

## GMO DEBURRING TOOL

Deburring - Micro-deburring from  $\varnothing 0.8\text{mm}$

Hard metal blades with high durability

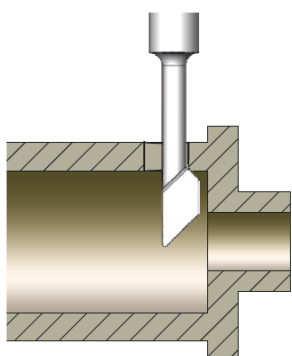
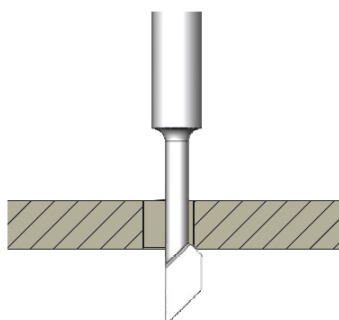
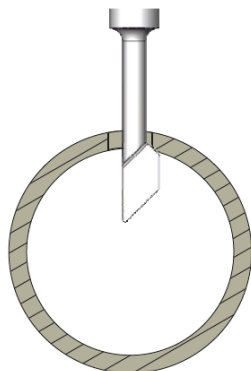
Wide selection of blades

Adjustable working diameter

Fast working cycle

Ideal for use on CNC machines

Deburring of flat or curved profiles



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## FEATURES

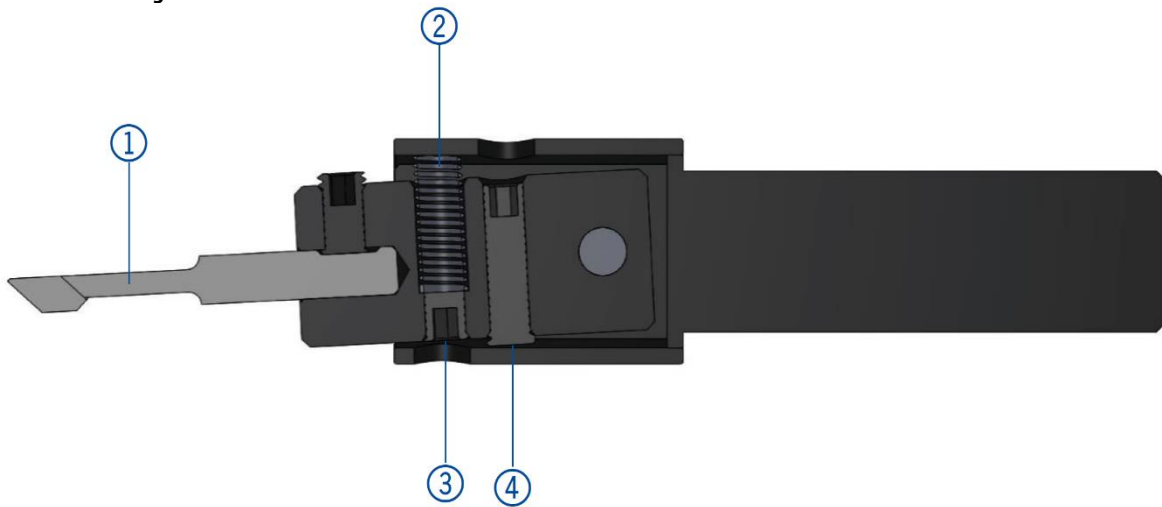
- Suited for deburring holes from  $\varnothing 0,80\text{mm}$  to  $\varnothing 15,0\text{mm}$
- Different interchangeable blade holders based on the working diameter
- Screw for adjusting the blade offset for fine adjustment of the deburring diameter
- Adjustable deburring force through the selection of 4 types of compression springs and the ability to regulate spring compression using the dedicated screw
- Different blade sizes depending on the working diameter
- Different cutting edges for pull-only deburring or push-pull deburring
- Different cutting edge angles to deburr intersecting holes in conditions of strong curvature
- Capability to supply special blades

1: Hard metal blade

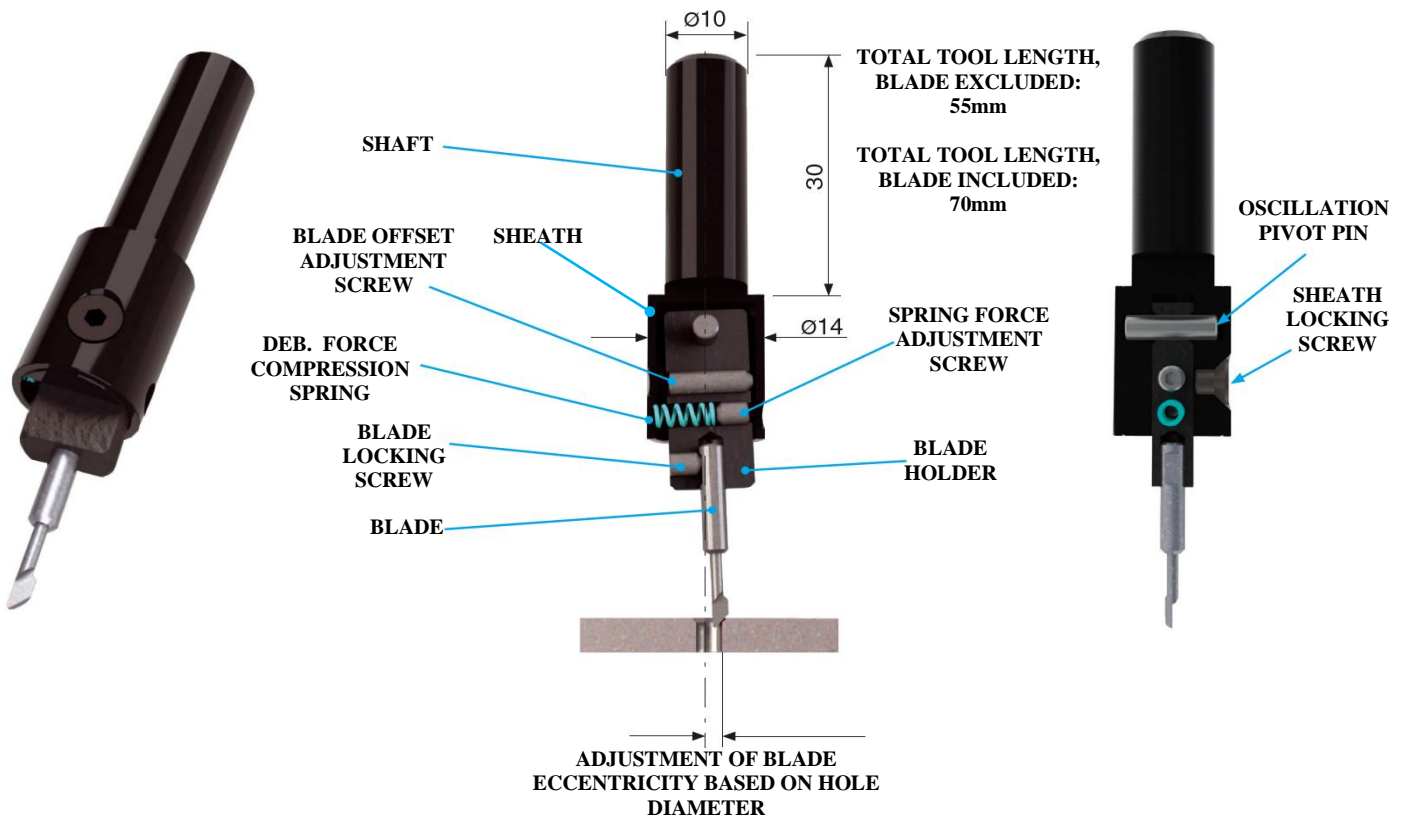
2: Compression spring for adjusting the deburring force

3: Adjustment screw for deburring force

4: Blade offset adjustment screw



## TOOL COMPONENTS



With the GMO deburring tool, two different work cycles or deburring methods are possible

### **DEBURRING WITH BLADE OSCILLATION (WITH SPRING)**

- Quick deburring cycle (axial entry, oscillating blade)
- Adaptation of the cutting edge to the hole edge (blade oscillation during cutting action)

### **RIGID DEBURRING (WITHOUT SPRING)**

- For larger holes and more aggressive deburring
- Chamfers of known size and well-defined profiles are produced

### **TECHNICAL SUPPORT**

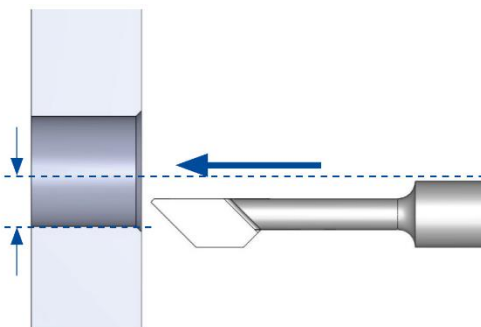
In the GMO tools page on our website ([www.tecnimetal-tm.com](http://www.tecnimetal-tm.com), products page, GMO) you will find:

- Useful simulation tool; by entering processing data, the tool configuration (blade and blade holder) and the CNC program will be provided.
- Instructional videos for GMO configuration and usage demonstration

### **DEBURRING WITH BLADE OSCILLATION (WITH SPRING)**

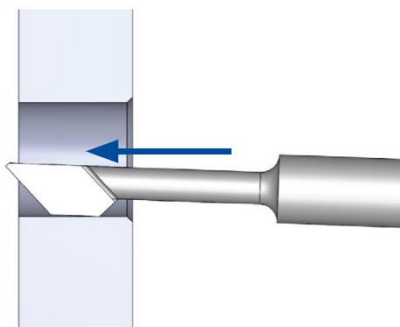
- 1.** Adjust the deburring diameter using adjustment screw 4 for offset regulation.
- 2.** Position the tool at the center of the hole.
- 3.** Tool in rotation, fast feed until complete penetration of the wall.
- 4.** Retract with working feed (F80-F100) to perform deburring.
- 5.** Rapidly retract from the hole once deburring is completed.

#### **POSITIONING**



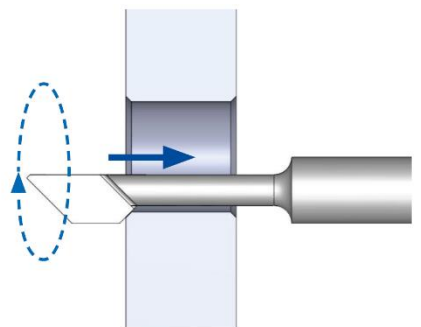
Position the deburring tool in alignment with the center of the hole, and adjust the blade offset with the cutting center aligned with the edge of the hole

#### **PENETRATION**



Traverse the hole with the tool in rotation and fast feed F500. In the push-only version, the front and side are rounded to allow rapid passage through the hole without causing damage

#### **DEBURRING**



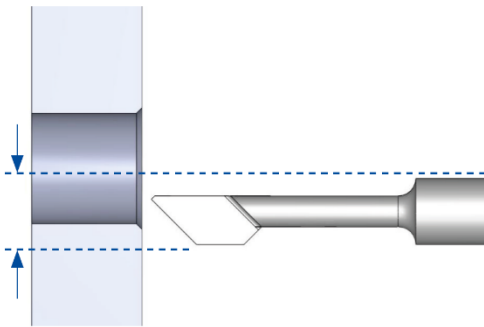
Retract at the working speed, approximately F80-F100 depending on the size of the burr and chamfer desired. After completing deburring, retract quickly from the hole.

It is possible to adjust the deburring force and the size of the chamfer by choosing the type of spring and adjusting its compression. It is also possible through the adjustment of the working speed and, if necessary, by introducing a pause during operation.

## RIGID DEBURRING (WITHOUT SPRING)

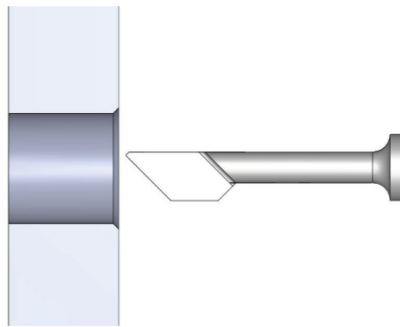
1. Replace the spring with the adjustment screw M3 x 10 mm.
2. Adjust the chamfer diameter by adjusting the screws (ref. 3 and 4). Blade offset, spindle aligned with the hole.
3. Off-axis positioning for hole penetration.
4. Traverse the hole with stationary tool and rapid feed.
5. Re-position the tool along the hole axis (point 2 coordinates).
6. Start rotation and retract at the working feed to perform the deburring.
7. Stop the rotation and position the tool off-axis again.
8. Exit the hole with rapid feed.

### BLADE OFFSET ADJUSTMENT



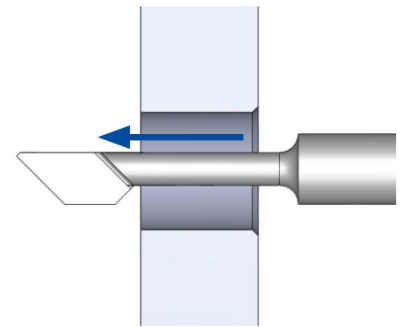
Position the deburring tool aligned with the hole axis, and adjust the blade offset with the cutting center aligned with the edge of the hole.

### OFF-AXIS POSITIONING



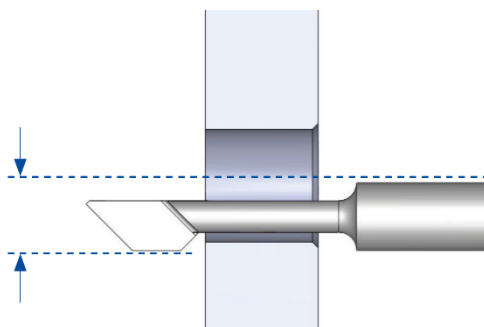
Off-axis positioning to ensure that the blade does not touch the walls of the hole during penetration.

### PENETRATION



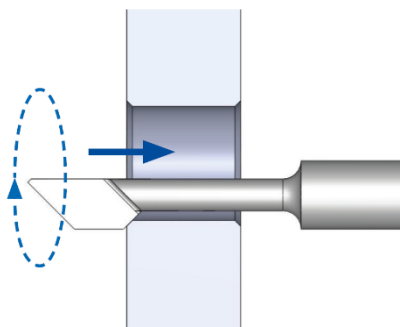
Traverse the hole with stationary tool and rapid feed.

### ON-AXIS POSITIONING



Re-position the tool along the hole axis (deburring position)

### DEBURRING



Start rotation and retract at the working feed. Then, stop the rotation and position the tool off-axis again to exit the hole.

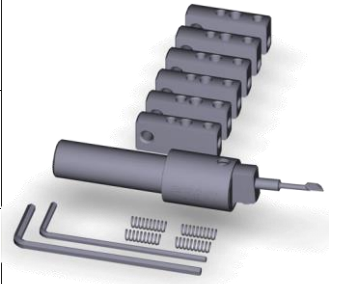
### Blade coding examples

The standard blades have a 45° inclination and work only in pulling motion, while form B blades work in both pushing and pulling motions. Both types are available in a W25 configuration with a 25° inclination for deburring in intersections of highly curved holes.

Pull-only 45°	GMO-S.. A..	ex. GMO-S23A45
Push-pull 45°	GMO-S.. BA..	ex. GMO-S23BA5
Pull-only 25°	GMO-S.. A.. W25	ex. GMO-S23A5W25
Push-pull 25°	GMO-S.. BA.. W25	ex. GMO-S23BA5W25

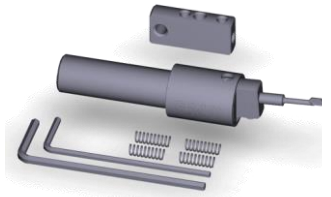
**GMO 1 Sets - Deburring tool complete with accessories (blades excluded to be ordered separately)**

Item	Content	Accessories codes
<b>GMO-SET1</b>	1x Body 6x Blade holders 4x Springs 2x Allen keys	Blade holders: E00, E05, E10, E15, E20, E25 Springs: F40, F50, F55, F63
<b>GMO-SET1V Weldon</b>	1x Body 6x Blade holders 4x Springs 2x Allen keys	Blade holders: E00, E05, E10, E15, E20, E25 Springs: F40, F50, F55, F63
<b>GMO-SET1XL Extra Large Weldon</b>	1x Body 6x Blade holders 4x Springs 2x Allen keys	Blade holders: EX00, EX05, EX10, EX15, EX20, EX25 Springs: F63, F80, F90, F100

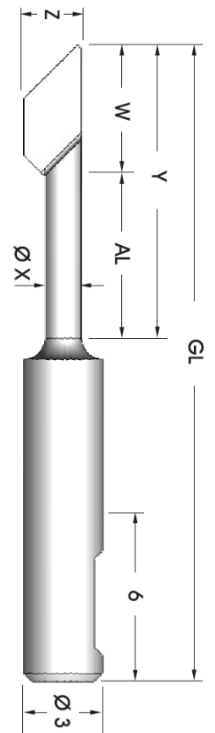


**GMO 2 Sets - Deburring tool with single blade holder (specify the GMO-E blade holder in the order, blades excluded to be ordered separately)**

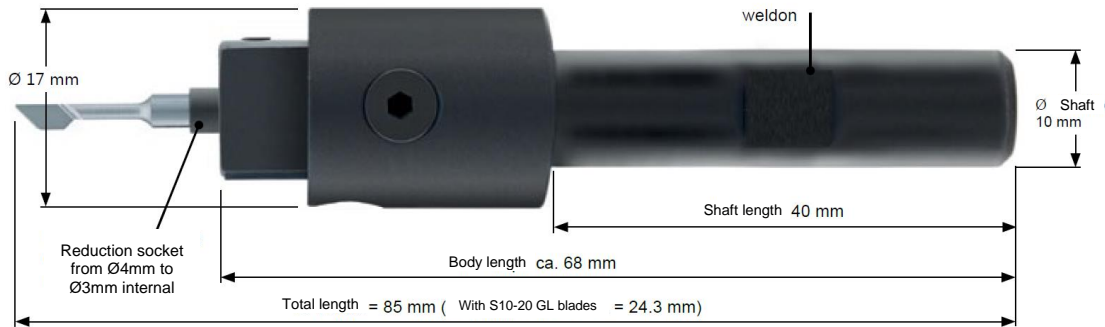
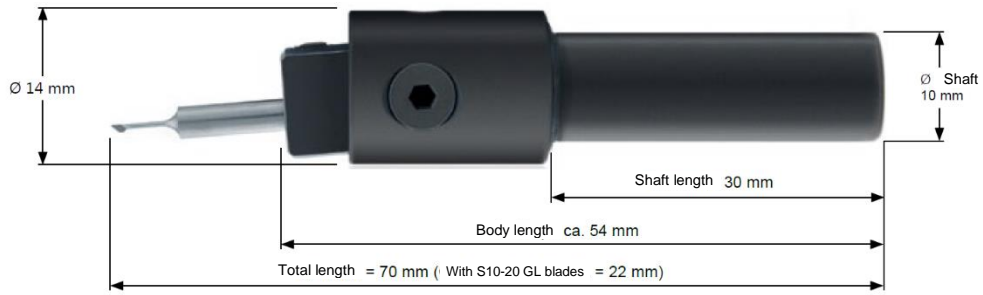
Item	Content	Accessories codes
<b>GMO-SET2</b>	1x Blade of choice 1x Body 1x Blade holders 4x Springs 2x Allen keys	Blade: not included Blade holder: of choice, included Springs: F40, F50, F55, F63
<b>GMO-SET2V Weldon</b>	1x Blade of choice 1x Body 1x Blade holders 4x Springs 2x Allen keys	Blade: not included Blade holder: of choice, included Springs: F40, F50, F55, F63
<b>GMO-SET2XL Extra Large Weldon</b>	1x Blade of choice 1x Body 1x Blade holders 4x Springs 3x Allen keys	Blade: not included Blade holder: of choice, included Springs: F63, F80, F90, F100



GMO blade	Hole diameter [mm]	Hole depth [mm]		AL	GL	W	ØX	Y	Z
GMO-S08(B)-A2(-W25)	0,8 - 1,0	2,0		2	22,0	1,40	0,5	3,40	0,75
GMO-S08(B)-A3(-W25)	0,8 - 1,0	3,0		3	22,0	1,40	0,5	4,40	0,75
GMO-S10(B)-A3(-W25)	1,0 - 1,2	3,0		3	22,0	2,00	0,65	5,00	0,95
GMO-S10(B)-A4(-W25)	1,0 - 1,2	4,0		4	22,0	2,00	0,65	6,00	0,95
GMO-S12(B)-A3(-W25)	1,2 - 1,5	3,0		3	22,0	2,65	0,70	5,65	1,10
GMO-S12(B)-A4(-W25)	1,2 - 1,5	4,0		4	22,0	2,65	0,70	6,65	1,10
GMO-S12(B)-A5(-W25)	1,2 - 1,5	5,0		5	22,0	2,65	0,70	7,65	1,10
GMO-S15(B)-A4(-W25)	1,5 - 2,0	4		4	22,0	3,10	1,00	7,10	1,40
GMO-S15(B)-A5(-W25)	1,5 - 2,0	5		5	22,0	3,10	1,00	8,10	1,40
GMO-S15(B)-A6(-W25)	1,5 - 2,0	6		6	22,0	3,10	1,00	9,10	1,40
GMO-S15(B)-A7(-W25)	1,5 - 2,0	7		7	22,0	3,10	1,00	10,10	1,40
GMO-S20(B)-A5(-W25)	2,0 - 2,5	5		5	22,0	3,80	1,40	8,80	1,90
GMO-S20(B)-A6(-W25)	2,0 - 2,5	6		6	22,0	3,80	1,40	9,80	1,90
GMO-S20(B)-A7(-W25)	2,0 - 2,5	7		7	22,0	3,80	1,40	10,80	1,90
GMO-S20(B)-A8(-W25)	2,0 - 2,5	8		8	22,0	3,80	1,40	11,80	1,90
GMO-S20(B)-A10(-W25)	2,0 - 2,5	10		10	22,0	3,80	1,40	13,80	1,90
GMO-S20(B)-A12(-W25)	2,0 - 2,5	12		12	22,0	3,80	1,40	15,80	1,90
GMO-S23(B)-A5(-W25)	2,3 - 7,5	5		5	24,3	5,00	1,40	10,00	2,20
GMO-S23(B)-A6(-W25)	2,3 - 7,5	6		6	24,3	5,00	1,40	11,00	2,20
GMO-S23(B)-A7(-W25)	2,3 - 7,5	7		7	24,3	5,00	1,40	12,00	2,20
GMO-S23(B)-A8(-W25)	2,3 - 7,5	8		8	24,3	5,00	1,40	13,00	2,20
GMO-S23(B)-A10(-W25)	2,3 - 7,5	10		10	24,3	5,00	1,40	15,00	2,20
GMO-S23(B)-A12(-W25)	2,3 - 7,5	12		12	24,3	5,00	1,40	17,00	2,20
GMO-S40(B)-A17(-W25)	4,0 - 14,0	17		17	29,0	5,90	3,00	22,90	3,90
GMO-S40(B)-A25(-W25)	4,0 - 14,0	25		25	37,0	5,90	3,00	30,90	3,90







### BLADE HOLDER

#### Standard and V model



Code	Working range
<b>GMO-E00</b>	0.8-2.5mm
<b>GMO-E05</b>	2.5-3.5mm
<b>GMO-E10</b>	3.5-4.5mm
<b>GMO-E15</b>	4.5-5.5mm
<b>GMO-E20</b>	5.5-6.5mm
<b>GMO-E25</b>	6.5-14.0mm

#### XL model only



Code	Working range
<b>GMO-EX00</b>	0.8-2.5mm
<b>GMO-EX05</b>	2.5-3.5mm
<b>GMO-EX10</b>	3.5-4.5mm
<b>GMO-EX15</b>	4.5-5.5mm
<b>GMO-EX20</b>	5.5-6.5mm
<b>GMO-EX25</b>	6.5-14.0mm

### SPRINGS

#### Standard and V model



Code	
<b>GMO-F40S</b>	Soft (Al, brass)
<b>GMO-F50S</b>	Medium (steel)
<b>GMO-F55</b>	Strong (stainless)
<b>GMO-F63</b>	Extra-strong

#### Solo per modello XL



Code	
<b>GMO-FXL63</b>	Soft (Al, brass)
<b>GMO-FXL80</b>	Medium (steel)
<b>GMO-FXL90</b>	Strong (stainless)
<b>GMO-FXL100</b>	Extra-strong

### SCREW SETS – PIN – REDUCTIONS

CodE	
<b>GMO-M3X3</b>	TPS M3x3 screw
<b>GMO-M3X4</b>	M3x4 E00 screw
<b>GMO-M3X5</b>	M3x5 E05 screw
<b>GMO-M3X10</b>	
<b>GMO-M3X4S</b>	



Cod.	
<b>GMO-PASS</b>	
<b>GMO-RHXL43</b>	Reduction socket

## GMO DEBURRING ENDMILLS

Cutting angles of 45° and 25° ideal for every application.

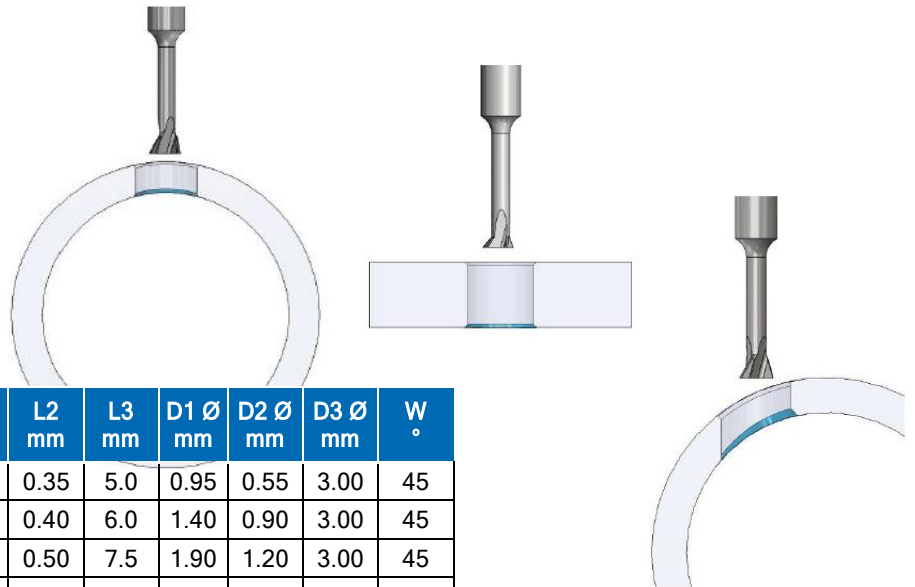
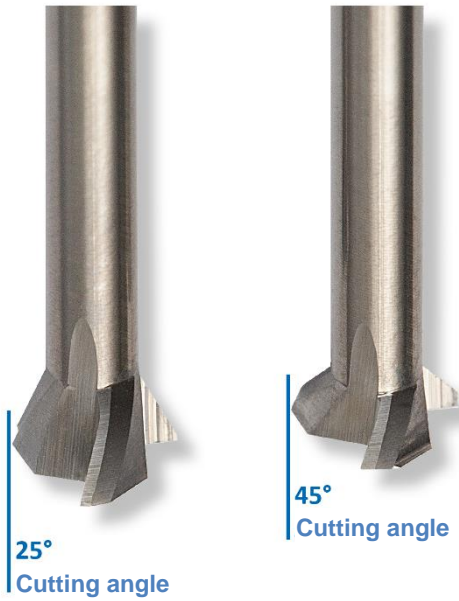
Suitable for deburring curved edges.

High-quality carbide tool with special coating.

Extremely long lifespan.

Can be used for holes from  $\varnothing$  1.0 mm.

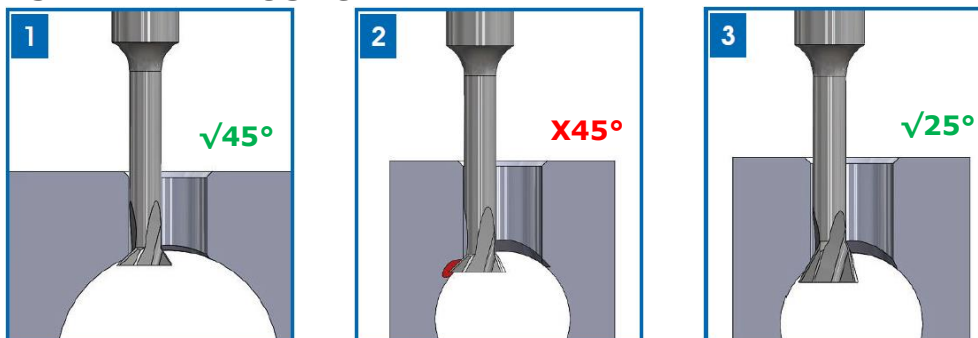
Wide range of sizes



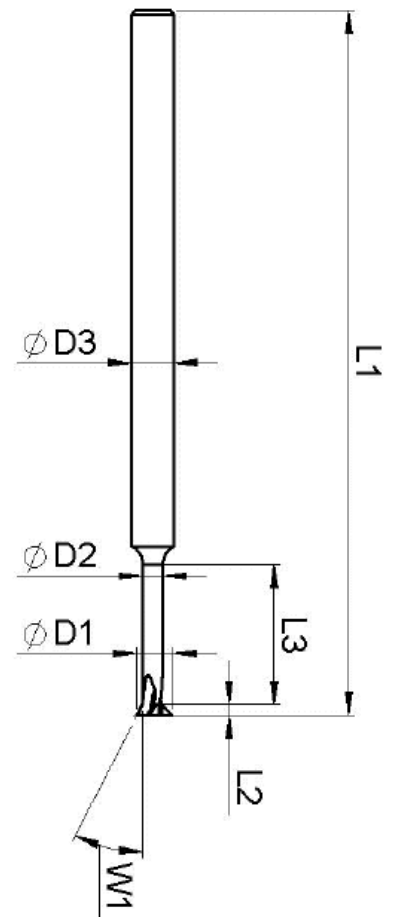
45° endmill	Hole $\varnothing$ mm	Hole depth mm	L1 mm	L2 mm	L3 mm	D1 $\varnothing$ mm	D2 $\varnothing$ mm	D3 $\varnothing$ mm	W °
GMO-EF10	1,0	5,0	50	0,35	5,0	0,95	0,55	3,00	45
GMO-EF15	1,5	6,0	50	0,40	6,0	1,40	0,90	3,00	45
GMO-EF20	2,0	7,5	50	0,50	7,5	1,90	1,20	3,00	45
GMO-EF25	2,5	9,0	60	0,70	9,0	2,40	1,30	3,00	45
GMO-EF30	3,0	11	70	0,75	11,0	2,85	1,70	3,00	45
GMO-EF40	4,0	14	80	0,90	14,0	3,80	2,40	4,00	45
GMO-EF50	5,0	17	100	1,10	17,0	4,80	3,00	5,00	45
GMO-EF60	6,0	20	100	1,35	20,0	5,80	3,50	6,00	45

25° endmill	Hole $\varnothing$ mm	Hole depth mm	L1 mm	L2 mm	L3 mm	D1 $\varnothing$ mm	D2 $\varnothing$ mm	D3 $\varnothing$ mm	W °
GMO-EF10-W25	1,0	5,0	50	0,60	5,0	0,95	0,55	3,00	25
GMO-EF15-W25	1,5	7,0	50	0,70	6,0	1,40	0,90	3,00	25
GMO-EF20-W25	2,0	8,0	50	0,90	7,5	1,90	1,20	3,00	25
GMO-EF25-W25	2,5	10,0	60	1,35	9,0	2,40	1,30	3,00	25
GMO-EF30-W25	3,0	12,0	70	1,40	11,0	2,85	1,70	3,00	25
GMO-EF40-W25	4,0	15	80	1,70	14,0	3,80	2,40	4,00	25
GMO-EF50-W25	5,0	17	100	2,15	17,0	4,80	3,00	5,00	25
GMO-EF60-W25	6,0	20	100	2,70	20,0	5,80	3,50	6,00	25

### 25° ENDMILL USAGE



Unfavorable ratio between entry diameter and intersection diameter for the use of the 45° cutter. Risk of collision (red area in the image)



## GMO DEBURRING ENDMILLS

Cutting angles of 45° and 25° ideal for every application.

Suitable for deburring curved edges.

High-quality carbide tool with special coating.

Extremely long lifespan.

Can be used for holes from  $\varnothing$  1.0 mm.

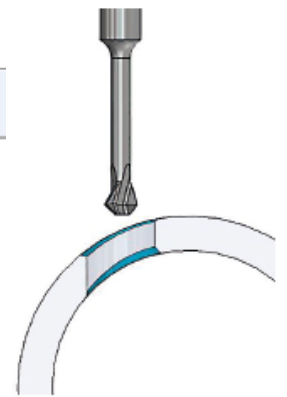
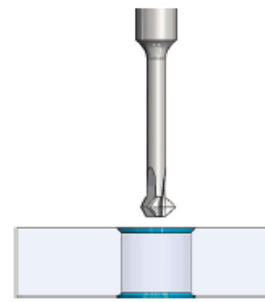
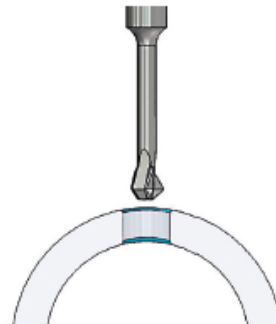
Wide range of sizes



25°/45° cutting angle



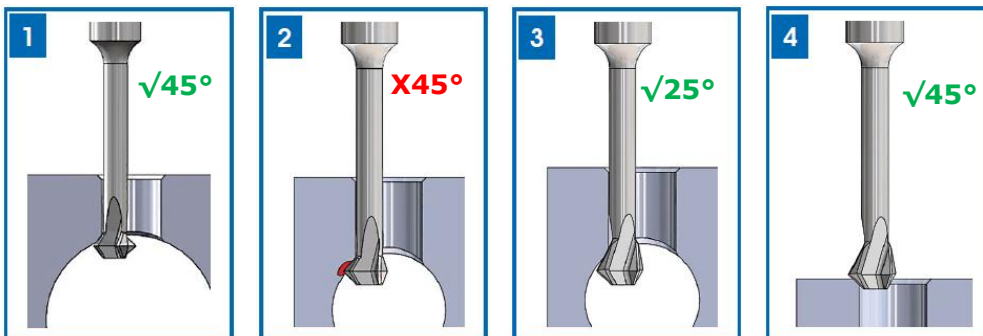
45°/45° cutting angle



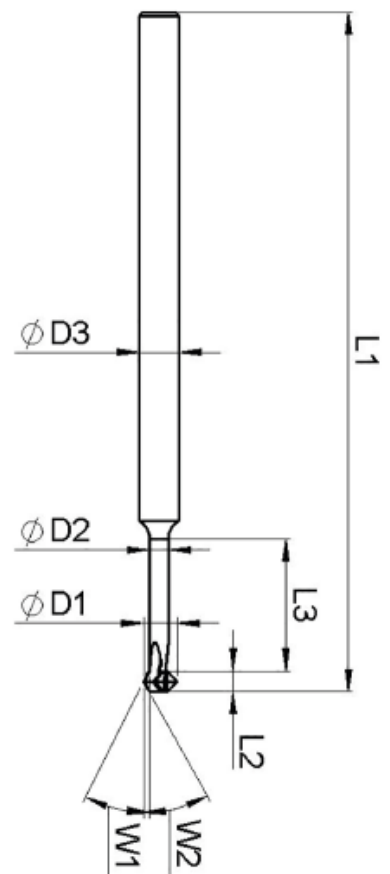
45° - 45° endmill	Hole $\varnothing$ mm	Hole depth mm	L1 mm	L2 mm	L3 mm	D1 $\varnothing$ mm	D2 $\varnothing$ mm	D2 $\varnothing$ mm	W1 °	W2 °
GMO-EF10-B	1,0	5,0	50	0.60	5.0	0.95	0.55	3.00	45	45
GMO-EF15-B	1,5	6,0	50	0.75	6.0	1.40	0.90	3.00	45	45
GMO-EF20-B	2,0	7,5	50	1.00	7.5	1.90	1.20	3.00	45	45
GMO-EF25-B	2,5	9,0	60	1.40	9.0	2.40	1.30	3.00	45	45
GMO-EF30-B	3,0	11	70	1.50	11.0	2.85	1.70	3.00	45	45
GMO-EF40-B	4,0	14	80	1.85	14.0	3.80	2.40	4.00	45	45
GMO-EF50-B	5,0	17	100	2.30	17.0	4.80	3.00	5.00	45	45
GMO-EF60-B	6,0	20	100	2.85	20.0	5.80	3.50	6.00	45	45

25° - 45° endmill	Hole $\varnothing$ mm	Hole depth mm	L1 mm	L2 mm	L3 mm	D1 $\varnothing$ mm	D2 $\varnothing$ mm	D2 $\varnothing$ mm	W1 °	W2 °
GMO-EF10-B-W25	1,0	5,0	50	0.85	5.0	0.95	0.55	3.00	25	45
GMO-EF15-B-W25	1,5	6,0	50	1.00	6.0	1.40	0.90	3.00	25	45
GMO-EF20-B-W25	2,0	7,5	50	1.40	7.5	1.90	1.20	3.00	25	45
GMO-EF25-B-W25	2,5	9,0	60	2.00	9.0	2.40	1.30	3.00	25	45
GMO-EF30-B-W25	3,0	11	70	2.15	11.0	2.85	1.70	3.00	25	45
GMO-EF40-B-W25	4,0	14	80	2.65	14.0	3.80	2.40	4.00	25	45
GMO-EF50-B-W25	5,0	17	100	3.35	17.0	4.80	3.00	5.00	25	45
GMO-EF60-B-W25	6,0	20	100	4.20	20.0	5.80	3.50	6.00	25	45

### 25° ENDMILL USAGE











Unfavorable ratio between entry diameter and intersection diameter for the use of the 45° cutter. Risk of collision (red area in the image)





## MODELS SUMMARY

	Code	Hole $\varnothing$	L1	L2	L3	D1	D2	D3	W1	W2
	GMO-EF10	1.0	50	0.35	5.00	0.95	0.55	3.00	45°	-
	GMO-EF10-W25			0.60					25°	-
	GMO-EF10-B			0.60					45°	45°
	GMO-EF10B-W25			0.85					25°	45°
	GMO-EF15	1.5	50	0.40	6.00	1.40	0.90	3.00	45°	-
	GMO-EF15-W25			0.70					25°	-
	GMO-EF15-B			0.75					45°	45°
	GMO-EF15-B-W25			1.00					25°	45°
	GMO-EF20	2.0	50	0.50	7.50	1.90	1.20	3.00	45°	-
	GMO-EF20-W25			0.90					25°	-
	GMO-EF20-B			1.00					45°	45°
	GMO-EF20-B-W25			1.40					25°	45°
	GMO-EF25	2.5	60	0.70	9.00	2.40	1.30	3.00	45°	-
	GMO-EF25-W25			1.35					25°	-
	GMO-EF25-B			1.40					45°	45°
	GMO-EF25-B-W25			2.00					25°	45°
	GMO-EF30	3.0	70	0.75	11.0	2.85	1.70	3.00	45°	-
	GMO-EF30-W25			1.40					25°	-
	GMO-EF30-B			1.50					45°	45°
	GMO-EF30-B-W25			2.15					25°	45°
	GMO-EF40	4.0	80	0.90	14.0	3.80	2.40	4.00	45°	-
	GMO-EF40-W25			1.70					25°	-
	GMO-EF40-B			1.85					45°	45°
	GMO-EF40B-W25			2.65					25°	45°
	GMO-EF50	5.0	100	1.10	17.0	4.80	3.00	5.00	45°	-
	GMO-EF50-W25			2.15					25°	-
	GMO-EF50B			2.30					45°	45°
	GMO-EF50-B-W25			3.35					25°	45°
	GMO-EF60	6.0	100	1.35	20.0	5.80	3.50	6.00	45°	-
	GMO-EF60-W25			2.70					25°	-
	GMO-EF60-B			2.85					45°	45°
	GMO-EF60-B-W25			4.20					25°	45°

