DEBURRING TOOL
ErgoBurr™
Deburring Application

**ErgoBurr™** is a top quality deburring tool line, produced by Vargus Ltd. Vargus is a well-known worldwide producer of cutting, threading and deburring tools, for the entire range of the Vargus tool lines.

### Applications

- **Straight Edge**
- **Hole Edge**
- **Outer Edge**
- **Cross-Hole Both Edge**
- **Hole Back-Edge**
- **Hole Inner Surface**
- **Flat Surface**
- **Sheets**
- **Slot/Keyway**
- **Inner Straight Corners**
**ErgoBurr™ Ergonomic Handles**

A new generation of comfort and control in deburring. Choose the most suitable ErgoBurr handle for your work.

### Long Reach Work
Works with all Ergoburr holders and blades. Simple retractable holder mechanism.

_ErgoBurr™ Handle_ Catalog No.: 141-00003

### Extra Close Work
Includes safety lock for maximum security and comfort.

_ErgoBurr™ B Handle_ Catalog No.: 141-00005

_ErgoBurr™ E Handle_ Catalog No.: 141-00004

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**ErgoBurr™ Telescopic Blade Holders**

<table>
<thead>
<tr>
<th>Blade Holder</th>
<th>Details</th>
</tr>
</thead>
</table>
| **B**        | Holds all B blades. Use axially or perpendicular to holder  
               Catalog No.: 141-00007 |
| **E**        | Holds all B blades  
               Catalog No.: 141-00006 |
| **C**        | Holds scraper blades (C Type)  
               Catalog No.: 141-00009 |
| **F**        | Holds countersinks (F Type)  
               Catalog No.: 141-00008 |

*Other holders for Set K, Set Burr-Bi and Set FR are offered with the relevant tool, and not separately.*
**Long-Reach Work Sets**

**Set B The Workhorse**

Popular standard set for holes, slots & edges. B holder supports all B blades which can be inserted axially or perpendicular to the holder.

- **B10**
- **B20**

Catalog No.: 143-00001

**Set E Heavy Duty**

Deburring set for heavy-duty deburring of holes, slots and edges. E holder supports all E blades.

- **E100**
- **E200**
- **E300**

Deburs Steel, Aluminium, Copper, Brass, Cast Iron, Stainless Steel and Plastics.

Catalog No.: 143-00002

**Set C Scraper**

Triangular blade with 3 cutting edges for high quality finishing & scraping. The telescopic holder lets you get to difficult-to-reach areas.

- **C42**

Deburs, Steel, Aluminum, Copper, Brass, Cast Iron, Stainless Steel and Plastics.

Catalog No.: 143-00026

**Set D The Sheet Cleaner**

Perfect for sheet metal from 0.12" to 0.31" thick (3 mm - 8 mm). Blades deburr both sides of sheet in one pass. For added safety, use with Handguard.

- **D80**

Catalog No.: 143-00037
Long-Reach Work Sets

Set F Countersink

Powerful tool, excellent for chamfering and deburring of hole-edge and tubes up to 0.79” (20mm) diameter. Deburs, Steel, Aluminum, Copper, Brass, Cast Iron, Stainless Steel and Plastics.

Set FR Ratchet-Burr for ID

Features FR ratchet holder, ideal for rotational chamfering, even when workspace is limited. For inside Diameter (ID) up to 0.79” (20 mm). Deburs Steel, Aluminium, Copper, Brass, Cast Iron, Stainless Steel and Plastics.

Set Burr-Ex Ratchet-Burr for OD

Features FR ratchet holder, ideal for rotational chamfering, even when workspace is limited. For: Outer Diameter (OD) chamfering up to 1” (26 mm).

Set G Slot Edge Cleaner

Ideal for deburring and cleaning edges of internal & external keyways and slots up to 0.6” (15 mm) wide. Blade features 8 cutting edges.
**Extra Close Work Sets**

**Set G3 Triple Corner Cleaner**

Cleans and removes unwanted radii after machining, to ensure smooth flush mating of adjoining faces. Special angled blade holder enables easy access to work area. Blades feature 3 deburring corners.

For added safety, use with Handguard.

**Set Burr-Bi Heavy-Duty Sheet Cleaner**

The original industrial surface scraper. Pulling/pushing action makes it perfect for smoothing metal and plastic surfaces as well as scraping paint and varnishes. Deburrs Steel, Aluminium, Copper, Brass, Cast Iron, Stainless Steel and Plastics.

**Set K Surface Scraper**

The original industrial surface scraper. Pulling/pushing action makes it perfect for smoothing metal and plastic surfaces as well as scraping paint and varnishes. Deburrs Steel, Aluminium, Copper, Brass, Cast Iron, Stainless Steel and Plastics.
Extra Close Work Sets

All sets contain the ErgoBurr™ ergonomic handle and a variety of blades for deburring various materials and applications.

Extra Close Sets

Set B + 1
Standard Duty

Catalog No.: 143-00029

Set B + 2
Standard Duty

Catalog No.: 143-00031

Set E + 1
Heavy Duty

Catalog No.: 143-00033

Set E + 3
Heavy Duty

Catalog No.: 143-00034
Extra close works set

ErgoBurr™ Finishing Tools

ErgoBurr Basic
Easy to use finishing tool. Removes burrs from holes and straight edges after drilling and sawing. Includes long lasting B10 or E100 replaceable blades. Available in 3 sizes:

*ErgoBurr Basic B
With B10 blade

*ErgoBurr Basic E
With E100 blade

UB1
Popular, slim-grip deburring tool, comes with heavy-duty E100 blade. Strong, yet lightweight. Features convenient pocket clip. Deburs Steel, Aluminum, Copper and Plastics.

MB2000
Popular, slim-grip deburring tool. Strong, hexagon-shaped handle. Comes with replaceable E100 blade.

* Handles B&E hold all B and E blade types respectively.
Scrapper

**ErgoScrape**

Easy to use Scraping Tool for multiple types of applications. Use after drilling and sawing. Available in 3 sizes:

*ErgoScrape 42*
Blade size 8mm (0.31”)

*ErgoScrape 40*
Blade size 4mm (0.16”)

*ErgoScrape 400*
Blade size 2mm (0.08”)

*Disposable tools*

- Flat Surface
- Hole Inner Surface
- Straight Edge
- Hole Edge
- Hole Back-Edge

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**CeraScrape**

High quality long lasting safe Ceramic tool, excellent for the finishing of plastic and soft metal parts.

Catalog No.: 143-00043

Catalog No.: 143-00042

Catalog No.: 143-00044

Catalog No.: 143-00045

* Disposable tools
All Bonus Packs contain FREE ErgoBurr ergonomic handle and 10 blades for deburring various materials. Bonus Packs available with or without holders.

**Bonus Packs**

<table>
<thead>
<tr>
<th>Handle+Holder</th>
<th>Description</th>
<th>Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B+10 B10</td>
<td>Free ErgoBurr handle</td>
<td>143-00048</td>
</tr>
<tr>
<td>E+10 E100</td>
<td>Free ErgoBurr handle</td>
<td>143-00046</td>
</tr>
<tr>
<td>E+10 E100S</td>
<td>Free ErgoBurr handle</td>
<td>143-00047</td>
</tr>
<tr>
<td>E+10 E200</td>
<td>Free ErgoBurr handle</td>
<td>143-00051</td>
</tr>
<tr>
<td>B10</td>
<td>Free ErgoBurr handle</td>
<td>143-00032</td>
</tr>
<tr>
<td>E100</td>
<td>Free ErgoBurr handle</td>
<td>143-00035</td>
</tr>
<tr>
<td>E100S (Cobalt)</td>
<td>Free ErgoBurr handle</td>
<td>143-00036</td>
</tr>
<tr>
<td>E200</td>
<td>Free ErgoBurr handle</td>
<td>143-00050</td>
</tr>
</tbody>
</table>

**Straight Edge**

**Hole Edge**

**Catalog No.: 143-00048**
**Catalog No.: 143-00046**
**Catalog No.: 143-00047**
**Catalog No.: 143-00051**
**Catalog No.: 143-00032**
**Catalog No.: 143-00035**
**Catalog No.: 143-00036**
**Catalog No.: 143-00050**
## Blade

<table>
<thead>
<tr>
<th>Blades Name</th>
<th>Description</th>
<th>Blade</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>B10</td>
<td>HSS. Deburs materials with spiral chips.</td>
<td>140-00039</td>
<td></td>
</tr>
<tr>
<td>B10P</td>
<td>PVD TiN coated for high resistance to wear. B10 geometry</td>
<td>140-00040</td>
<td></td>
</tr>
<tr>
<td>B20</td>
<td>HSS. Rotates clockwise &amp; counterclockwise</td>
<td>140-00041</td>
<td></td>
</tr>
<tr>
<td>B30</td>
<td>Simultaneously deburrs the inside and outside of holes up to 0.16” (4 mm) thick.</td>
<td>140-00042</td>
<td></td>
</tr>
<tr>
<td>B60</td>
<td>HSS. Removes burrs from back-edges of holes up to 0.8” (20 mm) thick.</td>
<td>140-00043</td>
<td></td>
</tr>
<tr>
<td>C40</td>
<td>0.16” (4 mm), triangular HSS scraper for precision work.</td>
<td>140-00044</td>
<td></td>
</tr>
<tr>
<td>C42</td>
<td>0.31” (8 mm), triangular HSS scraper.</td>
<td>140-00045</td>
<td></td>
</tr>
<tr>
<td>E100</td>
<td>Heavy-duty HSS. Deburs materials with spiral chips.</td>
<td>140-00046</td>
<td></td>
</tr>
<tr>
<td>E100P</td>
<td>PVD TiN coated for high resistance to wear. E100 geometry.</td>
<td>140-00047</td>
<td></td>
</tr>
<tr>
<td>E100S</td>
<td>Long-lasting, cobalt-enriched. E100 geometry. Perfect for stainless steel.</td>
<td>140-00048</td>
<td></td>
</tr>
<tr>
<td>E110</td>
<td>E-shaft, B10 cutting edge for materials with spiral chips. Deburs holes with min. diameter 0.08” (2 mm).</td>
<td>140-00053</td>
<td></td>
</tr>
<tr>
<td>E111</td>
<td>Thin-nosed, HSS. Deburs holes with min. diameter 0.06” (1.5 mm).</td>
<td>140-00050</td>
<td></td>
</tr>
<tr>
<td>E200</td>
<td>HSS for materials with powdery chips. Rotates clockwise &amp; counterclockwise.</td>
<td>140-00062</td>
<td></td>
</tr>
<tr>
<td>E300</td>
<td>HSS for materials with spiral chips. Simultaneously deburrs the inside and outside of holes up to 0.24” (6 mm) thick.</td>
<td>140-00051</td>
<td></td>
</tr>
<tr>
<td>E350</td>
<td>HSS for materials with powdery chips. Rotates clockwise &amp; counterclockwise.</td>
<td>140-00049</td>
<td></td>
</tr>
<tr>
<td>E600</td>
<td>HSS. Removes burrs from back-edges of holes up to 0.8” (20 mm) thick.</td>
<td>140-00052</td>
<td></td>
</tr>
</tbody>
</table>

**Soft Metals:** Steel, Aluminum, Copper  
**Hard Metals:** Brass, Cast Iron
# Blade

<table>
<thead>
<tr>
<th>Blades Name</th>
<th>Description</th>
<th>Blade</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>D80</td>
<td>Solid carbide, 6 deburring corners. Scrapes surfaces 7 sheet metal up to 0.12” (3mm) thick</td>
<td>140-00057</td>
<td><img src="image1" alt="Image" /></td>
</tr>
<tr>
<td>F20</td>
<td>Countersink for holes-edges with up to 0.79” (20 mm) diameter.</td>
<td>140-00054</td>
<td><img src="image2" alt="Image" /></td>
</tr>
<tr>
<td>F30</td>
<td>Countersink for hole-edges with up to 1.18” (30 mm) diameter.</td>
<td>140-00055</td>
<td><img src="image3" alt="Image" /></td>
</tr>
<tr>
<td>F26X</td>
<td>Excellent for external chamfering of pipes, tubes and other items with up to 1.02” (26 mm) diameter.</td>
<td>140-00060</td>
<td><img src="image4" alt="Image" /></td>
</tr>
<tr>
<td>G10</td>
<td>HSS. Deburrs slots up to 0.6” (15mm) wide.</td>
<td>140-00058</td>
<td><img src="image5" alt="Image" /></td>
</tr>
<tr>
<td>G30</td>
<td>HSS. 3 deburring edges. Cleans corners and removes radii after machining for smooth flush mating.</td>
<td>140-00059</td>
<td><img src="image6" alt="Image" /></td>
</tr>
<tr>
<td>K10</td>
<td>Double-edges, carbide. Deburrs surfaces up to 1.91” (50 mm) wide.</td>
<td>140-00063</td>
<td><img src="image7" alt="Image" /></td>
</tr>
<tr>
<td>R10</td>
<td>Double-sided, round HSS blade. “A” side deburrs materials with spiral chips; “B” side for powdery chips.</td>
<td>140-00056</td>
<td><img src="image8" alt="Image" /></td>
</tr>
</tbody>
</table>

**Soft Metals:** Steel, Aluminum, Copper

**Hard Metals:** Brass, Cast Iron

Note.
For more blade shape you need: Please request and let me know in detail.
<table>
<thead>
<tr>
<th>Tool Type</th>
<th>Description</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEBURRING TOOL</td>
<td>Xebec - Cutting Fiber (Cup brush)</td>
<td>189 - 193</td>
</tr>
<tr>
<td></td>
<td>Xebec - Cutting Fiber (End brush)</td>
<td>194 - 195</td>
</tr>
<tr>
<td></td>
<td>Xebec - Floating Holder</td>
<td>196 - 197</td>
</tr>
<tr>
<td></td>
<td>Xebec - Cross Hole deburring tool</td>
<td>198 - 201</td>
</tr>
<tr>
<td></td>
<td>Xebec - Ceramic Fiber Mounted Point</td>
<td>202 - 203</td>
</tr>
</tbody>
</table>
Ideal for automated fine deburring and surface finishing.

Features

- Suitable for use on machining centers, robots, custom machines and drilling machines-easy to automate.
- Superior grinding performance thanks to the self-sharpening action of the cutting edge of the Fine Alumina Fiber rod tips. The continuous cutting edge provides stable grinding performance.
- Consistently superior grinding performance can be achieved by establishing suitable processing conditions. (cutting depth and rpm)
- Can deburr and finish edges simultaneously.
- Can improve surface roughness in a shorter time, thus shortening the finishing process.
- Ideal for fine deburring and surface finishing of automotive parts, aircraft parts and machine parts.
Fine Alumina Fiber Rods and Structure

1 Fine Alumina Fiber Rod in the XEBEC Cutting Fiber Has 1,000 Cutting Edges.

*SEM Photograph of Fine Alumina Fiber Rod Tip*

One fine alumina fiber rod is made by binding together 1,000 alumina fiber filaments (ALF), each only several μm in diameter. The tips on each of the 1,000 ALFs are the cutting edges. The self-sharpening action of the cutting edge on the fine alumina fiber rod tips provides superior grinding performance. Continuous cutting edges provide a stable and continuous grinding performance.

Grinding Performance

Grinding Performance Comparison with Abrasive Nylon Brush and Brsaa Brush

(NOTE) * Abrasive Nylon Brush means Nylon brush with monofilaments including abrasive grains.  
* Legends show [Depth of cut (mm) and Revolutions (rpm)].  
* Work Reduction can be controlled through processing conditions (Depth of cut and Revolutions).  
* The above data are comparisons based on setting up the most appropriate processing conditions for each tool.  
* Because this test was to examine the grinding performance on a flat work, the depth of cut is relatively large.
Applications

This is “The Sharpness” of XEBEC Cutting Fiber

- **Fine Deburring after Miniscule Diameter Bore (Drill) Processing**
  - Workpiece: PGA Die
  - Material: NAK55
  - Processing Content: Fine Deburring after $\Phi$ 0.5mm bore (drill) processing

- **Fine Deburring after Gear Cutting**
  - Workpiece: Ring-Shaped Internal Gear
  - Material: S45C
  - Processing Content: Fine Deburring gear portions of the ring after Gear Cutting

- **Fine Deburring after Surface Grinding**
  - Workpiece: Plate
  - Material: S45C
  - Processing Content: Fine Deburring the edges of the cut area on the plate

Other Applications: Injector Body, $\Phi$ 0.1mm jet nozzles, etc.
Applications

Cutting Fiber with Higher Grinding Power A31(Blue)

Work piece Gear Material: Steel
Tool: A31-CB25M
Parameters: RPM 3500 min⁻¹ Feed 2500 mm/min Depth of cut 1 mm

Work piece Blade Material: Titanium
Tool: A31-CB40M
Parameters: RPM 2000 min⁻¹ Feed 500 mm/min Depth of cut 1 mm

Before After

Steps of ball end milling

Burrs

Before

After

Target burr size and material

Burr size

Thickn ess 0.1 mm (not height)

If the burr can be removed by your fingernail, it is about 0.1 mm thickness

Target Burrr size

Pink (A13): 0.05 mm
Red (A11): 0.1 mm
White (A21): 0.1 mm
Blue (A31): 0.15-0.2 mm

Materials

Any materials under HRC (Rockwell Code) ≤ 57
SC, SS, SUS, Ti, FC, FCD......

Recommended Initial Parameters for Deburring edges

1. Depth of cut (Grinding Load)
   - after end mill (vertical burrs): 0.5 mm
   - after face mill (horizontal burrs): 1.0 mm
2. Revolutions
   80% of the maximum rpm

<table>
<thead>
<tr>
<th>Max. RPM</th>
<th>g6mm</th>
<th>g15mm</th>
<th>g25mm</th>
<th>g40mm</th>
<th>g60mm</th>
<th>g100mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>6000</td>
<td>10,000</td>
<td>6,000</td>
<td>5,000</td>
<td>3,000</td>
<td>2,000</td>
<td>1,200</td>
</tr>
<tr>
<td>Initial RPM</td>
<td>6,000</td>
<td>4,800</td>
<td>4,000</td>
<td>2,400</td>
<td>1,000</td>
<td>960</td>
</tr>
</tbody>
</table>

3. Feed Rate
   2,400 mm/min

4. Fine Alumina Fiber Rods exposure from sleeve
   - Ø100, Ø60, Ø40, Ø25: 15 mm
   - Ø15: 10 mm
   - Ø6: 5 mm

5. Dry / Wet processing
   (1) Deburring: The brush can be used for both dry and wet processing
   (2) Surface grinding: Refer to the matrix below

How to select Cutting Fiber

Choose a brush by the material and cutting process of the work piece

Cutting process

<table>
<thead>
<tr>
<th>Material</th>
<th>End milling</th>
<th>Face milling</th>
<th>Hobbing, Pressing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plastics</td>
<td>Pink</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminum</td>
<td>Red</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steel</td>
<td>White</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cast iron</td>
<td>Blue</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
<Precautions In Use>

[Maximum Revolutions]
- Please use within the range of maximum revolutions (φ100: under 1,200rpm, φ60: under 2,000rpm, φ40: under 3,000rpm, φ25: under 5,000rpm, φ15: under 6,000rpm, φ6: under 10,000rpm).
- Usage over the maximum revolutions is dangerous because it may result in breakage.

[Depth of cut, Grinding Load]
- Usage under excessive depth of cut or grind load may not result in the desired, results, as well as shortened brush life caused by pronounced wear and breakage of the fine alumina fiber rods.
- Processing is the most effective using the tips of the fine alumina fiber rod. For the depth of cut, use 0.5mm to 1.0mm as a guideline, up to 1.5mm.

[Fine Alumina Fiber Rods Projection Adjustment]
- Attaching a sleeve (an external cylinder) to the perimeter of the brush allows for the projection of the fine alumina fiber rods to be adjusted for fine-tuning flexibility and trackability. Longer projection increases trackability and flexibility, while shorter projection decreases them. However, please keep projection range under 20mm for φ100, φ60, φ40, and φ25, under 15mm for φ15, and under 10mm for φ6. Usage beyond the projection range may result in damage to the brush.

[Bristle Length]
- With usage over time, the overall length of the fine alumina fiber rods (bristle length) may shorten, result in more grinding power but less easy to fit, please adjust the grind and fit by dropping the revolutions and depth of cut.

[Dry/Wet Processing]
- This 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.

<Operator Safety Measures>

[For Protective Equipment]
- Always wear protective goggles, gloves and masks when operating the tool.
- Wear long sleeves, tight cuffs, and clothing to minimize skin exposure.

[Beware of Grinding Powder]
- Grinding powder and burrs may scatter within an area around the work as the brush revolves; please stay clear of this area.
- 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.

[Caution for area around work]
- The area around your work is hazardous due to flying pieces of fiber rods from the brush and grinding powder. Please enclose your work area to prevent other people from entering, or have the surrounding people wear protection as well.
XEBEC®

Cutting Fiber (End Brush)

ISO9001 Certified
XEBEC products are manufactured in a plant certified by ISO9001, the international standard of quality control and assurance.

Patent Pending

Hand Tool Brush

Please use below the maximum revolutions of 12,000 rpm.

Features
- The tips of the fine alumina fiber rods have superior grinding power
- Can greatly improve surface smoothness in a short time
- Soft to the touch, prevents undulations in the work
- Less clogging with the self-sharpening action of the fiber rod tips
- Can be used in dry or wet processing

Main Uses
- EDM Scale Removal from Molds
- Modifying molds
- Deburring after forming of precision parts
- Deburring after machine processing of precision parts
- Surface finishing (removing post-processing marks and scales)

Minute deburring

EDM Scale Removal from Molds

Before finishing

After finishing

We made our ceramic abrasive stone into fine alumina fiber rods.
One fine alumina fiber rod is made from 1,000 alumina fiber filaments (ALF).
The tip on each of the 1,000 ALFs are the cutting edges,
giving each fiber rod 1,000 continuous cutting edges.
Grinding Performance

This is a comparison in grinding performance with diamond-ingrained abrasive nylon brush (#400)

<Grinding performance comparison (wet processing) on NAK80 (EDM treated surface)>

- XEBEC Cutting Fiber improves surface smoothness in a short time.
- XEBEC Cutting Fiber has superior grinding ability.

<table>
<thead>
<tr>
<th>Type</th>
<th>Product Code</th>
<th>Fine Alumina Fiber Rod (color)</th>
<th>Diameter</th>
<th>Fine Alumina Fiber Rod Length</th>
<th>Axis Core Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>End</td>
<td>A11-EB06M</td>
<td>A11 (Red)</td>
<td>φ 6mm</td>
<td>20mm</td>
<td>φ 3mm</td>
</tr>
<tr>
<td>End</td>
<td>A21-EB06M</td>
<td>A21 (White)</td>
<td>φ 6mm</td>
<td>20mm</td>
<td>φ 3mm</td>
</tr>
</tbody>
</table>

A11 : Easy to fit, suitable for minute deburring.  
A21 : More rigid than A11, superior grinding efficiency.

<Precautions Upon Usage>

[Pre-operation Inspections]
- Conduct a test run for one minute before starting operation, and three minutes after changing the brush, to check for abnormalities, such as vibrations, or looseness of the brush axis joint. Even if there are no abnormalities during the test run, if you notice anything unusual such as vibrations during usage, please stop the operation immediately; breakage, deformation, or damage to such parts as the brush fiber rods and the axis.

[Maximum Revolutions]
- Please use below the maximum revolutions of 12,000 rpm. Usage above the maximum may be dangerous because it may result in breakages to such parts as the brush fiber rods and the axis.

[Grinding Load, Depth of cut]
- Usage with an excessive load (depth of cut) may not only give less than optimal results, but may also lead to breakages and scattering of fine alumina wire rods. They are especially prone to occur when processing edges and uneven areas; it is therefore necessary to process with lower revolutions and a lighter load.

<Safety measures for the Worker>

[Protection]
- Please always wear protective glasses, gloves, and masks when working. Also, wear long sleeves, and close all cuffs and hems of your outerwear so that your skin is not exposed.

[Beware of Grinding Powder]
- Grinding powder and burrs may scatter within the area around the work as the brush revolves; please use a dust collecting device to collect the dust that is produced during dry processing.

[Caution to Your Surroundings]
- The area around your work is hazardous due to flying pieces of fiber rods from the brush and grinding powder; please enclose your working area to prevent other people from entering, or have the surrounding people wear protection as well.

<Directions for Tool Use>

[Polishing Flat Surfaces]
- Attach to a hand tool, and apply brush to work surface at an approximate 45 degrees angle.
- Apply as constant a load as possible with the brush to the work, and keep the depth of cut to a minimum (under 1mm).

[Polishing Edges and Deburring Uneven Areas]
- When polishing edges and deburring uneven areas, please work with lower revolutions and a lighter load. Also, please do not apply excessive pressure on the edges with the sides of the fiber rods.

[Bristle Length]
- With usage over time, the overall length of the fine alumina fiber rods (bristle length) may shorten, resulting in more grinding power but less easy to fit, please adjust the grind and fit by decreasing the revolutions and load (depth of cut).

[Truing / Dressing]
- Press the tip of the rotating brush against some polishing paper stuck onto a board in order to adjust the form of the brush. Please do the same for the dressing as well.

[Dry / Wet Processing]
- XEBEC Cutting Fiber can be used for both dry and wet processing. Please use a dust collecting device to collect any dust produced during dry processing.

We are planning more additions and expansions to our lineup, please visit our homepage for details.
XEBEC® Floating Holder

XEBEC® Floating Holder is an optional tool for XEBEC® Cutting Fiber to stabilize the cutting load.

Features:

- **Extend Tool Life!**
  - Reduce the amount of tool wear so as to stabilize processing conditions.

- **Reduce Process Control!**
  - Prolongs time to adjust brush exposure from sleeve and cutting depth due to tool wear.

- **Improve Quality!**
  - Delivers stable edge quality by adjusting for changes in cutting amount due to tool wear.

Product Code: FH-ST12

Ideal for Mass Productions!!!

- The tool holder floats by the action of the spring inside the holder, thus assuring stable processing under load control!
- Changing spring load is possible depending on materials and target quality!! (incl. standard with low and high springs)

Ideal to be used in CNC machines for mass productions and can also be used in drill press to stabilize the cutting load!

~with various machines~
- Machining Center
- Custom Machine
- NC Lathe
- Drill Press
- Other CNC machines

Can be used with collett chuck and drill chuck.
[Precautions in Use]

- When mounting tool on the machine, insert the shank all the way to the bottom of the chuck, then secure it tightly. In mounting the XEBEC Cutting Fiber, insert the shank all the way into the tool holding tube, and secure it tightly with shank-fastening screw.
- Conduct a test run for one minute or more before starting work, and three minutes or more after changing the tool, to confirm the absence of any abnormality such as tool vibration or looseness.
- Even if nothing abnormal occurs during the test run, stop operation immediately if you find anything unusual such as vibration; dangerous shank slopping out, breakage, deformation or even tool breakdown may occur.

[Tools that can be Mounted on]

- This floating holder is made for XEBEC Cutting Fiber with 25 mm and 40 mm diameter. Also XEBEC Cutting Fiber with 6 mm and 15 mm diameters can be mounted using the attached special bushing.

[How to Mount Special Bush]

- Align shank-fastening screw hole with aligning setting mark, insert special bushing as far as it will go, then secure the shank-fastening screw.

[Cutting load, floating stroke]

- The weight of the tool itself affects the cutting load, depending on the tool direction in processing.
- The floating stroke is 6 mm at the maximum.

[RPM]

- Operate at less than the maximum rpm of 5,000. Usage above the maximum rpm may result in breakage of the tool.
- Choose the ideal rpm carefully after reading the Instruction Manual for XEBEC Cutting Fiber.

[Dry or Wet Processing]

- Tool can be used for either wet or dry processing.
- For dry processing, use a dust collector to collect the dust that may be generated during the processing.
- During wet processing, make sure that the holder is not exposed to the coolant.
- If the dust or coolant gets inside the holder, the floating function will not work.

[When Attaching to Machining Center]

- When attaching the floating holder to a machining center, do not use a pull bolt with through-hole (center through pull bolt).
- If the coolant gets inside the holder, the floating portion will not operate.
- Use a spring load heavier or an attached spring that has heavier load when a horizontal machining center is used.
- If the spring load is light, the floating portion may not operate. Please check operation before in use.

[Replacement of Inside Spring]

- When replacing the inside spring of XEBEC Floating Holder, replace it carefully as instruction manual indicates.
- Use the spring with the specification XEBEC indicates or it may result in malfunction or breakage of the tool.

[Operator Safety Measures]

[For Protective Equipment]

- Always wear protective goggles, gloves and masks when operating the tool.
- Wear long sleeves, tight cuffs, and clothing to minimize your skin exposure.

[Warning]

- Please always follow the above instructions in order to use the tool safely. Failure to adequately familiarize yourself with instructions may result in slipping out, breakage or deformation of the shank.
- Read the XEBEC Cutting Fiber instruction manual carefully before use.
XEBEC®
Cross-Hole Deburring Tool

Only XEBEC’s alumina fiber has created!
Select XEBEC for fine deburring of cross-holes 3 mm to 20 mm in diameter!!

Ceramic Stone Type

Easy-to-use with hand grinder.
- Tool head is made of alumina fiber abrasive stone. Cutting edges are exposed over the entire surface.
- Efficient removal of fine burrs where the base thickness is 0.2 mm or less after machine processing.
- Ideal for point processing of cross-hole fine deburring.
- Flexible shaft for soft contact with the workpiece.
- Also use in a machining center, NC lathe, robot, etc.

Alumina Fiber Rod Type

Optimal for the automation of cross-hole deburring.
- Powerful tip grinding with “XEBEC Cutting Fiber” for rods made of alumina fiber abrasive stone.
- Burrs are accurately removed without damaging periphery of the cross-hole and without breaking the edge pattern.
- Centrifugal force generated by rotation efficiently removes cross-hole fine burrs in cylinders.
- Precision removal of all fine burrs where the base thickness is 0.1 mm or less after machine processing.
- Also can be used for polishing or scale removal on inner wall surfaces of cylinders.
Ceramic Stone Type

---

**Material and Structure**

- **Material**: The “Meister Finish” is an abrasive stone made of XEBEC alumina fibers which have the optimum crystal structure for grinding. Shaped into spherical and columnar configurations, the stone surface has multitude of fiber cutting edges providing superior grinding force and performance.
- **Structure**: The self-sharpening action of the cutting edge on the fine alumina fiber rod tips provides superior grinding ability. Continuous cutting edges provide a stable and continuous grinding performance.

---

**Deburring Performance**

- **“Point processing” or “Contouring” efficiently removes only fine cross-hole burrs.**

  - **Comparison of deburring finish of cross-hole burrs generated in φ 3.5 mm drill processing**

<table>
<thead>
<tr>
<th>Before Deburring</th>
<th>After Deburring (Comparison by same processing condition)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material : S45C</td>
<td>Tool rpm: 5000rpm, Processing time: 1sec, Bore diameter in primary processing: 6.4mm, Bore diameter in secondary processing: 3.5mm</td>
</tr>
</tbody>
</table>

---

**Usage, Applications**

- **Point processing (Insert from primary processing hole)**
  - By choosing a head that is slightly larger than the bore of cross-hole, burrs can be efficiently removed.

- **Contouring (Insert from secondary processing hole)**
  - Automated deburring application on a machining center.

---

**Comparison Table**

<table>
<thead>
<tr>
<th>Workpiece</th>
<th>Tool Used</th>
<th>Description</th>
<th>Conditions</th>
<th>Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>General/Machine Component (Hydraulic component) / Material: SUS</td>
<td>CH-PE-5B (insert from secondary processing hole)</td>
<td>After drilling, contour the bore edge to remove burrs.</td>
<td>Tool Revolutions: 5,000rpm, Depth of cut: 0.5mm, Feed rate: 100mm/min</td>
<td>Manual processing with a cutter resulted in inefficiency and unstable finishing quality.</td>
</tr>
</tbody>
</table>
Alumina Fiber Rod Type

Material and Structure

- Using the technology of “XEBEC Cutting Fiber”, which is the world's first fiber rod made from ceramic abrasive stone, we have produced a columnar fiber rod.
- One alumina fiber rod is made by binding together 1,000 alumina fiber filaments which have optimum crystal structure for grinding, each 10um in diameter. The tip has 1,000 high-density cutting edges.
- The self-sharpening action of the cutting edge on the fine alumina fiber rod tips provides superior grinding ability. Continuous cutting edges provides provide a stable and continuous grinding performance.

Structure

- This rigid fiber rod with high grinding capability is then shaped into a flexible brush to allow soft contact with the workpiece.

Deburring Performance

Burrs are accurately removed without damaging periphery of the cross-hole and without breaking the edge pattern.

- Deburring of cross-hole burrs generated in 4 mm drill processing

<table>
<thead>
<tr>
<th>Material</th>
<th>System Ba-12-3M (Insert from secondary processing hole)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Processing</td>
<td>Drilling</td>
</tr>
<tr>
<td>Tool rpm</td>
<td>10,000rpm</td>
</tr>
<tr>
<td>Feed rate</td>
<td>5mm/sec</td>
</tr>
<tr>
<td>Application</td>
<td>Automated deburring application with a custom machine</td>
</tr>
</tbody>
</table>

Usage, Applications

Tip of rod effectively removes burrs under rotational / centrifugal force.

Tool revolutions need more 8,000 rpm
**Product Lineup**

### Ceramic Stone Type

<table>
<thead>
<tr>
<th>Target Bore Diameter in Primary Processing</th>
<th>Head Size</th>
<th>Head Shape</th>
<th>Product Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over φ3mm</td>
<td>φ3mm</td>
<td>Sphere</td>
<td>CH-PM-3B</td>
</tr>
<tr>
<td></td>
<td>φ3x3mm</td>
<td>Column</td>
<td>CH-PM-3R</td>
</tr>
<tr>
<td>Over φ4mm</td>
<td>φ4mm</td>
<td>Sphere</td>
<td>CH-PM-4B</td>
</tr>
<tr>
<td></td>
<td>φ4x4mm</td>
<td>Column</td>
<td>CH-PM-4R</td>
</tr>
<tr>
<td>Over φ5mm</td>
<td>φ5mm</td>
<td>Sphere</td>
<td>CH-PM-5B</td>
</tr>
<tr>
<td></td>
<td>φ5x5mm</td>
<td>Column</td>
<td>CH-PM-5R</td>
</tr>
<tr>
<td>Over φ6mm</td>
<td>φ6mm</td>
<td>Sphere</td>
<td>CH-PM-6B</td>
</tr>
</tbody>
</table>

**Alumina Fiber Rod Type**

<table>
<thead>
<tr>
<th>Target Bore Diameter in Primary Processing</th>
<th>Brush Diameter a</th>
<th>Shaft Diameter b</th>
<th>Shank Diameter c</th>
<th>Full Length</th>
<th>Product Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>φ5 to 8mm</td>
<td>φ3mm</td>
<td>φ4mm</td>
<td>φ5mm</td>
<td>120mm</td>
<td>CH-A12-3M</td>
</tr>
<tr>
<td>φ8 to 10mm</td>
<td>φ4mm</td>
<td>φ5mm</td>
<td>φ5mm</td>
<td>120mm</td>
<td>CH-A12-5M</td>
</tr>
<tr>
<td>φ10 to 20mm</td>
<td>φ7mm</td>
<td>φ8mm</td>
<td>φ5mm</td>
<td>170mm</td>
<td>CH-A12-7M</td>
</tr>
</tbody>
</table>

### Precaution In Use

**<Ceramic Stone Type>**

**[Pre-operation Inspection]**
- When mounting on a rotary tool, insert the shank and all the way to the bottom of the chuck, and secure it tightly.
- Conduct a test run for one minute or more before starting operation, and three minutes or more after changing the tool, to confirm the absence of any abnormality such as tool vibration or looseness.
- Even if nothing abnormal occurs during the test run, stop the tool immediately if you find anything unusual such as vibration, dangerous head or shaft breakage, deformation or even tool breakdown may occur.

**[Maximum RPM]**
- Use below the maximum 10,000 rpm for φ6, 12,000 rpm for φ6 to φ8, and 15,000 for φ9 mm diameters. Usage above the maximum rpm may result in breakage of the head and shaft.

**[Cutting load]**
- Use a cutting load of 5N or less i.e. 500 gf, bending displacement of 2 mm or less. Usage with an excessive cutting load may cause a broken or a dangerously damaged shaft.

**[Size of Target Burr]**
- This tool is designed for removal of fine burrs where the base thickness is 0.2 mm or less after machine processing.

**<Alumina Fiber Rod Type>**

**[Pre-operation Inspection]**
- When the tool is machine-mounted, insert shank into the chuck up to chucking position marking on the tool (30 mm from tool end) and fix it tightly.
- If you find anything unusual such as vibration during tool operations use, stop immediately, or hazardous breakage, deformation, or damage to the brush fiber rods and/or shaft may result.

**[Maximum RPM]**
- Operate at less than the maximum rpm of 12,000. Usage above the maximum rpm may result in dangerous breakage of the tool.

**[Size of Target Burr]**
- This tool is designed for removal of fine burrs where the base thickness is 0.1 mm or less after machine processing.

### Operator Safety Measures

**[For Protective Equipment]**
- Always wear protective goggles, gloves and masks when operating the tool.
- Wear long sleeve, tight cuffs, and clothing to minimize skin exposure.

**[Beware of Grinding Powder]**
- Grinding powder and burrs may scatter within the area around the work as the tool rotation takes place. Use a dust collecting device to collect the dust.

**[Caution to your surroundings]**
- The area around your work is hazardous in case flying pieces of fiber rods from the tool and grinding powder may scatter, enclose your working area to prevent other people from entering, or have the people surrounding your work area wear protective equipment as well.
Can be used with high speed rotating tools (Air type).
- No cracking, no chipping!
- No clogging!
- Ideal for improving surface finishes!

**Feature**
- Cutting edges are continually exposed over the entire surface thanks to self-sharpening alumina fiber ceramic rod.
- Works great for any material up to 57HRC such as Aluminum and Stainless steel.
- Efficient removal of burrs with base thickness up to 0.2mm.

**Applications**
- Deburring of stainless steel groove
- Breaking edge of steel workpiece
- Chamfering of aluminum workpiece

※Please be careful with similar products.

Shape the tip for specific applications
Ceramic Fiber Mounted Point (Air Type)

**Product code and specification**

<table>
<thead>
<tr>
<th>Product code</th>
<th>Head Diameter</th>
<th>Head Length</th>
<th>Equivalent Grit</th>
<th>Shank size</th>
</tr>
</thead>
<tbody>
<tr>
<td>AX-PM-5RF</td>
<td>φ5mm</td>
<td>8mm</td>
<td>#220</td>
<td>φ5mm×30mm</td>
</tr>
<tr>
<td>AX-PM-3R</td>
<td>φ5mm</td>
<td>20mm</td>
<td>#220</td>
<td>φ5mm×20mm</td>
</tr>
<tr>
<td>AX-PM-6T</td>
<td>φ5mm</td>
<td>20mm</td>
<td>#220</td>
<td>φ5mm×20mm</td>
</tr>
</tbody>
</table>

All tool can be used with low speed rotating tools (electronic type).

**Precaution in use**

- Pre-operation inspection
  - Before using the tool, check that the tool is in good condition.
  - Conduct a test run for 1 minute or more before starting the operation and 3 minutes or more after changing a tool to confirm that there is no abnormality, including vibration and looseness, in the mounting place of the tool. Even if no abnormal condition is observed in the test run, stop the use immediately in case any abnormality, such as vibration, is observed while using the tool.
  - Do not exceed the maximum revolutions for use.
  - Do not use the tool under unreasonable angle and excessive pressure.
  - Do not use the tool in any place with risk of fire and explosion.
  - Do not grind or fabricate the shaft.

- Safety measures for operators
  - Wear protective clothing such as protective goggles, gloves and masks all the time while operating the tool. Wear long-sleeved clothes and tighten the cuffs to protect your skin.
  - While mounting, the tool will produce grinding dust from the part where the tool is applied and scatter the grinding dust around, so collect the dust with dust collector, etc.
  - To avoid any danger caused by scattering of broken pieces or grinding dust from the tool while operating, ensure the working area with a safeguard to prohibit any person from entering into the dangerous area except the operator, or instruct any person working around the working area to wear the protective equipment.

**Warning**

- Failure to observe the precautions in use and safety measures for operators above without fail. If you fail to observe them, broken pieces of the tool or grinding dust may stick into your skin, or at worst stick into your eyes, causing blindness.