





















Milling · Fräsen

Solid Carbide End Mills · Vollhartmetallschaftfräser

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Machining · Bearbeitung	Shape Ausführung	Teeth · Zähne	Type Typ	Serie	Ø	material · Material										Page Seite	
						P		M	K	N		S	H		Specification Spezifikation	Cutting data Schnittdaten	
						Carbon steel alloy steel Kohlenstoff Stahl Legierter Stahl	Quenched and tempered steel Vergüteter Stahl	Stainless steel Rostfreier Stahl	Cast iron Grauguss	Copper alloy Kupfer Legierung	Aluminum alloy Alu Legierung	Heat resist. alloy Warmfeste Leg.	Hardened steel < 55HRC	gehärteter Stahl > 55HRC			
High performance milling · Hochleistungsfräsen	End mill Eckfräser	2	PM-2E		Ø1.0~ Ø20.0	✓	✓	✓	✓			✓	✓	B241	B415		
			PM-2EL		Ø3.0~ Ø20.0	✓	✓	✓	✓			✓	✓	B242	B415		
		4	PM-4E-G		Ø1.0~ Ø20.0	✓	✓	✓	✓			✓	✓	B243	B417		
			PM-4EL-G		Ø3.0~ Ø20.0	✓	✓	✓	✓			✓	✓	B244	B417		
			PM-4EX-G		Ø3.0~ Ø20.0	✓	✓	✓	✓			✓	✓	B245	B418		
			PM-4E		Ø1.0~ Ø20.0	✓	✓	✓	✓			✓	✓	B246	B419		
		PM-4EL		Ø3.0~ Ø20.0	✓	✓	✓	✓			✓	✓	B247	B419			
		6	PM-6E		Ø6.0~ Ø20.0	✓	✓	✓	✓			✓	✓	B248	B420		
	PM-6EL			Ø6.0~ Ø20.0	✓	✓	✓	✓			✓	✓	B249	B421			
	Ball nose Kugelkopf fräser	2	PM-2B		R0.5~R10.0	✓	✓	✓	✓			✓	✓	B250	B422-423		
			PM-2BFP		R0.5~R10.0	✓	✓	✓	✓			✓	✓	B252	B422-423		
			PM-2BL		R1.0~R10.0	✓	✓	✓	✓			✓	✓	B251	B422-423		
		4	PM-4B		R1.5~R10.0	✓	✓	✓	✓			✓	✓	B253	B424		
			PM-4BL		R1.5~R10.0	✓	✓	✓	✓			✓	✓	B254	B424		
	Ball nose with Conical neck Kugelkopf fräser mit konischem Hals	2	PM-2BC		R0.25~R2.0	✓	✓	✓	✓			✓	✓	B255-258	B425-426		
	Corner Radius mills Radiuseck fräser	2	PM-2R		Ø1.0~ Ø12.0	✓	✓	✓	✓			✓	✓	B259	B427		
		4	PM-4R		Ø3.0~ Ø12.0	✓	✓	✓	✓			✓	✓	B260	B428		
	High feeding Hochvorschub-fräser	4	PM-4H		Ø3.0~ Ø12.0	✓	✓	✓	✓			✓	✓	B261	B429-430		















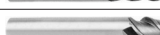

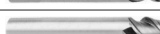
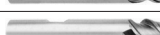
✓ = Very suitable · Sehr empfohlen
 ✓ = Suitable · Empfohlen

B

Solid Carbide end mills
 Vollhartmetallschaftfräser

Milling · Fräsen















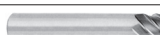














Solid Carbide end mills Overview · Vollhartmetallschaftfräser Übersicht

Machining · Bearbeitung	Shape Ausführung	Teeth · Zähne	NORM	Type Typ	Serie	Ø	material · Material						Page Seite	
							P	M	K	N	S	H	Specification Spezifikation	Cutting data Schnittdaten
							Carbon steel alloy steel Kohlenstoff Stahl Legierter Stahl	Stainless steel · Rostfreier Stahl	Cast iron Grauguss	Copper alloy Kupfer Legierung	Aluminum alloy Alu Legierung	Heat resist. alloy Warmfeste Leg		
General machining · Allgemeine Bearbeitung	End mill · Eckfräser	2	DIN	5501R302GM		Ø3.0~Ø20.0	✓	✓	✓				B263	B387-388
				5601R302GM		Ø3.0~Ø20.0	✓	✓	✓				B264	B388
				5502R302GM		Ø3.0~Ø20.0	✓	✓	✓				B265	B391-392
				5602R302GM		Ø3.0~Ø20.0	✓	✓	✓				B266	B392
			GM-2E		Ø1.0~Ø20.0	✓	✓	✓				B267	B433	
			GM-2EL		Ø3.0~Ø20.0	✓	✓	✓				B268	B433	
			GM-2EX		Ø3.0~Ø20.0	✓	✓	✓				B269	B435	
			GM-2EFP		Ø6.0~Ø20.0	✓	✓	✓				B270	B436	
			GM-2F		Ø1.0~Ø20.0	✓	✓	✓				B271	B434	
			GM-2FL		Ø3.0~Ø20.0	✓	✓	✓				B272	B434	
		3	DIN	GM-3E		Ø1.0~Ø20.0	✓	✓	✓				B273	B437
				GM-3EL		Ø3.0~Ø20.0	✓	✓	✓				B274	B437
			5501R303GM		Ø3.0~Ø20.0	✓	✓	✓				B275	B389	
			5601R303GM		Ø3.0~Ø20.0	✓	✓	✓				B276	B389	
			5502R303GM		Ø3.0~Ø20.0	✓	✓	✓				B277	B393	
			5602R303GM		Ø3.0~Ø20.0	✓	✓	✓				B278	B393	
			5502R453GM		Ø3.0~Ø20.0	✓	✓	✓				B279	B394	
			5602R453GM		Ø3.0~Ø20.0	✓	✓	✓				B280	B394	

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Milling · Fräsen

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Machining · Bearbeitung	Shape Ausführung	Teeth · Zähne	NORM	Type Typ	Serie	Ø	material · Material						Page Seite			
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							Carbon steel alloy steel Kohlenstoff Stahl Legierter Stahl	Stainless steel · rostfreier Stahl	Cast iron Grauguss	Copper alloy Kupfer Legierung	Aluminum alloy Alu Legierung	Heat resist. alloy Warmfeste Leg			Hardened steel gehärteter Stahl	
General machining · Allgemeine Bearbeitung	End mill · Eckfräser	4	DIN	5501R304GF		Ø3.0~Ø20.0	✓	✓	✓				B289	B390		
				5601R304GF		Ø3.0~Ø20.0	✓	✓	✓						B290	B390
				5502R304GF		Ø3.0~Ø20.0	✓	✓	✓						B291	B395
				5602R304GF		Ø3.0~Ø20.0	✓	✓	✓						B292	B395
				5508R454GM		Ø3.0~Ø20.0	✓	✓	✓						B293	B393, 395
				5602R454GM		Ø3.0~Ø20.0	✓	✓	✓						B294	B393
			GM-4E-G		Ø1.0~Ø20.0	✓	✓	✓						B281	B438	
			GM-4F-G		Ø1.0~Ø20.0	✓	✓	✓						B282	B439	
			GM-4EL-G		Ø3.0~Ø20.0	✓	✓	✓						B283	B438	
			GM-4FL-G		Ø3.0~Ø20.0	✓	✓	✓						B284	B439	
			GM-4EX-G		Ø3.0~Ø20.0	✓	✓	✓						B285	B440	
			GM-4E		Ø1.0~Ø20.0	✓	✓	✓						B286	B441	
		GM-4EL		Ø3.0~Ø20.0	✓	✓	✓						B287	B441		
		GM-4EFP		Ø6.0~Ø20.0	✓	✓	✓						B288	B442		
		6	DIN 5589R45MGFR		Ø6.0~Ø20.0	✓	✓	✓						B295	B396	
			GM-6E		Ø6.0~Ø20.0	✓	✓	✓						B296	B443	
			GM-6EL		Ø6.0~Ø20.0	✓	✓	✓						B297	B444	
		Micro end mill Micro-fräser	2	GM-2EP		Ø0.5~Ø5.0	✓	✓	✓					B298-299	B445-446	
	GM-2ES				Ø0.3~Ø3.0	✓	✓	✓						B300	B447	
	Ball nose · Kugelkopfräser	2	DIN	5565R302GF		Ø3.0~Ø16.0	✓	✓	✓					B301	B397	
				5665R202GM		Ø3.0~Ø20.0	✓	✓	✓						B302	B397
				5566R302GF		Ø3~Ø12.0	✓	✓	✓						B303	B398
			GM-2B		Ø1.0~Ø20.0	✓	✓	✓						B304	B448	
			GM-2BL		R1.0~R10.0	✓	✓	✓						B305	B448	
GM-2BFP				Ø1.0~Ø20.0	✓	✓	✓						B306	B451-452		
4		GM-4B		R1.5~R10.0	✓	✓	✓						B307	B449		
		GM-4BL		R1.5~R10.0	✓	✓	✓						B308	B449		
		Micro ball nose Micro Kugelkopf fräser	2	GM-2BS		R0.15~R1.5	✓	✓	✓					B309	B450	
				GM-2BP		R0.25~R2.5	✓	✓	✓						B310-311	B451-452

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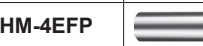










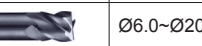
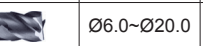
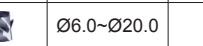
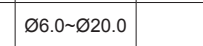
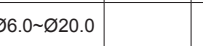






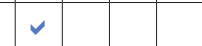


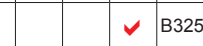

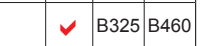
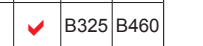
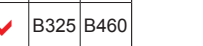
B

Solid Carbide end mills
 Vollhartmetallschaftfräser
































Milling · Fräsen

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Machining · Bearbeitung	Shape Ausführung	Teeth · Zähne	NORM	Type Typ	Serie	Ø	material · Material						Page Seite		
							P	M	K	N	S	H	Specification Spezifikation	Cutting data Schnittdaten	
							Carbon steel alloy steel Kohlenstoff Stahl Legierter Stahl	Stainless steel · Rostfreier Stahl	Cast iron Grauguss	Copper alloy Kupfer Legierung	Aluminum alloy Alu Legierung	Heat resist. alloy Warmfeste Leg			Hardened steel gehärteter Stahl
General machining Allgemeine Bearbeitung	Corner Radius mills Radiuseckfräser	2		GM-2R		Ø1.0~Ø12.0	✓	✓	✓		✓		B312	B453	
		4		GM-4R		Ø3.0~Ø12.0	✓	✓	✓		✓		B313	B454	
					GM-4RL		Ø6.0~Ø16.0	✓	✓	✓		✓		B314	B454
	Corrugated edge Kordelfräser	4	DIN	5602R303/304GR		Ø10.0~Ø20.0	✓		✓		✓		B315	B414	
				GM-4W		Ø6.0~Ø20.0	✓		✓		✓		B316	B455 -456	
Machining high hardness steel · Hartbearbeitung	End mill Eckfräser	4		HM-4E		Ø1.0~Ø20.0			✓			✓	B322	B459	
					HM-4EFP		Ø6.0~Ø20.0			✓			✓	B325	B460
					HM-4EL		Ø3.0~Ø20.0			✓			✓	B323	B459
		6	DIN	5502R55MHH		Ø3.0~Ø20.0			✓			✓		B324	B409, 411
					HM-6E		Ø6.0~Ø20.0			✓			✓	B326	B461
					HM-6EL		Ø6.0~Ø20.0			✓			✓	B327	B462
	Micro end mill Microfräser	4			HM-2E		Ø1.0~Ø20.0			✓			✓	B320	B457
					HM-2EP		Ø0.5~Ø5.0			✓			✓	B328 -329	B463 -464
					HM-2EFP		Ø6.0~Ø20.0			✓			✓	B321	B458
					HM-2ES		Ø0.3~Ø3.0			✓			✓	B330	B465
		2	Ball nose Kugelpopf fräser	DIN	5565R302GH		Ø3.0~Ø16.0			✓			✓	B331	B404
						5566R302GH		Ø3.0~Ø12.0			✓			✓	B332
				HM-2B		R0.5~R10.0			✓			✓	B333	B466	
DIN	5565R302HH				Ø3.0~Ø16.0			✓				✓	B334	B408	
				5566R302HH		Ø3.0~Ø12.0			✓			✓	B335	B409	
				HM-2BL		R1.0~R10.0			✓			✓	B336	B466	
4				HM-2BFP		R0.5~R10.0			✓			✓	B337	B466	
		DIN	5566R304HH		Ø6.0~Ø12.0			✓			✓	B338	B410		
				HM-4B		R1.5~R10.0			✓			✓	B339	B467	
				HM-4BL		Ø3.0~Ø20.0			✓			✓	B340	B467	
2	Micro end mill Microfräser			HM-2BS		R0.15~R1.5			✓			✓	B341	B468	
				HM-2BP		R0.25~R2.5			✓			✓	B342 -343	B469 -470	
4	Corner Radius mills Radiuseck fräser	DIN		5585R554HHR		Ø6.0~Ø16.0			✓			✓	B344	B412	
					5586R554HHR		Ø6.0~Ø16.0			✓			✓	B345	B413
				HM-4R		Ø3.0~Ø12.0			✓			✓	B346	B471	
				HM-4RF		Ø6.0~Ø12.0			✓			✓	B347	B471	
				HM-4RP		Ø6.0~Ø16.0			✓			✓	B348	B471	

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Machining copper Kupferbearbeitung	End mill Eckfräser	2	DIN	5502R402NM		Ø6.0~Ø20.0								B350	B399									
				NM-2E		Ø1.0~Ø12.0										B351	B472							
				NM-4E		Ø3.0~Ø12.0											B352	B473						
	Micro end mill Microfräser	2	DIN	NM-2EP		Ø0.5~Ø5.0									B353	B474								
				NM-2B		R0.5~R6.0										B354	B475							
				NM-2BP		R0.25~R2.5											B355	B476						
Machining aluminum Aluminium Bearbeitung	End mill Eckfräser	2	DIN	AL-2E		Ø1.0~Ø20.0									B357	B477								
				AL-2EL		Ø3.0~Ø20.0											B358	B477						
				AL-3E		Ø1.0~Ø20.0												B359	B478					
				AL-3EL		Ø3.0~Ø20.0												B362	B478					
	Ball nose Kugelkopffräser	2	DIN	5565R302NH		Ø3.0~Ø16.0										B360	B400							
				5566R302NH		Ø3.0~Ø16.0												B361	B401					
	Roughing end mills, rough pitch form Schruppfräser, fein verzahnt	3	DIN	AL-2B		R1.0~R6.0											B363	B479						
				AL-3W		Ø6.0~Ø20.0													B364	B480				
			2	DIN	AL-2R-AIR		Ø6.0~Ø20.0											B365	B481					
					AL-2RL-AIR		Ø6.0~Ø20.0													B366	B482			
AL-3R-AIR						Ø12.0~Ø20.0														B367	B483			
AL-3RL-AIR						Ø12.0~Ø20.0															B368	B484		
HPC serie with unequal helix angle HPC Serie mit ungleichem Spiralwinkel	General machining Allgemeine Bearbeitung	4	DIN	5501R38414GM		HPC 38° / 41° Ø4.0~Ø20.0	✓	✓	✓								B373	B431 -432						
				5502R38414GM		HPC 38° / 41° Ø4.0~Ø20.0	✓	✓	✓											B374	B431 -432			
				5602R38414GM		HPC 38° / 41° Ø4.0~Ø20.0	✓	✓	✓												B376	B431 -432		
				5502R38414GM-R		HPC 38° / 41° Ø4.0~Ø20.0	✓	✓	✓													B375	B431 -432	
				5602R38414GM-R		HPC 38° / 41° Ø4.0~Ø20.0	✓	✓	✓														B377	B431 -432
				UM-4E		Ø4.0~Ø20.0	✓	✓	✓														B378	B485
	UM-4EL		Ø4.0~Ø20.0	✓	✓	✓															B379	B485		
	UM-4EFP		Ø6.0~Ø20.0	✓	✓	✓															B380	B487		
	UM-4R		Ø4.0~Ø20.0	✓	✓	✓															B381	B489 -490		
	UM-4RL		Ø6.0~Ø16.0	✓	✓	✓															B382	B489 -490		
	UM-4RFP		Ø6.0~Ø16.0	✓	✓	✓															B383	B491		
	Machining heat resistance super alloys Warmfeste Superlegierung Bearb.	4	DIN	VSM-4E		HPC 38° / 41° Ø4.0~Ø20.0	✓	✓														B384	B492	
VSM-4R					HPC 38° / 41° Ø6.0~Ø12.0	✓	✓																B385	B493

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B

Solid Carbide end mills
Vollhartmetallschaftfräser

DIN - STANDARD

Type of function Schneidenausführung	
code	Description Beschreibung
0	End mill Eckfräser
6	Ball nose end mill Kugelkopffräser
8	Radius end mill Fräser mit Eckradius

Helical alwinkel / Spiralwinkel			
code	Helical alwinkel	Spiralwinkel	Description
00	0°	45	45°
20	20°	55	55°
30	30°	60	60°
3841	38°/41°		

Number of teeth Anzahl Zähne	
code	Description Beschreibung
2-4	Number of teeth Anzahl Zähne
M	It is indicated by M when the same type is with different sizes and number of teeth. Wird angegeben, wenn verschiedene Durchmesser verschiedene Zähnezahlen haben.

Type of tools Werkzeugtype	
code	Description Beschreibung
5	End mills / Fräser

Direction of rotation Drehrichtung	
code	Description Beschreibung
R	Right hand / Rechts
L	Left hand / Links

Radius	
code	Description Beschreibung
R05	Radius: 0.5 mm

Durchmesser	
code	Description Beschreibung
0800	8.0 mm in diameter Durchmesser: 8.0mm



Type of shank Schaftausführung	
code	Description · Beschreibung
1	Shank · Schaft
5	DIN 6535 HA
6	Weldon DIN 6535 HB
7	Whistel-Notch DIN 6535 HE
9	Taper shank · Morsekegel

Tool shape Ausführung	
code	Description · Beschreibung
1	DIN 6527 K
2	DIN 6527 L
5	As per ZCC-A in QJ ZZQ(TQ)01.002.002 between the radius and the specification Nach Werksnorm ZCC-A
6	As per ZCC-B in QJ ZZQ(TQ)01.002.002 between the radius and the specification Nach Werksnorm ZCC-B
8	DIN 6528
9	As per ZCC-D in QJ ZZQ(TQ)01.002.002 between the radius and the specification Nach Werksnorm ZCC-D

Machining Bearbeitung	
code	Description · Beschreibung
GR	General roughing Allgemeine Schruppbearbeitung
NR	Roughing machining of nonferrous metals Schruppen von NE-Metallen
GM	General semi-finishing Allgemeine mittlere Bearbeitung
SR	Machining of Ti alloys and Heat resist. alloys Zur Bearbeitung von Ti-Legierungen und wärmefesten Materialien
GF	General finishing Allgemeine Schlichtbearbeitung
NH	High speed machining of nonferrous Metals Hochgeschwindigkeitsbearb. von NE-Metallen
NM	Semi-finishing of nonferrous Metals Mittlere Bearb. von NE-Metallen
HH	High speed machining of hardened materials Hochgeschwindigkeitsbearbeitung von gehärtetem Material (HRC: 52-65)
GH	High speed machining of general material Hochgeschwindigkeitbearb. von Stahl
PR	Roughing of steel Schruppbearbeitung von Stahl
HM	For machining high-hardness steel Zur Bearbeitung von gehärtetem Stahl
PM	High performance end mills Hochleistungsfräser
UM	High performance solide carbide endmills Hochleistungs-VHM-Fräser

B

Solid Carbide end mills
Vollhartmetallschaftfräser

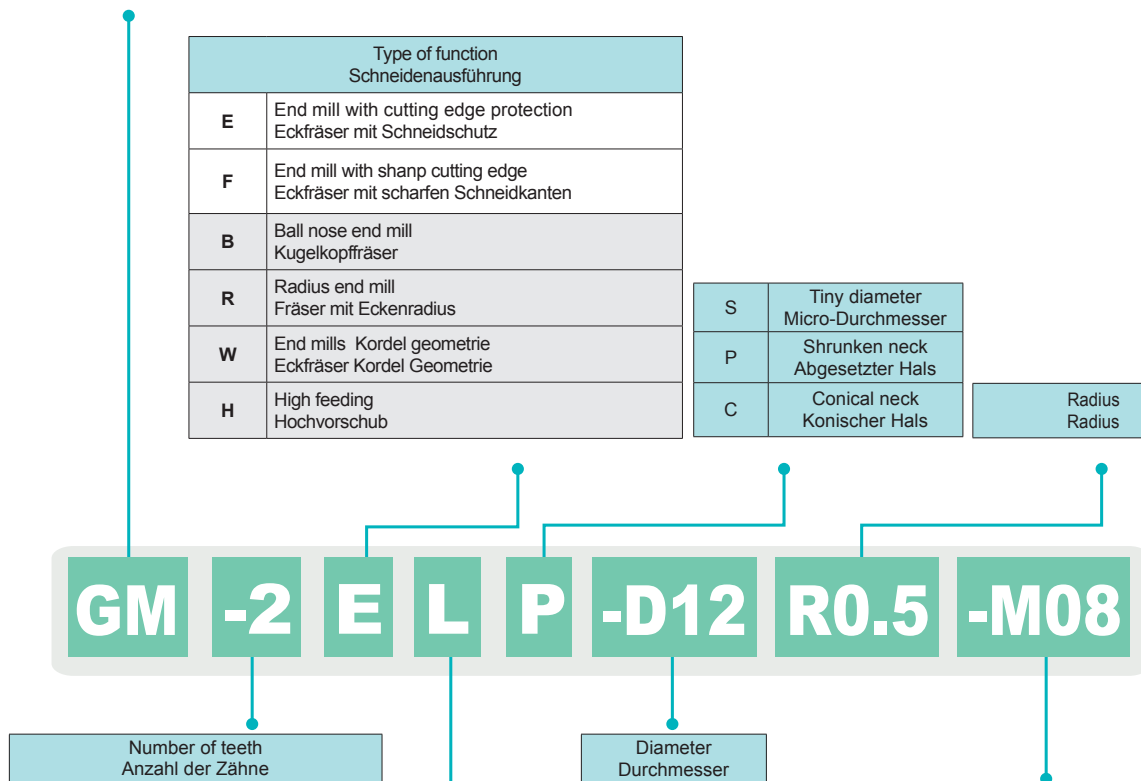
JM - SERIE

Machining Bearbeitung	
GM	Universal machining Allgemeine Bearbeitung
PM	High performance milling Hochleistungsfräsen
HM	For hard materials machining and high speed cutting Zur Hartbearbeitung im HSC Bereich
NM	For copper and nonferrous metals machining Zur Bearbeitung von Kupfer und NE-Metallen
AL	For aluminum alloy machining Zur Bearbeitung von Aluminiumlegierungen
SM	For machining of heat resistant super alloys Zur Bearbeitung von wärmefesten Superlegierungen

Type of function Schneidenausführung	
E	End mill with cutting edge protection Eckfräser mit Schneidschutz
F	End mill with sharp cutting edge Eckfräser mit scharfen Schneidkanten
B	Ball nose end mill Kugelkopffräser
R	Radius end mill Fräser mit Eckenradius
W	End mills Kordel geometrie Eckfräser Kordel Geometrie
H	High feeding Hochvorschub

S	Tiny diameter Micro-Durchmesser
P	Shrunk neck Abgesetzter Hals
C	Conical neck Konischer Hals

Radius Radius



Tool shape Ausführung	
L	Long series · Lange Serie
X	Extral long Extral Lange
F	Short cutting edge Kurze Schneidenlänge
	Series of standard length Standardlänge Serie

Special size instruction Spezielle Baumaße	
G	4-teeth end mills with 30° helical angle 4-Zähne Fräser mit Spiral Winkel 30°
M	Neck length Halslänge
H	Cutting edge length Schneidenlänge
L	Whole length Gesamtlänge
D	Diameter Durchmesser
S	Slim shank (ø 4mm) Schmale Ausführung
AIR	Extra high speed end mills for machining aluminum in aerospace industry High-Speed Fräser für Luftfahrtindustrie

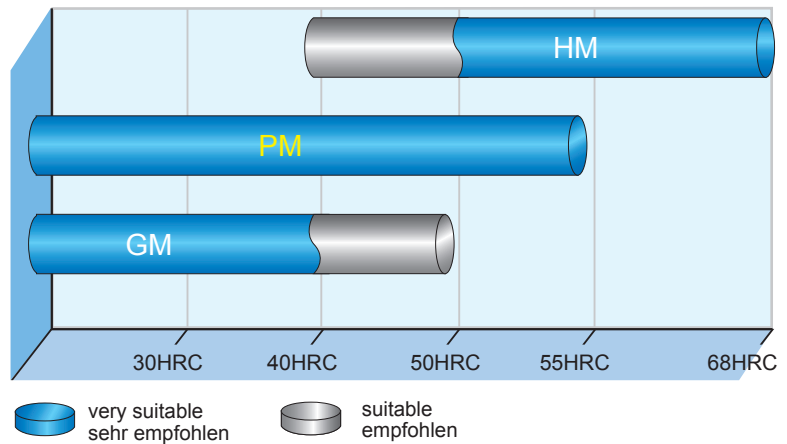
B

Solid Carbide end mills
Vollhartmetallschaftfräser

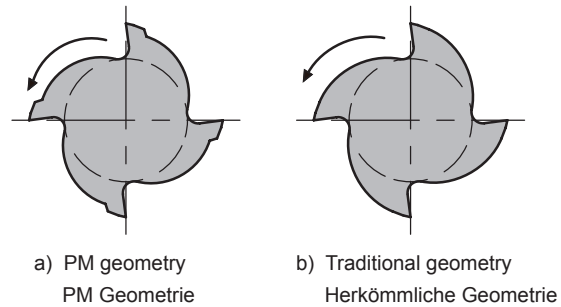
High performance end mills Hochleistungsfräser

P M

Application in machining of steel
Anwendung in Bearbeitung von Stahl



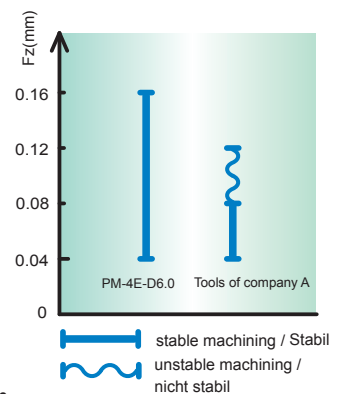
Optimal geometry, improving chips flow.
Optimierte Geometrie für guten Spanfluß.



Stabile cutting edge and high rigid, improving feed rate F_z and machining efficiency.

Eine stabile Schneidkante mit hoher Steifigkeit erhöht die Vorschubwerte und die Auslastung der Maschine.

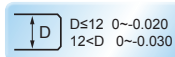
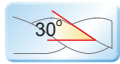
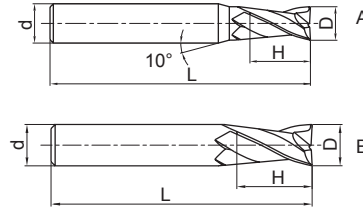
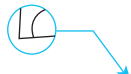
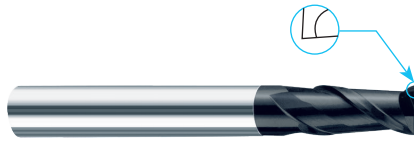
Diameter / Durchmesser: $\varnothing 6.0\text{mm}$
 Type / Typ: a) PM-4E-D6.0
 b) Tools of company A
 Machine Tools /
 Werkzeug Wettbewerber: Mikron UCP1000
 Material: NAK80(40HRC)
 Cooling / Kühlung : air cooling / Luft
 Operation: side milling / Eckfräsen
 Cutting data / Schnittdaten: $V_c=100\text{m/min}$
 $a_p=9\text{mm}$
 $a_e=0.6\text{mm}$
 $F_z=0.04\text{mm}\sim 0.16\text{mm}$



2-flute flattened end mills with straight shank 2-Schneiden Eckfräser mit Zylinderschaft



PM-2E



Type Typ	Dimension (mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 405
	D	d	H	L			
PM-2E-D1.0S	1.0	4	3	50	2	A	●
PM-2E-D1.5S	1.5	4	4	50	2	A	●
PM-2E-D2.0S	2.0	4	6	50	2	A	●
PM-2E-D2.5S	2.5	4	8	50	2	A	●
PM-2E-D3.0S	3.0	4	8	50	2	A	●
PM-2E-D4.0S	4.0	4	11	50	2	B	●
PM-2E-D1.0	1.0	6	3	50	2	A	●
PM-2E-D1.5	1.5	6	4	50	2	A	●
PM-2E-D2.0	2.0	6	6	50	2	A	●
PM-2E-D2.5	2.5	6	8	50	2	A	●
PM-2E-D3.0	3.0	6	8	50	2	A	●
PM-2E-D3.5	3.5	6	10	50	2	A	●
PM-2E-D4.0	4.0	6	11	50	2	A	●
PM-2E-D4.5	4.5	6	11	50	2	A	●
PM-2E-D5.0	5.0	6	13	50	2	A	●
PM-2E-D5.5	5.5	6	16	50	2	A	●
PM-2E-D6.0	6.0	6	16	50	2	B	●
PM-2E-D7.0	7.0	8	20	60	2	A	●
PM-2E-D8.0	8.0	8	20	60	2	B	●
PM-2E-D9.0	9.0	10	22	75	2	A	●
PM-2E-D10.0	10.0	10	25	75	2	B	●
PM-2E-D11.0	11.0	12	26	75	2	A	●
PM-2E-D12.0	12.0	12	30	75	2	B	●
PM-2E-D14.0	14.0	14	32	75	2	B	●
PM-2E-D16.0	16.0	16	45	100	2	B	●
PM-2E-D18.0	18.0	18	45	100	2	B	●
PM-2E-D20.0	20.0	20	45	100	2	B	●

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
 ✓ = Suitable · Empfohlen

KMG405

		Workpiece material Werkstückstoff									
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓	✓	✓	✓	✓			✓	✓

Code key B231
ISO Kennzeichen

Cutting data B415-430
Schnittdaten

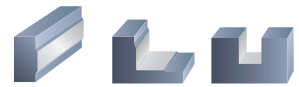
Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

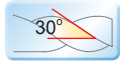
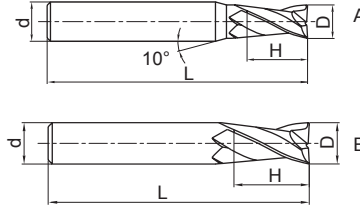
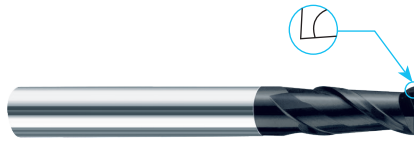
Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

2-flute flattened end mills with straight shank and long cutting edge
2-Schneiden Eckfräser mit langer Schneide und Zylinderschaft



PM-2EL



Type Typ	Dimension (mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 405
	D	d	H	L			
PM-2EL-D3.0	3.0	6	12	75	2	A	●
PM-2EL-D4.0	4.0	6	15	75	2	A	●
PM-2EL-D5.0	5.0	6	20	75	2	A	●
PM-2EL-D6.0	6.0	6	20	75	2	B	●
PM-2EL-D8.0	8.0	8	25	100	2	B	●
PM-2EL-D10.0	10.0	10	30	100	2	B	●
PM-2EL-D12.0	12.0	12	35	100	2	B	●
PM-2EL-D14.0	14.0	14	40	100	2	B	●
PM-2EL-D16.0	16.0	16	50	150	2	B	●
PM-2EL-D20.0	20.0	20	55	150	2	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

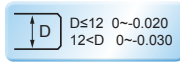
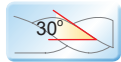
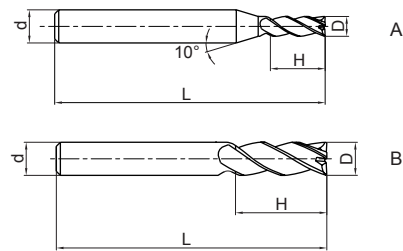
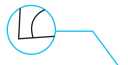
KMG405	Workpiece material Werkstückstoff											
	Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
			~40HRC	~50HRC	~55HRC	~68HRC						
	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓

● Ex Stock / ab Lager ○ On demand / auf Anfrage

4-flute flattened end mills with straight shank 4-Schneiden Eckfräser mit Zylinderschaft



PM-4E-G



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 405
	D	d	H	L			
PM-4E-D1.0S-G	1.0	4	3	50	4	A	●
PM-4E-D1.5S-G	1.5	4	4	50	4	A	●
PM-4E-D2.0S-G	2.0	4	6	50	4	A	●
PM-4E-D2.5S-G	2.5	4	8	50	4	A	●
PM-4E-D3.0S-G	3.0	4	8	50	4	A	●
PM-4E-D4.0S-G	4.0	4	11	50	4	B	●
PM-4E-D1.0-G	1.0	6	3	50	4	A	●
PM-4E-D1.5-G	1.5	6	4	50	4	A	●
PM-4E-D2.0-G	2.0	6	6	50	4	A	●
PM-4E-D2.5-G	2.5	6	8	50	4	A	●
PM-4E-D3.0-G	3.0	6	8	50	4	A	●
PM-4E-D3.5-G	3.5	6	10	50	4	A	●
PM-4E-D4.0-G	4.0	6	11	50	4	A	●
PM-4E-D4.5-G	4.5	6	11	50	4	A	●
PM-4E-D5.0-G	5.0	6	13	50	4	A	●
PM-4E-D5.5-G	5.5	6	16	50	4	A	●
PM-4E-D6.0-G	6.0	6	16	50	4	B	●
PM-4E-D7.0-G	7.0	8	20	60	4	A	●
PM-4E-D8.0-G	8.0	8	20	60	4	B	●
PM-4E-D9.0-G	9.0	10	22	75	4	A	●
PM-4E-D10.0-G	10.0	10	25	75	4	B	●
PM-4E-D11.0-G	11.0	12	26	75	4	A	●
PM-4E-D12.0-G	12.0	12	30	75	4	B	●
PM-4E-D14.0-G	14.0	14	32	75	4	B	●
PM-4E-D16.0-G	16.0	16	45	100	4	B	●
PM-4E-D18.0-G	18.0	18	45	100	4	B	●
PM-4E-D20.0-G	20.0	20	45	100	4	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG405

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓	✓	✓	✓	✓			✓	✓

Code key B231
ISO Kennzeichen

Cutting data B415-430
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

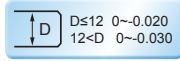
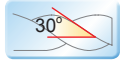
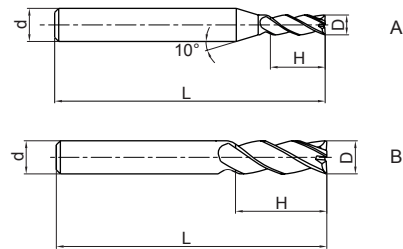
Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

4-flute flattened end mills with straight shank and long cutting edge
4-Schneiden Eckfräser mit langer Schneide und Zylinderschaft



PM-4EL-G



Type Typ	Dimension (mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 405
	D	d	H	L			
PM-4EL-D3.0-G	3.0	6	12	75	4	A	○
PM-4EL-D4.0-G	4.0	6	15	75	4	A	○
PM-4EL-D5.0-G	5.0	6	20	75	4	A	○
PM-4EL-D6.0-G	6.0	6	20	75	4	B	○
PM-4EL-D8.0-G	8.0	8	25	100	4	B	○
PM-4EL-D10.0-G	10.0	10	30	100	4	B	○
PM-4EL-D12.0-G	12.0	12	35	100	4	B	○
PM-4EL-D14.0-G	14.0	14	40	100	4	B	○
PM-4EL-D16.0-G	16.0	16	50	150	4	B	○
PM-4EL-D20.0-G	20.0	20	55	150	4	B	○

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
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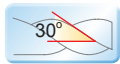
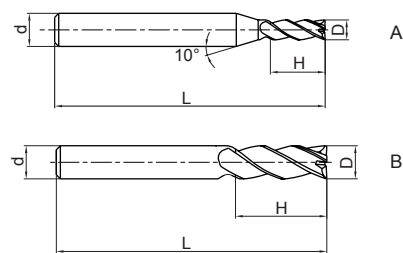
KMG405	Workpiece material Werkstückstoff											
	Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
			~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

● Ex Stock / ab Lager ○ On demand / auf Anfrage

4-flute flattened end mills with straight shank and longer cutting edge
4-Schneiden Eckfräser mit Zylinderschaft und langere Schneide



PM-4EX-G



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 405
	D	d	H	L			
PM-4EX-D3.0-G	3.0	6	20	75	4	A	●
PM-4EX-D4.0-G	4.0	6	25	75	4	A	●
PM-4EX-D5.0-G	5.0	6	30	75	4	A	●
PM-4EX-D6.0-G	6.0	6	30	75	4	B	●
PM-4EX-D8.0-G	8.0	8	40	100	4	B	●
PM-4EX-D10.0-G	10.0	10	50	110	4	B	●
PM-4EX-D12.0-G	12.0	12	50	110	4	B	●
PM-4EX-D16.0-G	16.0	16	70	150	4	B	●
PM-4EX-D20.0-G	20.0	20	75	150	4	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
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KMG405

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓	✓	✓	✓	✓			✓	✓

Code key
ISO Kennzeichen

B231

Cutting data
Schnittdaten

B415-430

Graphics identification & application
Graphische Werkzeug- & Anwendungsbeschr.

B232

Order form for non-standard products
Bestellformular für Sonderwerkzeuge

B497-B498

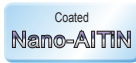
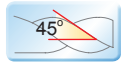
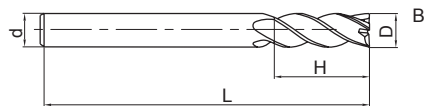
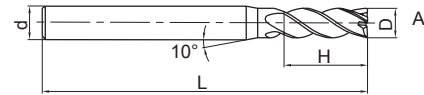
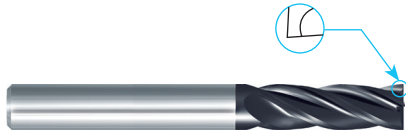
Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

4-flute flattened end mills with straight shank
4-Schneiden Eckfräser mit Zylinderschaft



PM-4E



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 405
	D	d	H	L			
PM-4E-D1.0S	1.0	4	3	50	4	A	●
PM-4E-D1.5S	1.5	4	4	50	4	A	●
PM-4E-D2.0S	2.0	4	6	50	4	A	●
PM-4E-D2.5S	2.5	4	8	50	4	A	●
PM-4E-D3.0S	3.0	4	8	50	4	A	●
PM-4E-D4.0S	4.0	4	11	50	4	B	●
PM-4E-D1.0	1.0	6	3	50	4	A	●
PM-4E-D1.5	1.5	6	4	50	4	A	●
PM-4E-D2.0	2.0	6	6	50	4	A	●
PM-4E-D2.5	2.5	6	8	50	4	A	●
PM-4E-D3.0	3.0	6	8	50	4	A	●
PM-4E-D3.5	3.5	6	10	50	4	A	●
PM-4E-D4.0	4.0	6	11	50	4	A	●
PM-4E-D4.5	4.5	6	11	50	4	A	●
PM-4E-D5.0	5.0	6	13	50	4	A	●
PM-4E-D5.5	5.5	6	16	50	4	A	●
PM-4E-D6.0	6.0	6	16	50	4	B	●
PM-4E-D7.0	7.0	8	20	60	4	A	●
PM-4E-D8.0	8.0	8	20	60	4	B	●
PM-4E-D9.0	9.0	10	22	75	4	A	●
PM-4E-D10.0	10.0	10	25	75	4	B	●
PM-4E-D11.0	11.0	12	26	75	4	A	●
PM-4E-D12.0	12.0	12	30	75	4	B	●
PM-4E-D14.0	14.0	14	32	75	4	B	●
PM-4E-D16.0	16.0	16	45	100	4	B	●
PM-4E-D18.0	18.0	18	45	100	4	B	●
PM-4E-D20.0	20.0	20	45	100	4	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG405

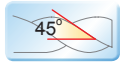
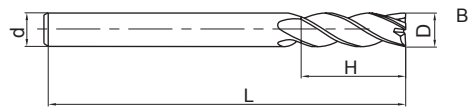
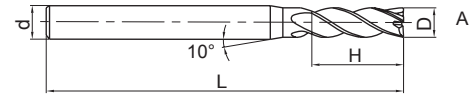
		Workpiece material Werkstückstoff									
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓	✓	✓	✓	✓			✓	✓

● Ex Stock / ab Lager ○ On demand / auf Anfrage

4-flute flattened end mills with straight shank and long cutting edge 4-Schneiden Eckfräser mit langer Schneide und Zylinderschaft



PM-4EL



Type Typ	Dimension (mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 405
	D	d	H	L			
PM-4EL-D3.0	3.0	6	12	75	4	A	●
PM-4EL-D4.0	4.0	6	15	75	4	A	●
PM-4EL-D5.0	5.0	6	20	75	4	A	●
PM-4EL-D6.0	6.0	6	20	75	4	B	●
PM-4EL-D8.0	8.0	8	25	100	4	B	●
PM-4EL-D10.0	10.0	10	30	100	4	B	●
PM-4EL-D12.0	12.0	12	35	100	4	B	●
PM-4EL-D14.0	14.0	14	40	100	4	B	●
PM-4EL-D16.0	16.0	16	50	150	4	B	●
PM-4EL-D20.0	20.0	20	55	150	4	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG405

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓	✓	✓	✓	✓			✓	✓

Code key
ISO Kennzeichen

B231

Cutting data
Schnittdaten

B415-430

Graphics identification & application
Graphische Werkzeug- & Anwendungsbeschr.

B232

Order form for non-standard products
Bestellformular für Sonderwerkzeuge

B497-B498

B247

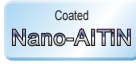
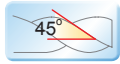
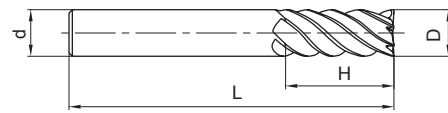
Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

6-flute flattened end mills with straight shank 6-Schneiden Eckfräser mit Zylinderschaft



PM-6E



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Grade Sorte KMG 405
	D	d	H	L		
PM-6E-D6.0	6.0	6	18	60	6	●
PM-6E-D8.0	8.0	8	20	60	6	●
PM-6E-D10.0	10.0	10	30	75	6	●
PM-6E-D12.0	12.0	12	32	75	6	●
PM-6E-D16.0	16.0	16	40	100	6	●
PM-6E-D20.0	20.0	20	45	100	6	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

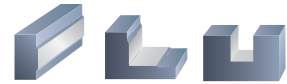
Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

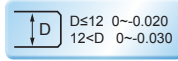
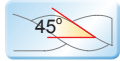
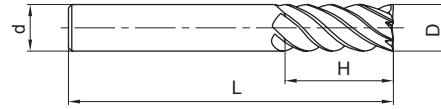
KMG405	Workpiece material Werkstückstoff											
	Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
			~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

● Ex Stock / ab Lager ○ On demand / auf Anfrage

6-flute flattened end mills with straight shank and long cutting edge
6-Schneiden Eckfräser mit langer Schneide und Zylinderschaft



PM-6EL



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Grade Sorte KMG 405
	D	d	H	L		
PM-6EL-D6.0	6.0	6	24	75	6	●
PM-6EL-D8.0	8.0	8	32	75	6	●
PM-6EL-D10.0	10.0	10	40	100	6	●
PM-6EL-D12.0	12.0	12	45	100	6	●
PM-6EL-D16.0	16.0	16	64	150	6	●
PM-6EL-D20.0	20.0	20	75	150	6	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
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KMG405

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓	✓	✓	✓	✓			✓	✓

Code key B231
ISO Kennzeichen

Cutting data B415-430
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

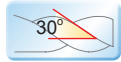
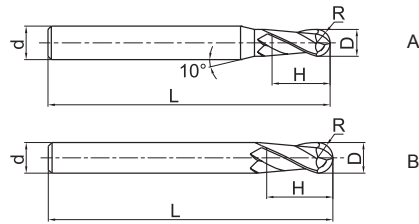
Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschafffräser

2-flute ball nose end mills with straight shank
2-Schneiden Kugelkopffräser mit Zylinderschaft



PM-2B



Type Typ	Dimension(mm) Abmessungen					Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 405
	D	R	d	H	L			
PM-2B-R0.5S	1.0	0.5	4	2	50	2	A	●
PM-2B-R0.75S	1.5	0.75	4	3	50	2	A	●
PM-2B-R1.0S	2.0	1.0	4	4	50	2	A	●
PM-2B-R1.25S	2.5	1.25	4	5	50	2	A	●
PM-2B-R1.5S	3.0	1.5	4	6	50	2	A	●
PM-2B-R2.0S	4.0	2.0	4	8	50	2	B	●
PM-2B-R0.5	1.0	0.5	6	2	50	2	A	●
PM-2B-R0.75	1.5	0.75	6	3	50	2	A	●
PM-2B-R1.0	2.0	1.0	6	4	50	2	A	●
PM-2B-R1.25	2.5	1.25	6	5	50	2	A	●
PM-2B-R1.5	3.0	1.5	6	6	50	2	A	●
PM-2B-R1.75	3.5	1.75	6	8	50	2	A	●
PM-2B-R2.0	4.0	2.0	6	8	50	2	A	●
PM-2B-R2.5	5.0	2.5	6	10	50	2	A	●
PM-2B-R2.75	5.5	2.75	6	12	50	2	A	●
PM-2B-R3.0	6.0	3.0	6	12	50	2	B	●
PM-2B-R3.5	7.0	3.5	8	14	60	2	A	●
PM-2B-R4.0	8.0	4.0	8	16	60	2	B	●
PM-2B-R4.5	9.0	4.5	10	18	75	2	A	●
PM-2B-R5.0	10.0	5.0	10	20	75	2	B	●
PM-2B-R6.0	12.0	6.0	12	24	75	2	B	●
PM-2B-R7.0	14.0	7.0	14	28	75	2	B	●
PM-2B-R8.0	16.0	8.0	16	32	100	2	B	●
PM-2B-R10.0	20.0	10.0	20	40	100	2	B	●

B

Solid Carbide end mills
Vollhartmetallschafffräser

Material Overview · Material Übersicht

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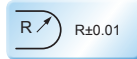
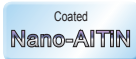
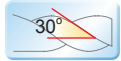
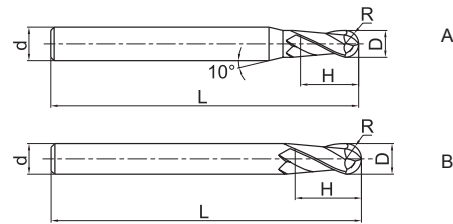
KMG405	Workpiece material Werkstückstoff											
	Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
			~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓

● Ex Stock / ab Lager ○ On demand / auf Anfrage

2-flute ball nose end mills with straight shank and long cutting edge
2-Schneiden Kugelnkopffräser mit langer Schneide und Zylinderschaft



PM-2BL



Type Typ	Dimension(mm) Abmessungen					Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 405
	D	R	d	H	L			
PM-2BL-R1.0	2.0	1.0	6	4	75	2	A	●
PM-2BL-R1.25	2.5	1.25	6	5	75	2	A	●
PM-2BL-R1.5	3.0	1.5	6	6	75	2	A	●
PM-2BL-R1.75	3.5	1.75	6	8	75	2	A	●
PM-2BL-R2.0	4.0	2.0	6	8	75	2	A	●
PM-2BL-R2.5	5.0	2.5	6	10	75	2	A	●
PM-2BL-R2.75	5.5	2.75	6	12	75	2	A	●
PM-2BL-R3.0	6.0	3.0	6	12	75	2	B	●
PM-2BL-R3.5	7.0	3.5	8	14	75	2	A	●
PM-2BL-R4.0	8.0	4.0	8	16	100	2	B	●
PM-2BL-R4.5	9.0	4.5	10	18	100	2	A	●
PM-2BL-R5.0	10.0	5.0	10	20	100	2	B	●
PM-2BL-R6.0	12.0	6.0	12	24	100	2	B	●
PM-2BL-R7.0	14.0	7.0	14	28	100	2	B	●
PM-2BL-R8.0	16.0	8.0	16	32	150	2	B	●
PM-2BL-R10.0	20.0	10.0	20	40	150	2	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
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KMG405

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓	✓	✓	✓	✓			✓	✓

Code key B231
ISO Kennzeichen

Cutting data B415-430
Schnittdaten

Graphics identification & application B232
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Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

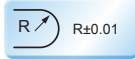
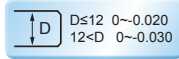
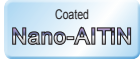
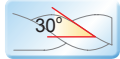
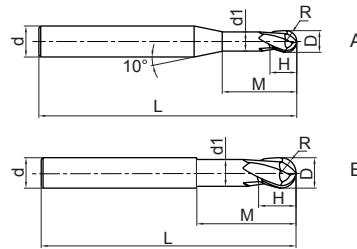
Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

2-flute straight shank ball nose end mills with short cutting edge and long neck
2-Schneiden Kugelkopffräser mit kurzer Schneide und Zylinderschaft



PM-2BFP



Type Typ	Dimension(mm) Abmessungen							Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 405
	D	R	H	d ₁	M	d	L			
PM-2BFP-R0.5	1.0	0.5	1	0.95	2.5	6	75	2	A	●
PM-2BFP-R0.75	1.5	0.75	1.5	1.45	3	6	75	2	A	●
PM-2BFP-R1.0	2.0	1.0	2	1.95	4	6	75	2	A	●
PM-2BFP-R1.5	3.0	1.5	3	2.85	6	6	75	2	A	●
PM-2BFP-R2.0	4.0	2.0	4	3.85	8	6	75	2	A	●
PM-2BFP-R2.5	5.0	2.5	5	4.85	10	6	75	2	A	●
PM-2BFP-R3.0	6.0	3.0	6	5.8	12	6	75	2	B	●
PM-2BFP-R4.0	8.0	4.0	8	7.8	16	8	100	2	B	●
PM-2BFP-R5.0	10.0	5.0	10	9.6	20	10	100	2	B	●
PM-2BFP-R6.0	12.0	6.0	12	11.5	24	12	100	2	B	●
PM-2BFP-R8.0	16.0	8.0	16	15.5	32	16	150	2	B	●
PM-2BFP-R10.0	20.0	10.0	20	19.5	40	20	150	2	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

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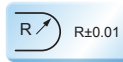
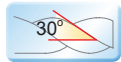
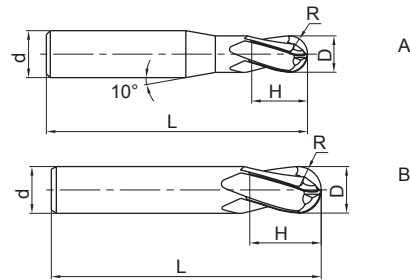
KMG405	Workpiece material Werkstückstoff											
	Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
			~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

● Ex Stock / ab Lager ○ On demand / auf Anfrage

4-flute ball nose end mills with straight shank 4-Schneiden Kugelkopffräser mit Zylinderschaft



PM-4B



Type Typ	Dimension (mm) Abmessungen					Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 405
	D	R	d	H	L			
PM-4B-R1.5	3.0	1.5	6	6	50	4	A	●
PM-4B-R2.0	4.0	2.0	6	8	50	4	A	●
PM-4B-R2.5	5.0	2.5	6	10	50	4	A	●
PM-4B-R3.0	6.0	3.0	6	12	50	4	B	●
PM-4B-R4.0	8.0	4.0	8	16	60	4	B	●
PM-4B-R5.0	10.0	5.0	10	20	75	4	B	●
PM-4B-R6.0	12.0	6.0	12	24	75	4	B	●
PM-4B-R7.0	14.0	7.0	14	28	75	4	B	●
PM-4B-R8.0	16.0	8.0	16	32	100	4	B	●
PM-4B-R9.0	18.0	9.0	18	36	100	4	B	●
PM-4B-R10.0	20.0	10.0	20	40	100	4	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG405

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓	✓	✓	✓	✓			✓	✓

Code key
ISO Kennzeichen

B231

Cutting data
Schnittdaten

B415-430

Graphics identification & application
Graphische Werkzeug- & Anwendungsbeschr.

B232

Order form for non-standard products
Bestellformular für Sonderwerkzeuge

B497-B498

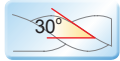
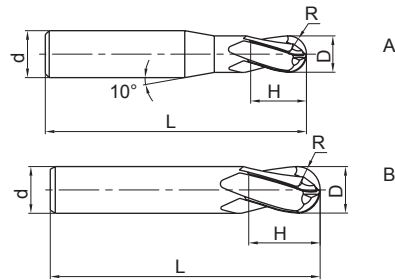
Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschafffräser

4-flute ball nose end mills with straight shank and long cutting edge
4-Schneiden Kugelpkopfräser mit mit langer Schneide und Zylinderschaft



PM-4BL



Type Typ	Dimension(mm) Abmessungen					Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 405
	D	R	d	H	L			
PM-4BL-R1.5	3.0	1.5	6	6	75	4	A	●
PM-4BL-R2.0	4.0	2.0	6	8	75	4	A	●
PM-4BL-R2.5	5.0	2.5	6	10	75	4	A	●
PM-4BL-R3.0	6.0	3.0	6	12	75	4	B	●
PM-4BL-R4.0	8.0	4.0	8	16	100	4	B	●
PM-4BL-R5.0	10.0	5.0	10	20	100	4	B	●
PM-4BL-R6.0	12.0	6.0	12	24	100	4	B	●
PM-4BL-R7.0	14.0	7.0	14	28	100	4	B	●
PM-4BL-R8.0	16.0	8.0	16	32	150	4	B	●
PM-4BL-R9.0	18.0	9.0	18	36	150	4	B	●
PM-4BL-R10.0	20.0	10.0	20	40	150	4	B	●

B

Solid Carbide end mills
Vollhartmetallschafffräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
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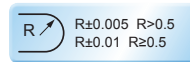
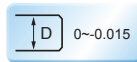
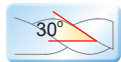
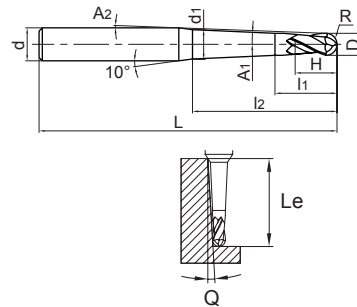
KMG405	Workpiece material Werkstückstoff											
	Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
			~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

● Ex Stock / ab Lager ○ On demand / auf Anfrage

2-flute conical neck ball nose end mills 2-Schneiden Mikro Kugelkopffräser mit konischem Hals



PM-2BC



Type Typ	Dimension(mm) Abmessungen										Teeth Zähne Z	Le(Q ^Λ = Le)				Grade Sorte KMG 405
	D	R	A1	H	l2	l1	A2	d1	L	d		Q=0.5°	Q=1°	Q=2°	Q=3°	
PM-2BC05-R0.25-M03	0.5	0.25	0.5°	0.5	3	1.5	7.8°	0.49	50	4	2	3.3	3.5	3.9	4.4	○
PM-2BC05-R0.25-M05					5		6.8°	0.53			2	5.3	5.6	6.2	7.1	○
PM-2BC10-R0.25-M03			1.0°		3		7.8°	0.52			2	-	3.4	3.8	4.3	○
PM-2BC10-R0.25-M05					5		6.9°	0.59			2	-	5.4	6.0	6.8	○
PM-2BC15-R0.25-M03			1.5°		3		7.9°	0.54			2	-	-	3.7	4.1	○
PM-2BC15-R0.25-M05					5		7.0°	0.65			2	-	-	5.8	6.6	○
PM-2BC05-R0.30-M05	0.6	0.30	0.5°	0.6	5	1.6	6.8°	0.62	50	4	2	5.3	5.6	6.2	7.1	○
PM-2BC05-R0.30-M08					8		5.7°	0.68			2	8.3	8.7	9.8	11.1	○
PM-2BC10-R0.30-M05			1.0°		5		6.8°	0.68			2	-	5.4	6.0	6.8	○
PM-2BC10-R0.30-M08					8		5.8°	0.79			2	-	8.4	9.4	10.7	○
PM-2BC10-R0.30-M10			1.5°		10		5.2°	0.86			2	-	10.4	11.6	13.2	○
PM-2BC10-R0.30-M12					12		4.8°	0.93			2	-	12.4	13.9	15.8	○
PM-2BC10-R0.30-M15	0.8	0.40	0.5°	0.8	15	1.8	4.2°	1.03	50	4	2	-	15.4	17.2	19.6	○
PM-2BC15-R0.30-M05					5		6.9°	0.74			2	-	-	5.8	6.6	○
PM-2BC15-R0.30-M08			8		5.9°		0.90	2			-	-	9.0	10.2	○	
PM-2BC05-R0.40-M08			1.0°		8		5.5°	0.87			2	8.3	8.7	9.8	11.1	○
PM-2BC05-R0.40-M12					12		4.5°	0.94			60	2	12.3	13.0	14.5	16.5
PM-2BC10-R0.40-M08			1.5°		8		5.6°	0.98			2	-	8.4	9.4	10.7	○
PM-2BC10-R0.40-M12	12	4.6°		1.12	60	2	-	12.4	13.9	15.8	○					
PM-2BC15-R0.40-M08	1.5°	8	5.8°	1.09	2	-	-	9.0	10.2	○						
PM-2BC15-R0.40-M12		12	4.8°	1.30	60	2	-	-	13.2	15.0	○					

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

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KMG405

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy wärmefeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓	✓	✓	✓	✓			✓	✓

Code key B231
ISO Kennzeichen

Cutting data B415-430
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

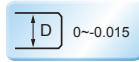
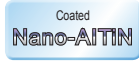
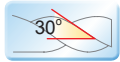
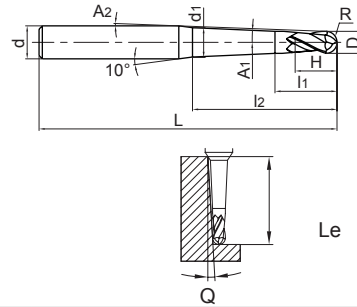
Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

2-flute conical neck ball nose end mills 2-Schneiden Mikro Kugelkopffräser mit konischem Hals



PM-2BC



B

Solid Carbide end mills
Vollhartmetallschaftfräser

Type Typ	Dimension(mm) Abmessungen											Teeth Zähne Z	Q $\hat{=}$ Le				Grade Sorte KMG 405				
	D	R	A ₁	H	l ₂	l ₁	A ₂	d ₁	L	d	0.5°		1°	2°	3°						
PM-2BC05-R0.50-M10	1.0	0.50	0.5°	1.0	10	2.5	6.1°	1.08	60	6	2	10.4	10.9	12.2	13.9	○					
PM-2BC05-R0.50-M15					15		5.1°	1.16	60		2	15.4	16.2	18.2	20.7	○					
PM-2BC05-R0.50-M20					20		4.4°	1.25	70		2	20.4	21.5	24.1	27.4	○					
PM-2BC05-R0.50-M25					25		3.8°	1.34	70		2	25.4	26.8	30.0	34.2	○					
PM-2BC05-R0.50-M30					30		3.4°	1.42	70		2	30.4	32.0	35.9	41.0	○					
PM-2BC10-R0.50-M10					10		6.2°	1.21	60		2	-	10.5	11.8	13.4	○					
PM-2BC10-R0.50-M15					15		5.2°	1.38	60		2	-	15.5	17.4	19.8	○					
PM-2BC10-R0.50-M20					20		4.5°	1.56	70		2	-	20.5	23.0	26.2	○					
PM-2BC10-R0.50-M25					25		3.9°	1.73	70		2	-	25.5	28.6	32.6	○					
PM-2BC10-R0.50-M30					30		3.5°	1.91	70		2	-	30.5	34.2	39.0	○					
PM-2BC10-R0.50-M35			35		3.2°		2.08	80	2		-	35.5	39.8	45.4	○						
PM-2BC15-R0.50-M10			10		6.3°		1.34	60	2		-	-	11.3	12.8	○						
PM-2BC15-R0.50-M15			15		5.3°		1.60	60	2		-	-	16.6	18.9	○						
PM-2BC15-R0.50-M20			20		4.6°		1.86	70	2		-	-	21.9	24.9	○						
PM-2BC20-R0.50-M15			15		5.4°		1.82	60	2		-	-	15.8	18.0	○						
PM-2BC20-R0.50-M20			20		4.7°		2.17	70	2		-	-	20.8	23.7	○						
PM-2BC30-R0.50-M20			20		5.0°		2.78	70	2		-	-	-	21.2	○						
PM-2BC50-R0.50-M20			20		5.7°		4.01	70	2		-	-	-	-	○						
PM-2BC05-R0.60-M12			1.2		0.60		0.5°	1.2	12		2.7	5.6°	1.31	60	6	2	12.4	13.1	14.6	16.6	○
PM-2BC05-R0.60-M24									24			3.8°	1.52	70		2	24.4	25.7	28.8	32.8	○
PM-2BC10-R0.60-M12	12	5.7°		1.47		60			2	-		12.5	14.0	15.9		○					
PM-2BC10-R0.60-M24	24	3.9°		1.89		70	2		-	24.5		27.5	31.3	○							
PM-2BC15-R0.60-M12	12	5.8°		1.63		60	2		-	-		13.4	15.2	○							
PM-2BC15-R0.60-M24	24	4.1°		2.26		70	2		-	-		26.2	29.8	○							

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
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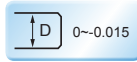
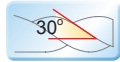
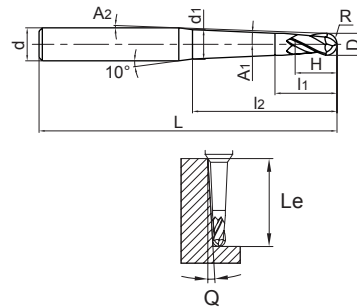
KMG405	Workpiece material Werkstückstoff											
	Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
			~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

● Ex Stock / ab Lager ○ On demand / auf Anfrage

2-flute conical neck ball nose end mills 2-Schneiden Mikro Kugelkopffräser mit konischem Hals



PM-2BC



Type Typ	Dimension(mm) Abmessungen										Teeth Zähne Z	Q Le				Grade Sorte KMG 405	
	D	R	A1	H	l2	l1	A2	d1	L	d		0.5°	1°	2°	3°		
PM-2BC05-R0.75-M10	1.5	0.75	0.5°	1.5	10	3	5.9°	1.57	60	6	2	10.4	10.9	12.2	13.8	○	
PM-2BC05-R0.75-M15					15		4.9°	1.65			60	2	15.4	16.2	18.1	20.6	○
PM-2BC05-R0.75-M30					30		3.2°	1.92			70	2	30.4	32.0	35.9	40.9	○
PM-2BC10-R0.75-M10	1.5	0.75	1.0°	1.5	10	3	6.0°	1.69	60	6	2	-	10.5	11.8	13.3	○	
PM-2BC10-R0.75-M15					15		5.0°	1.86			60	2	-	15.5	17.4	19.7	○
PM-2BC10-R0.75-M20					20		4.2°	2.04			70	2	-	20.5	23.0	26.1	○
PM-2BC10-R0.75-M30	1.5	0.75	1.0°	1.5	30	3	3.3°	2.39	70	6	2	-	30.5	34.2	39.0	○	
PM-2BC15-R0.75-M10					10		6.1°	1.81			60	2	-	-	11.3	12.8	○
PM-2BC15-R0.75-M15					15		5.1°	2.07			60	2	-	-	16.6	18.9	○
PM-2BC15-R0.75-M30	1.5	0.75	1.5°	1.5	30	3	3.4°	2.86	70	6	2	-	-	32.5	37.0	○	
PM-2BC05-R1.0-M20					20		3.9°	2.18			60	2	20.7	21.7	24.3	27.6	○
PM-2BC05-R1.0-M30					30		2.9°	2.36			70	2	30.7	32.3	36.2	no interference	○
PM-2BC05-R1.0-M40	2.0	1.0	0.5°	2.0	40	4	2.4°	2.53	80	6	2	40.7	42.8	48.0	no interference	○	
PM-2BC10-R1.0-M20					20		4.0°	2.46			60	2	-	20.8	23.3	26.4	○
PM-2BC10-R1.0-M25					25		3.4°	2.64			60	2	-	25.8	28.9	32.9	○
PM-2BC10-R1.0-M30	2.0	1.0	1.0°	2.0	30	4	3.0°	2.81	70	6	2	-	30.8	34.5	39.3	○	
PM-2BC10-R1.0-M35					35		2.7°	2.99			80	2	-	35.8	40.1	no interference	○
PM-2BC10-R1.0-M40					40		2.5°	3.16			80	2	-	40.8	45.8	no interference	○
PM-2BC10-R1.0-M50	2.0	1.0	1.5°	2.0	50	4	2.1°	3.51	90	6	2	-	50.8	57.0	no interference	○	
PM-2BC15-R1.0-M20					20		4.1°	2.74			60	2	-	-	22.3	25.3	○
PM-2BC15-R1.0-M30					30		3.1°	3.27			70	2	-	-	32.9	37.4	○
PM-2BC15-R1.0-M40	2.0	1.0	2°	2	40	4	2.6°	3.79	80	6	2	-	-	43.5	no interference	○	
PM-2BC20-R1.0-M30					30		3.3°	3.72			70	2	-	-	31.3	35.5	○
PM-2BC20-R1.0-M40					40		2.7°	4.42			80	2	-	-	41.3	no interference	○
PM-2BC30-R1.0-M30	2.0	1.0	3°	2	30	4	3.5°	4.63	70	6	2	-	-	-	31.8	○	
PM-2BC30-R1.0-M40					40		2.9°	5.68			80	2	-	-	-	no interference	○

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Material Overview · Material Übersicht

KMG405

		Workpiece material Werkstückstoff									
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓	✓	✓	✓	✓			✓	✓

Code key B231
ISO Kennzeichen

Cutting data B415-430
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

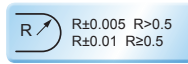
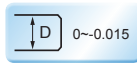
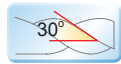
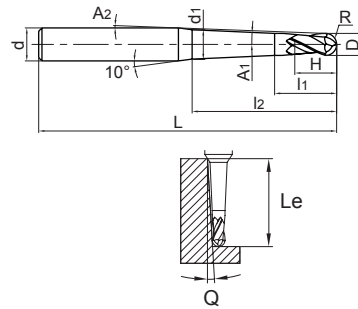
Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschafffräser

2-flute conical neck ball nose end mills 2-Schneiden Mikro Kugelkopffräser mit konischem Hals



PM-2BC



Type Typ	Dimension(mm) Abmessungen										Teeth Zähne Z	Q = Le				Grade Sorte KMG 405
	D	R	A1	H	l2	l1	A2	d1	L	d		0.5°	1°	2°	3°	
PM-2BC05-R1.5-M30	3.0	1.5	0.5°	3	30	6	2.4°	3.32	70	6	2	30.7	32.3	36.2	no interference	○
PM-2BC05-R1.5-M40					40		1.9°	3.50	80		2	40.7	42.9	no interference	no interference	○
PM-2BC05-R1.5-M50					50		1.6°	3.67	90		2	50.7	53.4	no interference	no interference	○
PM-2BC10-R1.5-M30			1.0°		30		2.5°	3.74	70		2	-	31.0	34.7	no interference	○
PM-2BC10-R1.5-M40					40		2.0°	4.09	80		2	-	41.0	45.9	no interference	○
PM-2BC10-R1.5-M50					50		1.7°	4.44	90		2	-	51.0	no interference	no interference	○
PM-2BC15-R1.5-M30			1.5°		30		2.6°	4.16	70		2	-	-	33.1	no interference	○
PM-2BC15-R1.5-M40					40		2.1°	4.69	80		2	-	-	43.8	no interference	○
PM-2BC15-R1.5-M50					50		1.7°	5.21	90		2	-	-	no interference	no interference	○
PM-2BC05-R2.0-M60			4.0		2.0		0.5°	4	60		7	1.0°	4.83	110	6	2
PM-2BC10-R2.0-M60	1.0°	60		1.0°		5.76	110	2	-	61.1		no interference	no interference	○		

B

Solid Carbide end mills
Vollhartmetallschafffräser

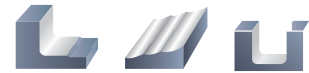
Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

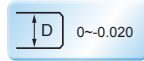
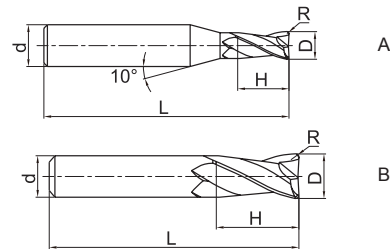
KMG405	Workpiece material Werkstückstoff											
	Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy wärmefeste Leg
			~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

● Ex Stock / ab Lager ○ On demand / auf Anfrage

2-flute radius end mills with straight shank 2-Schneiden Radius Schafffräser und Zylinderschaft



PM-2R



Type Typ	Dimension(mm) Abmessungen					Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 405
	D	R	d	H	L			
PM-2R-D1.0R0.2	1.0	0.2	4	3	50	2	A	●
PM-2R-D1.5R0.2	1.5	0.2	4	4	50	2	A	●
PM-2R-D2.0R0.2	2.0	0.2	4	6	50	2	A	●
PM-2R-D2.0R0.5	2.0	0.5	4	6	50	2	A	●
PM-2R-D2.5R0.2	2.5	0.2	4	8	50	2	A	●
PM-2R-D2.5R0.5	2.5	0.5	4	8	50	2	A	●
PM-2R-D3.0R0.2	3.0	0.2	4	8	50	2	A	●
PM-2R-D3.0R0.3	3.0	0.3	4	8	50	2	A	○
PM-2R-D3.0R0.5	3.0	0.5	4	8	50	2	A	●
PM-2R-D4.0R0.2	4.0	0.2	4	11	50	2	B	●
PM-2R-D4.0R0.3	4.0	0.3	4	11	50	2	B	●
PM-2R-D4.0R0.5	4.0	0.5	4	11	50	2	B	●
PM-2R-D4.0R1.0	4.0	1.0	4	11	50	2	B	●
PM-2R-D5.0R0.3	5.0	0.3	6	13	50	2	A	○
PM-2R-D5.0R0.5	5.0	0.5	6	13	50	2	A	●
PM-2R-D5.0R1.0	5.0	1.0	6	13	50	2	A	●
PM-2R-D6.0R0.3	6.0	0.3	6	16	50	2	B	○
PM-2R-D6.0R0.5	6.0	0.5	6	16	50	2	B	●
PM-2R-D6.0R1.0	6.0	1.0	6	16	50	2	B	●
PM-2R-D8.0R0.3	8.0	0.3	8	20	60	2	B	○
PM-2R-D8.0R0.5	8.0	0.5	8	20	60	2	B	●
PM-2R-D8.0R1.0	8.0	1.0	8	20	60	2	B	●
PM-2R-D10.0R0.5	10.0	0.5	10	25	75	2	B	●
PM-2R-D10.0R1.0	10.0	1.0	10	25	75	2	B	●
PM-2R-D10.0R1.5	10.0	1.5	10	25	75	2	B	●
PM-2R-D10.0R2.0	10.0	2.0	10	25	75	2	B	●
PM-2R-D12.0R0.5	12.0	0.5	12	30	75	2	B	●
PM-2R-D12.0R1.0	12.0	1.0	12	30	75	2	B	●
PM-2R-D12.0R1.5	12.0	1.5	12	30	75	2	B	●
PM-2R-D12.0R2.0	12.0	2.0	12	30	75	2	B	●

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
 ✓ = Suitable · Empfohlen

KMG405

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓	✓	✓	✓	✓			✓	✓

Code key B231
ISO Kennzeichen

Cutting data B415-430
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

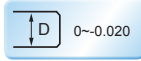
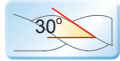
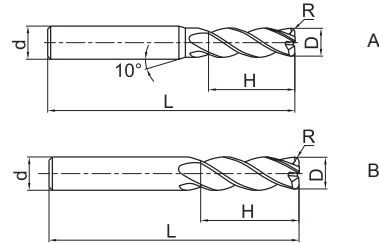
Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschafffräser

4-flute radius end mills with straight shank
4-Schneiden Radius Schafffräser und Zylinderschaft



PM-4R



Type Typ	Dimension(mm) Abmessungen					Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 405
	D	R	d	H	L			
PM-4R-D3.0R0.2	3.0	0.2	6	8	50	4	A	●
PM-4R-D4.0R0.3	4.0	0.3	6	10	50	4	A	●
PM-4R-D4.0R0.5	4.0	0.5	6	10	50	4	A	●
PM-4R-D5.0R0.5	5.0	0.5	6	13	50	4	A	●
PM-4R-D5.0R1.0	5.0	1.0	6	13	50	4	A	●
PM-4R-D6.0R0.5	6.0	0.5	6	16	50	4	B	●
PM-4R-D6.0R1.0	6.0	1.0	6	16	50	4	B	●
PM-4R-D8.0R0.5	8.0	0.5	8	20	60	4	B	●
PM-4R-D8.0R1.0	8.0	1.0	8	20	60	4	B	●
PM-4R-D10.0R0.5	10.0	0.5	10	25	75	4	B	●
PM-4R-D10.0R1.0	10.0	1.0	10	25	75	4	B	●
PM-4R-D10.0R2.0	10.0	2.0	10	25	75	4	B	●
PM-4R-D10.0R3.0	10.0	3.0	10	25	75	4	B	●
PM-4R-D12.0R0.5	12.0	0.5	12	30	75	4	B	●
PM-4R-D12.0R1.0	12.0	1.0	12	30	75	4	B	●
PM-4R-D12.0R2.0	12.0	2.0	12	30	75	4	B	●
PM-4R-D12.0R3.0	12.0	3.0	12	30	75	4	B	●

B

Solid Carbide end mills
Vollhartmetallschafffräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG405	Workpiece material Werkstückstoff											
	Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
			~40HRC	~50HRC	~55HRC	~68HRC						
	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓

● Ex Stock / ab Lager ○ On demand / auf Anfrage

4-flute high feed end mills 4-Schneiden "High Feed" VHM-Fräser

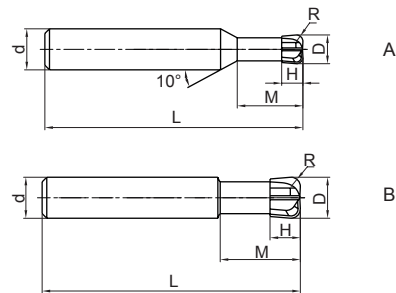


PM-4H



Coated
Nano-AlTiN

±D D~-0.030



Type Typ	Dimension(mm) Abmessungen							Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 405
	D	R	d	d ₁	H	M	L			
PM-4H-D3.0R0.8	3.0	0.8	6	2.7	1.2	8	50	4	A	●
PM-4H-D4.0R1.0	4.0	1.0	6	3.6	1.6	10	50	4	A	●
PM-4H-D5.0R1.2	5.0	1.2	6	4.5	2	12.5	50	4	A	●
PM-4H-D6.0R1.0	6.0	1.0	6	5.4	2.5	12	50	4	B	●
PM-4H-D6.0R1.5	6.0	1.5	6	5.4	2.5	12	50	4	B	●
PM-4H-D8.0R1.0	8.0	1.0	8	7.0	3.5	16	60	4	B	●
PM-4H-D8.0R2.0	8.0	2.0	8	7.0	3.5	16	60	4	B	●
PM-4H-D10.0R1.0	10.0	1.0	10	9.0	4	20	75	4	B	●
PM-4H-D10.0R2.0	10.0	2.0	10	9.0	4	20	75	4	B	●
PM-4H-D12.0R2.0	12.0	2.0	12	11.0	5	24	75	4	B	●
PM-4H-D12.0R3.0	12.0	3.0	12	11.0	5	24	75	4	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG405

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓	✓		✓	✓			✓	✓

Code key
ISO Kennzeichen

B231

Cutting data
Schnittdaten

B415-430

Graphics identification & application
Graphische Werkzeug- & Anwendungsbeschr.

B232

Order form for non-standard products
Bestellformular für Sonderwerkzeuge

B497-B498

GM

Series end mills for general machining

Serie Eckfräser für allgemeine Anwendung

Wide application: high efficiency machining of common steel up to light hardend steel.

Optimized structure: reasonable combination of sharp cutting edge and tool strength makes cutting much light and fast, achieving longer tool-life.

Completes Programm (application): covers applications from roughing with high metal removal rate to finish machining with high surface quality.

Completes Programm (dimension): the minimum diameter of 0.3 mm, easily complete machining even though the micro part of workpiece.

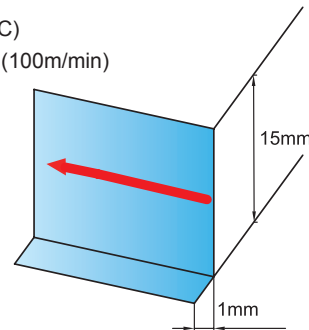
Großer Anwendungsbereich: effiziente Bearbeitung von normalem bis zu leicht gehärtetem Stahl.

Optimiertes Design: Scharfe Schneide mit hoher Kantenstabilität. Für leichte und schnelle Bearbeitung mit hoher Standzeit.

komplettes Programm (Anwendung): vom Schruppen bei hoher Zerspanungsleistung bis Schlichten bei exzellenter Werkstückqualität.

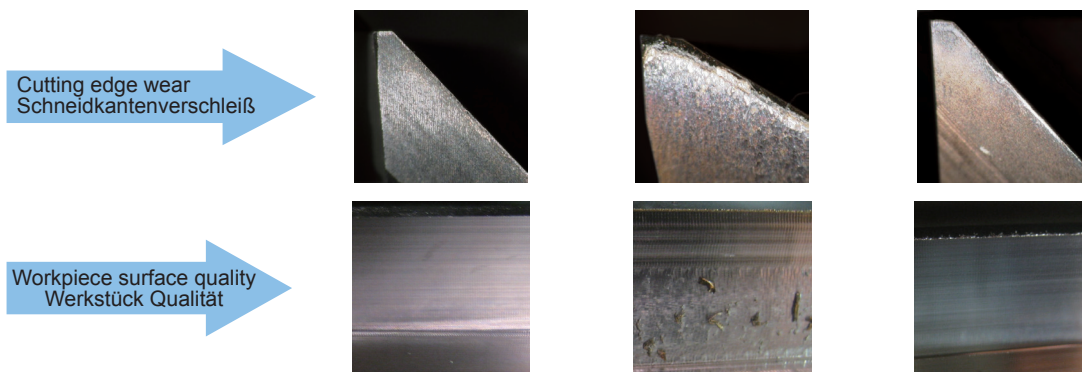
komplettes Programm (Abmessung): ab Durchmesser 0,3 mm für die Bearbeitung von kleinen Werkstücken.

- Type / Typ : GM-4E-D10.0
- Size / Größe : Ø10.0mm
- Workpiece material / Werkstückstoff : NAK80 (40HRC)
- Rotating speed / Schnittgeschwindigkeit : 3200r/min (100m/min)
- Feed / Vorschub : 640mm/r (0.2mm/r)
- Axial cutting depth
Axiale Zustellung: $A_p=15\text{mm}$
- Radial cutting depth
Radiale Zustellung: $A_e=1.0\text{mm}$
- Cutting style / Bearbeitung: side milling / Eckfräsen
- Cooling system / Kühlsystem : air blow / Luft
- Machine / Maschine: MIKRON UCP 1000



■ Cutting edge wear and surface quality of workpiece · Schneidkantenverschleiß und Werkstück Oberflächenqualität

End mills · Eckfräser	GM-4E-D10.0	Similar product of company A Ähnliches Produkt Firma A	Similar product of company B Ähnliches Produkt Firma B
Cutting length · Schnittlänge	60m	20m	60m

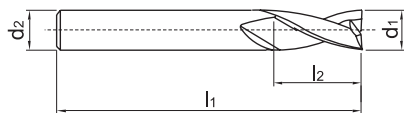
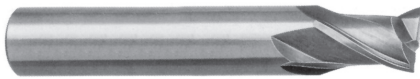


DIN 6527K 2-flute slotting end mills · DIN 6527K 2-Schneiden VHM Langlochfräser



5501R302GM

YK30F: Ultra-fine carbide grade / *Ultrafeinkornhartmetall*
 KMG303: nano TiAlN coated ultra-fine carbide / *nano TiAlN beschichtetes Ultrafeinkornhartmetall*



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne z	Application Anwendung Grade Sorte	P M K	
	d1(e8)	d2(h6)	l2	l1			YK30F	KMG303
5501R302GM-0300	3.00	6	4	50	2		●	●
5501R302GM-0400	4.00	6	5	54	2		●	●
5501R302GM-0500	5.00	6	6	54	2		●	●
5501R302GM-0600	6.00	6	7	54	2		●	●
5501R302GM-0800	8.00	8	9	58	2		●	●
5501R302GM-1000	10.00	10	11	66	2		●	●
5501R302GM-1200	12.00	12	12	73	2		●	●
5501R302GM-1400	14.00	14	14	75	2		●	●
5501R302GM-1600	16.00	16	16	82	2		●	●
5501R302GM-1800	18.00	18	18	84	2		●	●
5501R302GM-2000	20.00	20	20	92	2		●	●
Art. Group No. / Produktgruppe Nr. :							021140	021130

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
 ✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

Code key **B229**
ISO Kennzeichen

Cutting data **B387-414**
Schnittdaten

Graphics identification & application **B230**
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products **B497-498**
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

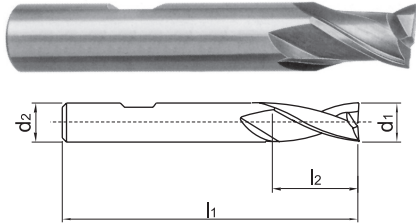
Solid Carbide end mills · Vollhartmetallschaftfräser

DIN 6527K 2-flute slotting end mills · DIN 6527K 2-Schneiden VHM Langlochfräser



5601R302GM

YK30F: Ultra-fine carbide grade / Ultrafeinkornhartmetall
KMG303: nano TiAlN coated ultra-fine carbide / nano TiAlN beschichtetes Ultrafeinkornhartmetall



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne	Application Anwendung	P M K	
	d ₁ (e ₈)	d ₂ (h ₆)	l ₂	l ₁			Grade Sorte	YK30F
5601R302GM-0300	3.00	6	4	50	2		○	●
5601R302GM-0400	4.00	6	5	54	2		○	●
5601R302GM-0500	5.00	6	6	54	2		○	●
5601R302GM-0600	6.00	6	7	54	2		○	●
5601R302GM-0800	8.00	8	9	58	2		○	●
5601R302GM-1000	10.00	10	11	66	2		○	●
5601R302GM-1200	12.00	12	12	73	2		○	●
5601R302GM-1400	14.00	14	14	75	2		○	●
5601R302GM-1600	16.00	16	16	82	2		○	●
5601R302GM-1800	18.00	18	18	84	2		○	●
5601R302GM-2000	20.00	20	20	92	2		○	●
Art. Group No. / Produktgruppe Nr. :							021140	021130

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

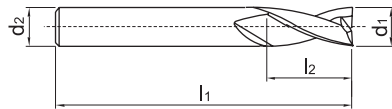
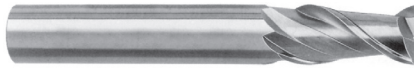
● Ex Stock / ab Lager ○ On demand / auf Anfrage

DIN 6527L 2-flute slotting end mills · DIN 6527L 2-Schneiden VHM Langlochfräser



5502R302GM

YK30F: Ultra-fine carbide grade / *Ultrafeinkornhartmetall*
 KMG303: nano TiAlN coated ultra-fine carbide / *nano TiAlN beschichtetes Ultrafeinkornhartmetall*



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne	Application Anwendung	P M K	
	d1(e8)	d2(h6)	l2	l1			Grade Sorte	YK30F
5502R302GM-0100	1.00	3	2	38	2		○	●
5502R302GM-0150	1.50	3	3	38	2		○	●
5502R302GM-0200	2.00	6	6	57	2		○	●
5502R302GM-0250	2.50	6	7	57	2		○	●
5502R302GM-0280	2.80	6	7	57	2		○	●
5502R302GM-0300	3.00	6	7	57	2		○	●
5502R302GM-0350	3.50	6	7	57	2		○	●
5502R302GM-0380	3.80	6	8	57	2		○	●
5502R302GM-0400	4.00	6	8	57	2		○	●
5502R302GM-0450	4.50	6	8	57	2		○	●
5502R302GM-0480	4.80	6	8	57	2		○	●
5502R302GM-0500	5.00	6	10	57	2		○	●
5502R302GM-0550	5.50	6	10	57	2		○	●
5502R302GM-0575	5.75	6	10	57	2		○	●
5502R302GM-0600	6.00	6	10	57	2		○	●
5502R302GM-0675	6.75	8	13	63	2		○	○
5502R302GM-0700	7.00	8	13	63	2		○	●
5502R302GM-0750	7.50	8	16	63	2		○	●
5502R302GM-0775	7.75	8	16	63	2		○	●
5502R302GM-0800	8.00	8	16	63	2		○	●
5502R302GM-0870	8.70	10	16	72	2		○	●
5502R302GM-0900	9.00	10	16	72	2		○	●
5502R302GM-0950	9.50	10	16	72	2			○
5502R302GM-1000	10.00	10	19	72	2		○	●
5502R302GM-1100	11.00	12	22	83	2			●
5502R302GM-1170	11.70	12	22	83	2		○	●
5502R302GM-1200	12.00	12	22	83	2		○	●
5502R302GM-1370	13.70	14	22	83	2		○	●
5502R302GM-1400	14.00	14	22	83	2		○	●
5502R302GM-1500	15.00	16	26	92	2			●
5502R302GM-1570	15.70	16	26	92	2		○	●
5502R302GM-1600	16.00	16	26	92	2		○	●
5502R302GM-1700	17.00	18	26	92	2			○
5502R302GM-1800	18.00	18	26	92	2		○	●
5502R302GM-2000	20.00	20	32	104	2		○	●

Art. Group No. / Produktgruppe Nr. : 021140 021130

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Code key B229
ISO Kennzeichen

Cutting data B387-414
Schnittdaten

Graphics identification & application B230
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products B497-498
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

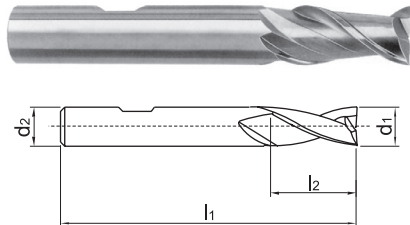
Solid Carbide end mills · Vollhartmetallschaftfräser

DIN 6527L 2-flute slotting end mills · DIN 6527L 2-Schneiden VHM Langlochfräser



5602R302GM

YK30F: Ultra-fine carbide grade / *Ultrafeinkornhartmetall*
KMG303: nano TiAlN coated ultra-fine carbide / *nano TiAlN beschichtetes Ultrafeinkornhartmetall*

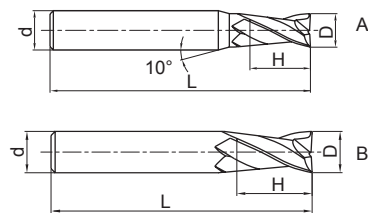
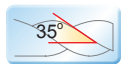


Type Typ	Dimension(mm) Abmessungen				Teeth Zähne	Application Anwendung	P M K	
	d ₁ (e ₈)	d ₂ (h ₆)	l ₂	l ₁			z	Grade Sorte
5602R302GM-0200	2.00	6	6	57	2		○	●
5602R302GM-0250	2.50	6	7	57	2		○	●
5602R302GM-0280	2.80	6	7	57	2		○	●
5602R302GM-0300	3.00	6	7	57	2		○	●
5602R302GM-0350	3.50	6	7	57	2		○	●
5602R302GM-0380	3.80	6	8	57	2		○	●
5602R302GM-0400	4.00	6	8	57	2		○	●
5602R302GM-0450	4.50	6	8	57	2		○	●
5602R302GM-0480	4.80	6	8	57	2		○	●
5602R302GM-0500	5.00	6	10	57	2		○	●
5602R302GM-0550	5.50	6	10	57	2		○	●
5602R302GM-0575	5.75	6	10	57	2		○	●
5602R302GM-0600	6.00	6	10	57	2		○	●
5602R302GM-0675	6.75	8	13	63	2		○	○
5602R302GM-0700	7.00	8	13	63	2		○	●
5602R302GM-0750	7.50	8	16	63	2		○	●
5602R302GM-0775	7.75	8	16	63	2		○	●
5602R302GM-0800	8.00	8	16	63	2		○	●
5602R302GM-0870	8.70	10	16	72	2		○	●
5602R302GM-0900	9.00	10	16	72	2		○	●
5602R302GM-1000	10.00	10	19	72	2		○	●
5602R302GM-1170	11.70	12	22	83	2		○	●
5602R302GM-1200	12.00	12	22	83	2		○	●
5602R302GM-1370	13.70	14	22	83	2		○	●
5602R302GM-1400	14.00	14	22	83	2		○	●
5602R302GM-1570	15.70	16	26	92	2		○	●
5602R302GM-1600	16.00	16	26	92	2		○	●
5602R302GM-1800	18.00	18	26	92	2		○	●
5602R302GM-2000	20.00	20	32	104	2		○	●
Art. Group No. / Produktgruppe Nr. :							021140	021130

● Ex Stock / ab Lager ○ On demand / auf Anfrage

GM-2E

2-flute flattened end mills with straight shank
2-Schneiden Eckfräser mit Zylinderschaft



Type Typ	Dimension (mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 303
	D	d	H	L			
GM-2E-D1.0S	1.0	4	3	50	2	A	•
GM-2E-D1.5S	1.5	4	4	50	2	A	•
GM-2E-D2.0S	2.0	4	6	50	2	A	•
GM-2E-D2.5S	2.5	4	8	50	2	A	•
GM-2E-D3.0S	3.0	4	8	50	2	A	•
GM-2E-D4.0S	4.0	4	11	50	2	B	•
GM-2E-D1.0	1.0	6	3	50	2	A	•
GM-2E-D1.5	1.5	6	4	50	2	A	•
GM-2E-D2.0	2.0	6	6	50	2	A	•
GM-2E-D2.5	2.5	6	8	50	2	A	•
GM-2E-D3.0	3.0	6	8	50	2	A	•
GM-2E-D3.5	3.5	6	10	50	2	A	•
GM-2E-D4.0	4.0	6	11	50	2	A	•
GM-2E-D4.5	4.5	6	11	50	2	A	•
GM-2E-D5.0	5.0	6	13	50	2	A	•
GM-2E-D5.5	5.5	6	16	50	2	A	•
GM-2E-D6.0	6.0	6	16	50	2	B	•
GM-2E-D7.0	7.0	8	20	60	2	A	•
GM-2E-D8.0	8.0	8	20	60	2	B	•
GM-2E-D9.0	9.0	10	22	75	2	A	•
GM-2E-D10.0	10.0	10	25	75	2	B	•
GM-2E-D11.0	11.0	12	26	75	2	A	•
GM-2E-D12.0	12.0	12	30	75	2	B	•
GM-2E-D14.0	14.0	14	32	75	2	B	•
GM-2E-D16.0	16.0	16	45	100	2	B	•
GM-2E-D18.0	18.0	18	45	100	2	B	•
GM-2E-D20.0	20.0	20	45	100	2	B	•

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

Code key B231
ISO Kennzeichen

Cutting data B431-456
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

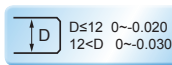
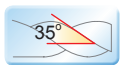
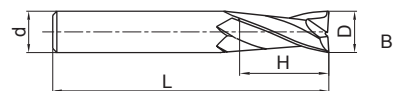
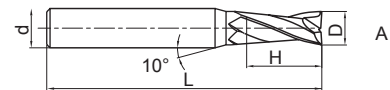
Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

GM-2EL series for general machining · **GM-2EL** Serie für allgemeine Bearbeitung

2-flute flattened end mills with straight shank and long cutting edge
2-Schneiden Eckfräser mit langer Schneide und Zylinderschaft



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 303
	D	d	H	L			
GM-2EL-D3.0	3.0	6	12	75	2	A	●
GM-2EL-D4.0	4.0	6	15	75	2	A	●
GM-2EL-D5.0	5.0	6	20	75	2	A	●
GM-2EL-D6.0	6.0	6	20	75	2	B	●
GM-2EL-D8.0	8.0	8	25	100	2	B	●
GM-2EL-D10.0	10.0	10	30	100	2	B	●
GM-2EL-D12.0	12.0	12	35	100	2	B	●
GM-2EL-D14.0	14.0	14	40	100	2	B	●
GM-2EL-D16.0	16.0	16	50	150	2	B	●
GM-2EL-D20.0	20.0	20	55	150	2	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

● Ex Stock / ab Lager ○ On demand / auf Anfrage

GM-2EX

2-flute flattened end mills with straight shank and very long cutting edge
2-Schneiden Eckfräser mit extra langer Schneide und Zylinderschaft



Type Typ	Dimension (mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 303
	D	d	H	L			
GM-2EX-D3.0	3.0	6	20	75	2	A	○
GM-2EX-D4.0	4.0	6	25	75	2	A	○
GM-2EX-D5.0	5.0	6	30	75	2	A	○
GM-2EX-D6.0	6.0	6	30	75	2	B	○
GM-2EX-D8.0	8.0	8	40	100	2	B	○
GM-2EX-D10.0	10.0	10	50	110	2	B	○
GM-2EX-D12.0	12.0	12	50	110	2	B	○
GM-2EX-D16.0	16.0	16	70	150	2	B	○
GM-2EX-D20.0	20.0	20	75	150	2	B	○

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

Code key B231
ISO Kennzeichen

Cutting data B431-456
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

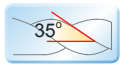
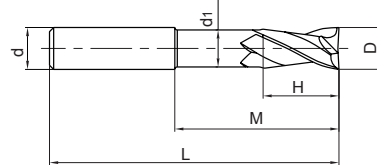
Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

GM-2EFP

2-flute end mills with straight shank and short cutting edge and long neck
2-Schneiden Eckfräser mit kurzer Schneide und Zylinderschaft



Type Typ	Dimension(mm) Abmessungen					Geometry Ausführung	Teeth · Zähne Z	Grade Sorte KMG 303
	D	d	H	L	d1			
GM-2EFP-D6.0	6.0	6	9	30	5.8	75	2	●
GM-2EFP-D8.0	8.0	8	12	40	7.8	100	2	●
GM-2EFP-D10.0	10.0	10	15	50	9.6	100	2	●
GM-2EFP-D12.0	12.0	12	18	50	11.5	100	2	●
GM-2EFP-D16.0	16.0	16	24	50	15.5	150	2	○
GM-2EFP-D20.0	20.0	20	30	60	19.5	150	2	○

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

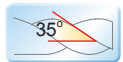
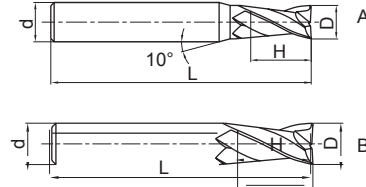
KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

● Ex Stock / ab Lager ○ On demand / auf Anfrage

GM-2F

2-flute flattened end mills with straight shank
2-Schneiden Eckfräser mit Zylinderschaft



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 303
	D	d	H	L			
GM-2F-D1.0S	1.0	4	3	50	2	A	○
GM-2F-D1.5S	1.5	4	4	50	2	A	○
GM-2F-D2.0S	2.0	4	6	50	2	A	○
GM-2F-D2.5S	2.5	4	8	50	2	A	○
GM-2F-D3.0S	3.0	4	8	50	2	A	○
GM-2F-D4.0S	4.0	4	11	50	2	B	○
GM-2F-D1.0	1.0	6	3	50	2	A	○
GM-2F-D1.5	1.5	6	4	50	2	A	○
GM-2F-D2.0	2.0	6	6	50	2	A	○
GM-2F-D2.5	2.5	6	8	50	2	A	○
GM-2F-D3.0	3.0	6	8	50	2	A	○
GM-2F-D3.5	3.5	6	10	50	2	A	○
GM-2F-D4.0	4.0	6	11	50	2	A	○
GM-2F-D4.5	4.5	6	11	50	2	A	○
GM-2F-D5.0	5.0	6	13	50	2	A	○
GM-2F-D5.5	5.5	6	16	50	2	A	○
GM-2F-D6.0	6.0	6	16	50	2	B	○
GM-2F-D7.0	7.0	8	20	60	2	A	○
GM-2F-D8.0	8.0	8	20	60	2	B	○
GM-2F-D9.0	9.0	10	22	75	2	A	○
GM-2F-D10.0	10.0	10	25	75	2	B	○
GM-2F-D11.0	11.0	12	26	75	2	A	○
GM-2F-D12.0	12.0	12	30	75	2	B	○
GM-2F-D14.0	14.0	14	32	75	2	B	○
GM-2F-D16.0	16.0	16	45	100	2	B	○
GM-2F-D18.0	18.0	18	45	100	2	B	○
GM-2F-D20.0	20.0	20	45	100	2	B	○

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

Code key B231
ISO Kennzeichen

Cutting data B431-456
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

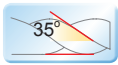
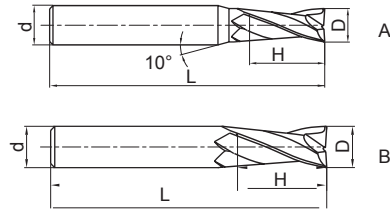
Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

GM-2FL

2-flute end mills with straight shank and long cutting edge and long neck
2-Schneiden Eckfräser mit langer Schneide und Zylinderschaft



Type Typ	Dimension (mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 303
	D	d	H	L			
GM-2FL-D3.0	3.0	6	12	75	2	A	○
GM-2FL-D4.0	4.0	6	15	75	2	A	○
GM-2FL-D5.0	5.0	6	20	75	2	A	○
GM-2FL-D6.0	6.0	6	20	75	2	B	○
GM-2FL-D8.0	8.0	8	25	100	2	B	○
GM-2FL-D10.0	10.0	10	30	100	2	B	○
GM-2FL-D12.0	12.0	12	35	100	2	B	○
GM-2FL-D14.0	14.0	14	40	100	2	B	○
GM-2FL-D16.0	16.0	16	50	150	2	B	○
GM-2FL-D20.0	20.0	20	55	150	2	B	○

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

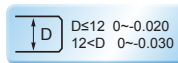
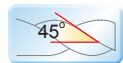
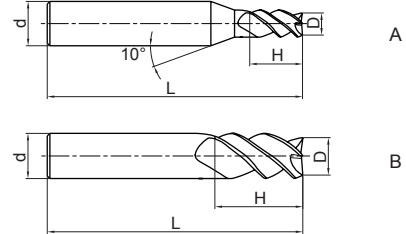
KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

● Ex Stock / ab Lager ○ On demand / auf Anfrage

GM-3E

3-flute flattened end mills with straight shank
3-Schneiden Eckfräser mit Zylinderschaft



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 303
	D	d	H	L			
GM-3E-D1.0S	1.0	4	3	50	3	A	○
GM-3E-D1.5S	1.5	4	4	50	3	A	○
GM-3E-D2.0S	2.0	4	6	50	3	A	○
GM-3E-D2.5S	2.5	4	8	50	3	A	○
GM-3E-D3.0S	3.0	4	8	50	3	A	○
GM-3E-D4.0S	4.0	4	11	50	3	B	○
GM-3E-D1.0	1.0	6	3	50	3	A	○
GM-3E-D1.5	1.5	6	4	50	3	A	○
GM-3E-D2.0	2.0	6	6	50	3	A	○
GM-3E-D2.5	2.5	6	8	50	3	A	○
GM-3E-D3.0	3.0	6	8	50	3	A	○
GM-3E-D3.5	3.5	6	10	50	3	A	○
GM-3E-D4.0	4.0	6	11	50	3	A	○
GM-3E-D4.5	4.5	6	11	50	3	A	○
GM-3E-D5.0	5.0	6	13	50	3	A	○
GM-3E-D5.5	5.5	6	16	50	3	A	○
GM-3E-D6.0	6.0	6	16	50	3	B	○
GM-3E-D7.0	7.0	8	20	60	3	A	○
GM-3E-D8.0	8.0	8	20	60	3	B	○
GM-3E-D9.0	9.0	10	22	75	3	A	○
GM-3E-D10.0	10.0	10	25	75	3	B	○
GM-3E-D11.0	11.0	12	26	75	3	A	○
GM-3E-D12.0	12.0	12	30	75	3	B	○
GM-3E-D14.0	14.0	14	32	75	3	B	○
GM-3E-D16.0	16.0	16	45	100	3	B	○
GM-3E-D18.0	18.0	18	45	100	3	B	○
GM-3E-D20.0	20.0	20	45	100	3	B	○

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

Code key
ISO Kennzeichen

B231

Cutting data
Schnittdaten

B431-456

Graphics identification & application
Graphische Werkzeug- & Anwendungsbeschr.

B232

Order form for non-standard products
Bestellformular für Sonderwerkzeuge

B497-B498

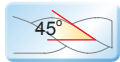
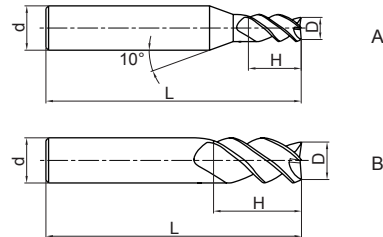
B273

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

GM-3EL

3-flute end mills with straight shank and long cutting edge and long neck
3-Schneiden Eckfräser mit langer Schneide und Zylinderschaft



Type Typ	Dimension (mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 303
	D	d	H	L			
GM-3EL-D3.0	3.0	6	12	75	3	A	○
GM-3EL-D4.0	4.0	6	15	75	3	A	○
GM-3EL-D5.0	5.0	6	20	75	3	A	○
GM-3EL-D6.0	6.0	6	20	75	3	B	○
GM-3EL-D8.0	8.0	8	25	100	3	B	○
GM-3EL-D10.0	10.0	10	30	100	3	B	○
GM-3EL-D12.0	12.0	12	35	100	3	B	○
GM-3EL-D14.0	14.0	14	40	100	3	B	○
GM-3EL-D16.0	16.0	16	50	150	3	B	○
GM-3EL-D20.0	20.0	20	55	150	3	B	○

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG303	Workpiece material Werkstückstoff											
	Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
			~40HRC	~50HRC	~55HRC	~68HRC						
	✓	✓	✓	✓			✓	✓				

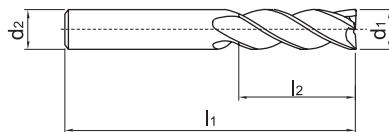
● Ex Stock / ab Lager ○ On demand / auf Anfrage

DIN 6527K 3-flute slotting end mills · DIN 6527K 3-Schneiden VHM Langlochfräser



5501R303GM

YK30F: Ultra-fine carbide grade / *Ultrafeinkornhartmetall*
 KMG303: nano TiAlN coated ultra-fine carbide / *nano TiAlN beschichtetes Ultrafeinkornhartmetall*



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne	Application Anwendung	P M K		
	d ₁ (e8)	d ₂ (h6)	l ₂	l ₁			Grade Sorte	YK30F	KMG303
5501R303GM-0300	3.00	6	4	50	3		○	●	
5501R303GM-0400	4.00	6	5	54	3		○	●	
5501R303GM-0500	5.00	6	6	54	3		○	●	
5501R303GM-0600	6.00	6	7	54	3		○	●	
5501R303GM-0800	8.00	8	9	58	3		○	●	
5501R303GM-1000	10.00	10	11	66	3		○	●	
5501R303GM-1200	12.00	12	12	73	3		○	●	
5501R303GM-1400	14.00	14	14	75	3		○	●	
5501R303GM-1600	16.00	16	16	82	3		○	●	
5501R303GM-1800	18.00	18	18	84	3		○	●	
5501R303GM-2000	20.00	20	20	92	3		○	●	
Art. Group No. / Produktgruppe Nr. :							021140	021130	

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
 ✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

Code key B229
ISO Kennzeichen

Cutting data B387-414
Schnittdaten

Graphics identification & application B230
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products B497-498
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

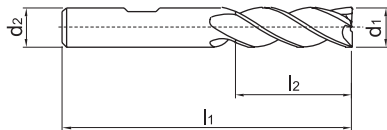
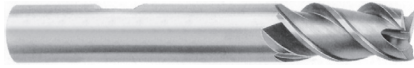
Solid Carbide end mills · Vollhartmetallschaftfräser

DIN 6527K 3-flute slotting end mills · DIN 6527K 3-Schneiden VHM Langlochfräser



5601R303GM

YK30F: Ultra-fine carbide grade / *Ultrafeinkornhartmetall*
 KMG303: nano TiAlN coated ultra-fine carbide / *nano TiAlN beschichtetes Ultrafeinkornhartmetall*



B

Solid Carbide end mills
Vollhartmetallschaftfräser

Type Typ	Dimension(mm) Abmessungen				Teeth Zähne z	Application Anwendung Grade Sorte	P M K	
	d ₁ (e ₈)	d ₂ (h ₆)	l ₂	l ₁			YK30F	KMG303
5601R303GM-0300	3.00	6	4	50	3		○	●
5601R303GM-0400	4.00	6	5	54	3		○	●
5601R303GM-0500	5.00	6	6	54	3		○	●
5601R303GM-0600	6.00	6	7	54	3		○	●
5601R303GM-0800	8.00	8	9	58	3		○	●
5601R303GM-1000	10.00	10	11	66	3		○	●
5601R303GM-1200	12.00	12	12	73	3		○	●
5601R303GM-1400	14.00	14	14	75	3		○	●
5601R303GM-1600	16.00	16	16	82	3		○	●
5601R303GM-1800	18.00	18	18	84	3		○	●
5601R303GM-2000	20.00	20	20	92	3		○	●
Art. Group No. / Produktgruppe Nr. :							021140	021130

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
 ✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

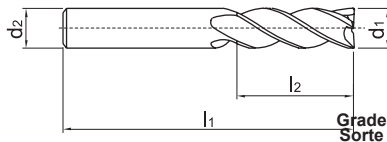
● Ex Stock / ab Lager ○ On demand / auf Anfrage

DIN 6527L 3-flute slotting end mills · DIN 6527L 3-Schneiden VHM Langlochfräser



5502R303GM

YK30F: Ultra-fine carbide grade / *Ultrafeinkornhartmetall*
 KMG303: nano TiAlN coated ultra-fine carbide / *nano TiAlN beschichtetes Ultrafeinkornhartmetall*



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne	Application Anwendung	P M K	
	d ₁ (h ₁₀)	d ₂ (h ₆)	l ₂	l ₁			Grade Sorte	YK30F
5502R303GM-0300	3.00	6	7	57	3		○	●
5502R303GM-0400	4.00	6	8	57	3		○	●
5502R303GM-0500	5.00	6	10	57	3		○	●
5502R303GM-0600	6.00	6	10	57	3		○	●
5502R303GM-0800	8.00	8	16	63	3		○	●
5502R303GM-1000	10.00	10	19	72	3		○	●
5502R303GM-1200	12.00	12	22	83	3		○	●
5502R303GM-1400	14.00	14	22	83	3		○	●
5502R303GM-1600	16.00	16	26	92	3		○	●
5502R303GM-1800	18.00	18	26	92	3		○	●
5502R303GM-2000	20.00	20	32	104	3		○	●
Art. Group No. / Produktgruppe Nr. :							021140	021130

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
 ✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

Code key B229
ISO Kennzeichen

Cutting data B387-414
Schnittdaten

Graphics identification & application B230
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products B497-498
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

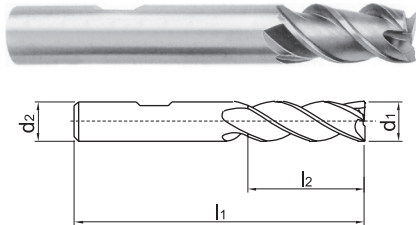
Solid Carbide end mills · Vollhartmetallschaftfräser

DIN 6527L 3-flute slotting end mills · DIN 6527L 3-Schneiden VHM Langlochfräser



5602R303GM

YK30F: Ultra-fine carbide grade / Ultrafeinkornhartmetall
KMG303: nano TiAlN coated ultra-fine carbide / nano TiAlN beschichtetes Ultrafeinkornhartmetall



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne	Application Anwendung	P M K	
	d ₁ (h ₁₀)	d ₂ (h ₆)	l ₂	l ₁			Grade Sorte	YK30F
5602R303GM-0300	3.00	6	7	57	3		○	●
5602R303GM-0400	4.00	6	8	57	3		○	●
5602R303GM-0500	5.00	6	10	57	3		○	●
5602R303GM-0600	6.00	6	10	57	3		○	●
5602R303GM-0800	8.00	8	16	63	3		○	●
5602R303GM-1000	10.00	10	19	72	3		○	●
5602R303GM-1200	12.00	12	22	83	3		○	●
5602R303GM-1400	14.00	14	22	83	3		○	●
5602R303GM-1600	16.00	16	26	92	3		○	●
5602R303GM-1800	18.00	18	26	92	3		○	●
5602R303GM-2000	20.00	20	32	104	3		○	●
Art. Group No. / Produktgruppe Nr. :							021140	021130

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

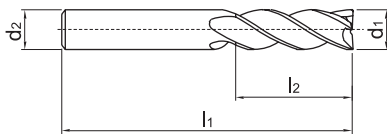
● Ex Stock / ab Lager ○ On demand / auf Anfrage

DIN 6527L 3-flute end mills · DIN 6527L 3-Schneiden VHM Schaftfräser



5502R453GM

KMG405: nano TiAlN coated ultra-fine carbide / nano TiAlN beschichtetes Ultrafeinkornhartmetall



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne	Application Anwendung	P M K S				
	d ₁ (h ₁₀)	d ₂ (h ₆)	l ₂	l ₁			z	Grade Sorte	KMG405		
5502R453GM-0300	3.00	6	7	57	3			●			
5502R453GM-0400	4.00	6	8	57	3			●			
5502R453GM-0500	5.00	6	10	57	3			●			
5502R453GM-0600	6.00	6	10	57	3			●			
5502R453GM-0800	8.00	8	16	63	3			●			
5502R453GM-1000	10.00	10	19	72	3			●			
5502R453GM-1200	12.00	12	22	83	3			●			
5502R453GM-1400	14.00	14	22	83	3			●			
5502R453GM-1600	16.00	16	26	92	3			●			
5502R453GM-1800	18.00	18	26	92	3			●			
5502R453GM-2000	20.00	20	32	104	3			●			

Art. Group No. / Produktgruppe Nr. :

021130

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG405

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

Code key
ISO Kennzeichen

B229

Cutting data
Schnittdaten

B387-414

Graphics identification & application
Graphische Werkzeug- & Anwendungsbeschr.

B230

Order form for non-standard products
Bestellformular für Sonderwerkzeuge

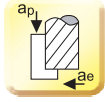
B497-498

B279

Milling · Fräsen

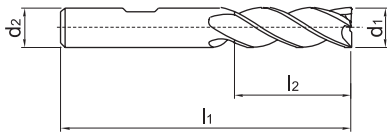
Solid Carbide end mills · Vollhartmetallschaftfräser

DIN 6527L 3-flute end mills · DIN 6527L 3-Schneiden VHM Schaftfräser



5602R453GM

KMG405: nano TiAlN coated ultra-fine carbide / nano TiAlN beschichtetes Ultrafeinkornhartmetall
KMG303: nano TiAlN coated ultra-fine carbide / nano TiAlN beschichtetes Ultrafeinkornhartmetall



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne	Application Anwendung	P M K S	
	d ₁ (h ₁₀)	d ₂ (h ₆)	l ₂	l ₁			Grade Sorte	KMG303
5602R453GM-0300	3.00	6	7	57	3		●	●
5602R453GM-0400	4.00	6	8	57	3		●	●
5602R453GM-0500	5.00	6	10	57	3		●	●
5602R453GM-0600	6.00	6	10	57	3		●	●
5602R453GM-0800	8.00	8	16	63	3		●	●
5602R453GM-1000	10.00	10	19	72	3		●	●
5602R453GM-1200	12.00	12	22	83	3		●	●
5602R453GM-1400	14.00	14	22	83	3		●	●
5602R453GM-1600	16.00	16	26	92	3		●	●
5602R453GM-1800	18.00	18	26	92	3		●	●
5602R453GM-2000	20.00	20	32	104	3		●	●

Art. Group No. / Produktgruppe Nr. :

021130

Material Overview · Material Übersicht

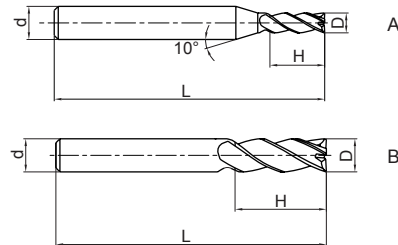
✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG405	Workpiece material Werkstückstoff											
	Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
			~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓			✓	✓	

● Ex Stock / ab Lager ○ On demand / auf Anfrage

GM-4E-G

4-flute flattened end mills with straight shank
4-Schneiden Eckfräser mit Zylinderschaft



Type Typ	Dimension (mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 303
	D	d	H	L			
GM-4E-D1.0S-G	1.0	4	3	50	4	A	•
GM-4E-D1.5S-G	1.5	4	4	50	4	A	•
GM-4E-D2.0S-G	2.0	4	6	50	4	A	•
GM-4E-D2.5S-G	2.5	4	8	50	4	A	•
GM-4E-D3.0S-G	3.0	4	8	50	4	A	•
GM-4E-D4.0S-G	4.0	4	11	50	4	B	•
GM-4E-D1.0-G	1.0	6	3	50	4	A	•
GM-4E-D1.5-G	1.5	6	4	50	4	A	•
GM-4E-D2.0-G	2.0	6	6	50	4	A	•
GM-4E-D2.5-G	2.5	6	8	50	4	A	•
GM-4E-D3.0-G	3.0	6	8	50	4	A	•
GM-4E-D3.5-G	3.5	6	10	50	4	A	•
GM-4E-D4.0-G	4.0	6	11	50	4	A	•
GM-4E-D4.5-G	4.5	6	11	50	4	A	•
GM-4E-D5.0-G	5.0	6	13	50	4	A	•
GM-4E-D5.5-G	5.5	6	16	50	4	A	•
GM-4E-D6.0-G	6.0	6	16	50	4	B	•
GM-4E-D7.0-G	7.0	8	20	60	4	A	•
GM-4E-D8.0-G	8.0	8	20	60	4	B	•
GM-4E-D9.0-G	9.0	10	22	75	4	A	•
GM-4E-D10.0-G	10.0	10	25	75	4	B	•
GM-4E-D11.0-G	11.0	12	26	75	4	A	•
GM-4E-D12.0-G	12.0	12	30	75	4	B	•
GM-4E-D14.0-G	14.0	14	32	75	4	B	•
GM-4E-D16.0-G	16.0	16	45	100	4	B	•
GM-4E-D18.0-G	18.0	18	45	100	4	B	•
GM-4E-D20.0-G	20.0	20	45	100	4	B	•

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

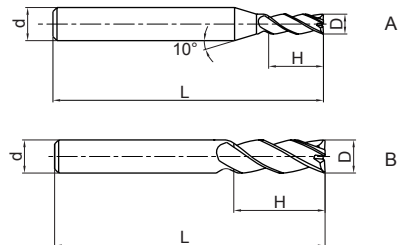
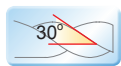


Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

GM-4F-G

4-flute flattened end mills with straight shank
4-Schneiden Eckfräser mit Zylinderschaft



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 303
	D	d	H	L			
GM-4F-D1.0S-G	1.0	4	3	50	4	A	○
GM-4F-D1.5S-G	1.5	4	4	50	4	A	○
GM-4F-D2.0S-G	2.0	4	6	50	4	A	○
GM-4F-D2.5S-G	2.5	4	8	50	4	A	○
GM-4F-D3.0S-G	3.0	4	8	50	4	A	○
GM-4F-D4.0S-G	4.0	4	11	50	4	B	○
GM-4F-D1.0-G	1.0	6	3	50	4	A	○
GM-4F-D1.5-G	1.5	6	4	50	4	A	○
GM-4F-D2.0-G	2.0	6	6	50	4	A	○
GM-4F-D2.5-G	2.5	6	8	50	4	A	○
GM-4F-D3.0-G	3.0	6	8	50	4	A	○
GM-4F-D3.5-G	3.5	6	10	50	4	A	○
GM-4F-D4.0-G	4.0	6	11	50	4	A	○
GM-4F-D4.5-G	4.5	6	11	50	4	A	○
GM-4F-D5.0-G	5.0	6	13	50	4	A	○
GM-4F-D5.5-G	5.5	6	16	50	4	A	○
GM-4F-D6.0-G	6.0	6	16	50	4	B	○
GM-4F-D7.0-G	7.0	8	20	60	4	A	○
GM-4F-D8.0-G	8.0	8	20	60	4	B	○
GM-4F-D9.0-G	9.0	10	22	75	4	A	○
GM-4F-D10.0-G	10.0	10	25	75	4	B	○
GM-4F-D11.0-G	11.0	12	26	75	4	A	○
GM-4F-D12.0-G	12.0	12	30	75	4	B	○
GM-4F-D14.0-G	14.0	14	32	75	4	B	○
GM-4F-D16.0-G	16.0	16	45	100	4	B	○
GM-4F-D18.0-G	18.0	18	45	100	4	B	○
GM-4F-D20.0-G	20.0	20	45	100	4	B	○

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

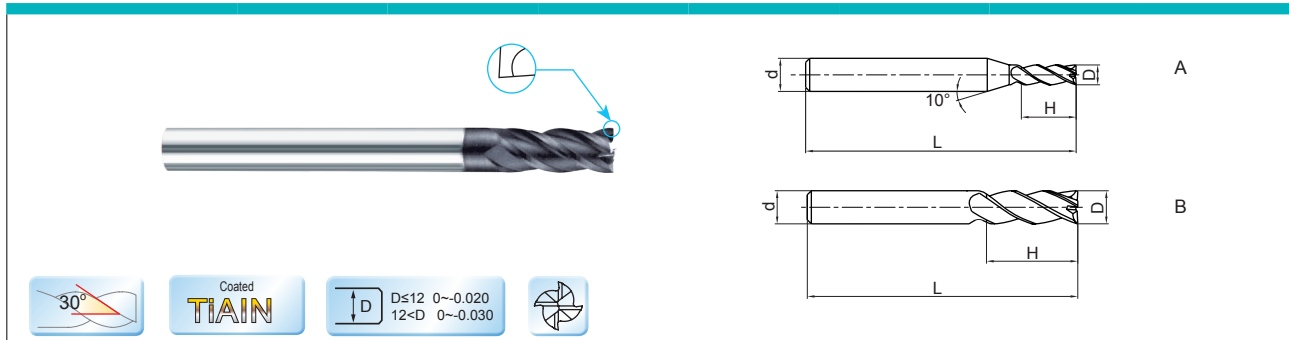
KMG303

		Workpiece material Werkstückstoff									
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

● Ex Stock / ab Lager ○ On demand / auf Anfrage

GM-4EL-G

4-flute flattened end mills with straight shank and long cutting edge
4-Schneiden Eckfräser mit langer Schneide und Zylinderschaft



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 303
	D	d	H	L			
GM-4EL-D3.0-G	3.0	6	12	75	4	A	○
GM-4EL-D4.0-G	4.0	6	15	75	4	A	○
GM-4EL-D5.0-G	5.0	6	20	75	4	A	○
GM-4EL-D6.0-G	6.0	6	20	75	4	B	○
GM-4EL-D8.0-G	8.0	8	25	100	4	B	○
GM-4EL-D10.0-G	10.0	10	30	100	4	B	○
GM-4EL-D12.0-G	12.0	12	35	100	4	B	○
GM-4EL-D14.0-G	14.0	14	40	100	4	B	○
GM-4EL-D16.0-G	16.0	16	50	150	4	B	○
GM-4EL-D20.0-G	20.0	20	55	150	4	B	○

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

Code key
ISO Kennzeichen

B231

Cutting data
Schnittdaten

B431-456

Graphics identification & application
Graphische Werkzeug- & Anwendungsbeschr.

B232

Order form for non-standard products
Bestellformular für Sonderwerkzeuge

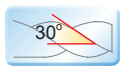
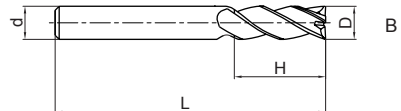
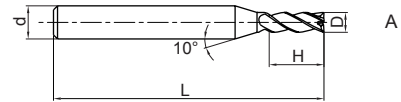
B497-B498

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

GM-4FL-G

4-flute flattened end mills with straight shank and long cutting edge
4-Schneiden Eckfräser mit langer Schneide und Zylinderschaft



Type Typ	Dimension (mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 303
	D	d	H	L			
GM-4FL-D3.0-G	3.0	6	12	75	4	A	○
GM-4FL-D4.0-G	4.0	6	15	75	4	A	○
GM-4FL-D5.0-G	5.0	6	20	75	4	A	○
GM-4FL-D6.0-G	6.0	6	20	75	4	B	○
GM-4FL-D8.0-G	8.0	8	25	100	4	B	○
GM-4FL-D10.0-G	10.0	10	30	100	4	B	○
GM-4FL-D12.0-G	12.0	12	35	100	4	B	○
GM-4FL-D14.0-G	14.0	14	40	100	4	B	○
GM-4FL-D16.0-G	16.0	16	50	150	4	B	○
GM-4FL-D20.0-G	20.0	20	55	150	4	B	○

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

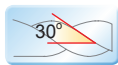
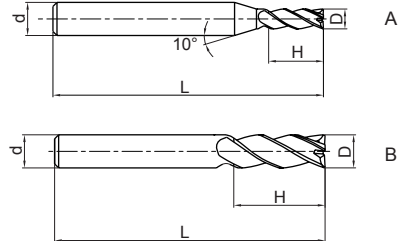
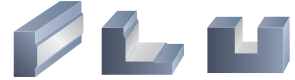
KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

● Ex Stock / ab Lager ○ On demand / auf Anfrage

GM-4EX-G

4-flute flattened end mills with straight shank and extra long cutting edge
4-Schneiden Eckfräser mit extra langer Schneide und Zylinderschaft



Type Typ	Dimension (mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 303
	D	d	H	L			
GM-4EX-D3.0-G	3.0	6	20	75	4	A	●
GM-4EX-D4.0-G	4.0	6	25	75	4	A	●
GM-4EX-D5.0-G	5.0	6	30	75	4	A	●
GM-4EX-D6.0-G	6.0	6	30	75	4	B	●
GM-4EX-D8.0-G	8.0	8	40	100	4	B	●
GM-4EX-D10.0-G	10.0	10	50	110	4	B	●
GM-4EX-D12.0-G	12.0	12	50	110	4	B	●
GM-4EX-D16.0-G	16.0	16	70	150	4	B	●
GM-4EX-D20.0-G	20.0	20	75	150	4	B	●
GM-4FL-D20.0-G	20.0	20	55	150	4	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
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KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

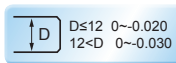
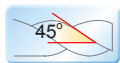
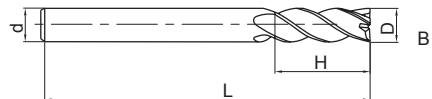
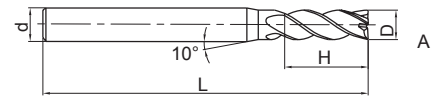
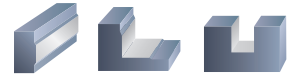


Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

GM-4E series for general machining · **GM-4E** Serie für allgemeine Bearbeitung

4-flute flattened end mills with straight shank
4-Schneiden Eckfräser mit Zylinderschaft



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 303
	D	d	H	L			
GM-4E-D1.0S	1.0	4	3	50	4	A	●
GM-4E-D1.5S	1.5	4	4	50	4	A	●
GM-4E-D2.0S	2.0	4	6	50	4	A	●
GM-4E-D2.5S	2.5	4	8	50	4	A	●
GM-4E-D3.0S	3.0	4	8	50	4	A	●
GM-4E-D4.0S	4.0	4	11	50	4	B	●
GM-4E-D1.0	1.0	6	3	50	4	A	●
GM-4E-D1.5	1.5	6	4	50	4	A	●
GM-4E-D2.0	2.0	6	6	50	4	A	●
GM-4E-D2.5	2.5	6	8	50	4	A	●
GM-4E-D3.0	3.0	6	8	50	4	A	●
GM-4E-D3.5	3.5	6	10	50	4	A	●
GM-4E-D4.0	4.0	6	11	50	4	A	●
GM-4E-D4.5	4.5	6	11	50	4	A	●
GM-4E-D5.0	5.0	6	13	50	4	A	●
GM-4E-D5.5	5.5	6	16	50	4	A	●
GM-4E-D6.0	6.0	6	16	50	4	B	●
GM-4E-D7.0	7.0	8	20	60	4	A	●
GM-4E-D8.0	8.0	8	20	60	4	B	●
GM-4E-D9.0	9.0	10	22	75	4	A	●
GM-4E-D10.0	10.0	10	25	75	4	B	●
GM-4E-D11.0	11.0	12	26	75	4	A	●
GM-4E-D12.0	12.0	12	30	75	4	B	●
GM-4E-D14.0	14.0	14	32	75	4	B	●
GM-4E-D16.0	16.0	16	45	100	4	B	●
GM-4E-D18.0	18.0	18	45	100	4	B	●
GM-4E-D20.0	20.0	20	45	100	4	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

Material Overview · Material Übersicht

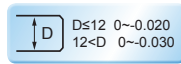
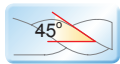
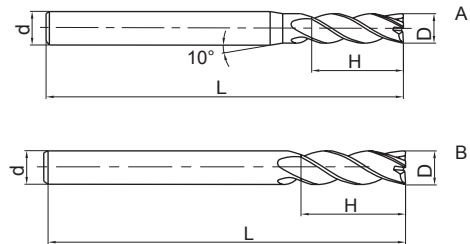
KMG303

		Workpiece material Werkstückstoff									
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

● Ex Stock / ab Lager ○ On demand / auf Anfrage

GM-4EL series for general machining · GM-4EL Serie für allgemeine Bearbeitung

4-flute flattened end mills with straight shank and long cutting edge
4-Schneiden Eckfräser mit langer Schneide und Zylinderschaft



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 303
	D	d	H	L			
GM-4EL-D3.0	3.0	6	12	75	4	A	●
GM-4EL-D4.0	4.0	6	15	75	4	A	●
GM-4EL-D5.0	5.0	6	20	75	4	A	●
GM-4EL-D6.0	6.0	6	20	75	4	B	●
GM-4EL-D8.0	8.0	8	25	100	4	B	●
GM-4EL-D10.0	10.0	10	30	100	4	B	●
GM-4EL-D12.0	12.0	12	35	100	4	B	●
GM-4EL-D14.0	14.0	14	40	100	4	B	●
GM-4EL-D16.0	16.0	16	50	150	4	B	●
GM-4EL-D20.0	20.0	20	55	150	4	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

Code key B231
ISO Kennzeichen

Cutting data B431-456
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

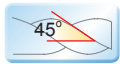
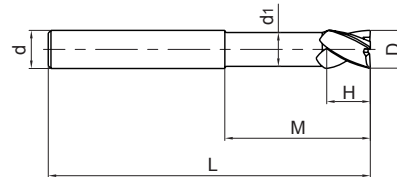
Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

GM-4EFP

4-flute end mills with straight shank and short cutting edge and long neck
4-Schneiden Eckfräser mit kurzer Schneide und Zylinderschaft



Type Typ	Dimension(mm) Abmessungen						Teeth Zähne Z	Grade Sorte KMG 303
	D	d	H	M	d1	L		
GM-4EFP-D6.0	6.0	6	9	30	5.8	75	4	○
GM-4EFP-D8.0	8.0	8	12	40	7.8	100	4	○
GM-4EFP-D10.0	10.0	10	15	50	9.6	100	4	○
GM-4EFP-D12.0	12.0	12	18	50	11.5	100	4	○
GM-4EFP-D16.0	16.0	16	24	50	15.5	150	4	○
GM-4EFP-D20.0	20.0	20	30	60	19.5	150	4	○

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

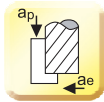
✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

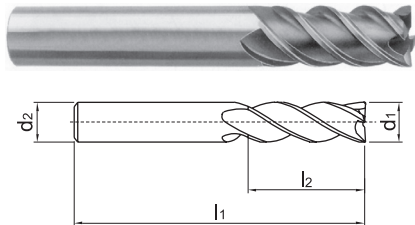
● Ex Stock / ab Lager ○ On demand / auf Anfrage

DIN 6527K 4-flute end mills · DIN 6527K 4-Schneiden VHM Schaftfräser



5501R304GF

YK30F: Ultra-fine carbide grade / *Ultrafeinkornhartmetall*
 KMG303: nano TiAlN coated ultra-fine carbide / *nano TiAlN beschichtetes Ultrafeinkornhartmetall*



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne	Application Anwendung	P M K	
	d ₁ (h ₁₀)	d ₂ (h ₆)	l ₂	l ₁			Grade Sorte	YK30F
5501R304GF-0300	3.00	6	5	50	4		○	●
5501R304GF-0400	4.00	6	8	54	4		○	●
5501R304GF-0500	5.00	6	9	54	4		○	●
5501R304GF-0600	6.00	6	10	54	4		○	●
5501R304GF-0800	8.00	8	12	58	4		○	●
5501R304GF-1000	10.00	10	14	66	4		○	●
5501R304GF-1200	12.00	12	16	73	4		○	●
5501R304GF-1400	14.00	14	18	75	4		○	●
5501R304GF-1600	16.00	16	22	82	4		○	●
5501R304GF-1800	18.00	18	24	84	4		○	●
5501R304GF-2000	20.00	20	26	92	4		○	●
Art. Group No. / Produktgruppe Nr. :							021140	021130

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
 ✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

Code key B229
ISO Kennzeichen

Cutting data B387-414
Schnittdaten

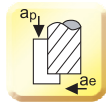
Graphics identification & application B230
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products B497-498
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

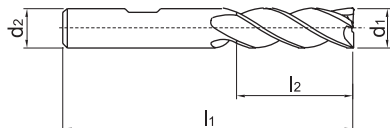
Solid Carbide end mills · Vollhartmetallschaftfräser

DIN 6527K 4-flute end mills · DIN 6527K 4-Schneiden VHM Schafffräser



5601R304GF

YK30F: Ultra-fine carbide grade / *Ultrafeinkornhartmetall*
KMG303: nano TiAlN coated ultra-fine carbide / *nano TiAlN beschichtetes Ultrafeinkornhartmetall*



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne	Application Anwendung	P M K	
	d1(h10)	d2(h6)	l2	l1			Grade Sorte	YK30F
5601R304GF-0300	3.00	6	5	50	4		○	●
5601R304GF-0400	4.00	6	8	54	4		○	●
5601R304GF-0500	5.00	6	9	54	4		○	●
5601R304GF-0600	6.00	6	10	54	4		○	●
5601R304GF-0800	8.00	8	12	58	4		○	●
5601R304GF-1000	10.00	10	14	66	4		○	●
5601R304GF-1200	12.00	12	16	73	4		○	●
5601R304GF-1400	14.00	14	18	75	4		○	●
5601R304GF-1600	16.00	16	22	82	4		○	●
5601R304GF-1800	18.00	18	24	84	4		○	●
5601R304GF-2000	20.00	20	26	92	4		○	●
Art. Group No. / Produktgruppe Nr. :							021140	021130

Material Overview · Material Übersicht

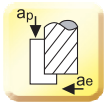
✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

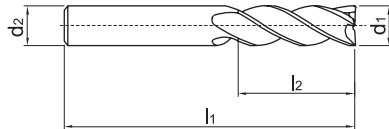
● Ex Stock / ab Lager ○ On demand / auf Anfrage

DIN 6527L 4-flute end mills · DIN 6527L 4-Schneiden VHM Schaftfräser



5502R304GF

YK30F: Ultra-fine carbide grade / *Ultrafeinkornhartmetall*
 KMG303: nano TiAlN coated ultra-fine carbide / *nano TiAlN beschichtetes Ultrafeinkornhartmetall*



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne	Application Anwendung	P M K	
	d ₁ (h ₁₀)	d ₂ (h ₆)	l ₂	l ₁			z	Grade Sorte
5502R304GF-0300	3.00	6	8	57	4		○	●
5502R304GF-0400	4.00	6	11	57	4		○	●
5502R304GF-0500	5.00	6	13	57	4		○	●
5502R304GF-0600	6.00	6	13	57	4		○	●
5502R304GF-0800	8.00	8	19	63	4		○	●
5502R304GF-1000	10.00	10	22	72	4		○	●
5502R304GF-1200	12.00	12	26	83	4		○	●
5502R304GF-1400	14.00	14	26	83	4		○	●
5502R304GF-1600	16.00	16	32	92	4		○	●
5502R304GF-1800	18.00	18	32	92	4		○	●
5502R304GF-2000	20.00	20	38	104	4		○	●
Art. Group No. / Produktgruppe Nr. :							021140	021130

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
 ✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

Code key B229
ISO Kennzeichen

Cutting data B387-414
Schnittdaten

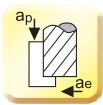
Graphics identification & application B230
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products B497-498
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

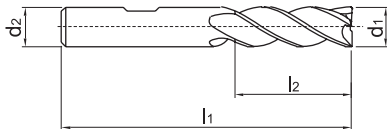
DIN 6527L 4-flute end mills · DIN 6527L 4-Schneiden VHM Schaftfräser



5602R304GF

YK30F: Ultra-fine carbide grade / Ultrafeinkornhartmetall

KMG303: nano TiAlN coated ultra-fine carbide / nano TiAlN beschichtetes Ultrafeinkornhartmetall



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne	Application Anwendung	P M K	
	d ₁ (h ₁₀)	d ₂ (h ₆)	l ₂	l ₁			Grade Sorte	YK30F
5602R304GF-0300	3.00	6	8	57	4		○	●
5602R304GF-0400	4.00	6	11	57	4		○	●
5602R304GF-0500	5.00	6	13	57	4		○	●
5602R304GF-0600	6.00	6	13	57	4		○	●
5602R304GF-0800	8.00	8	19	63	4		○	●
5602R304GF-1000	10.00	10	22	72	4		○	●
5602R304GF-1200	12.00	12	26	83	4		○	●
5602R304GF-1400	14.00	14	26	83	4		○	●
5602R304GF-1600	16.00	16	32	92	4		○	●
5602R304GF-1800	18.00	18	32	92	4		○	●
5602R304GF-2000	20.00	20	38	104	4		○	●
Art. Group No. / Produktgruppe Nr. :							021140	021130

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen

✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

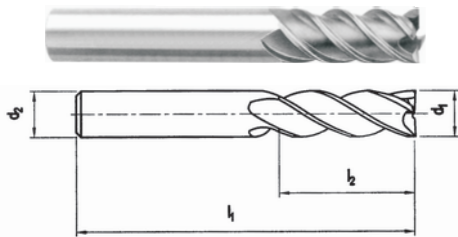
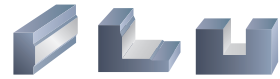
● Ex Stock / ab Lager ○ On demand / auf Anfrage

DIN 6528 4-flute end mills · DIN 6528 4-Schneiden VHM Schaftfräser



5508R454GM

YK30F: Ultra-fine carbide grade / *Ultrafeinkornhartmetall*
 KMG303: nano TiAlN coated ultra-fine carbide / *nano TiAlN beschichtetes Ultrafeinkornhartmetall*



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne	Application Anwendung	P M K	
	d ₁ (h ₁₀)	d ₂ (h ₆)	l ₂	l ₁			Grade Sorte	YK30F
5508R454GM-0300	3.00	3	8	45	4		○	●
5508R454GM-0400	4.00	4	11	50	4		○	●
5508R454GM-0500	5.00	5	13	50	4		○	●
5508R454GM-0600	6.00	6	13	57	4		○	●
5508R454GM-0800	8.00	8	19	63	4		○	●
5508R454GM-1000	10.00	10	22	72	4		○	●
5508R454GM-1200	12.00	12	26	83	4		○	●
5508R454GM-1400	14.00	14	26	83	4		○	●
5508R454GM-1600	16.00	16	32	92	4		○	●
5508R454GM-1800	18.00	18	32	92	4		○	●
5508R454GM-2000	20.00	20	38	104	4		○	●

Art. Group No. / Produktgruppe Nr. : 021140 021130

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
 ✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

Code key B229
ISO Kennzeichen

Cutting data B387-414
Schnittdaten

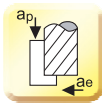
Graphics identification & application B230
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products B497-498
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

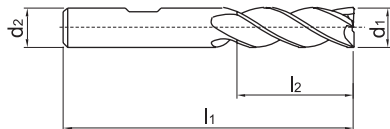
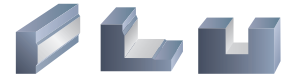
Solid Carbide end mills · Vollhartmetallschaftfräser

DIN 6527L 4-flute end mills · DIN 6527L 4-Schneiden VHM Schafffräser



5602R454GM

YK30F: Ultra-fine carbide grade / *Ultrafeinkornhartmetall*
KMG303: nano TiAlN coated ultra-fine carbide / *nano TiAlN beschichtetes Ultrafeinkornhartmetall*



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne	Application Anwendung	P M K		
	d ₁ (h ₁₀)	d ₂ (h ₆)	l ₂	l ₁			Grade Sorte	KMG303	
5602R454GM-0300	3.00	6	8	57	4			●	
5602R454GM-0400	4.00	6	11	57	4			●	
5602R454GM-0500	5.00	6	13	57	4			●	
5602R454GM-0600	6.00	6	13	57	4			●	
5602R454GM-0800	8.00	8	19	63	4			●	
5602R454GM-1000	10.00	10	22	72	4			●	
5602R454GM-1200	12.00	12	26	83	4			●	
5602R454GM-1400	14.00	14	26	83	4			●	
5602R454GM-1600	16.00	16	32	92	4			●	
5602R454GM-1800	18.00	18	32	92	4			●	
5602R454GM-2000	20.00	20	38	104	4			●	

Art. Group No. / Produktgruppe Nr. :

021130

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

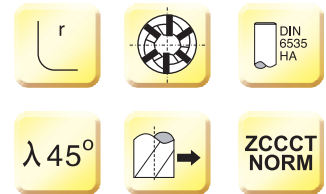
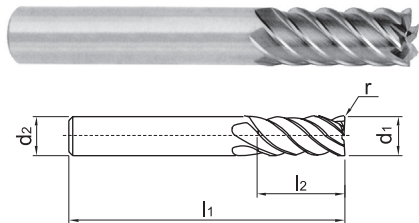
● Ex Stock / ab Lager ○ On demand / auf Anfrage

ZCC CT 6-flute slotting end mills (HRC<=50) · **ZCC CT** 6-Schneiden VHM Langlochfräser (HRC<=50)



5589R45MGFR

KMG405: nano TiAlN coated ultra-fine carbide / nano TiAlN beschichtetes Ultrafeinkornhartmetall



Type Typ	Dimension(mm) Abmessungen					Teeth Zähne	Application Anwendung	P K	
	d ₁ (e ₈)	d ₂ (h ₆)	l ₂	l ₁				Grade Sorte	KMG405
5589R45MGFR02-0600	6	6	19	63	0.2	6		●	
5589R45MGFR02-0800	8	8	28	72	0.2	6		●	
5589R45MGFR02-1000	10	10	34	84	0.2	6		●	
5589R45MGFR02-1200	12	12	40	97	0.2	6		●	
5589R45MGFR03-1600	16	16	48	108	0.3	8		●	
5589R45MGFR03-2000	20	20	56	122	0.3	10		●	

Art. Group No. / Produktgruppe Nr. : **021130**

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG405

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

Code key **B229**
ISO Kennzeichen

Cutting data **B387-414**
Schnittdaten

Graphics identification & application **B230**
Graphische Werkzeug- & Anwendungsbeschr.

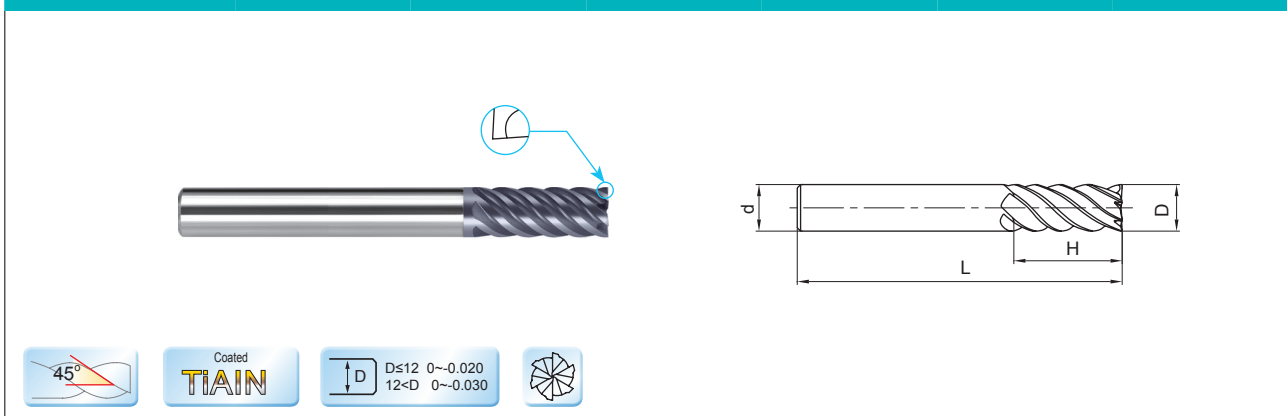
Order form for non-standard products **B497-498**
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

GM-6E

6-flute end mills with straight shank
6-Schneiden Eckfräser mit Zylinderschaft



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Grade Sorte KMG 303
	D	d	H	L		
GM-6E-D6.0	6.0	6	18	60	6	●
GM-6E-D8.0	8.0	8	20	60	6	●
GM-6E-D10.0	10.0	10	30	75	6	●
GM-6E-D12.0	12.0	12	32	75	6	●
GM-6E-D16.0	16.0	16	40	100	6	●
GM-6E-D20.0	20.0	20	45	100	6	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG303


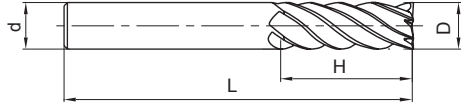
Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

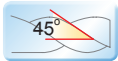
● Ex Stock / ab Lager ○ On demand / auf Anfrage

GM-6EL series for general machining · GM-6EL Serie für allgemeine Bearbeitung


6-flute end mills with straight shank and long cutting edge
6-Schneiden Eckfräser mit langer Schneide und Zylinderschaft










45°



Coated
TiAlN



D ≤ 12 0 ~ -0.020
12 < D 0 ~ -0.030



Type Typ	Dimension (mm) Abmessungen				Teeth Zähne Z	Grade Sorte KMG 303
	D	d	H	L		
GM-6EL-D6.0	6.0	6	24	75	6	•
GM-6EL-D8.0	8.0	8	32	75	6	•
GM-6EL-D10.0	10.0	10	40	100	6	•
GM-6EL-D12.0	12.0	12	45	100	6	•
GM-6EL-D16.0	16.0	16	64	150	6	•
GM-6EL-D20.0	20.0	20	75	150	6	•

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG405

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

Code key **B231**
ISO Kennzeichen

Cutting data **B431-456**
Schnittdaten

Graphics identification & application **B232**
Graphische Werkzeug- & Anwendungsbeschr.

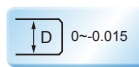
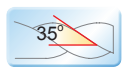
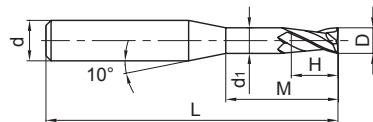
Order form for non-standard products **B497-B498**
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

GM-2EP series for general machining · **GM-2EP** Serie für allgemeine Bearbeitung

2-flute end mills with straight shank and short cutting edge and long neck
2-Schneiden Eckfräser mit kurzer Schneide und Zylinderschaft



Type Typ	Dimension(mm) Abmessungen						Teeth Zähne Z	Grade Sorte KMG 303
	D	d	H	M	d1	L		
GM-2EP-D0.5-M04	0.5	4.0	0.7	4.0	0.45	50	2	●
GM-2EP-D0.5-M06	0.5	4.0	0.7	6.0	0.45	50	2	●
GM-2EP-D0.5-M08	0.5	4.0	0.7	8.0	0.45	50	2	●
GM-2EP-D0.8-M04	0.8	4.0	1.2	4.0	0.75	50	2	●
GM-2EP-D0.8-M06	0.8	4.0	1.2	6.0	0.75	50	2	●
GM-2EP-D0.8-M08	0.8	4.0	1.2	8.0	0.75	50	2	●
GM-2EP-D0.8-M10	0.8	4.0	1.2	10.0	0.75	50	2	●
GM-2EP-D1.0-M04	1.0	4.0	1.5	4.0	0.95	50	2	●
GM-2EP-D1.0-M06	1.0	4.0	1.5	6.0	0.95	50	2	●
GM-2EP-D1.0-M08	1.0	4.0	1.5	8.0	0.95	50	2	●
GM-2EP-D1.0-M10	1.0	4.0	1.5	10.0	0.95	50	2	●
GM-2EP-D1.0-M12	1.0	4.0	1.5	12.0	0.95	50	2	●
GM-2EP-D1.0-M14	1.0	4.0	1.5	14.0	0.95	50	2	●
GM-2EP-D1.2-M06	1.2	4.0	1.8	6.0	1.15	50	2	●
GM-2EP-D1.2-M08	1.2	4.0	1.8	8.0	1.15	50	2	●
GM-2EP-D1.2-M10	1.2	4.0	1.8	10.0	1.15	50	2	●
GM-2EP-D1.2-M12	1.2	4.0	1.8	12.0	1.15	50	2	○
GM-2EP-D1.5-M06	1.5	4.0	2.3	6.0	1.45	50	2	●
GM-2EP-D1.5-M08	1.5	4.0	2.3	8.0	1.45	50	2	●
GM-2EP-D1.5-M10	1.5	4.0	2.3	10.0	1.45	50	2	●
GM-2EP-D1.5-M12	1.5	4.0	2.3	12.0	1.45	50	2	●
GM-2EP-D1.5-M14	1.5	4.0	2.3	14.0	1.45	50	2	●
GM-2EP-D2.0-M06	2.0	4.0	3.0	6.0	1.95	50	2	●
GM-2EP-D2.0-M08	2.0	4.0	3.0	8.0	1.95	50	2	●

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

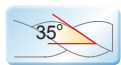
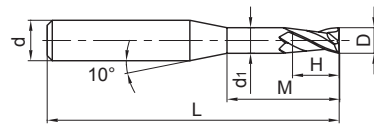
KMG303

		Workpiece material Werkstückstoff									
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

● Ex Stock / ab Lager ○ On demand / auf Anfrage

GM-2EP series for general machining · GM-2EP Serie für allgemeine Bearbeitung

2-flute end mills with straight shank and short cutting edge and long neck
 2-Schneiden Eckfräser mit kurzer Schneide und Zylinderschaft



Type Typ	Dimension (mm) Abmessungen						Teeth Zähne Z	Grade Sorte KMG 303
	D	d	H	M	d ₁	L		
GM-2EP-D2.0-M10	2.0	4.0	3.0	10.0	1.95	50	2	●
GM-2EP-D2.0-M12	2.0	4.0	3.0	12.0	1.95	50	2	●
GM-2EP-D2.0-M14	2.0	4.0	3.0	14.0	1.95	50	2	●
GM-2EP-D2.0-M16	2.0	4.0	3.0	16.0	1.95	50	2	●
GM-2EP-D2.5-M08	2.5	4.0	3.7	8.0	2.4	50	2	●
GM-2EP-D2.5-M10	2.5	4.0	3.7	10.0	2.4	50	2	●
GM-2EP-D2.5-M12	2.5	4.0	3.7	12.0	2.4	50	2	●
GM-2EP-D2.5-M14	2.5	4.0	3.7	14.0	2.4	50	2	●
GM-2EP-D2.5-M16	2.5	4.0	3.7	16.0	2.4	60	2	●
GM-2EP-D2.5-M18	2.5	4.0	3.7	18.0	2.4	60	2	●
GM-2EP-D2.5-M20	2.5	4.0	3.7	20.0	2.4	60	2	●
GM-2EP-D3.0-M06	3.0	6.0	4.5	6.0	2.85	50	2	●
GM-2EP-D3.0-M08	3.0	6.0	4.5	8.0	2.85	50	2	●
GM-2EP-D3.0-M10	3.0	6.0	4.5	10.0	2.85	50	2	●
GM-2EP-D3.0-M12	3.0	6.0	4.5	12.0	2.85	50	2	●
GM-2EP-D3.0-M14	3.0	6.0	4.5	14.0	2.85	60	2	●
GM-2EP-D3.0-M16	3.0	6.0	4.5	16.0	2.85	60	2	●
GM-2EP-D3.0-M18	3.0	6.0	4.5	18.0	2.85	60	2	●
GM-2EP-D3.0-M20	3.0	6.0	4.5	20.0	2.85	60	2	●
GM-2EP-D4.0-M12	4.0	6.0	6.0	12.0	3.85	50	2	●
GM-2EP-D4.0-M14	4.0	6.0	6.0	14.0	3.85	60	2	●
GM-2EP-D4.0-M16	4.0	6.0	6.0	16.0	3.85	60	2	●
GM-2EP-D4.0-M20	4.0	6.0	6.0	20.0	3.85	60	2	●
GM-2EP-D4.0-M25	4.0	6.0	6.0	25.0	3.85	60	2	●
GM-2EP-D5.0-M16	5.0	6.0	7.5	16.0	4.85	60	2	●
GM-2EP-D5.0-M25	5.0	6.0	7.5	25.0	4.85	70	2	●

B

Solid Carbide end mills
 Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
 ✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

Code key B231
 ISO Kennzeichen

Cutting data B431-456
 Schnittdaten

Graphics identification & application B232
 Graphische Werkzeug- & Anwendungsbeschr.

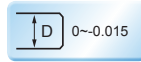
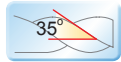
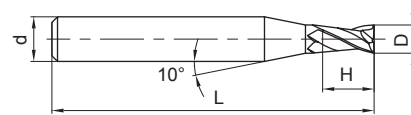
Order form for non-standard products B497-B498
 Bestellformular für Sonderwerkzeuge

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

GM-2ES series for general machining · **GM-2ES** Serie für allgemeine Bearbeitung

2-flute micro end mills with straight shank
2-Schneiden Mirco Eckfräser mit langer Schneide



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Grade Sorte KMG303
	D	d	H	L		
GM-2ES-D0.3	0.3	4.0	0.6	50	2	●
GM-2ES-D0.4	0.4	4.0	0.8	50	2	●
GM-2ES-D0.5	0.5	4.0	1.0	50	2	●
GM-2ES-D0.6	0.6	4.0	1.2	50	2	●
GM-2ES-D0.7	0.7	4.0	1.4	50	2	●
GM-2ES-D0.8	0.8	4.0	1.6	50	2	●
GM-2ES-D0.9	0.9	4.0	1.8	50	2	●
GM-2ES-D1.0	1.0	4.0	2.0	50	2	●
GM-2ES-D1.1	1.1	4.0	2.0	50	2	●
GM-2ES-D1.2	1.2	4.0	2.5	50	2	●
GM-2ES-D1.3	1.3	4.0	2.5	50	2	●
GM-2ES-D1.4	1.4	4.0	3.0	50	2	●
GM-2ES-D1.5	1.5	4.0	3.0	50	2	●
GM-2ES-D1.6	1.6	4.0	3.5	50	2	●
GM-2ES-D1.7	1.7	4.0	3.5	50	2	●
GM-2ES-D1.8	1.8	4.0	4.0	50	2	●
GM-2ES-D1.9	1.9	4.0	4.0	50	2	●
GM-2ES-D2.0	2.0	4.0	4.0	50	2	●
GM-2ES-D2.1	2.1	4.0	4.0	50	2	●
GM-2ES-D2.2	2.2	4.0	4.5	50	2	●
GM-2ES-D2.3	2.3	4.0	4.5	50	2	●
GM-2ES-D2.4	2.4	4.0	5.0	50	2	●
GM-2ES-D2.5	2.5	4.0	5.0	50	2	●
GM-2ES-D2.6	2.6	4.0	5.0	50	2	●
GM-2ES-D2.7	2.7	4.0	5.5	50	2	●
GM-2ES-D2.8	2.8	4.0	5.5	50	2	●
GM-2ES-D2.9	2.9	4.0	6.0	50	2	●
GM-2ES-D3.0	3.0	4.0	6.0	50	2	●

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG303

		Workpiece material Werkstückstoff									
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

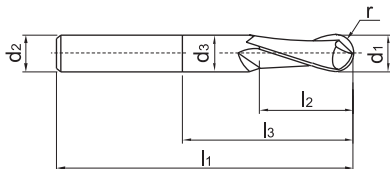
● Ex Stock / ab Lager ○ On demand / auf Anfrage

ZCC CT 2-flute ball nose end mills · ZCC CT 2-Schneiden VHM Kugelkopffräser



5565R302GF

KMG303: nano TiAlN coated ultra-fine carbide / nano TiAlN beschichtetes Ultrafeinkornhartmetall



Type Typ	Dimension(mm) Abmessungen								Teeth Zähne	Application Anwendung	P K M		
	d ₁	d ₂ (h ₆)	l ₂	l ₁	d ₃	l ₃	r(f ₈)	α°			Grade Sorte	KMG303	
5565R302GF-0300	3.00	6	4	57	2.80	9	1.50	6	2			●	
5565R302GF-0400	4.00	6	5	57	3.70	12	2.00	4	2			●	
5565R302GF-0500	5.00	6	6	57	4.60	15	2.50	2	2			●	
5565R302GF-0600	6.00	6	7	57	5.50	20	3.00		2			●	
5565R302GF-0800	8.00	8	9	63	7.40	26	4.00		2			●	
5565R302GF-1000	10.00	10	11	72	9.20	31	5.00		2			●	
5565R302GF-1200	12.00	12	12	83	11.00	37	6.00		2			●	
5565R302GF-1600	16.00	16	16	92	15.00	43	8.00		2			●	
5565R302GF-2000	20.00	20	20	104	19.00	50	10.00		2			●	

Art. Group No. / Produktgruppe Nr. :

021130

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

Code key B229
ISO Kennzeichen

Cutting data B387-414
Schnittdaten

Graphics identification & application B230
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products B497-498
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

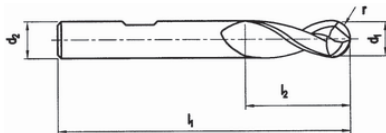
Solid Carbide end mills · Vollhartmetallschaftfräser

ZCC CT 2-flute ball nose end mills · ZCC CT 2-Schneiden VHM Kugelkopffräser



5665R202GM

KMG303: nano TiAlN coated ultra-fine carbide / nano TiAlN beschichtetes Ultrafeinkornhartmetall



Type Typ	Dimension(mm) Abmessungen								Teeth Zähne	Application Anwendung	Grade Sorte	P K M
	d ₁	d ₂ (h ₆)	l ₂	l ₁	d ₃	l ₃	r	α°				
5665R202GM-0300	3.00	6	4	57	2.80	9	1.50	7	2		●	
5665R202GM-0400	4.00	6	5	57	3.70	12	2.00	5	2		●	
5665R202GM-0500	5.00	6	6	57	4.60	15	2.50	3	2		●	
5665R202GM-0600	6.00	6	7	57	5.50	20	3.00	-	2		●	
5665R202GM-0800	8.00	8	9	63	7.40	26	4.00	-	2		●	
5665R202GM-1000	10.00	10	11	72	9.20	31	5.00	-	2		●	
5665R202GM-1200	12.00	12	12	83	11.00	37	6.00	-	2		●	
5665R202GM-1600	16.00	16	16	92	15.00	43	8.00	-	2		●	
5665R202GM-2000	20.00	20	20	104	19.00	50	10.00	-	2		●	

Art. Group No. / Produktgruppe Nr. :

021130

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

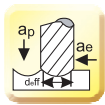
✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

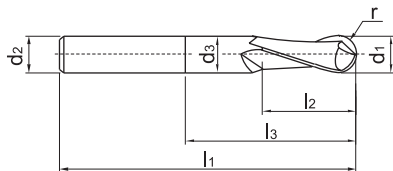
● Ex Stock / ab Lager ○ On demand / auf Anfrage

ZCC CT 2-flute ball nose end mills (long) · ZCC CT 2-Schneiden VHM Kugelkopffräser (Lang)



5566R302GF

KMG303: nano TiAlN coated ultra-fine carbide / nano TiAlN beschichtetes Ultrafeinkornhartmetall



Type Typ	Dimension(mm) Abmessungen								Teeth Zähne	Application Anwendung	P M K		
	d ₁	d ₂ (h ₆)	l ₂	l ₁	d ₃	l ₃	r(f ₈)	α°			z	Grade Sorte	KMG303
5566R302GF-0300	3.00	6	4	75	2.80	15	1.50	-	2			●	
5566R302GF-0400	4.00	6	5	75	3.70	20	2.00	-	2			●	
5566R302GF-0500	5.00	6	6	80	4.60	25	2.50	-	2			●	
5566R302GF-0600	6.00	6	7	80	5.50	30	3.00	-	2			●	
5566R302GF-0800	8.00	8	9	90	7.40	35	4.00	-	2			●	
5566R302GF-1000	10.00	10	11	100	9.20	40	5.00	-	2			●	
5566R302GF-1200	12.00	12	12	120	11.00	50	6.00	-	2			●	

Art. Group No. / Produktgruppe Nr. : **021130**

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

Code key **B229**
ISO Kennzeichen

Cutting data **B387-414**
Schnittdaten

Graphics identification & application **B230**
Graphische Werkzeug- & Anwendungsbeschr.

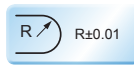
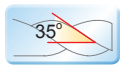
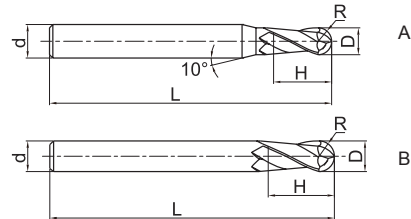
Order form for non-standard products **B497-498**
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

GM-2B

2-flute ball nose end mills with straight shank
2-Schneiden Kugelkopffräser mit Zylinderschaft



Type Typ	Dimension (mm) Abmessungen					Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 303
	D	R	d	H	L			
GM-2B-R0.5S	1.0	0.5	4	2	50	2	A	●
GM-2B-R0.75S	1.5	0.75	4	3	50	2	A	●
GM-2B-R1.0S	2.0	1.0	4	4	50	2	A	●
GM-2B-R1.25S	2.5	1.25	4	5	50	2	A	●
GM-2B-R1.5S	3.0	1.5	4	6	50	2	A	●
GM-2B-R2.0S	4.0	2.0	4	8	50	2	B	●
GM-2B-R0.5	1.0	0.5	6	2	50	2	A	●
GM-2B-R0.75	1.5	0.75	6	3	50	2	A	●
GM-2B-R1.0	2.0	1.0	6	4	50	2	A	●
GM-2B-R1.25	2.5	1.25	6	5	50	2	A	●
GM-2B-R1.5	3.0	1.5	6	6	50	2	A	●
GM-2B-R1.75	3.5	1.75	6	8	50	2	A	●
GM-2B-R2.0	4.0	2.0	6	8	50	2	A	●
GM-2B-R2.5	5.0	2.5	6	10	50	2	A	●
GM-2B-R2.75	5.5	2.75	6	12	50	2	A	●
GM-2B-R3.0	6.0	3.0	6	12	50	2	B	●
GM-2B-R3.5	7.0	3.5	8	14	60	2	A	●
GM-2B-R4.0	8.0	4.0	8	16	60	2	B	●
GM-2B-R4.5	9.0	4.5	10	18	75	2	A	●
GM-2B-R5.0	10	5.0	10	20	75	2	B	●
GM-2B-R6.0	12	6.0	12	24	75	2	B	●
GM-2B-R7.0	14	7.0	14	28	75	2	B	●
GM-2B-R8.0	16	8.0	16	32	100	2	B	●
GM-2B-R10.0	20	10.0	20	40	100	2	B	●

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

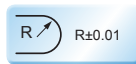
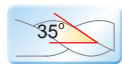
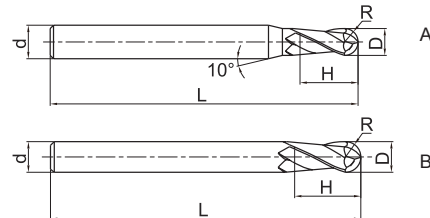
KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

● Ex Stock / ab Lager ○ On demand / auf Anfrage

GM-2BL series for general machining · GM-2BL Serie für allgemeine Bearbeitung

2-flute ball nose end mills with with straight shank and long cutting edge
 2-Schneiden Kugelnkopffräser mit langer Schneide und Zylinderschaft



Type Typ	Dimension (mm) Abmessungen					Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 303
	D	R	d	H	L			
GM-2BL-R1.0	2.0	1.0	6.0	4.0	75	2	A	●
GM-2BL-R1.25	2.5	1.25	6.0	5.0	75	2	A	●
GM-2BL-R1.5	3.0	1.5	6.0	6.0	75	2	A	●
GM-2BL-R1.75	3.5	1.75	6.0	8.0	75	2	A	●
GM-2BL-R2.0	4.0	2.0	6.0	8.0	75	2	A	●
GM-2BL-R2.5	5.0	2.5	6.0	10.0	75	2	A	●
GM-2BL-R2.75	5.5	2.75	6.0	12.0	75	2	A	●
GM-2BL-R3.0	6.0	3.0	6.0	12.0	75	2	B	●
GM-2BL-R3.5	7.0	3.5	8.0	14.0	75	2	A	●
GM-2BL-R4.0	8.0	4.0	8.0	16.0	100	2	B	●
GM-2BL-R4.5	9.0	4.5	10.0	18.0	100	2	A	●
GM-2BL-R5.0	10.0	5.0	10.0	20.0	100	2	B	●
GM-2BL-R6.0	12.0	6.0	12.0	24.0	100	2	B	●
GM-2BL-R7.0	14.0	7.0	14.0	28.0	100	2	B	●
GM-2BL-R8.0	16.0	8.0	16.0	32.0	150	2	B	●
GM-2BL-R10.0	20.0	10.0	20.0	40.0	150	2	B	●

B

Solid Carbide end mills
 Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
 ✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

Code key B231
 ISO Kennzeichen

Cutting data B431-456
 Schnittdaten

Graphics identification & application B232
 Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products B497-B498
 Bestellformular für Sonderwerkzeuge


Milling · Fräsen

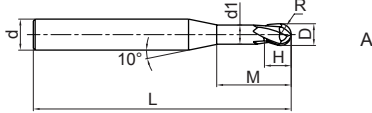
Solid Carbide end mills · Vollhartmetallschaftfräser

GM-2BFP

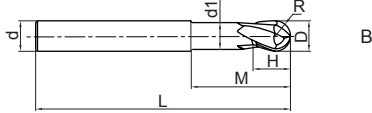
2-flute straight shank ball nose end mills with short cutting edge and long neck
2-Schneiden Kugelkopffräser mit kurzer Schneide und Zylinderschaft







A



B

35°

Coated
TiAlN

$\begin{matrix} D \leq 12 & 0 \sim -0.020 \\ 12 < D & 0 \sim -0.030 \end{matrix}$

$R \curvearrowright R \pm 0.01$

Type Typ	Dimension(mm) Abmessungen							Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 303
	D	R	H	d ₁	M	d	L			
GM-2BFP-R0.5	1.0	0.5	1	0.95	2.5	6	75	2	A	○
GM-2BFP-R0.75	1.5	0.75	1	1.45	3	6	75	2	A	○
GM-2BFP-R1.0	2.0	1.0	2	1.95	4	6	75	2	A	○
GM-2BFP-R1.5	3.0	1.5	3	2.85	6	6	75	2	A	○
GM-2BFP-R2.0	4.0	2.0	4	3.85	8	6	75	2	A	○
GM-2BFP-R2.5	5.0	2.5	5	4.85	10	6	75	2	A	○
GM-2BFP-R3.0	6.0	3.0	6	5.8	12	6	75	2	B	○
GM-2BFP-R4.0	8.0	4.0	8	7.8	16	8	100	2	B	○
GM-2BFP-R5.0	10.0	5.0	10	9.6	20	10	100	2	B	○
GM-2BFP-R6.0	12.0	6.0	12	11.5	24	12	100	2	B	○
GM-2BFP-R8.0	16.0	8.0	16	15.5	32	16	150	2	B	○
GM-2BFP-R10.0	20.0	10.0	20	19.5	40	20	150	2	B	○

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

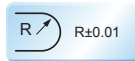
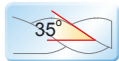
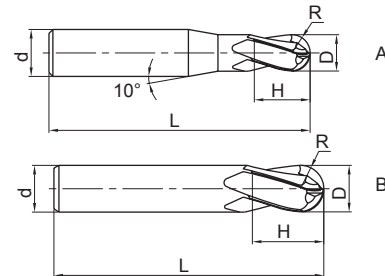
KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

● Ex Stock / ab Lager ○ On demand / auf Anfrage

GM-4B series for general machining · GM-4B Serie für allgemeine Bearbeitung

4-flute ball nose end mills with straight shank
4-Schneiden Kugelnosefräser mit Zylinderschaft



Type Typ	Dimension (mm) Abmessungen					Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 303
	D	R	d	H	L			
GM-4B-R1.5	3.0	1.5	6.0	6.0	50	4	A	●
GM-4B-R2.0	4.0	2.0	6.0	8.0	50	4	A	●
GM-4B-R2.5	5.0	2.5	6.0	10.0	50	4	A	●
GM-4B-R3.0	6.0	3.0	6.0	12.0	50	4	B	●
GM-4B-R4.0	8.0	4.0	8.0	16.0	60	4	B	●
GM-4B-R5.0	10.0	5.0	10.0	20.0	75	4	B	●
GM-4B-R6.0	12.0	6.0	12.0	24.0	75	4	B	●
GM-4B-R7.0	14.0	7.0	14.0	28.0	75	4	B	●
GM-4B-R8.0	16.0	8.0	16.0	32.0	100	4	B	●
GM-4B-R9.0	18.0	9.0	18.0	36.0	100	4	B	●
GM-4B-R10.0	20.0	10.0	20.0	40.0	100	4	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

Code key B231
ISO Kennzeichen

Cutting data B431-456
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

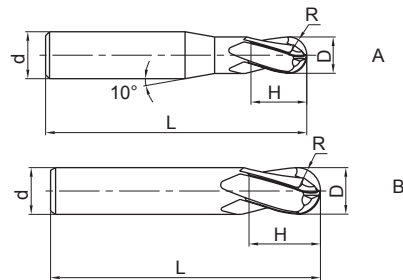
Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

GM-4BL

4-flute ball nose end mills with with straight shank and long cutting edge
4-Schneiden Kugelnkopfräser mit langer Schneide und Zylinderschaft



Type Typ	Dimension(mm) Abmessungen					Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 303
	D	R	d	H	L			
GM-4BL-R1.5	3.0	1.5	6	6	75	4	A	○
GM-4BL-R2.0	4.0	2.0	6	8	75	4	A	○
GM-4BL-R2.5	5.0	2.5	6	10	75	4	A	○
GM-4BL-R3.0	6.0	3.0	6	12	75	4	B	○
GM-4BL-R4.0	8.0	4.0	8	16	100	4	B	○
GM-4BL-R5.0	10.0	5.0	10	20	100	4	B	○
GM-4BL-R6.0	12.0	6.0	12	24	100	4	B	○
GM-4BL-R7.0	14.0	7.0	14	28	100	4	B	○
GM-4BL-R8.0	16.0	8.0	16	32	150	4	B	○
GM-4BL-R9.0	18.0	9.0	18	36	150	4	B	○
GM-4BL-R10.0	20.0	10.0	20	40	150	4	B	○

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

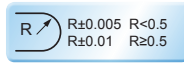
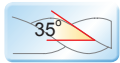
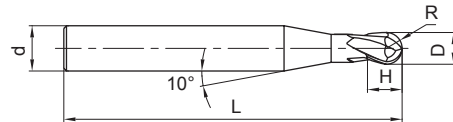
KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

● Ex Stock / ab Lager ○ On demand / auf Anfrage

GM-2BS series for general machining · GM-2BS Serie für allgemeine Bearbeitung

2-flute tiny ball nose end mills with straight shank
2-Schneiden Micro-Kugelnkopffräser mit Zylinderschaft



Type Typ	Dimension(mm) Abmessungen					Teeth Zähne Z	Grade Sorte KMG 303
	D	R	d	H	L		
GM-2BS-R0.15	0.30	0.15	4.0	0.5	50	2	●
GM-2BS-R0.20	0.40	0.20	4.0	0.6	50	2	●
GM-2BS-R0.25	0.50	0.25	4.0	0.8	50	2	●
GM-2BS-R0.30	0.60	0.30	4.0	0.9	50	2	●
GM-2BS-R0.35	0.70	0.35	4.0	1.0	50	2	●
GM-2BS-R0.40	0.80	0.40	4.0	1.2	50	2	●
GM-2BS-R0.45	0.90	0.45	4.0	1.3	50	2	●
GM-2BS-R0.50	1.00	0.50	4.0	1.5	50	2	●
GM-2BS-R0.60	1.20	0.60	4.0	1.8	50	2	●
GM-2BS-R0.70	1.40	0.70	4.0	2.0	50	2	●
GM-2BS-R0.75	1.50	0.75	4.0	2.3	50	2	●
GM-2BS-R0.80	1.60	0.80	4.0	2.5	50	2	●
GM-2BS-R0.90	1.80	0.90	4.0	2.7	50	2	●
GM-2BS-R1.00	2.00	1.00	4.0	3.0	50	2	●
GM-2BS-R1.25	2.50	1.25	4.0	3.7	50	2	●
GM-2BS-R1.50	3.00	1.50	4.0	4.5	50	2	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓				

Code key B231
ISO Kennzeichen

Cutting data B431-456
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

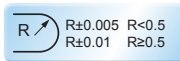
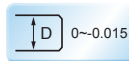
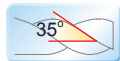
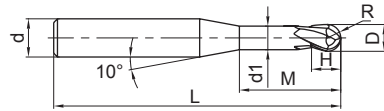
Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

GM-2BP series for general machining · GM-2BP Serie für allgemeine Bearbeitung

2-flute ball nose end mills with short cutting edge and long neck
2-Schneiden Kugelkopffräser mit kurzer Schneide und Zylinderschaft

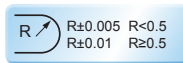
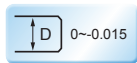
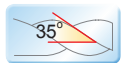
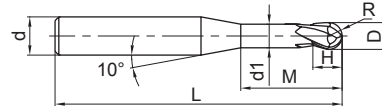
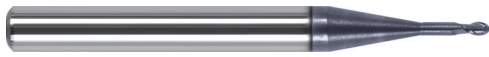


Type Typ	Dimension(mm) Abmessungen							Teeth Zähne Z	Grade Sorte KMG 303
	D	R	H	d ₁	M	d	L		
GM-2BP-R0.25-M04	0.5	0.25	0.7	0.45	4.0	4.0	50	2	●
GM-2BP-R0.25-M06	0.5	0.25	0.7	0.45	6.0	4.0	50	2	●
GM-2BP-R0.3-M04	0.6	0.3	0.9	0.55	4.0	4.0	50	2	●
GM-2BP-R0.3-M06	0.6	0.3	0.9	0.55	6.0	4.0	50	2	●
GM-2BP-R0.3-M08	0.6	0.3	0.9	0.55	8.0	4.0	50	2	●
GM-2BP-R0.4-M04	0.8	0.4	1.2	0.75	4.0	4.0	50	2	●
GM-2BP-R0.4-M06	0.8	0.4	1.2	0.75	6.0	4.0	50	2	●
GM-2BP-R0.4-M08	0.8	0.4	1.2	0.75	8.0	4.0	50	2	●
GM-2BP-R0.4-M10	0.8	0.4	1.2	0.75	10.0	4.0	50	2	●
GM-2BP-R0.5-M04	1.0	0.5	1.5	0.95	4.0	4.0	50	2	●
GM-2BP-R0.5-M06	1.0	0.5	1.5	0.95	6.0	4.0	50	2	●
GM-2BP-R0.5-M08	1.0	0.5	1.5	0.95	8.0	4.0	50	2	●
GM-2BP-R0.5-M10	1.0	0.5	1.5	0.95	10.0	4.0	50	2	●
GM-2BP-R0.5-M12	1.0	0.5	1.5	0.95	12.0	4.0	50	2	●
GM-2BP-R0.6-M06	1.2	0.6	1.8	1.15	6.0	4.0	50	2	●
GM-2BP-R0.6-M08	1.2	0.6	1.8	1.15	8.0	4.0	50	2	●
GM-2BP-R0.6-M12	1.2	0.6	1.8	1.15	12.0	4.0	50	2	●
GM-2BP-R0.6-M16	1.2	0.6	1.8	1.15	16.0	4.0	50	2	●
GM-2BP-R0.75-M08	1.5	0.75	2.3	1.45	8.0	4.0	50	2	●
GM-2BP-R0.75-M12	1.5	0.75	2.3	1.45	12.0	4.0	50	2	●
GM-2BP-R0.75-M16	1.5	0.75	2.3	1.45	16.0	4.0	50	2	●
GM-2BP-R1.0-M06	2.0	1.0	3.0	1.95	6.0	4.0	50	2	●
GM-2BP-R1.0-M08	2.0	1.0	3.0	1.95	8.0	4.0	50	2	●
GM-2BP-R1.0-M10	2.0	1.0	3.0	1.95	10.0	4.0	50	2	●
GM-2BP-R1.0-M12	2.0	1.0	3.0	1.95	12.0	4.0	50	2	●
GM-2BP-R1.0-M16	2.0	1.0	3.0	1.95	16.0	4.0	50	2	●
GM-2BP-R1.0-M20	2.0	1.0	3.0	1.95	20.0	4.0	50	2	●
GM-2BP-R1.25-M08	2.5	1.25	3.7	2.4	8.0	4.0	50	2	●
GM-2BP-R1.25-M12	2.5	1.25	3.7	2.4	12.0	4.0	50	2	●
GM-2BP-R1.25-M16	2.5	1.25	3.7	2.4	16.0	4.0	60	2	●
GM-2BP-R1.25-M20	2.5	1.25	3.7	2.4	20.0	4.0	60	2	●

● Ex Stock / ab Lager ○ On demand / auf Anfrage

GM-2BP series for general machining · GM-2BP Serie für allgemeine Bearbeitung

2-flute straight shank ball nose end mills with short cutting edge and long neck
 2-Schneiden Kugelkopffräser mit kurzer Schneide und Zylinderschaft



Type Typ	Dimension(mm) Abmessungen							Teeth Zähne Z	Grade Sorte KMG 303
	D	R	H	d ₁	M	d	L		
GM-2BP-R1.5-M08	3.0	1.5	4.5	2.85	8.0	6.0	50	2	●
GM-2BP-R1.5-M10	3.0	1.5	4.5	2.85	10.0	6.0	50	2	●
GM-2BP-R1.5-M12	3.0	1.5	4.5	2.85	12.0	6.0	50	2	●
GM-2BP-R1.5-M16	3.0	1.5	4.5	2.85	16.0	6.0	60	2	●
GM-2BP-R1.5-M20	3.0	1.5	4.5	2.85	20.0	6.0	60	2	●
GM-2BP-R2.0-M10	4.0	2.0	6.0	3.85	10.0	6.0	60	2	●
GM-2BP-R2.0-M16	4.0	2.0	6.0	3.85	16.0	6.0	60	2	●
GM-2BP-R2.0-M20	4.0	2.0	6.0	3.85	20.0	6.0	60	2	●
GM-2BP-R2.0-M25	4.0	2.0	6.0	3.85	25.0	6.0	60	2	●
GM-2BP-R2.5-M16	5.0	2.5	7.5	4.85	16.0	6.0	60	2	●
GM-2BP-R2.5-M25	5.0	2.5	7.5	4.85	25.0	6.0	70	2	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
 ✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓				✓	✓				



Code key B231
ISO Kennzeichen



Cutting data B431-456
Schnittdaten



Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.



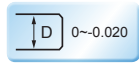
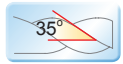
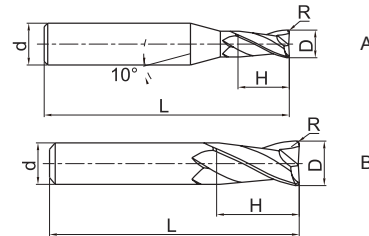
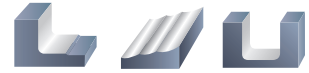
Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

GM-2R series for general machining · GM-2R Serie für allgemeine Bearbeitung

2-flute radius end mills with straight shank
2-Schneiden Radius-Schaftfräser und Zylinderschaft



Type Typ	Dimension(mm) Abmessungen					Teeth Zähne Z	Grade Sorte KMG 303
	D	R	d	H	L		
GM-2R-D1.0R0.2	1.0	0.2	4	3	50	2	○
GM-2R-D1.5R0.2	1.5	0.2	4	4	50	2	○
GM-2R-D2.0R0.2	2.0	0.2	4	6	50	2	○
GM-2R-D2.0R0.5	2.0	0.5	4	6	50	2	○
GM-2R-D2.5R0.2	2.5	0.2	4	8	50	2	○
GM-2R-D2.5R0.5	2.5	0.5	4	8	50	2	○
GM-2R-D3.0R0.2	3.0	0.2	4	8	50	2	○
GM-2R-D3.0R0.3	3.0	0.3	4	8	50	2	○
GM-2R-D3.0R0.5	3.0	0.5	4	8	50	2	○
GM-2R-D4.0R0.2	4.0	0.2	4	11	50	2	○
GM-2R-D4.0R0.3	4.0	0.3	4	11	50	2	○
GM-2R-D4.0R0.5	4.0	0.5	4	11	50	2	○
GM-2R-D4.0R1.0	4.0	1.0	4	11	50	2	○
GM-2R-D5.0R0.3	5.0	0.3	6	13	50	2	○
GM-2R-D5.0R0.5	5.0	0.5	6	13	50	2	○
GM-2R-D5.0R1.0	5.0	1.0	6	13	50	2	○
GM-2R-D6.0R0.3	6.0	0.3	6	16	50	2	○
GM-2R-D6.0R0.5	6.0	0.5	6	16	50	2	○
GM-2R-D6.0R1.0	6.0	1.0	6	16	50	2	○
GM-2R-D8.0R0.3	8.0	0.3	8	20	60	2	○
GM-2R-D8.0R0.5	8.0	0.5	8	20	60	2	○
GM-2R-D8.0R1.0	8.0	1.0	8	20	60	2	○
GM-2R-D10.0R0.5	10.0	0.5	10	25	75	2	○
GM-2R-D10.0R1.0	10.0	1.0	10	25	75	2	○
GM-2R-D10.0R1.5	10.0	1.5	10	25	75	2	●
GM-2R-D10.0R2.0	10.0	2.0	10	25	75	2	○
GM-2R-D12.0R0.5	12.0	0.5	12	30	75	2	○
GM-2R-D12.0R1.0	12.0	1.0	12	30	75	2	○
GM-2R-D12.0R1.5	12.0	1.5	12	30	75	2	○
GM-2R-D12.0R2.0	12.0	2.0	12	30	75	2	●

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

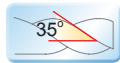
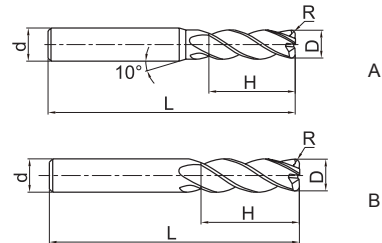
KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓			✓	✓

● Ex Stock / ab Lager ○ On demand / auf Anfrage

GM-4R series for general machining · GM-4R Serie für allgemeine Bearbeitung

4-flute radius end mills with straight shank
4-Schneiden Radius-Schafffräser und Zylinderschaft



Type Typ	Dimension(mm) Abmessungen					Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 303
	D	R	d	H	L			
GM-4R-D3.0R0.2	3.0	0.2	4	8	50	4	A	●
GM-4R-D4.0R0.3	4.0	0.3	4	10	50	4	B	○
GM-4R-D4.0R0.5	4.0	0.5	4	10	50	4	B	●
GM-4R-D5.0R0.5	5.0	0.5	6	13	50	4	A	●
GM-4R-D5.0R1.0	5.0	1.0	6	13	50	4	A	●
GM-4R-D6.0R0.5	6.0	0.5	6	16	50	4	B	●
GM-4R-D6.0R1.0	6.0	1.0	6	16	50	4	B	●
GM-4R-D8.0R0.5	8.0	0.5	8	20	60	4	B	●
GM-4R-D8.0R1.0	8.0	1.0	8	20	60	4	B	●
GM-4R-D10.0R0.5	10.0	0.5	10	25	75	4	B	●
GM-4R-D10.0R1.0	10.0	1.0	10	25	75	4	B	●
GM-4R-D10.0R2.0	10.0	2.0	10	25	75	4	B	●
GM-4R-D10.0R3.0	10.0	3.0	10	25	75	4	B	●
GM-4R-D12.0R0.5	12.0	0.5	12	30	75	4	B	●
GM-4R-D12.0R1.0	12.0	1.0	12	30	75	4	B	●
GM-4R-D12.0R2.0	12.0	2.0	12	30	75	4	B	●
GM-4R-D12.0R3.0	12.0	3.0	12	30	75	4	B	●

B

Solid Carbide end mills
Vollhartmetallschafffräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓			✓	✓

Code key B231
ISO Kennzeichen

Cutting data B431-456
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

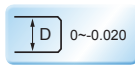
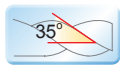
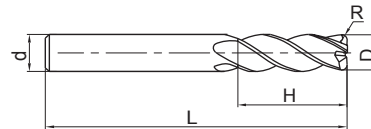
Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

GM-4RL series for general machining · GM-4RL Serie für allgemeine Bearbeitung

4-flute radius end mills with straight shank
4-Schneiden Gesenkfräser mit Eckenradius u. Zylinderschaft



Type Typ	Dimension(mm) Abmessungen					Teeth Zähne Z	Grade Sorte KMG 303
	D	R	d	H	L		
GM-4RL-D6.0R0.5	6.0	0.5	6	16	75	4	●
GM-4RL-D6.0R1.0	6.0	1.0	6	16	75	4	●
GM-4RL-D8.0R0.5	8.0	0.5	8	20	100	4	●
GM-4RL-D8.0R1.0	8.0	1.0	8	20	100	4	●
GM-4RL-D10.0R0.5	10.0	0.5	10	25	100	4	●
GM-4RL-D10.0R1.0	10.0	1.0	10	25	100	4	●
GM-4RL-D10.0R2.0	10.0	2.0	10	25	100	4	●
GM-4RL-D12.0R0.5	12.0	0.5	12	30	100	4	○
GM-4RL-D12.0R1.0	12.0	1.0	12	30	100	4	●
GM-4RL-D12.0R2.0	12.0	2.0	12	30	100	4	●
GM-4RL-D16.0R1.0	16.0	1.0	16	45	150	4	●
GM-4RL-D16.0R2.0	16.0	2.0	16	45	150	4	●

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓			✓	✓			✓	✓

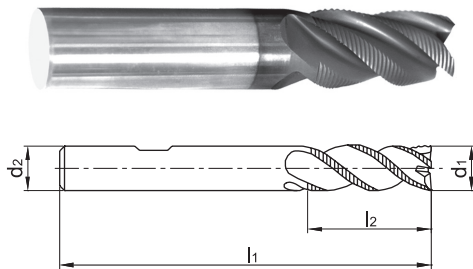
● Ex Stock / ab Lager ○ On demand / auf Anfrage

DIN 6527L Roughing end mills · DIN 6527L VHM Schruppfräser



5602R303/304GR

KMG303: nano TiAlN coated ultra-fine carbide / nano TiAlN beschichtetes Ultrafeinkornhartmetall



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne	Application Anwendung	P K S		
	d ₁ (h ₁₀)	d ₂ (h ₆)	l ₂	l ₁			z	Grade Sorte	KMG303
5602R303GR-0600	6	6	13	57	3			●	
5602R303GR-0800	8	8	19	63	3			●	
5602R304GR-1000	10	10	22	72	4			●	
5602R304GR-1200	12	12	26	83	4			●	
5602R304GR-1600	16	16	32	92	4			●	
5602R304GR-2000	20	20	38	104	4			●	

Art. Group No. / Produktgruppe Nr. :

021130

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG303

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓				✓			✓	✓

Code key B229
ISO Kennzeichen

Cutting data B387-414
Schnittdaten

Graphics identification & application B230
Graphische Werkzeug- & Anwendungsbeschr.

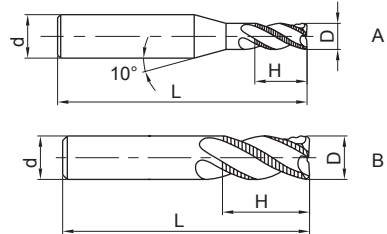
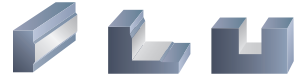
Order form for non-standard products B497-498
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

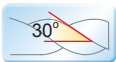
Solid Carbide end mills · Vollhartmetallschaftfräser

GM-4W series for general machining · **GM-4W** Serie für allgemeine Bearbeitung

4-flute end mills with straight shank for roughing
4-Schneiden Schruppfräser mit Zylinderschaft



- Most suitable for effectively rough machining.
- Besonders empfohlen für die Schruppbearbeitung.



D ≤ 6	0 ~ -0.048	6 < D ≤ 10	0 ~ -0.058
10 < D ≤ 18	0 ~ -0.07	18 < D	0 ~ -0.084



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 405
	D	d	H	L			
GM-4W-D6.0	6	6	16	50	4	B	●
GM-4W-D7.0	7	8	20	60	4	A	●
GM-4W-D8.0	8	8	20	60	4	B	●
GM-4W-D9.0	9	10	22	75	4	A	●
GM-4W-D10.0	10	10	25	75	4	B	●
GM-4W-D11.0	11	12	26	75	4	A	●
GM-4W-D12.0	12	12	30	75	4	B	●
GM-4W-D16.0	16	16	45	100	4	B	●
GM-4W-D20.0	20	20	45	100	4	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG405

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓				✓			✓	✓

● Ex Stock / ab Lager ○ On demand / auf Anfrage

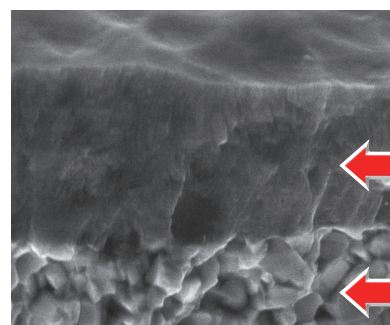
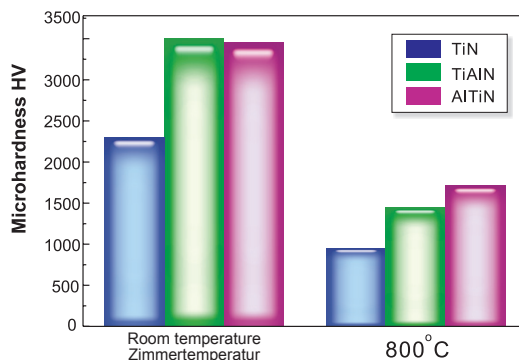
series end mills for machining high-hardness steel

HM

Serie Vollhartmetall Schaftfräser zur Bearbeitung von gehärtetem Stahl

1. Excellent tool design covers large chip pocket, good stability and high machining efficiency.
2. Optimized cutting geometry (rake angle) assures edge stability and sharpness. The application area is wider.
3. The outstanding high cutting performance based on the perfect combination of ultrafine grain carbide substrate with high wear resistance and stable cutting edge.
4. The optimized Nano- AlTiN coating is the base for hardmachining with high speed at high temperature.

1. Exzellentes Werkzeug Design, mit großem Spanraum für kontrollierte Spanabfuhr, hervorragende Stabilität und höchste Bearbeitungswirtschaftlichkeit.
2. Trotz großem Spanwinkel und scharfer Schneide ist die Schneidenstabilität gewährleistet. Der Anwendungsbereich wird dadurch deutlich erweitert.
3. Das ultrafeine Hartmetall Substrat, und die optimierte Beschichtung ist speziell für die Bearbeitung von gehärtetem Stahl entwickelt.
4. Die Nano- AlTiN Beschichtung ist perfekt geeignet für die Hartbearbeitung bei hohen Temperaturen.



AlTiN coating

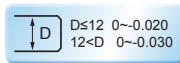
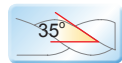
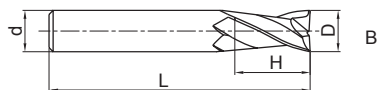
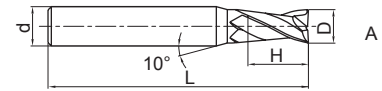
Ultra-fine carbide substrate

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

HM-2E

2-flute end mills with straight shank
2-Schneiden Eckfräser mit Zylinderschaft



Type Typ	Dimension (mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 555
	D	d	H	L			
HM-2E-D1.0S	1.0	4	3	50	2	A	●
HM-2E-D1.5S	1.5	4	4	50	2	A	●
HM-2E-D2.0S	2.0	4	6	50	2	A	●
HM-2E-D2.5S	2.5	4	8	50	2	A	●
HM-2E-D3.0S	3.0	4	8	50	2	A	●
HM-2E-D4.0S	4.0	4	11	50	2	B	●
HM-2E-D1.0	1.0	6	3	50	2	A	●
HM-2E-D1.5	1.5	6	4	50	2	A	●
HM-2E-D2.0	2.0	6	6	50	2	A	●
HM-2E-D2.5	2.5	6	8	50	2	A	●
HM-2E-D3.0	3.0	6	8	50	2	A	●
HM-2E-D3.5	3.5	6	10	50	2	A	●
HM-2E-D4.0	4.0	6	11	50	2	A	●
HM-2E-D4.5	4.5	6	11	50	2	A	●
HM-2E-D5.0	5.0	6	13	50	2	A	●
HM-2E-D5.5	5.5	6	16	50	2	A	●
HM-2E-D6.0	6.0	6	16	50	2	B	●
HM-2E-D7.0	7.0	8	20	60	2	A	●
HM-2E-D8.0	8.0	8	20	60	2	B	●
HM-2E-D9.0	9.0	10	22	75	2	A	●
HM-2E-D10.0	10.0	10	25	75	2	B	●
HM-2E-D11.0	11.0	12	26	75	2	A	○
HM-2E-D12.0	12.0	12	30	75	2	B	●
HM-2E-D14.0	14.0	14	32	100	2	B	●
HM-2E-D16.0	16.0	16	45	100	2	B	●
HM-2E-D18.0	18.0	18	45	100	2	B	○
HM-2E-D20.0	20.0	20	45	100	2	B	●

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

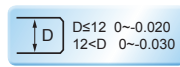
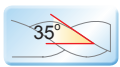
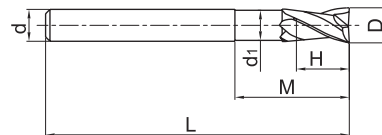
KMG555

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
			✓	✓	✓		✓				

● Ex Stock / ab Lager ○ On demand / auf Anfrage

HM-2EFP

2-flute flute end mills with straight shank and short cutting edge and long neck
2-Schneiden Eckfräser mit kurzer Schneide und Zylinderschaft



Type Typ	Dimension(mm) Abmessungen						Teeth Zähne Z	Grade Sorte KMG 555
	D	d	H	L				
HM-2EFP-D6.0	6.0	6	9	30	5.8	75	2	●
HM-2EFP-D8.0	8.0	8	12	40	7.8	100	2	●
HM-2EFP-D10.0	10.0	10	15	50	9.6	100	2	●
HM-2EFP-D12.0	12.0	12	18	50	11.5	100	2	●
HM-2EFP-D16.0	16.0	16	24	50	15.5	150	2	●
HM-2EFP-D20.0	20.0	20	30	60	19.5	150	2	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG555

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
			✓	✓	✓		✓				

Code key B231
ISO Kennzeichen

Cutting data B457-471
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

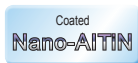
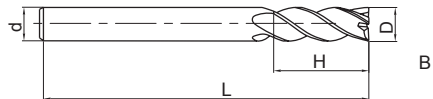
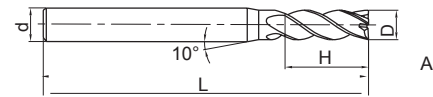
B321

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

HM-4E series for machining high hardness steel · **HM-4E** Serie für die Hartbearbeitung

4-flute end mills with straight shank
4-Schneiden Schaftfräser mit Zylinderschaft



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 555
	D	d	H	L			
HM-4E-D1.0S	1.0	4	3	50	4	A	●
HM-4E-D1.5S	1.5	4	4	50	4	A	●
HM-4E-D2.0S	2.0	4	6	50	4	A	●
HM-4E-D2.5S	2.5	4	8	50	4	A	●
HM-4E-D3.0S	3.0	4	8	50	4	A	●
HM-4E-D4.0S	4.0	4	11	50	4	B	●
HM-4E-D1.0	1.0	6	3	50	4	A	●
HM-4E-D1.5	1.5	6	4	50	4	A	●
HM-4E-D2.0	2.0	6	6	50	4	A	●
HM-4E-D2.5	2.5	6	8	50	4	A	●
HM-4E-D3.0	3.0	6	8	50	4	A	●
HM-4E-D3.5	3.5	6	10	50	4	A	●
HM-4E-D4.0	4.0	6	11	50	4	A	●
HM-4E-D4.5	4.5	6	11	50	4	A	●
HM-4E-D5.0	5.0	6	13	50	4	A	●
HM-4E-D5.5	5.5	6	16	50	4	A	●
HM-4E-D6.0	6.0	6	16	50	4	B	●
HM-4E-D7.0	7.0	8	20	60	4	A	●
HM-4E-D8.0	8.0	8	20	60	4	B	●
HM-4E-D9.0	9.0	10	22	75	4	A	●
HM-4E-D10.0	10.0	10	25	75	4	B	●
HM-4E-D11.0	11.0	12	26	75	4	A	●
HM-4E-D12.0	12.0	12	30	75	4	B	●
HM-4E-D14.0	14.0	14	32	75	4	B	●
HM-4E-D16.0	16.0	16	45	100	4	B	●
HM-4E-D18.0	18.0	18	45	100	4	B	●
HM-4E-D20.0	20.0	20	45	100	4	B	●

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

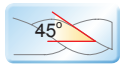
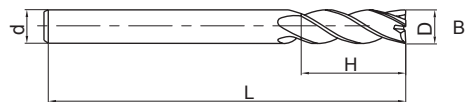
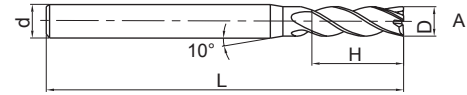
KMG555

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
			✓	✓	✓		✓				

● Ex Stock / ab Lager ○ On demand / auf Anfrage

HM-4EL series for machining high hardness steel · **HM-4EL** Serie für die Hartbearbeitung

4-flute end mills with straight shank and long cutting edges
4-Schneiden Schaftfräser mit Zylinderschaft und langer Schneide



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 555
	D	d	H	L			
HM-4EL-D3.0	3.0	6	12	75	4	A	●
HM-4EL-D4.0	4.0	6	15	75	4	A	●
HM-4EL-D5.0	5.0	6	20	75	4	A	●
HM-4EL-D6.0	6.0	6	20	75	4	B	●
HM-4EL-D8.0	8.0	8	25	100	4	B	●
HM-4EL-D10.0	10.0	10	30	100	4	B	●
HM-4EL-D12.0	12.0	12	35	100	4	B	●
HM-4EL-D14.0	14.0	14	40	100	4	B	●
HM-4EL-D16.0	16.0	16	50	150	4	B	●
HM-4EL-D20.0	20.0	20	55	150	4	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG555

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
			✓	✓	✓		✓				

Code key B231
ISO Kennzeichen

Cutting data B457-471
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

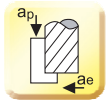
Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

DIN 6527L mills for HSC machining high hardness steel (HRC>48)

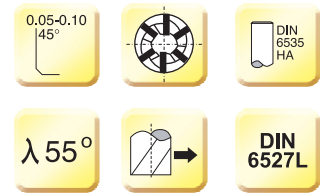
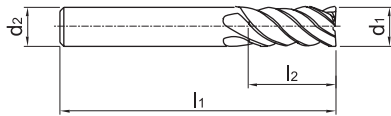
DIN 6527L VHM Radiusfräser für die Hartbearbeitung im HSC Bereich (HRC>48)



5502R55MHH

KMG405: nano AlTiN Coated Ultra-fine carbide / nano AlTiN beschichtetes Ultrafeinkornhartmetall
For HSC machining of steel (HRC<63) / Für HSC Bearbeitung von Stahl (HRC<63)

KMG555: nano AlTiXN Coated super-fine carbide / nano AlTiXN beschichtetes Superfeinkornhartmetall
For HSC machining and dry machining of steel (HRC<=70) / Für HSC Bearbeitung und Trockenbearbeitung von Stahl (HRC<=70)



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne	Application Anwendung	H K	
	d1(e8)	d2(h6)	l2	l1			Grade Sorte	KMG555
5502R55MHH-0300	3.00	6	8	57	4		●	●
5502R55MHH-0400	4.00	6	11	57	4		●	●
5502R55MHH-0500	5.00	6	13	57	5		●	●
5502R55MHH-0600	6.00	6	13	57	6		●	●
5502R55MHH-0800	8.00	8	19	63	6		●	●
5502R55MHH-1000	10.00	10	22	72	6		●	●
5502R55MHH-1200	12.00	12	26	83	6		●	●
5502R55MHH-1600	16.00	16	32	92	6		●	●
5502R55MHH-2000	20.00	20	38	104	8		●	●

Art. Group No. / Produktgruppe Nr. :

024130

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

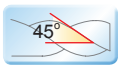
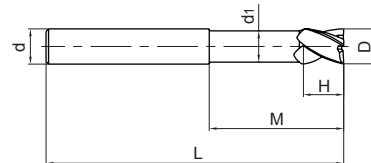
KMG555

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
		✓	✓	✓	✓		✓				

● Ex Stock / ab Lager ○ On demand / auf Anfrage

HM-4EFP

4-flute end mills with straight shank and short cutting edge and long neck
4-Schneiden Eckfräser mit kurzer Schneide und Zylinderschaft



Type Typ	Dimension (mm) Abmessungen						Teeth Zähne Z	Grade Sorte KMG 555
	D	d	H	M	d ₁	L		
HM-4EFP-D6.0	6.0	6	9	30	5.8	75	4	○
HM-4EFP-D8.0	8.0	8	12	40	7.8	100	4	●
HM-4EFP-D10.0	10.0	10	15	50	9.6	100	4	●
HM-4EFP-D12.0	12.0	12	18	50	11.5	100	4	●
HM-4EFP-D16.0	16.0	16	24	50	15.5	150	4	●
HM-4EFP-D20.0	20.0	20	30	60	19.5	150	4	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG555

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
			✓	✓	✓		✓				

Code key B231
ISO Kennzeichen

Cutting data B457-471
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

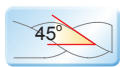
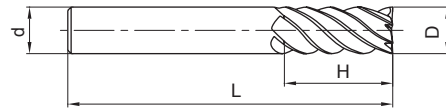
B 325

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

HM-6E

6-flute end mills with straight shank
6-Schneiden Schafffräser mit Zylinderschaft



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Grade Sorte KMG 555
	D	d	H	L		
HM-6E-D6.0	6.0	6	18	60	6	○
HM-6E-D8.0	8.0	8	20	60	6	○
HM-6E-D10.0	10.0	10	30	75	6	○
HM-6E-D12.0	12.0	12	32	75	6	○
HM-6E-D16.0	16.0	16	40	100	6	○
HM-6E-D20.0	20.0	20	45	100	6	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

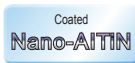
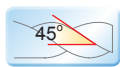
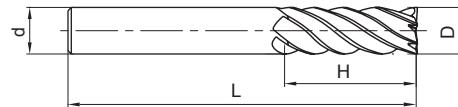
KMG555

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
			✓	✓	✓		✓				

● Ex Stock / ab Lager ○ On demand / auf Anfrage

HM-6EL series for machining high hardness steel · **HM-6EL** Serie für die Hartbearbeitung

6-flute end mills with straight shank and long cutting edges
6-Schneiden Schaftfräser mit Zylinderschaft und langer Schneide



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Grade Sorte KMG 555
	D	d	H	L		
HM-6EL-D6.0	6.0	6	24	75	6	●
HM-6EL-D8.0	8.0	8	32	75	6	●
HM-6EL-D10.0	10.0	10	40	100	6	●
HM-6EL-D12.0	12.0	12	45	100	6	●
HM-6EL-D16.0	16.0	16	64	150	6	●
HM-6EL-D20.0	20.0	20	75	150	6	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG555

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
			✓	✓	✓		✓				



Code key B231
ISO Kennzeichen



Cutting data B457-471
Schnittdaten



Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.



Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

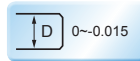
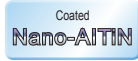
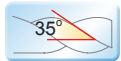
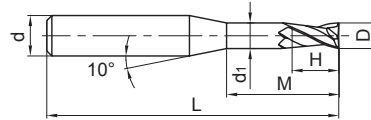
B 327

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

HM-2EP series for machining high hardness steel · **HM-2EP** Serie für die Hartbearbeitung

2-flute slot end mills with short cutting edge and long neck
2-Schneiden Nutenfräser mit kurzer Schneide und Zylinderschaft



Type Typ	Dimension(mm) Abmessungen						Teeth Zähne Z	Grade Sorte KMG 555
	D	d	H	M	d ₁	L		
HM-2EP-D0.5-M04	0.5	4.0	0.7	4.0	0.45	50	2	●
HM-2EP-D0.5-M06	0.5	4.0	0.7	6.0	0.45	50	2	●
HM-2EP-D0.5-M08	0.5	4.0	0.7	8.0	0.45	50	2	●
HM-2EP-D0.8-M04	0.8	4.0	1.2	4.0	0.75	50	2	●
HM-2EP-D0.8-M06	0.8	4.0	1.2	6.0	0.75	50	2	●
HM-2EP-D0.8-M08	0.8	4.0	1.2	8.0	0.75	50	2	●
HM-2EP-D0.8-M10	0.8	4.0	1.2	10.0	0.75	50	2	●
HM-2EP-D1.0-M04	1.0	4.0	1.5	4.0	0.95	50	2	●
HM-2EP-D1.0-M06	1.0	4.0	1.5	6.0	0.95	50	2	●
HM-2EP-D1.0-M08	1.0	4.0	1.5	8.0	0.95	50	2	●
HM-2EP-D1.0-M10	1.0	4.0	1.5	10.0	0.95	50	2	●
HM-2EP-D1.0-M12	1.0	4.0	1.5	12.0	0.95	50	2	●
HM-2EP-D1.0-M14	1.0	4.0	1.5	14.0	0.95	50	2	●
HM-2EP-D1.2-M06	1.2	4.0	1.8	6.0	1.15	50	2	●
HM-2EP-D1.2-M08	1.2	4.0	1.8	8.0	1.15	50	2	●
HM-2EP-D1.2-M10	1.2	4.0	1.8	10.0	1.15	50	2	●
HM-2EP-D1.2-M12	1.2	4.0	1.8	12.0	1.15	50	2	●
HM-2EP-D1.5-M06	1.5	4.0	2.3	6.0	1.45	50	2	●
HM-2EP-D1.5-M08	1.5	4.0	2.3	8.0	1.45	50	2	●
HM-2EP-D1.5-M10	1.5	4.0	2.3	10.0	1.45	50	2	●
HM-2EP-D1.5-M12	1.5	4.0	2.3	12.0	1.45	50	2	●
HM-2EP-D1.5-M14	1.5	4.0	2.3	14.0	1.45	50	2	●
HM-2EP-D2.0-M06	2.0	4.0	3.0	6.0	1.95	50	2	●
HM-2EP-D2.0-M08	2.0	4.0	3.0	8.0	1.95	50	2	●
HM-2EP-D2.0-M10	2.0	4.0	3.0	10.0	1.95	50	2	●
HM-2EP-D2.0-M12	2.0	4.0	3.0	12.0	1.95	50	2	●
HM-2EP-D2.0-M14	2.0	4.0	3.0	14.0	1.95	50	2	●
HM-2EP-D2.0-M16	2.0	4.0	3.0	16.0	1.95	50	2	●

Material Overview · Material Übersicht

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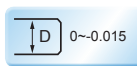
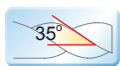
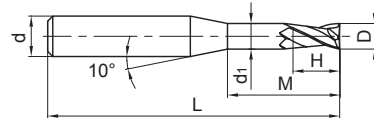
KMG555

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
			✓	✓	✓		✓				

● Ex Stock / ab Lager ○ On demand / auf Anfrage

HM-2EP series for machining high hardness steel · **HM-2EP** Serie für die Hartbearbeitung

2-flute slot end mills with short cutting edge and long neck
2-Schneiden Nutenfräser mit kurzer Schneide und Zylinderschaft



Type Typ	Dimension(mm) Abmessungen						Teeth Zähne Z	Grade Sorte KMG 555
	D	d	H	M	d ₁	L		
HM-2EP-D2.5-M08	2.5	4.0	3.7	8.0	2.4	50	2	●
HM-2EP-D2.5-M10	2.5	4.0	3.7	10.0	2.4	50	2	●
HM-2EP-D2.5-M12	2.5	4.0	3.7	12.0	2.4	50	2	●
HM-2EP-D2.5-M14	2.5	4.0	3.7	14.0	2.4	50	2	●
HM-2EP-D2.5-M16	2.5	4.0	3.7	16.0	2.4	60	2	●
HM-2EP-D2.5-M18	2.5	4.0	3.7	18.0	2.4	60	2	●
HM-2EP-D2.5-M20	2.5	4.0	3.7	20.0	2.4	60	2	●
HM-2EP-D3.0-M06	3.0	6.0	4.5	6.0	2.85	50	2	●
HM-2EP-D3.0-M08	3.0	6.0	4.5	8.0	2.85	50	2	●
HM-2EP-D3.0-M10	3.0	6.0	4.5	10.0	2.85	50	2	●
HM-2EP-D3.0-M12	3.0	6.0	4.5	12.0	2.85	50	2	●
HM-2EP-D3.0-M14	3.0	6.0	4.5	14.0	2.85	60	2	●
HM-2EP-D3.0-M16	3.0	6.0	4.5	16.0	2.85	60	2	●
HM-2EP-D3.0-M18	3.0	6.0	4.5	18.0	2.85	60	2	●
HM-2EP-D3.0-M20	3.0	6.0	4.5	20.0	2.85	60	2	●
HM-2EP-D4.0-M12	4.0	6.0	6.0	12.0	3.85	60	2	●
HM-2EP-D4.0-M16	4.0	6.0	6.0	16.0	3.85	60	2	●
HM-2EP-D4.0-M20	4.0	6.0	6.0	20.0	3.85	60	2	●
HM-2EP-D4.0-M25	4.0	6.0	6.0	25.0	3.85	60	2	●
HM-2EP-D5.0-M16	5.0	6.0	7.5	16.0	4.85	60	2	●
HM-2EP-D5.0-M25	5.0	6.0	7.5	25.0	4.85	70	2	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
 ✓ = Suitable · Empfohlen

KMG555

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
			✓	✓	✓		✓				

Code key B231
ISO Kennzeichen

Cutting data B457-471
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

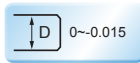
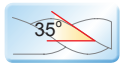
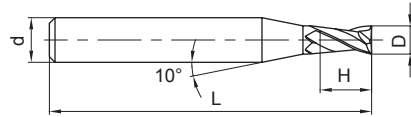
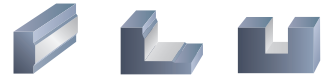
Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

HM-2ES series machining high hardness steel · HM-2ES Serie für die Hartbearbeitung

2-flute tiny diameter end mills with straight shank
2-Schneiden Mirco-Fräser mit Zylinderschaft



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Grade Sorte KMG 555
	D	d	H	L		
HM-2ES-D0.3	0.3	4.0	0.6	50	2	●
HM-2ES-D0.4	0.4	4.0	0.8	50	2	●
HM-2ES-D0.5	0.5	4.0	1.0	50	2	●
HM-2ES-D0.6	0.6	4.0	1.2	50	2	●
HM-2ES-D0.7	0.7	4.0	1.4	50	2	●
HM-2ES-D0.8	0.8	4.0	1.6	50	2	●
HM-2ES-D0.9	0.9	4.0	1.8	50	2	●
HM-2ES-D1.0	1.0	4.0	2.0	50	2	●
HM-2ES-D1.1	1.1	4.0	2.0	50	2	●
HM-2ES-D1.2	1.2	4.0	2.5	50	2	●
HM-2ES-D1.3	1.3	4.0	2.5	50	2	●
HM-2ES-D1.4	1.4	4.0	3.0	50	2	●
HM-2ES-D1.5	1.5	4.0	3.0	50	2	●
HM-2ES-D1.6	1.6	4.0	3.5	50	2	●
HM-2ES-D1.7	1.7	4.0	3.5	50	2	●
HM-2ES-D1.8	1.8	4.0	4.0	50	2	●
HM-2ES-D1.9	1.9	4.0	4.0	50	2	●
HM-2ES-D2.0	2.0	4.0	4.0	50	2	●
HM-2ES-D2.1	2.1	4.0	4.0	50	2	●
HM-2ES-D2.2	2.2	4.0	4.5	50	2	●
HM-2ES-D2.3	2.3	4.0	4.5	50	2	●
HM-2ES-D2.4	2.4	4.0	5.0	50	2	●
HM-2ES-D2.5	2.5	4.0	5.0	50	2	●
HM-2ES-D2.6	2.6	4.0	5.0	50	2	●
HM-2ES-D2.7	2.7	4.0	5.5	50	2	●
HM-2ES-D2.8	2.8	4.0	5.5	50	2	●
HM-2ES-D2.9	2.9	4.0	6.0	50	2	●
HM-2ES-D3.0	3.0	4.0	6.0	50	2	●

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG555

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
			✓	✓	✓		✓				

● Ex Stock / ab Lager ○ On demand / auf Anfrage

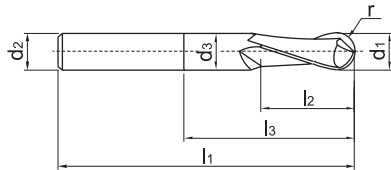
ZCC CT 2-flute ball nose end mills for HSC machining high hardness steel (HRC>48) short

ZCC CT 2-Schneiden VHM Vollradiusfräser für Hartbearbeitung im HSC Bereich (HRC>48) kurz



5565R302GH

KMG405: nano AlTiN Coated Ultra-fine carbide / nano AlTiN beschichtetes Ultrafeinkornhartmetall



Type Typ	Dimension(mm) Abmessungen								Teeth Zähne	Application Anwendung	Grade Sorte	P K H
	d ₁	d ₂ (h ₆)	l ₂	l ₁	d ₃	l ₃	r(f ₈)	α°				
5565R302GH-0300	3.00	6	4	57	2.80	9	1.50	6	2		●	
5565R302GH-0400	4.00	6	5	57	3.70	12	2.00	4	2		●	
5565R302GH-0500	5.00	6	6	57	4.60	15	2.50	2	2		●	
5565R302GH-0600	6.00	6	7	57	5.50	20	3.00	-	2		●	
5565R302GH-0800	8.00	8	9	63	7.40	26	4.00	-	2		●	
5565R302GH-1000	10.00	10	11	72	9.20	31	5.00	-	2		●	
5565R302GH-1200	12.00	12	12	83	11.00	37	6.00	-	2		●	
5565R302GH-1600	16.00	16	16	92	15.00	43	8.00	-	2		●	

Art. Group No. / Produktgruppe Nr. : 025130

B

Solid Carbide end mills
Vollhartmetallschaftfräser

KMG555

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
		✓	✓	✓			✓				

Code key B229
ISO Kennzeichen

Cutting data B387-414
Schnittdaten

Graphics identification & application B230
Graphische Werkzeug- & Anwendungsbeschr.

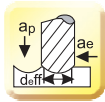
Order form for non-standard products B497-498
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

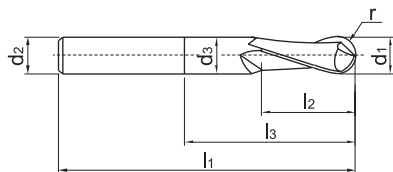
ZCC CT 2-flute ball nose end mills for HSC machining high hardness steel (HRC>48) lang

ZCC CT 2-Schneiden VHM Vollradiusfräser für Hartbearbeitung im HSC Bereich (HRC>48) lang



5566R302GH

KMG405: nano AlTiN Coated Ultra-fine carbide / nano AlTiN beschichtetes Ultrafeinkornhartmetall



Type Typ	Dimension(mm) Abmessungen								Teeth Zähne	Application Anwendung	Grade Sorte	P K H
	d1	d2(h6)	l2	l1	d3	l3	r(f8)	α°				
5566R302GH-0300	3.00	6	4	75	2.80	15	1.50	6	2		KMG405	●
5566R302GH-0400	4.00	6	5	75	3.70	20	2.00	4	2		KMG405	●
5566R302GH-0500	5.00	6	6	80	4.60	25	2.50	2	2		KMG405	●
5566R302GH-0600	6.00	6	7	80	5.50	30	3.00	-	2		KMG405	●
5566R302GH-0800	8.00	8	9	90	7.40	35	4.00	-	2		KMG405	●
5566R302GH-1000	10.00	10	11	100	9.20	40	5.00	-	2		KMG405	●
5566R302GH-1200	12.00	12	12	120	11.00	50	6.00	-	2		KMG405	●

Art. Group No. / Produktgruppe Nr. : 025130

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
 ✓ = Suitable · Empfohlen

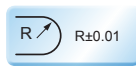
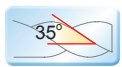
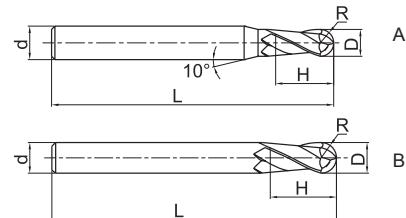
KMG555

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
		✓	✓	✓			✓				

● Ex Stock / ab Lager ○ On demand / auf Anfrage

HM-2B series machining high hardness steel · HM-2B Serie für die Hartbearbeitung

2-flute ball nose end mills with straight shank
2-Schneiden Kugelkopffräser mit Zylinderschaft



Type Typ	Dimension(mm) Abmessungen					Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 555
	D	R	d	H	L			
HM-2B-R0.5S	1.0	0.5	4.0	2.0	50	2	A	●
HM-2B-R0.75S	1.5	0.75	4.0	3.0	50	2	A	●
HM-2B-R1.0S	2.0	1.0	4.0	4.0	50	2	A	●
HM-2B-R1.25S	2.5	1.25	4.0	5.0	50	2	A	●
HM-2B-R1.5S	3.0	1.5	4.0	6.0	50	2	A	●
HM-2B-R2.0S	4.0	2.0	4.0	8.0	50	2	B	●
HM-2B-R0.5	1.0	0.5	6.0	2.0	50	2	A	●
HM-2B-R0.75	1.5	0.75	6.0	3.0	50	2	A	●
HM-2B-R1.0	2.0	1.0	6.0	4.0	50	2	A	●
HM-2B-R1.25	2.5	1.25	6.0	5.0	50	2	A	●
HM-2B-R1.5	3.0	1.5	6.0	6.0	50	2	A	●
HM-2B-R1.75	3.5	1.75	6.0	8.0	50	2	A	●
HM-2B-R2.0	4.0	2.0	6.0	8.0	50	2	A	●
HM-2B-R2.5	5.0	2.5	6.0	10.0	50	2	A	●
HM-2B-R2.75	5.5	2.75	6.0	12.0	50	2	A	●
HM-2B-R3.0	6.0	3.0	6.0	12.0	50	2	B	●
HM-2B-R3.5	7.0	3.5	8.0	14.0	60	2	A	●
HM-2B-R4.0	8.0	4.0	8.0	16.0	60	2	B	●
HM-2B-R4.5	9.0	4.5	10.0	18.0	75	2	A	●
HM-2B-R5.0	10.0	5.0	10.0	20.0	75	2	B	●
HM-2B-R6.0	12.0	6.0	12.0	24.0	75	2	B	●
HM-2B-R7.0	14.0	7.0	14.0	28.0	75	2	B	●
HM-2B-R8.0	16.0	8.0	16.0	32.0	100	2	B	●
HM-2B-R10.0	20.0	10.0	20.0	40.0	100	2	B	●

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG555

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
		✓	✓	✓			✓				

Code key
ISO Kennzeichen

Cutting data
Schnittdaten

Graphics identification & application
Graphische Werkzeug- & Anwendungsbeschr.

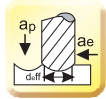
Order form for non-standard products
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

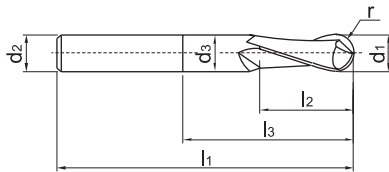
ZCC CT 2-flute ball nose end mills for HSC machining high hardness steel (HRC>48)

ZCC CT 2-Schneiden VHM Kugelkopffräser für Hartbearbeitung im HSC Bereich (HRC>48)



5565R302HH

KMG405: nano AlTiN Coated Ultra-fine carbide / nano AlTiN beschichtetes Ultrafeinkornhartmetall



Type Typ	Dimension(mm) Abmessungen								Teeth Zähne	Application Anwendung	P K H			
	d ₁	d ₂ (h ₆)	l ₂	l ₁	d ₃	l ₃	r(f ₈)	α°			z	Grade Sorte	KMG405	
5565R302HH-0300	3	6	4	57	2.8	9	1.5	6	2			●		
5565R302HH-0400	4	6	5	57	3.7	12	2.0	4	2			●		
5565R302HH-0500	5	6	6	57	4.6	15	2.5	2	2			●		
5565R302HH-0600	6	6	7	57	5.5	20	3.0	-	2			●		
5565R302HH-0800	8	8	9	63	7.4	26	4.0	-	2			●		
5565R302HH-1000	10	10	11	72	9.2	31	5.0	-	2			●		
5565R302HH-1200	12	12	12	83	11	37	6.0	-	2			●		
5565R302HH-1600	16	16	16	92	15	43	8.0	-	2			●		

Art. Group No. / Produktgruppe Nr. :

026130

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
 ✓ = Suitable · Empfohlen

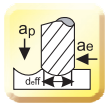
KMG555

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
		✓	✓	✓	✓		✓				

● Ex Stock / ab Lager ○ On demand / auf Anfrage

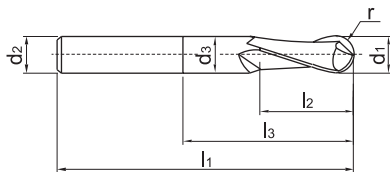
ZCC CT 2-flute ball nose end mills for HSC machining high hardness steel (HRC>48)

ZCC CT 2-Schneiden VHM Kugelkopffräser für Hartbearbeitung im HSC Bereich (HRC>48)



5566R302HH

KMG405: nano AlTiN Coated Ultra-fine carbide / nano AlTiN beschichtetes Ultrafeinkornhartmetall



Type Typ	Dimension(mm) Abmessungen								Teeth Zähne	Application Anwendung	P K H		
	d ₁	d ₂ (h _e)	l ₂	l ₁	d ₃	l ₃	r(f _a)	α°			z	Grade Sorte	KMG405
5566R302HH-0300	3	6	4	75	2.8	15	1.5	6	2			●	
5566R302HH-0400	4	6	5	75	3.7	20	2.0	4	2			●	
5566R302HH-0500	5	6	6	80	4.6	25	2.5	2	2			●	
5566R302HH-0600	6	6	7	80	5.5	30	3.0	-	2			●	
5566R302HH-0800	8	8	9	90	7.4	35	4.0	-	2			●	
5566R302HH-1000	10	10	11	100	9.2	40	5.0	-	2			●	
5566R302HH-1200	12	12	12	120	11.0	50	6.0	-	2			●	

Art. Group No. / Produktgruppe Nr. :

026130

Solid Carbide end mills
Vollhartmetallschaftfräser

B

KMG555

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
		✓	✓	✓	✓		✓				

Code key **B229**
ISO Kennzeichen

Cutting data **B387-414**
Schnittdaten

Graphics identification & application **B230**
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products **B497-498**
Bestellformular für Sonderwerkzeuge

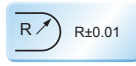
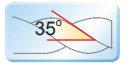
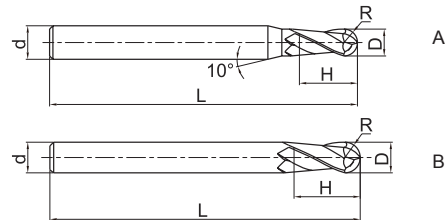
B335

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

HM-2BL series for machining high hardness steel · **HM-2BL** Serie für die Hartbearbeitung

2-flute ball nose end mills with long straight shank
2-Schneiden Nutenfräser mit langem Zylinderschaft



Type Typ	Dimension(mm) Abmessungen					Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 555
	D	R	d	H	L			
HM-2BL-R1.0	2.0	1.0	6.0	4.0	75	2	A	●
HM-2BL-R1.25	2.5	1.25	6.0	6.0	75	2	A	●
HM-2BL-R1.5	3.0	1.5	6.0	6.0	75	2	A	●
HM-2BL-R1.75	3.5	1.75	6.0	8.0	75	2	A	●
HM-2BL-R2.0	4.0	2.0	6.0	8.0	75	2	A	●
HM-2BL-R2.5	5.0	2.5	6.0	10.0	75	2	A	●
HM-2BL-R2.75	5.5	2.75	6.0	12.0	75	2	A	●
HM-2BL-R3.0	6.0	3.0	6.0	12.0	75	2	B	●
HM-2BL-R3.5	7.0	3.5	8.0	14.0	75	2	A	●
HM-2BL-R4.0	8.0	4.0	8.0	16.0	100	2	B	●
HM-2BL-R4.5	9.0	4.5	10.0	18.0	100	2	A	●
HM-2BL-R5.0	10.0	5.0	10.0	20.0	100	2	B	●
HM-2BL-R6.0	12.0	6.0	12.0	24.0	100	2	B	●
HM-2BL-R7.0	14.0	7.0	14.0	28.0	100	2	B	●
HM-2BL-R8.0	16.0	8.0	16.0	32.0	150	2	B	●
HM-2BL-R10.0	20.0	10.0	20.0	40.0	150	2	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
 ✓ = Suitable · Empfohlen

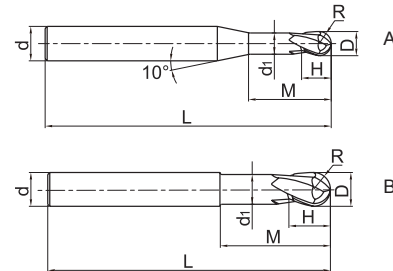
KMG555

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
			✓	✓	✓		✓				

● Ex Stock / ab Lager ○ On demand / auf Anfrage

HM-2BFP series for machining high hardness steel · **HM-2BFP** Serie für die Hartbearbeitung

2-flute ball nose mills with long straight shank
2-Schneiden Kugelkopffräser mit langem Zylinderschaft



Type Typ	Dimension(mm) Abmessungen							Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 555
	D	R	H	d ₁	M	d	L			
HM-2BFP-R0.5	1.0	0.5	1.0	0.95	2.5	6	75	2	A	○
HM-2BFP-R0.75	1.5	0.75	1.5	1.45	3.0	6	75	2	A	○
HM-2BFP-R1.0	2.0	1.0	2.0	1.95	4.0	6	75	2	A	○
HM-2BFP-R1.5	3.0	1.5	3.0	2.85	6.0	6	75	2	A	○
HM-2BFP-R2.0	4.0	2.0	4.0	3.85	8.0	6	75	2	A	○
HM-2BFP-R2.5	5.0	2.5	5.0	4.85	10.0	6	75	2	A	○
HM-2BFP-R3.0	6.0	3.0	6.0	5.8	12.0	6	75	2	B	○
HM-2BFP-R4.0	8.0	4.0	8.0	7.8	16.0	8	100	2	B	○
HM-2BFP-R5.0	10.0	5.0	10	9.6	20.0	10	100	2	B	○
HM-2BFP-R6.0	12.0	6.0	12	11.5	24.0	12	100	2	B	○
HM-2BFP-R8.0	16.0	8.0	16	15.5	32.0	16	150	2	B	○
HM-2BFP-R10.0	20.0	10.0	20	19.5	40.0	20	150	2	B	○

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
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KMG555

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
			✓	✓	✓		✓				

Code key B231
ISO Kennzeichen

Cutting data B457-471
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

B337

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

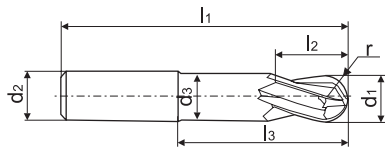
ZCC CT 4-flute ball nose end mills for HSC machining high hardness steel (HRC>48) short

ZCC CT 4-Schneiden VHM Kugelkopffräser für Hartbearbeitung im HSC Bereich (HRC>48) kurz



5566R304HH

KMG405: nano AlTiN Coated Ultra-fine carbide / nano AlTiN beschichtetes Ultrafeinkornhartmetall



Type Typ	Dimension(mm) Abmessungen							Teeth Zähne	Application Anwendung	P K H
	d1	d2(h6)	l2	l1	d3	l3	r(js8)			
5566R304HH-0600	6.00	6	7	80	5.50	20	3.00	4		○
5566R304HH-0800	8.00	8	9	90	7.40	26	4.00	4		●
5566R304HH-1000	10.00	10	11	100	9.20	31	5.00	4		●
5566R304HH-1200	12.00	12	12	120	11.00	37	6.00	4		●

Art. Group No. / Produktgruppe Nr. :

024130

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
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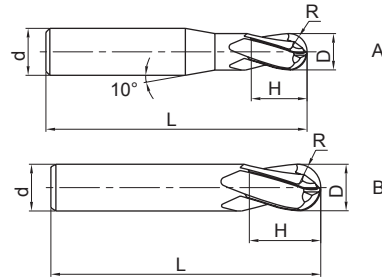
KMG555

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
			✓	✓	✓		✓				

● Ex Stock / ab Lager ○ On demand / auf Anfrage

HM-4B series for machining high hardness steel · **HM-4B** Serie für die Hartbearbeitung

4-flute ball nose mills with long straight shank
4-Schneiden Kugelkopffräser mit Zylinderschaft



Type Typ	Dimension(mm) Abmessungen					Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 555
	D	R	d	H	L			
HM-4B-R1.5	3.0	1.5	6.0	6.0	50	4	A	●
HM-4B-R2.0	4.0	2.0	6.0	8.0	50	4	A	●
HM-4B-R2.5	5.0	2.5	6.0	10.0	50	4	A	●
HM-4B-R3.0	6.0	3.0	6.0	12.0	50	4	B	●
HM-4B-R4.0	8.0	4.0	8.0	16.0	60	4	B	●
HM-4B-R5.0	10.0	5.0	10.0	20.0	75	4	B	●
HM-4B-R6.0	12.0	6.0	12.0	24.0	75	4	B	●
HM-4B-R7.0	14.0	7.0	14.0	28.0	75	4	B	●
HM-4B-R8.0	16.0	8.0	16.0	32.0	100	4	B	●
HM-4B-R9.0	18.0	9.0	18.0	36.0	100	4	B	●
HM-4B-R10.0	20.0	10.0	20.0	40.0	100	4	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
 ✓ = Suitable · Empfohlen

KMG555

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
			✓	✓	✓		✓				

Code key B231
ISO Kennzeichen

Cutting data B457-471
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

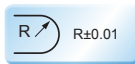
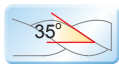
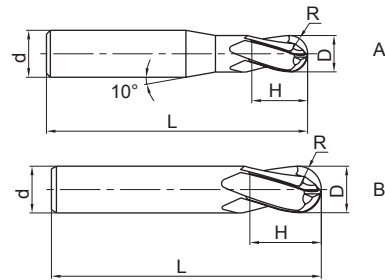
Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

HM-4BL

4-flute ball nose mills with long straight shank and long cutting edge
4-Schneiden Kugelkopffräser mit mit langer Schneide und Zylinderschaft



Type Typ	Dimension(mm) Abmessungen					Teeth Zähne Z	Typ	Grade Sorte KMG 555
	D	R	d	H	L			
HM-4BL-R1.5	3.0	1.5	6	6	75	4	A	○
HM-4BL-R2.0	4.0	2.0	6	8	75	4	A	○
HM-4BL-R2.5	5.0	2.5	6	10	75	4	A	○
HM-4BL-R3.0	6.0	3.0	6	12	75	4	B	○
HM-4BL-R4.0	8.0	4.0	8	16	100	4	B	○
HM-4BL-R5.0	10.0	5.0	10	20	100	4	B	○
HM-4BL-R6.0	12.0	6.0	12	24	100	4	B	○
HM-4BL-R7.0	14.0	7.0	14	28	100	4	B	○
HM-4BL-R8.0	16.0	8.0	16	32	150	4	B	○
HM-4BL-R9.0	18.0	9.0	18	36	150	4	B	○
HM-4BL-R10.0	20.0	10.0	20	40	150	4	B	○

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

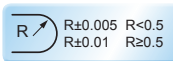
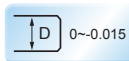
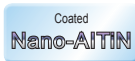
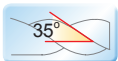
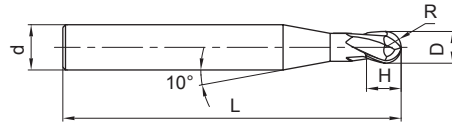
KMG555

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
			✓	✓	✓		✓				

● Ex Stock / ab Lager ○ On demand / auf Anfrage

HM-2BS series for machining high hardness steel · **HM-2BS** Serie für die Hartbearbeitung

2-flute tiny diameter ball nose end mills with straight shank
2-Schneiden Mirco-Kugelpkopfräser mit Zylinderschaft



Type Typ	Dimension(mm) Abmessungen					Teeth Zähne Z	Grade Sorte KMG 555
	D	R	d	H	L		
HM-2BS-R0.15	0.30	0.15	4.0	0.5	50	2	●
HM-2BS-R0.20	0.40	0.20	4.0	0.6	50	2	●
HM-2BS-R0.25	0.50	0.25	4.0	0.8	50	2	●
HM-2BS-R0.30	0.60	0.30	4.0	0.9	50	2	●
HM-2BS-R0.35	0.70	0.35	4.0	1.0	50	2	●
HM-2BS-R0.40	0.80	0.40	4.0	1.2	50	2	●
HM-2BS-R0.45	0.90	0.45	4.0	1.3	50	2	●
HM-2BS-R0.50	1.00	0.50	4.0	1.5	50	2	●
HM-2BS-R0.60	1.20	0.60	4.0	1.8	50	2	●
HM-2BS-R0.70	1.40	0.70	4.0	2.0	50	2	●
HM-2BS-R0.75	1.50	0.75	4.0	2.3	50	2	●
HM-2BS-R0.80	1.60	0.80	4.0	2.5	50	2	●
HM-2BS-R0.90	1.80	0.90	4.0	2.7	50	2	●
HM-2BS-R1.00	2.00	1.00	4.0	3.0	50	2	●
HM-2BS-R1.25	2.50	1.25	4.0	3.7	50	2	●
HM-2BS-R1.50	3.00	1.50	4.0	4.5	50	2	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG555

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
			✓	✓	✓		✓				

Code key B231
ISO Kennzeichen

Cutting data B457-471
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

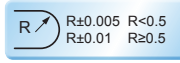
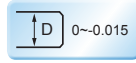
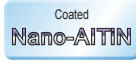
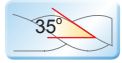
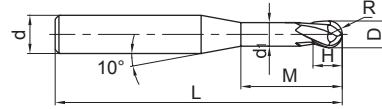
Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

HM-2BP series for machining high hardness steel · **HM-2BP** Serie für die Hartbearbeitung

2-flute short cutting edge ball nose micro end mills with straight shank and long neck
2-Schneiden Micro Kugelkopffräser mit kurzer Schneide und Zylinderschaft



Type Typ	Dimension(mm) Abmessungen							Teeth Zähne Z	Grade Sorte KMG 555
	D	R	H	d ₁	M	d	L		
HM-2BP-R0.25-M04	0.5	0.25	0.7	0.45	4.0	4.0	50	2	●
HM-2BP-R0.25-M06	0.5	0.25	0.7	0.45	6.0	4.0	50	2	●
HM-2BP-R0.3-M04	0.6	0.3	0.9	0.55	4.0	4.0	50	2	●
HM-2BP-R0.3-M06	0.6	0.3	0.9	0.55	6.0	4.0	50	2	●
HM-2BP-R0.3-M08	0.6	0.3	0.9	0.55	8.0	4.0	50	2	●
HM-2BP-R0.4-M04	0.8	0.4	1.2	0.75	4.0	4.0	50	2	●
HM-2BP-R0.4-M06	0.8	0.4	1.2	0.75	6.0	4.0	50	2	●
HM-2BP-R0.4-M08	0.8	0.4	1.2	0.75	8.0	4.0	50	2	●
HM-2BP-R0.4-M10	0.8	0.4	1.2	0.75	10.0	4.0	50	2	●
HM-2BP-R0.5-M04	1.0	0.5	1.5	0.95	4.0	4.0	50	2	●
HM-2BP-R0.5-M06	1.0	0.5	1.5	0.95	6.0	4.0	50	2	●
HM-2BP-R0.5-M08	1.0	0.5	1.5	0.95	8.0	4.0	50	2	●
HM-2BP-R0.5-M10	1.0	0.5	1.5	0.95	10.0	4.0	50	2	●
HM-2BP-R0.5-M12	1.0	0.5	1.5	0.95	12.0	4.0	50	2	●
HM-2BP-R0.6-M06	1.2	0.6	1.8	1.15	6.0	4.0	50	2	●
HM-2BP-R0.6-M08	1.2	0.6	1.8	1.15	8.0	4.0	50	2	●
HM-2BP-R0.6-M12	1.2	0.6	1.8	1.15	12.0	4.0	50	2	●
HM-2BP-R0.6-M16	1.2	0.6	1.8	1.15	16.0	4.0	50	2	●
HM-2BP-R0.75-M08	1.5	0.75	2.3	1.45	8.0	4.0	50	2	●
HM-2BP-R0.75-M12	1.5	0.75	2.3	1.45	12.0	4.0	50	2	●
HM-2BP-R0.75-M16	1.5	0.75	2.3	1.45	16.0	4.0	50	2	●
HM-2BP-R1.0-M06	2.0	1.0	3.0	1.95	6.0	4.0	50	2	●
HM-2BP-R1.0-M08	2.0	1.0	3.0	1.95	8.0	4.0	50	2	●
HM-2BP-R1.0-M10	2.0	1.0	3.0	1.95	10.0	4.0	50	2	●
HM-2BP-R1.0-M12	2.0	1.0	3.0	1.95	12.0	4.0	50	2	●
HM-2BP-R1.0-M16	2.0	1.0	3.0	1.95	16.0	4.0	50	2	●
HM-2BP-R1.0-M20	2.0	1.0	3.0	1.95	20.0	4.0	50	2	●
HM-2BP-R1.25-M08	2.5	1.25	3.7	2.4	8.0	4.0	50	2	●
HM-2BP-R1.25-M12	2.5	1.25	3.7	2.4	12.0	4.0	50	2	●
HM-2BP-R1.25-M16	2.5	1.25	3.7	2.4	16.0	4.0	60	2	●
HM-2BP-R1.25-M20	2.5	1.25	3.7	2.4	20.0	4.0	60	2	●

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
			✓	✓	✓		✓				

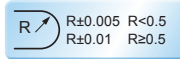
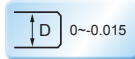
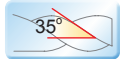
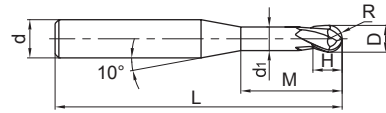
● Ex Stock / ab Lager ○ On demand / auf Anfrage

Solid Carbide end mills
Vollhartmetallschaftfräser

KMG555

HM-2BP series for machining high hardness steel · **HM-2BP** Serie für die Hartbearbeitung

2-flute short cutting edge ball nose micro end mills with straight shank and long neck
2-Schneiden Micro Kugelkopffräser mit kurzer Schneide und Zylinderschaft



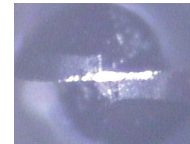
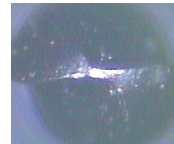
Type Typ	Dimension(mm) Abmessungen							Teeth Zähne Z	Grade Sorte KMG 555
	D	R	H	d ₁	M	d	L		
HM-2BP-R1.5-M08	3.0	1.5	4.5	2.85	8.0	6.0	50	2	●
HM-2BP-R1.5-M10	3.0	1.5	4.5	2.85	10.0	6.0	50	2	●
HM-2BP-R1.5-M12	3.0	1.5	4.5	2.85	12.0	6.0	50	2	●
HM-2BP-R1.5-M16	3.0	1.5	4.5	2.85	16.0	6.0	60	2	●
HM-2BP-R1.5-M20	3.0	1.5	4.5	2.85	20.0	6.0	60	2	●
HM-2BP-R2.0-M10	4.0	2.0	6.0	3.85	10.0	6.0	60	2	●
HM-2BP-R2.0-M16	4.0	2.0	6.0	3.85	16.0	6.0	60	2	●
HM-2BP-R2.0-M20	4.0	2.0	6.0	3.85	20.0	6.0	60	2	●
HM-2BP-R2.0-M25	4.0	2.0	6.0	3.85	25.0	6.0	60	2	●
HM-2BP-R2.5-M16	5.0	2.5	7.5	4.85	16.0	6.0	60	2	●
HM-2BP-R2.5-M25	5.0	2.5	7.5	4.85	25.0	6.0	70	2	●

Tool type / Werkzeug: HM-2BP-R0.3-M08
 Size / Größe: R 0.3mm
 Workpiece material
 Werkstückstoff: S136/52HRC
 Rotating speed / Drehzahl: 30000 r/min
 Feed / Vorschub: 200 mm/min
 Axial cutting depth /
 Axiale Zustellung: Ap=0.02mm
 Radial cutting depth /
 Radiale Zustellung: Ae=0.04mm
 Cutting style /
 Bearbeitung: contour machining (mould of car light)
 Cooling syste: air blow
 Machine /
 Maschine: MIKRON HSM 800



End mill Schafffräser	HM-2BP-R0.3-M08	Similar product of company A
Cutting time Standzeit	300 min	180 min
Wear value Verschleiß	0.025 mm	0.048 mm

Wear
Verschleiß



Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
 ✓ = Suitable · Empfohlen

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
			✓	✓	✓		✓				

KMG555

Code key
ISO Kennzeichen

B231

Cutting data
Schnittdaten

B457-471

Graphics identification & application
Graphische Werkzeug- & Anwendungsbeschr.

B232

Order form for non-standard products
Bestellformular für Sonderwerkzeuge

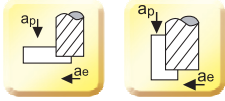
B497-B498

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

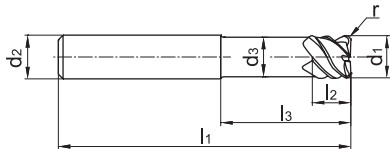
ZCC CT 4-flute radius end mills for machining of steel (HRC>48)

ZCC CT 4-Schneiden VHM Schaftfräser mit Eckenradius für die Stahlbearbeitung (HRC>48)



5585R554HHR

KMG405: nano AlTiN Coated Ultra-fine carbide /
nano AlTiN beschichtetes Ultrafeinkornhartmetall



B

Solid Carbide end mills
Vollhartmetallschaftfräser

Type Typ	Dimension(mm) Abmessungen							Teeth Zähne	Application Anwendung	Grade Sorte	P K H
	d1(e8)	d2(h6)	l2	l1	d3	l3	r(+0,03)				
5585R554HHR03-0600	6	6	7	57	5.5	20	0.3	4		●	
5585R554HHR15-0600	6	6	7	57	5.5	20	1.5	4		●	
5585R554HHR03-0800	8	8	9	63	7.4	26	0.3	4		●	
5585R554HHR20-0800	8	8	9	63	7.4	26	2.0	4		●	
5585R554HHR05-1000	10	10	11	72	9.2	31	0.5	4		●	
5585R554HHR25-1000	10	10	11	72	9.2	31	2.5	4		●	
5585R554HHR05-1200	12	12	12	83	11.0	37	0.5	4		●	
5585R554HHR30-1200	12	12	12	83	11.0	37	3.0	4		●	
5585R554HHR10-1600	16	16	16	92	15.0	43	1.0	4		●	
5585R554HHR40-1600	16	16	16	92	15.0	43	4.0	4		●	

Art. Group No. / Produktgruppe Nr. :

024130

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

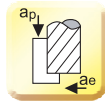
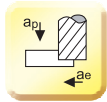
KMG405

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
		✓	✓	✓	✓		✓				

● Ex Stock / ab Lager ○ On demand / auf Anfrage

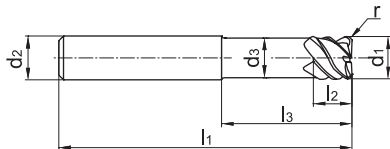
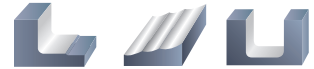
ZCC CT 4-flute ball nose end mills machining high hardness steel (HRC>48)

ZCC CT 4-Schneiden VHM Schaftfräser für Hartbearbeitung (HRC>48)



5586R554HHR

KMG405: nano AlTiN Coated Ultra-fine carbide /
nano AlTiN beschichtetes Ultrafeinkornhartmetall



Type Typ	Dimension(mm) Abmessungen							Teeth Zähne	Application Anwendung	P H	
	d1(e8)	d2(h8)	l2	l1	d3	l3	r(+0.03)			Grade Sorte	KMG405
5586R554HHR03-0600	6	6	7	80	5.5	43	0.3	4		○	
5586R554HHR15-0600	6	6	7	80	5.5	43	1.5	4		●	
5586R554HHR03-0800	8	8	9	90	7.4	53	0.3	4		●	
5586R554HHR20-0800	8	8	9	90	7.4	53	2.0	4		●	
5586R554HHR05-1000	10	10	11	100	9.2	59	0.5	4		○	
5586R554HHR25-1000	10	10	11	100	9.2	59	2.5	4		●	
5586R554HHR05-1200	12	12	12	120	11.0	74	0.5	4		●	
5586R554HHR30-1200	12	12	12	120	11.0	74	3.0	4		●	
5586R554HHR10-1600	16	16	16	140	15.0	91	1.0	4		●	
5586R554HHR40-1600	16	16	16	140	15.0	91	4.0	4		●	

Art. Group No. / Produktgruppe Nr. :

024130

B

Solid Carbide end mills
Vollhartmetallschaftfräser

KMG405

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
		✓	✓	✓	✓		✓				

Code key B229
ISO Kennzeichen

Cutting data B387-414
Schnittdaten

Graphics identification & application B230
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products B497-498
Bestellformular für Sonderwerkzeuge

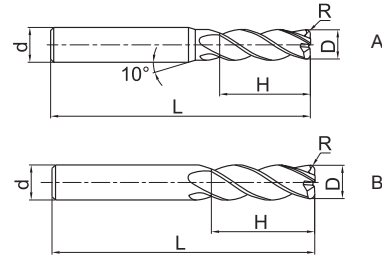
B 345

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

HM-4R series for machining high hardness steel · **HM-4R** Serie für die Hartbearbeitung

4-flute radius end mills with straight shank
4-Schneiden Radiuseckfräser mit Zylinderschaft



Type Typ	Dimension (mm) Abmessungen					Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG 555
	D	R	d	H	L			
HM-4R-D3.0R0.2	3.0	0.2	4	8	50	4	A	●
HM-4R-D4.0R0.3	4.0	0.3	4	10	50	4	B	●
HM-4R-D4.0R0.5	4.0	0.5	4	10	50	4	B	●
HM-4R-D5.0R0.5	5.0	0.5	6	13	50	4	A	●
HM-4R-D5.0R1.0	5.0	1.0	6	13	50	4	A	●
HM-4R-D6.0R0.5	6.0	0.5	6	16	50	4	B	●
HM-4R-D6.0R1.0	6.0	1.0	6	16	50	4	B	●
HM-4R-D8.0R0.5	8.0	0.5	8	20	60	4	B	●
HM-4R-D8.0R1.0	8.0	1.0	8	20	60	4	B	●
HM-4R-D10.0R0.5	10.0	0.5	10	25	75	4	B	●
HM-4R-D10.0R1.0	10.0	1.0	10	25	75	4	B	●
HM-4R-D10.0R2.0	10.0	2.0	10	25	75	4	B	●
HM-4R-D10.0R3.0	10.0	3.0	10	25	75	4	B	●
HM-4R-D12.0R0.5	12.0	0.5	12	30	75	4	B	●
HM-4R-D12.0R1.0	12.0	1.0	12	30	75	4	B	●
HM-4R-D12.0R2.0	12.0	2.0	12	30	75	4	B	●
HM-4R-D12.0R3.0	12.0	3.0	12	30	75	4	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

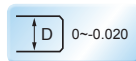
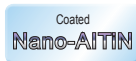
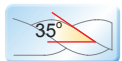
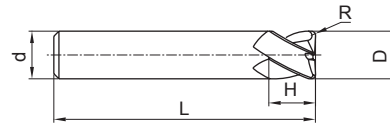
KMG555

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
			✓	✓	✓		✓				

● Ex Stock / ab Lager ○ On demand / auf Anfrage

HM-4RF series for machining high hardness steel · **HM-4RF** Serie für die Hartbearbeitung

4-flute short cutting edge R end mills with straight shank
4-Schneiden Radiuseckfräser mit kurzer Schneide und Zylinderschaft



Type Typ	Dimension(mm) Abmessungen					Teeth Zähne Z	Grade Sorte KMG 555
	D	R	d	H	L		
HM-4RF-D6.0R0.5	6.0	0.5	6.0	6	50	4	○
HM-4RF-D6.0R1.0	6.0	1.0	6.0	6	50	4	○
HM-4RF-D8.0R0.5	8.0	0.5	8.0	8	60	4	○
HM-4RF-D8.0R1.0	8.0	1.0	8.0	8	60	4	○
HM-4RF-10.0R0.5	10.0	0.5	10.0	10	75	4	○
HM-4RF-D10.0R1.0	10.0	1.0	10.0	10	75	4	○
HM-4RF-D10.0R2.0	10.0	2.0	10.0	10	75	4	○
HM-4RF-D12.0R0.5	12.0	0.5	12.0	12	75	4	○
HM-4RF-D12.0R1.0	12.0	1.0	12.0	12	75	4	○
HM-4RF-D12.0R2.0	12.0	2.0	12.0	12	75	4	○

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG555

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
			✓	✓	✓		✓				

Code key B231
ISO Kennzeichen

Cutting data B457-471
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

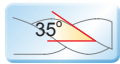
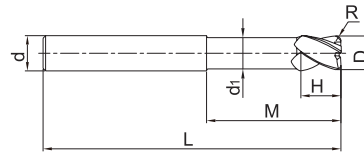
B347

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

HM-4RP series for machining high hardness steel · **HM-4RP** Serie für die Hartbearbeitung

4-flute short cutting edge R end mills with straight shank and long neck
4-Schneiden Radiuseckfräser mit kurzer Schneide und Zylinderschaft



Type Typ	Dimension (mm) Abmessungen							Teeth Zähne Z	Grade Sorte KMG 555
	D	R	d	d ₁	H	M	L		
HM-4RP-D6.0R0.5	6.0	0.5	6.0	5.8	6.0	18	75	4	○
HM-4RP-D6.0R1.0	6.0	1.0	6.0	5.8	6.0	18	75	4	○
HM-4RP-D8.0R0.5	8.0	0.5	8.0	7.8	8.0	24	100	4	○
HM-4RP-D8.0R1.0	8.0	1.0	8.0	7.8	8.0	24	100	4	○
HM-4RP-D10.0R0.5	10.0	0.5	10.0	9.6	10.0	30	100	4	○
HM-4RP-D10.0R1.0	10.0	1.0	10.0	9.6	10.0	30	100	4	○
HM-4RP-D10.0R2.0	10.0	2.0	10.0	9.6	10.0	30	100	4	○
HM-4RP-D12.0R0.5	12.0	0.5	12.0	11.5	12.0	36	100	4	○
HM-4RP-D12.0R1.0	12.0	1.0	12.0	11.5	12.0	36	100	4	○
HM-4RP-D12.0R2.0	12.0	2.0	12.0	11.5	12.0	36	100	4	○
HM-4RP-D16.0R1.0	16.0	1.0	16.0	15.5	16.0	40	150	4	○
HM-4RP-D16.0R2.0	16.0	2.0	16.0	15.5	16.0	40	150	4	○

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG555

		Workpiece material Werkstückstoff									
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
			✓	✓	✓		✓				

● Ex Stock / ab Lager ○ On demand / auf Anfrage

Milling · Fräsen

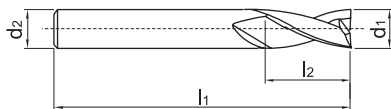
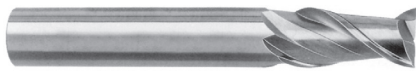
Solid Carbide end mills · Vollhartmetallschaftfräser

DIN 6527L 2-flute end mills · DIN 6527L 2-Schneiden VHM Schaftfräser



5502R402NM

YK30F: Ultrafine carbide / Ultrafeinkornhartmetall



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne	Application Anwendung	N
	d ₁ (e ₈)	d ₂ (h ₆)	l ₂	l ₁			
5502R402NM-0300	3.00	6	8	57	2		●
5502R402NM-0400	4.00	6	11	57	2		●
5502R402NM-0500	5.00	6	13	57	2		●
5502R402NM-0600	6.00	6	13	57	2		●
5502R402NM-0800	8.00	8	19	63	2		●
5502R402NM-1000	10.00	10	22	72	2		●
5502R402NM-1200	12.00	12	26	83	2		●
5502R402NM-1400	14.00	14	26	83	2		●
5502R402NM-1600	16.00	16	32	92	2		●
5502R402NM-1800	18.00	18	32	92	2		●
5502R402NM-2000	20.00	20	38	104	2		●

Art. Group No. / Produktgruppe Nr. :

022140

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
 ✓ = Suitable · Empfohlen

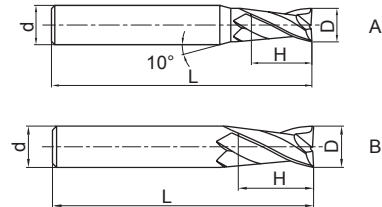
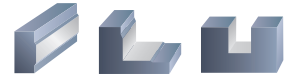
YK 30F

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
								✓			

● Ex Stock / ab Lager ○ On demand / auf Anfrage

NM-2E series for machining cooper · **NM-2E** Serie für die Bearbeitung von Kupfer

2-flute end mills with straight shank
2-Schneiden Schafffräser mit Zylinderschaft



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG309
	D	d	H	L			
NM-2E-D1.0	1.0	4	3	50	2	A	●
NM-2E-D2.0	2.0	4	6	50	2	A	●
NM-2E-D3.0	3.0	6	8	50	2	A	●
NM-2E-D4.0	4.0	6	11	50	2	A	●
NM-2E-D5.0	5.0	6	13	50	2	A	●
NM-2E-D6.0	6.0	6	16	50	2	B	●
NM-2E-D8.0	8.0	8	20	60	2	B	●
NM-2E-D10.0	10.0	10	25	75	2	B	●
NM-2E-D12.0	12.0	12	30	75	2	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG309

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
								✓			

Code key **B231**
ISO Kennzeichen

Cutting data **B472-476**
Schnittdaten

Graphics identification & application **B232**
Graphische Werkzeug- & Anwendungsbeschr.

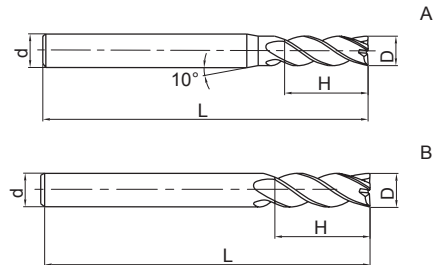
Order form for non-standard products **B497-B498**
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

NM-4E series for machining cooper · **NM-4E** Serie für die Bearbeitung von Kupfer

4-flute end mills with straight shank
4-Schneiden Schaftfräser mit Zylinderschaft



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG309
	D	d	H	L			
NM-4E-D3.0	3.0	6	8	50	4	A	○
NM-4E-D4.0	4.0	6	11	50	4	A	○
NM-4E-D5.0	5.0	6	13	50	4	A	○
NM-4E-D6.0	6.0	6	16	50	4	B	○
NM-4E-D8.0	8.0	8	20	60	4	B	○
NM-4E-D10.0	10.0	10	25	75	4	B	○
NM-4E-D12.0	12.0	12	30	75	4	B	○

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

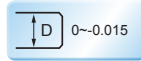
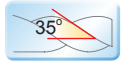
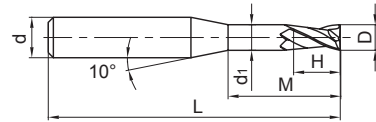
Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
								✓			

● Ex Stock / ab Lager ○ On demand / auf Anfrage

KMG309

NM-2EP series for machining cooper · **NM-2EP** Serie für die Bearbeitung von Kupfer

2-flute short cutting edge end mills with straight shank with long neck
2-Schneiden Schaftfräser mit Zylinderschaft



Type Typ	Dimension(mm) Abmessungen						Teeth Zähne Z	Grade Sorte KMG309
	D	d	H	M	d ₁	L		
NM-2EP-D0.5-M04	0.5	4.0	0.7	4.0	0.45	50	2	●
NM-2EP-D0.5-M06	0.5	4.0	0.7	6.0	0.45	50	2	●
NM-2EP-D0.5-M08	0.5	4.0	0.7	8.0	0.45	50	2	●
NM-2EP-D0.8-M04	0.8	4.0	1.2	4.0	0.75	50	2	●
NM-2EP-D0.8-M06	0.8	4.0	1.2	6.0	0.75	50	2	●
NM-2EP-D0.8-M08	0.8	4.0	1.2	8.0	0.75	50	2	●
NM-2EP-D0.8-M10	0.8	4.0	1.2	10.0	0.75	50	2	●
NM-2EP-D1.0-M04	1.0	4.0	1.5	4.0	0.95	50	2	●
NM-2EP-D1.0-M06	1.0	4.0	1.5	6.0	0.95	50	2	●
NM-2EP-D1.0-M08	1.0	4.0	1.5	8.0	0.95	50	2	●
NM-2EP-D1.0-M10	1.0	4.0	1.5	10.0	0.95	50	2	●
NM-2EP-D1.0-M12	1.0	4.0	1.5	12.0	0.95	50	2	●
NM-2EP-D1.0-M14	1.0	4.0	1.5	14.0	0.95	50	2	●
NM-2EP-D1.5-M08	1.5	4.0	2.3	8.0	1.45	50	2	●
NM-2EP-D1.5-M16	1.5	4.0	2.3	16.0	1.45	50	2	●
NM-2EP-D2.0-M06	2.0	4.0	3.0	6.0	1.95	50	2	●
NM-2EP-D2.0-M08	2.0	4.0	3.0	8.0	1.95	50	2	●
NM-2EP-D2.0-M10	2.0	4.0	3.0	10.0	1.95	50	2	●
NM-2EP-D2.0-M12	2.0	4.0	3.0	12.0	1.95	50	2	●
NM-2EP-D2.0-M14	2.0	4.0	3.0	14.0	1.95	50	2	●
NM-2EP-D2.0-M16	2.0	4.0	3.0	16.0	1.95	50	2	●
NM-2EP-D2.5-M10	2.5	4.0	3.7	10.0	2.4	50	2	●
NM-2EP-D2.5-M20	2.5	4.0	3.7	20.0	2.4	60	2	●
NM-2EP-D3.0-M10	3.0	6.0	4.5	10.0	2.85	50	2	●
NM-2EP-D3.0-M20	3.0	6.0	4.5	20.0	2.85	60	2	●
NM-2EP-D4.0-M16	4.0	6.0	6.0	16.0	3.85	60	2	●
NM-2EP-D4.0-M25	4.0	6.0	6.0	25.0	3.85	60	2	●
NM-2EP-D5.0-M16	5.0	6.0	7.5	16.0	4.85	60	2	●
NM-2EP-D5.0-M25	5.0	6.0	7.5	25.0	4.85	70	2	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG309

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
								✓			

Code key B231
ISO Kennzeichen

Cutting data B472-476
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

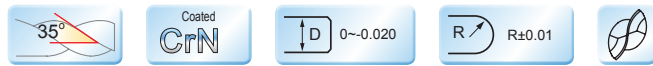
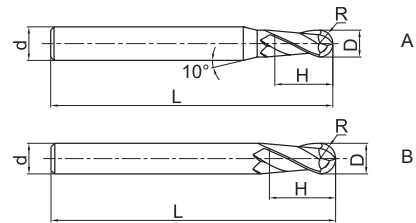
Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

NM-2B series for machining cooper · **NM-2B** Serie für die Bearbeitung von Kupfer

2-flute ball nose mills with straight shank
2-Schneiden Kugelkopffräser mit Zylinderschaft



Type Typ	Dimension(mm) Abmessungen					Teeth Zähne Z	Geometry Ausführung	Grade Sorte KMG309
	D	R	d	H	L			
NM-2B-R0.5	1.0	0.5	4.0	2.0	50	2	A	●
NM-2B-R0.75	1.5	0.75	4.0	3.0	50	2	A	●
NM-2B-R1.0	2.0	1.0	4.0	4.0	50	2	A	●
NM-2B-R1.25	2.5	1.25	4.0	5.0	50	2	A	●
NM-2B-R1.5	3.0	1.5	6.0	6.0	50	2	A	●
NM-2B-R1.75	3.5	1.75	6.0	8.0	50	2	A	●
NM-2B-R2.0	4.0	2.0	6.0	8.0	50	2	A	●
NM-2B-R2.5	5.0	2.5	6.0	10.0	50	2	A	●
NM-2B-R3.0	6.0	3.0	6.0	12.0	50	2	B	●
NM-2B-R4.0	8.0	4.0	8.0	16.0	60	2	B	●
NM-2B-R5.0	10.0	5.0	10.0	20.0	75	2	B	●
NM-2B-R6.0	12.0	6.0	12.0	24.0	75	2	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

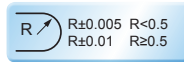
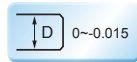
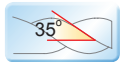
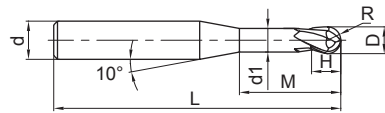
Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
								✓			

● Ex Stock / ab Lager ○ On demand / auf Anfrage

KMG309

NM-2BP series for machining cooper · **NM-2BP** Serie für die Bearbeitung von Kupfer

2-flute short cutting edge ball nose micro end mills with straight shank and long
2-Schneiden Micro Kugelkopffräser, mit kurzer Schneide und Zylinderschaft (lang)



Type Typ	Dimension(mm) Abmessungen							Teeth Zähne Z	Grade Sorte KMG309
	D	R	H	d ₁	M	d	L		
NM-2BP-R0.25-M04	0.5	0.25	0.7	0.45	4.0	4.0	50	2	●
NM-2BP-R0.25-M06	0.5	0.25	0.7	0.45	6.0	4.0	50	2	●
NM-2BP-R0.3-M04	0.6	0.3	0.9	0.55	4.0	4.0	50	2	●
NM-2BP-R0.3-M06	0.6	0.3	0.9	0.55	6.0	4.0	50	2	●
NM-2BP-R0.3-M08	0.6	0.3	0.9	0.55	8.0	4.0	50	2	●
NM-2BP-R0.4-M04	0.8	0.4	1.2	0.75	4.0	4.0	50	2	●
NM-2BP-R0.4-M06	0.8	0.4	1.2	0.75	6.0	4.0	50	2	●
NM-2BP-R0.4-M08	0.8	0.4	1.2	0.75	8.0	4.0	50	2	●
NM-2BP-R0.4-M10	0.8	0.4	1.2	0.75	10.0	4.0	50	2	●
NM-2BP-R0.5-M04	1.0	0.5	1.5	0.95	4.0	4.0	50	2	●
NM-2BP-R0.5-M06	1.0	0.5	1.5	0.95	6.0	4.0	50	2	●
NM-2BP-R0.5-M08	1.0	0.5	1.5	0.95	8.0	4.0	50	2	●
NM-2BP-R0.5-M10	1.0	0.5	1.5	0.95	10.0	4.0	50	2	●
NM-2BP-R0.5-M12	1.0	0.5	1.5	0.95	12.0	4.0	50	2	●
NM-2BP-R0.75-M08	1.5	0.75	2.3	1.45	8.0	4.0	50	2	●
NM-2BP-R0.75-M16	1.5	0.75	2.3	1.45	16.0	4.0	50	2	●
NM-2BP-R1.0-M06	2.0	1.0	3.0	1.95	6.0	4.0	50	2	●
NM-2BP-R1.0-M08	2.0	1.0	3.0	1.95	8.0	4.0	50	2	●
NM-2BP-R1.0-M10	2.0	1.0	3.0	1.95	10.0	4.0	50	2	●
NM-2BP-R1.0-M12	2.0	1.0	3.0	1.95	12.0	4.0	50	2	●
NM-2BP-R1.0-M16	2.0	1.0	3.0	1.95	16.0	4.0	50	2	●
NM-2BP-R1.0-M20	2.0	1.0	3.0	1.95	20.0	4.0	60	2	●
NM-2BP-R1.5-M10	3.0	1.5	4.5	2.85	10.0	6.0	50	2	●
NM-2BP-R1.5-M20	3.0	1.5	4.5	2.85	20.0	6.0	60	2	●
NM-2BP-R2.0-M10	4.0	2.0	6.0	3.85	10.0	6.0	60	2	●
NM-2BP-R2.0-M16	4.0	2.0	6.0	3.85	16.0	6.0	60	2	●
NM-2BP-R2.0-M20	4.0	2.0	6.0	3.85	20.0	6.0	60	2	●
NM-2BP-R2.0-M25	4.0	2.0	6.0	3.85	25.0	6.0	60	2	●
NM-2BP-R2.5-M16	5.0	2.5	7.5	4.85	16.0	6.0	60	2	●
NM-2BP-R2.5-M25	5.0	2.5	7.5	4.85	25.0	6.0	70	2	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG309

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
								✓			

Code key B231
ISO Kennzeichen

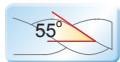
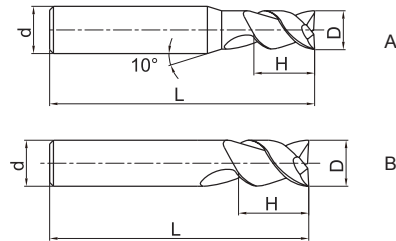
Cutting data B472-476
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

AL-2E series for machining aluminium · **AL-2E** Serie für die Bearbeitung von Aluminium

2-flute end mills with straight shank
2-Schneiden Schaftfräser mit Zylinderschaft



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte YK30F
	D	d	H	L			
AL-2E-D1.0	1.0	4	3	50	2	A	●
AL-2E-D1.5	1.5	4	4	50	2	A	●
AL-2E-D2.0	2.0	4	6	50	2	A	●
AL-2E-D2.5	2.5	4	7	50	2	A	●
AL-2E-D3.0	3.0	6	9	50	2	A	●
AL-2E-D4.0	4.0	6	12	50	2	A	●
AL-2E-D5.0	5.0	6	15	50	2	A	●
AL-2E-D6.0	6.0	6	18	60	2	B	●
AL-2E-D8.0	8.0	8	20	60	2	B	●
AL-2E-D10.0	10.0	10	30	75	2	B	●
AL-2E-D12.0	12.0	12	32	75	2	B	●
AL-2E-D16.0	16.0	16	45	100	2	B	●
AL-2E-D20.0	20.0	20	45	100	2	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

YK 30F

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
								✓			

Code key **B231**
ISO Kennzeichen

Cutting data **B477-484**
Schnittdaten

Graphics identification & application **B232**
Graphische Werkzeug- & Anwendungsbeschr.

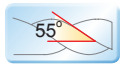
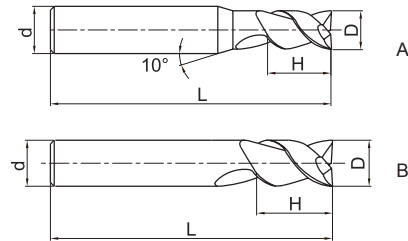
Order form for non-standard products **B497-B498**
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

AL-2EL series for machining aluminium · **AL-2EL** Serie für die Bearbeitung von Aluminium

2-flute long cutting edge end mills with straight shank
2-Schneiden Schafffräser mit langer Schneide und Zylinderschaft



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte YK30F
	D	d	H	L			
AL-2EL-D3.0	3.0	6	12	60	2	A	●
AL-2EL-D4.0	4.0	6	16	60	2	A	●
AL-2EL-D5.0	5.0	6	20	60	2	A	●
AL-2EL-D6.0	6.0	6	25	75	2	B	●
AL-2EL-D8.0	8.0	8	32	75	2	B	●
AL-2EL-D10.0	10.0	10	45	100	2	B	●
AL-2EL-D12.0	12.0	12	45	100	2	B	●
AL-2EL-D16.0	16.0	16	65	150	2	B	●
AL-2EL-D20.0	20.0	20	75	150	2	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

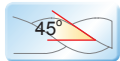
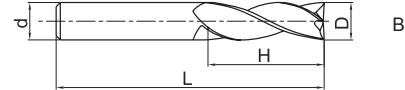
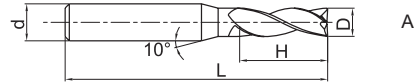
Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
								✓			

● Ex Stock / ab Lager ○ On demand / auf Anfrage

YK 30F

AL-3E series for machining aluminium · **AL-3E** Serie für die Bearbeitung von Aluminium

3-flute end mills with straight shank
3-Schneiden Schaftfräser mit Zylinderschaft



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte YK30F
	D	d	H	L			
AL-3E-D1.0	1.0	4	3	50	3	A	●
AL-3E-D1.5	1.5	4	4	50	3	A	●
AL-3E-D2.0	2.0	4	6	50	3	A	●
AL-3E-D2.5	2.5	4	7	50	3	A	●
AL-3E-D3.0	3.0	6	9	50	3	A	●
AL-3E-D4.0	4.0	6	12	50	3	A	●
AL-3E-D5.0	5.0	6	15	50	3	A	●
AL-3E-D6.0	6.0	6	18	60	3	B	●
AL-3E-D8.0	8.0	8	20	60	3	B	●
AL-3E-D10.0	10.0	10	30	75	3	B	●
AL-3E-D12.0	12.0	12	32	75	3	B	●
AL-3E-D16.0	16.0	16	45	100	3	B	●
AL-3E-D20.0	20.0	20	45	100	3	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
 ✓ = Suitable · Empfohlen

YK 30F

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
								✓			

Code key **B231**
ISO Kennzeichen

Cutting data **B477-484**
Schnittdaten

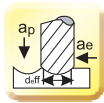
Graphics identification & application **B232**
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products **B497-B498**
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

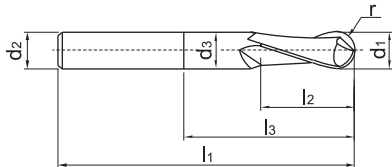
Solid Carbide end mills · Vollhartmetallschaftfräser

ZCC CT series for machining aluminium · **ZCC CT** Serie für die Bearbeitung von Aluminium



5565R302NH

YK40F: Ultrafine carbide / Ultrafeinkornhartmetall



B

Solid Carbide end mills
Vollhartmetallschaftfräser

Type Typ	Dimension(mm) Abmessungen								Teeth Zähne	Application Anwendung	N
	d ₁	d ₂ (h ₆)	l ₂	l ₁	D ₃	l ₃	r(f ₈)	α°			
5565R302NH-0300	3.00	6	6	57	2.80	9	1.50	6	2		●
5565R302NH-0400	4.00	6	8	57	3.70	12	2.00	4	2		●
5565R302NH-0500	5.00	6	10	57	4.60	15	2.50	2	2		●
5565R302NH-0600	6.00	6	12	57	5.50	20	3.00	-	2		●
5565R302NH-0800	8.00	8	16	63	7.40	26	4.00	-	2		●
5565R302NH-1000	10.00	10	20	72	9.20	31	5.00	-	2		●
5565R302NH-1200	12.00	12	24	83	11.00	37	6.00	-	2		●
5565R302NH-1600	16.00	16	32	92	15.00	43	8.00	-	2		●

Art. Group No. / Produktgruppe Nr. :

023140

Material Overview · Material Übersicht

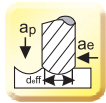
✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

YK 40F

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
								✓			

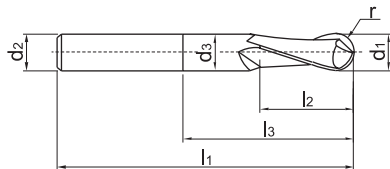
● Ex Stock / ab Lager ○ On demand / auf Anfrage

ZCC CT series for machining aluminium · **ZCC CT** Serie für die Bearbeitung von Aluminium



5566R302NH

YK40F: Ultrafine carbide / Ultrafeinkornhartmetall



Type Typ	Dimension(mm) Abmessungen								Teeth Zähne	Application Anwendung	N
	d ₁	d ₂ (h ₆)	l ₂	l ₁	d ₃	l ₃	r(f ₈)	α°			
5566R302NH-0300	3.00	6	6	75	2.80	9	1.50	6	2		●
5566R302NH-0400	4.00	6	8	75	3.70	12	2.00	4	2		●
5566R302NH-0500	5.00	6	10	80	4.60	15	2.50	2	2		●
5566R302NH-0600	6.00	6	12	80	5.50	20	3.00	-	2		●
5566R302NH-0800	8.00	8	16	90	7.40	26	4.00	-	2		●
5566R302NH-1000	10.00	10	20	100	9.20	31	5.00	-	2		●
5566R302NH-1200	12.00	12	24	120	11.00	37	6.00	-	2		●
5566R302NH-1600	16.00	16	32	140	15.00	43	8.00	-	2		●

Art. Group No. / Produktgruppe Nr. :

023140

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
								✓			

YK 40F

Code key **B229**
ISO Kennzeichen

Cutting data **B387-414**
Schnittdaten

Graphics identification & application **B230**
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products **B497-498**
Bestellformular für Sonderwerkzeuge

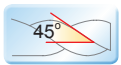
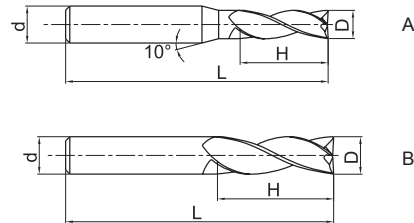
B361

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

AL-3EL

3-flute end mills with straight shank and long cutting edge
3-Schneiden Schafffräser mit langer Schneide und Zylinderschaft



Type Typ	Dimension (mm) Abmessungen				Teeth Zähne Z	Geometry Ausführung	Grade Sorte YK30F
	D	d	H	L			
AL-3EL-D3.0	3.0	6	12	60	3	A	●
AL-3EL-D4.0	4.0	6	16	60	3	A	●
AL-3EL-D5.0	5.0	6	20	60	3	A	●
AL-3EL-D6.0	6.0	6	25	75	3	B	●
AL-3EL-D8.0	8.0	8	32	75	3	B	●
AL-3EL-D10.0	10.0	10	45	100	3	B	●
AL-3EL-D12.0	12.0	12	45	100	3	B	●
AL-3EL-D16.0	16.0	16	65	150	3	B	●
AL-3EL-D20.0	20.0	20	75	150	3	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

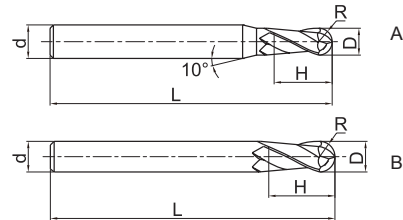
Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
								✓			

● Ex Stock / ab Lager ○ On demand / auf Anfrage

YK 30F

AL-2B series for machining aluminium · **AL-2B** Serie für die Bearbeitung von Aluminium

2-flute ball nose end mills with straight shank
2-Schneiden Kugelkopffräser mit Zylinderschaft



Type Typ	Dimension(mm) Abmessungen					Teeth Zähne Z	Geometry Ausführung	Grade Sorte YK30F
	D	R	d	H	L			
AL-2B-R1.0	2.0	1.0	6.0	4.0	60	2	A	○
AL-2B-R1.5	3.0	1.5	6.0	6.0	60	2	A	○
AL-2B-R2.0	4.0	2.0	6.0	8.0	60	2	A	○
AL-2B-R2.5	5.0	2.5	6.0	10.0	60	2	A	○
AL-2B-R3.0	6.0	3.0	6.0	12.0	60	2	B	○
AL-2B-R4.0	8.0	4.0	8.0	16.0	75	2	B	○
AL-2B-R5.0	10.0	5.0	10.0	20.0	75	2	B	○
AL-2B-R6.0	12.0	6.0	12.0	24.0	75	2	B	○

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
 ✓ = Suitable · Empfohlen

YK 30F

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
								✓			

Code key **B231**
ISO Kennzeichen

Cutting data **B477-484**
Schnittdaten

Graphics identification & application **B232**
Graphische Werkzeug- & Anwendungsbeschr.

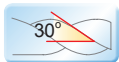
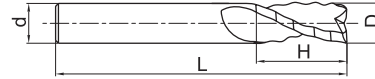
Order form for non-standard products **B497-B498**
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

AL-3W series for machining aluminium · **AL-3W** Serie für die Bearbeitung von Aluminium

3-flute rough end mills with straight shank, rough pitch form
3-Schneiden Schruppfräser mit Zylinderschaft, grob verzahnt



D ≤ 6	0 ~ -0.048	6 < D ≤ 10	0 ~ -0.058
10 < D ≤ 18	0 ~ -0.07	18 < D	0 ~ -0.084



Type Typ	Dimension(mm) Abmessungen				Teeth Zähne Z	Grade Sorte YK30F
	D	d	H	L		
AL-3W-D6.0	6	6	16	50	3	●
AL-3W-D8.0	8	8	20	60	3	●
AL-3W-D10.0	10	10	25	75	3	●
AL-3W-D12.0	12	12	30	75	3	●
AL-3W-D16.0	16	16	45	100	3	●
AL-3W-D20.0	20	20	45	100	3	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
 ✓ = Suitable · Empfohlen

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
								✓			

● Ex Stock / ab Lager ○ On demand / auf Anfrage

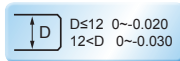
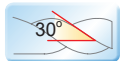
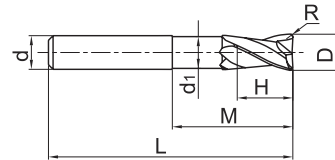
YK 30F

AL-2R-AIR series for machining aluminium · **AL-2R-AIR** Serie für die Bearbeitung von Aluminium

2-flute end mills with straight shank
2-Schneiden Schaftfräser mit Zylinderschaft



Ultrahigh speed
HSC



Type Typ	Dimension(mm) Abmessungen							Teeth Zähne Z	Grade Sorte YK40F
	D	R	d	d ₁	H	M	L		
AL-2R-D6.0R1.0- AIR	6	1.0	6	5.5	7	20	57	2	○
AL-2R-D8.0R1.0- AIR	8	1.0	8	7.4	9	26	63	2	○
AL-2R-D10.0R1.0- AIR	10	1.0	10	9.2	11	31	72	2	○
AL-2R-D10.0R2.0- AIR	10	2.0	10	9.2	11	31	72	2	○
AL-2R-D12.0R1.0- AIR	12	1.0	12	11	12	37	83	2	○
AL-2R-D12.0R2.0- AIR	12	2.0	12	11	12	37	83	2	○
AL-2R-D12.0R3.0- AIR	12	3.0	12	11	12	37	83	2	○
AL-2R-D16.0R1.0- AIR	16	1.0	16	15	16	43	92	2	○
AL-2R-D16.0R2.0- AIR	16	2.0	16	15	16	43	92	2	○
AL-2R-D16.0R3.0- AIR	16	3.0	16	15	16	43	92	2	○
AL-2R-D16.0R4.0- AIR	16	4.0	16	15	16	43	92	2	○
AL-2R-D20.0R1.0- AIR	20	1.0	20	19	20	53	104	2	○
AL-2R-D20.0R2.0- AIR	20	2.0	20	19	20	53	104	2	○
AL-2R-D20.0R3.0- AIR	20	3.0	20	19	20	53	104	2	○
AL-2R-D20.0R4.0- AIR	20	4.0	20	19	20	53	104	2	○
AL-2R-D20.0R5.0- AIR	20	5.0	20	19	20	53	104	2	○
AL-2R-D20.0R6.0- AIR	20	6.0	20	19	20	53	104	2	○

for air space industry · für Luft- und Raumfahrt - Industrie

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

YK 40F

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
								✓			

Code key B231
ISO Kennzeichen

Cutting data B477-484
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

Milling · Fräsen

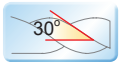
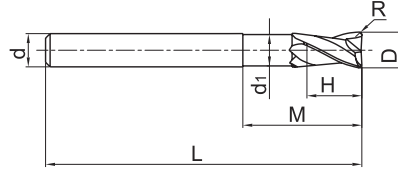
Solid Carbide end mills · Vollhartmetallschaftfräser

AL-2RL-AIR series for machining aluminium · **AL-2RL-AIR** Serie für die Bearbeitung von Aluminium

2-flute radius end mills with long straight shank
2-Schneiden Radiusfräser mit langem Zylinderschaft



Ultrahigh speed
HSC



Type Typ	Dimension(mm) Abmessungen							Teeth Zähne Z	Grade Sorte YK40F
	D	R	d	d ₁	H	M	L		
AL-2RL-D6.0R1.0- AIR	6	1.0	6	5.5	7	43	80	2	○
AL-2RL-D8.0R1.0- AIR	8	1.0	8	7.4	9	53	90	2	○
AL-2RL-D10.0R1.0- AIR	10	1.0	10	9.2	11	59	100	2	○
AL-2RL-D10.0R2.0- AIR	10	2.0	10	9.2	11	59	100	2	○
AL-2RL-D12.0R1.0- AIR	12	1.0	12	11	12	74	120	2	○
AL-2RL-D12.0R2.0- AIR	12	2.0	12	11	12	74	120	2	○
AL-2RL-D12.0R3.0- AIR	12	3.0	12	11	12	74	120	2	○
AL-2RL-D16.0R1.0- AIR	16	1.0	16	15	16	84	140	2	○
AL-2RL-D16.0R2.0- AIR	16	2.0	16	15	16	84	140	2	○
AL-2RL-D16.0R3.0- AIR	16	3.0	16	15	16	84	140	2	○
AL-2RL-D16.0R4.0- AIR	16	4.0	16	15	16	84	140	2	○
AL-2RL-D20.0R1.0- AIR	20	1.0	20	19	20	89	140	2	○
AL-2RL-D20.0R2.0- AIR	20	2.0	20	19	20	89	140	2	○
AL-2RL-D20.0R3.0- AIR	20	3.0	20	19	20	89	140	2	○
AL-2RL-D20.0R4.0- AIR	20	4.0	20	19	20	89	140	2	○
AL-2RL-D20.0R5.0- AIR	20	5.0	20	19	20	89	140	2	○
AL-2RL-D20.0R6.0- AIR	20	6.0	20	19	20	89	140	2	○

for air space industry · für Luft- und Raumfahrt - Industrie

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

YK 40F

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
								✓			

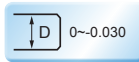
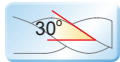
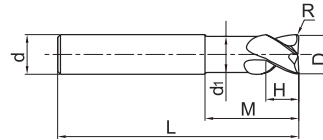
● Ex Stock / ab Lager ○ On demand / auf Anfrage

AL-3R-AIR series for machining aluminium · **AL-3R-AIR** Serie für die Bearbeitung von Aluminium

3-flute radius end mills with straight shank
3-Schneiden Radiusfräser mit langem Zylinderschaft



Ultrahigh speed



Type Typ	Dimension (mm) Abmessungen							Teeth Zähne Z	Grade Sorte YK40F
	D	R	d	d ₁	H	M	L		
AL-3R-D12.0R1.0- AIR	12	1.0	12	11	12	37	83	3	○
AL-3R-D12.0R2.0- AIR	12	2.0	12	11	12	37	83	3	○
AL-3R-D12.0R3.0- AIR	12	3.0	12	11	12	37	83	3	○
AL-3R-D16.0R1.0- AIR	16	1.0	16	15	16	43	92	3	○
AL-3R-D16.0R2.0- AIR	16	2.0	16	15	16	43	92	3	○
AL-3R-D16.0R3.0- AIR	16	3.0	16	15	16	43	92	3	○
AL-3R-D16.0R4.0- AIR	16	4.0	16	15	16	43	92	3	○
AL-3R-D20.0R1.0- AIR	20	1.0	20	19	20	53	104	3	○
AL-3R-D20.0R2.0- AIR	20	2.0	20	19	20	53	104	3	○
AL-3R-D20.0R3.0- AIR	20	3.0	20	19	20	53	104	3	○
AL-3R-D20.0R4.0- AIR	20	4.0	20	19	20	53	104	3	○
AL-3R-D20.0R5.0- AIR	20	5.0	20	19	20	53	104	3	○
AL-3R-D20.0R6.0- AIR	20	6.0	20	19	20	53	104	3	○

for air space industry · für Luft- und Raumfahrt - Industrie

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
								✓			

YK 40F

Code key
ISO Kennzeichen

B231

Cutting data
Schnittdaten

B477-484

Graphics identification & application
Graphische Werkzeug- & Anwendungsbeschr.

B232

Order form for non-standard products
Bestellformular für Sonderwerkzeuge

B497-B498

B367

Milling · Fräsen

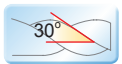
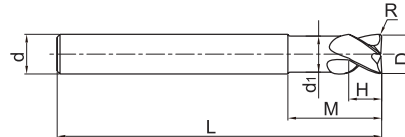
Solid Carbide end mills · Vollhartmetallschaftfräser

AL-3RL-AIR series for machining aluminium · **AL-3RL-AIR** Serie für die Bearbeitung von Aluminium

3-flute radius end mills with long straight shank
3-Schneiden Radiusfräser mit langem Zylinderschaft



Ultrahigh speed
HSC



Type Typ	Dimension(mm) Abmessungen							Teeth Zähne Z	Grade Sorte YK40F
	D	R	d	d ₁	H	M	L		
AL-3RL-D12.0R1.0- AIR	12	1.0	12	11	12	74	120	3	○
AL-3RL-D12.0R2.0- AIR	12	2.0	12	11	12	74	120	3	○
AL-3RL-D12.0R3.0- AIR	12	3.0	12	11	12	74	120	3	○
AL-3RL-D16.0R1.0- AIR	16	1.0	16	15	16	84	140	3	○
AL-3RL-D16.0R2.0- AIR	16	2.0	16	15	16	84	140	3	○
AL-3RL-D16.0R3.0- AIR	16	3.0	16	15	16	84	140	3	○
AL-3RL-D16.0R4.0- AIR	16	4.0	16	15	16	84	140	3	○
AL-3RL-D20.0R1.0- AIR	20	1.0	20	19	20	89	140	3	○
AL-3RL-D20.0R2.0- AIR	20	2.0	20	19	20	89	140	3	○
AL-3RL-D20.0R3.0- AIR	20	3.0	20	19	20	89	140	3	○
AL-3RL-D20.0R4.0- AIR	20	4.0	20	19	20	89	140	3	○
AL-3RL-D20.0R5.0- AIR	20	5.0	20	19	20	89	140	3	○
AL-3RL-D20.0R6.0- AIR	20	6.0	20	19	20	89	140	3	○

for air space industry · für Luft- und Raumfahrt - Industrie

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
								✓			

● Ex Stock / ab Lager ○ On demand / auf Anfrage

YK 40F

- Unique geometry design with unequal helix angle (38°/41°) in optimal combination of top grade, KMG 405.
- Suitable for roughing and finishing of steel, alloy steel and stainless steel, heat resistance super alloy.
- Effective milling with higher feed rate and bigger cutting depth.
- Quiet machining without vibration.
- Long tool life and good surface finishing.

- *Einzigartige Geometrie mit ungleichem Spiralwinkel (38°/41°), in Kombination mit der Hochleistungssorte KMG 405.*
- *Geeignet zur Schrapp- und Schlichtbearbeitung von Stahl, legiertem Stahl, rostfreiem Stahl.*
- *Effektive Fräsbearbeitung mit höheren Vorschüben und größeren Schnitttiefen.*
- *Ruhige Bearbeitung ohne Vibrationen.*
- *Höhere Standzeit und bessere Oberflächenqualität.*



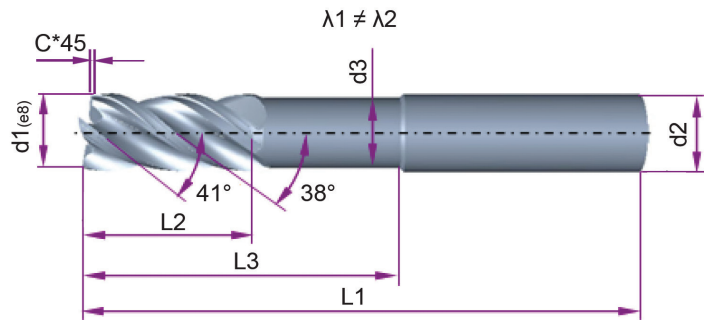
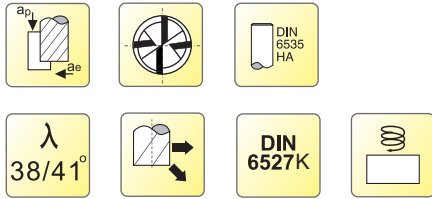
HPC Endmills

HPC Fräser

High Performance Solide Carbide Endmills
Hochleistungs-VHM-Fräser

5501R38414GM

4-flute end mills
4-Schneiden VHM Schaftfräser



Type Typ	Dimension(mm) Abmessungen							Teeth Zähne	Application Anwendung	Grade Sorte	P M K
	d1(e8)	d2(h6)	L1	L2	d3	L3	C*45°				
5501R38414GM-0400	4	6	54	8	3.70	16	0.01-0.06	4			●
5501R38414GM-0500	5	6	54	9	4.70	17	0.01-0.06	4			●
5501R38414GM-0600	6	6	54	10	5.70	18	0.06-0.10	4			●
5501R38414GM-0800	8	8	58	12	7.70	22	0.06-0.10	4			●
5501R38414GM-1000	10	10	66	14	9.50	26	0.06-0.10	4			●
5501R38414GM-1200	12	12	73	16	11.50	28	0.10-0.15	4			●
5501R38414GM-1400	14	14	75	18	13.50	30	0.10-0.15	4			●
5501R38414GM-1600	16	16	82	22	15.50	34	0.10-0.15	4			●
5501R38414GM-1800	18	18	84	24	17.50	36	0.10-0.15	4			●
5501R38414GM-2000	20	20	92	26	19.50	42	0.15-0.20	4			●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
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Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
✓	✓	✓	✓			✓	✓			✓	✓

KMG405

Code key B231
ISO Kennzeichen

Cutting data B431-456
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

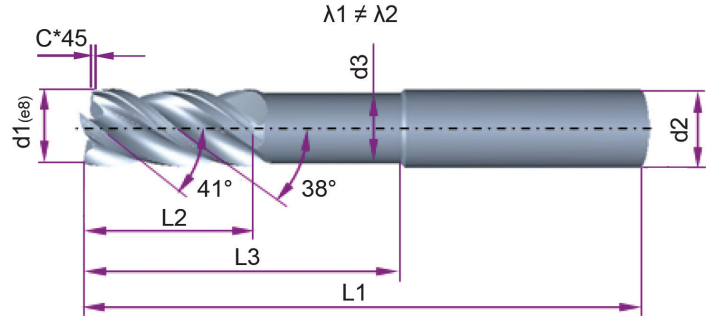
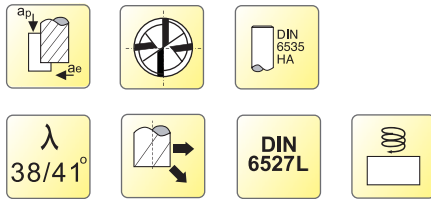
B373

Milling - Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

5502R38414GM

4-flute end mills
4-Schneiden VHM Schaftfräser



Type Typ	Dimension(mm) Abmessungen							Teeth Zähne	Applicaion Anwendung	P M K		
	d1(e8)	d2(h6)	L1	L2	d3	L3	C*45°			Grade Sorte	KMG 405	
5502R38414GM-0400	4	6	57	11	3.70	19	0.01-0.06	4			●	
5502R38414GM-0500	5	6	57	13	4.70	21	0.01-0.06	4			●	
5502R38414GM-0600	6	6	57	13	5.70	21	0.06-0.10	4			●	
5502R38414GM-0800	8	8	63	19	7.70	27	0.06-0.10	4			●	
5502R38414GM-1000	10	10	72	22	9.50	32	0.06-0.10	4			●	
5502R38414GM-1200	12	12	83	26	11.50	38	0.10-0.15	4			●	
5502R38414GM-1400	14	14	83	26	13.50	38	0.10-0.15	4			●	
5502R38414GM-1600	16	16	92	32	15.50	44	0.10-0.15	4			●	
5502R38414GM-1800	18	18	92	32	17.50	44	0.10-0.15	4			●	
5502R38414GM-2000	20	20	104	38	19.50	54	0.15-0.20	4			●	

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
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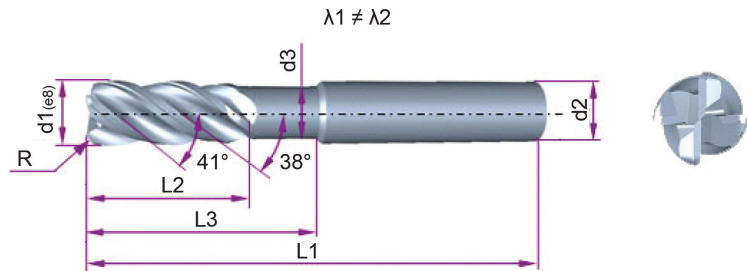
KMG405

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
✓	✓	✓	✓			✓	✓			✓	✓

● Ex Stock / ab Lager ○ On demand / auf Anfrage

5502R38414GM-R

4-flute end mills with radius
4-Schneiden VHM Schaftfräser mit Radius



Type Typ	Dimension(mm) Abmessungen							Teeth Zähne Z	Application Anwendung Grade Sorte	P M K
	d1(e8)	R±0.01	d2(h6)	L1	L2	d3	L3			
5502R38414GM-R02-0400	4	0.2	6	57	11	3.70	19	4		•
5502R38414GM-R05-0400	4	0.5	6	57	11	3.70	19	4		•
5502R38414GM-R02-0500	5	0.2	6	57	13	4.70	21	4		•
5502R38414GM-R05-0500	5	0.5	6	57	13	4.70	21	4		•
5502R38414GM-R02-0600	6	0.2	6	57	13	5.70	21	4		•
5502R38414GM-R05-0600	6	0.5	6	57	13	5.70	21	4		•
5502R38414GM-R10-0600	6	1.0	6	57	13	5.70	21	4		•
5502R38414GM-R02-0800	8	0.2	8	63	19	7.70	27	4		•
5502R38414GM-R05-0800	8	0.5	8	63	19	7.70	27	4		•
5502R38414GM-R10-0800	8	1.0	8	63	19	7.70	27	4		•
5502R38414GM-R15-0800	8	1.5	8	63	19	7.70	27	4		•
5502R38414GM-R20-0800	8	2.0	8	63	19	7.70	27	4		•
5502R38414GM-R02-1000	10	0.2	10	72	22	9.50	32	4		•
5502R38414GM-R05-1000	10	0.5	10	72	22	9.50	32	4		•
5502R38414GM-R10-1000	10	1.0	10	72	22	9.50	32	4		•
5502R38414GM-R15-1000	10	1.5	10	72	22	9.50	32	4		•
5502R38414GM-R20-1000	10	2.0	10	72	22	9.50	32	4		•
5502R38414GM-R05-1200	12	0.5	12	83	26	11.50	38	4		•
5502R38414GM-R10-1200	12	1.0	12	83	26	11.50	38	4		•
5502R38414GM-R15-1200	12	1.5	12	83	26	11.50	38	4		•
5502R38414GM-R20-1200	12	2.0	12	83	26	11.50	38	4		•
5502R38414GM-R10-1600	16	1.0	16	92	32	15.50	44	4		•
5502R38414GM-R15-1600	16	1.5	16	92	32	15.50	44	4		•
5502R38414GM-R20-1600	16	2.0	16	92	32	15.50	44	4		•
5502R38414GM-R30-1600	16	3.0	16	92	32	15.50	44	4		•
5502R38414GM-R10-2000	20	1.0	20	104	38	19.50	54	4		•
5502R38414GM-R15-2000	20	1.5	20	104	38	19.50	54	4		•
5502R38414GM-R20-2000	20	2.0	20	104	38	19.50	54	4		•
5502R38414GM-R30-2000	20	3.0	20	104	38	19.50	54	4		•

Material Overview · Material Übersicht

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✓ = Suitable · Empfohlen

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
✓	✓	✓	✓			✓	✓			✓	✓

Code key B231 ISO Kennzeichen
Cutting data B431-B456 Schnittdaten
Graphics identification & application B232 Graphische Werkzeug- & Anwendungsbeschr.
Order form for non-standard products B497-B498 Bestellformular für Sonderwerkzeuge

B

Solid Carbide end mills
Vollhartmetallschaftfräser

KMG405

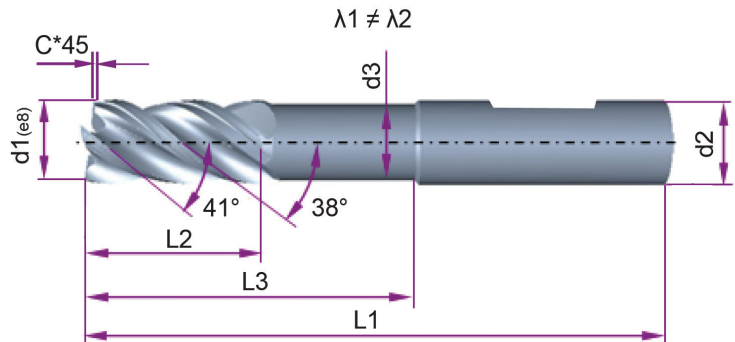
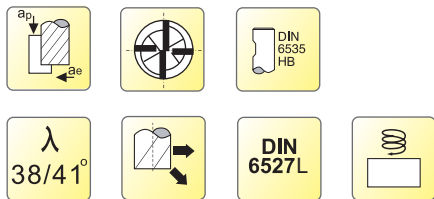
B375

Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

5602R38414GM

4-flute end mills
4-Schneiden VHM Schaftfräser



Type Typ	Dimension(mm) Abmessungen							Teeth Zähne Z	Application Anwendung Grade Sorte	P M K		
	d1(e8)	d2(h6)	L1	L2	d3	L3	C*45°			KMG 405		
5602R38414GM-0400	4	6	57	11	3.70	19	0.01-0.06	4			●	
5602R38414GM-0500	5	6	57	13	4.70	21	0.01-0.06	4			●	
5602R38414GM-0600	6	6	57	13	5.70	21	0.06-0.10	4			●	
5602R38414GM-0800	8	8	63	19	7.70	27	0.06-0.10	4			●	
5602R38414GM-1000	10	10	72	22	9.50	32	0.06-0.10	4			●	
5602R38414GM-1200	12	12	83	26	11.50	38	0.10-0.15	4			●	
5602R38414GM-1400	14	14	83	26	13.50	38	0.10-0.15	4			●	
5602R38414GM-1600	16	16	92	32	15.50	44	0.10-0.15	4			●	
5602R38414GM-1800	18	18	92	32	17.50	44	0.10-0.15	4			●	
5602R38414GM-2000	20	20	104	38	19.50	54	0.15-0.20	4			●	

Material Overview · Material Übersicht

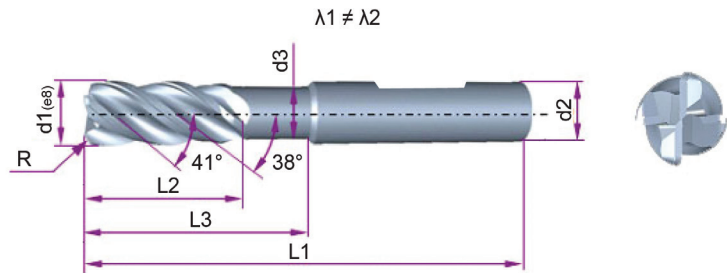
✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

KMG405	Workpiece material Werkstückstoff											
	Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

● Ex Stock / ab Lager ○ On demand / auf Anfrage

5602R38414GM-R

4-flute end mills with radius
4-Schneiden VHM Schafffräser mit Radius



Type Typ	Dimension(mm) Abmessungen							Teeth Zähne Z	Application Anwendung Grade Sorte	P M K
	d1(e8)	R±0.01	d2(h6)	L1	L2	d3	L3			
5602R38414GM-R02-0400	4	0.2	6	57	11	3.70	19	4		•
5602R38414GM-R05-0400	4	0.5	6	57	11	3.70	19	4		•
5602R38414GM-R02-0500	5	0.2	6	57	13	4.70	21	4		•
5602R38414GM-R05-0500	5	0.5	6	57	13	4.70	21	4		•
5602R38414GM-R02-0600	6	0.2	6	57	13	5.70	21	4		•
5602R38414GM-R05-0600	6	0.5	6	57	13	5.70	21	4		•
5602R38414GM-R10-0600	6	1.0	6	57	13	5.70	21	4		•
5602R38414GM-R02-0800	8	0.2	8	63	19	7.70	27	4		•
5602R38414GM-R05-0800	8	0.5	8	63	19	7.70	27	4		•
5602R38414GM-R10-0800	8	1.0	8	63	19	7.70	27	4		•
5602R38414GM-R15-0800	8	1.5	8	63	19	7.70	27	4		•
5602R38414GM-R20-0800	8	2.0	8	63	19	7.70	27	4		•
5602R38414GM-R02-1000	10	0.2	10	72	22	9.50	32	4		•
5602R38414GM-R05-1000	10	0.5	10	72	22	9.50	32	4		•
5602R38414GM-R10-1000	10	1.0	10	72	22	9.50	32	4		•
5602R38414GM-R15-1000	10	1.5	10	72	22	9.50	32	4		•
5602R38414GM-R20-1000	10	2.0	10	72	22	9.50	32	4		•
5602R38414GM-R05-1200	12	0.5	12	83	26	11.50	38	4		•
5602R38414GM-R10-1200	12	1.0	12	83	26	11.50	38	4		•
5602R38414GM-R15-1200	12	1.5	12	83	26	11.50	38	4		•
5602R38414GM-R20-1200	12	2.0	12	83	26	11.50	38	4		•
5602R38414GM-R10-1600	16	1.0	16	92	32	15.50	44	4		•
5602R38414GM-R15-1600	16	1.5	16	92	32	15.50	44	4		•
5602R38414GM-R20-1600	16	2.0	16	92	32	15.50	44	4		•
5602R38414GM-R30-1600	16	3.0	16	92	32	15.50	44	4		•
5602R38414GM-R10-2000	20	1.0	20	104	38	19.50	54	4		•
5602R38414GM-R15-2000	20	1.5	20	104	38	19.50	54	4		•
5602R38414GM-R20-2000	20	2.0	20	104	38	19.50	54	4		•
5602R38414GM-R30-2000	20	3.0	20	104	38	19.50	54	4		•

B

Solid Carbide end mills
Vollhartmetallschafffräser

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Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
✓	✓	✓	✓			✓	✓			✓	✓

KMG405

Code key B231
ISO Kennzeichen

Cutting data B431-B456
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

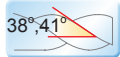
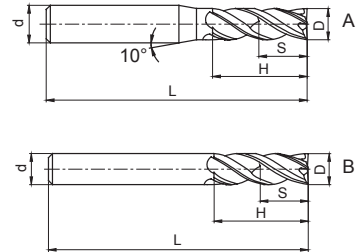
Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

4-flute flattened end mills with straight shank 4-Schneiden Eckfräser mit Zylinderschaft



UM-4E



D	D ≤ 6	-0.020 ~ -0.038	6 < D ≤ 10	-0.025 ~ -0.047
	10 < D ≤ 18	-0.032 ~ -0.059	18 < D	-0.04 ~ -0.073



Type Typ	Dimension(mm) Abmessungen					Teeth Zähne Z	Geometry Ausführung	Stock Lager
	D	d	H	S	L			
UM-4E-D4.0S	4.0	4	11	6.00	50	4	B	○
UM-4E-D4.0	4.0	6	11	6.00	50	4	A	●
UM-4E-D4.5	4.5	6	11	6.75	50	4	A	○
UM-4E-D5.0	5.0	6	13	7.50	50	4	A	●
UM-4E-D5.5	5.5	6	16	8.25	50	4	A	○
UM-4E-D6.0	6.0	6	16	9.00	50	4	B	●
UM-4E-D7.0	7.0	8	20	10.5	60	4	A	●
UM-4E-D8.0	8.0	8	20	12.0	60	4	B	●
UM-4E-D9.0	9.0	10	22	13.5	75	4	A	●
UM-4E-D10.0	10.0	10	25	15.0	75	4	B	●
UM-4E-D11.0	11.0	12	26	16.5	75	4	A	●
UM-4E-D12.0	12.0	12	30	18.0	75	4	B	●
UM-4E-D14.0	14.0	14	32	21.0	75	4	B	●
UM-4E-D16.0	16.0	16	45	24.0	100	4	B	●
UM-4E-D18.0	18.0	18	45	27.0	100	4	B	●
UM-4E-D20.0	20.0	20	45	30.0	100	4	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

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✓ = Suitable · Empfohlen

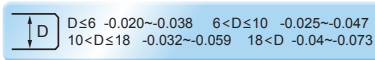
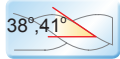
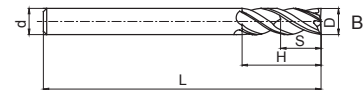
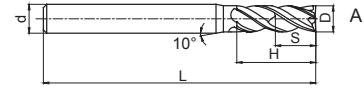
Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓	✓		✓	✓			✓	✓

● Ex Stock / ab Lager ○ On demand / auf Anfrage

4-flute flattened end mills with straight shank and long cutting edge
4-Schneiden Eckfräser mit langer Schneide und Zylinderschaft



UM-4EL



Type Typ	Dimension (mm) Abmessungen					Teeth Zähne Z	Geometry Ausführung	Stock Lager
	D	d	H	S	L			
UM-4EL-D4.0	4.0	6	15	6.00	75	4	A	●
UM-4EL-D5.0	5.0	6	20	7.50	75	4	A	●
UM-4EL-D6.0	6.0	6	20	9.00	75	4	B	●
UM-4EL-D8.0	8.0	8	25	12.0	100	4	B	●
UM-4EL-D10.0	10.0	10	30	15.0	100	4	B	●
UM-4EL-D12.0	12.0	12	35	18.0	100	4	B	●
UM-4EL-D14.0	14.0	14	40	21.0	100	4	B	●
UM-4EL-D16.0	16.0	16	50	24.0	150	4	B	●
UM-4EL-D20.0	20.0	20	55	30.0	150	4	B	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓	✓		✓	✓			✓	✓

Code key
ISO Kennzeichen

B231

Cutting data
Schnittdaten

B485-491

Graphics identification & application
Graphische Werkzeug- & Anwendungsbeschr.

B232

Order form for non-standard products
Bestellformular für Sonderwerkzeuge

B497-B498

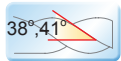
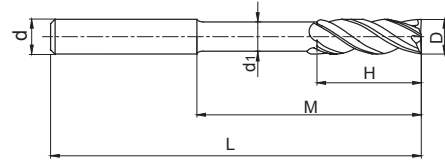
Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

4-flute flattened end mills with short cutting edge and long neck
4-Schneiden Eckfräser mit kurzer Schneide und Zylinderschaft



UM-4EFP



D	D ≤ 6	-0.020 ~ -0.038	6 < D ≤ 10	-0.025 ~ -0.047
	10 < D ≤ 18	-0.032 ~ -0.059	18 < D	-0.04 ~ -0.073



Type Typ	Dimension (mm) Abmessungen						Teeth Zähne Z	Stock Lager
	D	d	H	M	d ₁	L		
UM-4EFP-D6.0	6.0	6	9	30	5.8	75	4	●
UM-4EFP-D8.0	8.0	8	12	40	7.8	100	4	●
UM-4EFP-D10.0	10.0	10	15	50	9.6	100	4	●
UM-4EFP-D12.0	12.0	12	18	50	11.5	100	4	●
UM-4EFP-D16.0	16.0	16	24	50	15.5	150	4	●
UM-4EFP-D20.0	20.0	20	30	60	19.5	150	4	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

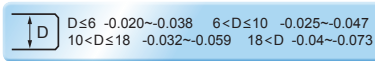
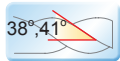
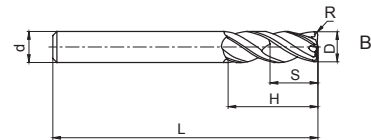
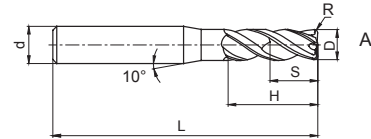
Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓	✓		✓	✓			✓	✓

● Ex Stock / ab Lager ○ On demand / auf Anfrage

4-flute radius end mills with straight shank 4-Schneiden Radiuseckfräser mit Zylinderschaft



UM-4R



Type Typ	Dimension(mm) Abmessungen						Teeth Zähne Z	Geometry Ausführung	Stock Lager
	D	R	d	H	S	L			
UM-4R-D4.0R0.3	4.0	0.3	6	10	6.0	50	4	A	●
UM-4R-D4.0R0.5	4.0	0.5	6	10	6.0	50	4	A	●
UM-4R-D5.0R0.5	5.0	0.5	6	13	7.5	50	4	A	●
UM-4R-D5.0R1.0	5.0	1.0	6	13	7.5	50	4	A	●
UM-4R-D6.0R0.5	6.0	0.5	6	16	9.0	50	4	B	●
UM-4R-D6.0R1.0	6.0	1.0	6	16	9.0	50	4	B	●
UM-4R-D8.0R0.5	8.0	0.5	8	20	12	60	4	B	●
UM-4R-D8.0R1.0	8.0	1.0	8	20	12	60	4	B	●
UM-4R-D10.0R0.5	10.0	0.5	10	25	15	75	4	B	●
UM-4R-D10.0R1.0	10.0	1.0	10	25	15	75	4	B	●
UM-4R-D10.0R2.0	10.0	2.0	10	25	15	75	4	B	●
UM-4R-D10.0R3.0	10.0	3.0	10	25	15	75	4	B	●
UM-4R-D12.0R0.5	12.0	0.5	12	30	18	75	4	B	●
UM-4R-D12.0R1.0	12.0	1.0	12	30	18	75	4	B	●
UM-4R-D12.0R2.0	12.0	2.0	12	30	18	75	4	B	●
UM-4R-D12.0R3.0	12.0	3.0	12	30	18	75	4	B	●
UM-4R-D16.0R1.0	16.0	1.0	16	45	24	100	4	B	●
UM-4R-D16.0R2.0	16.0	2.0	16	45	24	100	4	B	●
UM-4R-D16.0R3.0	16.0	3.0	16	45	24	100	4	B	●
UM-4R-D20.0R1.0	20.0	1.0	20	45	30	100	4	B	●
UM-4R-D20.0R2.0	20.0	2.0	20	45	30	100	4	B	●
UM-4R-D20.0R3.0	20.0	3.0	20	45	30	100	4	B	●

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
 ✓ = Suitable · Empfohlen

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓	✓		✓	✓			✓	✓

Code key B231
ISO Kennzeichen

Cutting data B485-491
Schnittdaten

Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.

Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

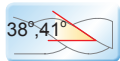
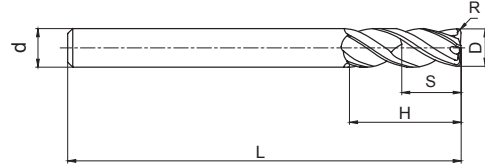
Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

4-flute radius end mills with straight shank and long cutting edge
4-Schneiden Radiuseckfräser mit langer Schneide und Zylinderschaft



UM-4RL



$D \leq 6$	$-0.020 \sim -0.038$	$6 < D \leq 10$	$-0.025 \sim -0.047$
$10 < D \leq 18$	$-0.032 \sim -0.059$	$18 < D$	$-0.04 \sim -0.073$



Type Typ	Dimension(mm) Abmessungen						Teeth Zähne Z	Stock Lager
	D	R	d	H	S	L		
UM-4RL-D6.0R0.5	6.0	0.5	6	16	9	75	4	●
UM-4RL-D6.0R1.0	6.0	1.0	6	16	9	75	4	●
UM-4RL-D8.0R0.5	8.0	0.5	8	20	12	100	4	●
UM-4RL-D8.0R1.0	8.0	1.0	8	20	12	100	4	●
UM-4RL-D10.0R0.5	10.0	0.5	10	25	15	100	4	●
UM-4RL-D10.0R1.0	10.0	1.0	10	25	15	100	4	●
UM-4RL-D10.0R2.0	10.0	2.0	10	25	15	100	4	●
UM-4RL-D12.0R0.5	12.0	0.5	12	30	18	100	4	●
UM-4RL-D12.0R1.0	12.0	1.0	12	30	18	100	4	●
UM-4RL-D12.0R2.0	12.0	2.0	12	30	18	100	4	●
UM-4RL-D16.0R1.0	16.0	1.0	16	45	24	150	4	●
UM-4RL-D16.0R2.0	16.0	2.0	16	45	24	150	4	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

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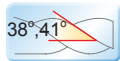
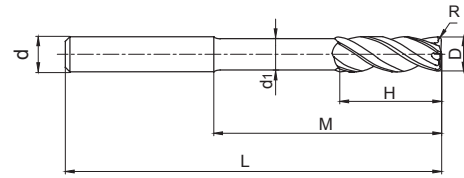
Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓	✓		✓	✓			✓	✓

● Ex Stock / ab Lager ○ On demand / auf Anfrage

4-flute radius end mills with straight shank and short cutting edge and long neck
4-Schneiden Radiuseckfräser mit kurzer Schneide und Zylinderschaft



UM-4RFP



$\frac{D}{D}$	D ≤ 6 -0.020~-0.038	6 < D ≤ 10 -0.025~-0.047
	10 < D ≤ 18 -0.032~-0.059	18 < D -0.04~-0.073



Type Typ	Dimension (mm) Abmessungen							Teeth Zähne Z	Stock Lager
	D	R	d	d ₁	H	M	L		
UM-4RFP-D6.0R0.5	6.0	0.5	6	5.8	6	18	75	4	●
UM-4RFP-D6.0R1.0	6.0	1.0	6	5.8	6	18	75	4	●
UM-4RFP-D8.0R0.5	8.0	0.5	8	7.7	8	24	100	4	●
UM-4RFP-D8.0R1.0	8.0	1.0	8	7.7	8	24	100	4	●
UM-4RFP-D10.0R0.5	10.0	0.5	10	9.6	10	30	100	4	●
UM-4RFP-D10.0R1.0	10.0	1.0	10	9.6	10	30	100	4	●
UM-4RFP-D10.0R2.0	10.0	2.0	10	9.6	10	30	100	4	●
UM-4RFP-D12.0R0.5	12.0	0.5	12	11.5	12	36	100	4	●
UM-4RFP-D12.0R1.0	12.0	1.0	12	11.5	12	36	100	4	●
UM-4RFP-D12.0R2.0	12.0	2.0	12	11.5	12	36	100	4	●
UM-4RFP-D16.0R1.0	16.0	1.0	16	15.5	16	40	150	4	●
UM-4RFP-D16.0R2.0	16.0	2.0	16	15.5	16	40	150	4	●

B

Solid Carbide end mills
Vollhartmetallschaftfräser

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
✓ = Suitable · Empfohlen

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~55HRC	~68HRC						
✓	✓	✓	✓	✓		✓	✓			✓	✓



Code key B231
ISO Kennzeichen



Cutting data B485-491
Schnittdaten



Graphics identification & application B232
Graphische Werkzeug- & Anwendungsbeschr.



Order form for non-standard products B497-B498
Bestellformular für Sonderwerkzeuge

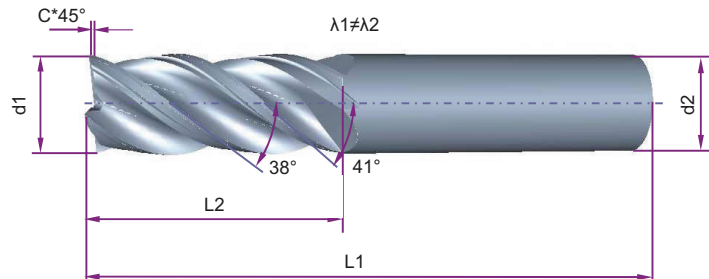
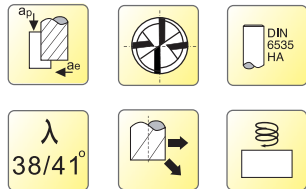
Milling · Fräsen

VSM-4E for difficult to machine material with sharp cutting edge

VSM-4E für schwerzerspanbares Material, mit scharfer Schneide

4-flute end mills with straight shank and long cutting edge

4-Schneiden Eckfräser mit langer Schneide und Zylinderschaft



Type Typ	Dimension(mm) Abmessungen					Teeth Zähne	Application Anwendung	Grade Sorte	P M S		
	d1	d2	L2	L1	C*45°				KMG 405		
VSM-4E-D4.0	4	6	11	50	0.01-0.06	4					●
VSM-4E-D5.0	5	6	13	50	0.01-0.06	4					●
VSM-4E-D6.0	6	6	16	50	0.06-0.10	4					●
VSM-4E-D8.0	8	8	20	60	0.06-0.10	4					●
VSM-4E-D10.0	10	10	25	75	0.06-0.10	4					●
VSM-4E-D12.0	12	12	30	75	0.10-0.15	4					●
VSM-4E-D16.0	16	16	45	100	0.10-0.15	4					●
VSM-4E-D20.0	20	20	45	100	0.15-0.20	4					●

Material Overview · Material Übersicht

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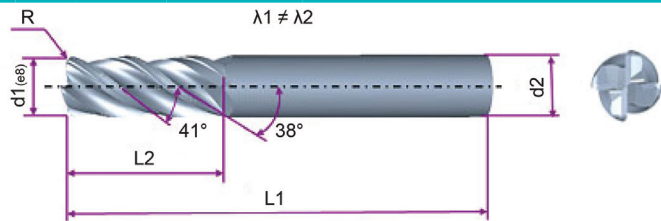
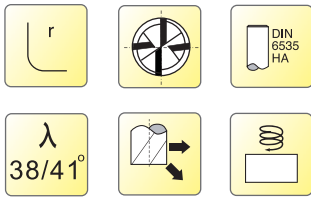
KMG405

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy warmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
✓	✓	✓				✓				✓	✓

VSM-4R for difficult to machine material with radius
VSM-4R für schwerzerspanbares Material, mit Radius



4-flute end mills with radius
4-Schneiden VHM Schafffräser mit Radius



Type Typ	Dimension(mm) Abmessungen					Teeth Zähne Z	Applicaion Anwendung Grade Sorte	P M S		
	d1(e8)	R ± 0.01	d2(h6)	L1	L2			KMG 405		
VSM-4R-D4.0R0.2	4	0.2	6	50	11	4		•		
VSM-4R-D4.0R0.5	4	0.5	6	50	11	4		•		
VSM-4R-D5.0R0.2	5	0.2	6	50	13	4		•		
VSM-4R-D5.0R0.5	5	0.5	6	50	13	4		•		
VSM-4R-D6.0R0.2	6	0.2	6	50	16	4		•		
VSM-4R-D6.0R0.5	6	0.5	6	50	16	4		•		
VSM-4R-D6.0R1.0	6	1.0	6	50	16	4		•		
VSM-4R-D6.0R1.5	6	1.5	6	50	16	4		•		
VSM-4R-D8.0R0.5	8	0.5	8	63	20	4		•		
VSM-4R-D8.0R0.8	8	0.8	8	63	20	4		•		
VSM-4R-D8.0R1.0	8	1.0	8	63	20	4		•		
VSM-4R-D8.0R1.5	8	1.5	8	63	20	4		•		
VSM-4R-D8.0R2.0	8	2.0	8	63	20	4		•		
VSM-4R-D10.0R0.5	10	0.5	10	75	25	4		•		
VSM-4R-D10.0R0.8	10	0.8	10	75	25	4		•		
VSM-4R-D10.0R1.0	10	1.0	10	75	25	4		•		
VSM-4R-D10.0R1.5	10	1.5	10	75	25	4		•		
VSM-4R-D10.0R2.0	10	2.0	10	75	25	4		•		
VSM-4R-D12.0R0.5	12	0.5	12	75	30	4		•		
VSM-4R-D12.0R0.8	12	0.8	12	75	30	4		•		
VSM-4R-D12.0R1.0	12	1.0	12	75	30	4		•		
VSM-4R-D12.0R1.5	12	1.5	12	75	30	4		•		
VSM-4R-D12.0R2.0	12	2.0	12	75	30	4		•		
VSM-4R-D12.0R2.5	12	2.5	12	75	30	4		•		
VSM-4R-D12.0R3.0	12	3.0	12	75	30	4		•		
VSM-4R-D12.0R4.0	12	4.0	12	75	30	4		•		
VSM-4R-D16.0R0.5	16	0.5	16	100	45	4		•		
VSM-4R-D16.0R0.8	16	0.8	16	100	45	4		•		
VSM-4R-D16.0R1.0	16	1.0	16	100	45	4		•		
VSM-4R-D16.0R1.5	16	1.5	16	100	45	4		•		
VSM-4R-D16.0R2.0	16	2.0	16	100	45	4		•		
VSM-4R-D16.0R2.5	16	2.5	16	100	45	4		•		
VSM-4R-D16.0R3.0	16	3.0	16	100	45	4		•		
VSM-4R-D16.0R4.0	16	4.0	16	100	45	4		•		
VSM-4R-D20.0R0.5	20	0.5	20	100	45	4		•		
VSM-4R-D20.0R1.0	20	1.0	20	100	45	4		•		
VSM-4R-D20.0R1.5	20	1.5	20	100	45	4		•		
VSM-4R-D20.0R2.0	20	2.0	20	100	45	4		•		
VSM-4R-D20.0R2.5	20	2.5	20	100	45	4		•		
VSM-4R-D20.0R3.0	20	3.0	20	100	45	4		•		
VSM-4R-D20.0R4.0	20	4.0	20	100	45	4		•		

Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen
 ✓ = Suitable · Empfohlen

Workpiece material Werkstückstoff											
Carbon steel Kohlenstoff Stahl	Alloy steel Legierter Stahl	Quenched and tempered steel · Vergüteter Stahl		Hardened steel · Gehärteter Stahl		Stainless steel · Rostfreier Stahl	Cast iron, Nodular cast iron Grauguss GGG	Copper alloy Kupfer Leg	Aluminum alloy Alu Leg	Titanium alloy Titan Leg	Heat resist alloy wärmfeste Leg
		~40HRC	~50HRC	~60HRC	~68HRC						
✓	✓	✓				✓				✓	✓

KMG405

B

Solid Carbide end mills
Vollhartmetallschaftfräser