

Your technology partner for cost-effective machining

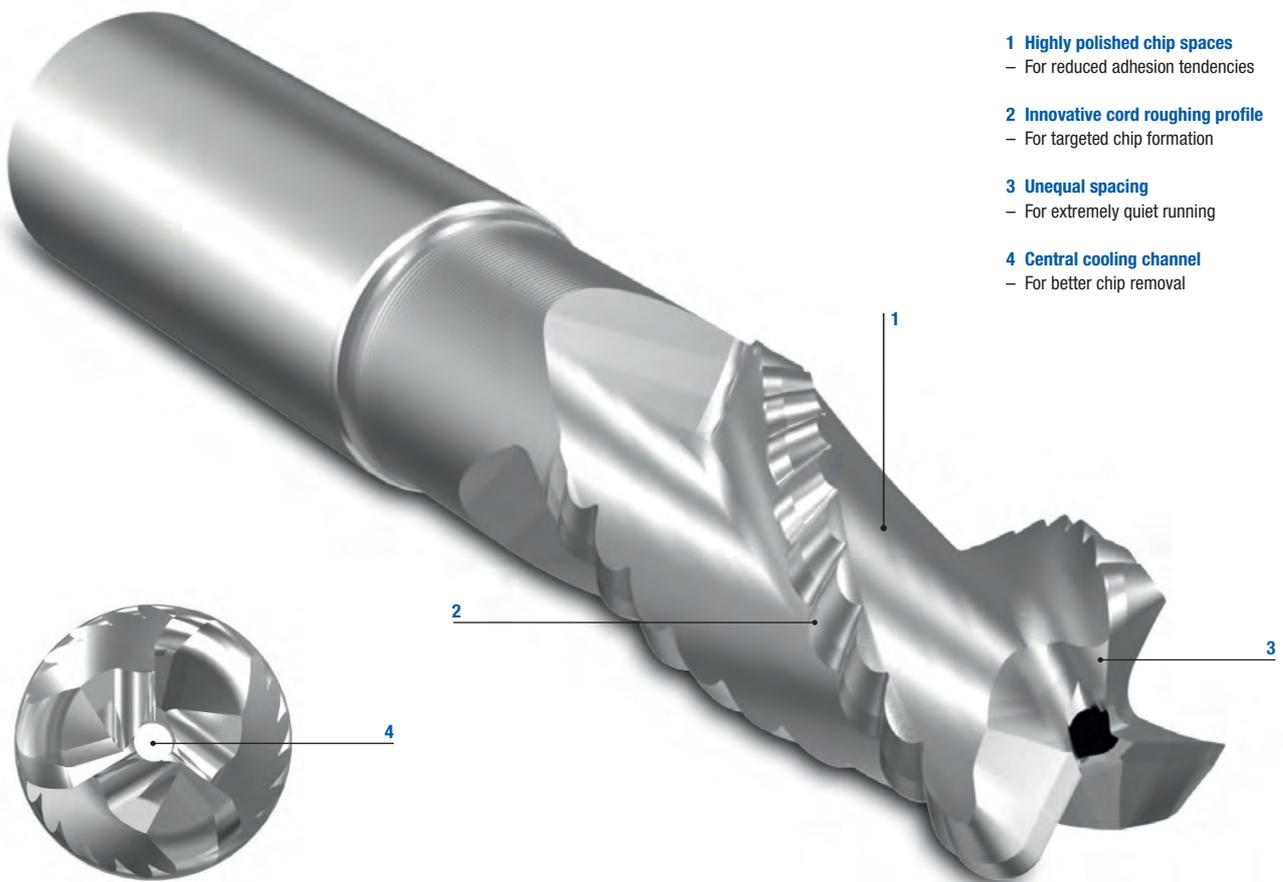
## OptiMill<sup>®</sup>-Alu-Wave

# OptiMill®-Alu-Wave

## A new dimension of high-volume aluminium machining

The OptiMill-Alu-Wave is a newly developed roughing cutter for machining aluminium materials. It produces short chips and ensures smooth cutting behaviour thanks to its unique cord roughing geometry. The milling cutter has a central cooling channel that minimises the formation of built-up edges and safely removes chips. It also offers configurable corner radii for precise near-contour roughing.

Due to its high machining volume, the OptiMill-Alu-Wave allows efficient material removal and, in this way, increases productivity. Available in various lengths, it adapts perfectly to the individual requirements of any roughing task.



- 1 Highly polished chip spaces**  
– For reduced adhesion tendencies
- 2 Innovative cord roughing profile**  
– For targeted chip formation
- 3 Unequal spacing**  
– For extremely quiet running
- 4 Central cooling channel**  
– For better chip removal

## Features

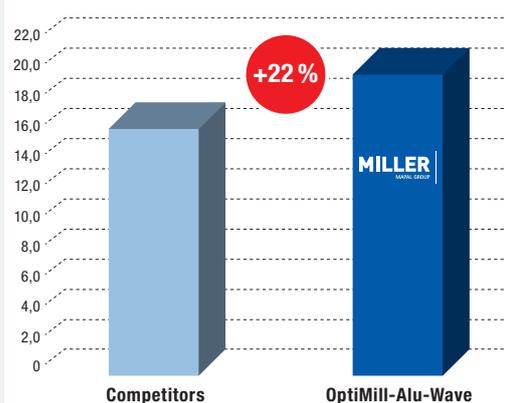
### Configurable features:

- Ø area: 12.00 - 25.00 mm
- Shank form: HB | Safe-lock®
- Cutting edge design: Radius | Chamfer 45° of Ø 12.00 – 25.00 mm | 0.40 – 1.00 mm
- Coating: Available as DLC coating with cutting material HP910

### Dimensions:

- Short, medium and long projection length with neck
- Ø area: 12.00 - 25.00 mm

## MATERIAL REMOVAL RATE [dm<sup>3</sup>/min]

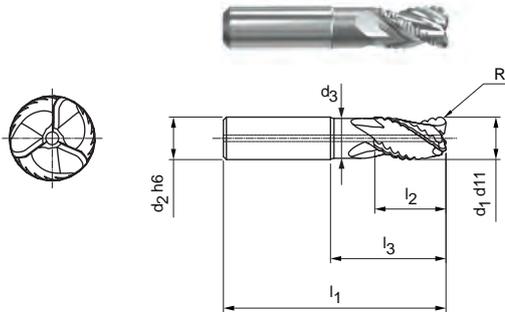


### Workpiece material: EN-AW50

Tool ø: 25.00 mm  
Spindle speed: 24.465 1/mm  
Feed: 26.738 mm/min  
Material removal rate: 20.1 dm<sup>3</sup>/min

# OptiMill®-Alu-Wave

Shoulder milling cutter, short projection length with neck, with internal coolant supply  
M3582



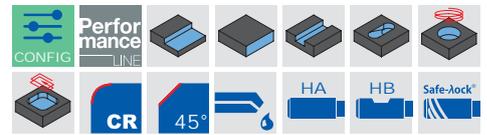
N	1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	4.1	4.2	4.3	C	1.1	1.2	1.3	2.1	3.1	4.1	4.2	5.1	5.2	5.3
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## Design:

Diameter of milling cutter:	12.00 - 25.00 mm
Shank form:	HA (DIN 6535)
Coating:	Uncoated
Number of cutting edges:	3
Point geometry:	Specific geometry
Helix angle:	36°
Dimensions:	Factory standard
Special feature:	With central internal cooling

## Application:

Before using in the machine, check the cutting data according to machine performance (see cutting data).



## Preferred series available from stock | Short projection length

Dimensions							z	Specification	Order no.
d1 d11	d2 h6	d3	l1	l2	l3	R			
12,00	12	11,2	83	22	36	2,00	3	M3582-1200AU-R0200	31430485
16,00	16	15,1	92	26	42	3,00	3	M3582-1600AU-R0300	31430488
20,00	20	18,8	104	32	54	3,00	3	M3582-2000AU-R0300	31430551
20,00	20	18,8	104	32	54	4,00	3	M3582-2000AU-R0400	31430552
25,00	25	23,5	114	40	58	3,00	3	M3582-2500AU-R0300	31430559
25,00	25	23,5	114	40	58	4,00	3	M3582-2500AU-R0400	31430560

## Configurable features



### Shank form:

Shank form: HB | Safe-lock®



### Cutting edge design:

Configurable radius  
Configurable chamfer 45°



### Coating:

Available as DLC coating with coating MF8



### Specification:

M3582-2500[shank form][coating][cutting edge]-[size]

## Safe-lock® by HAIMER

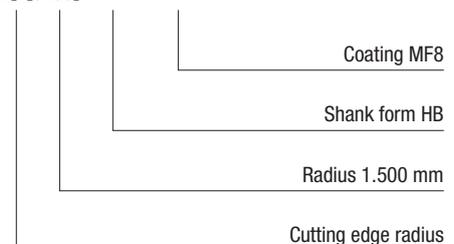
Manufacturer's ID number: 6272

## Dimensions of configurable radii and corner chamfers

d1	Radius		Chamfer 45°	
	Rmin.	Rmax.	Fmin.	Fmax.
12,00	0,4	3,00	0,40	1,00
16,00	0,5	4,00	0,40	1,00
20,00	0,6	5,20	0,40	1,00
25,00	0,75	6,50	0,40	1,00

### Example:

M3582-2500[B][02][R]-[0150]



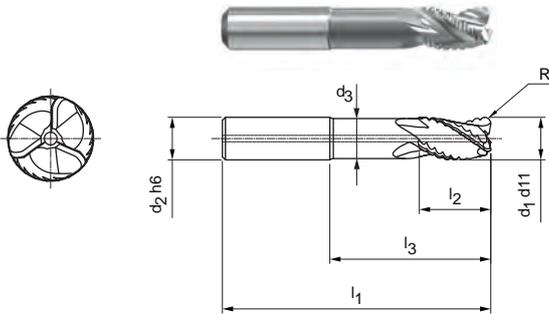
Dimensions in mm.

For cutting data recommendation, see pages 6/7.

Special designs and other coatings available upon request.

# OptiMill®-Alu-Wave

Shoulder milling cutter, medium projection length with neck, with internal coolant supply  
M3582



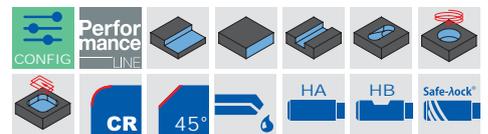
N	1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	4.1	4.2	4.3	C	1.1	1.2	1.3	2.1	3.1	4.1	4.2	5.1	5.2	5.3
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**Design:**

Diameter of milling cutter: 12.00 - 25.00 mm  
 Shank form: HA (DIN 6535)  
 Coating: Uncoated  
 Number of cutting edges: 3  
 Point geometry: Specific geometry  
 Helix angle: 36°  
 Dimensions: Factory standard  
 Special feature: With central internal cooling

**Application:**

Before using in the machine, check the cutting data according to machine performance (see cutting data).



**Preferred series available from stock | Medium projection length**

Dimensions							z	Specification	Order no.
d1 d11	d2 h6	d3	l1	l2	l3	R			
12,00	12	11,2	95	26	50	2,00	3	M3582-1200AU-R0200	31430486
16,00	16	15,1	115	32	65	3,00	3	M3582-1600AU-R0300	31430489
20,00	20	18,8	125	32	75	3,00	3	M3582-2000AU-R0300	31430553
20,00	20	18,8	125	32	75	4,00	3	M3582-2000AU-R0400	31430556
25,00	25	23,5	136	50	80	3,00	3	M3582-2500AU-R0300	31430561
25,00	25	23,5	136	50	80	4,00	3	M3582-2500AU-R0400	31430562

**Configurable features**

**Shank form:**  
Shank form: HB | Safe-lock®

**Cutting edge design:**  
Configurable radius  
Configurable chamfer 45°

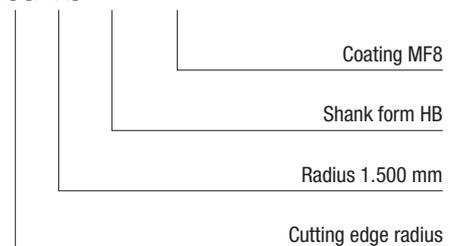
**Coating:**  
Available as DLC coating with coating MF8

**Specification:**  
M3582-2500[shank form][coating][cutting edge]-[size]

**Dimensions of configurable radii and corner chamfers**

d1	Radius		Chamfer 45°	
	Rmin.	Rmax.	Fmin.	Fmax.
12,00	0,4	3,00	0,40	1,00
16,00	0,5	4,00	0,40	1,00
20,00	0,6	5,20	0,40	1,00
25,00	0,75	6,50	0,40	1,00

**Example:**  
M3582-2500[B][02][R]-[0150]



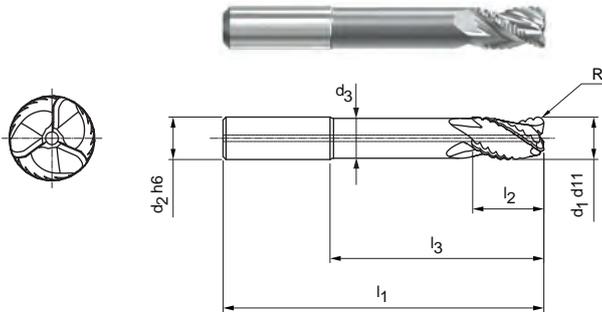
Dimensions in mm.

For cutting data recommendation, see pages 6/7.

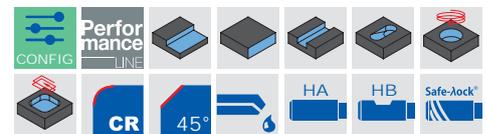
Special designs and other coatings available upon request.

# OptiMill®-Alu-Wave

Shoulder milling cutter, long projection length with neck, with internal coolant supply  
M3582



N	1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	4.1	4.2	4.3	C	1.1	1.2	1.3	2.1	3.1	4.1	4.2	5.1	5.2	5.3
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## Preferred series available from stock | Long projection length

Dimensions							z	Specification	Order no.
d1 d11	d2 h6	d3	l1	l2	l3	R			
12,00	12	11,2	106	16	60	2,00	3	M3582-1200AU-R0200	31430487
16,00	16	15,1	129	24	80	3,00	3	M3582-1600AU-R0300	31430550
20,00	20	18,8	150	32	100	3,00	3	M3582-2000AU-R0300	31430557
20,00	20	18,8	150	32	100	4,00	3	M3582-2000AU-R0400	31430558
25,00	25	23,5	163	42	107	3,00	3	M3582-2500AU-R0300	31430563
25,00	25	23,5	163	42	107	4,00	3	M3582-2500AU-R0400	31430564

## Configurable features

**Shank form:**  
Shank form: HB | Safe-lock®

**Cutting edge design:**  
Configurable radius  
Configurable chamfer 45°

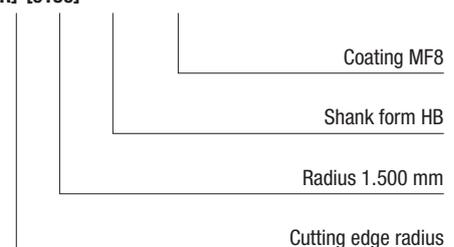
**Coating:**  
Available as DLC coating with coating MF8

**Specification:**  
M3582-2500[shank form][coating][cutting edge]-[size]

## Dimensions of configurable radii and corner chamfers

d1	Radius		Chamfer 45°	
	Rmin.	Rmax.	Fmin.	Fmax.
12,00	0,4	3,00	0,40	1,00
16,00	0,5	4,00	0,40	1,00
20,00	0,6	5,20	0,40	1,00
25,00	0,75	6,50	0,40	1,00

**Example:**  
M3582-2500[B][02][R]-[0150]



Dimensions in mm.

For cutting data recommendation, see pages 6/7.

Special designs and other coatings available upon request.

# Cutting data recommendations for shoulder milling cutters

Feed and cutting speed

## OptiMill-Alu-Wave | M3582 | Machine performance 25 kW to ≤40 kW

MMG*	Workpiece material	Strength/hardness [N/mm <sup>2</sup> ] [HRC]	Cooling		
			MQL/Air	Dry	Wet
N N1	N1.1 Aluminium, unalloyed and alloyed < 3% Si				✓
	N1.2 Aluminium, alloyed ≤ 7% Si				✓
	N1.3 Aluminium, alloyed > 7 - 12% Si				✓
	N1.4 Aluminium, alloyed > 12% Si				✓

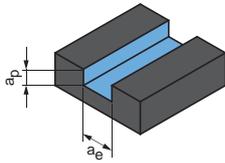
## OptiMill-Alu-Wave | M3582 | Machine performance 40 kW to ≤80 kW

MMG*	Workpiece material	Strength/hardness [N/mm <sup>2</sup> ] [HRC]	Cooling		
			MQL/Air	Dry	Wet
N N1	N1.1 Aluminium, unalloyed and alloyed < 3% Si				✓
	N1.2 Aluminium, alloyed ≤ 7% Si				✓
	N1.3 Aluminium, alloyed > 7 - 12% Si				✓
	N1.4 Aluminium, alloyed > 12% Si				✓

## OptiMill-Alu-Wave | M3582 | Machine performance >80 kW

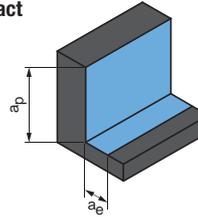
MMG*	Workpiece material	Strength/hardness [N/mm <sup>2</sup> ] [HRC]	Cooling		
			MQL/Air	Dry	Wet
N N1	N1.1 Aluminium, unalloyed and alloyed < 3% Si				✓
	N1.2 Aluminium, alloyed ≤ 7% Si				✓
	N1.3 Aluminium, alloyed > 7 - 12% Si				✓
	N1.4 Aluminium, alloyed > 12% Si				✓

**Full cutting**



**Short projection length**  
 $a_p = 1xD \mid a_e = 1xD$   
**Medium projection length**  
 $a_p = 1xD \mid a_e = 1xD$   
**Long projection length**  
 $a_p = 0.5xD \mid a_e = 1xD$

**Part-contact cutting**



**Short projection length**  
 $a_p = 1.5xD \mid a_e = 0.6xD$   
**Medium projection length**  
 $a_p = 1.5xD \mid a_e = 0.4xD$   
**Long projection length**  
 $a_p = 1.5xD \mid a_e = 0.25xD$

	Feed per tooth [f <sub>z</sub> ] [mm/tooth] for diameter of milling cutter					Feed per tooth [f <sub>z</sub> ] [mm/tooth] for diameter of milling cutter				
	∅	12.00	16.00	20.00		25.00	∅	12.00	16.00	20.00
<b>v<sub>c</sub></b>	600 - 900	600 - 900	300 - 600	300 - 600	<b>v<sub>c</sub></b>	600 - 900	600 - 900	400 - 700	300 - 600	
Factor <b>v<sub>c</sub></b>					Factor <b>v<sub>c</sub></b>					
<b>1</b>	0.1 - 0.18	0.12 - 0.2	0.15 - 0.2	0.15 - 0.2	<b>1</b>	0.12 - 0.22	0.15 - 0.22	0.15 - 0.22	0.15 - 0.22	
<b>0.95</b>	0.1 - 0.18	0.12 - 0.2	0.15 - 0.2	0.15 - 0.2	<b>0.95</b>	0.12 - 0.22	0.15 - 0.22	0.15 - 0.22	0.15 - 0.22	
<b>0.85</b>	0.1 - 0.18	0.12 - 0.2	0.15 - 0.2	0.15 - 0.2	<b>0.85</b>	0.12 - 0.22	0.15 - 0.22	0.15 - 0.22	0.15 - 0.22	
<b>0.75</b>	0.1 - 0.18	0.12 - 0.2	0.15 - 0.2	0.15 - 0.2	<b>0.75</b>	0.12 - 0.22	0.15 - 0.22	0.15 - 0.22	0.15 - 0.22	

	Feed per tooth [f <sub>z</sub> ] [mm/tooth] for diameter of milling cutter					Feed per tooth [f <sub>z</sub> ] [mm/tooth] for diameter of milling cutter				
	∅	12.00	16.00	20.00		25.00	∅	12.00	16.00	20.00
<b>v<sub>c</sub></b>	900 - 1200	1100 - 1400	1100 - 1400	900 - 1200	<b>v<sub>c</sub></b>	900 - 1200	1100 - 1400	1100 - 1400	900 - 1200	
Factor <b>v<sub>c</sub></b>					Factor <b>v<sub>c</sub></b>					
<b>1</b>	0.1 - 0.18	0.12 - 0.2	0.14 - 0.21	0.15 - 0.22	<b>1</b>	0.1 - 0.22	0.15 - 0.25	0.15 - 0.25	0.15 - 0.25	
<b>0.95</b>	0.1 - 0.18	0.12 - 0.2	0.14 - 0.21	0.15 - 0.22	<b>0.95</b>	0.1 - 0.22	0.15 - 0.25	0.15 - 0.25	0.15 - 0.25	
<b>0.85</b>	0.1 - 0.18	0.12 - 0.2	0.14 - 0.21	0.15 - 0.22	<b>0.85</b>	0.1 - 0.22	0.15 - 0.25	0.15 - 0.25	0.15 - 0.25	
<b>0.75</b>	0.1 - 0.18	0.12 - 0.2	0.14 - 0.21	0.15 - 0.22	<b>0.75</b>	0.1 - 0.22	0.15 - 0.25	0.15 - 0.25	0.15 - 0.25	

	Feed per tooth [f <sub>z</sub> ] [mm/tooth] for diameter of milling cutter					Feed per tooth [f <sub>z</sub> ] [mm/tooth] for diameter of milling cutter				
	∅	12.00	16.00	20.00		25.00	∅	12.00	16.00	20.00
<b>v<sub>c</sub></b>	900 - 1200	1100 - 1400	1300 - 1600	1700 - 2500	<b>v<sub>c</sub></b>	900 - 1200	1100 - 1400	1300 - 1600	1700 - 2500	
Factor <b>v<sub>c</sub></b>					Factor <b>v<sub>c</sub></b>					
<b>1</b>	0.1 - 0.18	0.12 - 0.2	0.15 - 0.23	0.15 - 0.23	<b>1</b>	0.1 - 0.22	0.13 - 0.25	0.15 - 0.27	0.15 - 0.27	
<b>0.95</b>	0.1 - 0.18	0.12 - 0.2	0.15 - 0.23	0.15 - 0.23	<b>0.95</b>	0.1 - 0.22	0.13 - 0.25	0.15 - 0.27	0.15 - 0.27	
<b>0.85</b>	0.1 - 0.18	0.12 - 0.2	0.15 - 0.23	0.15 - 0.23	<b>0.85</b>	0.1 - 0.22	0.13 - 0.25	0.15 - 0.27	0.15 - 0.27	
<b>0.75</b>	0.1 - 0.18	0.12 - 0.2	0.15 - 0.23	0.15 - 0.23	<b>0.75</b>	0.1 - 0.22	0.13 - 0.25	0.15 - 0.27	0.15 - 0.27	

The specified machining values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

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