

**HAIMER®**  
Quality Wins.

# HAIMER MILL

One tool for everything – ramping, drilling,  
milling or slotting



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# OVERVIEW SOLID CARBIDE END MILLS

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Shank	Application	Material
		<p>Main Material </p> <p>also suitable for </p>
		<p>Main Material </p> <p>also suitable for </p>
		<p>Main Material </p> <p>also suitable for </p>
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# OVERVIEW SOLID CARBIDE END MILLS

Products		ø D1	Page	Characteristics	
F2004LL – HAIMER MILL		<div style="background-color: #0056b3; color: white; padding: 2px; margin-bottom: 2px;">METRIC</div> <div style="background-color: #4CAF50; color: white; padding: 2px;">INCH</div>	ø 6 – ø 20 ø 1/4" – ø 3/4"	22 23	   
F2014KK – HAIMER MILL		<div style="background-color: #0056b3; color: white; padding: 2px; margin-bottom: 2px;">METRIC</div> <div style="background-color: #4CAF50; color: white; padding: 2px;">INCH</div>	ø 2 – ø 20 ø 3/32" – ø 3/4"	24 25	   
F2014 – HAIMER MILL		<div style="background-color: #4CAF50; color: white; padding: 2px;">INCH</div>	ø 1/4" – ø 3/4"	26	   

Shank

Application

Material



Main Material also suitable for

P	M	K	S
		N	H



Main Material also suitable for

P	M	K	S
		N	H



Main Material also suitable for

P	M	K	S
		N	H

# EXPLANATION ICONS/ARTICLE CODE/MATERIAL LIST

## Explanation Icons

### Characteristics

<b>Cutting length</b> 	<b>Similar DIN</b> 	<b>Helix angle</b> 	<b>Sharp cutting edge</b> 	<b>Corner chamfer</b> 	<b>Corner radius</b> 	<b>Ball Nose</b> 	<b>Spot</b> 	<b>Edge radius</b> 
<b>Teeth 2</b> 	<b>Teeth 3</b> 	<b>Teeth 4</b> 	<b>Teeth 5</b> 	<b>Teeth 6</b> 	<b>Safe-lock®</b> 	<b>Straight shank</b> 	<b>Weldon shank</b> 	<b>All three shanks available</b> 

### Application

<b>Feed direction</b> 	<b>Feed direction</b> 	<b>Feed direction</b> 	<b>Ramping</b> 	<b>Slotting</b> 	<b>Side milling</b> 	<b>Rounding</b> 	<b>Chamfering</b> 
<b>Drilling</b> 	<b>3D Milling</b> 	<b>V-slotting</b> 	<b>Contouring</b> 	<b>Chamfering</b> 	<b>Side milling</b> 		

### Coolant

<b>Emulsion</b> 	<b>Cold air</b> 	<b>Dry machining</b> 	<b>Minimal lubrication</b> 	<b>Central inner cooling</b> 
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### Explanation article code

F	1	0	0	2	M	N	L
Tool type	Group	Type	Modification	No. of teeth	Length of cut	Overall length	Shank type
F- Cylindrical end mill	1- Universal	0- Plain cutter	0- With neck	2- Z2	N- DIN (1.75-2.5xD)	N- DIN6527	L- Safe-Lock
E- Chamfering end mill	2- Steel < 52HRC	1- Chip breaker	1- No Neck	3- Z3	L- 2.6-3.5xD	L- Long	H- Straight
V- Ball nose end mill	4- Alu	3- Roughing		4- Z4	M- 1.5xD	K- Short	B- Weldon
	6- Titanium/Inconel			5- Z5	K- 1.25xD	U- Ultra short	
				6- Z6	U- 0.75xD		
				8- Z8			
				0- Z10			

Material list

HAIMER Material groups	Example material		Material information		
	ANSI	Material no.	Tensile strength	Content/Hardness	
<b>P1</b> <b>General construction steels</b>	A252, A50-2, 1045	1.0038, 1.0050, 1.0503	≤ 116,000 PSI, 800MPA	up to 25 HRC	
<b>P2</b> <b>Heat treated steels</b>	D2, 4140	1.2367, 1.2379, 1.2363, 1.7225	> 116,000 PSI, 800MPA	up to 45 HRC	
M1 Stainless steels	303, 304	1.4305, 1.4301, 1.4034	≤ 94,275 PSI, 650MPA		
M2 Stainless steels	316Ti, 316L	1.4571, 1.4404, 1.4418	> 94,275 PSI, 650MPA		
K1 Cast iron	ASTM A48 NO. 30, ASTM A48 NO. 55/60, G1800	0.6020, 0.6040, 0.7040	≤ 65,265 PSI, 450MPA		
K2 Cast iron	ASTM A536 80-55-06, ASTMA536 100-70-06	0.7060, 0.7070	> 65,265 PSI, 450MPA		
S1 Titanium & titanium alloys	Ti6Al4V	3.7165			
S2 High Temp alloys	Inconel, Nimonic				
N1 Wrought aluminum alloys	A5005, A6061, A7075	3.3315		Si < 9%	
N2 Aluminum cast alloys	A310, A400	3.2581		Si > 9%	
H1 Hardened steels				45 - 55 HRC	
H1 Hardened steels				> 55 HRC	

1000	R	1.00	A	A	0001	KR
Diameter	Cutting edge transition	Size transition	Material	Coating	Special number	Cooling
1200- Metric 1/2Z- Inch	S- Sharp cutting edge C- Chamfer R- Radius W- Chamfer angle	1.00- Metric .03- Inch 90- Chamfer angle 60- Chamfer angle 120- Chamfer angle	A- HF10 h5 D- HF10 h6	A- HAIMER-UNI C- HAIMER-ALU T- HAIMER-HARD  - none	0000 - 9999	KR- Cooling radial KZ- Cooling central KS- Cooling special

Cutting data

HAIMER Material groups		Example material		Material information		Roughing Vc (m/min)	Finishing Vc (m/min)
		ANSI	Material no.	Tensile strength	Content/ Hardness		
P1	General construction steels	A252, A50-2, 1045	1.0038, 1.0050, 1.0503	≤ 800 N/mm <sup>2</sup>	up to 25 HRC	160 – 220	220 – 280
P2	Heat treated steels	D2, 4140	1.2367, 1.2379, 1.2363, 1.7225	> 800 N/mm <sup>2</sup>	up to 45 HRC	120 – 160	160 – 200
M1	Stainless steels	303, 304	1.4305, 1.4301, 1.4034	≤ 650 N/mm <sup>2</sup>		80 – 120	120 – 160
M2	Stainless steels	316Ti, 316L	1.4571, 1.4404, 1.4418	> 650 N/mm <sup>2</sup>		60 – 90	90 – 120
K1	Cast iron	ASTM A48 NO. 30, ASTM A48 NO. 55/60, G1800	0.6020, 0.6040, 0.7040	≤ 450 N/mm <sup>2</sup>		120 – 180	180 – 240
K2	Cast iron	ASTM A536 80-55-06, ASTMA536 100-70-06	0.7060, 0.7070	> 450 N/mm <sup>2</sup>		80 – 160	160 – 220
S1	Titanium & titanium alloys	Ti6Al4V	3.7165			40 – 80	40 – 80
S2	High Temp alloys	Inconel, Nimonic		800 – 1700 N/mm <sup>2</sup>		30 – 40	30 – 40
N1	Wrought aluminum alloys	A5005, A6061, A7075	3.3315		Si < 9%	500 – 900	500 – 900
N2	Aluminum cast alloys	A310, A400	3.2581		Si > 9%	120 – 350	120 – 350
H1	Hardened steels				45 – 55 HRC	40 – 60	60 – 80

Cutting data are reference values and need to be adjusted according to the application area.

Feed per tooth (mm/tooth) in relation with D1 and cutting width ae				
	ø 4	ø 6	ø 8	ø 10
fz	0.01 – 0.04	0.015 – 0.06	0.02 – 0.08	0.03 – 0.10

# E1012 – HAIMER MILL MULTIFUNCTION END MILL

## Technical data and product characteristics



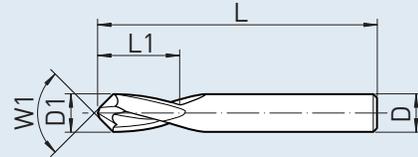
### Characteristics



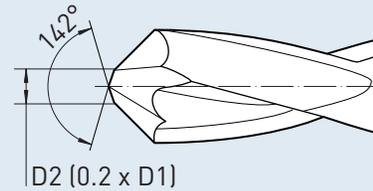
### Application



### Coolant



$\sqrt{\leq 0.005}$



Fine balanced

### Material – characteristics

Main Material



also suitable for



- Cone angle 60/90/120/142°
- Center spot
- Multi functional tool
- Circumference cutting

Article-Code	Quality	D1 (h6) [mm]	Chamfer	Angle W1	L1 max. [mm]	L [mm]	D2 [mm]	Shank
E1012NNH0400W60..	DA	4.00	W	60°	11	51	4.00	HA
E1012NNH0400W90..	DA	4.00	W	90°	11	51	4.00	HA
E1012NNH0400W120..	DA	4.00	W	120°	11	51	4.00	HA
E1012NNH0400W142..	DA	4.00	W	142°	11	51	4.00	HA
E1012NLH0600W60..	DA	6.00	W	60°	13	66	6.00	HA
E1012NLH0600W90..	DA	6.00	W	90°	13	66	6.00	HA
E1012NLH0600W120..	DA	6.00	W	120°	13	66	6.00	HA
E1012NLH0600W142..	DA	6.00	W	142°	13	66	6.00	HA
E1012NLH0800W60..	DA	8.00	W	60°	19	79	8.00	HA
E1012NLH0800W90..	DA	8.00	W	90°	19	79	8.00	HA
E1012NLH0800W120..	DA	8.00	W	120°	19	79	8.00	HA
E1012NLH0800W142..	DA	8.00	W	142°	19	79	8.00	HA
E1012NLH1000W60..	DA	10.00	W	60°	22	89	10.00	HA
E1012NLH1000W90..	DA	10.00	W	90°	22	89	10.00	HA
E1012NLH1000W120..	DA	10.00	W	120°	22	89	10.00	HA
E1012NLH1000W142..	DA	10.00	W	142°	22	89	10.00	HA

Order No. = Article Code + Quality.

Technical data and product characteristics



Characteristics	Application	Coolant
R		
Z=4		
HA		

Fine balanced  
\* diameter not center cutting

Material – characteristics

Main Material



also suitable for



- For contour rounding
- 5° tangential release
- Positive rake angle without profile displacement

Article-Code	Quality	D1 [mm]	Cutting edge	Edge radius [mm]	L1 max. [mm]	L [mm]	D (h6) [mm]	Shank
E1014UNH0600R0.25..	DA	5.0	R	0.25	0.50	58	6	HA
E1014UNH0600R0.50..	DA	4.5	R	0.50	0.75	58	6	HA
E1014UNH0800R0.75..	DA	6.0	R	0.75	1.00	64	8	HA
E1014UNH0800R1.00..	DA	5.0	R	1.00	1.50	64	8	HA
E1014UNH1000R1.50..	DA	6.0	R	1.50	2.00	73	10	HA
E1014UNH1000R2.00..	DA	5.0	R	2.00	2.50	73	10	HA

Order No. = Article Code + Quality.

# E1014UN/E1016UN – HAIMER MILL CHAMFERING END MILL

## Technical data and product characteristics



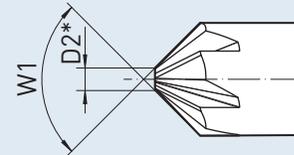
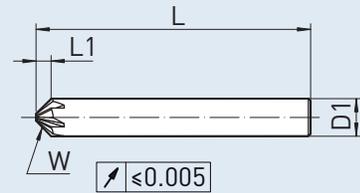
### Characteristics



### Application



### Coolant



Fine balanced  
\* diameter not center cutting

### Material – characteristics

#### Main Material



#### also suitable for



- Cone angle 60/90/120°
- Flat tip
- Multi functional tool
- Straight fluted

Article-Code	Quality	D1 (h6) [mm]	Chamfer	Angle W1	L1 max. [mm]	L [mm]	D2 [mm]	Shank
E1014UNH0400W60..	DA	4.00	W	60°	2.8	51	0.8	HA
E1014UNH0400W90..	DA	4.00	W	90°	1.6	51	0.8	HA
E1014UNH0400W120..	DA	4.00	W	120°	0.9	51	0.8	HA
E1016UNH0600W60..	DA	6.00	W	60°	4.2	51	0.8	HA
E1016UNH0600W90..	DA	6.00	W	90°	2.4	58	1.2	HA
E1016UNH0600W120..	DA	6.00	W	120°	1.3	58	1.2	HA
E1016UNH0800W60..	DA	8.00	W	60°	5.5	64	1.6	HA
E1016UNH0800W90..	DA	8.00	W	90°	3.2	64	1.6	HA
E1016UNH0800W120..	DA	8.00	W	120°	1.8	64	1.6	HA
E1016UNH1000W60..	DA	10.00	W	60°	6.9	73	2.0	HA
E1016UNH1000W90..	DA	10.00	W	90°	4	73	2.0	HA
E1016UNH1000W120..	DA	10.00	W	120°	2.3	73	2.0	HA

Order No. = Article Code + Quality.

Cutting data inch

HAIMER Material groups	Example material	Material information	Cutting width						
			ANSI	Material no.	Tensile strength	Content/ Hardness	Ramping	Cutting Speed (SFM)	
<b>P1</b> General construction steels	A252, A50-2, 1045	1.0038, 1.0050, 1.0503	≤ 116,000 PSI, 800MPA	up to 25 HRC	45°	836 – 902	1049 – 1115	1311 – 1377	
<b>P2</b> Heat treated steels	D2, 4140	1.2367, 1.2379, 1.2363, 1.7225	> 116,000 PSI, 800MPA	up to 45 HRC	30°	623 – 689	721 – 787	951 – 1016	
<b>M1</b> Stainless steels	303, 304	1.4305, 1.4301, 1.4034	≤ 94,275 PSI, 650MPA		10°	311 – 361	377 – 443	492 – 557	
<b>M2</b> Stainless steels	316Ti, 316L	1.4571, 1.4404, 1.4418	> 94,275 PSI, 650MPA		5°	246 – 295	311 – 344	361 – 426	
<b>K1</b> Cast iron	ASTM A48 NO. 30, ASTM A48 NO. 55/60, G1800	0.6020, 0.6040, 0.7040	≤ 65,265 PSI, 450MPA		45°	525 – 590	590 – 656	689 – 754	
<b>K2</b> Cast iron	ASTM A536 80-55-06, ASTMA536 100-70-06	0.7060, 0.7070	> 65,265 PSI, 450MPA		20°	426 – 492	492 – 557	590 – 656	
<b>S1</b> Titanium & titanium alloys	Ti6Al4V	3.7165			10°	164 – 197	197 – 262	262 – 295	
<b>S2</b> High Temp alloys	Inconel, Nimonic				5°	98 – 131	98 – 131	98 – 131	
<b>N1</b> Wrought aluminum alloys	A5005, A6061, A7075	3.3315		Si > 9%	30°	1541 – 1607	1967 – 2066	2557 – 2689	
<b>N2</b> Aluminum cast alloys	A310, A400	3.2581		Si > 9%	30°	1115 – 1180	1377 – 1443	1770 – 1902	
<b>H1</b> Hardened steels				45-55 HRC	10°	131 – 197	197 – 262	197 – 262	

Cutting data are reference values and need to be adjusted according to the application area. Chip removal recommended for drilling depth 0.5 – 1 x D.

Feed per tooth (inch/tooth) in relation with D1 and cutting width ae										
ae		3/32	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4
to 50% ø		0.0006	0.0008	0.0012	0.0016	0.0020	0.0024	0.0033	0.0041	0.0049
100% ø		*0.0005	*0.0007	*0.0011	*0.0014	*0.0017	*0.0021	*0.0028	*0.0034	*0.0041
	<b>P</b>	0.0004	0.0006	0.0009	0.0011	0.0014	0.0017	0.0023	0.0028	0.0034
	<b>M</b>	0.0002	0.0003	0.0005	0.0006	0.0008	0.0009	0.0013	0.0016	0.0019
	<b>K</b>	0.0004	0.0005	0.0008	0.0010	0.0013	0.0015	0.0020	0.0025	0.0030
	<b>S</b>	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0015
	<b>N</b>	0.0004	0.0006	0.0009	0.0011	0.0014	0.0017	0.0023	0.0028	0.0034

\* For Slotting (100% ø) in material M1, M2 and S1 reduce fz by 30%.

Cutting data metric

HAIMER Material groups	Example material	Material information	Cutting width					
			Ramping	Cutting speed Vc (m/min)				
ANSI	Material no.	Tensile strength	Content/ Hardness					
<b>P1</b> General construction steels	A252, A50-2, 1045	1.0038. 1.0050. 1.0503	≤ 800 N/mm <sup>2</sup>	up to 25 HRC	45°	255 – 275	320 – 340	400 – 420
<b>P2</b> Heat treated steels	D2, 4140	1.2367. 1.2379. 1.2363. 1.7225	> 800 N/mm <sup>2</sup>	up to 25 HRC	30°	190 – 210	220 – 240	290 – 310
<b>M1</b> Stainless steels	303, 304	1.4305. 1.4301. 1.4034	≤ 650 N/mm <sup>2</sup>		10°	95 – 110	115 – 135	150 – 170
<b>M2</b> Stainless steels	316Ti, 316L	1.4571. 1.4404. 1.4418	> 650 N/mm <sup>2</sup>		5°	75 – 90	95 – 105	110 – 130
<b>K1</b> Cast iron	ASTM A48 NO. 30, ASTM A48 NO. 55/60, G1800	0.6020. 0.6040. 0.7040	≤ 450 N/mm <sup>2</sup>		45°	160 – 180	180 – 200	210 – 230
<b>K2</b> Cast iron	ASTM A536 80-55-06, ASTM A536 100-70-06	0.7060. 0.7070	> 450 N/mm <sup>2</sup>		20°	130 – 150	150 – 170	180 – 200
<b>S1</b> Titanium & titanium alloys	Ti6Al4V	3.7165			10°	50 – 60	60 – 80	80 – 90
<b>S2</b> High Temp alloys	Inconel, Nimonic		800 – 1700 N/mm <sup>2</sup>		5°	30 – 40	30 – 40	30 – 40
<b>N1</b> Wrought aluminum alloys	A5005, A6061, A7075	3.3315		Si < 9%	30°	470 – 490	600 – 630	780 – 820
<b>N2</b> Aluminum cast alloys	A310, A400	3.2581		Si > 9%	30°	340 – 360	420 – 440	540 – 580
<b>H1</b> Hardened steels				45 – 55 HRC	10°	40 – 60	60 – 80	60 – 80

Cutting data are reference values and need to be adjusted according to the application area. Chip removal recommended for drilling depth 0.5 – 1 x D.

Feed per tooth (mm/tooth) in relation with D1 and cutting width ae												
ae	ø 2	ø 3	ø 4	ø 5	ø 6	ø 8	ø 10	ø 12	ø 14	ø 16	ø 18	ø 20
to 50% ø	0.013	0.020	0.026	0.033	0.039	0.052	0.065	0.078	0.091	0.104	0.117	0.13
100% ø	*0.011	*0.017	*0.022	*0.028	*0.033	*0.044	*0.055	*0.066	*0.077	*0.088	*0.099	*0.11
	<b>P</b>	0.007	0.011	0.014	0.018	0.021	0.028	0.035	0.042	0.049	0.056	0.063
	<b>M</b>	0.004	0.006	0.008	0.010	0.012	0.016	0.020	0.024	0.028	0.032	0.036
	<b>K</b>	0.007	0.011	0.014	0.018	0.021	0.028	0.035	0.042	0.049	0.056	0.063
	<b>S</b>	0.004	0.006	0.008	0.010	0.012	0.016	0.020	0.024	0.028	0.032	0.036
	<b>N</b>	0.009	0.014	0.018	0.023	0.027	0.036	0.045	0.054	0.063	0.072	0.081

\*For Slotting (100% ø) in material M1, M2, S1 and S2 reduce fz by 30%.

Technical data and product characteristics

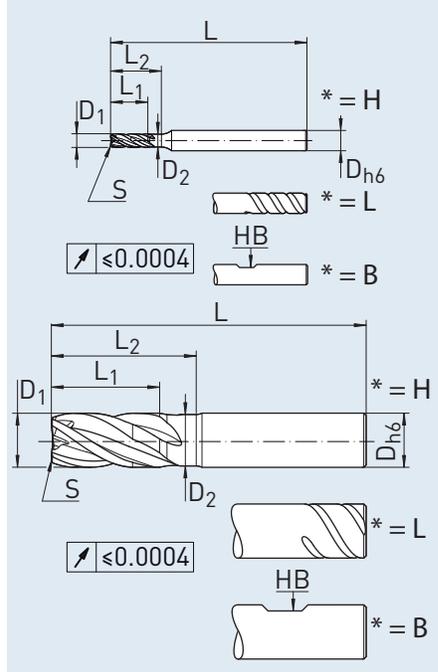


Optional:

- Straight shank  
DIN 6535-HA
- Safe-Lock shank (S-λ)
- Weldon shank similar  
DIN 6535-HB

\* = H      \* = L      \* = B

Characteristics	Application	Coolant



Material – characteristics

Main Material      also suitable for

P

M

K

S

N

H

- Neck for higher cutting depth
- Center cutting
- Unequal cutting edge
- Cutting length L1 max. 2.25 x D1

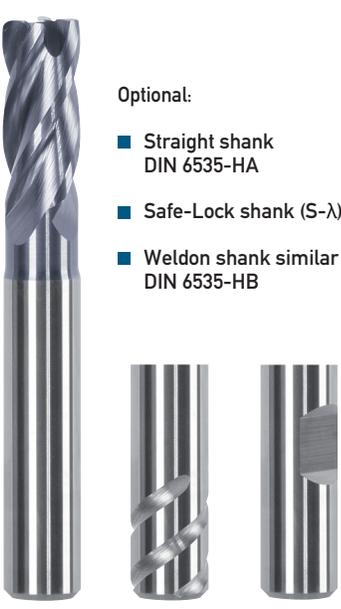
Article-Code	Quality	D1 (f9) [inch]	Cutting edge	L1 [inch]	L [inch]	L2 [inch]	D2 [inch]	D (h6) [inch]	Shank
F2004MN*3/32ZS..	DA	3/32	S	0.211	2	9/32	0.090	1/4	HA/S-λ/HB
F2004MN*1/8ZS..	DA	1/8	S	0.281	2	3/8	0.121	1/4	HA/S-λ/HB
F2004MN*3/16ZS..	DA	3/16	S	0.422	2 1/2	9/16	0.180	1/4	HA/S-λ/HB
F2004MN*1/4ZS..	DA	1/4	S	0.563	2 1/2	3/4	0.231	1/4	HA/S-λ/HB
F2004MN*5/16ZS..	DA	5/16	S	0.703	2 1/2	15/16	0.297	5/16	HA/S-λ/HB
F2004MN*3/8ZS..	DA	3/8	S	0.844	3	1 1/8	0.355	3/8	HA/S-λ/HB
F2004MN*1/2ZS..	DA	1/2	S	1.125	3 1/2	1 1/2	0.476	1/2	HA/S-λ/HB
F2004MN*5/8ZS..	DA	5/8	S	1.406	4	1 7/8	0.594	5/8	HA/S-λ/HB
F2004MN*3/4ZS..	DA	3/4	S	1.688	4 1/2	2 1/4	0.711	3/4	HA/S-λ/HB

\* = L - Safe-Lock / H - Straight shank / B - Weldon shank. Order No. = Article Code + Quality.

INCH

# F2004MN – HAIMER MILL CORNER RADIUS

## Technical data and product characteristics

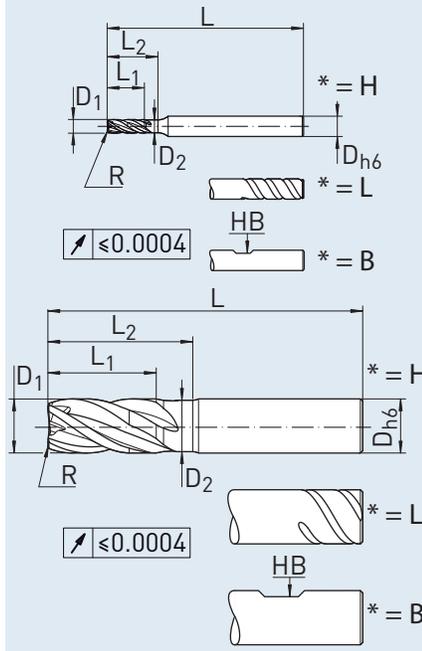


**Optional:**

- Straight shank DIN 6535-HA
- Safe-Lock shank (S-λ)
- Weldon shank similar DIN 6535-HB

\* = H      \* = L      \* = B

Characteristics	Application	Coolant
		
		
		
		
		



\* = H  
\* = L  
\* = B

### Material – characteristics

**Main Material** also suitable for

P

M

K

S

N

H

- Neck for higher cutting depth
- Center cutting
- Unequal cutting edge
- Cutting length L1 max. 2.25 x D1

Article-Code	Quality	D1 (f9) [inch]	Cutting edge	Size [inch]	L1 [inch]	L [inch]	L2 [inch]	D2 [inch]	D (h6) [inch]	Shank
F2004MN*3/32ZR.010..	DA	3/32	R	0.010	0.211	2	9/32	0.090	1/4	HA/S-λ/HB
F2004MN*1/8ZR.010..	DA	1/8	R	0.010	0.281	2	3/8	0.121	1/4	HA/S-λ/HB
F2004MN*3/16ZR.015..	DA	3/16	R	0.015	0.422	2 1/2	9/16	0.180	1/4	HA/S-λ/HB
F2004MN*1/4ZR.030..	DA	1/4	R	0.030	0.563	2 1/2	3/4	0.231	1/4	HA/S-λ/HB
F2004MN*5/16ZR.030..	DA	5/16	R	0.030	0.703	2 1/2	15/16	0.297	5/16	HA/S-λ/HB
F2004MN*3/8ZR.015..	DA	3/8	R	0.015	0.844	3	1 1/8	0.355	3/8	HA/S-λ/HB
F2004MN*3/8ZR.030..	DA	3/8	R	0.030	0.844	3	1 1/8	0.355	3/8	HA/S-λ/HB
F2004MN*1/2ZR.015..	DA	1/2	R	0.015	1.125	3 1/2	1 1/2	0.476	1/2	HA/S-λ/HB
F2004MN*1/2ZR.020..	DA	1/2	R	0.020	1.125	3 1/2	1 1/2	0.476	1/2	HA/S-λ/HB
F2004MN*1/2ZR.060..	DA	1/2	R	0.060	1.125	3 1/2	1 1/2	0.476	1/2	HA/S-λ/HB
F2004MN*5/8ZR.060..	DA	5/8	R	0.060	1.406	4	1 7/8	0.594	5/8	HA/S-λ/HB
F2004MN*3/4ZR.060..	DA	3/4	R	0.060	1.688	4 1/2	2 1/4	0.711	3/4	HA/S-λ/HB
F2004MN*3/4ZR.090..	DA	3/4	R	0.090	1.688	4 1/2	2 1/4	0.711	3/4	HA/S-λ/HB
F2004MN*3/4ZR.125..	DA	3/4	R	0.125	1.688	4 1/2	2 1/4	0.711	3/4	HA/S-λ/HB

\* = L - Safe-Lock / H - Straight shank / B - Weldon shank. Order No. = Article Code + Quality.

Technical data and product characteristics



Optional:

- Straight shank  
DIN 6535-HA
- Safe-Lock shank (S-λ)
- Weldon shank similar  
DIN 6535-HB

\* = H      \* = L      \* = B

**Characteristics**

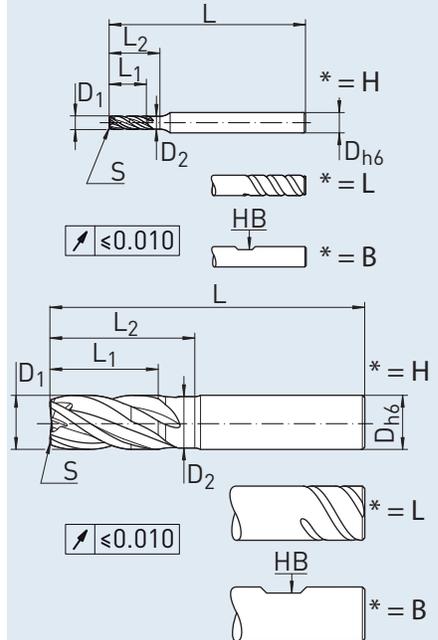
- DIN 6527 L
- S
- Z=4
- 31°  
33°
-

**Application**

- 
- 45°
- 
-

**Coolant**

- 
- Air
-



Material – characteristics

Main Material      also suitable for

P

M

K

S

N

H

- Neck for higher cutting depth
- Center cutting
- Unequal cutting edge

Article-Code	Quality	D1 (f9) [mm]	Cutting edge	L1 max. [mm]	L [mm]	L2 [mm]	D2 [mm]	D (h6) [mm]	Shank
F2004NN*0200S..	DA	2.00	S	7	58	9	1.9	6	HA/S-λ/HB
F2004NN*0300S..	DA	3.00	S	8	58	10	2.9	6	HA/S-λ/HB
F2004NN*0400S..	DA	4.00	S	11	58	15	3.8	6	HA/S-λ/HB
F2004NN*0500S..	DA	5.00	S	13	58	18	4.8	6	HA/S-λ/HB
F2004NN*0600S..	DA	6.00	S	13	58	20	5.7	6	HA/S-λ/HB
F2004NN*0800S..	DA	8.00	S	19	64	26	7.6	8	HA/S-λ/HB
F2004NN*1000S..	DA	10.00	S	22	73	30.5	9.5	10	HA/S-λ/HB
F2004NN*1200S..	DA	12.00	S	26	84	36.5	11.4	12	HA/S-λ/HB
F2004NN*1400S..	DA	14.00	S	26	84	36.5	13.3	14	HA/S-λ/HB
F2004NN*1600S..	DA	16.00	S	32	93	42.5	15.2	16	HA/S-λ/HB
F2004NN*1800S..	DA	18.00	S	32	93	42.5	17.1	18	HA/S-λ/HB
F2004NN*2000S..	DA	20.00	S	38	105	52	19	20	HA/S-λ/HB

\* = L - Safe-Lock / H - Straight shank / B - Weldon shank. Order No. = Article Code + Quality.

# F2004NN – HAIMER MILL CHAMFER UNDERSIZE

## Technical data and product characteristics

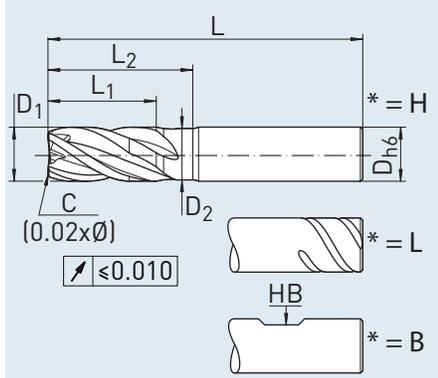


**Optional:**

- Straight shank  
DIN 6535-HA
- Safe-Lock shank (S-λ)
- Weldon shank similar  
DIN 6535-HB

\* = H      \* = L      \* = B

Characteristics	Application	Coolant



### Material – characteristics

**Main Material**

P

M

K

S

N

H

**also suitable for**

- Neck for higher cutting depth
- Center cutting
- Unequal cutting edge

Article-Code	Quality	D1 (f9) [mm]	Cutting edge	Size [mm]	L1 max. [mm]	L [mm]	L2 [mm]	D2 [mm]	D (h6) [mm]	Shank
F2004NN*0570C..	DA	5.70	C	0.12	13	58	20	5.7	6	HA/S-λ/HB
F2004NN*0770C..	DA	7.70	C	0.16	19	64	26	7.6	8	HA/S-λ/HB
F2004NN*0970C..	DA	9.70	C	0.20	22	73	30.5	9.5	10	HA/S-λ/HB
F2004NN*1170C..	DA	11.70	C	0.24	26	84	36.5	11.4	12	HA/S-λ/HB
F2004NN*1370C..	DA	13.70	C	0.28	26	84	36.5	13.3	14	HA/S-λ/HB
F2004NN*1560C..	DA	15.60	C	0.32	32	93	42.5	15.2	16	HA/S-λ/HB
F2004NN*1950C..	DA	19.50	C	0.40	38	105	52	19	20	HA/S-λ/HB

\* = L - SafeLock / H - Straight shank / B - Weldon shank. Order No. = Article Code + Quality.

Technical data and product characteristics

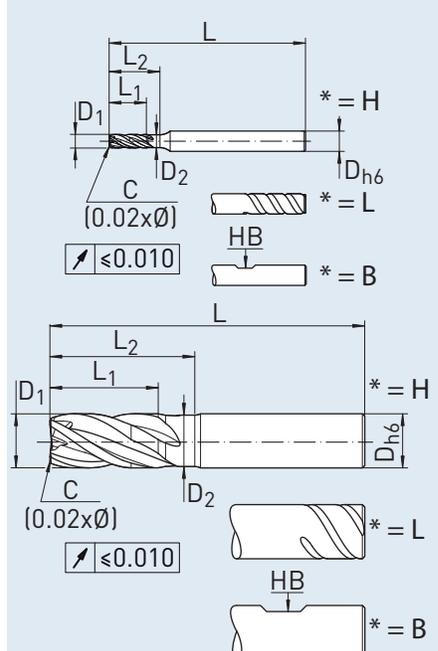


Optional:

- Straight shank DIN 6535-HA
- Safe-Lock shank (S-λ)
- Weldon shank similar DIN 6535-HB

\* = H      \* = L      \* = B

Characteristics	Application	Coolant



Material – characteristics

Main Material      also suitable for

P

M

K

S

N

H

- Neck for higher cutting depth
- Center cutting
- Unequal cutting edge

Article-Code	Quality	D1 (f9) [mm]	Cutting edge	Size [mm]	L1 max. [mm]	L [mm]	L2 [mm]	D2 [mm]	D (h6) [mm]	Shank
F2004NN*0200C..	DA	2.00	C	0.04	7	58	9	1.9	6	HA/S-λ/HB
F2004NN*0300C..	DA	3.00	C	0.06	8	58	10	2.9	6	HA/S-λ/HB
F2004NN*0400C..	DA	4.00	C	0.08	11	58	15	3.8	6	HA/S-λ/HB
F2004NN*0500C..	DA	5.00	C	0.10	13	58	18	4.8	6	HA/S-λ/HB
F2004NN*0600C..	DA	6.00	C	0.12	13	58	20	5.7	6	HA/S-λ/HB
F2004NN*0800C..	DA	8.00	C	0.16	19	64	26	7.6	8	HA/S-λ/HB
F2004NN*1000C..	DA	10.00	C	0.20	22	73	30.5	9.5	10	HA/S-λ/HB
F2004NN*1200C..	DA	12.00	C	0.24	26	84	36.5	11.4	12	HA/S-λ/HB
F2004NN*1400C..	DA	14.00	C	0.28	26	84	36.5	13.3	14	HA/S-λ/HB
F2004NN*1600C..	DA	16.00	C	0.32	32	93	42.5	15.2	16	HA/S-λ/HB
F2004NN*1800C..	DA	18.00	C	0.36	32	93	42.5	17.1	18	HA/S-λ/HB
F2004NN*2000C..	DA	20.00	C	0.40	38	105	52	19	20	HA/S-λ/HB

\* = L - Safe-Lock / H - Straight shank / B - Weldon shank. Order No. = Article Code + Quality.

# F2004NN – HAIMER MILL CORNER RADIUS

## Technical data and product characteristics



**Optional:**

- Straight shank  
DIN 6535-HA
- Safe-Lock shank (S-λ)
- Weldon shank similar  
DIN 6535-HB

\* = H      \* = L      \* = B

**Characteristics**

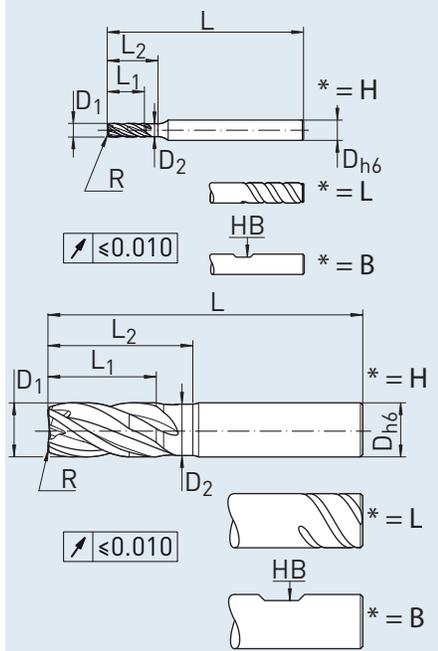


**Application**



**Coolant**





### Material – characteristics

**Main Material**

P

M

K

S

N

H

**also suitable for**

- Neck for higher cutting depth
- Center cutting
- Unequal cutting edge

Article-Code	Quality	D1 (f9) [mm]	Cutting edge	Size [mm]	L1 max. [mm]	L [mm]	L2 [mm]	D2 [mm]	D (h6) [mm]	Shank
F2004NN*0200R0.20..	DA	2.00	R	0.20	7	58	9	1.9	6	HA/S-λ/HB
F2004NN*0300R0.30..	DA	3.00	R	0.30	8	58	10	2.9	6	HA/S-λ/HB
F2004NN*0400R0.30..	DA	4.00	R	0.30	11	58	15	3.8	6	HA/S-λ/HB
F2004NN*0400R0.40..	DA	4.00	R	0.40	11	58	15	3.8	6	HA/S-λ/HB
F2004NN*0400R0.50..	DA	4.00	R	0.50	11	58	15	3.8	6	HA/S-λ/HB
F2004NN*0500R0.30..	DA	5.00	R	0.30	13	58	18	4.8	6	HA/S-λ/HB
F2004NN*0500R0.50..	DA	5.00	R	0.50	13	58	18	4.8	6	HA/S-λ/HB
F2004NN*0500R1.00..	DA	5.00	R	1.00	13	58	18	4.8	6	HA/S-λ/HB
F2004NN*0600R0.30..	DA	6.00	R	0.30	13	58	20	5.7	6	HA/S-λ/HB
F2004NN*0600R0.50..	DA	6.00	R	0.50	13	58	20	5.7	6	HA/S-λ/HB
F2004NN*0600R0.80..	DA	6.00	R	0.80	13	58	20	5.7	6	HA/S-λ/HB
F2004NN*0600R1.00..	DA	6.00	R	1.00	13	58	20	5.7	6	HA/S-λ/HB

➔ Turn page for more articles

\* = L - Safe-Lock / H - Straight shank / B - Weldon shank. Order No. = Article Code + Quality.

Technical data and product characteristics

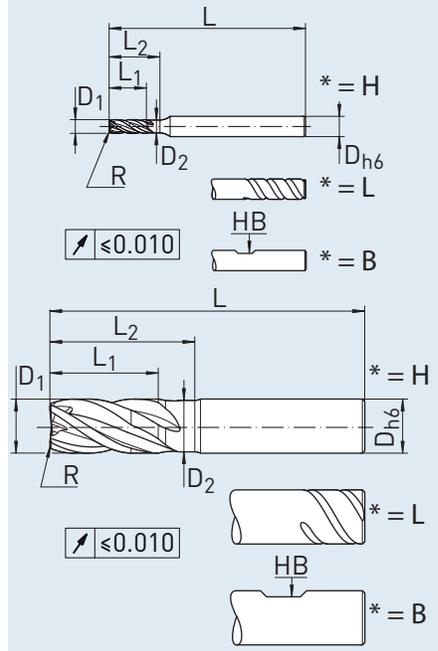


Optional:

- Straight shank  
DIN 6535-HA
- Safe-Lock shank (S-λ)
- Weldon shank similar  
DIN 6535-HB

\* = H      \* = L      \* = B

Characteristics	Application	Coolant
DIN 6527 L		
R	45°	Air
Z=4		
31° 33°		MMS



Material – characteristics

Main Material      also suitable for

P

M

K

S

N

H

- Neck for higher cutting depth
- Center cutting
- Unequal cutting edge

Article-Code	Quality	D1 (f9) [mm]	Cutting edge	Size [mm]	L1 max. [mm]	L [mm]	L2 [mm]	D2 [mm]	D (h6) [mm]	Shank
F2004NN*0600R1.50..	DA	6.00	R	1.50	13	58	20	5.7	6	HA/S-λ/HB
F2004NN*0600R2.00..	DA	6.00	R	2.00	13	58	20	5.7	6	HA/S-λ/HB
F2004NN*0800R0.30..	DA	8.00	R	0.30	19	64	26	7.6	8	HA/S-λ/HB
F2004NN*0800R0.50..	DA	8.00	R	0.50	19	64	26	7.6	8	HA/S-λ/HB
F2004NN*0800R0.80..	DA	8.00	R	0.80	19	64	26	7.6	8	HA/S-λ/HB
F2004NN*0800R1.00..	DA	8.00	R	1.00	19	64	26	7.6	8	HA/S-λ/HB
F2004NN*0800R1.50..	DA	8.00	R	1.50	19	64	26	7.6	8	HA/S-λ/HB
F2004NN*0800R2.00..	DA	8.00	R	2.00	19	64	26	7.6	8	HA/S-λ/HB
F2004NN*1000R0.30..	DA	10.00	R	0.30	22	73	30.5	9.5	10	HA/S-λ/HB
F2004NN*1000R0.50..	DA	10.00	R	0.50	22	73	30.5	9.5	10	HA/S-λ/HB

➔ Turn page for more articles

\* = L - Safe-Lock / H - Straight shank / B - Weldon shank. Order No. = Article Code + Quality.

## F2004NN – HAIMER MILL CORNER RADIUS

Article-Code	Quality	D1 (f9) [mm]	Cutting edge	Size [mm]	L1 max. [mm]	L [mm]	L2 [mm]	D2 [mm]	D (h6) [mm]	Shank
F2004NN*1000R0.80..	DA	10.00	R	0.80	22	73	30.5	9.5	10	HA/S-λ/HB
F2004NN*1000R1.00..	DA	10.00	R	1.00	22	73	30.5	9.5	10	HA/S-λ/HB
F2004NN*1000R1.50..	DA	10.00	R	1.50	22	73	30.5	9.5	10	HA/S-λ/HB
F2004NN*1000R2.00..	DA	10.00	R	2.00	22	73	30.5	9.5	10	HA/S-λ/HB
F2004NN*1000R2.50..	DA	10.00	R	2.50	22	73	30.5	9.5	10	HA/S-λ/HB
F2004NN*1200R0.30..	DA	12.00	R	0.30	26	84	36.5	11.4	12	HA/S-λ/HB
F2004NN*1200R0.50..	DA	12.00	R	0.50	26	84	36.5	11.4	12	HA/S-λ/HB
F2004NN*1200R0.80..	DA	12.00	R	0.80	26	84	36.5	11.4	12	HA/S-λ/HB
F2004NN*1200R1.00..	DA	12.00	R	1.00	26	84	36.5	11.4	12	HA/S-λ/HB
F2004NN*1200R1.50..	DA	12.00	R	1.50	26	84	36.5	11.4	12	HA/S-λ/HB
F2004NN*1200R2.00..	DA	12.00	R	2.00	26	84	36.5	11.4	12	HA/S-λ/HB
F2004NN*1200R2.50..	DA	12.00	R	2.50	26	84	36.5	11.4	12	HA/S-λ/HB
F2004NN*1200R3.00..	DA	12.00	R	3.00	26	84	36.5	11.4	12	HA/S-λ/HB
F2004NN*1200R4.00..	DA	12.00	R	4.00	26	84	36.5	11.4	12	HA/S-λ/HB
F2004NN*1400R0.50..	DA	14.00	R	0.50	26	84	36.5	13.3	14	HA/S-λ/HB
F2004NN*1400R1.00..	DA	14.00	R	1.00	26	84	36.5	13.3	14	HA/S-λ/HB
F2004NN*1400R2.00..	DA	14.00	R	2.00	26	84	36.5	13.3	14	HA/S-λ/HB
F2004NN*1600R0.30..	DA	16.00	R	0.30	32	93	42.5	15.2	16	HA/S-λ/HB
F2004NN*1600R0.50..	DA	16.00	R	0.50	32	93	42.5	15.2	16	HA/S-λ/HB
F2004NN*1600R0.80..	DA	16.00	R	0.80	32	93	42.5	15.2	16	HA/S-λ/HB
F2004NN*1600R1.00..	DA	16.00	R	1.00	32	93	42.5	15.2	16	HA/S-λ/HB
F2004NN*1600R1.50..	DA	16.00	R	1.50	32	93	42.5	15.2	16	HA/S-λ/HB
F2004NN*1600R2.00..	DA	16.00	R	2.00	32	93	42.5	15.2	16	HA/S-λ/HB
F2004NN*1600R3.00..	DA	16.00	R	3.00	32	93	42.5	15.2	16	HA/S-λ/HB
F2004NN*1600R4.00..	DA	16.00	R	4.00	32	93	42.5	15.2	16	HA/S-λ/HB
F2004NN*1800R0.50..	DA	18.00	R	0.50	32	93	42.5	17.1	18	HA/S-λ/HB
F2004NN*1800R1.00..	DA	18.00	R	1.00	32	93	42.5	17.1	18	HA/S-λ/HB
F2004NN*1800R2.00..	DA	18.00	R	2.00	32	93	42.5	17.1	18	HA/S-λ/HB
F2004NN*2000R0.30..	DA	20.00	R	0.30	38	105	52	19	20	HA/S-λ/HB
F2004NN*2000R0.50..	DA	20.00	R	0.50	38	105	52	19	20	HA/S-λ/HB
F2004NN*2000R0.80..	DA	20.00	R	0.80	38	105	52	19	20	HA/S-λ/HB
F2004NN*2000R1.00..	DA	20.00	R	1.00	38	105	52	19	20	HA/S-λ/HB
F2004NN*2000R1.50..	DA	20.00	R	1.50	38	105	52	19	20	HA/S-λ/HB
F2004NN*2000R2.00..	DA	20.00	R	2.00	38	105	52	19	20	HA/S-λ/HB
F2004NN*2000R3.00..	DA	20.00	R	3.00	38	105	52	19	20	HA/S-λ/HB
F2004NN*2000R4.00..	DA	20.00	R	4.00	38	105	52	19	20	HA/S-λ/HB

\* = L - Safe-Lock / H - Straight shank / B - Weldon shank. Order No. = Article Code + Quality.

Technical data and product characteristics

**Optional:**

- Straight shank DIN 6535-HA
- Safe-Lock shank (S-λ)
- Weldon shank similar DIN 6535-HB

**Characteristics**

- DIN 6527 L
- 45°
- Z=4
- 36° / 39°

**Application**

- 45° chamfering
- ap, ae
- ap, ae

**Coolant**

- Air
- MMS

**Technical Diagrams:**

- Main chamfering diagram: L, L<sub>2</sub>, L<sub>1</sub>, D<sub>1</sub>, D<sub>2</sub>, C (0.02xØ), D<sub>h6</sub>, \* = H
- Shank detail: \* = L
- Shank detail: HB, \* = B
- Surface finish: √ ≤ 0,010

\* = H      \* = L      \* = B

Material – characteristics

**Main Material** also suitable for

- Neck for higher cutting depth
- Center cutting
- Unequal cutting edge

**Material Matrix:**

<b>P</b>	<b>M</b>	<b>K</b>	<b>S</b>
		<b>N</b>	<b>H</b>

Article-Code	Quality	D1 (f9) [mm]	Cutting edge	Size [mm]	L1 max. [mm]	L [mm]	L2 [mm]	D2 [mm]	D (h6) [mm]	Shank
F2004LL*0600C..	DA	6.00	C	0.12	18	62	24	5.7	6	HA/S-λ/HB
F2004LL*0800C..	DA	8.00	C	0.16	24	70	32	7.6	8	HA/S-λ/HB
F2004LL*1000C..	DA	10.00	C	0.20	30	82	40	9.5	10	HA/S-λ/HB
F2004LL*1200C..	DA	12.00	C	0.24	36	95	48	11.4	12	HA/S-λ/HB
F2004LL*1400C..	DA	14.00	C	0.28	42	105	56	13.3	14	HA/S-λ/HB
F2004LL*1600C..	DA	16.00	C	0.32	48	115	64	15.2	16	HA/S-λ/HB
F2004LL*2000C..	DA	20.00	C	0.40	60	133	80	19.0	20	HA/S-λ/HB

\* = L - Safe-Lock / H - Straight shank / B - Weldon shank. Order No. = Article Code + Quality.

INCH

# F2004LL – HAIMER MILL CHAMFER

## Technical data and product characteristics



**Optional:**

- Straight shank  
DIN 6535-HA
- Safe-Lock shank (S-λ)
- Weldon shank similar  
DIN 6535-HB



\* = H

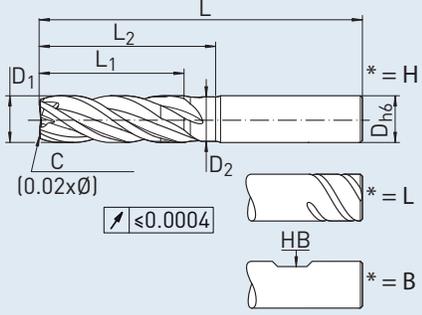


\* = L



\* = B

Characteristics	Application	Coolant
		
		
		
		
		



### Material – characteristics

**Main Material**

P

M

K

S

N

H

**also suitable for**

- Neck for higher cutting depth
- Center cutting
- Unequal cutting edge
- Cutting length L1 max. 3 x D1

Article-Code	Quality	D1 (f9) [inch]	Cutting edge	Size [inch]	L1 [inch]	L [inch]	L2 [inch]	D2 [inch]	D (h6) [inch]	Shank
F2004LL*1/4ZC..	DA	1/4	C	0.0050	0.750	2 1/2	1	0.238	1/4	HA/S-λ/HB
F2004LL*5/16ZC..	DA	5/16	C	0.0064	0.938	3	1 1/4	0.296	5/16	HA/S-λ/HB
F2004LL*3/8ZC..	DA	3/8	C	0.0075	1.125	3 1/2	1 1/2	0.355	3/8	HA/S-λ/HB
F2004LL*1/2ZC..	DA	1/2	C	0.0100	1.500	4	2	0.476	1/2	HA/S-λ/HB
F2004LL*5/8ZC..	DA	5/8	C	0.0125	1.875	4 1/2	2 1/2	0.593	5/8	HA/S-λ/HB
F2004LL*3/4ZC..	DA	3/4	C	0.0150	2.250	5	3	0.710	3/4	HA/S-λ/HB

\* = L - Safe-Lock / H - Straight shank / B - Weldon shank. Order No. = Article Code + Quality.

Technical data and product characteristics

Optional:

- Straight shank DIN 6535-HA
- Weldon shank similar DIN 6535-HB

\* = H      \* = B

Characteristics	Application	Coolant

Material – characteristics

Main Material      also suitable for

P

M

K

S

N

H

- Center cutting
- Unequal cutting edge
- Cutting length L1 max. 1.25 x D1
- No neck
- Shortened shank for ideal length in some applications

Article-Code	Quality	D1 (F9) [mm]	Cutting edge	Size [mm]	L1 max. [mm]	L [mm]	D (h6) [mm]	Shank h6
F2014KK*0200C..	DA	2.00	C	0.04	2.50	38	6	HA/HB
F2014KK*0300C..	DA	3.00	C	0.06	3.75	38	6	HA/HB
F2014KK*0400C..	DA	4.00	C	0.08	5.00	38	6	HA/HB
F2014KK*0500C..	DA	5.00	C	0.10	6.25	38	6	HA/HB
F2014KK*0600C..	DA	6.00	C	0.12	7.50	38	6	HA/HB
F2014KK*0800C..	DA	8.00	C	0.16	10.00	42	8	HA/HB
F2014KK*1000C..	DA	10.00	C	0.20	12.50	50	10	HA/HB
F2014KK*1200C..	DA	12.00	C	0.24	15.00	55	12	HA/HB
F2014KK*1400C..	DA	14.00	C	0.28	17.50	58	14	HA/HB
F2014KK*1600C..	DA	16.00	C	0.32	20.00	63	16	HA/HB
F2014KK*2000C..	DA	20.00	C	0.40	25.00	75	20	HA/HB

\* = L - Safe-Lock / H - Straight shank / B - Weldon shank. Order No. = Article Code + Quality.

INCH

# F2014KK – HAIMER MILL CHAMFER

## Technical data and product characteristics



Characteristics	Application	Coolant

### Material – characteristics

Main Material



also suitable for

- Center cutting
- Unequal cutting edge
- Cutting length L1 max. 1.25 x D1
- No neck
- Shortened shank for ideal length in some applications

Article-Code	Quality	D1 (f9) [inch]	Cutting edge	Size [inch]	L1 [inch]	L [inch]	D (h6) [inch]	Shank
F2014KK*3/32ZC..	DA	3/32	C	0.0018	0.117	1 1/2	1/4	HA/HB
F2014KK*1/8ZC..	DA	1/8	C	0.0025	0.156	1 1/2	1/4	HA/HB
F2014KK*3/16ZC..	DA	3/16	C	0.0038	0.234	1 1/2	1/4	HA/HB
F2014KK*1/4ZC..	DA	1/4	C	0.0050	0.313	1 1/2	1/4	HA/HB
F2014KK*5/16ZC..	DA	5/16	C	0.0064	0.391	2	5/16	HA/HB
F2014KK*3/8ZC..	DA	3/8	C	0.0075	0.469	2	3/8	HA/HB
F2014KK*1/2ZC..	DA	1/2	C	0.0100	0.625	2 1/2	1/2	HA/HB
F2014KK*5/8ZC..	DA	5/8	C	0.0125	0.781	2 1/2	5/8	HA/HB
F2014KK*3/4ZC..	DA	3/4	C	0.0150	0.938	3	3/4	HA/HB

\* = H - Straight shank / B - Weldon shank. Order No. = Article Code + Quality.

Technical data and product characteristics



Characteristics	Application	Coolant
DIN 6527 L	Application 1	Coolant 1
R	Application 2 (45°)	Air
Z=4	Application 3 (ap, ae)	MMS
31° 33°	Application 4 (ap, ae)	
HA		

Material – characteristics

Main Material

also suitable for

- Center cutting
- Unequal cutting edge



Article-Code	Quality	D1 (f9) [inch]	Cutting edge	Size [inch]	L1 [inch]	L [inch]	D (h6) [inch]	Shank
F2014NNH1/4ZR.015..	DA	1/4	R	0.015	7/16	2 1/2	1/4	HA
F2014NNH1/4ZR.030..	DA	1/4	R	0.030	7/16	2 1/2	1/4	HA
F2014LNH1/4ZR.015..	DA	1/4	R	0.015	3/4	2 1/2	1/4	HA
F2014LNH1/4ZR.030..	DA	1/4	R	0.030	3/4	2 1/2	1/4	HA
F2014LNH5/16ZR.015..	DA	5/16	R	0.015	13/16	2 1/2	5/16	HA
F2014LNH5/16ZR.030..	DA	5/16	R	0.030	13/16	2 1/2	5/16	HA
F2014KNH3/8ZR.030..	DA	3/8	R	0.030	1/2	2 1/2	3/8	HA
F2014NNH3/8ZR.030..	DA	3/8	R	0.030	7/8	2 1/2	3/8	HA
F2014KKH1/2ZR.015..	DA	1/2	R	0.015	5/8	2 1/2	1/2	HA
F2014KKH1/2ZR.030..	DA	1/2	R	0.030	5/8	2 1/2	1/2	HA
F2014NNH1/2ZR.030..	DA	1/2	R	0.030	1	3	1/2	HA
F2014NNH1/2ZR.060..	DA	1/2	R	0.060	1	3	1/2	HA
F2014NLH1/2ZR.015..	DA	1/2	R	0.015	1 1/4	3 1/2	1/2	HA
F2014NLH1/2ZR.030..	DA	1/2	R	0.030	1 1/4	3 1/2	1/2	HA
F2014NLH1/2ZR.060..	DA	1/2	R	0.060	1 1/4	3 1/2	1/2	HA
F2014NNH5/8ZR.030..	DA	5/8	R	0.030	1 1/4	4	5/8	HA
F2014NNH5/8ZR.060..	DA	5/8	R	0.060	1 1/4	4	5/8	HA
F2014NNH3/4ZR.030..	DA	3/4	R	0.030	1 1/2	4	3/4	HA
F2014NNH3/4ZR.060..	DA	3/4	R	0.060	1 1/2	4	3/4	HA
F2014NNH3/4ZR.090..	DA	3/4	R	0.090	1 1/2	4	3/4	HA
F2014NNH3/4ZR.125..	DA	3/4	R	0.125	1 1/2	4	3/4	HA

# HAIMER MILL SUCCESS STORIES

## Application Area: General Engineering

### Application at a medium sized job shop:

Due to the intense competition the customer is steadily looking for more productivity. By using the HAIMER Power Shrink Chuck in combination with the HAIMER MILL the cycle times could be reduced significantly.

### Application: Side milling

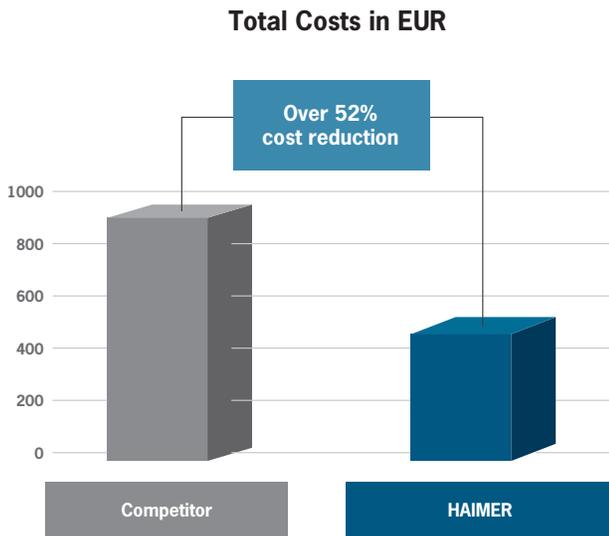
Material: 1.4301 / Stainless steel  
 Machine: DMG MORI CTX Gamma 1250 TC  
 Interface: HSK-A63  
 Tool: HAIMER MILL Z4 Chamfer  
 (Order No. F2004NNH1000CDA)  
 Tool holder: Power Shrink Chuck ultrashort with Cool Flash

### Cutting data

Cutting speed (vc): 120 (m/min)  
 Feed per tooth (fz): 0.05 mm/tooth  
 Width of cut (ae): 1.4 mm  
 Depth of cut (ap): 10 mm

### Benefits

- Double tool life
- Cycle time reduced from 15 to 7 minutes



**Test result: Over 52% cost reduction due to increased performance and tool life**

## Application Area: Die and Mold

### Application at a die and mold company:

While searching for a universal cutting tool with best tool life and available for all production sites, the HAIMER MILL has proven to be the best solution. The HAIMER MILL outperformed established competition with significant longer tool life.

### Application: Slotting

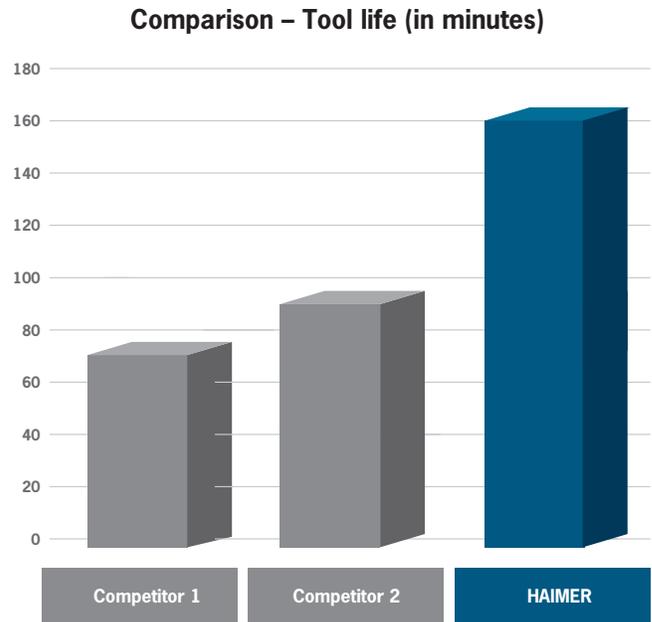
Material: 1.2343 / Tool steel  
 Machine: MECOF  
 Interface: SK50  
 Tool: HAIMER MILL Z4 Chamfer  
 (Order No. F2004NNH2000CDA)  
 Tool holder: HAIMER Standard Shrink Chuck  
 Coolant: Air

### Cutting data

Cutting speed (vc): 50 (m/min)  
 Feed per tooth (fz): 0.07 mm/tooth  
 Width of cut (ae): 20 mm  
 Depth of cut (ap): 30 mm

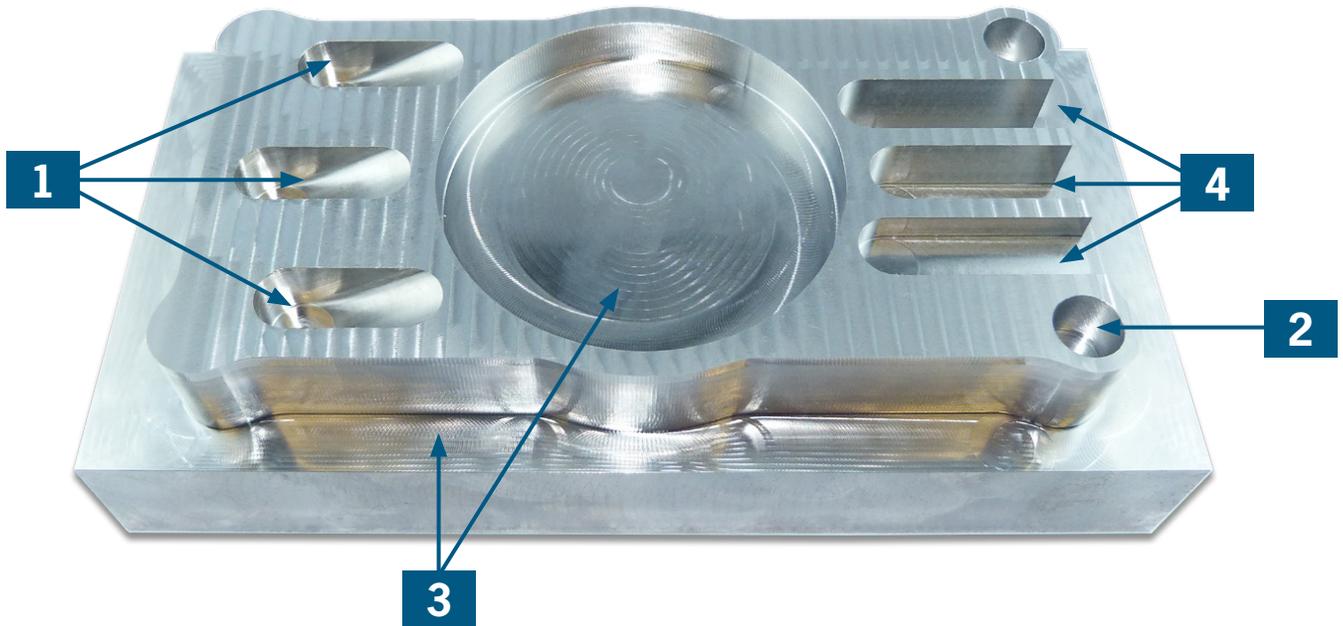
### Benefits

- HAIMER MILL with best tool life in cutting test
- Extreme smooth cutting sound at 1.5xD full slotting



**Test result: Highest tool life in slotting**

# APPLICATION EXAMPLES HAIMER MILL



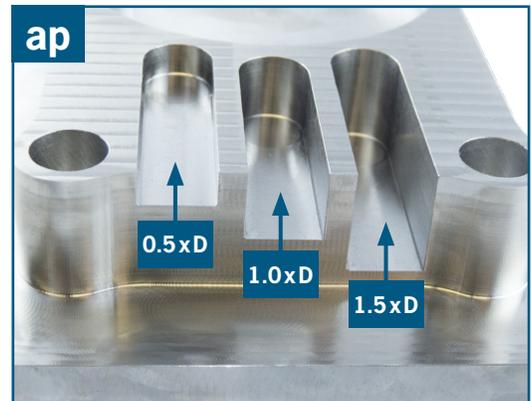
## Universal applications of HAIMER MILL in 42CrMo4

The 42CrMo4 steel workpiece with tensile strength of 104,427 PSI is machined within 1 min and 41 sec.

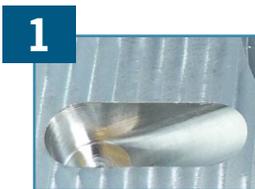
All applications (ramping, drilling, trochoidal milling and slotting) were done by Basic Mill F2014NNH1200CDA in diam. 12 mm.

### Universality is no problem for HAIMER MILL!

The workpiece was clamped with a mechanical bench vice. During the milling operation air was blown through the spindle nozzles for cooling.



Scan and see the HAIMER MILL in Action!



#### Application: Ramping 30°

Cutting Speed (SFM): 656  
Feed per tooth fz: 0.0012"  
Cutting width ae: 0.472"  
Cutting depth ap: 0.472"



#### Application: Drilling 1 xD

Cutting Speed (SFM): 656  
Feed per tooth fz: 0.0012"  
Cutting width ae: 0.472"  
Cutting depth ap: 0.472"



#### Application: Trochoidal Milling

Cutting Speed (SFM): 1411  
Feed per tooth fz: 0.0073"  
Cutting width ae: 0.094"  
Cutting depth ap: 0.827"



#### Application: Slotting 0.5 – 1.5xD

Cutting Speed (SFM): 656  
Feed per tooth fz: 0.0019"  
Cutting width ae: 0.472"  
Cutting depth ap: up to 0.709"

## HAIMER MILL – SOLID CARBIDE ENDMILLS MADE IN IGENHAUSEN



With a multi million dollar investment, HAIMER established a new tool grinding production facility that incorporates truly unique technology and equipment. Solid carbide end mills “made by HAIMER” are ground there.

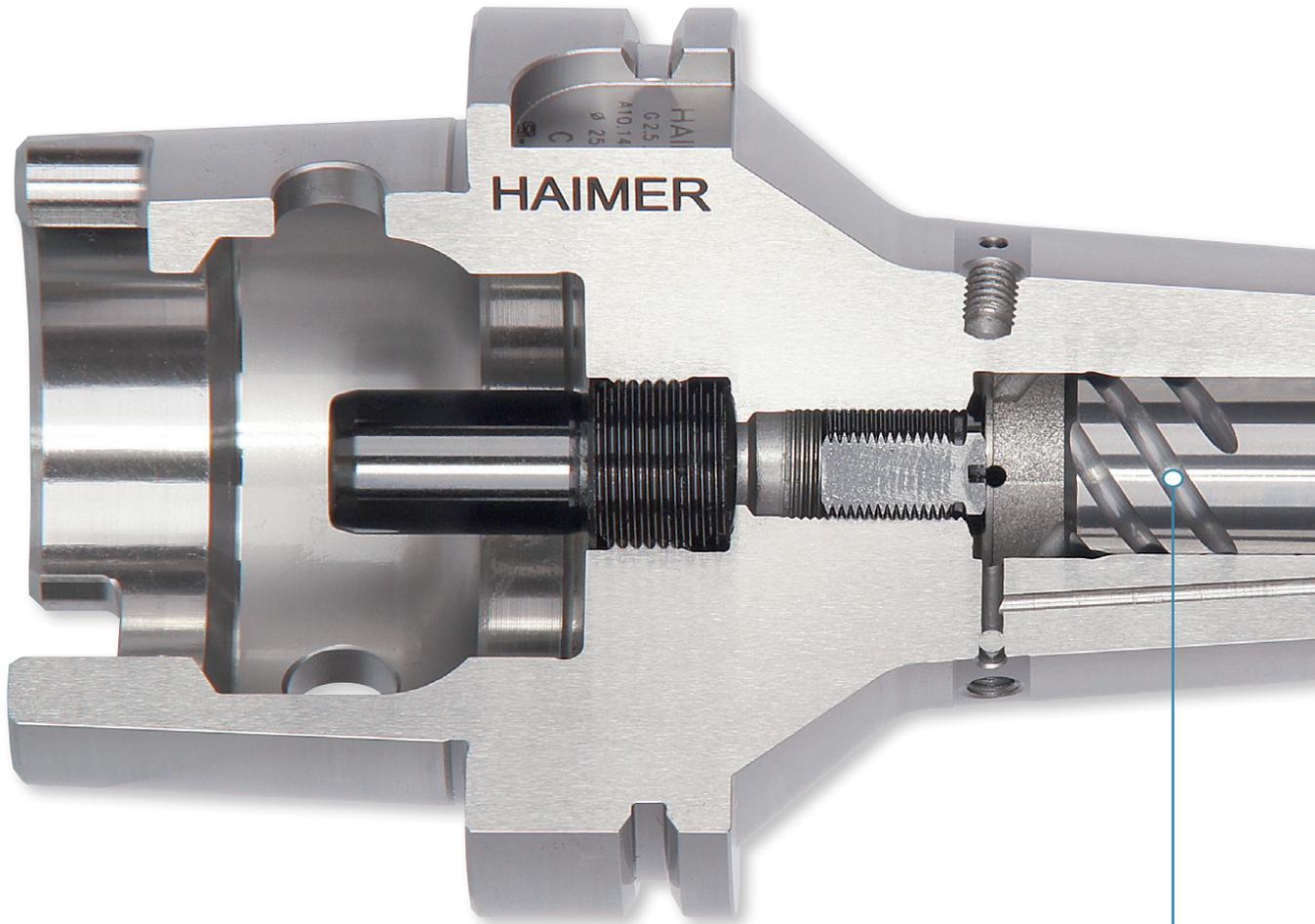
Thanks to many decades of experience with cutting tools in our own machine shop, testing and developing geometries by German experts, HAIMER was able to transfer the know-how and knowledge from tool holders to the cutting tools.

The customer can only take full advantage of the accuracy of our tool holders if the runout accuracy of the cutting tool features a correspondingly high quality grade.

The solid carbide endmills of the HAIMER MILL and HAIMER MILL Power Series, can be equipped with the Straight Shank, Weldon Shank or our well-known Safe-Lock Shank. Convince yourself and unite best runout accuracy, vibration-free running and best cutting parameters with absolute process reliability by using HAIMER tool holders and end mills.

# HAIMER MILL Power Series

## Solid Carbide End Mills – Unique Advantages

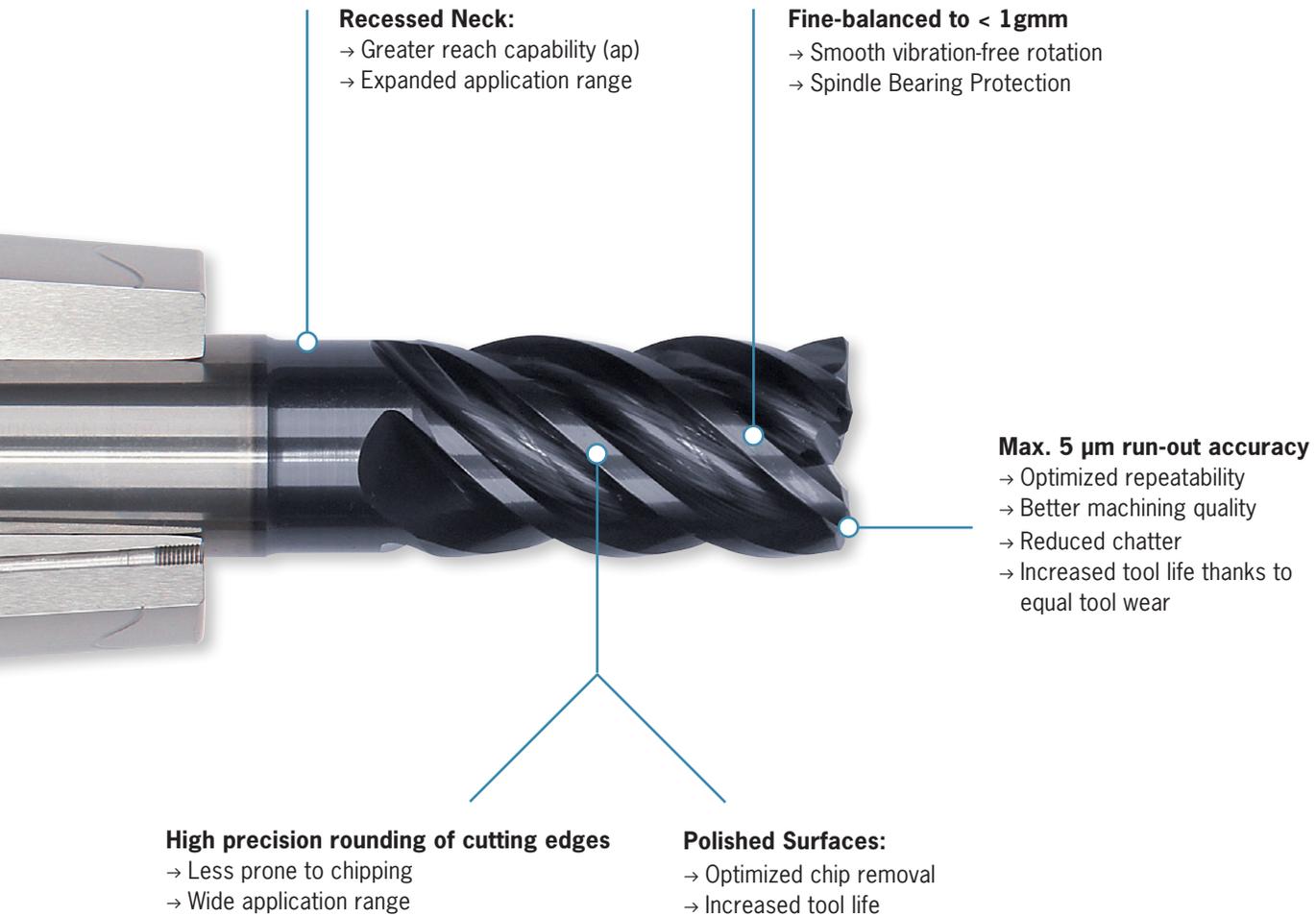


HAIMER Quality – 100% guarantee:

- Consistent cutting tool performance
- Maximized process reliability

**Safe-Lock shank:**

- Maximum pull-out protection
- Best run-out accuracy
- Maximum cutting volume
- Even in tool holders without Safe-Lock consistent clamping forces and torques
- h5 shank tolerance



**Shock-resistant packaging**  
 → Top quality in each delivery

## SAFE-LOCK® – The safety belt for your tools

In high performance cutting (HPC), it is possible for the cutting tool to be pulled out of the chuck. The reason is a slow micro-creeping motion. It happens when cutting at high speeds and with high pull out forces. Even chucks with extremely high clamping force cannot prevent micro-creeping. High-quality work pieces become scrap as a result.

**The Safe-lock® system offers a solution.**

The revolutionary system secures the cutting tool via the high accuracy frictional clamping in conjunction with a positive locking form fit connection.

This is accomplished by means of grooves in the cutting tools and the corresponding form fit in the tool holder. Resulting in a connection in which all potential movements of the cutting tool are prevented.

## Your advantages On the safe side with SAFE-LOCK®:

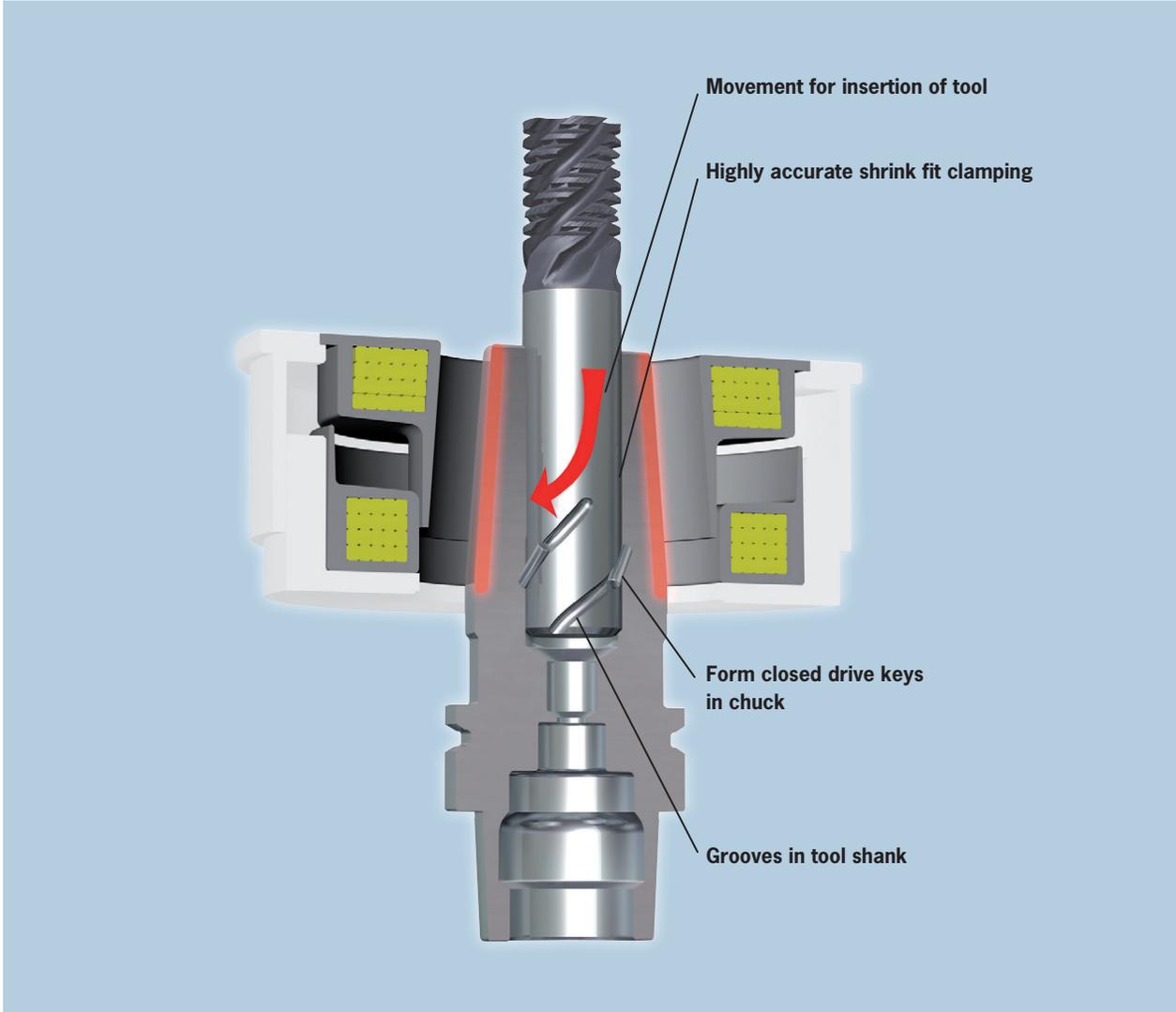
- For High Performance Cutting
- Highly accurate clamping due to shrink fit or collet chuck technology
- High torque due to form closed clamping
- No tool pull out (see image on the lower left)
- No twisting
- Patent granted: licensing possible

➔ **Maximum metal removal rate  
with absolute process reliability**

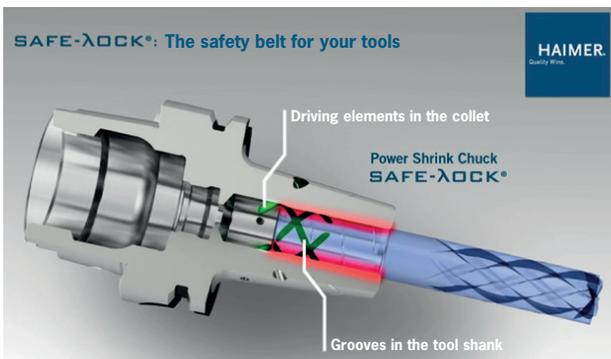


No tool pull out with Safe-Lock

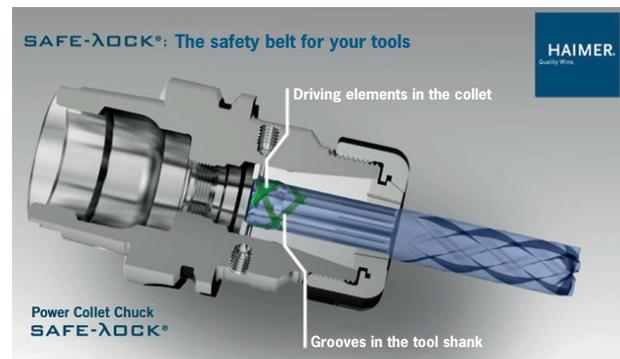
# SAFE-LOCK® PULL OUT PROTECTION – FUNCTIONALITY



## POWER SHRINK CHUCK WITH SAFE-LOCK



## POWER COLLET CHUCK WITH SAFE-LOCK



# DUO-LOCK®

## Advanced Materials Require Advanced Manufacturing.

The continuing development of high-strength, lightweight materials such as titanium alloys, Inconel, and new aluminum alloys are eagerly sought by manufacturers in many industries, including aerospace and defense, energy, and transportation. These new materials present significant machining challenges in themselves. Add the competitive pressures in these global industries, and finding advanced manufacturing solutions becomes a top priority.

## DUO-LOCK®

The Duo-Lock technology addresses the issue of the increasing cost of carbide by delivering a modular interface for cutting tool heads. Duo-Lock provides maximum stability and load capacity through a proprietary thread design with a double cone bond. The results are unmatched precision and productivity, with a connection that is virtually unbreakable in the most demanding applications.

## SAFE-LOCK®

The Safe-Lock anti-pullout interface is also available with modular Duo-Lock extensions to take advantage of long reach and aggressive cuts.

See Master Catalog  
for more details.



Milling Heads



Holders



Collets



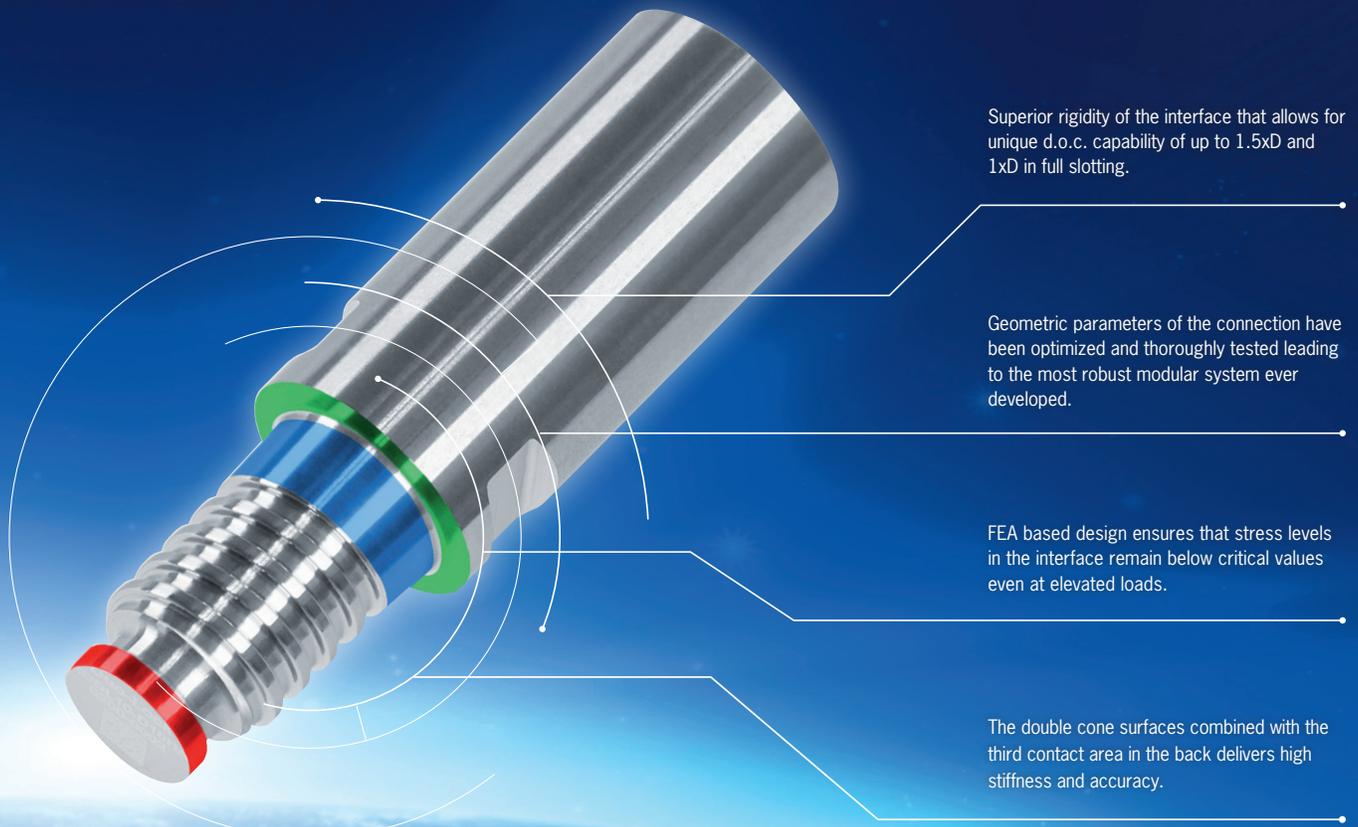
Extensions



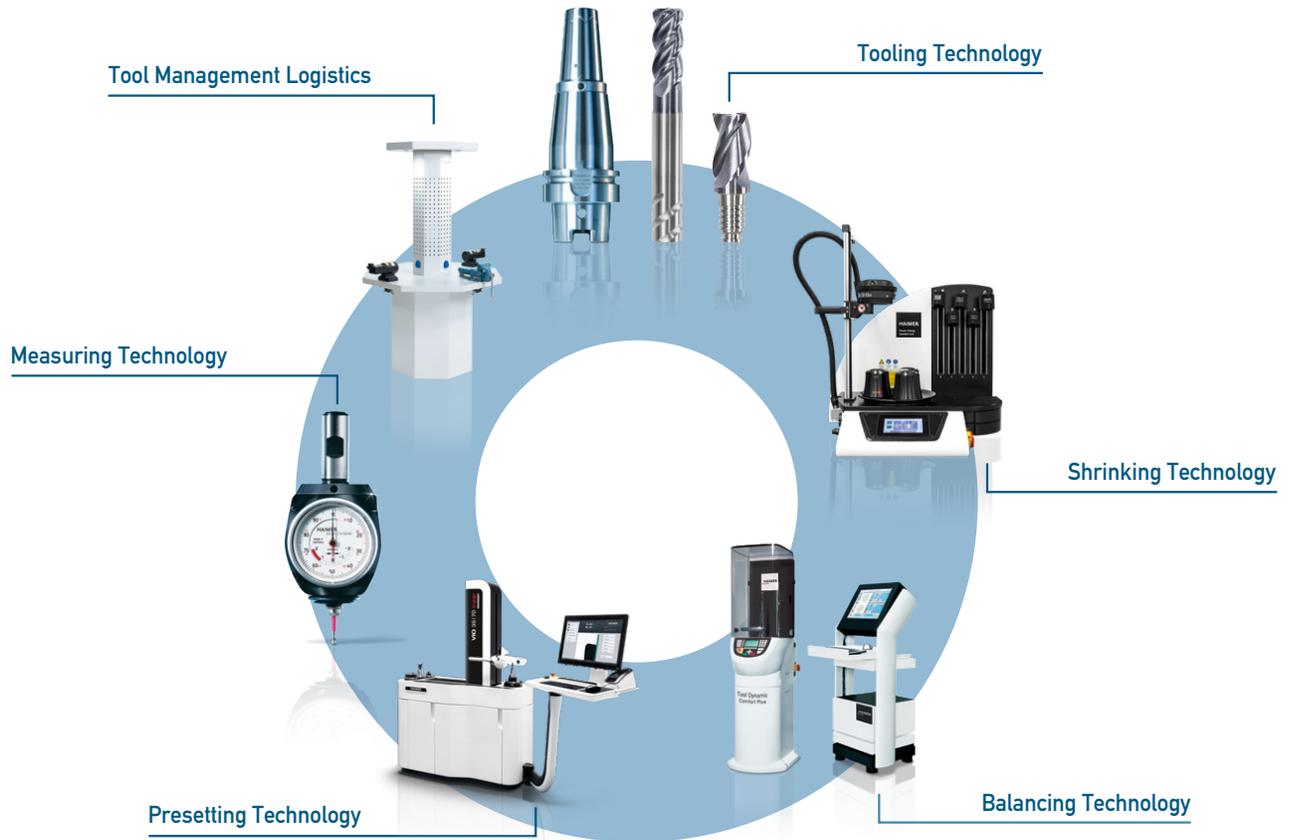
**For the first time, a modular milling system can achieve the similar high performance of the latest generation solid carbide end mill.**

To deliver groundbreaking joint technology, Duo-Lock combines the innovative histories of two leaders in the world of manufacturing – Kennametal and HAIMER.

Duo-Lock maximizes a carbide tool's full potential with productivity gains in both roughing and finishing. It provides high load capacity and rigidity when machining at high metal removal rates. When combined with high-performance cutting tools, Duo-Lock provides more than double the metal removal rate in common milling applications.



**HAIMER**<sup>®</sup>  
Quality Wins.



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