

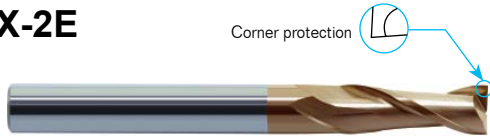
B MILLING Solid Carbide End Mills

HMX series for machining high hardness steel

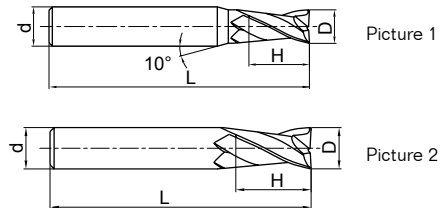
2-flute flattened end mills with straight shank



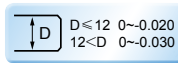
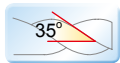
HMX-2E



Corner protection



- For slot milling.
- Very suitable for high speed cutting and dry cutting.



Ordering number	Basic dimension(mm)				Number of teeth Z	Geometry	Stock
	D	d	H	L			
HMX-2E-D1.0S	1.0	4	3	50	2	Picture 1	●
HMX-2E-D1.5S	1.5	4	4	50	2	Picture 1	●
HMX-2E-D2.0S	2.0	4	6	50	2	Picture 1	●
HMX-2E-D2.5S	2.5	4	8	50	2	Picture 1	●
HMX-2E-D3.0S	3.0	4	8	50	2	Picture 1	●
HMX-2E-D4.0S	4.0	4	11	50	2	Picture 2	●
HMX-2E-D1.0	1.0	6	3	50	2	Picture 1	●
HMX-2E-D1.5	1.5	6	4	50	2	Picture 1	●
HMX-2E-D2.0	2.0	6	6	50	2	Picture 1	●
HMX-2E-D2.5	2.5	6	8	50	2	Picture 1	●
HMX-2E-D3.0	3.0	6	8	50	2	Picture 1	●
HMX-2E-D3.5	3.5	6	10	50	2	Picture 1	●
HMX-2E-D4.0	4.0	6	11	50	2	Picture 1	●
HMX-2E-D4.5	4.5	6	11	50	2	Picture 1	●
HMX-2E-D5.0	5.0	6	13	50	2	Picture 1	●
HMX-2E-D5.5	5.5	6	16	50	2	Picture 1	●
HMX-2E-D6.0	6.0	6	16	50	2	Picture 2	●
HMX-2E-D7.0	7.0	8	20	60	2	Picture 1	●
HMX-2E-D8.0	8.0	8	20	60	2	Picture 2	●
HMX-2E-D9.0	9.0	10	22	75	2	Picture 1	●
HMX-2E-D10.0	10.0	10	25	75	2	Picture 2	●
HMX-2E-D11.0	11.0	12	26	75	2	Picture 1	●
HMX-2E-D12.0	12.0	12	30	75	2	Picture 2	●
HMX-2E-D14.0	14.0	14	32	100	2	Picture 2	●
HMX-2E-D16.0	16.0	16	45	100	2	Picture 2	●
HMX-2E-D18.0	18.0	18	45	100	2	Picture 2	●
HMX-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	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
			○	●	●		○				

Code key

B213

Graphics category and identification

B214

Cutting parameters

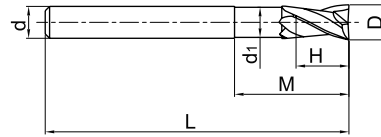
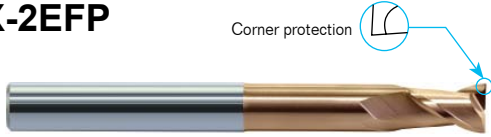
B410

HMX series for machining high hardness steel

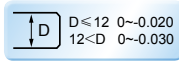
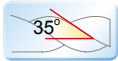
2-flute flattened end mills with long straight shank and short cutting edge



HMX-2EFP



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



Ordering number	Basic dimension(mm)						Number of teeth Z	Stock
	D	d	H	M	d1	L		
HMX-2EFP-D6.0	6.0	6	9	30	5.8	75	2	●
HMX-2EFP-D8.0	8.0	8	12	40	7.8	100	2	●
HMX-2EFP-D10.0	10.0	10	15	50	9.6	100	2	●
HMX-2EFP-D12.0	12.0	12	18	50	11.5	100	2	●
HMX-2EFP-D16.0	16.0	16	24	50	15.5	150	2	●
HMX-2EFP-D20.0	20.0	20	30	60	19.5	150	2	●

● Stock available ○ Make-to-order

Indexable milling tools

Solid carbide end mills

HMX 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 B213 Graphics category and identification B214 Cutting parameters B411

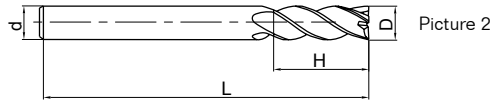
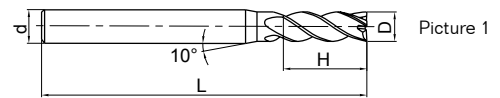
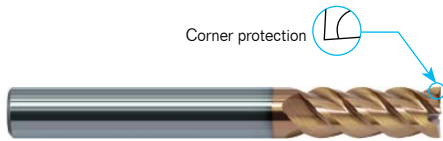
B MILLING Solid Carbide End Mills

HMX series for machining high hardness steel

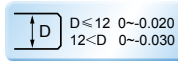
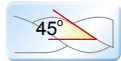
4-flute flattened end mills with straight shank



HMX-4E



- For side milling and shallow slot milling.
- Very suitable for high speed cutting and dry cutting.



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

B213

Graphics category and identification

B214

Cutting parameters

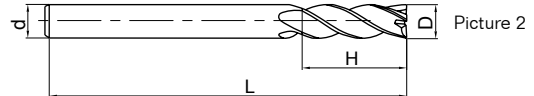
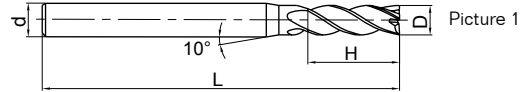
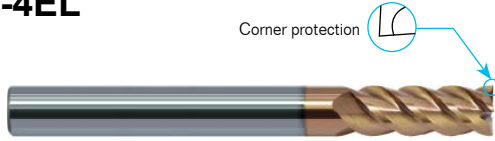
B412

HMx series for machining high hardness steel

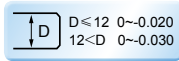
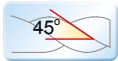
4-flute flattened end mills with straight shank and long cutting edge



HMx-4EL

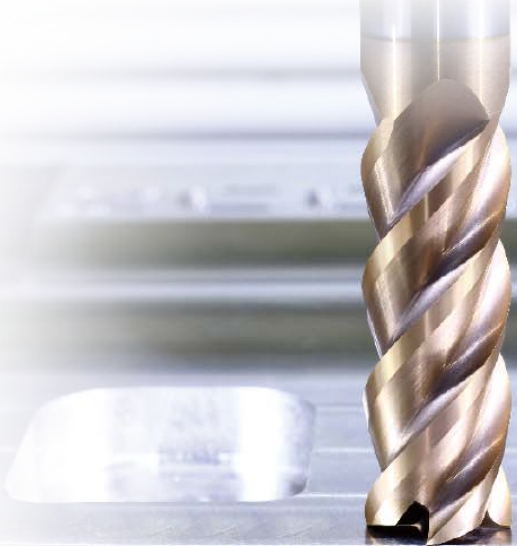


● HM-4E series with long cutting edge.



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

● Stock available ○ Make-to-order



Indexable milling tools

Solid carbide end mills

HMx 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 **B213** Graphics category and identification **B214** Cutting parameters **B412**

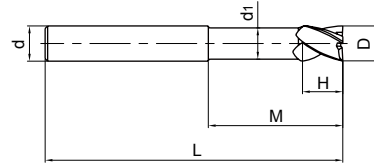
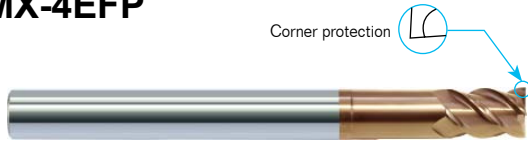
B MILLING Solid Carbide End Mills

HMX series for machining high hardness steel

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



HMX-4EFP



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



Ordering number	Basic dimension(mm)						Number of teeth Z	Stock
	D	d	H	M	d ₁	L		
HMX-4EFP-D6.0	6.0	6	9	30	5.8	75	4	●
HMX-4EFP-D8.0	8.0	8	12	40	7.8	100	4	●
HMX-4EFP-D10.0	10.0	10	15	50	9.6	100	4	●
HMX-4EFP-D12.0	12.0	12	18	50	11.5	100	4	●
HMX-4EFP-D16.0	16.0	16	24	50	15.5	150	4	●
HMX-4EFP-D20.0	20.0	20	30	60	19.5	150	4	●

● Stock available ○ Make-to-order

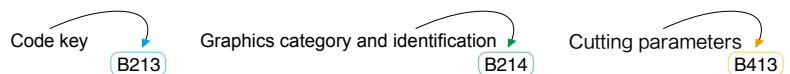
Indexable milling tools

Solid carbide end mills

HMX 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						
			○	●	●		○				

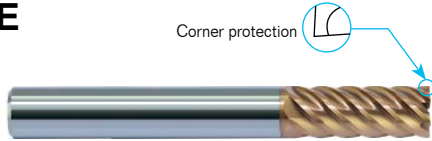


HMX series for machining high hardness steel

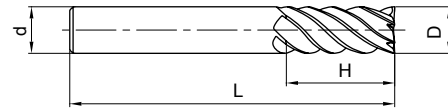
6-flute flattened end mills with straight shank



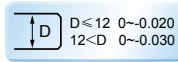
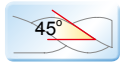
HMX-6E



Corner protection



- High tool rigidity reduce tool deflection in side milling.
- Very suitable for high speed cutting and dry cutting.



Ordering number	Basic dimension(mm)				Number of teeth Z	Stock
	D	d	H	L		
HMX-6E-D6.0	6.0	6	18	60	6	●
HMX-6E-D8.0	8.0	8	20	60	6	●
HMX-6E-D10.0	10.0	10	30	75	6	●
HMX-6E-D12.0	12.0	12	32	75	6	●
HMX-6E-D16.0	16.0	16	40	100	6	●
HMX-6E-D20.0	20.0	20	45	100	6	●

● Stock available ○ Make-to-order

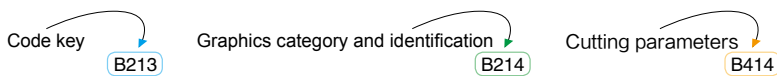
Indexable milling tools

Solid carbide end mills

HMX 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						
			○	●	●		○				



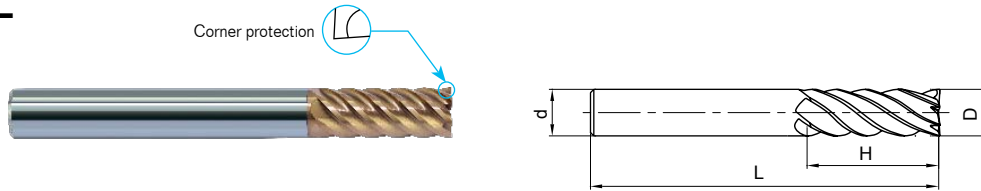
B MILLING Solid Carbide End Mills

HMX series for machining high hardness steel

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



HMX-6EL



● HM-6E series with long cutting edge.



Ordering number	Basic dimension(mm)				Number of teeth Z	Stock
	D	d	H	L		
HMX-6EL-D6.0	6.0	6	24	75	6	●
HMX-6EL-D8.0	8.0	8	32	75	6	●
HMX-6EL-D10.0	10.0	10	40	100	6	●
HMX-6EL-D12.0	12.0	12	45	100	6	●
HMX-6EL-D16.0	16.0	16	64	150	6	●
HMX-6EL-D20.0	20.0	20	75	150	6	●

● Stock available ○ Make-to-order

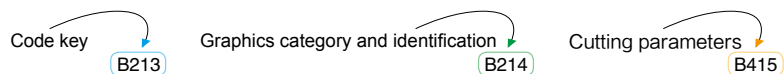
Indexable milling tools

Solid carbide end mills

HMX 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						
			○	●	●		○				



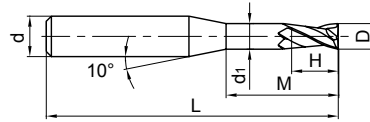
HMX series for machining high hardness steel

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

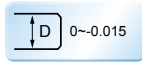
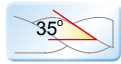


Deep flattened slot

HMX-2EP



- Suitable for narrow slot milling or milling of fine parts that could generate interference.



Ordering number	Basic dimension(mm)						Number of teeth Z	Stock
	D	d	H	M	d ₁	L		
HMX-2EP-D0.5-M04	0.5	4	0.7	4	0.45	50	2	●
HMX-2EP-D0.5-M06	0.5	4	0.7	6	0.45	50	2	●
HMX-2EP-D0.5-M08	0.5	4	0.7	8	0.45	50	2	●
HMX-2EP-D0.8-M04	0.8	4	1.2	4	0.75	50	2	●
HMX-2EP-D0.8-M06	0.8	4	1.2	6	0.75	50	2	●
HMX-2EP-D0.8-M08	0.8	4	1.2	8	0.75	50	2	●
HMX-2EP-D0.8-M10	0.8	4	1.2	10	0.75	50	2	●
HMX-2EP-D1.0-M04	1.0	4	1.5	4	0.95	50	2	●
HMX-2EP-D1.0-M06	1.0	4	1.5	6	0.95	50	2	●
HMX-2EP-D1.0-M08	1.0	4	1.5	8	0.95	50	2	●
HMX-2EP-D1.0-M10	1.0	4	1.5	10	0.95	50	2	●
HMX-2EP-D1.0-M12	1.0	4	1.5	12	0.95	50	2	●
HMX-2EP-D1.0-M14	1.0	4	1.5	14	0.95	50	2	●
HMX-2EP-D1.2-M06	1.2	4	1.8	6	1.15	50	2	●
HMX-2EP-D1.2-M08	1.2	4	1.8	8	1.15	50	2	●
HMX-2EP-D1.2-M10	1.2	4	1.8	10	1.15	50	2	●
HMX-2EP-D1.2-M12	1.2	4	1.8	12	1.15	50	2	●
HMX-2EP-D1.5-M06	1.5	4	2.3	6	1.45	50	2	●
HMX-2EP-D1.5-M08	1.5	4	2.3	8	1.45	50	2	●
HMX-2EP-D1.5-M10	1.5	4	2.3	10	1.45	50	2	●
HMX-2EP-D1.5-M12	1.5	4	2.3	12	1.45	50	2	●
HMX-2EP-D1.5-M14	1.5	4	2.3	14	1.45	50	2	●
HMX-2EP-D2.0-M06	2.0	4	3.0	6	1.95	50	2	●
HMX-2EP-D2.0-M08	2.0	4	3.0	8	1.95	50	2	●
HMX-2EP-D2.0-M10	2.0	4	3.0	10	1.95	50	2	●
HMX-2EP-D2.0-M12	2.0	4	3.0	12	1.95	50	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

B213

Graphics category and identification

B214

Cutting parameters

B416-B417

B MILLING Solid Carbide End Mills

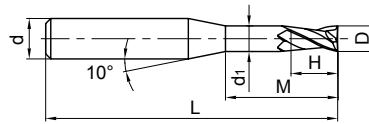
HMX series for machining high hardness steel

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

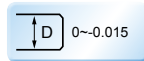
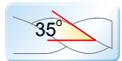


Deep flattened slot

HMX-2EP



- Suitable for narrow slot milling or milling of fine parts that could generate interference.



Ordering number	Basic dimension(mm)						Number of teeth Z	Stock
	D	d	H	M	d ₁	L		
HMX-2EP-D2.0-M14	2.0	4	3.0	14	1.95	50	2	●
HMX-2EP-D2.0-M16	2.0	4	3.0	16	1.95	50	2	●
HMX-2EP-D2.5-M08	2.5	4	3.7	8	2.4	50	2	●
HMX-2EP-D2.5-M10	2.5	4	3.7	10	2.4	50	2	●
HMX-2EP-D2.5-M12	2.5	4	3.7	12	2.4	50	2	●
HMX-2EP-D2.5-M14	2.5	4	3.7	14	2.4	50	2	●
HMX-2EP-D2.5-M16	2.5	4	3.7	16	2.4	60	2	●
HMX-2EP-D2.5-M18	2.5	4	3.7	18	2.4	60	2	●
HMX-2EP-D2.5-M20	2.5	4	3.7	20	2.4	60	2	●
HMX-2EP-D3.0-M06	3.0	6	4.5	6	2.85	50	2	●
HMX-2EP-D3.0-M08	3.0	6	4.5	8	2.85	50	2	●
HMX-2EP-D3.0-M10	3.0	6	4.5	10	2.85	50	2	●
HMX-2EP-D3.0-M12	3.0	6	4.5	12	2.85	50	2	●
HMX-2EP-D3.0-M14	3.0	6	4.5	14	2.85	60	2	●
HMX-2EP-D3.0-M16	3.0	6	4.5	16	2.85	60	2	●
HMX-2EP-D3.0-M18	3.0	6	4.5	18	2.85	60	2	●
HMX-2EP-D3.0-M20	3.0	6	4.5	20	2.85	60	2	●
HMX-2EP-D4.0-M12	4.0	6	6.0	12	3.85	60	2	●
HMX-2EP-D4.0-M16	4.0	6	6.0	16	3.85	60	2	●
HMX-2EP-D4.0-M20	4.0	6	6.0	20	3.85	60	2	●
HMX-2EP-D4.0-M25	4.0	6	6.0	25	3.85	60	2	●
HMX-2EP-D5.0-M16	5.0	6	7.5	16	4.85	60	2	●
HMX-2EP-D5.0-M25	5.0	6	7.5	25	4.85	70	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

B213

Graphics category and identification

B214

Cutting parameters

B416-B417

HMX series for machining high hardness steel

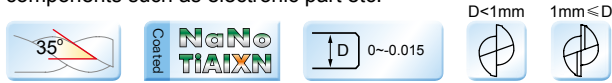
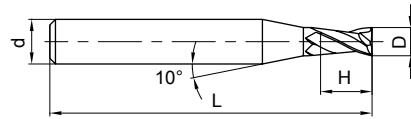
2-flute flattened end mills with straight shank and tiny diameter



HMX-2ES



● Tiny diameter end mills can fully display high speed and high precision performances of machining center, often used for machining of precision components such as electronic part etc.



Ordering number	Basic dimension(mm)				Number of teeth Z	Stock
	D	d	H	L		
HMX-2ES-D0.3	0.3	4	0.6	50	2	●
HMX-2ES-D0.4	0.4	4	0.8	50	2	●
HMX-2ES-D0.5	0.5	4	1.0	50	2	●
HMX-2ES-D0.6	0.6	4	1.2	50	2	●
HMX-2ES-D0.7	0.7	4	1.4	50	2	●
HMX-2ES-D0.8	0.8	4	1.6	50	2	●
HMX-2ES-D0.9	0.9	4	1.8	50	2	●
HMX-2ES-D1.0	1.0	4	2.0	50	2	●
HMX-2ES-D1.1	1.1	4	2.0	50	2	●
HMX-2ES-D1.2	1.2	4	2.5	50	2	●
HMX-2ES-D1.3	1.3	4	2.5	50	2	●
HMX-2ES-D1.4	1.4	4	3.0	50	2	●
HMX-2ES-D1.5	1.5	4	3.0	50	2	●
HMX-2ES-D1.6	1.6	4	3.5	50	2	●
HMX-2ES-D1.7	1.7	4	3.5	50	2	●
HMX-2ES-D1.8	1.8	4	4.0	50	2	●
HMX-2ES-D1.9	1.9	4	4.0	50	2	●
HMX-2ES-D2.0	2.0	4	4.0	50	2	●
HMX-2ES-D2.1	2.1	4	4.0	50	2	●
HMX-2ES-D2.2	2.2	4	4.5	50	2	●
HMX-2ES-D2.3	2.3	4	4.5	50	2	●
HMX-2ES-D2.4	2.4	4	5.0	50	2	●
HMX-2ES-D2.5	2.5	4	5.0	50	2	●
HMX-2ES-D2.6	2.6	4	5.0	50	2	●
HMX-2ES-D2.7	2.7	4	5.5	50	2	●
HMX-2ES-D2.8	2.8	4	5.5	50	2	●
HMX-2ES-D2.9	2.9	4	6.0	50	2	●
HMX-2ES-D3.0	3.0	4	6.0	50	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 B213 Graphics category and identification B214 Cutting parameters B418

Indexable milling tools
Solid carbide end mills
HMX series

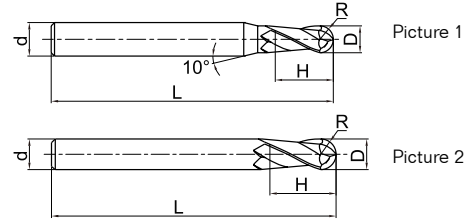
B MILLING Solid Carbide End Mills

HMX series for machining high hardness steel

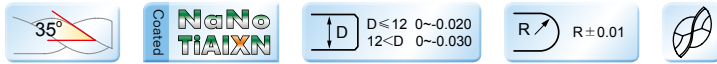
2-flute ball nose end mills with straight shank



HMX-2B



- For profile milling.
- Very suitable for high speed cutting and dry cutting.



Ordering number	Basic dimension(mm)					Number of teeth Z	Geometry	Stock
	D	R	d	H	L			
HMX-2B-R0.5S	1.0	0.5	4	2	50	2	Picture 1	●
HMX-2B-R0.75S	1.5	0.75	4	3	50	2	Picture 1	●
HMX-2B-R1.0S	2.0	1.0	4	4	50	2	Picture 1	●
HMX-2B-R1.25S	2.5	1.25	4	5	50	2	Picture 1	●
HMX-2B-R1.5S	3.0	1.5	4	6	50	2	Picture 1	●
HMX-2B-R2.0S	4.0	2.0	4	8	50	2	Picture 2	●
HMX-2B-R0.5	1.0	0.5	6	2	50	2	Picture 1	●
HMX-2B-R0.75	1.5	0.75	6	3	50	2	Picture 1	●
HMX-2B-R1.0	2.0	1.0	6	4	50	2	Picture 1	●
HMX-2B-R1.25	2.5	1.25	6	5	50	2	Picture 1	●
HMX-2B-R1.5	3.0	1.5	6	6	50	2	Picture 1	●
HMX-2B-R1.75	3.5	1.75	6	8	50	2	Picture 1	●
HMX-2B-R2.0	4.0	2.0	6	8	50	2	Picture 1	●
HMX-2B-R2.5	5.0	2.5	6	10	50	2	Picture 1	●
HMX-2B-R2.75	5.5	2.75	6	12	50	2	Picture 1	●
HMX-2B-R3.0	6.0	3.0	6	12	50	2	Picture 2	●
HMX-2B-R3.5	7.0	3.5	8	14	60	2	Picture 1	●
HMX-2B-R4.0	8.0	4.0	8	16	60	2	Picture 2	●
HMX-2B-R4.5	9.0	4.5	10	18	75	2	Picture 1	●
HMX-2B-R5.0	10.0	5.0	10	20	75	2	Picture 2	●
HMX-2B-R6.0	12.0	6.0	12	24	75	2	Picture 2	●
HMX-2B-R7.0	14.0	7.0	14	28	75	2	Picture 2	●
HMX-2B-R8.0	16.0	8.0	16	32	100	2	Picture 2	●
HMX-2B-R10.0	20.0	10.0	20	40	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	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
			○	●	●		○				

Code key

B213

Graphics category and identification

B214

Cutting parameters

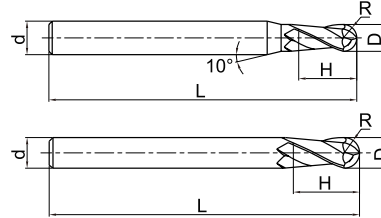
B419

HMX series for machining high hardness steel

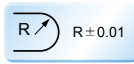
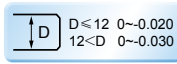
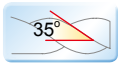
2-flute ball nose end mills with straight shank



HMX-2BL



● HM-2B series with long shank.



Ordering number	Basic dimension(mm)					Number of teeth Z	Geometry	Stock
	D	R	d	H	L			
HMX-2BL-R1.0	2.0	1.0	6	4	75	2	Picture 1	●
HMX-2BL-R1.25	2.5	1.25	6	6	75	2	Picture 1	●
HMX-2BL-R1.5	3.0	1.5	6	6	75	2	Picture 1	●
HMX-2BL-R1.75	3.5	1.75	6	8	75	2	Picture 1	●
HMX-2BL-R2.0	4.0	2.0	6	8	75	2	Picture 1	●
HMX-2BL-R2.5	5.0	2.5	6	10	75	2	Picture 1	●
HMX-2BL-R2.75	5.5	2.75	6	12	75	2	Picture 1	●
HMX-2BL-R3.0	6.0	3.0	6	12	75	2	Picture 2	●
HMX-2BL-R3.5	7.0	3.5	8	14	75	2	Picture 1	●
HMX-2BL-R4.0	8.0	4.0	8	16	100	2	Picture 2	●
HMX-2BL-R4.5	9.0	4.5	10	18	100	2	Picture 1	●
HMX-2BL-R5.0	10.0	5.0	10	20	100	2	Picture 2	●
HMX-2BL-R6.0	12.0	6.0	12	24	100	2	Picture 2	●
HMX-2BL-R7.0	14.0	7.0	14	28	100	2	Picture 2	●
HMX-2BL-R8.0	16.0	8.0	16	32	150	2	Picture 2	●
HMX-2BL-R10.0	20.0	10.0	20	40	150	2	Picture 2	●

● Stock available ○ Make-to-order

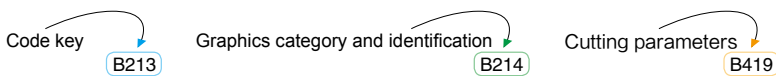
Indexable milling tools

Solid carbide end mills

HMX 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						
			○	○	○		○				



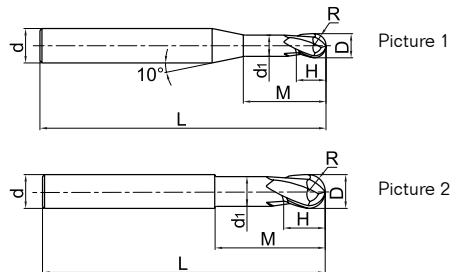
B MILLING Solid Carbide End Mills

HMX series for machining high hardness steel

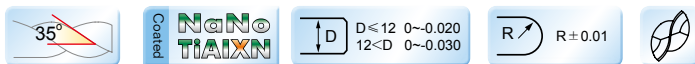
2-flute ball nose end mills with straight shank, long neck and short cutting edge



HMX-2BFP



- Short cutting edge and high rigidity designed, applicable for heavy cutting.



Ordering number	Basic dimension(mm)							Number of teeth Z	Geometry	Stock
	D	R	H	d ₁	M	d	L			
HMX-2BFP-R0.5	1.0	0.5	1	0.95	2.5	6	75	2	Picture 1	●
HMX-2BFP-R0.75	1.5	0.75	1.5	1.45	3	6	75	2	Picture 1	●
HMX-2BFP-R1.0	2.0	1.0	2	1.95	4	6	75	2	Picture 1	●
HMX-2BFP-R1.5	3.0	1.5	3	2.85	6	6	75	2	Picture 1	●
HMX-2BFP-R2.0	4.0	2.0	4	3.85	8	6	75	2	Picture 1	●
HMX-2BFP-R2.5	5.0	2.5	5	4.85	10	6	75	2	Picture 1	●
HMX-2BFP-R3.0	6.0	3.0	6	5.8	12	6	75	2	Picture 2	●
HMX-2BFP-R4.0	8.0	4.0	8	7.8	16	8	100	2	Picture 2	●
HMX-2BFP-R5.0	10.0	5.0	10	9.6	20	10	100	2	Picture 2	●
HMX-2BFP-R6.0	12.0	6.0	12	11.5	24	12	100	2	Picture 2	●
HMX-2BFP-R8.0	16.0	8.0	16	15.5	32	16	150	2	Picture 2	●
HMX-2BFP-R10.0	20.0	10.0	20	19.5	40	20	150	2	Picture 2	●

● Stock available ○ Make-to-order

Indexable milling tools

Solid carbide end mills

HMX 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 B213 Graphics category and identification B214 Cutting parameters B419

HMX series for machining high hardness steel

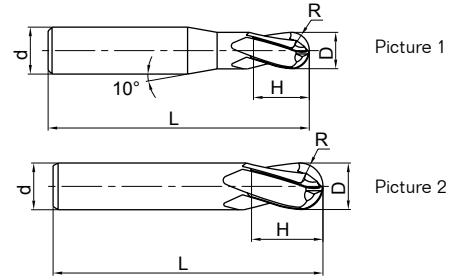
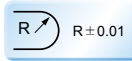
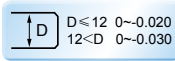
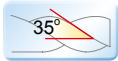
4-flute ball nose end mills with straight shank



HMX-4B



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



Ordering number	Basic dimension(mm)					Number of teeth Z	Geometry	Stock
	D	R	d	H	L			
HMX-4B-R1.5	3.0	1.5	6	6	50	4	Picture 1	●
HMX-4B-R2.0	4.0	2.0	6	8	50	4	Picture 1	●
HMX-4B-R2.5	5.0	2.5	6	10	50	4	Picture 1	●
HMX-4B-R3.0	6.0	3.0	6	12	50	4	Picture 2	●
HMX-4B-R4.0	8.0	4.0	8	16	60	4	Picture 2	●
HMX-4B-R5.0	10.0	5.0	10	20	75	4	Picture 2	●
HMX-4B-R6.0	12.0	6.0	12	24	75	4	Picture 2	●
HMX-4B-R7.0	14.0	7.0	14	28	75	4	Picture 2	●
HMX-4B-R8.0	16.0	8.0	16	32	100	4	Picture 2	●
HMX-4B-R9.0	18.0	9.0	18	36	100	4	Picture 2	●
HMX-4B-R10.0	20.0	10.0	20	40	100	4	Picture 2	●

● Stock available ○ Make-to-order

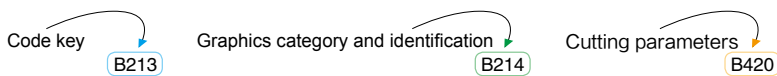
Indexable milling tools

Solid carbide end mills

HMX 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						
			○	○	○		○				



B MILLING Solid Carbide End Mills

HMX series for machining high hardness steel

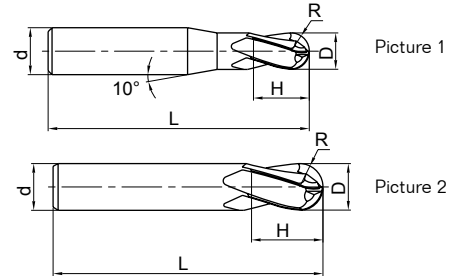
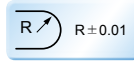
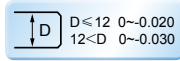
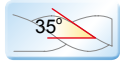
4-flute ball nose end mills with straight and long shank



HMX-4BL



- HMX-4B series with long shank.



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

● Stock available ○ Make-to-order

Indexable milling tools

Solid carbide end mills

HMX 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

B213

Graphics category and identification

B214

Cutting parameters

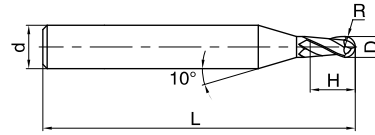
B420

HMX series for machining high hardness steel

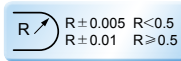
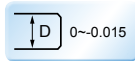
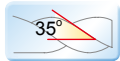
2-flute tiny ball nose end mills with straight shank



HMX-2BS



● Tiny diameter end mills can fully display high speed and high precision performances of machining center, often used for machining of precision components such as electronic part etc..



Ordering number	Basic dimension(mm)					Number of teeth Z	Stock
	D	R	d	H	L		
HMX-2BS-R0.15	0.30	0.15	4	0.5	50	2	●
HMX-2BS-R0.20	0.40	0.20	4	0.6	50	2	●
HMX-2BS-R0.25	0.50	0.25	4	0.8	50	2	●
HMX-2BS-R0.30	0.60	0.30	4	0.9	50	2	●
HMX-2BS-R0.35	0.70	0.35	4	1.0	50	2	●
HMX-2BS-R0.40	0.80	0.40	4	1.2	50	2	●
HMX-2BS-R0.45	0.90	0.45	4	1.3	50	2	●
HMX-2BS-R0.50	1.00	0.50	4	1.5	50	2	●
HMX-2BS-R0.60	1.20	0.60	4	1.8	50	2	●
HMX-2BS-R0.70	1.40	0.70	4	2.0	50	2	●
HMX-2BS-R0.75	1.50	0.75	4	2.3	50	2	●
HMX-2BS-R0.80	1.60	0.80	4	2.5	50	2	●
HMX-2BS-R0.90	1.80	0.90	4	2.7	50	2	●
HMX-2BS-R1.00	2.00	1.00	4	3.0	50	2	●
HMX-2BS-R1.25	2.50	1.25	4	3.7	50	2	●
HMX-2BS-R1.50	3.00	1.50	4	4.5	50	2	●

● Stock available ○ Make-to-order

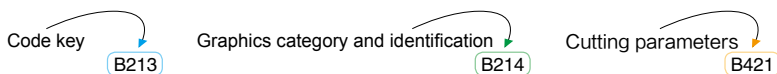
Indexable milling tools

Solid carbide end mills

HMX series

Applicable workpiece material table ● Very suitable ○ Suitable

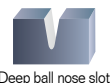
Workpiece material											
Carbon steel	Alloy steel	Pre-hardened steel, Hardened steel				Stainless steel	Cast iron, Nodular cast iron	Copper alloy	Aluminum alloy	Titanium alloy	Heat resistant alloy
		~40HRC	~50HRC	~55HRC	~68HRC						
			○	●	●		○				



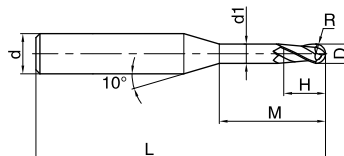
B MILLING Solid Carbide End Mills

HMX series for machining high hardness steel

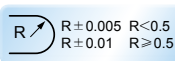
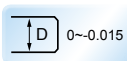
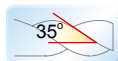
2-flute ball nose end mills with straight shank, long neck and short cutting edge



HMX-2BP



- Applicable for machining narrow slot and free-form surface.



Ordering number	Basic dimension(mm)							Number of teeth Z	Stock
	D	R	H	d ₁	M	d	L		
HMX-2BP-R0.25-M04	0.5	0.25	0.7	0.45	4	4	50	2	●
HMX-2BP-R0.25-M06	0.5	0.25	0.7	0.45	6	4	50	2	●
HMX-2BP-R0.3-M04	0.6	0.3	0.9	0.55	4	4	50	2	●
HMX-2BP-R0.3-M06	0.6	0.3	0.9	0.55	6	4	50	2	●
HMX-2BP-R0.3-M08	0.6	0.3	0.9	0.55	8	4	50	2	●
HMX-2BP-R0.4-M04	0.8	0.4	1.2	0.75	4	4	50	2	●
HMX-2BP-R0.4-M06	0.8	0.4	1.2	0.75	6	4	50	2	●
HMX-2BP-R0.4-M08	0.8	0.4	1.2	0.75	8	4	50	2	●
HMX-2BP-R0.4-M10	0.8	0.4	1.2	0.75	10	4	50	2	●
HMX-2BP-R0.5-M04	1.0	0.5	1.5	0.95	4	4	50	2	●
HMX-2BP-R0.5-M06	1.0	0.5	1.5	0.95	6	4	50	2	●
HMX-2BP-R0.5-M08	1.0	0.5	1.5	0.95	8	4	50	2	●
HMX-2BP-R0.5-M10	1.0	0.5	1.5	0.95	10	4	50	2	●
HMX-2BP-R0.5-M12	1.0	0.5	1.5	0.95	12	4	50	2	●
HMX-2BP-R0.6-M06	1.2	0.6	1.8	1.15	6	4	50	2	●
HMX-2BP-R0.6-M08	1.2	0.6	1.8	1.15	8	4	50	2	●
HMX-2BP-R0.6-M12	1.2	0.6	1.8	1.15	12	4	50	2	●
HMX-2BP-R0.6-M16	1.2	0.6	1.8	1.15	16	4	50	2	●
HMX-2BP-R0.75-M08	1.5	0.75	2.3	1.45	8	4	50	2	●
HMX-2BP-R0.75-M12	1.5	0.75	2.3	1.45	12	4	50	2	●
HMX-2BP-R0.75-M16	1.5	0.75	2.3	1.45	16	4	50	2	●
HMX-2BP-R1.0-M06	2.0	1.0	3.0	1.95	6	4	50	2	●
HMX-2BP-R1.0-M08	2.0	1.0	3.0	1.95	8	4	50	2	●
HMX-2BP-R1.0-M10	2.0	1.0	3.0	1.95	10	4	50	2	●
HMX-2BP-R1.0-M12	2.0	1.0	3.0	1.95	12	4	50	2	●
HMX-2BP-R1.0-M16	2.0	1.0	3.0	1.95	16	4	50	2	●
HMX-2BP-R1.0-M20	2.0	1.0	3.0	1.95	20	4	50	2	●
HMX-2BP-R1.25-M08	2.5	1.25	3.7	2.4	8	4	50	2	●
HMX-2BP-R1.25-M12	2.5	1.25	3.7	2.4	12	4	50	2	●
HMX-2BP-R1.25-M16	2.5	1.25	3.7	2.4	16	4	60	2	●
HMX-2BP-R1.25-M20	2.5	1.25	3.7	2.4	20	4	60	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

B213

Graphics category and identification

B214

Cutting parameters

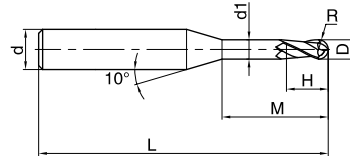
B422-B423

HMX series for machining high hardness steel

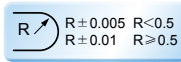
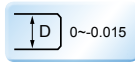
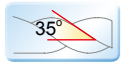
2-flute ball nose end mills with straight shank, long neck and short cutting edge



HMX-2BP



- Applicable for machining narrow slot and free-form surface



Ordering number	Basic dimension(mm)							Number of teeth Z	Stock
	D	R	H	d ₁	M	d	L		
HMX-2BP-R1.5-M08	3.0	1.5	4.5	2.85	8	6	50	2	●
HMX-2BP-R1.5-M10	3.0	1.5	4.5	2.85	10	6	50	2	●
HMX-2BP-R1.5-M12	3.0	1.5	4.5	2.85	12	6	50	2	●
HMX-2BP-R1.5-M16	3.0	1.5	4.5	2.85	16	6	60	2	●
HMX-2BP-R1.5-M20	3.0	1.5	4.5	2.85	20	6	60	2	●
HMX-2BP-R2.0-M10	4.0	2.0	6.0	3.85	10	6	60	2	●
HMX-2BP-R2.0-M16	4.0	2.0	6.0	3.85	16	6	60	2	●
HMX-2BP-R2.0-M20	4.0	2.0	6.0	3.85	20	6	60	2	●
HMX-2BP-R2.0-M25	4.0	2.0	6.0	3.85	25	6	60	2	●
HMX-2BP-R2.5-M16	5.0	2.5	7.5	4.85	16	6	60	2	●
HMX-2BP-R2.5-M25	5.0	2.5	7.5	4.85	25	6	70	2	●

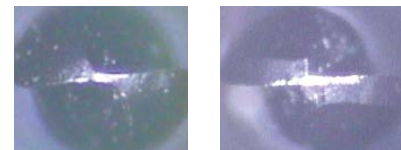
● Stock available ○ Make-to-order

Tool type: HM-2BP-R0.3-M08
 Dimensions: R0.3mm
 Workpiece material: S136(52HRC)
 Rotating speed: 30000r/min
 Feed speed: 200mm/min
 Axial cutting depth: $a_p=0.02\text{mm}$
 Radial cutting depth: $a_e=0.04\text{mm}$
 Cutting style: contour machining (mould of car light)
 Cooling system: air blow
 Machine tool: MIKRON HSM 800



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

Abrasion condition



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 **B213** Graphics category and identification **B214** Cutting parameters **B422-B423**

Indexable milling tools
Solid carbide end mills
HMX series

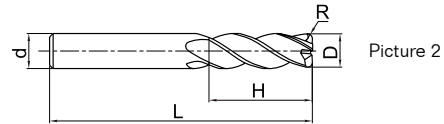
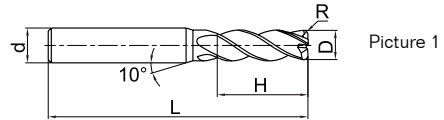
B MILLING Solid Carbide End Mills

HMX series for machining high hardness steel

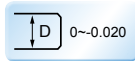
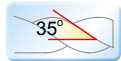
4-flute R end mills with straight shank



HMX-4R



- Wide applications, applicable for several machining conditions.



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

● Stock available ○ Make-to-order

Indexable
milling tools

Solid carbide
end mills

HMX 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

B213

Graphics category and identification

B214

Cutting parameters

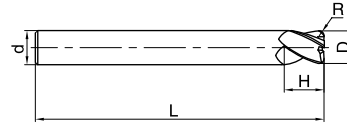
B424

HMX series for machining high hardness steel

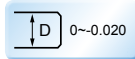
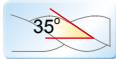
4-flute R end mills with straight shank and short cutting edge



HMX-4RF



- High-rigidity short edge design, for cutting with high feed rate at high speed.



Ordering number	Basic dimension(mm)					Number of teeth Z	Stock
	D	R	d	H	L		
HMX-4RF-D6.0R0.5	6.0	0.5	6	6	50	4	●
HMX-4RF-D6.0R1.0	6.0	1.0	6	6	50	4	●
HMX-4RF-D8.0R0.5	8.0	0.5	8	8	60	4	●
HMX-4RF-D8.0R1.0	8.0	1.0	8	8	60	4	●
HMX-4RF-10.0R0.5	10.0	0.5	10	10	75	4	●
HMX-4RF-D10.0R1.0	10.0	1.0	10	10	75	4	●
HMX-4RF-D10.0R2.0	10.0	2.0	10	10	75	4	●
HMX-4RF-D12.0R0.5	12.0	0.5	12	12	75	4	●
HMX-4RF-D12.0R1.0	12.0	1.0	12	12	75	4	●
HMX-4RF-D12.0R2.0	12.0	2.0	12	12	75	4	●

● Stock available ○ Make-to-order

Indexable milling tools

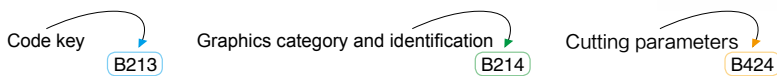
Solid carbide end mills

HMX 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						
			○	●	●		○				



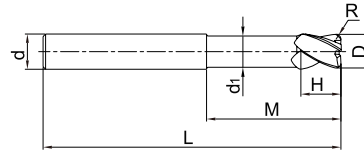
B MILLING Solid Carbide End Mills

HMX series for machining high hardness steel

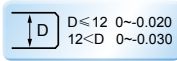
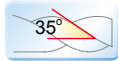
4-flute R end mills with straight shank, long neck and short cutting edge



HMX-4RP



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



Ordering number	Basic dimension(mm)							Number of teeth Z	Stock
	D	R	d	d ₁	H	M	L		
HMX-4RP-D6.0R0.5	6.0	0.5	6	5.8	6	18	75	4	●
HMX-4RP-D6.0R1.0	6.0	1.0	6	5.8	6	18	75	4	●
HMX-4RP-D8.0R0.5	8.0	0.5	8	7.8	8	24	100	4	●
HMX-4RP-D8.0R1.0	8.0	1.0	8	7.8	8	24	100	4	●
HMX-4RP-10.0R0.5	10.0	0.5	10	9.6	10	30	100	4	●
HMX-4RP-10.0R1.0	10.0	1.0	10	9.6	10	30	100	4	●
HMX-4RP-10.0R2.0	10.0	2.0	10	9.6	10	30	100	4	●
HMX-4RP-12.0R0.5	12.0	0.5	12	11.5	12	36	100	4	●
HMX-4RP-12.0R1.0	12.0	1.0	12	11.5	12	36	100	4	●
HMX-4RP-12.0R2.0	12.0	2.0	12	11.5	12	36	100	4	●
HMX-4RP-D16.0R1.0	16.0	1.0	16	15.5	16	40	150	4	●
HMX-4RP-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

HMX 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

B213

Graphics category and identification

B214

Cutting parameters

B424