

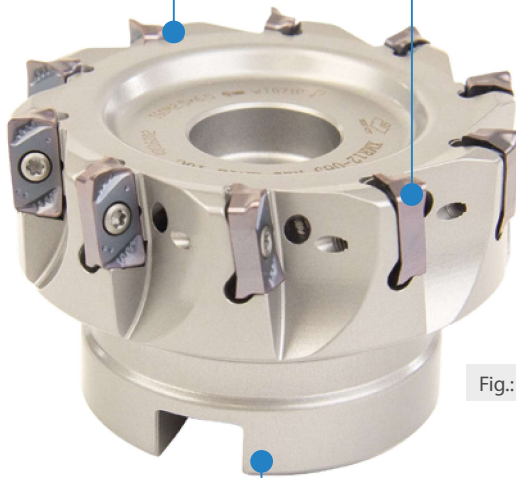
XMR12 high-feed milling system

Maximum chip removal rates coupled with minimum machining times

YOUR BENEFITS

- Double-sided inserts for **greater efficiency** and **stability**
- Finer pitch for **higher productivity**
- Top results when working with **steel** and **cast materials**
- Positive cutting geometry for **lower cutting forces**
- **Wide range of applications** (e.g., face milling, grooving, ramping)
- Available as an end mill, a shell-type milling cutter or an indexable head

Higher feed rates possible thanks to large number of insert seats available



Thicker inserts for increased process reliability



Fig.: XMR12-063-A22-EN12-10C

Fig.: QCH-25-EN12-M12-04-XMR12

Diameter range 16 – 63 mm



Insert grades



PVD
P10 – P30
M20 – M40

Chip breaker

ENMX-GM



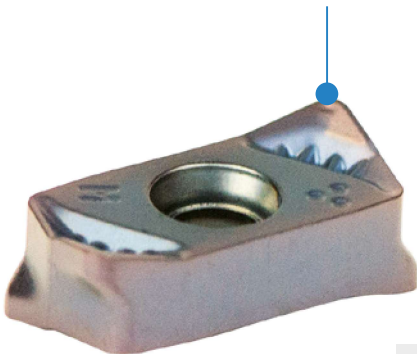
General machining

ENMX-XR



High-feed machining

Four-edged inserts for **high efficiency**



Low cutting forces thanks
to positive cutting edge design



Fig.: ENMX-120608-GM YBG205H

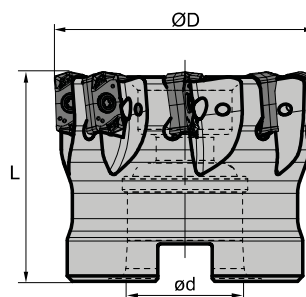
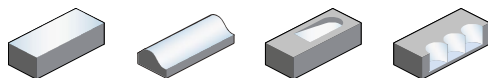


A

Turning

High-feed milling

XMR12 Kr: 18°



B

Milling

Article	*	Stock	Dimensions [mm]			Teeth	Coupling	kg	Insert
			ØD	ød	L				
XMR12-040-A16-EN12-06C	*	●	40	16	40	6	A	0,204	ENMX1206**
XMR12-050-A22-EN12-08C	*	●	50	22	50	8	A	0,336	
XMR12-063-A22-EN12-10C	*	●	63	22	50	10	A		

● Ex stock ○ On demand

* With internal cooling

C

Drilling

Spare parts			
	Insert	ENMX1206**	
	ØD	32-80	
	Screw	I60M2,5x6,5 (1,0Nm)	
	Wrench	WT07IP	

D

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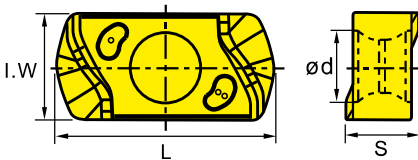
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Milling inserts

-  Ideal machining conditions
-  Normal machining conditions
-  Unfavourable machining conditions

ENMX	L	S	d
12 06	12	3	2,88

EN** milling inserts				HC ¹ (CVD)												HC ¹ (PVD)								HT	HC ²	HW							
				P																													
				M																													
				K																													
				N																													
				S																													
				H																													
ISO				r	I.W	a _p max	YBC302	YBC301	YBC401	YBM253	YBM251	YBM351	YBD152	YBD252	YBD203	YBH053	YBG101	YBG102	YBG202	YBG212	YBS203	YBG205	YBG205H	YB9320	YBG302	YBS303	YBG252	YNG151	YNG151C	YD101	YD201		
	ENMX120608-GM	0,8	6	2,8																													
	ENMX1206R30-GM	3	6	2,8																													
	ENMX1206XR-GM	0,6	6	0,6																													

● Ex stock ○ On demand

HC¹ Coated carbide
HT Uncoated cermet
HC² Coated cermet
HW Uncoated carbide

For **ENMX120608** and **ENMX1206R30** the diameter changes [ØD] -0.4mm / [L1] +0.11mm.

A

Turning

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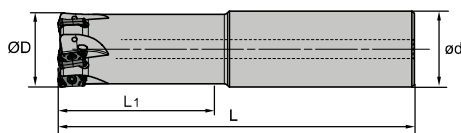
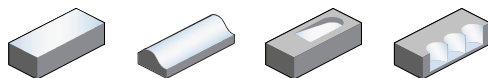


A

Turning

High-feed milling

XMR12 Kr: 18°



B

Milling

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Article	*	Stock	Dimensions [mm]				Teeth	kg	Insert
			ØD	ød	L ₁	L			
XMR12-016-G16-EN12-02C	*	●	16	16	30	100	2	0,13	ENMX1206**
XMR12-017-G16-EN12-02C	*	●	17	16	30	100	2	0,13	
XMR12-018-G16-EN12-02C	*	●	18	16	30	100	2	0,13	
XMR12-020-G20-EN12-03C	*	●	20	20	50	130	3	0,25	
XMR12-022-G20-EN12-03C	*	●	22	20	50	130	3	0,25	
XMR12-025-G25-EN12-04C	*	●	25	25	60	140	4	0,44	
XMR12-028-G25-EN12-04C	*	○	28	25	60	140	4	0,44	
XMR12-032-G32-EN12-05C	*	●	32	32	70	150	5	0,84	
XMR12-035-G32-EN12-05C	*	●	35	32	35	150	5	0,86	

● Ex stock ○ On demand

* With internal cooling

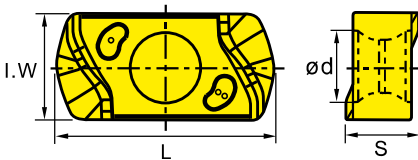
Spare parts			
	Insert	ENMX1206**	
	ØD	12-45	
	Screw	I60M2,5×6,5 (1,0 Nm)	
	Wrench	WT07IP	



Milling inserts

-  Ideal machining conditions
-  Normal machining conditions
-  Unfavourable machining conditions

ENMX	L	S	d
12 06	12	3	2,88

EN** milling inserts				HC ¹ (CVD)								HC ¹ (PVD)								HT	HC ²	HW																																																																																																																																																																																																																																																																																																																																																																											
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● Ex stock ○ On demand

HC¹ Coated carbide
HT Uncoated cermet
HC² Coated cermet
HW Uncoated carbide

For **ENMX120608** and **ENMX1206R30** the diameter changes [ØD] -0.4mm / [L1] +0.11mm.

A

Turning

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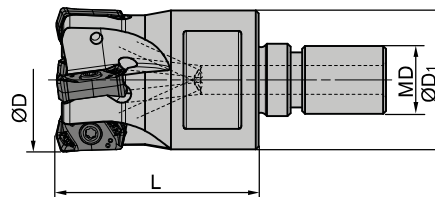
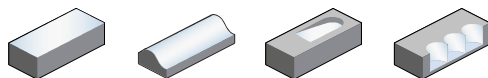


A

Turning

High-feed milling

QCH-EN Kr: 18



B

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Article	*	Stock	Dimensions [mm]				Teeth		Insert
			ØD	ØD ₁	L	MD			
QCH-16-EN12-M8-02-XMR12	*	●	16	13	28	8	2	0,025	 ENMX1206**
QCH-17-EN12-M8-02-XMR12	*	●	17	15	28	8	2		
QCH-18-EN12-M8-02-XMR12	*	●	18	15	28	8	2	0,033	
QCH-20-EN12-M10-03-XMR12	*	●	20	17	30	10	3	0,046	
QCH-22-EN12-M10-03-XMR12	*	●	22	19	30	10	3	0,057	
QCH-25-EN12-M12-04-XMR12	*	●	25	21,6	35	12	4	0,09	
QCH-28-EN12-M12-04-XMR12	*	●	28	21,6	35	12	4	0,104	
QCH-32-EN12-M16-05-XMR12	*	●	32	28	43	16	5	0,199	
QCH-33-EN12-M16-05-XMR12	*	●	33	28	43	16	5		
QCH-40-EN12-M16-06-XMR12	*	●	40	29	40	16	6		

● Ex stock ○ On demand

* With internal cooling

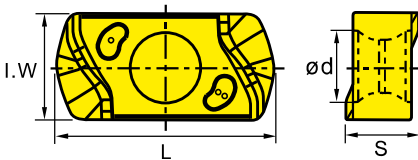
Spare parts			
	Insert	ENMX1206**	
	ØD	16-45	
	Screw	I60M2,5x6,5 (1,0 Nm)	
	Wrench	WT07IP	



Milling inserts

-  Ideal machining conditions
-  Normal machining conditions
-  Unfavourable machining conditions

ENMX	L	S	d
12 06	12	3	2,88

EN** milling inserts				HC ¹ (CVD)									HC ¹ (PVD)									HT	HC ²	HW																																																																																																																																																																																																																																																																																																																																																																										
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● Ex stock ○ On demand

HC¹ Coated carbide
HT Uncoated cermet
HC² Coated cermet
HW Uncoated carbide

For **ENMX120608** and **ENMX1206R30** the diameter changes [ØD] -0.4mm / [L1] +0.11mm.

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Indexable milling – group 7 (XMR01, XMR12, XMP01, QCH)

	Material group	Composition / structure / heat treatment		Brinell hardness HB	Machining group	Starting values for cutting speed v_c [m/min]					
						HC (CVD)					
						YBC302			YBD152		
						a_e / D			a_e / D		
						1/1 3/4	1/5	1/20	1/1 3/4	1/5	1/20
Turning	P	Unalloyed steel	approx. 0,15 % C	annealed	125	1	260	300	390		
			approx. 0,45 % C	annealed	190	2	225	255	335		
			approx. 0,45 % C	tempered	250	3	210	240	315		
			approx. 0,75 % C	annealed	270	4	185	210	275		
			approx. 0,75 % C	tempered	300	5	170	195	255		
	P	Low-alloyed steel		annealed	180	6	225	255	335		
				tempered	275	7	185	210	275		
				tempered	300	8	170	195	255		
				tempered	350	9	145	165	215		
	P	High-alloyed steel and high-alloyed tool steel		annealed	200	10	130	150	195		
				hardened and tempered	325	11	95	105	140		
Milling	M	Stainless steel	ferritic/martensitic	annealed	200	12					
			martensitic	tempered	240	13					
			austenitic	quench hardened	180	14					
			austenitic-ferritic		230	15					
	K	Grey cast iron	perlite/ferritic		180	16			335	390	510
			perlite (martensitic)		260	17			200	230	300
		Cast iron with spheroidal graphite	ferritic		160	18			225	260	340
			perlite		250	19			150	175	230
		Malleable cast iron	ferritic		130	20			275	320	420
			perlite		230	21			185	215	280
Drilling	N	Aluminium wrought alloys	cannot be hardened		60	22					
			hardenable	hardened	100	23					
		Cast aluminium alloys	≤ 12 % Si, cannot be hardened		75	24					
			≤ 12 % Si, hardenable	hardened	90	25					
			> 12 % Si, cannot be hardened		130	26					
		Copper and copper alloys (bronze/brass)	machining steel, PB > 1 %		110	27					
			CuZn, CuSnZn		90	28					
			CuSn, Pb-free copper, electrolytic copper		100	29					
		S	Fe-based alloys	annealed	200	30					
				hardened	280	31					
			Ni or Co base	annealed	250	32					
				hardened	350	33					
				cast	320	34					
Technical Information	S	Titanium alloys	pure titanium		R _m 400	35					
			α and β alloys	hardened	R _m 1050	36					
	H	Hardened steel		hardened and tempered	55 HRC	37					
				hardened and tempered	60 HRC	38					
		Hard cast iron		cast	400	39					
				hardened and tempered	55 HRC	40					
	X	Non-metallic materials	Thermoplasts			41					
			Thermosetting plastics			42					
			Plastic, glass-fibre reinforced GFRP			43					
			Plastic, carbon fibre reinforced CFRP			44					
			Graphite			45					
			Wood			46					

Note: The given cutting values are guide values, which were determined under ideal conditions.
The values have to be adapted in individual cases.
Feed rate recommendations on page B254.
For examples of material for cutting tool groups view page D11.



A

Recommended feed rate

Indexable milling – group7 (XMR01, XMR12, XMP01, QCH)

Material group		Feed rate per cutting edge [mm]									
		XMR01 face milling			XMR01 plunge milling			XMR01 circular milling			
		SDMT/WPGT			SDMT/WPGT			SDMT/WPGT			
		Tool diameter [mm]									
		20–25	30–50	63–160	20–25	30–50	63–160	20–25	30–50	63–160	
P	Unalloyed steel	1,00	1,20	2,00	0,20	0,25	0,30	0,80	0,96	1,40	
	Low-alloyed steel	0,93	1,12	1,86	0,19	0,23	0,28	0,74	0,89	1,30	
	High-alloyed steel and high-alloyed tool steel	0,70	0,84	1,40	0,18	0,22	0,26	0,70	0,84	1,23	
M	Stainless steel	0,50	0,60	1,00	0,14	0,18	0,21	0,56	0,67	0,98	
K	Grey cast iron	0,90	1,08	1,80	0,22	0,28	0,33	0,88	1,06	1,54	
	Cast iron with spheroidal graphite	0,90	1,08	1,80	0,20	0,25	0,30	0,80	0,96	1,40	
	Malleable cast iron	1,00	1,20	2,00	0,20	0,25	0,30	0,80	0,96	1,40	
N	Aluminium wrought alloys										
	Aluminum cast alloys										
	Copper and copper alloys (bronze/brass)										
S	Heat-resistant alloys										
	Titanium alloys										
H	Hardened steel										
	Hard cast iron										
	Hardened cast iron										
X	Non-metallic materials										

Note: The given cutting values are guide values, which were determined under ideal conditions.
The values have to be adapted in individual cases.

B

Milling

C

Drilling

Indexable milling – group7 (XMR01, XMR12, XMP01, QCH)

	Material group	Feed rate per cutting edge [mm]							
		XMP01	QCH	QCH	QCH	QCH	QCH	QCH	
		CNE	ZOHX	RD*	APKT	WPGT	SDMT	XPHT	ENMX
		Tool diameter [mm]							
		80–400	16–32	15–32	16–40	20–42	20–40	16–32	16–40
P	Unalloyed steel	0,20	0,20	0,20	0,15	1,00	1,00	0,20	1,00
	Low-alloyed steel	0,20	0,19	0,19	0,14	0,93	0,93	0,19	0,93
	High-alloyed steel and high-alloyed tool steel	0,20	0,18	0,18	0,13	0,70	0,70	0,18	0,70
M	Stainless steel	0,20	0,14	0,14	0,11	0,50	0,50	0,14	0,50
K	Grey cast iron	0,20	0,22	0,22	0,17	0,90	0,90	0,22	0,90
	Cast iron with spheroidal graphite	0,20	0,20	0,20	0,15	0,90	0,90	0,20	0,90
	Malleable cast iron	0,20	0,20	0,20	0,15	1,00	1,00	0,20	1,00
N	Aluminium wrought alloys				0,13				
	Aluminum cast alloys				0,13				
	Copper and copper alloys (bronze/brass)				0,11				
S	Heat-resistant alloys								
	Titanium alloys								
H	Hardened steel								
	Hard cast iron								
	Hardened cast iron								
X	Non-metallic materials								

Note: The given cutting values are guide values, which were determined under ideal conditions.
The values have to be adapted in individual cases.

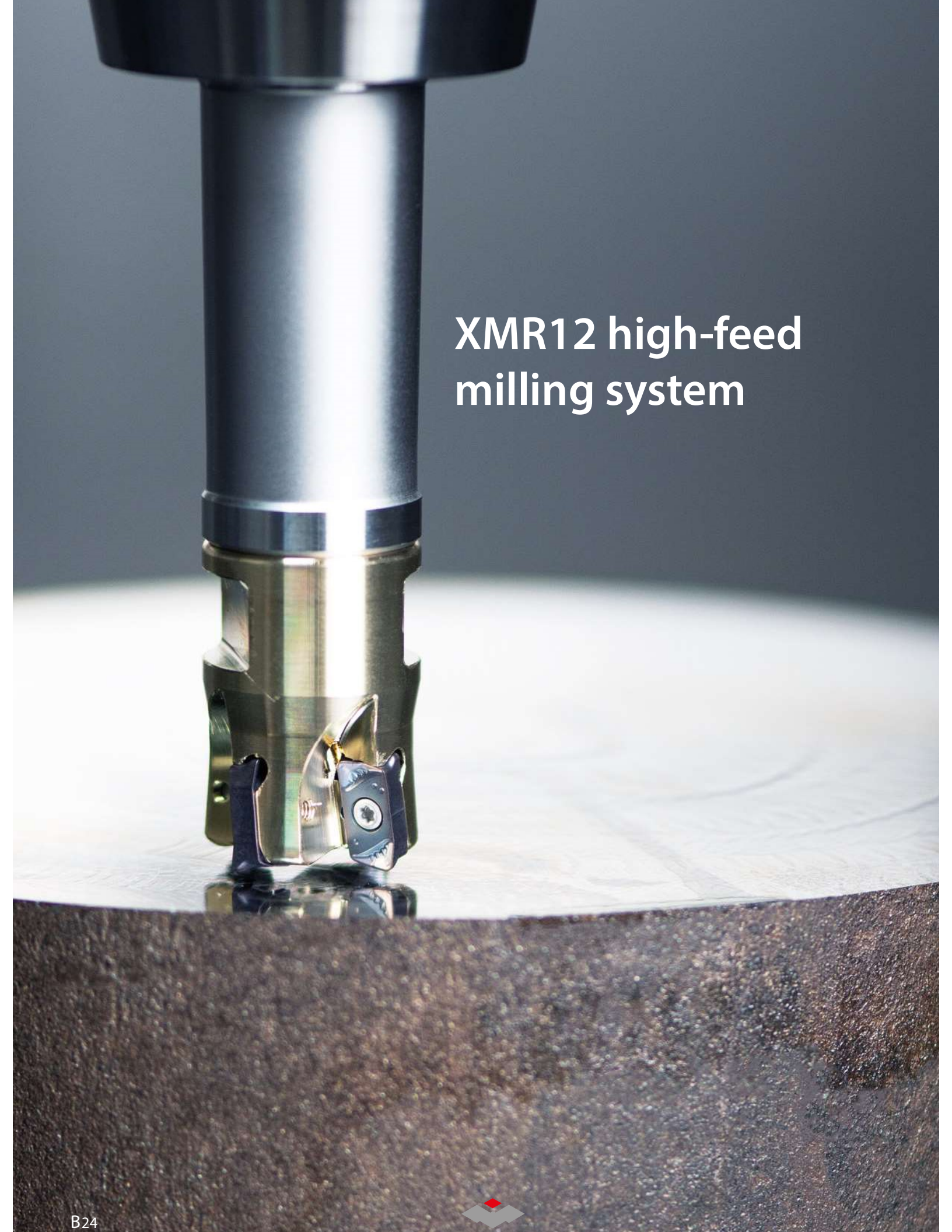
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A close-up photograph of a high-feed milling system. A black, cylindrical tool holder is positioned vertically, with a brass-colored milling head at its base. The head features two cutting inserts, one of which is visible and shows a complex, multi-fluted design. The tool is positioned just above a dark, textured metal workpiece. The background is a blurred, light-colored surface.

XMR12 high-feed milling system

