

## VADZA

ООО «Вадза»  
196128, Россия, Санкт-Петербург,  
ул. Варшавская, д. 5-а, лит. Б  
Тел./Факс: +7 (812) 369 08 14  
E-mail: info@vadza.com  
www.vadza.com



## CARBIDE DE-BURRING TOOLS

- Solid carbide de-burring fork EW 100 G standard
- Solid carbide de-burring spiral EW 100 S semistandard
- Solid carbide de-burring lance EW 100 L and solid carbide de-burring milling cutter EW 100 F special solutions



## A first for internal de-burring: Carbide tools

Guhring is the first manufacturer world-wide to offer carbide tools for internal and external de-burring operations. This, however, does not involve machining in the fullest sense of the word - as with, for example, conventional drills, milling cutters, taps, reamers and countersinks. Instead, the de-burring tool very carefully shaves off the burr and can also, if required, create a chamfer.

For the quality of a workpiece – especially with intersecting and cross holes – then internal de-burring is gaining more and more importance. This applies to, for example, oil galleries in modern high performance engines, where an optimal flow rate is dependent on perfect internal de-burring. Highly accurate de-burring and producing a chamfer is also increasingly required in crankshafts, valve blocks, steering arms, rotational housings, drive elements, injector nozzles and brake cylinders.

Whilst the de-burring of the entry to the hole hardly causes a problem, the internal de-burring of through holes in many cases involves an extensive operation that is often carried out manually and is time and cost intensive.

With the newly developed and patented carbide tools for internal de-burring, Guhring is providing the possibility to automate and rationalise this production step applying high performance tools.

There is a choice of four solutions:

1. De-burring fork EW 100 G - standard tool
2. De-burring spiral EW 100 S - semi-standard tool
3. De-burring lance EW 100 L - special tool for internal de-burring through deformation caused by very high pressure coolant.
4. De-burring milling cutter EW 100 F - special tool for external de-burring.

This not only means a considerable cost and time saving for the production, but also, more importantly, improved quality and process reliability. Moreover Guhring offers a de-burring milling cutter for external de-burring to customer's specific application tasks.



Solid carbide de-burring fork EW 100 G



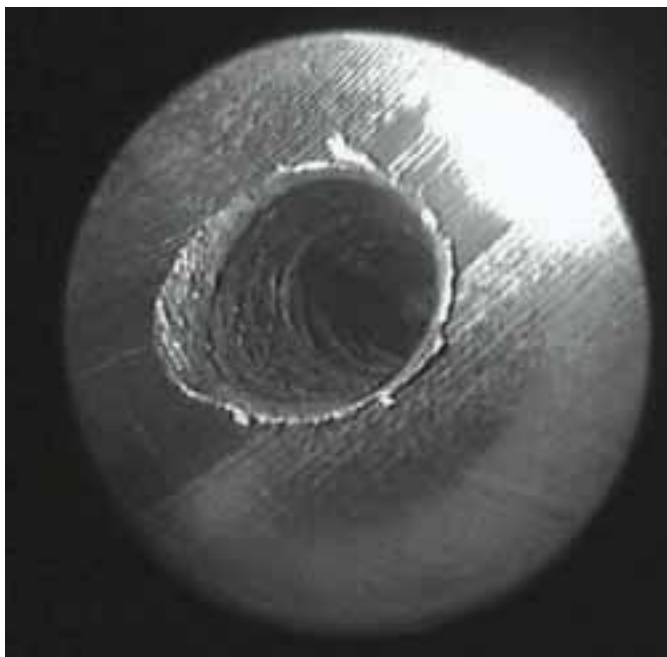
Solid carbide de-burring spiral EW 100 S



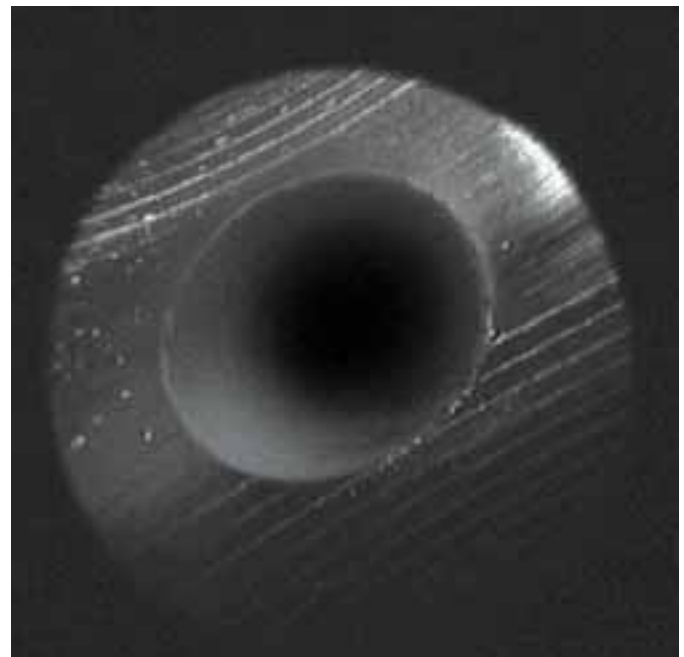
Solid carbide de-burring lance EW 100 L



Solid carbide de-burring milling cutter EW 100 F



Exit  
of through hole prior to ...



...and following machining with de-burring lance.

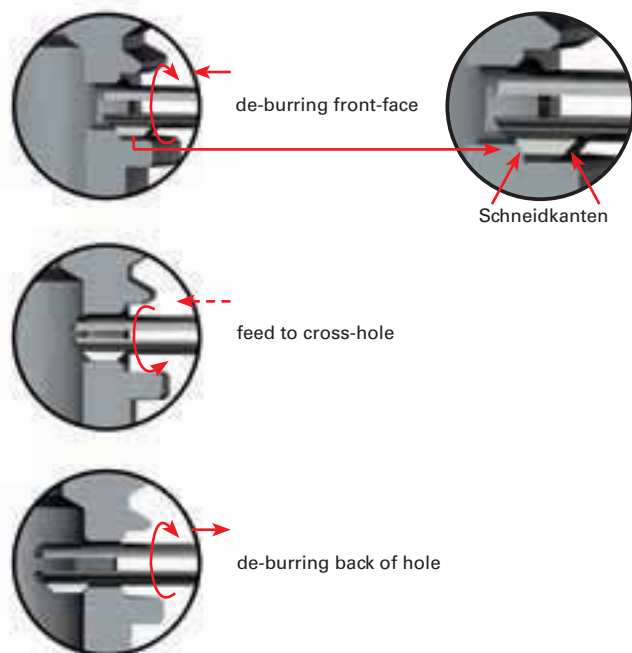
## De-burring fork EW 100 G

At EMO 2003 Guhring presented their new solid carbide de-burring tools for internal and external de-burring operations. The de-burring fork EW 100 G has now become firmly established as a standard tool!

### Advantages

- cost saving. The standard tool offers outstanding price advantages in comparison with special tooling.
- universal tooling for milling, turning and robotic applications. The range of 0.25 mm enables the application of our de-burring fork in holes with large tolerances. Reducing set-up time and cost!
- increased production. De-burring fork EW 100 G de-burrs automatically with one set-up and short cycle times. Expensive and extensive manual operations are no longer required.

### Operation



### Step by step:

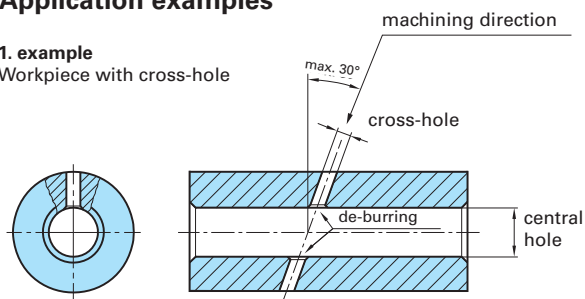
The automatically internal and external de-burring with de-burring fork EW 100 G is an easy and cost saving alternative to common, extensive manual operations. Just one tool is required for all machining steps.

range (mm)	Vc m/min	fu (mm)
< 4	8 - 10	0.1 - 0.2
4 - < 6	10 - 14	0.1 - 0.2
6 - 8	14 - 20	0.1 - 0.2

### Application examples

#### 1. example

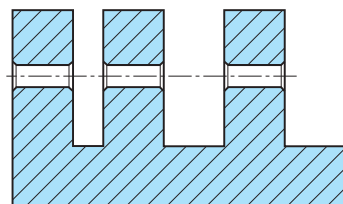
Workpiece with cross-hole



Please note when machining workpieces with cross-holes:  
 – the cross-hole must be 3.5 to 4 times smaller than the central hole  
 – the diameter of the cross-hole must be 40% larger than the cutting length  $l_6$

#### 2. example

Workpiece with multi-interrupted cut



### Universal application:

The new ex-stock de-burring fork machines workpieces with one cross-hole as well as workpieces with multi-interrupted cut and produces high quality de-burred faces and ends of the hole.

### Important:

Please note, that the cutting parameters are recommendations. They can be adapted to higher and lower cutting parameters.





## Solid carbide de-burring spiral EW 100 S

For internal de-burring through the central hole, Guhring has developed the solid carbide de-burring spiral EW 100 S. The slotted tool is available as a semi-standard tool with immediate effect, i. e. inside the diameter ranges specified in the adjacent table tools can be supplied in one-hundredth increments with the respective shank and length dimensions as well as number of cutting edges with short delivery times and at favourable prices. In addition, at any time other customer specific solutions as special tools, for example, with further reach or other shank diameters.

The principle of function of the de-burring spiral EW 100 S is based on the pre-tension of the grooved cutting portion. In the area of the cutting portion, the de-burring spiral has a fractionally larger diameter than the bore to be machined. Through the run-on, the grooved cutting portion is pressed together on entry into the hole to be machined and thereby pre-tensioned. The pre-tension ensures that inside the bore and especially in the area of the cross-hole to be de-burred there is a perfect fit of the cutting spiral at the wall of the bore or the edges of the cross-hole respectively. The burr

in the cross-hole is subsequently accurately and cleanly peeled off at the root. Thereby very small chips are created that can be evacuated problem-free from the hole.

Pre-requisite for the development of the de-burring spiral EW 100 S was a carbide as tool material that possesses an accordingly low rigidity and permits the necessary deformation in the cutting edge area. Thanks to Guhring's carbide expertise in development and production, then a carbide with such special attributes is available.

### Cutting parameters de-burring spiral

range (mm)	Vc m/min	fu (mm)
< 8	15 - 25	0.2 - 0.3
≥ 8	15 - 25	0.4 - 0.8

#### Important:

Please note, that the cutting parameters are recommendations. They can be adapted to higher and lower cutting parameters.

### Die Funktionsweise

#### Entry:

Entry feed with max. helix of the tool up to the first cross-hole.

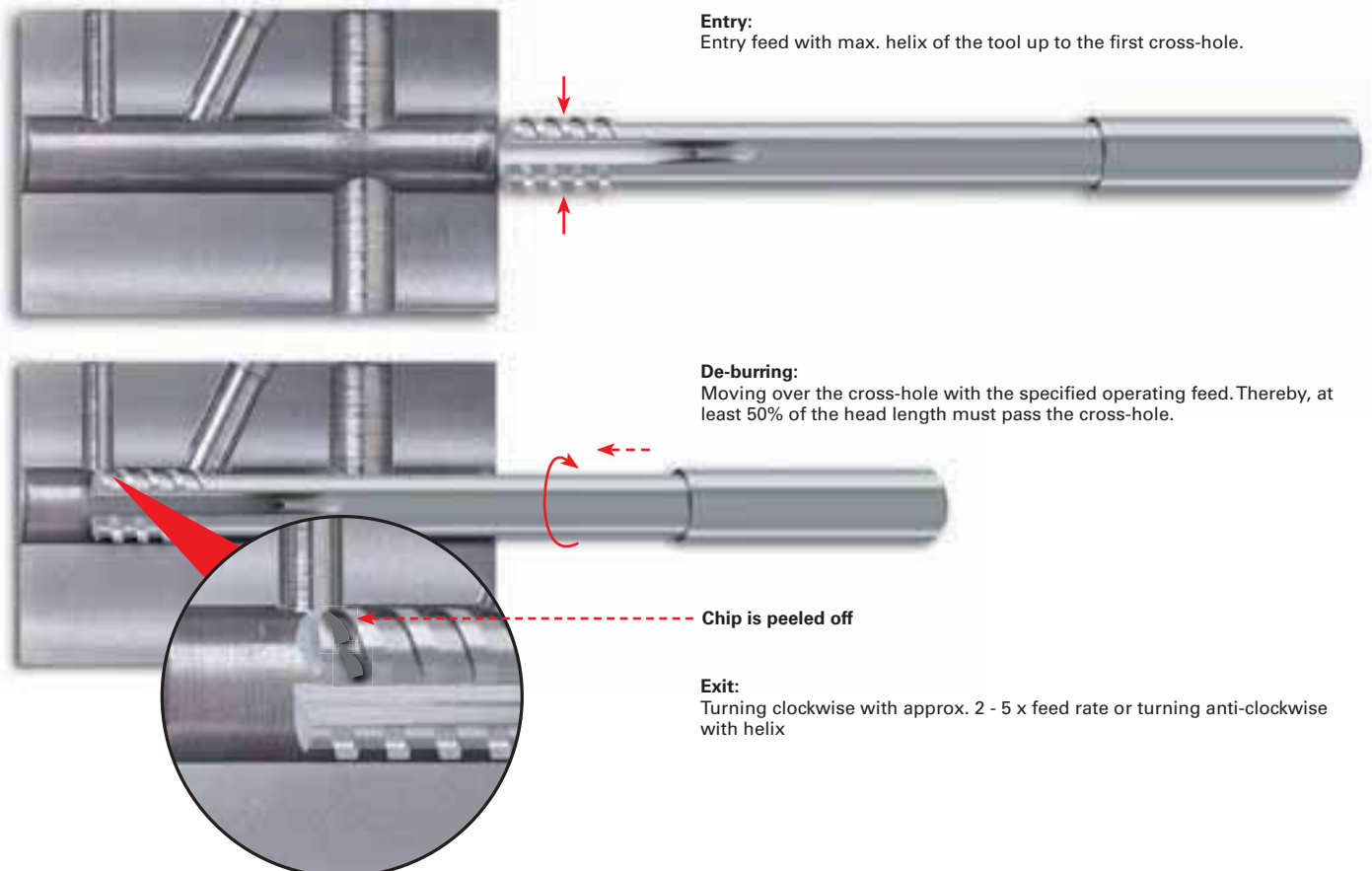
#### De-burring:

Moving over the cross-hole with the specified operating feed. Thereby, at least 50% of the head length must pass the cross-hole.

#### Chip is peeled off

#### Exit:

Turning clockwise with approx. 2 - 5 x feed rate or turning anti-clockwise with helix



# Solid carbide de-burring spiral EW 100 S - program semistandard

Re-inforced shank to DIN 6535 HA or extra length shank for extremely deep holes



Solutions for extremely deep holes

							<b>Standard</b>																																																													
							<b>Tool material</b>																																																													
							<b>Carbide grade</b>																																																													
							<b>Surface</b>																																																													
							<b>Type</b>																																																													
							<b>Discount group</b>																																																													
							<b>Special tool</b>																																																													
							<b>Guhring std.</b>																																																													
							<b>Solid carbide</b>																																																													
							<b>K</b>																																																													
							○																																																													
							<b>EW 100 S</b>																																																													
							<b>120</b>																																																													
<table border="1"> <thead> <tr> <th rowspan="2">Dimensions d1 from ... to 1/100 increments</th> <th rowspan="2">l4</th> <th colspan="2">Length Type 1</th> <th colspan="2">Length Type 2</th> <th rowspan="2">Shank d2 h6</th> </tr> <tr> <th>l1</th> <th>l2</th> <th>l1</th> <th>l2</th> </tr> <tr> <th>mm</th> <th>mm</th> <th>mm</th> <th>mm</th> <th>mm</th> <th>mm</th> <th>mm</th> </tr> </thead> <tbody> <tr> <td>3.00 - 4.10</td> <td>12</td> <td>68.00</td> <td>40</td> <td></td> <td></td> <td>4.00</td> </tr> <tr> <td>4.11 - 6.10</td> <td>12</td> <td>76.00</td> <td>40</td> <td></td> <td></td> <td>6.00</td> </tr> <tr> <td>6.11 - 8.10</td> <td>16</td> <td>101.00</td> <td>65</td> <td>76.00</td> <td>40</td> <td>8.00</td> </tr> <tr> <td>8.11 - 10.10</td> <td>19</td> <td>101.00</td> <td>61</td> <td>76.00</td> <td>36</td> <td>10.00</td> </tr> <tr> <td>10.11 - 12.10</td> <td>19</td> <td>130.00</td> <td>85</td> <td>80.00</td> <td>35</td> <td>12.00</td> </tr> <tr> <td>12.11 - 14.10</td> <td>22</td> <td>130.00</td> <td>85</td> <td>80.00</td> <td>35</td> <td>14.00</td> </tr> <tr> <td>14.11 - 16.10</td> <td>22</td> <td>150.00</td> <td>102</td> <td>90.00</td> <td>42</td> <td>16.00</td> </tr> </tbody> </table>	Dimensions d1 from ... to 1/100 increments	l4	Length Type 1		Length Type 2		Shank d2 h6		l1	l2	l1	l2	mm	mm	mm	mm	mm	mm	mm	3.00 - 4.10	12	68.00	40			4.00	4.11 - 6.10	12	76.00	40			6.00	6.11 - 8.10	16	101.00	65	76.00	40	8.00	8.11 - 10.10	19	101.00	61	76.00	36	10.00	10.11 - 12.10	19	130.00	85	80.00	35	12.00	12.11 - 14.10	22	130.00	85	80.00	35	14.00	14.11 - 16.10	22	150.00	102	90.00	42	16.00
Dimensions d1 from ... to 1/100 increments			l4	Length Type 1		Length Type 2		Shank d2 h6																																																												
	l1	l2		l1	l2																																																															
mm	mm	mm	mm	mm	mm	mm																																																														
3.00 - 4.10	12	68.00	40			4.00																																																														
4.11 - 6.10	12	76.00	40			6.00																																																														
6.11 - 8.10	16	101.00	65	76.00	40	8.00																																																														
8.11 - 10.10	19	101.00	61	76.00	36	10.00																																																														
10.11 - 12.10	19	130.00	85	80.00	35	12.00																																																														
12.11 - 14.10	22	130.00	85	80.00	35	14.00																																																														
14.11 - 16.10	22	150.00	102	90.00	42	16.00																																																														

## OUR PRODUCT RANGE:

### 1. DRILLING TOOLS IN HIGH SPEED STEEL AND CARBIDE

Twist drills  
Ratio drills  
Micro-precision drills  
Oil feed drills  
Subland drills  
Centre drills  
Core drills  
Gun drills  
Drilling systems with interchangeable inserts

### 2. THREAD CUTTING TOOLS IN HIGH SPEED STEEL AND CARBIDE

Machine taps and fluteless taps  
Oil feed taps and oil feed fluteless taps  
Hand taps  
Thread milling cutters  
Dies

### 3. MILLING CUTTERS IN HIGH SPEED STEEL AND CARBIDE

Ratio end mills  
Slot drills  
End mills  
Radius profile cutters  
Hard profile cutters  
Diesinking cutters

### 4. REAMING TOOLS IN HIGH SPEED STEEL AND CARBIDE

NC machine chucking reamers  
Machine and machine chucking reamers  
Taper pin reamers  
Hand reamers

### 5. COUNTERSINKING TOOLS IN HIGH SPEED STEEL AND CARBIDE

Countersinks, counterbores and spot facers  
Short counterbores, back spot facers  
De-burring tools

### 6. CUTTING TOOLS IN ULTRA-HARD MATERIALS

Face milling cutter PF 1000  
Cermets and ceramic tools  
PCD- and PCB-tipped tools

### 7. COATED TOOLS

A-tools, TiAlN-coated  
SuperA-tools, AlTiN-coated  
C-tools, TiCN-coated  
F-tools, FIRE-coated (allround)  
P-tools, AlCrNN-coated  
S-tools, TiN-coated (allround)  
M-tools, MolyGlide-coated

### 8. MODULAR TOOLING SYSTEMS

#### TOOLING SYSTEM GM 300

Tool holders, clamping systems and accessories to ISO 12164, DIN 69893 and DIN 69871 for transfer lines, machining and turning centres

#### FLEXIBLE TOOLING SYSTEM GE 100

a tooling system for the combined machining operations facing, chamfering, boring, centering etc.

#### ISO INDEXABLE INSERTS, SHORT CLAMPING HOLDERS AND KV 400 CARTRIDGES

### 9. Special Tools

to sketch or drawing, the more complex, the better

### 10. CARBIDES FOR PRECISION CUTTING TOOLS

### 11. CARBIDE SPECIAL PARTS FOR THE FORMING, MACHINING AND WEAR PROTECTION INDUSTRY

Cold heading dies, ribbed rolls, dies, mandrels, drawing dies, gear cutters, etc.

### 12. TOOL RESTORATION SERVICE

Re-grinding, re-coating, tool management