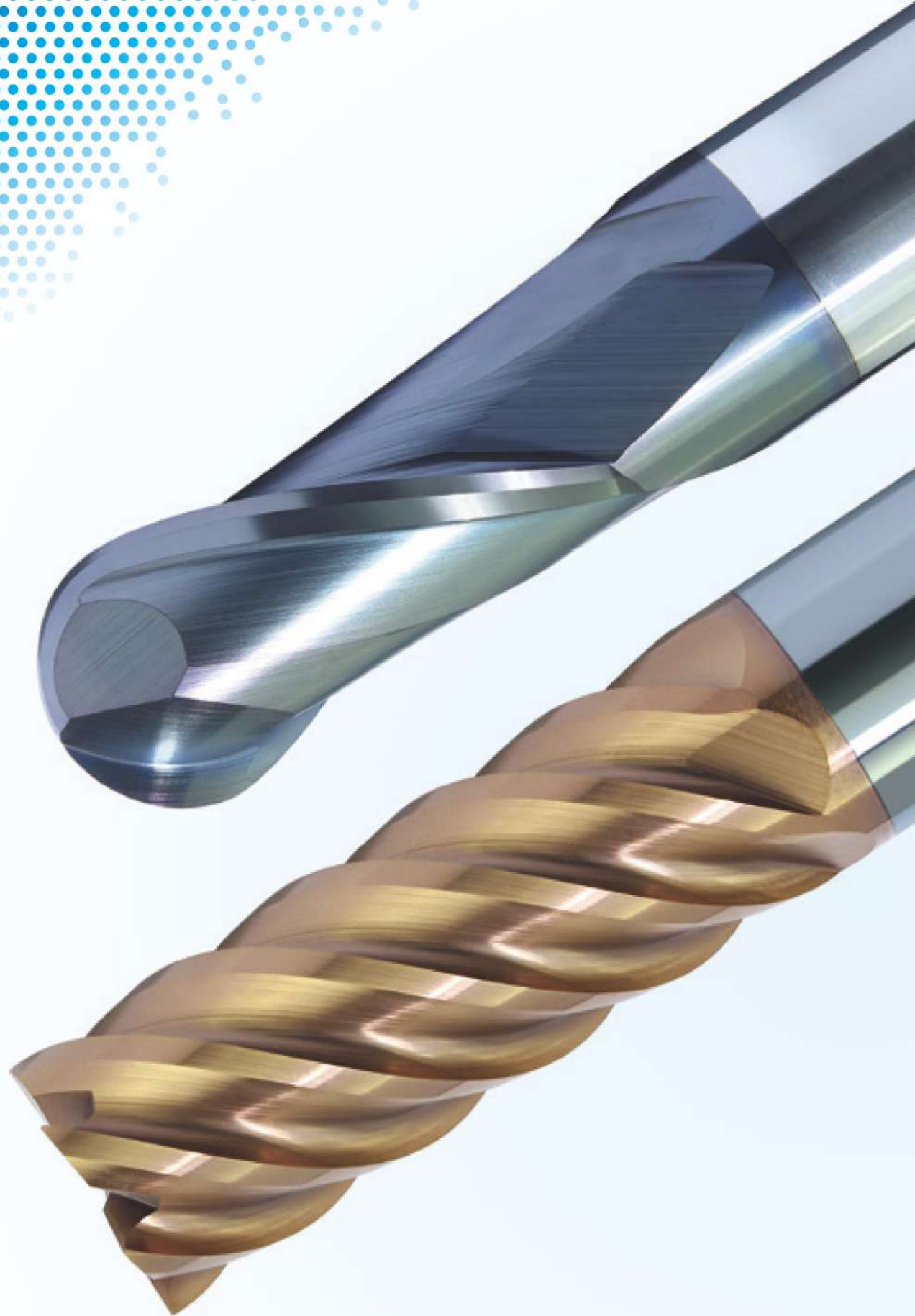


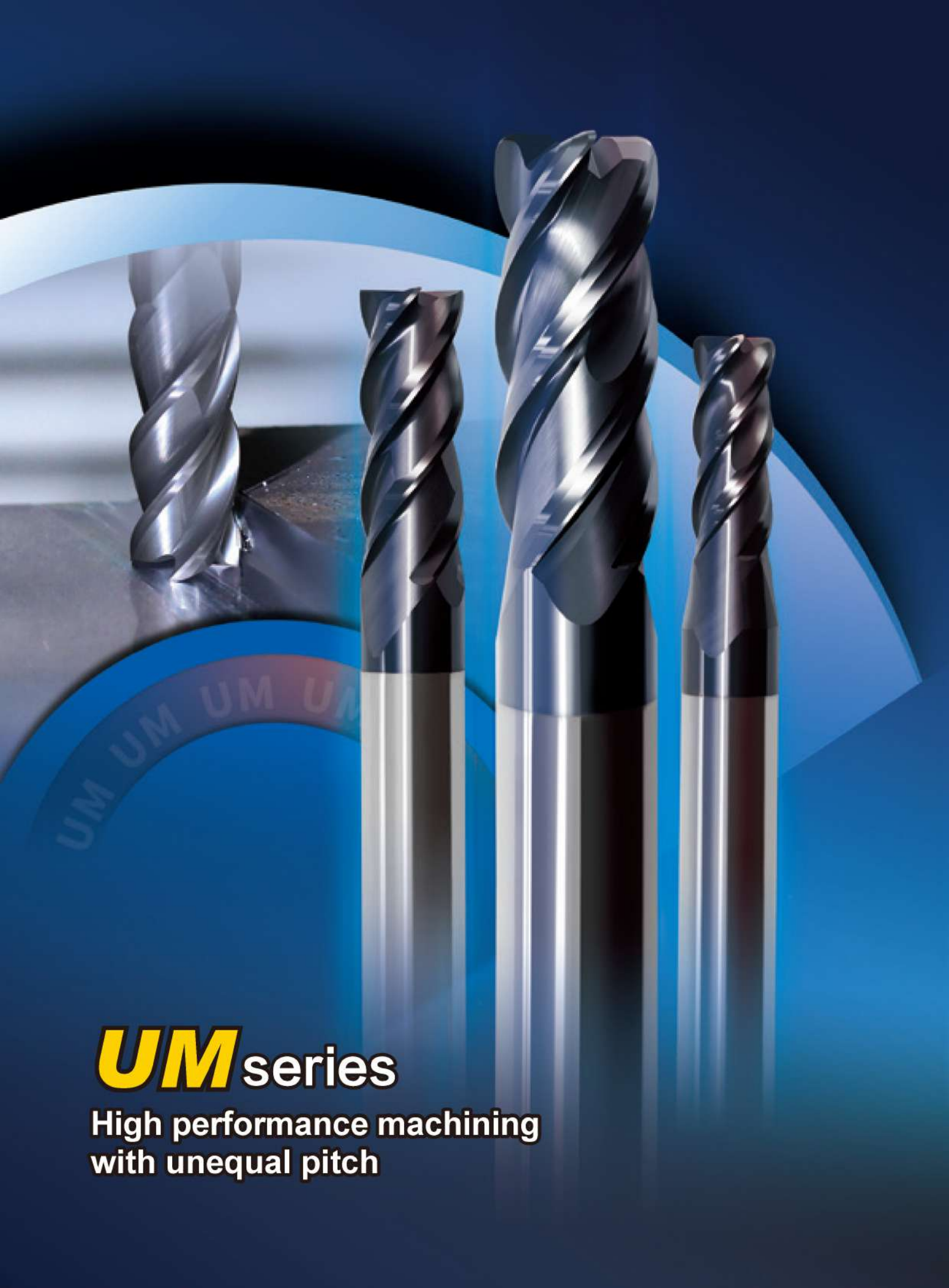






Milling Tools

Solid carbide end mills



UM series

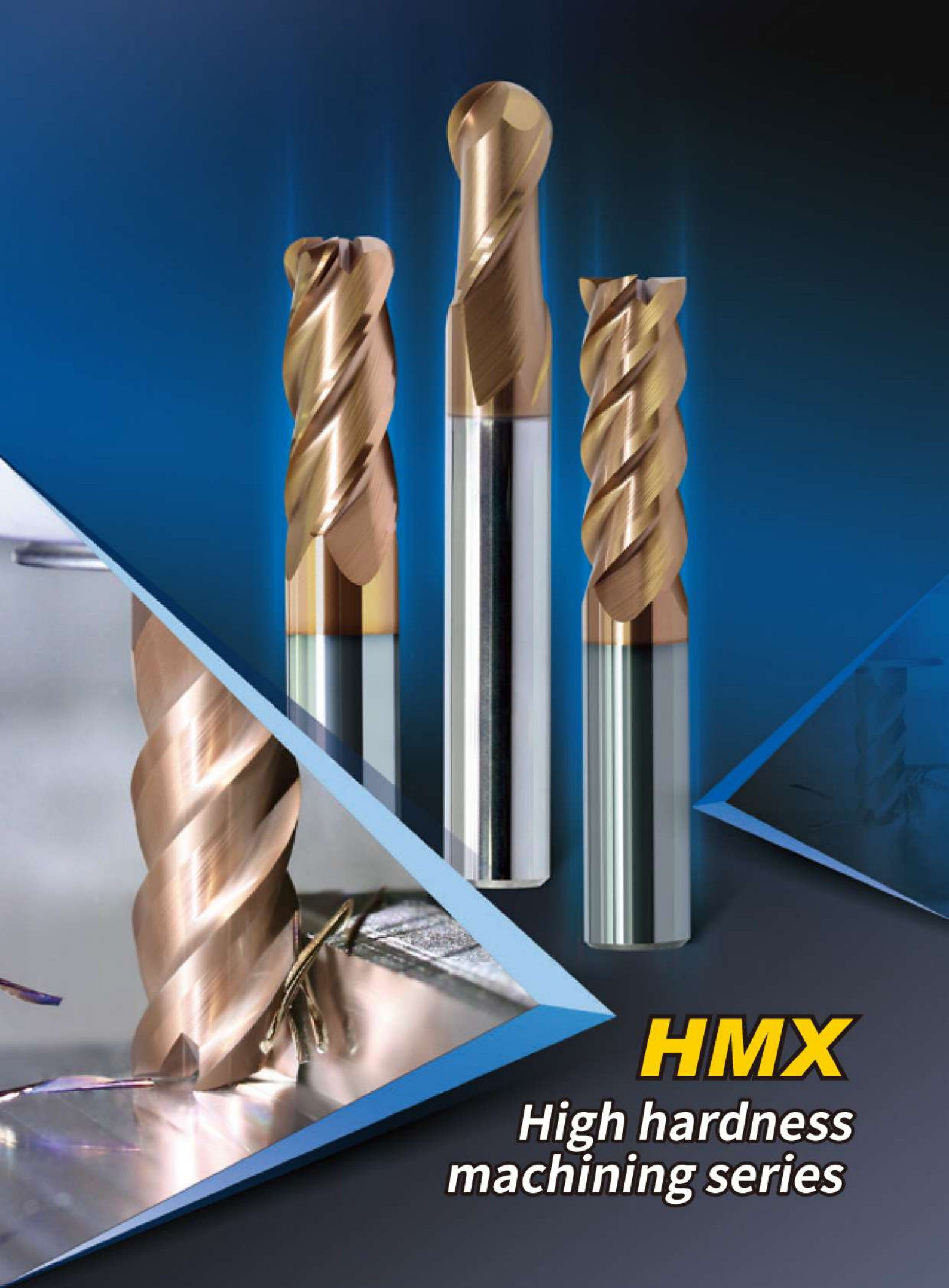
High performance machining
with unequal pitch

PML series





PM series



HMX
***High hardness
machining series***

Selection guide for solid carbide end mills

Selection guide for solid carbide end mills

Tool shape

Tool type

Series of tools

Solid Carbide End Mills
PML series

2-flute flattened end mills with straight shank

PML-2E

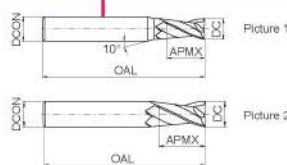


Very suitable for slot milling Wide application



Machining application

shape and size



Type	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	DC	DCON	APMX	OAL			
PML-2E-D1.0S	1.0	4	3	50	2	Picture 1	●
PML-2E-D1.0	1.0	6	3	50	2	Picture 1	●
PML-2E-D1.5S	1.5	4	4	50	2	Picture 1	●
PML-2E-D1.5	1.5	6	4	50	2	Picture 1	●
PML-2E-D2.0S	2.0	4	6	50	2	Picture 1	●
PML-2E-D2.0	2.0	6	6	50	2	Picture 1	●
PML-2E-D2.5S	2.5	4	8	50	2	Picture 1	●
PML-2E-D2.5	2.5	6	8	50	2	Picture 1	●
PML-2E-D3.0S	3.0	4	8	50	2	Picture 1	●
PML-2E-D3.0	3.0	6	8	50	2	Picture 1	●
PML-2E-D3.5	3.5	6	10	50	2	Picture 1	●
PML-2E-D4.0S	4.0	4	11	50	2	Picture 2	●
PML-2E-D4.0	4.0	6	11	50	2	Picture 1	●
PML-2E-D4.5	4.5	6	11	50	2	Picture 1	●
PML-2E-D5.0	5.0	6	13	50	2	Picture 1	●
PML-2E-D5.5	5.5	6	16	50	2	Picture 1	●
PML-2E-D6.0	6.0	6	16	50	2	Picture 2	●
PML-2E-D7.0	7.0	8	20	60	2	Picture 1	●
PML-2E-D8.0	8.0	8	20	60	2	Picture 2	●
PML-2E-D9.0	9.0	10	22	75	2	Picture 1	●
PML-2E-D10.0	10.0	10	25	75	2	Picture 2	●
PML-2E-D11.0	11.0	12	26	75	2	Picture 1	●
PML-2E-D12.0	12.0	12	30	75	2	Picture 2	●
PML-2E-D14.0	14.0	14	32	75	2	Picture 2	●
PML-2E-D16.0	16.0	16	45	100	2	Picture 2	●
PML-2E-D18.0	18.0	18	45	100	2	Picture 2	●
PML-2E-D20.0	20.0	20	45	100	2	Picture 2	●

● Stock available ○ Make-to-order

Applicable workpiece material table

Workpiece material									
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy
○	○	○	○	○	○	○	○	○	○

Code key B294 Graphics category and identification B295 Cutting parameters B652 Non-standard customization B652-B653

Applicable workpiece material range

Helical angle, coating and cutting diameter tolerance, etc.

Product features

Specification

Type, basic dimension, number of teeth and structure

Code key, cutting parameters, graphics category and identification, Non-standard customization



MILLING

Solid Carbide End Mills

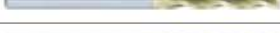
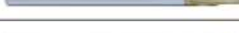


Solid carbide end mills overview	B286-B293
Solid carbide end mills code key	B294
Graphics category and identification	B295
Detail information of solid carbide end mills	B296-B539
High-performance general milling VPM series	B296-B305
High-performance general milling UM series	B306-B312
High-performance general milling PMX series	B313-B326
High-performance general milling PML series	B327-B355
High-performance general milling PM series	B356-B402
GM series for general machining	B403-B444
HMX series for machining high hardness steel	B445-B473
Super alloy end mills RM series	B474-B488
High performance universal end mills MM series	B489-B493
TM series for titanium alloy machining	B494-B503
NM series for copper machining	B504-B510
ALU series high-efficiency end mills for aluminium	B511-B513
AL/ALG series for machining aluminum	B514-B529
SM/VSM series for machining materials hard to cut	B530-B537
CM series for general chamfering	B538-B539
Recommended cutting parameters	B540-B646
Technical Information	B647-B651
Customized non-standard order	B652-B653

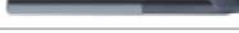


Machining application	Geometry	Number of teeth	Type	Shape	Size range	Workpiece material										Page	
						P		M	K	N		S	H				
						Carbon steel, alloy steel	Pre-hardened steel	Stainless steel	Cast iron	Copper alloy	Aluminum alloy	Heat resistant alloy, Titanium alloy	High hardness steel	Specification	Cutting parameters		
High-performance general milling	Flattened	4	VPM-4E (Unequal pitch)		Ø3.0~Ø20.0	○	○		○			○		B298	B540		
			VPM-4EBL/X (Unequal pitch)		Ø3.0~Ø20.0	○	○		○			○		B299	B540		
			VPM-4EFP (Unequal pitch)		Ø3.0~Ø20.0	○	○		○			○		B300	B540		
	Radius	4	VPM-4R (Unequal pitch)		Ø3.0~Ø12.0	○	○		○			○		B301-302	B541		
			VPM-4RBL/X (Unequal pitch)		Ø3.0~Ø12.0	○	○		○			○		B303-304	B541		
			VPM-4RFP (Unequal pitch)		Ø3.0~Ø12.0	○	○		○			○		B305	B541		
	Flattened	4	UM-4E (Unequal pitch)		Ø4.0~Ø20.0	○	○	○	○			○	○	B307	B542-543		
			UM-4EL (Unequal pitch)		Ø4.0~Ø20.0	○	○	○	○			○	○	B308	B542-543		
			UM-4EFP (Unequal pitch)		Ø6.0~Ø20.0	○	○	○	○			○	○	B309	B544-545		
	Radius	4	UM-4R (Unequal pitch)		Ø4.0~Ø20.0	○	○	○	○			○	○	B310	B546-547		
			UM-4RL (Unequal pitch)		Ø6.0~Ø16.0	○	○	○	○			○	○	B311	B546-547		
			UM-4RFP (Unequal pitch)		Ø6.0~Ø16.0	○	○	○	○			○	○	B312	B548		
	Flattened	4	PMX-4E (Unequal pitch)		Ø1.0~Ø20.0	○	○		○			○		B315-316	B549		
			PMX-4EBL/X (Unequal pitch)		Ø3.0~Ø20.0	○	○		○			○		B317	B549		
			PMX-4EFP (Unequal pitch)		Ø3.0~Ø20.0	○	○		○			○		B318	B549		
	Radius	4	PMX-4R (Unequal pitch)		Ø1.0~Ø16.0	○	○		○			○		B319-320	B550		
			PMX-4RBL/X (Unequal pitch)		Ø3.0~Ø16.0	○	○		○			○		B321-322	B550		
			PMX-4RFP (Unequal pitch)		Ø3.0~Ø16.0	○	○		○			○		B323	B550		
	Ball nose	2	PMX-2B		R1.0~R10.0	○	○		○			○		B324	B551		
			PMX-2BL/M/X		R1.0~R10.0	○	○		○			○		B325	B551		
			PMX-2BFP		R0.5~R10.0	○	○		○			○		B326	B551		
	Flattened	2	PML-2E (Corner protection)		Ø1.0~ Ø20.0	○	○	○	○			○		B328	B552		
			PML-2F (Sharp)		Ø1.0~ Ø20.0	○	○	○	○			○		B329	B553		
			PML-2EL (Corner protection)		Ø3.0~ Ø20.0	○	○	○	○			○		B330	B552		
			PML-2FL (Sharp)		Ø3.0~ Ø20.0	○	○	○	○			○		B331	B553		

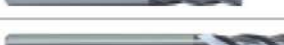
○Very suitable ○Suitable

Machining application	Geometry	Number of teeth	Type	Shape	Size range	Workpiece material										Page	
						P		M	K	N		S	H		Specification	Cutting parameters	
						Carbon steel, alloy steel	Pre-hardened steel	Stainless steel	Cast iron	Copper alloy	Aluminum alloy	Heat resistant alloy, Titanium alloy	High hardness steel				
High-performance general milling	Flattened	2	PML-2EFP (Corner protection)		Ø6.0~ Ø20.0											B332	B554
		3	PML-3E-H (Corner protection)		Ø3.0~ Ø20.0											B333	B555
			PML-3EL-H (Corner protection)		Ø3.0~ Ø20.0											B334	B555
			4	PML-4E-G (Corner protection)		Ø1.0~ Ø20.0											B335
		PML-4F-G (Sharp)			Ø1.0~ Ø20.0											B336	B558 -559
		PML-4EL-G (Corner protection)			Ø3.0~ Ø20.0											B337	B556 -557
		PML-4FL-G (Sharp)			Ø3.0~ Ø20.0											B338	B558 -559
		PML-4EX-G (Corner protection)			Ø3.0~ Ø20.0											B339	B560
		PML-4E (Corner protection)			Ø1.0~ Ø20.0											B340	B561 -562
		PML-4EL (Corner protection)			Ø3.0~ Ø20.0											B341	B561 -562
		PML-4E-H (Corner protection)			Ø3.0~ Ø20.0											B342	B556 -557
		PML-4EL-H (Corner protection)			Ø3.0~ Ø20.0											B343	B556 -557
		PML-4EFP (Corner protection)			Ø6.0~ Ø20.0											B344	B563 -564
		6	PML-6E (Corner protection)		Ø6.0~ Ø20.0											B345	B565
			PML-6EL (Corner protection)		Ø6.0~ Ø20.0											B346	B566
	Ball nose	2	PML-2B		R0.5~R10.0											B347	B567 -568
			PML-2BL		R1.0~R10.0											B348	B567 -568
			PML-2BFP		R0.5~R10.0											B349	B567 -568
		4	PML-4B		R1.5~R10.0											B350	B569
			PML-4BL		R1.5~R10.0											B351	B569
	Radius	2	PML-2R		Ø1.0~ Ø12.0											B352	B573
			PML-4R		Ø3.0~ Ø12.0											B353	B574
		4	PML-4R-H		Ø3.0~ Ø12.0											B354	B574
			PML-4RFP		Ø6.0~ Ø16.0											B355	B574
	Flattened	2	PM-2E (Corner protection)		Ø1.0~ Ø20.0											B358	B552

○Very suitable ○Suitable

Machining application	Geometry	Number of teeth	Type	Shape	Size range	Workpiece material										Page	
						P		M	K	N	S	H					
						Carbon steel, alloy steel	Pre-hardened steel	Stainless steel	Cast iron	Copper alloy	Aluminum alloy	Heat resistant alloy, Titanium alloy	High hardness steel		Specification	Cutting parameters	
													Below 55HRC	Above 55HRC			
High-performance general milling	Flattened	2	PM-2F (Sharp)		Ø1.0~ Ø20.0	○	○	○	○			○	○	B359	B553		
			PM-2EL (Corner protection)		Ø3.0~ Ø20.0	○	○	○	○			○	○	B360	B552		
			PM-2FL (Sharp)		Ø3.0~ Ø20.0	○	○	○	○			○	○	B361	B553		
			PM-2EFP (Corner protection)		Ø6.0~ Ø20.0	○	○	○	○			○	○	B362	B554		
			PM-2EBL/X (Corner protection)		Ø3.0~ Ø12.0	○	○	○	○			○	○	B363	B552		
		3	PM-3E-H (Corner protection)		Ø3.0~ Ø20.0	○	○	○	○			○	○	B364	B555		
			PM-3EL-H (Corner protection)		Ø3.0~ Ø20.0	○	○	○	○			○	○	B365	B555		
		4	PM-4E-G (Corner protection)		Ø1.0~ Ø20.0	○	○	○	○			○	○	B366-367	B556-557		
			PM-4F-G (Sharp)		Ø1.0~ Ø20.0	○	○	○	○			○	○	B368	B558-559		
			PM-4EL-G (Corner protection)		Ø3.0~ Ø20.0	○	○	○	○			○	○	B369	B556-557		
			PM-4FL-G (Sharp)		Ø3.0~ Ø20.0	○	○	○	○			○	○	B370	B558-559		
			PM-4EX-G (Corner protection)		Ø3.0~ Ø20.0	○	○	○	○			○	○	B371	B560		
			PM-4EBL/X-G (Corner protection)		Ø3.0~ Ø12.0	○	○	○	○			○	○	B372	B556-557		
			PM-4E (Corner protection)		Ø1.0~ Ø20.0	○	○	○	○			○	○	B373-374	B561-562		
			PM-4EL (Corner protection)		Ø3.0~ Ø20.0	○	○	○	○			○	○	B375	B561-562		
			PM-4E-H (Corner protection)		Ø3.0~ Ø20.0	○	○	○	○			○	○	B376	B556-557		
			PM-4EL-H (Corner protection)		Ø3.0~ Ø20.0	○	○	○	○			○	○	B377	B556-557		
			PM-4EFP (Corner protection)		Ø6.0~ Ø20.0	○	○	○	○			○	○	B378	B563-564		
			PM-4EBL/X (Corner protection)		Ø3.0~ Ø12.0	○	○	○	○			○	○	B379	B561-562		
		6	PM-6E (Corner protection)		Ø6.0~ Ø20.0	○	○	○	○			○	○	B380	B565		
			PM-6EL (Corner protection)		Ø6.0~ Ø20.0	○	○	○	○			○	○	B381	B566		
	Ball nose	2	PM-2B		R0.5~R10.0	○	○	○	○			○	○	B382	B567-568		
			PM-2BL/M/X		R1.0~R10.0	○	○	○	○			○	○	B383	B567-568		
			PM-2BFP		R0.5~R10.0	○	○	○	○			○	○	B384	B567-568		
		4	PM-4B		R1.5~R10.0	○	○	○	○			○	○	B385	B569		

○Very suitable ○Suitable

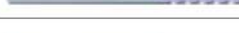
Machining application	Geometry	Number of teeth	Type	Shape	Size range	Workpiece material										Page	
						P		M	K	N		S	H		Specification	Cutting parameters	
						Carbon steel, alloy steel	Pre-hardened steel	Stainless steel	Cast iron	Copper alloy	Aluminum alloy	Heat resistant alloy, Titanium alloy	High hardness steel				
High-performance general milling	Ball nose	4	PM-4BL/M/X		R1.5~R10.0										B386	B569	
	Taper neck ball nose	2	PM-2BC		R0.25~R2.0										B387-390	B570-572	
	Radius		PM-2R		Ø1.0~ Ø12.0										B391-392	B573	
		PM-4R		Ø3.0~ Ø12.0										B393-394	B574		
		PM-4RBL/M/X		Ø4.0~ Ø10.0										B395-396	B574		
		PM-4R-H		Ø3.0~ Ø12.0										B397-398	B574		
		PM-4RBL/M/X-H		Ø4.0~ Ø12.0										B399	B574		
		PM-4RFP		Ø6.0~ Ø16.0										B400	B574		
	High-feed-rate	PM-4H		Ø3.0~ Ø12.0										B401	B575-576		
		PM-4HL		Ø4.0~ Ø12.0										B402	B575-576		
General milling	Flattened	2	GM-2E (Corner protection)		Ø1.0~ Ø20.0										B405	B577	
			GM-2F (Sharp)		Ø1.0~ Ø20.0										B406	B578	
			GM-2EL (Corner protection)		Ø3.0~ Ø20.0										B407	B577	
			GM-2FL (Sharp)		Ø3.0~ Ø20.0										B408	B578	
			GM-2EX (Corner protection)		Ø3.0~ Ø20.0										B409	B579	
			GM-2EFP (Corner protection)		Ø6.0~ Ø20.0										B410	B580	
			GM-2EBL/X (Corner protection)		Ø3.0~ Ø12.0										B411	B577	
		3	GM-3E (Corner protection)		Ø1.0~ Ø20.0										B412-413	B581	
			GM-3EL (Corner protection)		Ø3.0~ Ø20.0										B414	B581	
		4	GM-4E-G (Corner protection)		Ø1.0~ Ø20.0										B415-416	B582	
			GM-4F-G (Sharp)		Ø1.0~ Ø20.0										B417	B583	
			GM-4EL-G (Corner protection)		Ø3.0~ Ø20.0										B418	B582	
		4	GM-4FL-G (Sharp)		Ø3.0~ Ø20.0										B419	B583	
			GM-4EX-G (Corner protection)		Ø3.0~ Ø20.0										B420	B584	
			GM-4EBL/X-G (Corner protection)		Ø3.0~ Ø12.0										B421	B582	

○Very suitable ○Suitable

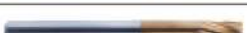
Indexable
milling toolsSolid carbide
end mills

Solid carbide end mills overview

Solid carbide end mills overview

Machining application	Geometry	Number of teeth	Type	Shape	Size range	Workpiece material										Page	
						P		M	K	N	S	H		Specification	Cutting parameters		
						Carbon steel, alloy steel	Pre-hardened steel	Stainless steel	Cast iron	Copper alloy	Aluminum alloy	Heat resistant alloy, Titanium alloy	High hardness steel				
General milling	Flattened	4	GM-4E (Corner protection)		Ø1.0~ Ø20.0											B422-423	B585
			GM-4EL (Corner protection)		Ø3.0~ Ø20.0											B424	B585
			GM-4EFP (Corner protection)		Ø6.0~ Ø20.0											B425	B586
			GM-4EBL/X (Corner protection)		Ø3.0~ Ø12.0											B426	B585
		6	GM-6E (Corner protection)		Ø6.0~ Ø20.0											B427	B587
			GM-6EL (Corner protection)		Ø6.0~ Ø20.0											B428	B588
	Long neck flattened		GM-2EP		Ø0.3~ Ø5.0											B429-430	B589-590
	Tiny head flattened		GM-2ES		Ø0.3~ Ø3.0											B431	B591
	Ball nose	2	GM-2B		R0.5~R10.0											B432	B592
			GM-2BL/M/X		R1.0~R10.0											B433	B592
			GM-2BFP		R0.5~R10.0											B434	B592
		4	GM-4B		R1.5~R10.0											B435	B593
			GM-4BL/M/X		R1.5~R10.0											B436	B593
	Tiny ball nose	2	GM-2BS		R0.15~ R1.5											B437	B594
	Long neck ball nose		GM-2BP		R0.15~R2.5											B438-439	B595-596
	Radius		GM-2R		Ø1.0~Ø12.0											B440	B597
		4	GM-4R		Ø1.0~Ø12.0											B441	B598
			GM-4RL/M/X		Ø4.0~Ø16.0											B442-443	B598
	Corrugated edge		GM-4W		Ø6.0~Ø20.0											B444	B599-600
Machining high hardness steel	Flattened	2	HMX-2E (Corner protection)		Ø1.0~Ø20.0										B446-447	B601	
			HMX-2EFP (Corner protection)		Ø6.0~Ø20.0										B448	B602	
			HMX-2EBL/X (Corner protection)		Ø3.0~Ø12.0										B449	B601	
		4	HMX-4E (Corner protection)		Ø1.0~Ø20.0										B450-451	B603	
			HMX-4EL (Corner protection)		Ø3.0~Ø20.0										B452	B603	
			HMX-4EFP (Corner protection)		Ø6.0~Ø20.0										B453	B604	

○Very suitable ○Suitable

Machining application	Geometry	Number of teeth	Type	Shape	Size range	Workpiece material										Page	
						P		M	K	N		S	H		Specification	Cutting parameters	
						Carbon steel, alloy steel	Pre-hardened steel	Stainless steel	Cast iron	Copper alloy	Aluminum alloy	Heat resistant alloy, Titanium alloy	High hardness steel				
Machining high hardness steel	Flattened	4	HMX-4EBL/X (Corner protection)		Ø3.0~Ø12.0				○				○	○	B454	B603	
		6	HMX-6E (Corner protection)		Ø6.0~Ø20.0				○				○	○	B455	B605	
			HMX-6EL (Corner protection)		Ø6.0~Ø20.0				○				○	○	B456	B606	
	Long neck flattened		HMX-2EP		Ø0.3~Ø5.0				○				○	○	B457-458	B607-608	
	Tiny head flattened		HMX-2ES		Ø0.3~Ø3.0				○				○	○	B459	B609	
	Ball nose	2	HMX-2B		R0.5~R10.0				○				○	○	B460	B610	
			HMX-2BL/M/X		R1.0~R10.0				○				○	○	B461	B610	
			HMX-2BFP		R0.5~R10.0				○				○	○	B462	B610	
		4	HMX-4B		R1.5~R10.0				○				○	○	B463	B611	
			HMX-4BL		R1.5~R10.0				○				○	○	B464	B611	
	Tiny ball nose	2	HMX-2BS		R0.15~R1.5				○				○	○	B465	B612	
	Long neck ball nose		HMX-2BP		R0.15~R2.5				○				○	○	B466-467	B613-614	
	Radius	4	HMX-4R		Ø1.0~Ø12.0				○				○	○	B468-469	B615	
			HMX-4RBL/M/X		Ø4.0~Ø12.0				○				○	○	B470	B615	
			HMX-4RF		Ø6.0~Ø12.0				○				○	○	B471	B615	
			HMX-4RP		Ø6.0~Ø16.0				○				○	○	B472	B615	
		6	HMX-6R-MAX		Ø6.0~Ø20.0				○				○	○	B473	B616	
Super alloy machining	Flattened	4	RM-4E		Ø6.0~Ø25.0	○		○				○			B476	B617	
		5	RM-5E		Ø10.0~Ø25.0	○		○				○			B477	B617	
		6	RM-6E		Ø10.0~Ø25.0	○		○				○			B478	B618	
	Ball nose	4	RM-4B		R3.0~R10.0	○		○				○			B479	B621	
			RM-4R		Ø6.0~Ø25.0	○		○				○			B480-482	B619	
	Radius	5	RM-5R		Ø6.0~Ø25.0	○		○				○			B483-485	B619	
		6	RM-6R		Ø10.0~Ø25.0	○		○				○			B486	B620	
		7	RM-7R		Ø10.0~Ø25.0	○		○				○			B487-488	B620	

○Very suitable ○Suitable

Indexable
milling toolsSolid carbide
end mills

Solid carbide end mills overview

Solid carbide end mills overview

Machining application	Geometry	Number of teeth	Type	Shape	Size range	Workpiece material										Page	
						P		M	K	N		S	H				
						Carbon steel, alloy steel	Pre-hardened steel	Stainless steel	Cast iron	Copper alloy	Aluminum alloy	Heat resistant alloy, Titanium alloy	High hardness steel	Below 55HRC	Above 55HRC	Specification	Cutting parameters
High performance general milling for stainless steel	Flattened	4	MM-4E		Ø1.0~Ø20.0										B490	B622	
			MM-4EF		Ø1.0~Ø20.0										B491	B622	
	Radius		MM-4R		Ø1.0~Ø20.0										B492	B623	
			MM-4RFP		Ø6.0~Ø20.0										B493	B623	
Machining titanium	Flattened	4	TM-4E		Ø6.0~Ø25.0										B495	B624	
	Ball nose		TM-4B		R3.0~R10.0										B496	B624	
	Radius		TM-4R		Ø6.0~Ø25.0										B497-499	B624	
			TM-4RP		Ø8.0~Ø25.0										B500	B624	
	5	TM-5R		Ø6.0~Ø25.0										B501-502	B625		
		6	TM-6R		Ø10.0~Ø25.0										B503	B626	
Copper machining	Flattened	2	NM-2E		Ø1.0~Ø12.0									B505	B627		
		4	NM-4E		Ø3.0~Ø12.0									B506	B628		
	Long neck flattened	2	NM-2EP		Ø0.5~Ø5.0									B507	B629		
	Ball nose		NM-2B		R0.5~R6.0									B508	B630		
	Long neck Ball nose		NM-2BP		R0.25~R2.5									B509	B631		
High-efficiency milling for Al	Flattened	3	ALU-3E		Ø3.0~Ø20.0									B513	B632		
Machining aluminum	Flattened	2	AL-2E		Ø1.0~Ø20.0									B515	B633		
			AL-2EL		Ø3.0~Ø20.0									B516	B633		
		3	AL-3E		Ø1.0~Ø20.0									B517	B634		
			AL-3EL		Ø3.0~Ø20.0									B518	B634		
	Ball nose	2	AL-2B		R1.0~R6.0									B519	B635		
	Corrugated edge	3	AL-3W		Ø6.0~Ø20.0									B520	B636		
	Radius (Super high speed)	2	AL-2R-AIR		Ø6.0~Ø20.0									B521	B637		
			AL-2RL-AIR		Ø6.0~Ø20.0									B522	B637		
		3	AL-3R-AIR		Ø12.0~Ø20.0									B523	B638		

○Very suitable ○Suitable

Machining application	Geometry	Number of teeth	Type	Shape	Size range	Workpiece material										Page	
						P		M	K	N		S	H				
						Carbon steel, alloy steel	Pre-hardened steel	Stainless steel	Cast iron	Copper alloy	Aluminum alloy	Heat resistant alloy, Titanium alloy	High hardness steel		Specification	Cutting parameters	
Machining aluminum	Radius (Super high speed)	3	AL-3RL-AIR		Ø12.0~Ø20.0						○				B524	B638	
	Flattened	2	ALG-2E		Ø1.0~Ø20.0						○				B526	B639	
		3	ALG-3E		Ø1.0~Ø20.0						○				B527	B640	
	Radius	2	ALG-2R		Ø1.0~Ø12.0						○				B528	B641	
		3	ALG-3R		Ø1.0~Ø12.0						○				B529	B642	
Machining of hard-to-cut materials	Flattened	3	SM-3E		Ø3.0~Ø20.0	○		○				○			B532	B643	
		4	VSM-4E (Unequal pitch)		Ø4.0~Ø20.0	○		○				○			B533	B644	
			VSM-4EFP (Unequal pitch)		Ø6.0~Ø16.0	○		○				○			B534	B644	
	Radius	4	SM-4R		Ø6.0~Ø12.0	○		○				○			B535	B645	
			VSM-4R (Unequal pitch)		Ø6.0~Ø20.0	○		○				○			B536	B646	
			VSM-4RFP (Unequal pitch)		Ø6.0~Ø16.0	○		○				○			B537	B646	
Chamfering	Flattened	2	CM-2E		Ø3.0~Ø16.0	○	○	○	○	○	○	○	○		B538	--	
		4	CM-4E		Ø3.0~Ø16.0	○	○	○	○	○	○	○	○		B539	--	

○Very suitable ○Suitable

Indexable
milling toolsSolid carbide
end mills

Solid carbide end mills overview

Solid carbide end mills code key

VPM/UM	High performance general machining with unequal pitch
PMX/PML/PM	High-performance general milling
GM	General milling
HMX	Machining hardened material
RM	Super alloy machining
MM	High performance general milling for stainless steel
TM	Machining titanium
NM	Machining copper
ALU	High-efficiency milling for Al
AL/ALG	Machining aluminum
SM/VSM	Machining of hard-to-cut materials
CM	General chamfering

End mill category

E	Corner protection flattened
F	Sharp flattened
B	Ball nose
R	Radius
W	Corrugated edge
H	High-feed-rate

End mill type

S	Tiny diameter
P	Straight neck
C	Taper neck
Default	Standard

Structure type

Radius of nose arc or radius of ball nose

GM - 2 E L P - D12 R0.5 - M08

Number of teeth

Length category

L	Long cutting edge
X	Extra long cutting edge
BL/M/X	Long shank type
F	Short cutting edge
Default	Standard

Tool diameter

Other

G	30° taper 4-flute flattened end mills
H	38° helical angle
M	Neck length
F	Slim shank: Ø3mm
S	Slim shank: Ø4mm
AIR	End mill for machining aluminum with super high speed

● For unequal pitch end mills, letter "V" is added before category code.

● 2-flute end face mill with taper shank

PM-2BC05-R0.25-M03.

— Taper

►► Coating of mills

	Super nanometer crystal TiAlCrN coating
	Super crystal nano heat resistant TiAlXN coatings
	Nano TiAlN coating
	TiAlN coating
	AlTiN coating
	CrN coating
	AlCrXN coating
	TiAlXN coating
	AlCrXN-Plus coating

►► End tooth type of mills

	2-flute flattened end mills		4-flute R end mills
	2-flute ball nose end mills		5-flute flattened end mills
	2-flute R end mills		5-flute R end mills
	3-flute flattened end mills		6-flute flattened end mills
	3-flute R end mills		6-flute R end mills
	4-flute flattened end mills		7-flute R end mills
	4-flute ball nose end mills		

►► Helical angle

	β is helical angle: 30°, 35°, 38°, 45°, 55°
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►► Cutting diameter tolerance

	Cutting diameter tolerance
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►► Radius tolerance of ball nose end mills

	Radius tolerance
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►► Nose type

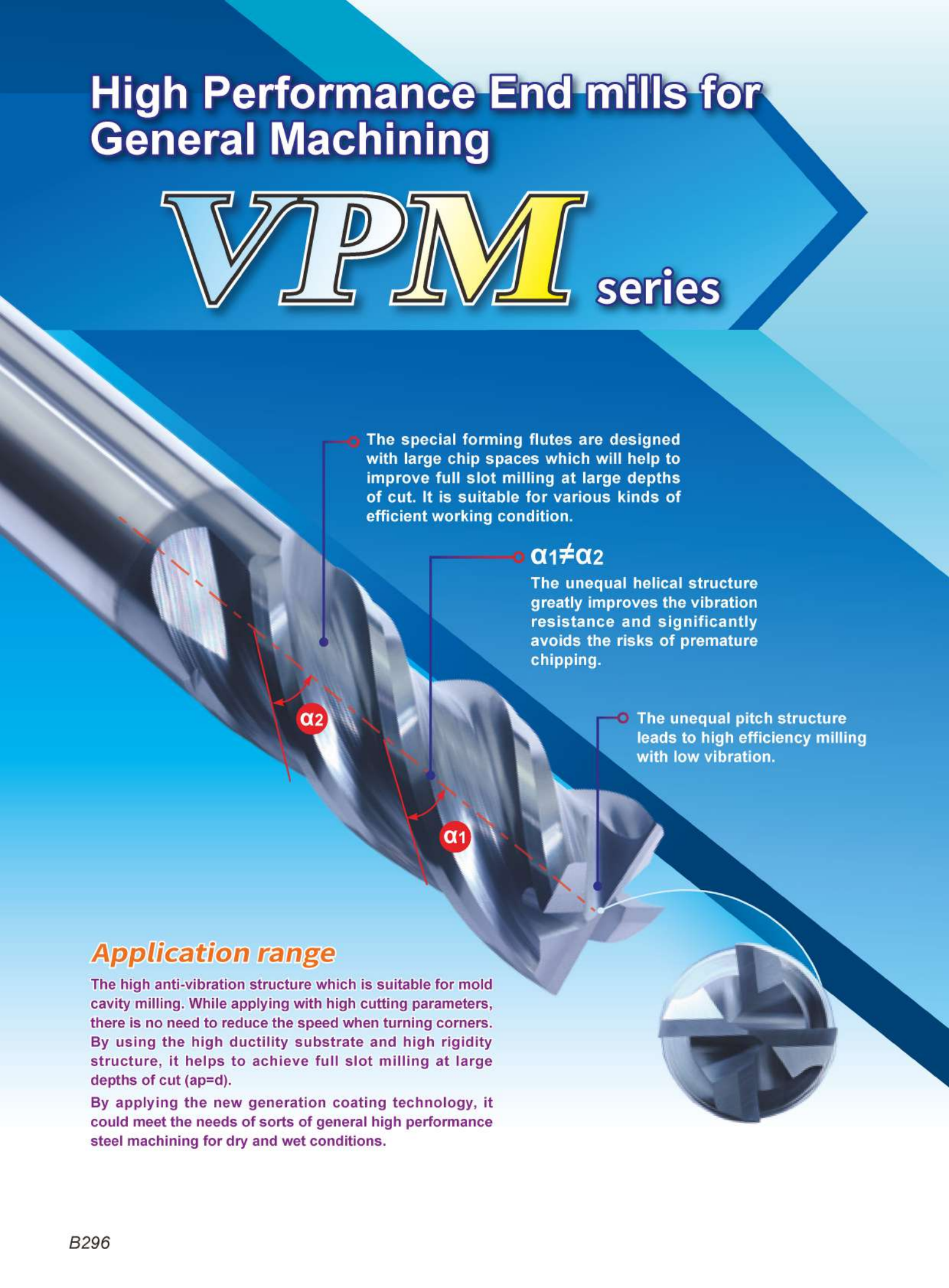
	Corner protection
	Sharp

►► Machining operation

	Flattened end mills for side machining
	Flattened end mills for shoulder machining
	Flattened end mills for straight slot machining
	Flattened end mills for deep slot machining
	Ball nose end mills for profile machining
	Ball nose end mills for cavity machining
	Ball nose end mills for slot machining
	Ball nose end mills for deep slot machining
	R end mills for side machining
	R end mills for slot machining
	R end mills for profile machining
	Chamfering

High Performance End mills for General Machining

VPM series



The special forming flutes are designed with large chip spaces which will help to improve full slot milling at large depths of cut. It is suitable for various kinds of efficient working condition.

$\alpha_1 \neq \alpha_2$

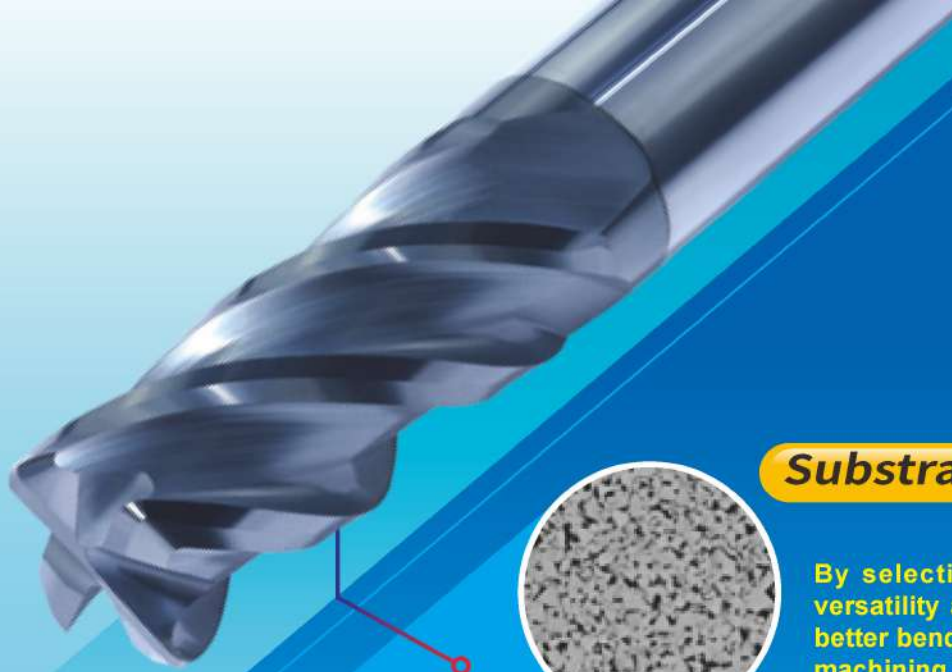
The unequal helical structure greatly improves the vibration resistance and significantly avoids the risks of premature chipping.

The unequal pitch structure leads to high efficiency milling with low vibration.

Application range

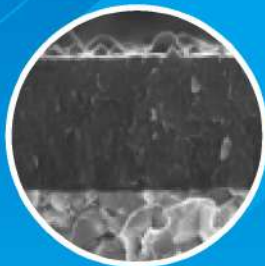
The high anti-vibration structure which is suitable for mold cavity milling. While applying with high cutting parameters, there is no need to reduce the speed when turning corners. By using the high ductility substrate and high rigidity structure, it helps to achieve full slot milling at large depths of cut ($ap=d$).

By applying the new generation coating technology, it could meet the needs of sorts of general high performance steel machining for dry and wet conditions.



Substrate and coating

By selecting the substrate with high versatility and wear resistance, it offers better bending stiffness to meet efficient machining requirements.



Coating grades with lower friction coefficient, especially are suitable for machining carbon steel, mild steel, stainless steel and other viscous materials.

CASE 1

Cutting tool: VPM-4E-D8.0
Method: Side milling
Workpiece material: 45#
Cutting parameters: $V_c=190\text{m/min}$,
 $f_z=0.08\text{mm/z}$, $a_p=12\text{mm}$, $a_e=2.4\text{mm}$
CNC Machine type:
5-Axis Vertical Machining Center
Cooling method: Emulsion
Overhang: 24mm

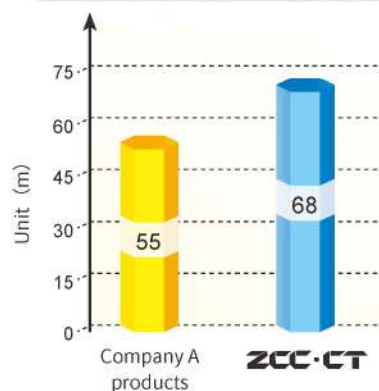


Test result: After processing 120 meters, the normal flank wear of our cutting tool reaches 0.039mm which can still work.

CASE 2

Cutting tool: VPM-4E-D8.0
Method: Slot milling
Workpiece material: 45#
Cutting parameters: $V_c=150\text{m/min}$,
 $f_r=0.2\text{mm/r}$, $a_p=8\text{mm}$
CNC Machine type: 5-Axis Vertical
Machining Center
Cooling method: Emulsion
Overhang: 24mm

Comparison on slot milling length



4-flute unequal pitch flattened end mills with straight shank



Side face



Step shoulder

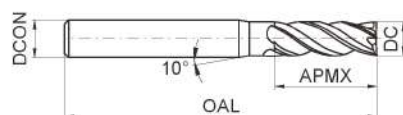
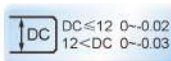


Straight slot

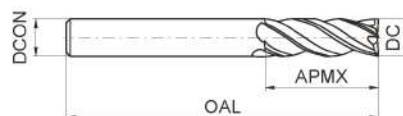
VPM-4E



- Suitable for high-efficient machining of ordinary steel and cast iron.
- Differential helical angle and pitch design offer high vibration resistance.
- Suitable for machining of large depth and width of cut.



Picture 1



Picture 2

Type	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	DC	DCON	APMX	OAL			
VPM-4E-D3.0S	3.0	4	8	50	4	Picture 1	●
VPM-4E-D3.0	3.0	6	8	50	4	Picture 1	●
VPM-4E-D3.5S	3.5	4	10	50	4	Picture 1	●
VPM-4E-D3.5	3.5	6	10	50	4	Picture 1	●
VPM-4E-D4.0S	4.0	4	11	50	4	Picture 2	●
VPM-4E-D4.0	4.0	6	11	50	4	Picture 1	●
VPM-4E-D4.5	4.5	6	11	50	4	Picture 1	●
VPM-4E-D5.0	5.0	6	13	50	4	Picture 1	●
VPM-4E-D5.5	5.5	6	16	50	4	Picture 1	●
VPM-4E-D6.0	6.0	6	16	50	4	Picture 2	●
VPM-4E-D7.0	7.0	8	20	60	4	Picture 1	●
VPM-4E-D8.0	8.0	8	20	60	4	Picture 2	●
VPM-4E-D9.0	9.0	10	22	75	4	Picture 1	●
VPM-4E-D10.0	10.0	10	25	75	4	Picture 2	●
VPM-4E-D11.0	11.0	12	26	75	4	Picture 1	●
VPM-4E-D12.0	12.0	12	30	75	4	Picture 2	●
VPM-4E-D14.0	14.0	14	32	75	4	Picture 2	●
VPM-4E-D16.0	16.0	16	45	100	4	Picture 2	●
VPM-4E-D18.0	18.0	18	45	100	4	Picture 2	●
VPM-4E-D20.0	20.0	20	45	100	4	Picture 2	●

● Stock available ○ Make-to-order

▶▶ Applicable workpiece material table ● Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
											

Code key

B294

Graphics category and identification

B295

Cutting parameters

B540

Non-standard customization

B652-B653

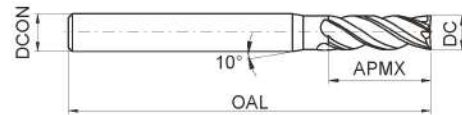
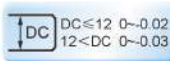
4-flute flattened end mills with long shank



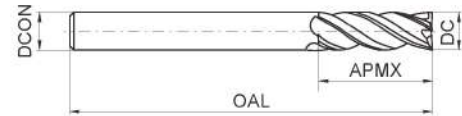
VPM-4EBL/X



● VPM-4E series with long shank.



Picture 1



Picture 2

Type	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	DC	DCON	APMX	OAL			
VPM-4EBL-D3.0S	3.0	4	8	75	4	Picture 1	○
VPM-4EBL-D3.0	3.0	6	8	75	4	Picture 1	○
VPM-4EBL-D4.0S	4.0	4	11	75	4	Picture 2	○
VPM-4EBL-D4.0	4.0	6	11	75	4	Picture 1	○
VPM-4EBL-D5.0	5.0	6	13	75	4	Picture 1	○
VPM-4EBL-D6.0	6.0	6	16	75	4	Picture 2	○
VPM-4EBX-D6.0	6.0	6	16	100	4	Picture 2	○
VPM-4EBL-D8.0	8.0	8	20	75	4	Picture 2	○
VPM-4EBX-D8.0	8.0	8	20	100	4	Picture 2	○
VPM-4EBL-D10.0	10.0	10	25	100	4	Picture 2	○
VPM-4EBL-D12.0	12.0	12	30	100	4	Picture 2	○
VPM-4EBL-D16.0	16.0	16	45	150	4	Picture 2	○
VPM-4EBL-D20.0	20.0	20	45	150	4	Picture 2	○

● Stock available ○ Make-to-order

Indexable
milling tools

Solid carbide
end mills

VPM series

▶▶ Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
											

Code key

B294

Graphics category and identification

B295

Cutting parameters

B540

Non-standard customization

B652-B653

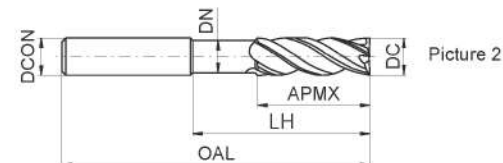
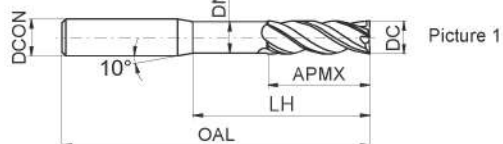
4-flute unequal pitch flattened end mills with straight shank, long neck and short cutting edge



VPM-4EFP



- Suitable for high-efficient machining of ordinary steel and cast iron.
- Differential helical angle and pitch design offer high vibration resistance.
- Suitable for machining of large depth and width of cut.



Type	Basic dimension(mm)						Number of teeth Z	Geometry	Stock
	DC	DCON	APMX	LH	DN	OAL			
VPM-4EFP-D3.0S	3.0	4	4.5	15	2.8	75	4	Picture 1	○
VPM-4EFP-D3.0	3.0	6	4.5	15	2.8	75	4	Picture 1	○
VPM-4EFP-D4.0S	4.0	4	6.0	20	3.8	75	4	Picture 2	○
VPM-4EFP-D4.0	4.0	6	6.0	20	3.8	75	4	Picture 1	○
VPM-4EFP-D5.0	5.0	6	8.0	25	4.8	75	4	Picture 1	○
VPM-4EFP-D6.0	6.0	6	9.0	30	5.8	75	4	Picture 2	○
VPM-4EFP-D8.0	8.0	8	12.0	40	7.8	100	4	Picture 2	○
VPM-4EFP-D10.0	10.0	10	15.0	50	9.5	100	4	Picture 2	○
VPM-4EFP-D12.0	12.0	12	18.0	50	11.5	100	4	Picture 2	○
VPM-4EFP-D16.0	16.0	16	24.0	60	15.5	150	4	Picture 2	○
VPM-4EFP-D20.0	20.0	20	30.0	60	19.5	150	4	Picture 2	○

● Stock available ○ Make-to-order

Applicable workpiece material table

● Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
											

Code key

B294

Graphics category and identification

B295

Cutting parameters

B540

Non-standard customization

B652-B653

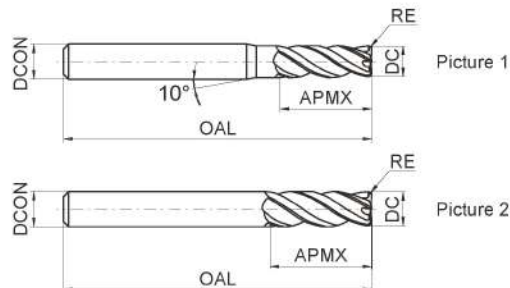
4-flute unequal pitch R end mills with straight shank



VPM-4R



- Suitable for high-efficient machining of ordinary steel and cast iron.
- Differential helical angle and pitch design offer high vibration resistance.
- Suitable for machining of large depth and width of cut.



Type	Basic dimension(mm)					Number of teeth Z	Geometry	Stock
	DC	RE	DCON	APMX	OAL			
VPM-4R-D3.0R0.2S	3.0	0.2	4	8	50	4	Picture 1	●
VPM-4R-D3.0R0.2	3.0	0.2	6	8	50	4	Picture 1	●
VPM-4R-D3.0R0.3S	3.0	0.3	4	8	50	4	Picture 1	●
VPM-4R-D3.0R0.3	3.0	0.3	6	8	50	4	Picture 1	●
VPM-4R-D4.0R0.2S	4.0	0.2	4	11	50	4	Picture 2	●
VPM-4R-D4.0R0.2	4.0	0.2	6	11	50	4	Picture 1	●
VPM-4R-D4.0R0.3S	4.0	0.3	4	11	50	4	Picture 2	●
VPM-4R-D4.0R0.3	4.0	0.3	6	11	50	4	Picture 1	●
VPM-4R-D4.0R0.5S	4.0	0.5	4	11	50	4	Picture 2	●
VPM-4R-D4.0R0.5	4.0	0.5	6	11	50	4	Picture 1	●
VPM-4R-D5.0R0.3	5.0	0.3	6	13	50	4	Picture 1	●
VPM-4R-D5.0R0.5	5.0	0.5	6	13	50	4	Picture 1	●
VPM-4R-D5.0R1.0	5.0	1.0	6	13	50	4	Picture 1	●
VPM-4R-D6.0R0.3	6.0	0.3	6	16	50	4	Picture 2	●
VPM-4R-D6.0R0.5	6.0	0.5	6	16	50	4	Picture 2	●

● Stock available ○ Make-to-order

Indexable milling tools

Solid carbide end mills

VPM series

➤ Applicable workpiece material table ● Very suitable ○ Suitable

Workpiece material										
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy
		~40HRC	~50HRC	~55HRC	~68HRC					
○	○	○	○	○			○			

Code key

B294

Graphics category and identification

B295

Cutting parameters

B541

Non-standard customization

B652-B653

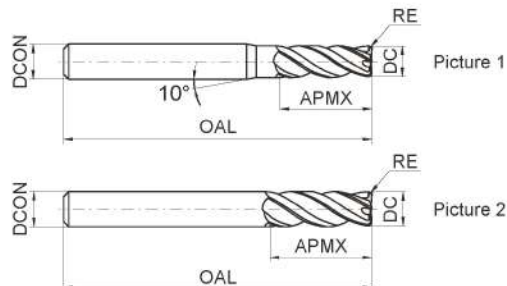
4-flute unequal pitch R end mills with straight shank



VPM-4R



- Suitable for high-efficient machining of ordinary steel and cast iron.
- Differential helical angle and pitch design offer high vibration resistance.
- Suitable for machining of large depth and width of cut.



Type	Basic dimension(mm)					Number of teeth Z	Geometry	Stock
	DC	RE	DCON	APMX	OAL			
VPM-4R-D6.0R1.0	6.0	1.0	6	16	50	4	Picture 2	●
VPM-4R-D8.0R0.3	8.0	0.3	8	20	60	4	Picture 2	●
VPM-4R-D8.0R0.5	8.0	0.5	8	20	60	4	Picture 2	●
VPM-4R-D8.0R1.0	8.0	1.0	8	20	60	4	Picture 2	●
VPM-4R-D10.0R0.3	10.0	0.3	10	25	75	4	Picture 2	●
VPM-4R-D10.0R0.5	10.0	0.5	10	25	75	4	Picture 2	●
VPM-4R-D10.0R1.0	10.0	1.0	10	25	75	4	Picture 2	●
VPM-4R-D10.0R1.5	10.0	1.5	10	25	75	4	Picture 2	●
VPM-4R-D10.0R2.0	10.0	2.0	10	25	75	4	Picture 2	●
VPM-4R-D12.0R0.3	12.0	0.3	12	30	75	4	Picture 2	●
VPM-4R-D12.0R0.5	12.0	0.5	12	30	75	4	Picture 2	●
VPM-4R-D12.0R1.0	12.0	1.0	12	30	75	4	Picture 2	●
VPM-4R-D12.0R1.5	12.0	1.5	12	30	75	4	Picture 2	●
VPM-4R-D12.0R2.0	12.0	2.0	12	30	75	4	Picture 2	●

● Stock available ○ Make-to-order

Applicable workpiece material table Very suitable Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
											

Code key

B294

Graphics category and identification

B295

Cutting parameters

B541

Non-standard customization

B652-B653

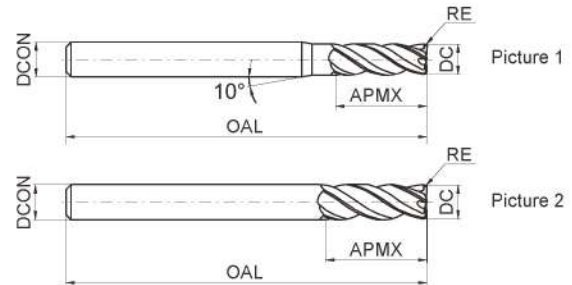
4-flute R end mills with long shank



VPM-4RBL/X



● VPM-4R series with long shank.



Type	Basic dimension(mm)					Number of teeth Z	Geometry	Stock
	DC	RE	DCON	APMX	OAL			
VPM-4RBL-D3.0R0.2S	3.0	0.2	4	8	75	4	Picture 1	○
VPM-4RBL-D3.0R0.2	3.0	0.2	6	8	75	4	Picture 1	○
VPM-4RBL-D3.0R0.3S	3.0	0.3	4	8	75	4	Picture 1	○
VPM-4RBL-D3.0R0.3	3.0	0.3	6	8	75	4	Picture 1	○
VPM-4RBL-D4.0R0.2S	4.0	0.2	4	11	75	4	Picture 2	○
VPM-4RBL-D4.0R0.2	4.0	0.2	6	11	75	4	Picture 1	○
VPM-4RBL-D4.0R0.3S	4.0	0.3	4	11	75	4	Picture 2	○
VPM-4RBL-D4.0R0.3	4.0	0.3	6	11	75	4	Picture 1	○
VPM-4RBL-D4.0R0.5S	4.0	0.5	4	11	75	4	Picture 2	○
VPM-4RBL-D4.0R0.5	4.0	0.5	6	11	75	4	Picture 1	○
VPM-4RBL-D6.0R0.3	6.0	0.3	6	16	75	4	Picture 2	○
VPM-4RBL-D6.0R0.5	6.0	0.5	6	16	75	4	Picture 2	○
VPM-4RBL-D6.0R1.0	6.0	1.0	6	16	75	4	Picture 2	○
VPM-4RBX-D6.0R0.3	6.0	0.3	6	16	100	4	Picture 2	○
VPM-4RBX-D6.0R0.5	6.0	0.5	6	16	100	4	Picture 2	○
VPM-4RBX-D6.0R1.0	6.0	1.0	6	16	100	4	Picture 2	○

● Stock available ○ Make-to-order

Indexable
milling tools

Solid carbide
end mills

VPM series

▶▶ Applicable workpiece material table ● Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
											

Code key

B294

Graphics category and identification

B295

Cutting parameters

B541

Non-standard customization

B652-B653



B MILLING / Solid Carbide End Mills

High-performance general milling VPM series

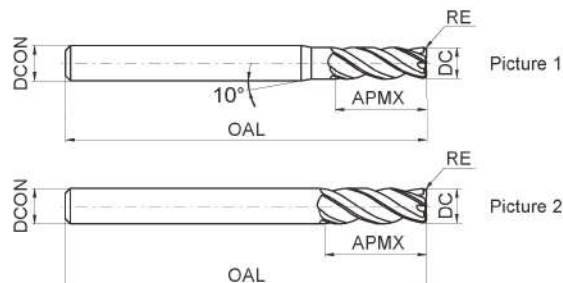
4-flute R end mills with long shank



VPM-4RBL/X



● VPM-4R series with long shank.



Type	Basic dimension(mm)					Number of teeth Z	Geometry	Stock
	DC	RE	DCON	APMX	OAL			
VPM-4RBL-D8.0R0.3	8.0	0.3	8	20	75	4	Picture 2	○
VPM-4RBL-D8.0R0.5	8.0	0.5	8	20	75	4	Picture 2	○
VPM-4RBL-D8.0R1.0	8.0	1.0	8	20	75	4	Picture 2	○
VPM-4RBX-D8.0R0.3	8.0	0.3	8	20	100	4	Picture 2	○
VPM-4RBX-D8.0R0.5	8.0	0.5	8	20	100	4	Picture 2	○
VPM-4RBX-D8.0R1.0	8.0	1.0	8	20	100	4	Picture 2	○
VPM-4RBL-D10.0R0.3	10.0	0.3	10	25	100	4	Picture 2	○
VPM-4RBL-D10.0R0.5	10.0	0.5	10	25	100	4	Picture 2	○
VPM-4RBL-D10.0R1.0	10.0	1.0	10	25	100	4	Picture 2	○
VPM-4RBL-D10.0R1.5	10.0	1.5	10	25	100	4	Picture 2	○
VPM-4RBL-D10.0R2.0	10.0	2.0	10	25	100	4	Picture 2	○
VPM-4RBL-D12.0R0.3	12.0	0.3	12	30	100	4	Picture 2	○
VPM-4RBL-D12.0R0.5	12.0	0.5	12	30	100	4	Picture 2	○
VPM-4RBL-D12.0R1.0	12.0	1.0	12	30	100	4	Picture 2	○
VPM-4RBL-D12.0R1.5	12.0	1.5	12	30	100	4	Picture 2	○
VPM-4RBL-D12.0R2.0	12.0	2.0	12	30	100	4	Picture 2	○

● Stock available ○ Make-to-order

▶▶ Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
											

Code key

B294

Graphics category and identification

B295

Cutting parameters

B541

Non-standard customization

B652-B653

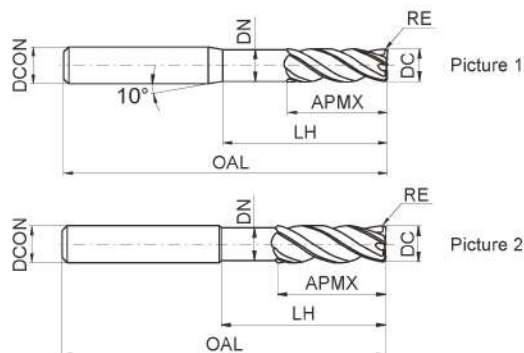
4-flute long neck and short cutting edge unequal pitch R end mills with straight shank



VPM-4RFP



- Suitable for high-efficient machining of ordinary steel and cast iron.
- Differential helical angle and pitch design offer high vibration resistance.
- Suitable for machining of large depth and width of cut.



Type	Basic dimension(mm)							Number of teeth Z	Geometry	Stock
	DC	RE	DCON	APMX	LH	DN	OAL			
VPM-4RFP-D3.0R0.2S	3.0	0.2	4	3	9	2.8	75	4	Picture 1	○
VPM-4RFP-D3.0R0.2	3.0	0.2	6	3	9	2.8	75	4	Picture 1	○
VPM-4RFP-D3.0R0.3S	3.0	0.3	4	3	9	2.8	75	4	Picture 1	○
VPM-4RFP-D3.0R0.3	3.0	0.3	6	3	9	2.8	75	4	Picture 1	○
VPM-4RFP-D4.0R0.2S	4.0	0.2	4	4	12	3.8	75	4	Picture 2	○
VPM-4RFP-D4.0R0.2	4.0	0.2	6	4	12	3.8	75	4	Picture 1	○
VPM-4RFP-D4.0R0.3S	4.0	0.3	4	4	12	3.8	75	4	Picture 2	○
VPM-4RFP-D4.0R0.3	4.0	0.3	6	4	12	3.8	75	4	Picture 1	○
VPM-4RFP-D4.0R0.5S	4.0	0.5	4	4	12	3.8	75	4	Picture 2	○
VPM-4RFP-D4.0R0.5	4.0	0.5	6	4	12	3.8	75	4	Picture 1	○
VPM-4RFP-D6.0R0.3	6.0	0.3	6	6	18	5.8	75	4	Picture 2	○
VPM-4RFP-D6.0R0.5	6.0	0.5	6	6	18	5.8	75	4	Picture 2	○
VPM-4RFP-D6.0R1.0	6.0	1.0	6	6	18	5.8	75	4	Picture 2	○
VPM-4RFP-D8.0R0.3	8.0	0.3	8	8	24	7.8	75	4	Picture 2	○
VPM-4RFP-D8.0R0.5	8.0	0.5	8	8	24	7.8	75	4	Picture 2	○
VPM-4RFP-D8.0R1.0	8.0	1.0	8	8	24	7.8	75	4	Picture 2	○
VPM-4RFP-D10.0R0.3	10.0	0.3	10	10	30	9.5	100	4	Picture 2	○
VPM-4RFP-D10.0R0.5	10.0	0.5	10	10	30	9.5	100	4	Picture 2	○
VPM-4RFP-D10.0R1.0	10.0	1.0	10	10	30	9.5	100	4	Picture 2	○
VPM-4RFP-D10.0R1.5	10.0	1.5	10	10	30	9.5	100	4	Picture 2	○
VPM-4RFP-D10.0R2.0	10.0	2.0	10	10	30	9.5	100	4	Picture 2	○
VPM-4RFP-D12.0R0.3	12.0	0.3	12	12	36	11.5	100	4	Picture 2	○
VPM-4RFP-D12.0R0.5	12.0	0.5	12	12	36	11.5	100	4	Picture 2	○
VPM-4RFP-D12.0R1.0	12.0	1.0	12	12	36	11.5	100	4	Picture 2	○
VPM-4RFP-D12.0R1.5	12.0	1.5	12	12	36	11.5	100	4	Picture 2	○
VPM-4RFP-D12.0R2.0	12.0	2.0	12	12	36	11.5	100	4	Picture 2	○

● Stock available ○ Make-to-order

Applicable workpiece material table

● Very suitable ○ Suitable

Workpiece material										
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy
		~40HRC	~50HRC	~55HRC	~68HRC					
○	○	○	○	○			○			

Code key

B294

Graphics category and identification

B295

Cutting parameters

B541

Non-standard customization

B652-B653

High-performance general machining end mills

UM Series

- Unequal pitch and variable inclined angle design reduce vibration risk and ensure better machining stability.
- Variable flute depth design improves rigidity for higher chip removal capacity.

Application range:

Suitable for high effectively machining of cast iron, carbon, alloy steel, pre-hardened steel, quenched and tempered steel, hardened steel under HRC55, etc.

Excellent machining stability under weak rigidity working condition such as thin-walled parts, parts corner, large overhang, etc.

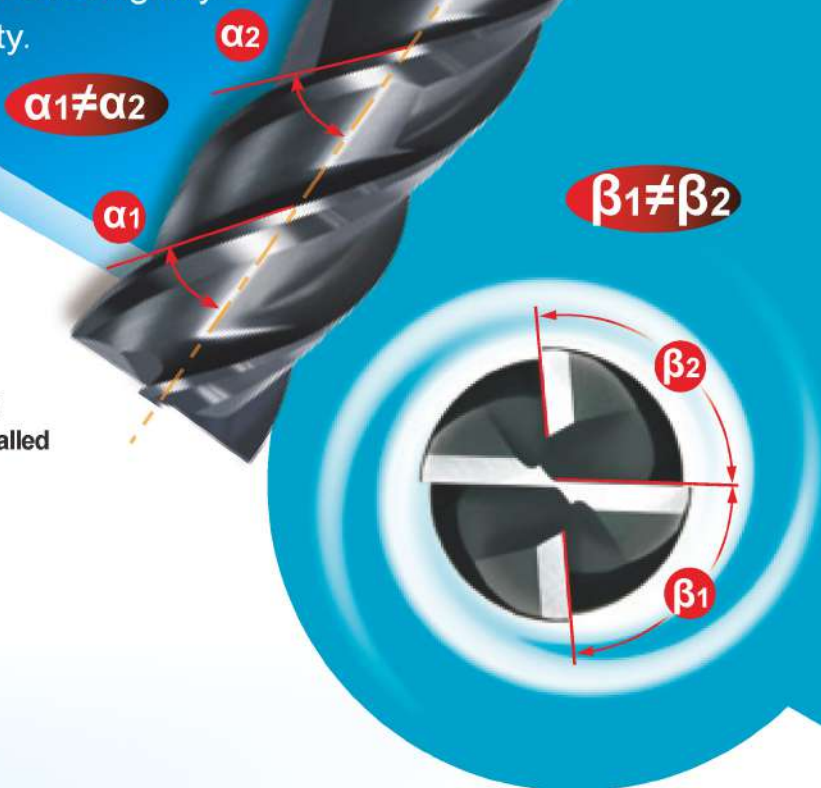
Machining case:

Workpiece material: 42CrMo (HRC35)

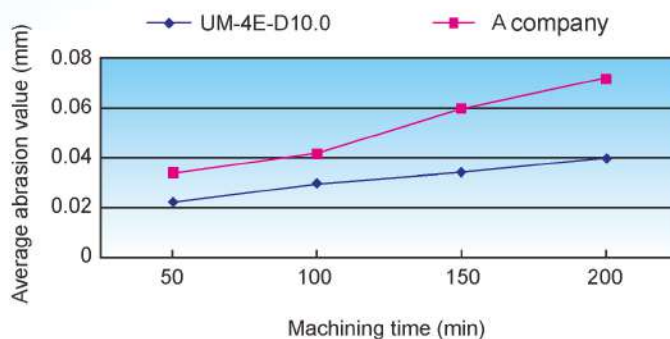
Cutting style: side milling

Tool type: UM-4E-D10.0

Cutting parameters: $n=6000\text{r/min}$,
 $f_z=0.16\text{mm/z}$,
 $a_p=10\text{mm}$, $a_e=1\text{mm}$



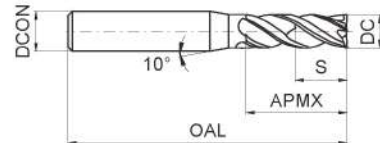
Comparison of tool wear



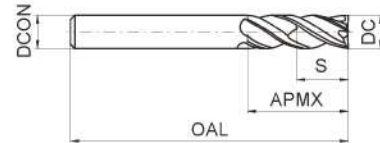
4-flute unequal pitch flattened end mills with straight shank



UM-4E



Picture 1



Picture 2

Type	Basic dimension(mm)					Number of teeth Z	Geometry	Stock
	DC	DCON	APMX	S	OAL			
UM-4E-D4.0S	4.0	4	11	6.00	50	4	Picture 2	○
UM-4E-D4.0	4.0	6	11	6.00	50	4	Picture 1	○
UM-4E-D4.5	4.5	6	11	6.75	50	4	Picture 1	○
UM-4E-D5.0	5.0	6	13	7.50	50	4	Picture 1	○
UM-4E-D5.5	5.5	6	16	8.25	50	4	Picture 1	○
UM-4E-D6.0	6.0	6	16	9.00	50	4	Picture 2	○
UM-4E-D7.0	7.0	8	20	10.5	60	4	Picture 1	○
UM-4E-D8.0	8.0	8	20	12.0	60	4	Picture 2	○
UM-4E-D9.0	9.0	10	22	13.5	75	4	Picture 1	○
UM-4E-D10.0	10.0	10	25	15.0	75	4	Picture 2	○
UM-4E-D11.0	11.0	12	26	16.5	75	4	Picture 1	○
UM-4E-D12.0	12.0	12	30	18.0	75	4	Picture 2	○
UM-4E-D14.0	14.0	14	32	21.0	75	4	Picture 2	○
UM-4E-D16.0	16.0	16	45	24.0	100	4	Picture 2	○
UM-4E-D18.0	18.0	18	45	27.0	100	4	Picture 2	○
UM-4E-D20.0	20.0	20	45	30.0	100	4	Picture 2	○

● Stock available ○ Make-to-order

Indexable
milling toolsSolid carbide
end mills

UM series

Applicable workpiece material table ● Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
○	○	○	○	○		○	○			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B542-B543

Non-standard customization

B652-B653

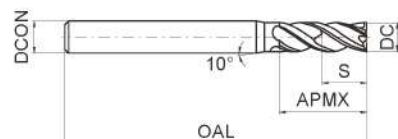
4-flute long cutting edge and unequal pitch flattened end mills with straight shank



UM-4EL



● UM-4E series with long cutting edge.



Picture 1



Picture 2

Type	Basic dimension(mm)					Number of teeth Z	Geometry	Stock
	DC	DCON	APMX	S	OAL			
UM-4EL-D4.0	4.0	6	15	6.00	75	4	Picture 1	○
UM-4EL-D5.0	5.0	6	20	7.50	75	4	Picture 1	○
UM-4EL-D6.0	6.0	6	20	9.00	75	4	Picture 2	○
UM-4EL-D8.0	8.0	8	25	12.0	100	4	Picture 2	○
UM-4EL-D10.0	10.0	10	30	15.0	100	4	Picture 2	○
UM-4EL-D12.0	12.0	12	35	18.0	100	4	Picture 2	○
UM-4EL-D14.0	14.0	14	40	21.0	100	4	Picture 2	○
UM-4EL-D16.0	16.0	16	50	24.0	150	4	Picture 2	○
UM-4EL-D20.0	20.0	20	55	30.0	150	4	Picture 2	○

● Stock available ○ Make-to-order

Indexable
milling tools

Solid carbide
end mills

UM series

Applicable workpiece material table ● Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
○	○	○	○	○		○	○			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B542-B543

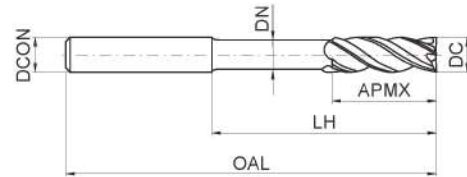
Non-standard customization

B652-B653

4-flute unequal pitch flattened end mills with long neck, short cutting edge and straight shank



UM-4EFP



Type	Basic dimension(mm)						Number of teeth Z	Stock
	DC	DCON	APMX	LH	DN	OAL		
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	○

● Stock available ○ Make-to-order

Indexable
milling tools

Solid carbide
end mills

UM series

Applicable workpiece material table

○ Very suitable ○ Suitable

Workpiece material										
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy
		~40HRC	~50HRC	~55HRC	~68HRC					
○	○	○	○	○		○	○			○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B544-B545

Non-standard customization

B652-B653



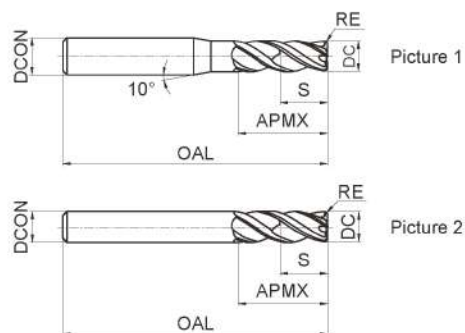
B MILLING / Solid Carbide End Mills

High-performance general milling UM series

4-flute unequal pitch R end mills with straight shank



UM-4R



Type	Basic dimension(mm)						Number of teeth Z	Geometry	Stock
	DC	RE	DCON	APMX	S	OAL			
UM-4R-D4.0R0.3	4.0	0.3	6	10	6.0	50	4	Picture 1	○
UM-4R-D4.0R0.5	4.0	0.5	6	10	6.0	50	4	Picture 1	○
UM-4R-D5.0R0.5	5.0	0.5	6	13	7.5	50	4	Picture 1	○
UM-4R-D5.0R1.0	5.0	1.0	6	13	7.5	50	4	Picture 1	○
UM-4R-D6.0R0.5	6.0	0.5	6	16	9.0	50	4	Picture 2	○
UM-4R-D6.0R1.0	6.0	1.0	6	16	9.0	50	4	Picture 2	○
UM-4R-D8.0R0.5	8.0	0.5	8	20	12	60	4	Picture 2	○
UM-4R-D8.0R1.0	8.0	1.0	8	20	12	60	4	Picture 2	○
UM-4R-D10.0R0.5	10.0	0.5	10	25	15	75	4	Picture 2	○
UM-4R-D10.0R1.0	10.0	1.0	10	25	15	75	4	Picture 2	○
UM-4R-D10.0R2.0	10.0	2.0	10	25	15	75	4	Picture 2	○
UM-4R-D10.0R3.0	10.0	3.0	10	25	15	75	4	Picture 2	○
UM-4R-D12.0R0.5	12.0	0.5	12	30	18	75	4	Picture 2	○
UM-4R-D12.0R1.0	12.0	1.0	12	30	18	75	4	Picture 2	○
UM-4R-D12.0R2.0	12.0	2.0	12	30	18	75	4	Picture 2	○
UM-4R-D12.0R3.0	12.0	3.0	12	30	18	75	4	Picture 2	○
UM-4R-D16.0R1.0	16.0	1.0	16	45	24	100	4	Picture 2	○
UM-4R-D16.0R2.0	16.0	2.0	16	45	24	100	4	Picture 2	○
UM-4R-D16.0R3.0	16.0	3.0	16	45	24	100	4	Picture 2	○
UM-4R-D20.0R1.0	20.0	1.0	20	45	30	100	4	Picture 2	○
UM-4R-D20.0R2.0	20.0	2.0	20	45	30	100	4	Picture 2	○
UM-4R-D20.0R3.0	20.0	3.0	20	45	30	100	4	Picture 2	○

● Stock available ○ Make-to-order

Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
○	○	○	○	○		○	○			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B546-B547

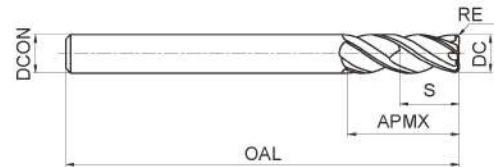
Non-standard customization

B652-B653

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



UM-4RL



● UM-4R series with cutting edge.



Type	Basic dimension(mm)						Number of teeth Z	Stock
	DC	RE	DCON	APMX	S	OAL		
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	○

● Stock available ○ Make-to-order

Indexable
milling tools

Solid carbide
end mills

UM series

➤ Applicable workpiece material table ● Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
○	○	○	○	○		○	○			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B546-B547

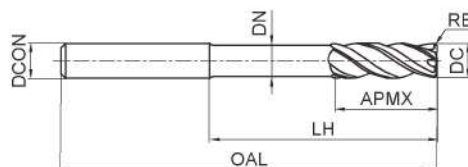
Non-standard customization

B652-B653

4-flute long neck and short cutting edge
unequal pitch R end mills with straight shank



UM-4RFP



Type	Basic dimension(mm)							Number of teeth Z	Stock
	DC	RE	DCON	DN	APMX	LH	OAL		
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	○

● Stock available ○ Make-to-order

Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
○	○	○	○	○		○	○			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

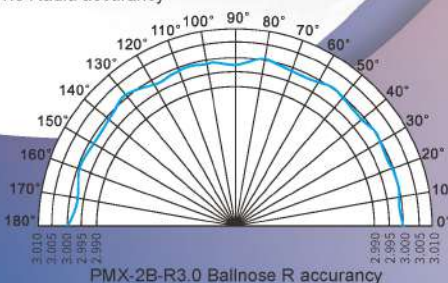
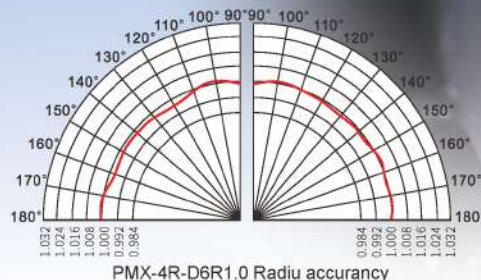
B548

Non-standard customization

B652-B653

PMX series

*High-performance
universal end mills*



Stable and high anti-vibration machining

Brand new U shape flutes design, taking the tool rigidity account with chip flowing performance, new flutes have good dynamic balance, and more stable for high speed high-efficiency machining.

Unequal teeth pitch and unequal helical structure effectively restrain the vibration when processing, improve cutting stability and effectively avoid tools abnormal chipping and lose valid.



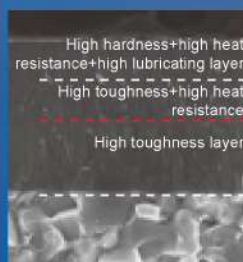
Application range

It is widely applied in high-speed and high-efficiency side milling, slot milling and profiling of carbon steel, alloy steel, die steel, etc., materials in the mold, automobile industries under dry cutting, water cooling, MQL cooling conditions.

Accuracy class improvement

Grinding process overall optimized, accuracy grades improve greatly.

	Flute diameter		Radiu		Ballnose		Shank diameter
Tolerance (mm)	D≤3	0~0.012	R<0.5	±0.005	SR≤3	±0.005	h5
	3<D≤12	0~0.015	R≥0.5	±0.008	SR>3	±0.008	
	D>12	0~0.02					



New coating grades

New "AlCrX-based" gradient coating to optimize stress distribution and improve impact resistance of the coating.

Nano-multilayer structure coating to restrain crack propagation effectively in the as-processed state.

With 40Gpa high hardness surface layer, the wear resistance of coating is excellent, and significantly improves tool service life.

Application case 1

Cutting tool: PMX-4E-D10.0

Processing: side milling

Hardness: HRC53~56

Machined material: SKD61

Cutting parameters: $V=150\text{m/min}$,

$f_r=0.2\text{mm/r}$,

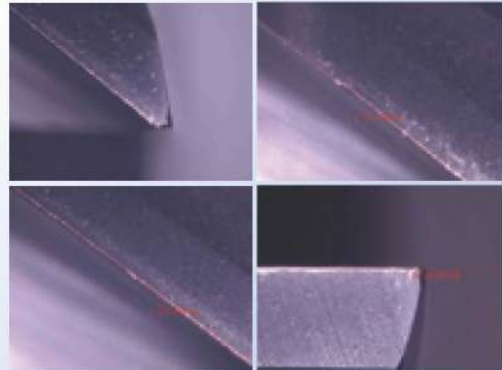
$a_p=10\text{mm}$,

$a_e=0.5\text{mm}$

Machine: vertical 5-axis CNC

Cooling method: emulsion coolant

Overhang length: 30mm



Test result: after machining 86m, flank face of ZCC-CT tool only normal wear 0.024mm, and it was available to continue cut.

Application case 2

Cutting tool: PMX-2B-R3.0

Workpiece: external outline of support arm

Hardness: HRC40

Machined material: NAK80

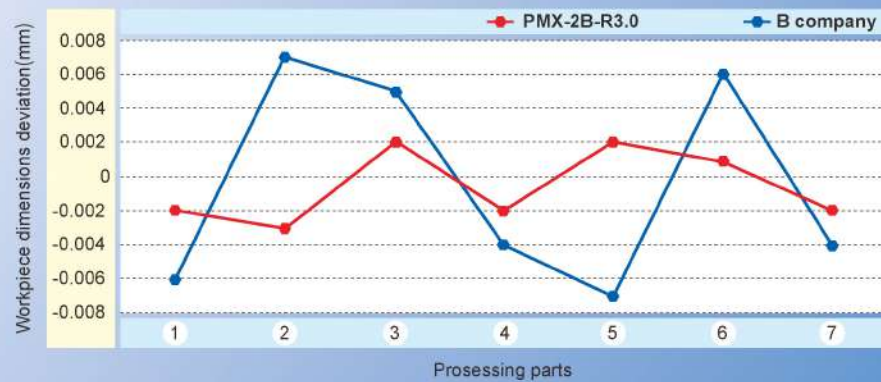
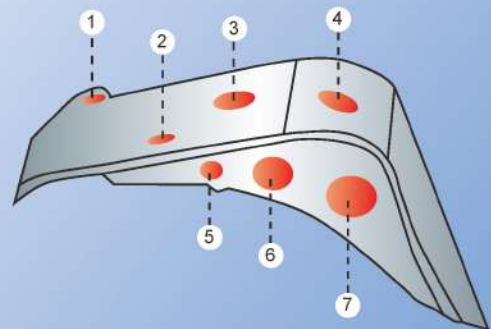
Cutting parameters: $V=210\text{m/min}$, $f_r=0.25\text{mm/r}$,

$a_p=0.2\text{mm}$, $a_e=0.3\text{mm}$

Machine: vertical 5-axis CNC

Cooling method: air cooling

Overhang length: 20mm



Result: After measuring the dimensions of seven parts of the workpiece, ZCC-CT tool PMX-2B-R3.0 product has higher accuracy and is stable within $\pm 0.003\text{mm}$.

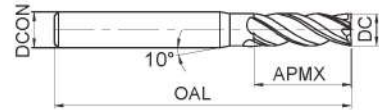
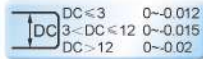
4-flute flattened end mills with straight shank



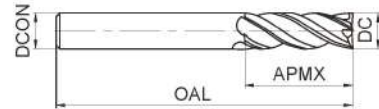
PMX-4E



- It's suitable for high-efficiency machining on mould steel, pre-hardened steel and carbon steel.
- Unequal Teeth pitch and unequal helical angle design, has good performance on vibration resistance.



Picture 1



Picture 2

Type	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	DC	DCON	APMX	OAL			
PMX-4E-D1.0F	1.0	3	3	50	4	Picture 1	●
PMX-4E-D1.5F	1.5	3	4	50	4	Picture 1	●
PMX-4E-D2.0F	2.0	3	6	50	4	Picture 1	●
PMX-4E-D2.5F	2.5	3	8	50	4	Picture 1	●
PMX-4E-D3.0F	3.0	3	8	50	4	Picture 2	●
PMX-4E-D1.0S	1.0	4	3	50	4	Picture 1	●
PMX-4E-D1.5S	1.5	4	4	50	4	Picture 1	●
PMX-4E-D2.0S	2.0	4	6	50	4	Picture 1	●
PMX-4E-D2.5S	2.5	4	8	50	4	Picture 1	●
PMX-4E-D3.0S	3.0	4	8	50	4	Picture 1	●
PMX-4E-D3.5S	3.5	4	10	50	4	Picture 1	●
PMX-4E-D4.0S	4.0	4	11	50	4	Picture 2	●

● Stock available ○ Make-to-order

Indexable milling tools

Solid carbide end mills

PMX series

➤ Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~65HRC						
○	○	○	○	○	○		○				

Code key

B294

Graphics category and identification

B295

Cutting parameters

B549

Non-standard customization

B652-B653

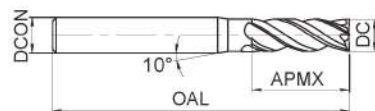
4-flute flattened end mills with straight shank



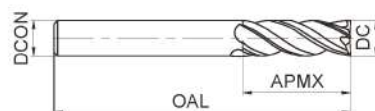
PMX-4E



- It's suitable for high-efficiency machining on mould steel, pre-hardened steel and carbon steel.
- Unequal Teeth pitch and unequal helical angle design, has good performance on vibration resistance.



Picture 1



Picture 2

Type	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	DC	DCON	APMX	OAL			
PMX-4E-D1.0	1.0	6	3	50	4	Picture 1	●
PMX-4E-D1.5	1.5	6	4	50	4	Picture 1	●
PMX-4E-D2.0	2.0	6	6	50	4	Picture 1	●
PMX-4E-D2.5	2.5	6	8	50	4	Picture 1	●
PMX-4E-D3.0	3.0	6	8	50	4	Picture 1	●
PMX-4E-D3.5	3.5	6	10	50	4	Picture 1	●
PMX-4E-D4.0	4.0	6	11	50	4	Picture 1	●
PMX-4E-D4.5	4.5	6	11	50	4	Picture 1	●
PMX-4E-D5.0	5.0	6	13	50	4	Picture 1	●
PMX-4E-D5.5	5.5	6	16	50	4	Picture 1	●
PMX-4E-D6.0	6.0	6	16	50	4	Picture 2	●
PMX-4E-D7.0	7.0	8	20	60	4	Picture 1	●
PMX-4E-D8.0	8.0	8	20	60	4	Picture 2	●
PMX-4E-D9.0	9.0	10	22	75	4	Picture 1	●
PMX-4E-D10.0	10.0	10	25	75	4	Picture 2	●
PMX-4E-D11.0	11.0	12	26	75	4	Picture 1	●
PMX-4E-D12.0	12.0	12	30	75	4	Picture 2	●
PMX-4E-D14.0	14.0	14	32	75	4	Picture 2	●
PMX-4E-D16.0	16.0	16	45	100	4	Picture 2	●
PMX-4E-D18.0	18.0	18	45	100	4	Picture 2	●
PMX-4E-D20.0	20.0	20	45	100	4	Picture 2	●

● Stock available ○ Make-to-order

Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~65HRC						
○	○	○	○	○	○		○				

Code key

B294

Graphics category and identification

B295

Cutting parameters

B549

Non-standard customization

B652-B653

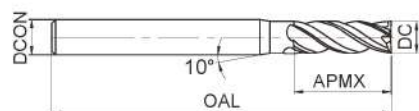
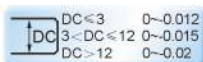
4-flute flattened end mills with long shank



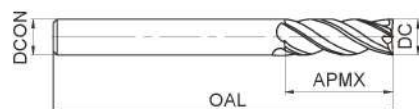
PMX-4EBL/X



- PMX-4E long shank series.
- It's suitable for high-efficiency machining on mould steel, pre-hardened steel and carbon steel.
- Unequal Teeth pitch and unequal helical angle structure has good performance on vibration resistance.



Picture 1



Picture 2

Type	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	DC	DCON	APMX	OAL			
PMX-4EBL-D3.0S	3.0	4	8	75	4	Picture 1	○
PMX-4EBL-D4.0S	4.0	4	11	75	4	Picture 2	○
PMX-4EBL-D3.0	3.0	6	8	75	4	Picture 1	○
PMX-4EBL-D4.0	4.0	6	11	75	4	Picture 1	○
PMX-4EBL-D5.0	5.0	6	13	75	4	Picture 1	○
PMX-4EBL-D6.0	6.0	6	16	75	4	Picture 2	○
PMX-4EBX-D6.0	6.0	6	16	100	4	Picture 2	○
PMX-4EBL-D8.0	8.0	8	20	75	4	Picture 2	○
PMX-4EBX-D8.0	8.0	8	20	100	4	Picture 2	○
PMX-4EBL-D10.0	10.0	10	25	100	4	Picture 2	○
PMX-4EBL-D12.0	12.0	12	30	100	4	Picture 2	○
PMX-4EBL-D16.0	16.0	16	45	150	4	Picture 2	○
PMX-4EBL-D20.0	20.0	20	45	150	4	Picture 2	○

● Stock available ○ Make-to-order

Indexable
milling toolsSolid carbide
end mills

PMX series

➤ Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~65HRC						
○	○	○	○	○	○		○				

Code key

B294

Graphics category and identification

B295

Cutting parameters

B549

Non-standard customization

B652-B653

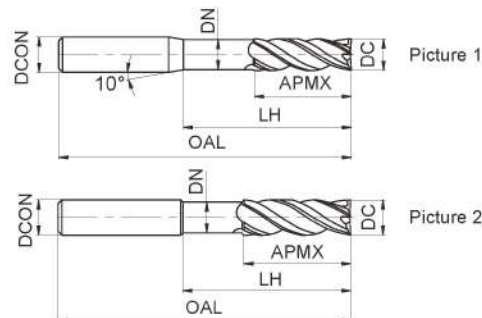
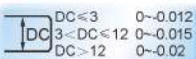
4-flute flattened end mills with straight shank, long neck and short cutting edge



PMX-4EFP



- It's suitable for high-efficiency machining on mould steel, pre-hardened steel and carbon steel.
- Unequal Teeth pitch and unequal helical angle structure has good performance on vibration resistance.
- High rigidity short flute design, it's more suitable for high efficiency machining.



Type	Basic dimension(mm)						Number of teeth Z	Geometry	Stock
	DC	DCON	APMX	LH	DN	OAL			
PMX-4EFP-D3.0S	3.0	4	4.5	15	2.8	75	4	Picture 1	○
PMX-4EFP-D4.0S	4.0	4	6	20	3.8	75	4	Picture 2	○
PMX-4EFP-D3.0	3.0	6	4.5	15	2.8	75	4	Picture 1	○
PMX-4EFP-D4.0	4.0	6	6	20	3.8	75	4	Picture 1	○
PMX-4EFP-D5.0	5.0	6	8	25	4.8	75	4	Picture 1	○
PMX-4EFP-D6.0	6.0	6	9	30	5.8	75	4	Picture 2	○
PMX-4EFP-D8.0	8.0	8	12	40	7.8	100	4	Picture 2	○
PMX-4EFP-D10.0	10.0	10	15	50	9.5	100	4	Picture 2	○
PMX-4EFP-D12.0	12.0	12	18	50	11.5	100	4	Picture 2	○
PMX-4EFP-D16.0	16.0	16	24	60	15.5	150	4	Picture 2	○
PMX-4EFP-D20.0	20.0	20	30	60	19.5	150	4	Picture 2	○

● Stock available ○ Make-to-order

Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~65HRC						
○	○	○	○	○	○		○				

Code key

B294

Graphics category and identification

B295

Cutting parameters

B549

Non-standard customization

B652-B653

4-flute R end mills with straight shank



Radius shoulder



Profile

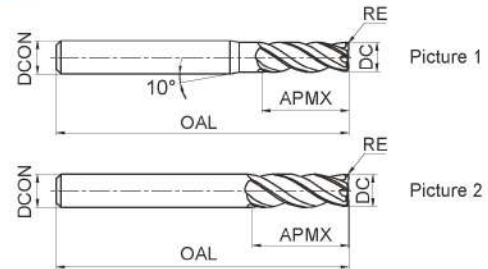


Radius corner slot

PMX-4R



- It's suitable for high-efficiency machining on mould steel, pre-hardened steel and carbon steel.
- Unequal Teeth pitch and unequal helical angle design, has good performance on vibration resistance.



Type	Basic dimension(mm)					Number of teeth Z	Geometry	Stock
	DC	RE	DCON	APMX	OAL			
PMX-4R-D1.0R0.2S	1.0	0.2	4	3	50	4	Picture 1	●
PMX-4R-D1.5R0.2S	1.5	0.2	4	4	50	4	Picture 1	●
PMX-4R-D2.0R0.2S	2.0	0.2	4	6	50	4	Picture 1	●
PMX-4R-D2.0R0.5S	2.0	0.5	4	6	50	4	Picture 1	●
PMX-4R-D2.5R0.2S	2.5	0.2	4	8	50	4	Picture 1	●
PMX-4R-D2.5R0.5S	2.5	0.5	4	8	50	4	Picture 1	●
PMX-4R-D3.0R0.2S	3.0	0.2	4	8	50	4	Picture 1	●
PMX-4R-D3.0R0.3S	3.0	0.3	4	8	50	4	Picture 1	●
PMX-4R-D4.0R0.2S	4.0	0.2	4	11	50	4	Picture 2	●
PMX-4R-D4.0R0.3S	4.0	0.3	4	11	50	4	Picture 2	●
PMX-4R-D4.0R0.5S	4.0	0.5	4	11	50	4	Picture 2	●
PMX-4R-D1.0R0.2	1.0	0.2	6	3	50	4	Picture 1	●
PMX-4R-D1.5R0.2	1.5	0.2	6	4	50	4	Picture 1	●
PMX-4R-D2.0R0.2	2.0	0.2	6	6	50	4	Picture 1	●
PMX-4R-D2.0R0.5	2.0	0.5	6	6	50	4	Picture 1	●
PMX-4R-D2.5R0.2	2.5	0.2	6	8	50	4	Picture 1	●
PMX-4R-D2.5R0.5	2.5	0.5	6	8	50	4	Picture 1	●
PMX-4R-D3.0R0.2	3.0	0.2	6	8	50	4	Picture 1	●
PMX-4R-D3.0R0.3	3.0	0.3	6	8	50	4	Picture 1	●
PMX-4R-D4.0R0.2	4.0	0.2	6	11	50	4	Picture 1	●
PMX-4R-D4.0R0.3	4.0	0.3	6	11	50	4	Picture 1	●
PMX-4R-D4.0R0.5	4.0	0.5	6	11	50	4	Picture 1	●
PMX-4R-D5.0R0.3	5.0	0.3	6	13	50	4	Picture 1	●
PMX-4R-D5.0R0.5	5.0	0.5	6	13	50	4	Picture 1	●
PMX-4R-D5.0R1.0	5.0	1.0	6	13	50	4	Picture 1	●

● Stock available ○ Make-to-order

Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~65HRC						
○	○	○	○	○	○		○				

Code key

B294

Graphics category and identification

B295

Cutting parameters

B550

Non-standard customization

B652-B653

4-flute R end mills with straight shank



Radius shoulder



Profile

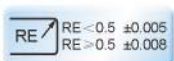
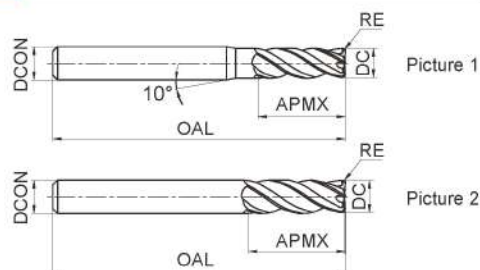


Radius corner slot

PMX-4R



- It's suitable for high-efficiency machining on mould steel, pre-hardened steel and carbon steel.
- Unequal teeth pitch and unequal helical angle design, has good performance on vibration resistance.



Type	Basic dimension(mm)					Number of teeth Z	Geometry	Stock
	DC	RE	DCON	APMX	OAL			
PMX-4R-D5.0R0.2	5.0	0.2	6	13	50	4	Picture 1	●
PMX-4R-D6.0R0.2	6.0	0.2	6	16	50	4	Picture 2	●
PMX-4R-D6.0R0.3	6.0	0.3	6	16	50	4	Picture 2	●
PMX-4R-D6.0R0.5	6.0	0.5	6	16	50	4	Picture 2	●
PMX-4R-D6.0R1.0	6.0	1.0	6	16	50	4	Picture 2	●
PMX-4R-D8.0R0.2	8.0	0.2	8	20	60	4	Picture 2	●
PMX-4R-D8.0R0.3	8.0	0.3	8	20	60	4	Picture 2	●
PMX-4R-D8.0R0.5	8.0	0.5	8	20	60	4	Picture 2	●
PMX-4R-D8.0R1.0	8.0	1.0	8	20	60	4	Picture 2	●
PMX-4R-D10.0R0.2	10.0	0.2	10	25	75	4	Picture 2	●
PMX-4R-D10.0R0.3	10.0	0.3	10	25	75	4	Picture 2	●
PMX-4R-D10.0R0.5	10.0	0.5	10	25	75	4	Picture 2	●
PMX-4R-D10.0R1.0	10.0	1.0	10	25	75	4	Picture 2	●
PMX-4R-D10.0R1.5	10.0	1.5	10	25	75	4	Picture 2	●
PMX-4R-D10.0R2.0	10.0	2.0	10	25	75	4	Picture 2	●
PMX-4R-D12.0R0.3	12.0	0.3	12	30	75	4	Picture 2	●
PMX-4R-D12.0R0.5	12.0	0.5	12	30	75	4	Picture 2	●
PMX-4R-D12.0R1.0	12.0	1.0	12	30	75	4	Picture 2	●
PMX-4R-D12.0R1.5	12.0	1.5	12	30	75	4	Picture 2	●
PMX-4R-D12.0R2.0	12.0	2.0	12	30	75	4	Picture 2	●
PMX-4R-D12.0R3.0	12.0	3.0	12	30	75	4	Picture 2	●
PMX-4R-D16.0R0.5	16.0	0.5	16	45	100	4	Picture 2	●
PMX-4R-D16.0R1.0	16.0	1.0	16	45	100	4	Picture 2	●
PMX-4R-D16.0R2.0	16.0	2.0	16	45	100	4	Picture 2	●
PMX-4R-D16.0R3.0	16.0	3.0	16	45	100	4	Picture 2	●

● Stock available ○ Make-to-order

Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material										
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron	Copper alloy	Aluminum alloy	Titanium alloy
		~40HRC	~50HRC	~55HRC	~65HRC					
○	○	○	○	○	○		○			

Code key

B294

Graphics category and identification

B295

Cutting parameters

B550

Non-standard customization

B652-B653

4-flute R end mills with long shank



Radius shoulder



Profile

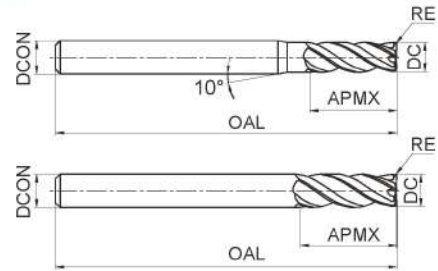
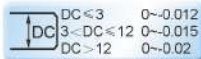


Radius corner slot

PMX-4RBL/X



● PMX-4R series with long shank.



Picture 1

Picture 2

Type	Basic dimension(mm)					Number of teeth Z	Geometry	Stock
	DC	RE	DCON	APMX	OAL			
PMX-4RBL-D3.0R0.2S	3.0	0.2	4	8	75	4	Picture 1	○
PMX-4RBL-D3.0R0.3S	3.0	0.3	4	8	75	4	Picture 1	○
PMX-4RBL-D4.0R0.2S	4.0	0.2	4	11	75	4	Picture 2	○
PMX-4RBL-D4.0R0.3S	4.0	0.3	4	11	75	4	Picture 2	○
PMX-4RBL-D4.0R0.5S	4.0	0.5	4	11	75	4	Picture 2	○
PMX-4RBL-D3.0R0.2	3.0	0.2	6	8	75	4	Picture 1	○
PMX-4RBL-D3.0R0.3	3.0	0.3	6	8	75	4	Picture 1	○
PMX-4RBL-D4.0R0.2	4.0	0.2	6	11	75	4	Picture 1	○
PMX-4RBL-D4.0R0.3	4.0	0.3	6	11	75	4	Picture 1	○
PMX-4RBL-D4.0R0.5	4.0	0.5	6	11	75	4	Picture 1	○
PMX-4RBL-D6.0R0.2	6.0	0.2	6	16	75	4	Picture 2	○
PMX-4RBL-D6.0R0.3	6.0	0.3	6	16	75	4	Picture 2	○
PMX-4RBL-D6.0R0.5	6.0	0.5	6	16	75	4	Picture 2	○
PMX-4RBL-D6.0R1.0	6.0	1.0	6	16	75	4	Picture 2	○
PMX-4RBX-D6.0R0.2	6.0	0.2	6	16	100	4	Picture 2	○
PMX-4RBX-D6.0R0.3	6.0	0.3	6	16	100	4	Picture 2	○
PMX-4RBX-D6.0R0.5	6.0	0.5	6	16	100	4	Picture 2	○
PMX-4RBX-D6.0R1.0	6.0	1.0	6	16	100	4	Picture 2	○
PMX-4RBL-D8.0R0.2	8.0	0.2	8	20	75	4	Picture 2	○
PMX-4RBL-D8.0R0.3	8.0	0.3	8	20	75	4	Picture 2	○
PMX-4RBL-D8.0R0.5	8.0	0.5	8	20	75	4	Picture 2	○
PMX-4RBL-D8.0R1.0	8.0	1.0	8	20	75	4	Picture 2	○
PMX-4RBX-D8.0R0.2	8.0	0.2	8	20	100	4	Picture 2	○
PMX-4RBX-D8.0R0.3	8.0	0.3	8	20	100	4	Picture 2	○
PMX-4RBX-D8.0R0.5	8.0	0.5	8	20	100	4	Picture 2	○
PMX-4RBX-D8.0R1.0	8.0	1.0	8	20	100	4	Picture 2	○

● Stock available ○ Make-to-order

➤ Applicable workpiece material ● Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~65HRC						
○	○	○	○	○	○		○				

Code key

B294

Graphics category and identification

B295

Cutting parameters

B550

Non-standard customization

B652-B653

4-flute R end mills with long shank



Radius shoulder

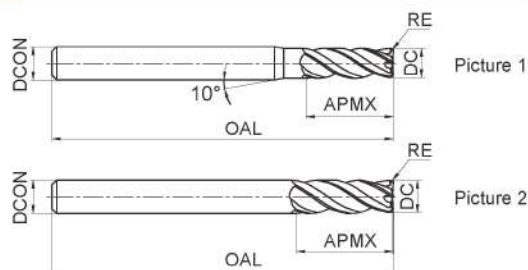


Profile



Radius corner slot

PMX-4RBL/X



● PMX-4R series with long shank.



Coated AIC-XN-Plus



DC ≤ 3 0~0.012
3 < DC ≤ 12 0~0.015
DC > 12 0~0.02



RE ≤ 0.5 ±0.005
RE > 0.5 ±0.008



h5



Shank diameter

Type	Basic dimension(mm)					Number of teeth Z	Geometry	Stock
	DC	RE	DCON	APMX	OAL			
PMX-4RBL-D10.0R0.2	10.0	0.2	10	25	100	4	Picture 2	○
PMX-4RBL-D10.0R0.3	10.0	0.3	10	25	100	4	Picture 2	○
PMX-4RBL-D10.0R0.5	10.0	0.5	10	25	100	4	Picture 2	○
PMX-4RBL-D10.0R1.0	10.0	1.0	10	25	100	4	Picture 2	○
PMX-4RBL-D10.0R1.5	10.0	1.5	10	25	100	4	Picture 2	○
PMX-4RBL-D10.0R2.0	10.0	2.0	10	25	100	4	Picture 2	○
PMX-4RBX-D10.0R0.2	10.0	0.2	10	25	150	4	Picture 2	○
PMX-4RBX-D10.0R0.3	10.0	0.3	10	25	150	4	Picture 2	○
PMX-4RBX-D10.0R0.5	10.0	0.5	10	25	150	4	Picture 2	○
PMX-4RBX-D10.0R1.0	10.0	1.0	10	25	150	4	Picture 2	○
PMX-4RBX-D10.0R1.5	10.0	1.5	10	25	150	4	Picture 2	○
PMX-4RBX-D10.0R2.0	10.0	2.0	10	25	150	4	Picture 2	○
PMX-4RBL-D12.0R0.3	12.0	0.3	12	30	100	4	Picture 2	○
PMX-4RBL-D12.0R0.5	12.0	0.5	12	30	100	4	Picture 2	○
PMX-4RBL-D12.0R1.0	12.0	1.0	12	30	100	4	Picture 2	○
PMX-4RBL-D12.0R1.5	12.0	1.5	12	30	100	4	Picture 2	○
PMX-4RBL-D12.0R2.0	12.0	2.0	12	30	100	4	Picture 2	○
PMX-4RBL-D12.0R3.0	12.0	3.0	12	30	100	4	Picture 2	○
PMX-4RBX-D12.0R0.3	12.0	0.3	12	30	150	4	Picture 2	○
PMX-4RBX-D12.0R0.5	12.0	0.5	12	30	150	4	Picture 2	○
PMX-4RBX-D12.0R1.0	12.0	1.0	12	30	150	4	Picture 2	○
PMX-4RBX-D12.0R1.5	12.0	1.5	12	30	150	4	Picture 2	○
PMX-4RBX-D12.0R2.0	12.0	2.0	12	30	150	4	Picture 2	○
PMX-4RBX-D12.0R3.0	12.0	3.0	12	30	150	4	Picture 2	○
PMX-4RBL-D16.0R0.5	16.0	0.5	16	45	150	4	Picture 2	○
PMX-4RBL-D16.0R1.0	16.0	1.0	16	45	150	4	Picture 2	○
PMX-4RBL-D16.0R2.0	16.0	2.0	16	45	150	4	Picture 2	○
PMX-4RBL-D16.0R3.0	16.0	3.0	16	45	150	4	Picture 2	○

● Stock available ○ Make-to-order

➤ Applicable workpiece material ● Very suitable ○ Suitable

Workpiece material										
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron	Copper alloy	Aluminum alloy	Titanium alloy
		~40HRC	~50HRC	~55HRC	~65HRC					
○	○	○	○	○	○		○			

Code key

B294

Graphics category and identification

B295

Cutting parameters

B550

Non-standard customization

B652-B653

4-flute R end mills with straight shank, long neck and short cutting edge



Radius shoulder



Profile



Radius corner slot

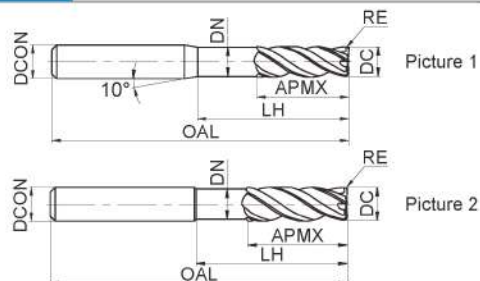
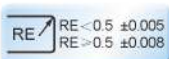
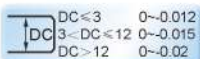
PMX-4RFP



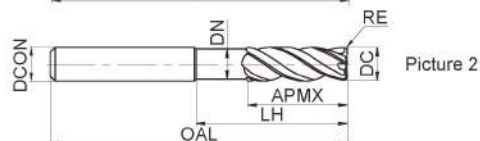
- It's suitable for high-efficiency machining on mould steel, pre-hardened steel and carbon steel.
- Unequal Teeth pitch and unequal helical angle structure has good performance on vibration resistance.
- High rigidity short flute design, it's more suitable for high efficiency machining.



Coated AICoXN-Plus



Picture 1



Picture 2

Type	Basic dimension(mm)							Number of teeth Z	Geometry	Stock
	DC	RE	DCON	APMX	LH	DN	OAL			
PMX-4RFP-D3.0R0.2S	3.0	0.2	4	3	9	2.8	75	4	Picture 1	○
PMX-4RFP-D3.0R0.3S	3.0	0.3	4	3	9	2.8	75	4	Picture 1	○
PMX-4RFP-D4.0R0.2S	4.0	0.2	4	4	12	3.8	75	4	Picture 2	○
PMX-4RFP-D4.0R0.3S	4.0	0.3	4	4	12	3.8	75	4	Picture 2	○
PMX-4RFP-D4.0R0.5S	4.0	0.5	4	4	12	3.8	75	4	Picture 2	○
PMX-4RFP-D3.0R0.2	3.0	0.2	6	3	9	2.8	75	4	Picture 1	○
PMX-4RFP-D3.0R0.3	3.0	0.3	6	3	9	2.8	75	4	Picture 1	○
PMX-4RFP-D4.0R0.2	4.0	0.2	6	4	12	3.8	75	4	Picture 1	○
PMX-4RFP-D4.0R0.3	4.0	0.3	6	4	12	3.8	75	4	Picture 1	○
PMX-4RFP-D4.0R0.5	4.0	0.5	6	4	12	3.8	75	4	Picture 1	○
PMX-4RFP-D6.0R0.3	6.0	0.3	6	6	18	5.8	75	4	Picture 2	○
PMX-4RFP-D6.0R0.5	6.0	0.5	6	6	18	5.8	75	4	Picture 2	○
PMX-4RFP-D6.0R1.0	6.0	1.0	6	6	18	5.8	75	4	Picture 2	○
PMX-4RFP-D8.0R0.3	8.0	0.3	8	8	24	7.8	75	4	Picture 2	○
PMX-4RFP-D8.0R0.5	8.0	0.5	8	8	24	7.8	75	4	Picture 2	○
PMX-4RFP-D8.0R1.0	8.0	1.0	8	8	24	7.8	75	4	Picture 2	○
PMX-4RFP-D10.0R0.3	10.0	0.3	10	10	30	9.5	100	4	Picture 2	○
PMX-4RFP-D10.0R0.5	10.0	0.5	10	10	30	9.5	100	4	Picture 2	○
PMX-4RFP-D10.0R1.0	10.0	1.0	10	10	30	9.5	100	4	Picture 2	○
PMX-4RFP-D10.0R1.5	10.0	1.5	10	10	30	9.5	100	4	Picture 2	○
PMX-4RFP-D10.0R2.0	10.0	2.0	10	10	30	9.5	100	4	Picture 2	○
PMX-4RFP-D12.0R0.3	12.0	0.3	12	12	36	11.5	100	4	Picture 2	○
PMX-4RFP-D12.0R0.5	12.0	0.5	12	12	36	11.5	100	4	Picture 2	○
PMX-4RFP-D12.0R1.0	12.0	1.0	12	12	36	11.5	100	4	Picture 2	○
PMX-4RFP-D12.0R1.5	12.0	1.5	12	12	36	11.5	100	4	Picture 2	○
PMX-4RFP-D12.0R2.0	12.0	2.0	12	12	36	11.5	100	4	Picture 2	○
PMX-4RFP-D16.0R1.0	16.0	1.0	16	16	40	15.5	150	4	Picture 2	○
PMX-4RFP-D16.0R2.0	16.0	2.0	16	16	40	15.5	150	4	Picture 2	○

Applicable workpiece material ● Very suitable ○ Suitable

● Stock available ○ Make-to-order

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~65HRC						
○	○	○	○	○	○		○				

Code key

B294

Graphics category and identification

B295

Cutting parameters

B550

Non-standard customization

B652-B653

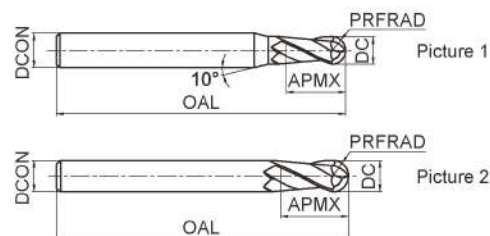
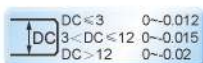
2-flute ball nose end mills with straight shank



PMX-2B



- It's suitable for profiling on mould steel, pre-hardened steel and carbon steel.
- Wide application.



Type	Basic dimension(mm)					Number of teeth Z	Geometry	Stock
	DC	PRFRAD	DCON	APMX	OAL			
PMX-2B-R1.0F	2.0	1.0	3	4	50	2	Picture 1	●
PMX-2B-R1.25F	2.5	1.25	3	5	50	2	Picture 1	●
PMX-2B-R1.5F	3.0	1.5	3	6	50	2	Picture 2	●
PMX-2B-R0.5S	1.0	0.5	4	2	50	2	Picture 1	●
PMX-2B-R0.75S	1.5	0.75	4	3	50	2	Picture 1	●
PMX-2B-R1.0S	2.0	1.0	4	4	50	2	Picture 1	●
PMX-2B-R1.25S	2.5	1.25	4	5	50	2	Picture 1	●
PMX-2B-R1.5S	3.0	1.5	4	6	50	2	Picture 1	●
PMX-2B-R1.75S	3.5	1.75	4	8	50	2	Picture 1	●
PMX-2B-R2.0S	4.0	2.0	4	8	50	2	Picture 2	●
PMX-2B-R0.5	1.0	0.5	6	2	50	2	Picture 1	●
PMX-2B-R0.75	1.5	0.75	6	3	50	2	Picture 1	●
PMX-2B-R1.0	2.0	1.0	6	4	50	2	Picture 1	●
PMX-2B-R1.25	2.5	1.25	6	5	50	2	Picture 1	●
PMX-2B-R1.5	3.0	1.5	6	6	50	2	Picture 1	●
PMX-2B-R1.75	3.5	1.75	6	8	50	2	Picture 1	●
PMX-2B-R2.0	4.0	2.0	6	8	50	2	Picture 1	●
PMX-2B-R2.5	5.0	2.5	6	10	50	2	Picture 1	●
PMX-2B-R2.75	5.5	2.75	6	12	50	2	Picture 1	●
PMX-2B-R3.0	6.0	3.0	6	12	50	2	Picture 2	●
PMX-2B-R3.5	7.0	3.5	8	14	60	2	Picture 1	●
PMX-2B-R4.0	8.0	4.0	8	16	60	2	Picture 2	●
PMX-2B-R4.5	9.0	4.5	10	18	75	2	Picture 1	●
PMX-2B-R5.0	10.0	5.0	10	20	75	2	Picture 2	●
PMX-2B-R6.0	12.0	6.0	12	24	75	2	Picture 2	●
PMX-2B-R7.0	14.0	7.0	14	28	75	2	Picture 2	●
PMX-2B-R8.0	16.0	8.0	16	32	100	2	Picture 2	●
PMX-2B-R10.0	20.0	10.0	20	40	100	2	Picture 2	●

Applicable workpiece material table

● Stock available ○ Make-to-order

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~65HRC						
○	○	○	○	○	○		○				

Code key

B294

Graphics category and identification

B295

Cutting parameters

B551

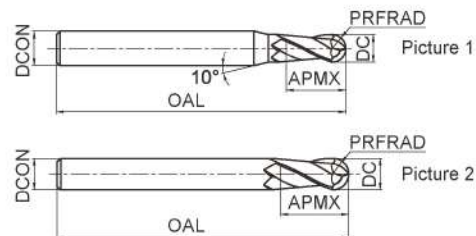
Non-standard customization

B652-B653

2-flute ball nose end mills with long shank



PMX-2BL/M/X



● PMX-2B series with long shank.



Type	Basic dimension(mm)					Number of teeth Z	Geometry	Stock
	DC	PRFRAD	DCON	APMX	OAL			
PMX-2BL-R1.0S	2.0	1.0	4	4	75	2	Picture 1	○
PMX-2BL-R1.25S	2.5	1.25	4	5	75	2	Picture 1	○
PMX-2BL-R1.5S	3.0	1.5	4	6	75	2	Picture 1	○
PMX-2BL-R1.75S	3.5	1.75	4	8	75	2	Picture 1	○
PMX-2BL-R2.0S	4.0	2.0	4	8	75	2	Picture 2	○
PMX-2BL-R1.0	2.0	1.0	6	4	75	2	Picture 1	○
PMX-2BL-R1.25	2.5	1.25	6	5	75	2	Picture 1	○
PMX-2BL-R1.5	3.0	1.5	6	6	75	2	Picture 1	○
PMX-2BL-R1.75	3.5	1.75	6	8	75	2	Picture 1	○
PMX-2BL-R2.0	4.0	2.0	6	8	75	2	Picture 2	○
PMX-2BL-R2.5	5.0	2.5	6	10	75	2	Picture 1	○
PMX-2BL-R2.75	5.5	2.75	6	12	75	2	Picture 1	○
PMX-2BL-R3.0	6.0	3.0	6	12	75	2	Picture 2	○
PMX-2BX-R3.0	6.0	3.0	6	12	100	2	Picture 2	○
PMX-2BL-R3.5	7.0	3.5	8	14	75	2	Picture 1	○
PMX-2BM-R4.0	8.0	4.0	8	16	75	2	Picture 2	○
PMX-2BL-R4.0	8.0	4.0	8	16	100	2	Picture 2	○
PMX-2BL-R4.5	9.0	4.5	10	20	100	2	Picture 1	○
PMX-2BL-R5.0	10.0	5.0	10	20	100	2	Picture 2	○
PMX-2BX-R5.0	10.0	5.0	10	20	150	2	Picture 2	○
PMX-2BL-R6.0	12.0	6	12	24	100	2	Picture 2	○
PMX-2BX-R6.0	12.0	6.0	12	24	150	2	Picture 2	○
PMX-2BL-R7.0	14.0	7.0	14	28	100	2	Picture 2	○
PMX-2BL-R8.0	16.0	8.0	16	32	150	2	Picture 2	○
PMX-2BL-R10.0	20.0	10.0	20	40	150	2	Picture 2	○

● Stock available ○ Make-to-order

Indexable
milling tools

Solid carbide
end mills

PMX series

➤ Applicable workpiece material table ● Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~65HRC						
○	○	○	○	○	○		○				

Code key

B294

Graphics category and identification

B295

Cutting parameters

B551

Non-standard customization

B652-B653

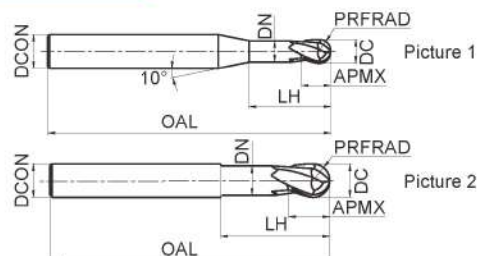
2-flute ball nose end mills with long neck and short cutting edge



PMX-2BFP



- High rigidity short flute design, it's suitable for heavy machining.



Type	Basic dimension(mm)							Number of teeth Z	Geometry	Stock
	DC	PRFRAD	DCON	APMX	LH	DN	OAL			
PMX-2BFP-R0.5	1.0	0.5	6	1	2.5	0.95	75	2	Picture 1	○
PMX-2BFP-R0.75	1.5	0.75	6	1.5	3	1.45	75	2	Picture 1	○
PMX-2BFP-R1.0	2.0	1.0	6	2	4	1.95	75	2	Picture 1	○
PMX-2BFP-R1.5	3.0	1.5	6	3	6	2.85	75	2	Picture 1	○
PMX-2BFP-R2.0	4.0	2.0	6	4	8	3.85	75	2	Picture 1	○
PMX-2BFP-R2.5	5.0	2.5	6	5	10	4.85	75	2	Picture 1	○
PMX-2BFP-R3.0	6.0	3.0	6	6	12	5.8	75	2	Picture 2	○
PMX-2BFP-R4.0	8.0	4.0	8	8	16	7.8	100	2	Picture 2	○
PMX-2BFP-R5.0	10.0	5.0	10	10	20	9.6	100	2	Picture 2	○
PMX-2BFP-R6.0	12.0	6.0	12	12	24	11.5	100	2	Picture 2	○
PMX-2BFP-R8.0	16.0	8.0	16	16	32	15.5	150	2	Picture 2	○
PMX-2BFP-R10.0	20.0	10.0	20	20	40	19.5	150	2	Picture 2	○

● Stock available ○ Make-to-order

Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material										
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron	Copper alloy	Aluminum alloy	Titanium alloy
		~40HRC	~50HRC	~55HRC	~65HRC					
○	○	○	○	○	○		○			

Code key

B294

Graphics category and identification

B295

Cutting parameters

B551

Non-standard customization

B652-B653

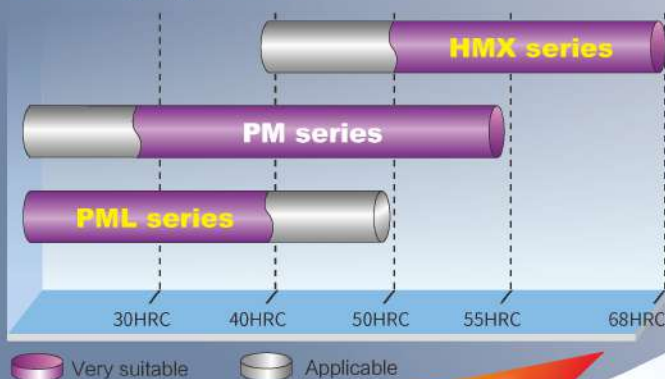
High performance universal machining

PML series

Applicable of high efficiency machining in a variety of materials under HRC50, while significantly promoting machinability of soft materials such as carbon steel, low carbon alloy steel under HRC40!

PML, PM, HMX high performance solid carbide end mills series

Recommendation for steel materials machining application



Application range:

Applicable for high-efficiency machining in a variety of materials under HRC50, e.g., non-ferrous alloy, steel, pre-hardened steel, stainless steel, especially suitable for soft materials such as carbon steel, low carbon alloy steel under HRC40. With excellent cutting performance in both dry and wet cutting conditions.

New technology
Perfect transformation

Unique cutting edge design, balancing edge strength and sharpness, with low cutting force.

Light yellow coating allows for better wear observation.

Advanced coating after-treatment technology, for closer combination with substrate, lower friction and superior surface quality.

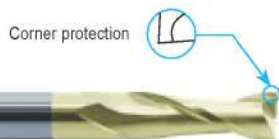
With new superlattice coatings technology, for excellent wear resistance, oxidation resistance, thermal stability and lubrication performance.



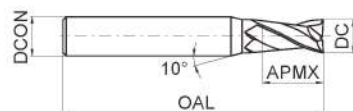
2-flute flattened end mills with straight shank



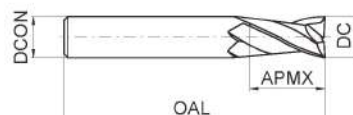
PML-2E



- Very suitable for slot milling.
- Wide application.



Picture 1



Picture 2

Type	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	DC	DCN	APMX	OAL			
PML-2E-D1.0S	1.0	4	3	50	2	Picture 1	●
PML-2E-D1.0	1.0	6	3	50	2	Picture 1	●
PML-2E-D1.5S	1.5	4	4	50	2	Picture 1	●
PML-2E-D1.5	1.5	6	4	50	2	Picture 1	●
PML-2E-D2.0S	2.0	4	6	50	2	Picture 1	●
PML-2E-D2.0	2.0	6	6	50	2	Picture 1	●
PML-2E-D2.5S	2.5	4	8	50	2	Picture 1	●
PML-2E-D2.5	2.5	6	8	50	2	Picture 1	●
PML-2E-D3.0S	3.0	4	8	50	2	Picture 1	●
PML-2E-D3.0	3.0	6	8	50	2	Picture 1	●
PML-2E-D3.5	3.5	6	10	50	2	Picture 1	●
PML-2E-D4.0S	4.0	4	11	50	2	Picture 2	●
PML-2E-D4.0	4.0	6	11	50	2	Picture 1	●
PML-2E-D4.5	4.5	6	11	50	2	Picture 1	●
PML-2E-D5.0	5.0	6	13	50	2	Picture 1	●
PML-2E-D5.5	5.5	6	16	50	2	Picture 1	●
PML-2E-D6.0	6.0	6	16	50	2	Picture 2	●
PML-2E-D7.0	7.0	8	20	60	2	Picture 1	●
PML-2E-D8.0	8.0	8	20	60	2	Picture 2	●
PML-2E-D9.0	9.0	10	22	75	2	Picture 1	●
PML-2E-D10.0	10.0	10	25	75	2	Picture 2	●
PML-2E-D11.0	11.0	12	26	75	2	Picture 1	●
PML-2E-D12.0	12.0	12	30	75	2	Picture 2	●
PML-2E-D14.0	14.0	14	32	75	2	Picture 2	●
PML-2E-D16.0	16.0	16	45	100	2	Picture 2	●
PML-2E-D18.0	18.0	18	45	100	2	Picture 2	●
PML-2E-D20.0	20.0	20	45	100	2	Picture 2	●

● Stock available ○ Make-to-order

Applicable workpiece material table ○Very suitable ○Suitable

Workpiece material										
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy
		~40HRC	~50HRC	~55HRC	~68HRC					
○	○	○	○			○	○			○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B552

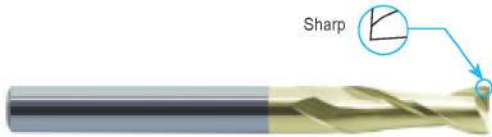
Non-standard customization

B652-B653

2-flute flattened end mills with straight shank

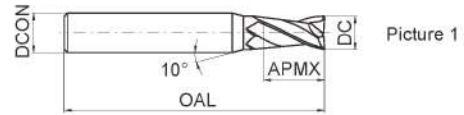


PML-2F

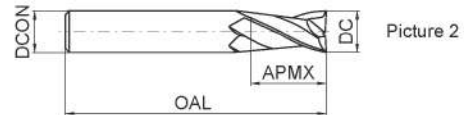


● Very suitable for slot milling.

● Wide application.



Picture 1



Picture 2

Type	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	DC	DCON	APMX	OAL			
PML-2F-D1.0S	1.0	4	3	50	2	Picture 1	○
PML-2F-D1.0	1.0	6	3	50	2	Picture 1	○
PML-2F-D1.5S	1.5	4	4	50	2	Picture 1	○
PML-2F-D1.5	1.5	6	4	50	2	Picture 1	○
PML-2F-D2.0S	2.0	4	6	50	2	Picture 1	○
PML-2F-D2.0	2.0	6	6	50	2	Picture 1	○
PML-2F-D2.5S	2.5	4	8	50	2	Picture 1	○
PML-2F-D2.5	2.5	6	8	50	2	Picture 1	○
PML-2F-D3.0S	3.0	4	8	50	2	Picture 1	○
PML-2F-D3.0	3.0	6	8	50	2	Picture 1	○
PML-2F-D3.5	3.5	6	10	50	2	Picture 1	○
PML-2F-D4.0S	4.0	4	11	50	2	Picture 2	○
PML-2F-D4.0	4.0	6	11	50	2	Picture 1	○
PML-2F-D4.5	4.5	6	11	50	2	Picture 1	○
PML-2F-D5.0	5.0	6	13	50	2	Picture 1	○
PML-2F-D5.5	5.5	6	16	50	2	Picture 1	○
PML-2F-D6.0	6.0	6	16	50	2	Picture 2	○
PML-2F-D7.0	7.0	8	20	60	2	Picture 1	○
PML-2F-D8.0	8.0	8	20	60	2	Picture 2	○
PML-2F-D9.0	9.0	10	22	75	2	Picture 1	○
PML-2F-D10.0	10.0	10	25	75	2	Picture 2	○
PML-2F-D11.0	11.0	12	26	75	2	Picture 1	○
PML-2F-D12.0	12.0	12	30	75	2	Picture 2	○
PML-2F-D14.0	14.0	14	32	75	2	Picture 2	○
PML-2F-D16.0	16.0	16	45	100	2	Picture 2	○
PML-2F-D18.0	18.0	18	45	100	2	Picture 2	○
PML-2F-D20.0	20.0	20	45	100	2	Picture 2	○

● Stock available ○ Make-to-order

Applicable workpiece material table ● Very suitable ○ Suitable

Workpiece material										
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy
		~40HRC	~50HRC	~55HRC	~68HRC					
○	○	○	○			○	○			○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B553

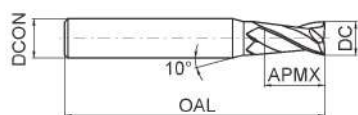
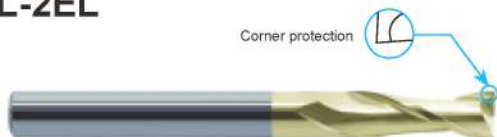
Non-standard customization

B652-B653

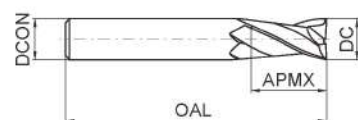
2-flute flattened end mills with straight shank and long cutting edge



PML-2EL



Picture 1



Picture 2

Type	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	DC	DCON	APMX	OAL			
PML-2EL-D3.0	3.0	6	12	75	2	Picture 1	○
PML-2EL-D4.0	4.0	6	15	75	2	Picture 1	○
PML-2EL-D5.0	5.0	6	20	75	2	Picture 1	○
PML-2EL-D6.0	6.0	6	20	75	2	Picture 2	○
PML-2EL-D8.0	8.0	8	25	100	2	Picture 2	○
PML-2EL-D10.0	10.0	10	30	100	2	Picture 2	○
PML-2EL-D12.0	12.0	12	35	100	2	Picture 2	○
PML-2EL-D14.0	14.0	14	40	100	2	Picture 2	○
PML-2EL-D16.0	16.0	16	50	150	2	Picture 2	○
PML-2EL-D20.0	20.0	20	55	150	2	Picture 2	○

● Stock available ○ Make-to-order

Indexable
milling tools

Solid carbide
end mills

PML series

Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material										
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy
		~40HRC	~50HRC	~55HRC	~68HRC					
○	○	○	○			○	○			○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B552

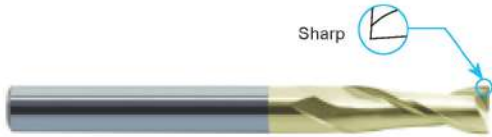
Non-standard customization

B652-B653

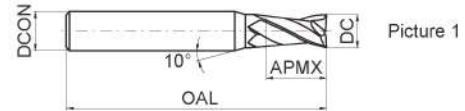
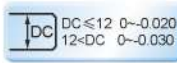
2-flute flattened end mills with straight shank and long cutting edge



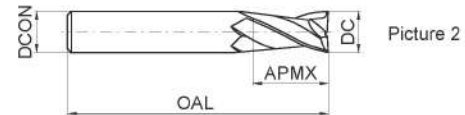
PML-2FL



- PML-2F series with long cutting edge.



Picture 1



Picture 2

Type	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	DC	DCON	APMX	OAL			
PML-2FL-D3.0	3.0	6	12	75	2	Picture 1	○
PML-2FL-D4.0	4.0	6	15	75	2	Picture 1	○
PML-2FL-D5.0	5.0	6	20	75	2	Picture 1	○
PML-2FL-D6.0	6.0	6	20	75	2	Picture 2	○
PML-2FL-D8.0	8.0	8	25	100	2	Picture 2	○
PML-2FL-D10.0	10.0	10	30	100	2	Picture 2	○
PML-2FL-D12.0	12.0	12	35	100	2	Picture 2	○
PML-2FL-D14.0	14.0	14	40	100	2	Picture 2	○
PML-2FL-D16.0	16.0	16	50	150	2	Picture 2	○
PML-2FL-D20.0	20.0	20	55	150	2	Picture 2	○

● Stock available ○ Make-to-order

Indexable
milling tools

Solid carbide
end mills

PML series

Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
○	○	○	○			○	○			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B553

Non-standard customization

B652-B653

2-flute flattened end mills with straight shank, long neck and short cutting edge



Side face

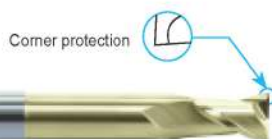


Step shoulder



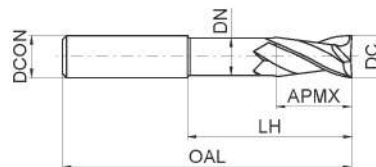
Straight slot

PML-2EFP



Corner protection

- High-rigidity short cutting edge, suitable for heavy cutting and also deep cavity milling.



Type	Basic dimension(mm)						Number of teeth Z	Stock
	DC	DCON	APMX	LH	DN	OAL		
PML-2EFP-D6.0	6.0	6	9	30	5.8	75	2	○
PML-2EFP-D8.0	8.0	8	12	40	7.8	100	2	○
PML-2EFP-D10.0	10.0	10	15	50	9.6	100	2	○
PML-2EFP-D12.0	12.0	12	18	50	11.5	100	2	○
PML-2EFP-D16.0	16.0	16	24	50	15.5	150	2	○
PML-2EFP-D20.0	20.0	20	30	60	19.5	150	2	○

● Stock available ○ Make-to-order

Indexable
milling toolsSolid carbide
end mills

PML series

Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
○	○	○	○			○	○			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B554

Non-standard customization

B652-B653

3-flute flattened end mills with straight shank



Side face



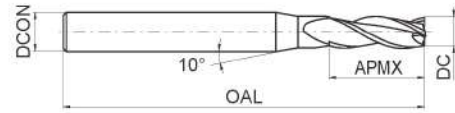
Step shoulder



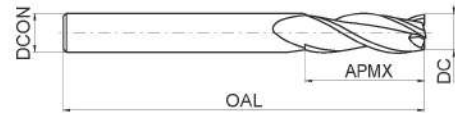
Straight slot

PML-3E-H

Corner protection



Picture 1



Picture 2

- Especially suitable for slot milling. ● Wide application.



Type	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	DC	DCON	APMX	OAL			
PML-3E-D3.0S-H	3.0	4	8	50	3	Picture 1	○
PML-3E-D3.0-H	3.0	6	8	50	3	Picture 1	○
PML-3E-D3.5-H	3.5	6	10	50	3	Picture 1	○
PML-3E-D4.0S-H	4.0	4	11	50	3	Picture 2	○
PML-3E-D4.0-H	4.0	6	11	50	3	Picture 1	○
PML-3E-D4.5-H	4.5	6	11	50	3	Picture 1	○
PML-3E-D5.0-H	5.0	6	13	50	3	Picture 1	○
PML-3E-D5.5-H	5.5	6	16	50	3	Picture 1	○
PML-3E-D6.0-H	6.0	6	16	50	3	Picture 2	○
PML-3E-D7.0-H	7.0	8	20	60	3	Picture 1	○
PML-3E-D8.0-H	8.0	8	20	60	3	Picture 2	○
PML-3E-D9.0-H	9.0	10	22	75	3	Picture 1	○
PML-3E-D10.0-H	10.0	10	25	75	3	Picture 2	○
PML-3E-D11.0-H	11.0	12	26	75	3	Picture 1	○
PML-3E-D12.0-H	12.0	12	30	75	3	Picture 2	○
PML-3E-D14.0-H	14.0	14	32	75	3	Picture 2	○
PML-3E-D16.0-H	16.0	16	45	100	3	Picture 2	○
PML-3E-D18.0-H	18.0	18	45	100	3	Picture 2	○
PML-3E-D20.0-H	20.0	20	45	100	3	Picture 2	○

● Stock available ○ Make-to-order

Indexable
milling toolsSolid carbide
end mills

PML series

▶▶ Applicable workpiece material table ● Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
○	○	○	○			○	○			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B555

Non-standard customization

B652-B653

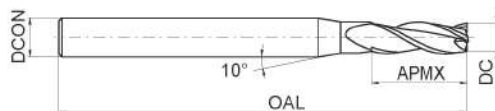
3-flute flattened end mills with straight shank and long cutting edge



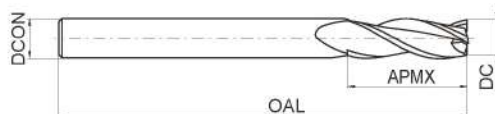
PML-3EL-H



● PML-3E-H series with long shank.



Picture 1



Picture 2

Type	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	DC	DCON	APMX	OAL			
PML-3EL-D3.0-H	3.0	6	12	75	3	Picture 1	○
PML-3EL-D4.0-H	4.0	6	15	75	3	Picture 1	○
PML-3EL-D5.0-H	5.0	6	20	75	3	Picture 1	○
PML-3EL-D6.0-H	6.0	6	20	75	3	Picture 2	○
PML-3EL-D8.0-H	8.0	8	25	100	3	Picture 2	○
PML-3EL-D10.0-H	10.0	10	30	100	3	Picture 2	○
PML-3EL-D12.0-H	12.0	12	35	100	3	Picture 2	○
PML-3EL-D14.0-H	14.0	14	40	100	3	Picture 2	○
PML-3EL-D16.0-H	16.0	16	50	150	3	Picture 2	○
PML-3EL-D20.0-H	20.0	20	55	150	3	Picture 2	○

● Stock available ○ Make-to-order

Indexable
milling tools

Solid carbide
end mills

PML series

Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
○	○	○	○			○	○			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B555

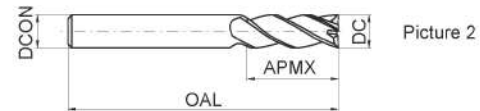
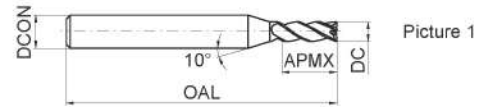
Non-standard customization

B652-B653

4-flute flattened end mills with straight shank



PML-4E-G



● Very suitable for side milling. ● Wide application.



Type	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	DC	DCON	APMX	OAL			
PML-4E-D1.0S-G	1.0	4	3	50	4	Picture 1	●
PML-4E-D1.0-G	1.0	6	3	50	4	Picture 1	●
PML-4E-D1.5S-G	1.5	4	4	50	4	Picture 1	●
PML-4E-D1.5-G	1.5	6	4	50	4	Picture 1	●
PML-4E-D2.0S-G	2.0	4	6	50	4	Picture 1	●
PML-4E-D2.0-G	2.0	6	6	50	4	Picture 1	●
PML-4E-D2.5S-G	2.5	4	8	50	4	Picture 1	●
PML-4E-D2.5-G	2.5	6	8	50	4	Picture 1	●
PML-4E-D3.0S-G	3.0	4	8	50	4	Picture 1	●
PML-4E-D3.0-G	3.0	6	8	50	4	Picture 1	●
PML-4E-D3.5-G	3.5	6	10	50	4	Picture 1	●
PML-4E-D4.0S-G	4.0	4	11	50	4	Picture 2	●
PML-4E-D4.0-G	4.0	6	11	50	4	Picture 1	●
PML-4E-D4.5-G	4.5	6	11	50	4	Picture 1	●
PML-4E-D5.0-G	5.0	6	13	50	4	Picture 1	●
PML-4E-D5.5-G	5.5	6	16	50	4	Picture 1	●
PML-4E-D6.0-G	6.0	6	16	50	4	Picture 2	●
PML-4E-D7.0-G	7.0	8	20	60	4	Picture 1	●
PML-4E-D8.0-G	8.0	8	20	60	4	Picture 2	●
PML-4E-D9.0-G	9.0	10	22	75	4	Picture 1	●
PML-4E-D10.0-G	10.0	10	25	75	4	Picture 2	●
PML-4E-D11.0-G	11.0	12	26	75	4	Picture 1	●
PML-4E-D12.0-G	12.0	12	30	75	4	Picture 2	●
PML-4E-D14.0-G	14.0	14	32	75	4	Picture 2	●
PML-4E-D16.0-G	16.0	16	45	100	4	Picture 2	●
PML-4E-D18.0-G	18.0	18	45	100	4	Picture 2	●
PML-4E-D20.0-G	20.0	20	45	100	4	Picture 2	●

Indexable milling tools

Solid carbide end mills

PML series

● Stock available ○ Make-to-order

➤ Applicable workpiece material table ● Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
○	○	○	○			○	○			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B556-B557

Non-standard customization

B652-B653

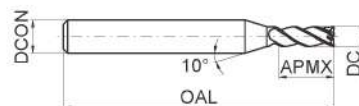
4-flute flattened end mills with straight shank



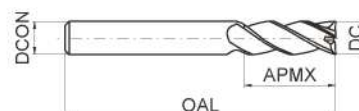
PML-4F-G



- Very suitable for side milling.
- Wide application.



Picture 1



Picture 2

Type	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	DC	DCON	APMX	OAL			
PML-4F-D1.0S-G	1.0	4	3	50	4	Picture 1	○
PML-4F-D1.0-G	1.0	6	3	50	4	Picture 1	○
PML-4F-D1.5S-G	1.5	4	4	50	4	Picture 1	○
PML-4F-D1.5-G	1.5	6	4	50	4	Picture 1	○
PML-4F-D2.0S-G	2.0	4	6	50	4	Picture 1	○
PML-4F-D2.0-G	2.0	6	6	50	4	Picture 1	○
PML-4F-D2.5S-G	2.5	4	8	50	4	Picture 1	○
PML-4F-D2.5-G	2.5	6	8	50	4	Picture 1	○
PML-4F-D3.0S-G	3.0	4	8	50	4	Picture 1	○
PML-4F-D3.0-G	3.0	6	8	50	4	Picture 1	○
PML-4F-D3.5-G	3.5	6	10	50	4	Picture 1	○
PML-4F-D4.0S-G	4.0	4	11	50	4	Picture 2	○
PML-4F-D4.0-G	4.0	6	11	50	4	Picture 1	○
PML-4F-D4.5-G	4.5	6	11	50	4	Picture 1	○
PML-4F-D5.0-G	5.0	6	13	50	4	Picture 1	○
PML-4F-D5.5-G	5.5	6	16	50	4	Picture 1	○
PML-4F-D6.0-G	6.0	6	16	50	4	Picture 2	○
PML-4F-D7.0-G	7.0	8	20	60	4	Picture 1	○
PML-4F-D8.0-G	8.0	8	20	60	4	Picture 2	○
PML-4F-D9.0-G	9.0	10	22	75	4	Picture 1	○
PML-4F-D10.0-G	10.0	10	25	75	4	Picture 2	○
PML-4F-D11.0-G	11.0	12	26	75	4	Picture 1	○
PML-4F-D12.0-G	12.0	12	30	75	4	Picture 2	○
PML-4F-D14.0-G	14.0	14	32	75	4	Picture 2	○
PML-4F-D16.0-G	16.0	16	45	100	4	Picture 2	○
PML-4F-D18.0-G	18.0	18	45	100	4	Picture 2	○
PML-4F-D20.0-G	20.0	20	45	100	4	Picture 2	○

● Stock available ○ Make-to-order

Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
⊙	⊙	⊙	○			○	⊙			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B558-B559

Non-standard customization

B652-B653

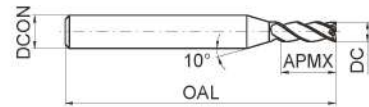
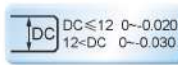
4-flute flattened end mills with straight shank and long cutting edge



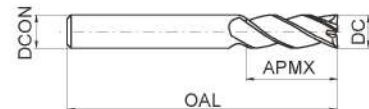
PML-4EL-G



● PML-4E-G series with long cutting edge.



Picture 1



Picture 2

Type	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	DC	DCON	APMX	OAL			
PML-4EL-D3.0-G	3.0	6	12	75	4	Picture 1	○
PML-4EL-D4.0-G	4.0	6	15	75	4	Picture 1	○
PML-4EL-D5.0-G	5.0	6	20	75	4	Picture 1	○
PML-4EL-D6.0-G	6.0	6	20	75	4	Picture 2	○
PML-4EL-D8.0-G	8.0	8	25	100	4	Picture 2	○
PML-4EL-D10.0-G	10.0	10	30	100	4	Picture 2	○
PML-4EL-D12.0-G	12.0	12	35	100	4	Picture 2	○
PML-4EL-D14.0-G	14.0	14	40	100	4	Picture 2	○
PML-4EL-D16.0-G	16.0	16	50	150	4	Picture 2	○
PML-4EL-D20.0-G	20.0	20	55	150	4	Picture 2	○

● Stock available ○ Make-to-order

Indexable milling tools

Solid carbide end mills

PML series

➤ Applicable workpiece material table ● Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
○	○	○	○			○	○			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B556-B557

Non-standard customization

B652-B653

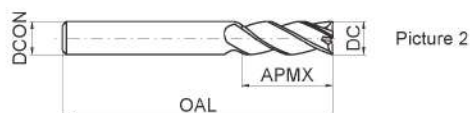
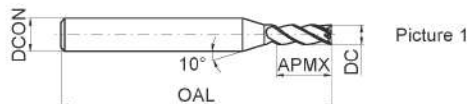
4-flute flattened end mills with straight shank and long cutting edge



PML-4FL-G



● PML-4F-G series with long cutting edge.



Type	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	DC	DCON	APMX	OAL			
PML-4FL-D3.0-G	3.0	6	12	75	4	Picture 1	○
PML-4FL-D4.0-G	4.0	6	15	75	4	Picture 1	○
PML-4FL-D5.0-G	5.0	6	20	75	4	Picture 1	○
PML-4FL-D6.0-G	6.0	6	20	75	4	Picture 2	○
PML-4FL-D8.0-G	8.0	8	25	100	4	Picture 2	○
PML-4FL-D10.0-G	10.0	10	30	100	4	Picture 2	○
PML-4FL-D12.0-G	12.0	12	35	100	4	Picture 2	○
PML-4FL-D14.0-G	14.0	14	40	100	4	Picture 2	○
PML-4FL-D16.0-G	16.0	16	50	150	4	Picture 2	○
PML-4FL-D20.0-G	20.0	20	55	150	4	Picture 2	○

● Stock available ○ Make-to-order

Indexable
milling tools

Solid carbide
end mills

PML series

Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
○	○	○	○			○	○			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B558-B559

Non-standard customization

B652-B653

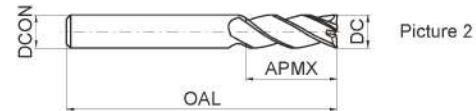
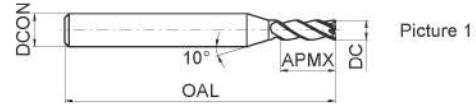
4-flute flattened end mills with straight shank and extra long cutting edge



PML-4EX-G



- Extra long cutting edge, for deep side wall machining.



Type	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	DC	DCON	APMX	OAL			
PML-4EX-D3.0-G	3.0	6	20	75	4	Picture 1	○
PML-4EX-D4.0-G	4.0	6	25	75	4	Picture 1	○
PML-4EX-D5.0-G	5.0	6	30	75	4	Picture 1	○
PML-4EX-D6.0-G	6.0	6	30	75	4	Picture 2	○
PML-4EX-D8.0-G	8.0	8	40	100	4	Picture 2	○
PML-4EX-D10.0-G	10.0	10	50	110	4	Picture 2	○
PML-4EX-D12.0-G	12.0	12	50	110	4	Picture 2	○
PML-4EX-D16.0-G	16.0	16	70	150	4	Picture 2	○
PML-4EX-D20.0-G	20.0	20	75	150	4	Picture 2	○

● Stock available ○ Make-to-order



Indexable
milling tools

Solid carbide
end mills

PML series

Applicable workpiece material table

○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
○	○	○	○			○	○			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B560

Non-standard customization

B652-B653



MILLING Solid Carbide End Mills

High-performance general milling PML series

4-flute flattened end mills with straight shank

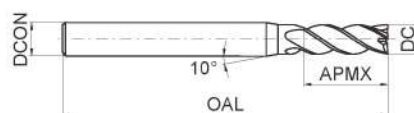


PML-4E

Corner protection



- Very suitable for side milling and shallow slot machining.
- Wide application.



Picture 1



Picture 2

Type	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	DC	DCON	APMX	OAL			
PML-4E-D1.0S	1.0	4	3	50	4	Picture 1	○
PML-4E-D1.0	1.0	6	3	50	4	Picture 1	○
PML-4E-D1.5S	1.5	4	4	50	4	Picture 1	○
PML-4E-D1.5	1.5	6	4	50	4	Picture 1	○
PML-4E-D2.0S	2.0	4	6	50	4	Picture 1	○
PML-4E-D2.0	2.0	6	6	50	4	Picture 1	○
PML-4E-D2.5S	2.5	4	8	50	4	Picture 1	○
PML-4E-D2.5	2.5	6	8	50	4	Picture 1	○
PML-4E-D3.0S	3.0	4	8	50	4	Picture 1	○
PML-4E-D3.0	3.0	6	8	50	4	Picture 1	○
PML-4E-D3.5	3.5	6	10	50	4	Picture 1	○
PML-4E-D4.0S	4.0	4	11	50	4	Picture 2	○
PML-4E-D4.0	4.0	6	11	50	4	Picture 1	○
PML-4E-D4.5	4.5	6	11	50	4	Picture 1	○
PML-4E-D5.0	5.0	6	13	50	4	Picture 1	○
PML-4E-D5.5	5.5	6	16	50	4	Picture 1	○
PML-4E-D6.0	6.0	6	16	50	4	Picture 2	○
PML-4E-D7.0	7.0	8	20	60	4	Picture 1	○
PML-4E-D8.0	8.0	8	20	60	4	Picture 2	○
PML-4E-D9.0	9.0	10	22	75	4	Picture 1	○
PML-4E-D10.0	10.0	10	25	75	4	Picture 2	○
PML-4E-D11.0	11.0	12	26	75	4	Picture 1	○
PML-4E-D12.0	12.0	12	30	75	4	Picture 2	○
PML-4E-D14.0	14.0	14	32	75	4	Picture 2	○
PML-4E-D16.0	16.0	16	45	100	4	Picture 2	○
PML-4E-D18.0	18.0	18	45	100	4	Picture 2	○
PML-4E-D20.0	20.0	20	45	100	4	Picture 2	○

● Stock available ○ Make-to-order

Applicable workpiece material table ○Very suitable ○Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
○	○	○	○			○	○			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B561-B562

Non-standard customization

B652-B653

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



Side face



Step shoulder



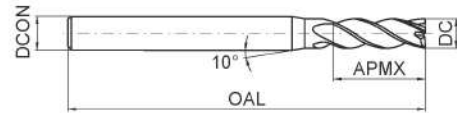
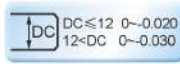
Straight slot

PML-4EL

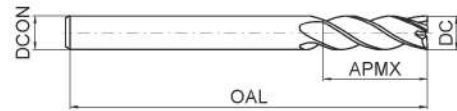
Corner protection



● PML-4E series with long cutting edge.



Picture 1



Picture 2

Type	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	DC	DCON	APMX	OAL			
PML-4EL-D3.0	3.0	6	12	75	4	Picture 1	○
PML-4EL-D4.0	4.0	6	15	75	4	Picture 1	○
PML-4EL-D5.0	5.0	6	20	75	4	Picture 1	○
PML-4EL-D6.0	6.0	6	20	75	4	Picture 2	○
PML-4EL-D8.0	8.0	8	25	100	4	Picture 2	○
PML-4EL-D10.0	10.0	10	30	100	4	Picture 2	○
PML-4EL-D12.0	12.0	12	35	100	4	Picture 2	○
PML-4EL-D14.0	14.0	14	40	100	4	Picture 2	○
PML-4EL-D16.0	16.0	16	50	150	4	Picture 2	○
PML-4EL-D20.0	20.0	20	55	150	4	Picture 2	○

● Stock available ○ Make-to-order

Indexable
milling toolsSolid carbide
end mills

PML series

▶▶ Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
○	○	○	○			○	○			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B561-B562

Non-standard customization

B652-B653

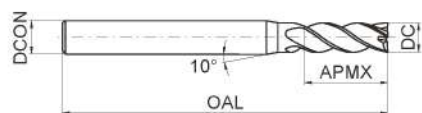
4-flute flattened end mills with straight shank



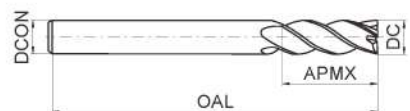
PML-4E-H



- Most suitable for slot milling.
- Wide application.



Picture 1



Picture 2

Type	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	DC	DCON	APMX	OAL			
PML-4E-D3.0S-H	3.0	4	8	50	4	Picture 1	○
PML-4E-D3.0-H	3.0	6	8	50	4	Picture 1	○
PML-4E-D3.5-H	3.5	6	10	50	4	Picture 1	○
PML-4E-D4.0S-H	4.0	4	11	50	4	Picture 2	○
PML-4E-D4.0-H	4.0	6	11	50	4	Picture 1	○
PML-4E-D4.5-H	4.5	6	11	50	4	Picture 1	○
PML-4E-D5.0-H	5.0	6	13	50	4	Picture 1	○
PML-4E-D5.5-H	5.5	6	16	50	4	Picture 1	○
PML-4E-D6.0-H	6.0	6	16	50	4	Picture 2	○
PML-4E-D7.0-H	7.0	8	20	60	4	Picture 1	○
PML-4E-D8.0-H	8.0	8	20	60	4	Picture 2	○
PML-4E-D9.0-H	9.0	10	22	75	4	Picture 1	○
PML-4E-D10.0-H	10.0	10	25	75	4	Picture 2	○
PML-4E-D11.0-H	11.0	12	26	75	4	Picture 1	○
PML-4E-D12.0-H	12.0	12	30	75	4	Picture 2	○
PML-4E-D14.0-H	14.0	14	32	75	4	Picture 2	○
PML-4E-D16.0-H	16.0	16	45	100	4	Picture 2	○
PML-4E-D18.0-H	18.0	18	45	100	4	Picture 2	○
PML-4E-D20.0-H	20.0	20	45	100	4	Picture 2	○

● Stock available ○ Make-to-order

Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
○	○	○	○			○	○			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B556-B557

Non-standard customization

B652-B653

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



Side face



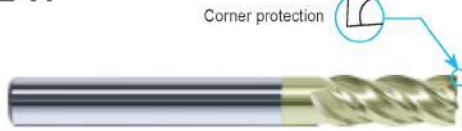
Step shoulder



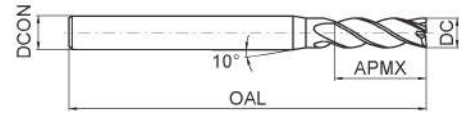
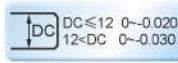
Straight slot

PML-4EL-H

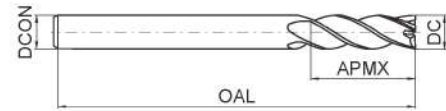
Corner protection



● PML-4E-H series with long shank.



Picture 1



Picture 2

Type	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	DC	DCON	APMX	OAL			
PML-4EL-D3.0-H	3.0	6	12	75	4	Picture 1	○
PML-4EL-D4.0-H	4.0	6	15	75	4	Picture 1	○
PML-4EL-D5.0-H	5.0	6	20	75	4	Picture 1	○
PML-4EL-D6.0-H	6.0	6	20	75	4	Picture 2	○
PML-4EL-D8.0-H	8.0	8	25	100	4	Picture 2	○
PML-4EL-D10.0-H	10.0	10	30	100	4	Picture 2	○
PML-4EL-D12.0-H	12.0	12	35	100	4	Picture 2	○
PML-4EL-D14.0-H	14.0	14	40	100	4	Picture 2	○
PML-4EL-D16.0-H	16.0	16	50	150	4	Picture 2	○
PML-4EL-D20.0-H	20.0	20	55	150	4	Picture 2	○

● Stock available ○ Make-to-order

Indexable
milling toolsSolid carbide
end mills

PML series

Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
○	○	○	○			○	○			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B556-B557

Non-standard customization

B652-B653

4-flute flattened end mills with straight shank, long neck and short cutting edge



Side face

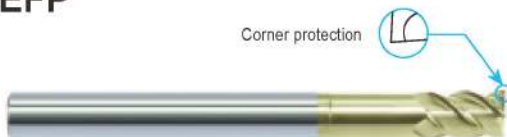


Step shoulder

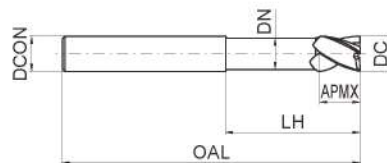


Straight slot

PML-4EFP



Corner protection



- High-rigidity short cutting edge, suitable for heavy cutting and also deep cavity milling.



Type	Basic dimension(mm)						Number of teeth Z	Stock
	DC	DCON	APMX	LH	DN	OAL		
PML-4EFP-D6.0	6.0	6	9	30	5.8	75	4	○
PML-4EFP-D8.0	8.0	8	12	40	7.8	100	4	○
PML-4EFP-D10.0	10.0	10	15	50	9.6	100	4	○
PML-4EFP-D12.0	12.0	12	18	50	11.5	100	4	○
PML-4EFP-D16.0	16.0	16	24	50	15.5	150	4	○
PML-4EFP-D20.0	20.0	20	30	60	19.5	150	4	○

● Stock available ○ Make-to-order

Indexable
milling tools

Solid carbide
end mills

PML series

Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material										
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy
		~40HRC	~50HRC	~55HRC	~68HRC					
○	○	○	○			○	○			○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B563-B564

Non-standard customization

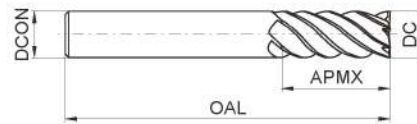
B652-B653

6-flute flattened end mills with straight shank



PML-6E

Corner protection



- Perfect rigidity, very suitable for side finish machining.
- High speed, high feed rate machining applicable.



Type	Basic dimension(mm)				Number of teeth Z	Stock
	DC	DCON	APMX	OAL		
PML-6E-D6.0	6.0	6	18	60	6	○
PML-6E-D8.0	8.0	8	20	60	6	○
PML-6E-D10.0	10.0	10	30	75	6	○
PML-6E-D12.0	12.0	12	32	75	6	○
PML-6E-D16.0	16.0	16	40	100	6	○
PML-6E-D20.0	20.0	20	45	100	6	○

● Stock available ○ Make-to-order

Indexable
milling toolsSolid carbide
end mills

PML series

▶▶ Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
○	○	○	○			○	○			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B565

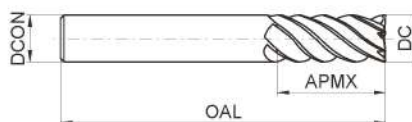
Non-standard customization

B652-B653

6-flute flattened end mills with straight shank and long cutting edge



PML-6EL



● PML-6E series with long cutting edge.



Type	Basic dimension(mm)				Number of teeth Z	Stock
	DC	DCON	APMX	OAL		
PML-6EL-D6.0	6.0	6	24	75	6	○
PML-6EL-D8.0	8.0	8	32	75	6	○
PML-6EL-D10.0	10.0	10	40	100	6	○
PML-6EL-D12.0	12.0	12	45	100	6	○
PML-6EL-D16.0	16.0	16	64	150	6	○
PML-6EL-D20.0	20.0	20	75	150	6	○

● Stock available ○ Make-to-order

Indexable
milling tools

Solid carbide
end mills

PML series

Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
○	○	○	○			○	○			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B566

Non-standard customization

B652-B653

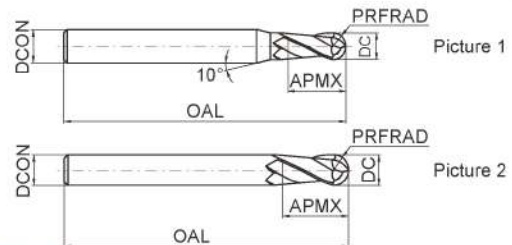
2-flute ball nose end mills with straight shank



PML-2B



- For profile milling, high speed machining applicable.
- Wide application.



Type	Basic dimension(mm)					Number of teeth Z	Geometry	Stock
	DC	PRFRAD	DCON	APMX	OAL			
PML-2B-R0.5S	1.0	0.5	4	2	50	2	Picture 1	●
PML-2B-R0.5	1.0	0.5	6	2	50	2	Picture 1	●
PML-2B-R0.75S	1.5	0.75	4	3	50	2	Picture 1	●
PML-2B-R0.75	1.5	0.75	6	3	50	2	Picture 1	●
PML-2B-R1.0S	2.0	1.0	4	4	50	2	Picture 1	●
PML-2B-R1.0	2.0	1.0	6	4	50	2	Picture 1	●
PML-2B-R1.25S	2.5	1.25	4	5	50	2	Picture 1	●
PML-2B-R1.25	2.5	1.25	6	5	50	2	Picture 1	●
PML-2B-R1.5S	3.0	1.5	4	6	50	2	Picture 1	●
PML-2B-R1.5	3.0	1.5	6	6	50	2	Picture 1	●
PML-2B-R1.75	3.5	1.75	6	8	50	2	Picture 1	●
PML-2B-R2.0S	4.0	2.0	4	8	50	2	Picture 2	●
PML-2B-R2.0	4.0	2.0	6	8	50	2	Picture 1	●
PML-2B-R2.5	5.0	2.5	6	10	50	2	Picture 1	●
PML-2B-R2.75	5.5	2.75	6	12	50	2	Picture 1	●
PML-2B-R3.0	6.0	3.0	6	12	50	2	Picture 2	●
PML-2B-R3.5	7.0	3.5	8	14	60	2	Picture 1	●
PML-2B-R4.0	8.0	4.0	8	16	60	2	Picture 2	●
PML-2B-R4.5	9.0	4.5	10	18	75	2	Picture 1	●
PML-2B-R5.0	10.0	5.0	10	20	75	2	Picture 2	●
PML-2B-R6.0	12.0	6.0	12	24	75	2	Picture 2	●
PML-2B-R7.0	14.0	7.0	14	28	75	2	Picture 2	●
PML-2B-R8.0	16.0	8.0	16	32	100	2	Picture 2	●
PML-2B-R10.0	20.0	10.0	20	40	100	2	Picture 2	●

● Stock available ○ Make-to-order

Indexable milling tools

Solid carbide end mills

PML series

Applicable workpiece material table

Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
○	○	○	○			○	○			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B567-B568

Non-standard customization

B652-B653

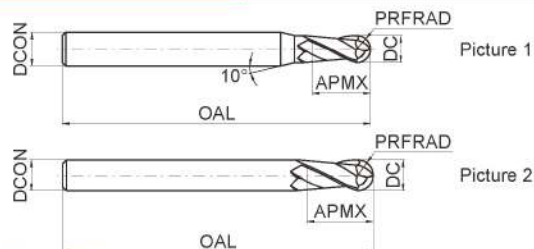
2-flute ball nose end mills with straight shank



PML-2BL



● PML-2B series with long shank.



Type	Basic dimension(mm)					Number of teeth Z	Geometry	Stock
	DC	PRFRAD	DCON	APMX	OAL			
PML-2BL-R1.0	2.0	1.0	6	4	75	2	Picture 1	○
PML-2BL-R1.25	2.5	1.25	6	5	75	2	Picture 1	○
PML-2BL-R1.5	3.0	1.5	6	6	75	2	Picture 1	○
PML-2BL-R1.75	3.5	1.75	6	8	75	2	Picture 1	○
PML-2BL-R2.0	4.0	2.0	6	8	75	2	Picture 1	○
PML-2BL-R2.5	5.0	2.5	6	10	75	2	Picture 1	○
PML-2BL-R2.75	5.5	2.75	6	12	75	2	Picture 1	○
PML-2BL-R3.0	6.0	3.0	6	12	75	2	Picture 2	○
PML-2BL-R3.5	7.0	3.5	8	14	75	2	Picture 1	○
PML-2BL-R4.0	8.0	4.0	8	16	100	2	Picture 2	○
PML-2BL-R4.5	9.0	4.5	10	18	100	2	Picture 1	○
PML-2BL-R5.0	10.0	5.0	10	20	100	2	Picture 2	○
PML-2BL-R6.0	12.0	6.0	12	24	100	2	Picture 2	○
PML-2BL-R7.0	14.0	7.0	14	28	100	2	Picture 2	○
PML-2BL-R8.0	16.0	8.0	16	32	150	2	Picture 2	○
PML-2BL-R10.0	20.0	10.0	20	40	150	2	Picture 2	○

● Stock available ○ Make-to-order

Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
○	○	○	○			○	○			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B567-B568

Non-standard customization

B652-B653

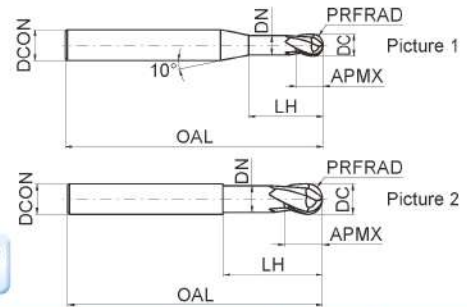
2-flute ball nose end mills with straight shank, long neck and short cutting edge



PML-2BFP



- High-rigidity short cutting edge, suitable for heavy cutting.



Type	Basic dimension(mm)							Number of teeth Z	Geometry	Stock
	DC	PRFRAD	APMX	DN	LH	DCON	OAL			
PML-2BFP-R0.5	1.0	0.5	1	0.95	2.5	6	75	2	Picture 1	○
PML-2BFP-R0.75	1.5	0.75	1.5	1.45	3.0	6	75	2	Picture 1	○
PML-2BFP-R1.0	2.0	1.0	2	1.95	4.0	6	75	2	Picture 1	○
PML-2BFP-R1.5	3.0	1.5	3	2.85	6.0	6	75	2	Picture 1	○
PML-2BFP-R2.0	4.0	2.0	4	3.85	8.0	6	75	2	Picture 1	○
PML-2BFP-R2.5	5.0	2.5	5	4.85	10.0	6	75	2	Picture 1	○
PML-2BFP-R3.0	6.0	3.0	6	5.8	12.0	6	75	2	Picture 2	○
PML-2BFP-R4.0	8.0	4.0	8	7.8	16.0	8	100	2	Picture 2	○
PML-2BFP-R5.0	10.0	5.0	10	9.6	20.0	10	100	2	Picture 2	○
PML-2BFP-R6.0	12.0	6.0	12	11.5	24.0	12	100	2	Picture 2	○
PML-2BFP-R8.0	16.0	8.0	16	15.5	32.0	16	150	2	Picture 2	○
PML-2BFP-R10.0	20.0	10.0	20	19.5	40.0	20	150	2	Picture 2	○

● Stock available ○ Make-to-order

Indexable
milling tools

Solid carbide
end mills

PML series

Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material										
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy
		~40HRC	~50HRC	~55HRC	~68HRC					
○	○	○	○			○	○			○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B567-B568

Non-standard customization

B652-B653

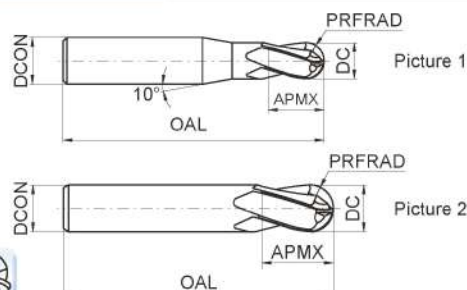
4-flute ball nose end mills with straight shank



PML-4B



4-flute ball nose end mill can operate with higher feed speed and machining efficiency, extending tool life in machining high-hardness workpiece.



Type	Basic dimension(mm)					Number of teeth Z	Geometry	Stock
	DC	PRFRAD	DCON	APMX	OAL			
PML-4B-R1.5	3.0	1.5	6	6	50	4	Picture 1	○
PML-4B-R2.0	4.0	2.0	6	8	50	4	Picture 1	○
PML-4B-R2.5	5.0	2.5	6	10	50	4	Picture 1	○
PML-4B-R3.0	6.0	3.0	6	12	50	4	Picture 2	○
PML-4B-R4.0	8.0	4.0	8	16	60	4	Picture 2	○
PML-4B-R5.0	10.0	5.0	10	20	75	4	Picture 2	○
PML-4B-R6.0	12.0	6.0	12	24	75	4	Picture 2	○
PML-4B-R7.0	14.0	7.0	14	28	75	4	Picture 2	○
PML-4B-R8.0	16.0	8.0	16	32	100	4	Picture 2	○
PML-4B-R9.0	18.0	9.0	18	36	100	4	Picture 2	○
PML-4B-R10.0	20.0	10.0	20	40	100	4	Picture 2	○

● Stock available ○ Make-to-order

Indexable
milling tools

Solid carbide
end mills

PML series

Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
⊙	⊙	⊙	○			○	⊙			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B569

Non-standard customization

B652-B653

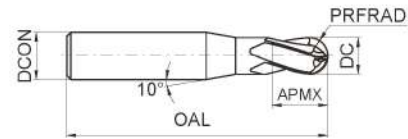
4-flute ball nose end mills with straight and long shank



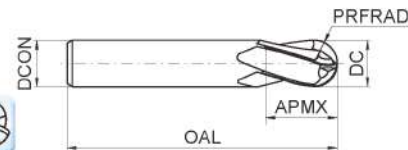
PML-4BL



- PML-4B series with long shank.



Picture 1



Picture 2

Type	Basic dimension(mm)					Number of teeth Z	Geometry	Stock
	DC	PRFRAD	DCON	APMX	OAL			
PML-4BL-R1.5	3.0	1.5	6	6	75	4	Picture 1	○
PML-4BL-R2.0	4.0	2.0	6	8	75	4	Picture 1	○
PML-4BL-R2.5	5.0	2.5	6	10	75	4	Picture 1	○
PML-4BL-R3.0	6.0	3.0	6	12	75	4	Picture 2	○
PML-4BL-R4.0	8.0	4.0	8	16	100	4	Picture 2	○
PML-4BL-R5.0	10.0	5.0	10	20	100	4	Picture 2	○
PML-4BL-R6.0	12.0	6.0	12	24	100	4	Picture 2	○
PML-4BL-R7.0	14.0	7.0	14	28	100	4	Picture 2	○
PML-4BL-R8.0	16.0	8.0	16	32	150	4	Picture 2	○
PML-4BL-R9.0	18.0	9.0	18	36	150	4	Picture 2	○
PML-4BL-R10.0	20.0	10.0	20	40	150	4	Picture 2	○

● Stock available ○ Make-to-order

Indexable
milling toolsSolid carbide
end mills

PML series

Applicable workpiece material table

● Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
○	○	○	○			○	○			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B569

Non-standard customization

B652-B653

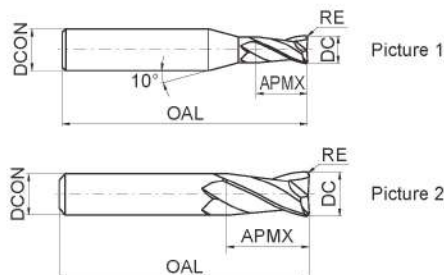
2-flute R end mills with straight shank



PML-2R



- Wide applications, applicable for several machining styles.



Type	Basic dimension(mm)					Number of teeth Z	Geometry	Stock
	DC	RE	DCON	APMX	OAL			
PML-2R-D1.0R0.2	1.0	0.2	4	3	50	2	Picture 1	○
PML-2R-D1.5R0.2	1.5	0.2	4	4	50	2	Picture 1	○
PML-2R-D2.0R0.2	2.0	0.2	4	6	50	2	Picture 1	○
PML-2R-D2.0R0.5	2.0	0.5	4	6	50	2	Picture 1	○
PML-2R-D2.5R0.2	2.5	0.2	4	8	50	2	Picture 1	○
PML-2R-D2.5R0.5	2.5	0.5	4	8	50	2	Picture 1	○
PML-2R-D3.0R0.2	3.0	0.2	4	8	50	2	Picture 1	○
PML-2R-D3.0R0.3	3.0	0.3	4	8	50	2	Picture 1	○
PML-2R-D3.0R0.5	3.0	0.5	4	8	50	2	Picture 1	○
PML-2R-D4.0R0.2	4.0	0.2	4	11	50	2	Picture 2	○
PML-2R-D4.0R0.3	4.0	0.3	4	11	50	2	Picture 2	○
PML-2R-D4.0R0.5	4.0	0.5	4	11	50	2	Picture 2	○
PML-2R-D4.0R1.0	4.0	1.0	4	11	50	2	Picture 2	○
PML-2R-D5.0R0.3	5.0	0.3	6	13	50	2	Picture 1	○
PML-2R-D5.0R0.5	5.0	0.5	6	13	50	2	Picture 1	○
PML-2R-D5.0R1.0	5.0	1.0	6	13	50	2	Picture 1	○
PML-2R-D6.0R0.3	6.0	0.3	6	16	50	2	Picture 2	○
PML-2R-D6.0R0.5	6.0	0.5	6	16	50	2	Picture 2	○
PML-2R-D6.0R1.0	6.0	1.0	6	16	50	2	Picture 2	○
PML-2R-D8.0R0.3	8.0	0.3	8	20	60	2	Picture 2	○
PML-2R-D8.0R0.5	8.0	0.5	8	20	60	2	Picture 2	○
PML-2R-D8.0R1.0	8.0	1.0	8	20	60	2	Picture 2	○
PML-2R-D10.0R0.5	10.0	0.5	10	25	75	2	Picture 2	○
PML-2R-D10.0R1.0	10.0	1.0	10	25	75	2	Picture 2	○
PML-2R-D10.0R1.5	10.0	1.5	10	25	75	2	Picture 2	○
PML-2R-D10.0R2.0	10.0	2.0	10	25	75	2	Picture 2	○
PML-2R-D12.0R0.5	12.0	0.5	12	30	75	2	Picture 2	○
PML-2R-D12.0R1.0	12.0	1.0	12	30	75	2	Picture 2	○
PML-2R-D12.0R1.5	12.0	1.5	12	30	75	2	Picture 2	○
PML-2R-D12.0R2.0	12.0	2.0	12	30	75	2	Picture 2	○

● Stock available ○ Make-to-order

Applicable workpiece material table ○Very suitable ○Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
○	○	○	○			○	○			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B573

Non-standard customization

B652-B653

4-flute R end mills with straight shank



Radius shoulder



Profile

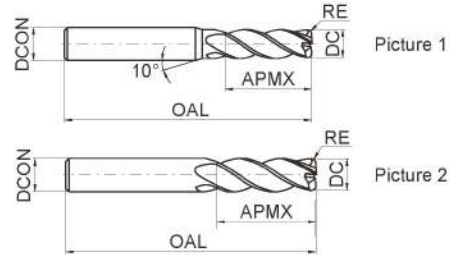


Radius corner slot

PML-4R



- Wide applications, applicable for several machining styles.



Type	Basic dimension(mm)					Number of teeth Z	Geometry	Stock
	DC	RE	DCON	APMX	OAL			
PML-4R-D3.0R0.2	3.0	0.2	6	8	50	4	Picture 1	●
PML-4R-D4.0R0.3	4.0	0.3	6	10	50	4	Picture 1	●
PML-4R-D4.0R0.5	4.0	0.5	6	10	50	4	Picture 1	●
PML-4R-D5.0R0.5	5.0	0.5	6	13	50	4	Picture 1	●
PML-4R-D5.0R1.0	5.0	1.0	6	13	50	4	Picture 1	●
PML-4R-D6.0R0.5	6.0	0.5	6	16	50	4	Picture 2	●
PML-4R-D6.0R1.0	6.0	1.0	6	16	50	4	Picture 2	●
PML-4R-D8.0R0.5	8.0	0.5	8	20	60	4	Picture 2	●
PML-4R-D8.0R1.0	8.0	1.0	8	20	60	4	Picture 2	●
PML-4R-D10.0R0.5	10.0	0.5	10	25	75	4	Picture 2	●
PML-4R-D10.0R1.0	10.0	1.0	10	25	75	4	Picture 2	●
PML-4R-D10.0R2.0	10.0	2.0	10	25	75	4	Picture 2	●
PML-4R-D10.0R3.0	10.0	3.0	10	25	75	4	Picture 2	●
PML-4R-D12.0R0.5	12.0	0.5	12	30	75	4	Picture 2	●
PML-4R-D12.0R1.0	12.0	1.0	12	30	75	4	Picture 2	●
PML-4R-D12.0R2.0	12.0	2.0	12	30	75	4	Picture 2	●
PML-4R-D12.0R3.0	12.0	3.0	12	30	75	4	Picture 2	●

● Stock available ○ Make-to-order

Indexable
milling toolsSolid carbide
end mills

PML series

Applicable workpiece material table

Very suitable Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
○	○	○	○			○	○			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B574

Non-standard customization

B652-B653

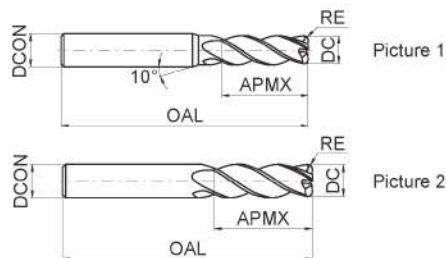
4-flute R end mills with straight shank



PML-4R-H



● Wide applications, applicable for several machining styles.



Type	Basic dimension(mm)					Number of teeth Z	Geometry	Stock
	DC	RE	DCON	APMX	OAL			
PML-4R-D3.0R0.2-H	3.0	0.2	6	8	50	4	Picture 1	●
PML-4R-D4.0R0.3-H	4.0	0.3	6	10	50	4	Picture 1	●
PML-4R-D4.0R0.5-H	4.0	0.5	6	10	50	4	Picture 1	●
PML-4R-D5.0R0.5-H	5.0	0.5	6	13	50	4	Picture 1	●
PML-4R-D5.0R1.0-H	5.0	1.0	6	13	50	4	Picture 1	●
PML-4R-D6.0R0.5-H	6.0	0.5	6	16	50	4	Picture 2	●
PML-4R-D6.0R1.0-H	6.0	1.0	6	16	50	4	Picture 2	●
PML-4R-D8.0R0.5-H	8.0	0.5	8	20	60	4	Picture 2	●
PML-4R-D8.0R1.0-H	8.0	1.0	8	20	60	4	Picture 2	●
PML-4R-D10R0.5-H	10.0	0.5	10	25	75	4	Picture 2	●
PML-4R-D10R1.0-H	10.0	1.0	10	25	75	4	Picture 2	●
PML-4R-D10R2.0-H	10.0	2.0	10	25	75	4	Picture 2	●
PML-4R-D10R3.0-H	10.0	3.0	10	25	75	4	Picture 2	●
PML-4R-D12R0.5-H	12.0	0.5	12	30	75	4	Picture 2	●
PML-4R-D12R1.0-H	12.0	1.0	12	30	75	4	Picture 2	●
PML-4R-D12R2.0-H	12.0	2.0	12	30	75	4	Picture 2	●
PML-4R-D12R3.0-H	12.0	3.0	12	30	75	4	Picture 2	●

● Stock available ○ Make-to-order

Applicable workpiece material table ○Very suitable ○Suitable

Workpiece material										
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy
		~40HRC	~50HRC	~55HRC	~68HRC					
○	○	○	○			○	○			○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B574

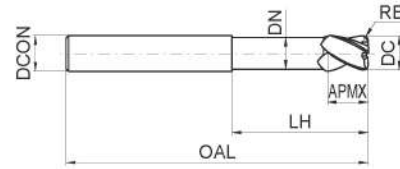
Non-standard customization

B652-B653

4-flute R end mills with straight shank, long neck and short cutting edge



PML-4RFP



- Long shank and short cutting edge designed for deep cavity milling.



Type	Basic dimension(mm)							Number of teeth Z	Stock
	DC	RE	DCON	DN	APMX	LH	OAL		
PML-4RFP-D6.0R0.5	6.0	0.5	6	5.8	6	18	75	4	○
PML-4RFP-D6.0R1.0	6.0	1.0	6	5.8	6	18	75	4	○
PML-4RFP-D8.0R0.5	8.0	0.5	8	7.8	8	24	100	4	○
PML-4RFP-D8.0R1.0	8.0	1.0	8	7.8	8	24	100	4	○
PML-4RFP-D10.0R0.5	10.0	0.5	10	9.6	10	30	100	4	○
PML-4RFP-D10.0R1.0	10.0	1.0	10	9.6	10	30	100	4	○
PML-4RFP-D10.0R2.0	10.0	2.0	10	9.6	10	30	100	4	○
PML-4RFP-D12.0R0.5	12.0	0.5	12	11.5	12	36	100	4	○
PML-4RFP-D12.0R1.0	12.0	1.0	12	11.5	12	36	100	4	○
PML-4RFP-D12.0R2.0	12.0	2.0	12	11.5	12	36	100	4	○
PML-4RFP-D16.0R1.0	16.0	1.0	16	15.5	16	40	150	4	○
PML-4RFP-D16.0R2.0	16.0	2.0	16	15.5	16	40	150	4	○

● Stock available ○ Make-to-order

Indexable
milling tools

Solid carbide
end mills

PML series

Applicable workpiece material table ○ Very suitable ○ Suitable

Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
○	○	○	○			○	○			○	○

Code key

B294

Graphics category and identification

B295

Cutting parameters

B574

Non-standard customization

B652-B653