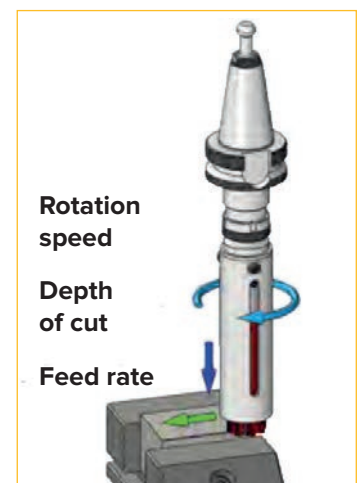
### MATERIAL 1st Brush Choice 2nd Brush Choice

Aluminium ● ○  
 Steel ○ ●  
 Hard to cut ● ○

## Parameter Recommendations

### Deburring Parameters









**Rotation Speed:** 80% of the maximum rotation speed  
**Depth of Cut:** 0.02 - 0.04", depending on direction of burr generation  
**Feed Rate:** About F40" - F160"/min  
 recommended to cut 0.02" for vertical burrs, 0.04" for horizontal burrs



- Recommended to use coolant, no matter the application
- If the amount of brush projection is below 0.2", the grinding power increases and it affects the finish





# XEBEC Ceramic Stone™

## XEBEC Ceramic Stone™ Meister Finish – stick type

							
<b>RED</b>	<b>WHITE</b>	<b>BLUE</b>	<b>BLACK</b>	<b>ORANGE</b>	<b>LIGHT BROWN</b>	<b>DARK BROWN</b>	<b>VOILET</b>
#1200	#1000	#800	#600	#400	#300	#220	#120

## XEBEC Ceramic Stone™ Heat Resistant – Ceramic abrasives

- Excellent heat resistance
- Doesn't soften
- Outstanding efficiency
- Attach to an ultrasonic polisher for optimal performance







			
<b>RED</b>	<b>BLUE</b>	<b>DARK BROWN</b>	<b>VOILET</b>
#1200	#800	#220	#120

## XEBEC Ceramic Stone™ Diamond Sticks – For polishing

- Best solution for EDM scale removal for maximum productivity
- Attached to an ultrasonic polisher for polisher for optimal performance

		
<b>BLACK</b>	<b>BLUEGREEN</b>	<b>GREY</b>
#1200	#1000	#800

## XEBEC Ceramic Stone™ Meister Finish – rod type

						
<b>RED</b>	<b>WHITE</b>	<b>BLUE</b>	<b>BLACK</b>	<b>ORANGE</b>	<b>LIGHT BROWN</b>	<b>GREY</b>
#1200	#1000	#800	#600	#400	#300	#220

## XEBEC Soft Ceramic Stone – for fine deburring and removing scratches

Rubber binder allows soft contact and do not damage work piece



### Features

- Adapts well to the shape of the work-piece
- Resistant to scratches great polish
- Removes only burrs without causing undercutting or linear scratches

### Usage/ Applications

- Ideal for polishing of copper electrodes and fine deburring
- Shade scratches on work-pieces



## Meister Finish Pencil Type – For polishing and deburring narrow parts

Ideal for polishing engraved and narrow detail of mould



Ultrafine 0.5mm square  
0.9mm square

### Features

- Able to use Meister Finish with a professional drafting pencil
- Hard to break, and possible to use up to the end.



All polishing stick and Rods available from Drill Service. Please visit our website for Further information and pricing.

# Drill Service stocks a complete range of tools including other Deburring Tools



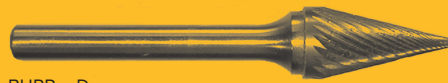
BARR - A



BARR - B



BARR - B



BARR - D



BARR - E



BARR - F



BARR - G



BARR - H



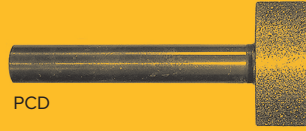
BARR - I



BARR - J



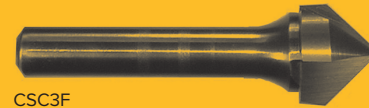
BARR - K



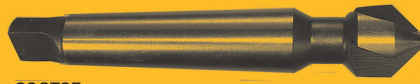
PCD



CSC1



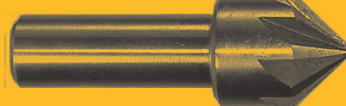
CSC3F



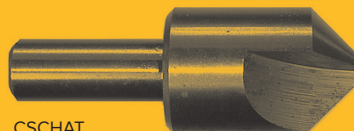
CSCT3F



CSCP



CSROSE



CSCHAT



CSCOH



CM4TIALN



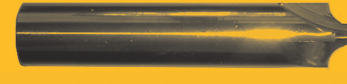
CM4



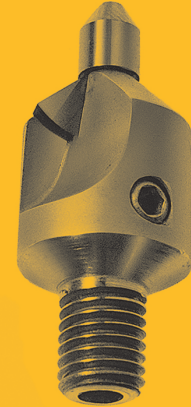
CSCOH



VCUT



CRCC



CSPD



CSD



CSAIR



# 35,000 STOCKED TOOLS



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