

PRODUCT OVERVIEW

FixReam: FXR500 | FXR510 | FXR505 | FXR503

The FXR series of high-performance reamers produced of solid carbide cover a wide range of applications. Depending on the diameter, the FixReam high-performance reamers have between four to eight cutting edges with internal cooling and achieve correspondingly high feed rates. Thanks to different cutting materials and coatings, numerous workpiece materials can be machined economically and reliably in the diameter range from 2.850 to 20.200 mm* without an adjustment process in the IT7 tolerance range.

For use where space is limited, for example on automated lathes, "short" versions are available.



FixReam



FixReam | FXR500 solid carbide

Straight fluted high-performance reamer with internal cooling produced of solid carbide. As a preferred series in H7.

Preferred series \varnothing range: 3.701 – 20.200 mm*



FixReam | FXR510 solid carbide

Left-hand fluted high-performance reamer with internal cooling produced of solid carbide. As a preferred series in H7.

Preferred series \varnothing range: 2.800 – 20.200 mm*





FixReam | FXR505 solid carbide

Straight fluted high-performance reamer with internal cooling produced of solid carbide. As a preferred series in H7.

Preferred series \varnothing range: 2.800-20.200 mm*





FixReam | FXR503 short, solid carbide

Extra-short FixReam reamer produced of solid carbide, specially designed for use on automated lathes. As a preferred series in H7.

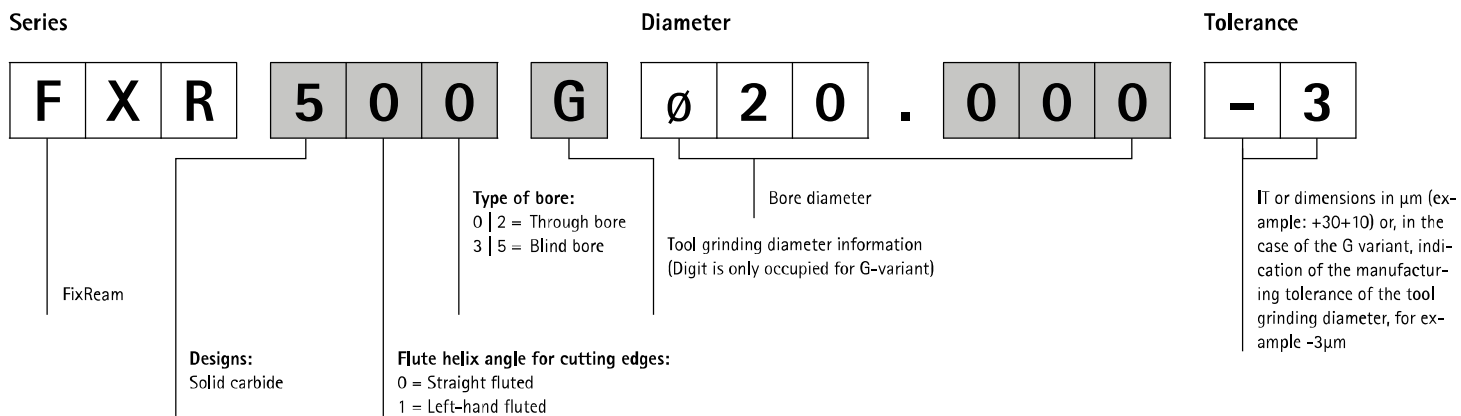
Preferred series \varnothing range: 2.800-20.100 mm*

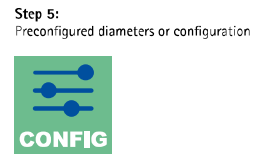
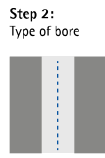


Article overview FixReam (1/2)

Product category	Type of bore	Material suitability												
		P				M	K	N				S	H	
		1-3	4	5	6	1-3	1-3	1	2	4	1	1-5	1	2
Performance TUNE		■	■	■	■		■							
			■		■		■							
									■					
									■	■	■			
												■		
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Ordering example:



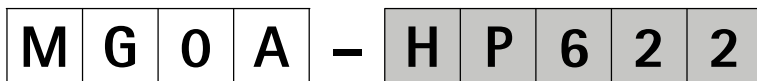


	Design					Preconfigured diameters		Configuration
	d1	Cutting material	Lead			Series	Page	
	2,800-20,200	HP145	MG1M	■		FXR510	322	FXR510 Fixed design, left-hand fluted, for through bores
	2,800-20,200	HP145	MF1M	■		FXR510	326	
	3,701-20,200	HP622	MG0A		■	FXR500	330	
	2,800-20,200	HU612	MG1M	■		FXR510	324	
	2,800-20,200	HC614	MF1M	■		FXR510	329	FXR500 Fixed design, straight fluted, for through bores
	2,800-20,200	HP613	MF1M	■		FXR510	328	
	3,701-20,200	HP141	MF0A		■	FXR500	331	
	2,800-20,200	HP145	MV0A		■	FXR505	332	FXR505 Fixed design, straight fluted, for blind bores
	2,800-20,100	HP145	MC1F		■	FXR503	342	
	2,800-20,200	HP145	MT0A		■	FXR505	334	
	2,800-20,200	HP622	MV0A		■	FXR505	335	
	2,800-20,200	HU612	MV0A		■	FXR505	336	
	2,800-20,200	HC614	MV0A		■	FXR505	339	
	2,800-20,200	HP613	MT0A		■	FXR505	338	FXR503 short Fixed design, straight fluted, for blind bores
	2,800-20,200	HP141	MT0A		■	FXR505	340	
					■			

Series configuration on next page.

Lead

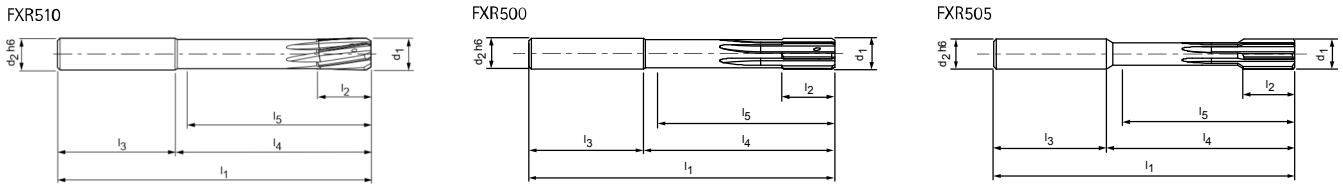
Cutting material



Lead geometry and rake angle:
 MG0A MT0A For explanation of
 MG1M MF0A the lead geometries,
 MF1M MC1F see pages 752
 MV0A

Cutting material:
 HP145 HP141
 HU612 HP613
 HP622
 HC614

Article overview FixReam | Configuration (2/2)



Tool dimensions

FXR510

d ₁	d ₂	l ₁	l ₂	l ₃	l ₄	l ₅	z
2,800 – 3,700	4	65	12	28	37	34	4
3,701 – 4,700	6	75	12	36	39	34	4
4,701 – 6,200	6	75	12	36	39	35	4
6,201 – 7,200	8	100	16	36	64	59	6
7,201 – 8,200	8	100	16	36	64	60	6
8,201 – 9,200	10	100	20	40	60	55	6
9,201 – 10,200	10	120	20	40	80	76	6
10,201 – 11,200	12	120	20	45	75	70	6
11,201 – 12,200	12	120	20	45	75	71	6
12,201 – 14,200	14	130	22	45	85	80	6
14,201 – 15,200	16	130	22	48	82	77	6
15,201 – 16,200	16	150	25	48	102	97	6
16,201 – 18,200	18	150	25	48	102	97	8
18,201 – 20,200	20	150	25	50	100	95	8

FXR505

d ₁	d ₂	l ₁	l ₂	l ₃	l ₄	l ₅	z
2,800 – 3,350	4	65	12	37	28	33	4
3,351 – 3,700	4	65	12	28	37	33	4
3,701 – 6,200	6	75	12	36	39	34	4
6,201 – 8,200	8	100	16	36	64	58	6
8,201 – 9,200	10	100	20	40	60	54	6
9,201 – 10,200	10	120	20	40	80	74	6
10,201 – 12,200	12	120	20	45	75	68	6
12,201 – 14,200	14	130	22	45	85	78	6
14,201 – 15,200	16	130	22	48	82	75	6
15,201 – 16,200	16	150	25	48	102	95	6
16,201 – 18,200	18	150	25	48	102	95	6
18,201 – 20,200	20	150	25	50	100	92	6

Tolerances for the G variant/fixed variant FXR5XX:

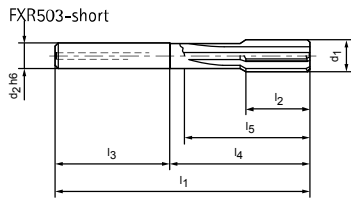
Cutting material	Diameter range
	Ø2.800-20.200
Uncoated	-0.003
HU612	
Coated (layer thickness 0.8-2 µm)	-0.004
HP145	
HP613	
HP622	
HC614	
Coated (layer thickness 2-4 µm)	-0.005
HP141	

Explanation of the G variant FXR

Permissible workpiece tolerances for selecting the tool diameter

G variant design:

The G variant indicates the tool diameter of the reamer with our manufacturing tolerances. The manufacturing tolerances depend on the cutting material; see permissible smallest tolerances for the G variant.



FXR500

d_1	d_2	l_1	l_2	l_3	l_4	l_5	z
3,701 - 4,700	6	75	12	36	39	34	4
4,701 - 6,200	6	75	12	36	39	35	4
6,201 - 7,200	8	100	16	36	64	59	6
7,201 - 8,200	8	100	16	36	64	60	6
8,201 - 9,200	10	100	20	40	60	55	6
9,201 - 10,200	10	120	20	40	80	76	6
10,201 - 11,200	12	120	20	45	75	70	6
11,201 - 12,200	12	120	20	45	75	71	6
12,201 - 14,200	14	130	22	45	85	80	6
14,201 - 15,200	16	130	22	48	82	77	6
15,201 - 16,200	16	150	25	48	102	97	6
16,201 - 18,200	18	150	25	48	102	97	8
18,201 - 20,200	20	150	25	50	100	95	8

FXR503-short

d_1	d_2	l_1	l_2	l_3	l_4	l_5	z
2,800 - 4,050	4	56	12	28	28	24	4
4,051 - 5,100	6	64	12	36	28	23	4
5,101 - 5,600	6	64	12	36	28	24	4
6,101 - 6,600	8	75	16	36	39	32	6
6,601 - 7,100	8	75	16	36	39	34	6
7,101 - 8,100	8	75	16	36	39	35	6
8,101 - 10,100	8	75	20	36	39	35	6
10,101 - 11,600	10	80	20	40	40	35	6
11,601 - 13,100	12	90	22	45	45	40	6
13,101 - 15,100	14	90	22	45	45	40	6
15,101 - 18,100	16	100	25	48	52	47	8
18,101 - 20,100	18	100	25	48	52	47	8



Customised special solutions for multi-stage machining and order-specific fitting with guide pads possible.

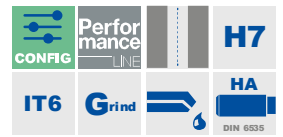
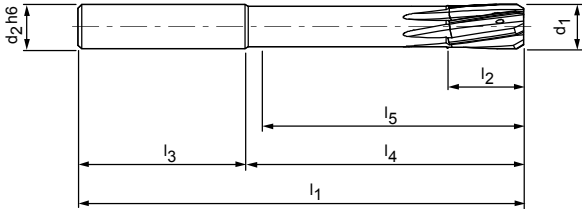
FixReam

Fixed design, left-hand fluted, for through bores
FXR510

Design:

Reamer diameter:
Lead:
Cutting material:

2,800–20,200 mm
MG1M
HP145
Carbide
PVD-coated



Preferred series in H7

d ₁ H7	Dimensions						z	Specification	Order no.
	d ₂ h6	l ₁	l ₂	l ₃	l ₄	l ₅			
4,000	6	75	12	36	39	34	4	FXR510Ø4,000H7MG1M-HP145	30570722
5,000	6	75	12	36	39	35	4	FXR510Ø5,000H7MG1M-HP145	30570724
6,000	6	75	12	36	39	35	4	FXR510Ø6,000H7MG1M-HP145	30570726
7,000	8	100	16	36	64	59	6	FXR510Ø7,000H7MG1M-HP145	30570728
8,000	8	100	16	36	64	60	6	FXR510Ø8,000H7MG1M-HP145	30570730
9,000	10	100	20	40	60	55	6	FXR510Ø9,000H7MG1M-HP145	30570732
10,000	10	120	20	40	80	76	6	FXR510Ø10,000H7MG1M-HP145	30570734
11,000	12	120	20	45	75	70	6	FXR510Ø11,000H7MG1M-HP145	30570736
12,000	12	120	20	45	75	71	6	FXR510Ø12,000H7MG1M-HP145	30570738
13,000	14	130	22	45	85	80	6	FXR510Ø13,000H7MG1M-HP145	30570739
14,000	14	130	22	45	85	80	6	FXR510Ø14,000H7MG1M-HP145	30570740
15,000	16	130	22	48	82	77	6	FXR510Ø15,000H7MG1M-HP145	30570741
16,000	16	150	25	48	102	97	6	FXR510Ø16,000H7MG1M-HP145	30570742
17,000	18	150	25	48	102	97	8	FXR510Ø17,000H7MG1M-HP145	30570743
18,000	18	150	25	48	102	97	8	FXR510Ø18,000H7MG1M-HP145	30570744
19,000	20	150	25	50	100	95	8	FXR510Ø19,000H7MG1M-HP145	30570745

Dimensions in mm.
For cutting data recommendations, see end of chapter.

FXR510 | Fixed design, left-hand fluted

Configurable features

**Bore diameter tolerance \geq IT6:**

- Diameter freely selectable in increments of 0,001 mm
- Can be ordered in tolerance \geq IT6

**Specification:**

FXR510Ø[diameter][tolerance]MG1M-HP145

G variants:

- Diameter freely selectable in increments of 0,001 mm
- From tolerance \geq 4 μ m orderable (G variant, see page 320)

G variant specification:

FXR510GØ[diameter][tolerance]MG1M-HP145

Dimensions of configurable series IT6

d ₁	d ₂	l ₁	l ₂	l ₃	l ₄	l ₅	z
2,800 - 3,700	4	65	12	28	37	34	4
3,701 - 4,700	6	75	12	36	39	34	4
4,701 - 6,200	6	75	12	36	39	35	4
6,201 - 7,200	8	100	16	36	64	59	6
7,201 - 8,200	8	100	16	36	64	60	6
8,201 - 9,200	10	100	20	40	60	55	6
9,201 - 10,200	10	120	20	40	80	76	6
10,201 - 11,200	12	120	20	45	75	70	6
11,201 - 12,200	12	120	20	45	75	71	6
12,201 - 14,200	14	130	22	45	85	80	6
14,201 - 15,200	16	130	22	48	82	77	6
15,201 - 16,200	16	150	25	48	102	97	6
16,201 - 18,200	18	150	25	48	102	97	8
18,201 - 20,200	20	150	25	50	100	95	8

IT6 tolerance example:

FXR510Ø16.350H6MG1M-HP145

Bore diameter d₁ = 16.350 H6**G variant example:**

FXR510GØ16.350-4MG1M-HP145

Special tool diameter d₁ = 16,350 -4 μ m

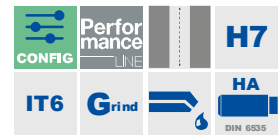
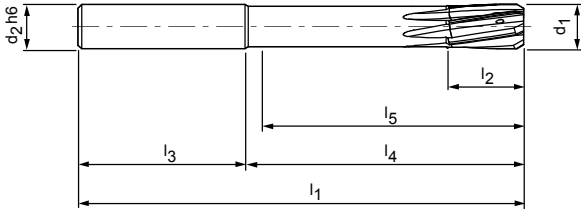
FixReam

Fixed design, left-hand fluted, for through bores
FXR510

Design:

Reamer diameter:
Lead:
Cutting material:

2,800–20,200 mm
MG1M
HU612
Carbide
uncoated



Preferred series in H7

d ₁ H7	Dimensions						z	Specification	Order no.
	d ₂ h6	l ₁	l ₂	l ₃	l ₄	l ₅			
4,000	6	75	12	36	39	34	4	FXR510Ø4,000H7MG1M-HU612	30570665
5,000	6	75	12	36	39	35	4	FXR510Ø5,000H7MG1M-HU612	30570667
6,000	6	75	12	36	39	35	4	FXR510Ø6,000H7MG1M-HU612	30570669
7,000	8	100	16	36	64	59	6	FXR510Ø7,000H7MG1M-HU612	30570671
8,000	8	100	16	36	64	60	6	FXR510Ø8,000H7MG1M-HU612	30570673
9,000	10	100	20	40	60	55	6	FXR510Ø9,000H7MG1M-HU612	30570675
10,000	10	120	20	40	80	76	6	FXR510Ø10,000H7MG1M-HU612	30570677
11,000	12	120	20	45	75	70	6	FXR510Ø11,000H7MG1M-HU612	30570679
12,000	12	120	20	45	75	71	6	FXR510Ø12,000H7MG1M-HU612	30570682
13,000	14	130	22	45	85	80	6	FXR510Ø13,000H7MG1M-HU612	30570683
14,000	14	130	22	45	85	80	6	FXR510Ø14,000H7MG1M-HU612	30570684
15,000	16	130	22	48	82	77	6	FXR510Ø15,000H7MG1M-HU612	30570685
16,000	16	150	25	48	102	97	6	FXR510Ø16,000H7MG1M-HU612	30570686
17,000	18	150	25	48	102	97	8	FXR510Ø17,000H7MG1M-HU612	30570687
18,000	18	150	25	48	102	97	8	FXR510Ø18,000H7MG1M-HU612	30570688

Dimensions in mm.

For cutting data recommendations, see end of chapter.

FXR510 | Fixed design, left-hand fluted

Configurable features

**Bore diameter tolerance \geq IT6:**

- Diameter freely selectable in increments of 0,001 mm
- Can be ordered in tolerance \geq IT6

**Specification:**

FXR510Ø[diameter][tolerance]MG1M-HU612

G variants:

- Diameter freely selectable in increments of 0,001 mm
- Can be ordered from tolerance \geq 3 μ m (G variant, see page 320)

G variant specification:

FXR510GØ[diameter][tolerance]MG1M-HU612

Dimensions of configurable series IT6

d_1	d_2	l_1	l_2	l_3	l_4	l_5	z
2,800 - 3,700	4	65	12	28	37	34	4
3,701 - 4,700	6	75	12	36	39	34	4
4,701 - 6,200	6	75	12	36	39	35	4
6,201 - 7,200	8	100	16	36	64	59	6
7,201 - 8,200	8	100	16	36	64	60	6
8,201 - 9,200	10	100	20	40	60	55	6
9,201 - 10,200	10	120	20	40	80	76	6
10,201 - 11,200	12	120	20	45	75	70	6
11,201 - 12,200	12	120	20	45	75	71	6
12,201 - 14,200	14	130	22	45	85	80	6
14,201 - 15,200	16	130	22	48	82	77	6
15,201 - 16,200	16	150	25	48	102	97	6
16,201 - 18,200	18	150	25	48	102	97	8
18,201 - 20,200	20	150	25	50	100	95	8

IT6 tolerance example:

FXR510Ø16.350H6MG1M-HU612

Bore diameter $d_1 = 16.350$ H6**G variant example:**

FXR510GØ16.350-3MG1M-HU612

Special tool diameter $d_1 = 16.350 - 3 \mu\text{m}$

FixReam

Fixed design, left-hand fluted, for through bores
FXR510

Design:

Reamer diameter:

2,800–20,200 mm

Lead:

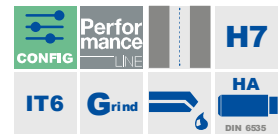
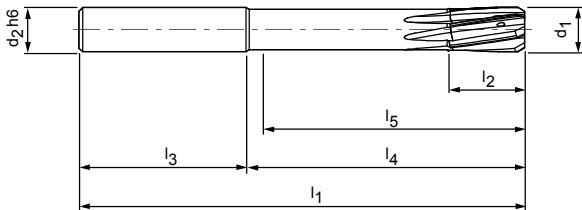
MF1M

Cutting material:

HP145

Carbide

PVD-coated


Preferred series in H7

d ₁ H7	Dimensions						z	Specification	Order no.
	d ₂ h6	l ₁	l ₂	l ₃	l ₄	l ₅			
4,000	6	75	12	36	39	35	4	FXR510Ø4.000H7MF1M-HP145	30570772
5,000	6	75	12	36	39	35	4	FXR510Ø5.000H7MF1M-HP145	30570774
6,000	6	75	12	36	39	35	4	FXR510Ø6.000H7MF1M-HP145	30570776
7,000	8	100	16	36	64	59	6	FXR510Ø7.000H7MF1M-HP145	30570778
8,000	8	100	16	36	64	60	6	FXR510Ø8.000H7MF1M-HP145	30570780
9,000	10	100	20	40	60	55	6	FXR510Ø9.000H7MF1M-HP145	30570782
10,000	10	120	20	40	80	76	6	FXR510Ø10.000H7MF1M-HP145	30570784
11,000	12	120	20	45	75	70	6	FXR510Ø11.000H7MF1M-HP145	30570786
12,000	12	120	20	45	75	71	6	FXR510Ø12.000H7MF1M-HP145	30570788
14,000	14	130	22	45	85	80	6	FXR510Ø14.000H7MF1M-HP145	30570790
16,000	16	150	25	48	102	97	6	FXR510Ø16.000H7MF1M-HP145	30570792

Dimensions in mm.

For cutting data recommendations, see end of chapter.

FXR510 | Fixed design, left-hand fluted

Configurable features

**Bore diameter tolerance \geq IT6:**

- Diameter freely selectable in increments of 0,001 mm
- Can be ordered in tolerance \geq IT6

**Specification:**

FXR510Ø[diameter][tolerance]MF1M-HP145

G variants:

- Diameter freely selectable in increments of 0,001 mm
- From tolerance \geq 4 μ m orderable (G variant, see page 320)

G variant specification:

FXR510GØ[diameter][tolerance]MF1M-HP145

Dimensions of configurable series IT6

d_1	d_2	l_1	l_2	l_3	l_4	l_5	z
2,800 - 3,700	4	65	12	28	37	34	4
3,701 - 4,700	6	75	12	36	39	34	4
4,701 - 6,200	6	75	12	36	39	35	4
6,201 - 7,200	8	100	16	36	64	59	6
7,201 - 8,200	8	100	16	36	64	60	6
8,201 - 9,200	10	100	20	40	60	55	6
9,201 - 10,200	10	120	20	40	80	76	6
10,201 - 11,200	12	120	20	45	75	70	6
11,201 - 12,200	12	120	20	45	75	71	6
12,201 - 14,200	14	130	22	45	85	80	6
14,201 - 15,200	16	130	22	48	82	77	6
15,201 - 16,200	16	150	25	48	102	97	6
16,201 - 18,200	18	150	25	48	102	97	8
18,201 - 20,200	20	150	25	50	100	95	8

IT6 tolerance example:

FXR510Ø16.350H6MF1M-HP145

Bore diameter $d_1 = 16.350$ H6**G variant example:**

FXR510GØ16.350-4MF1M-HP145

Special tool diameter $d_1 = 16.350 -4 \mu$ m

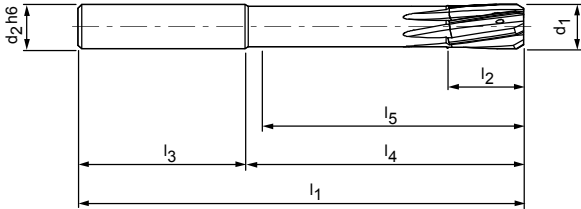
FixReam

Fixed design, left-hand fluted, for through bores
FXR510

Design:

Reamer diameter:
Lead:
Cutting material:

2,800–20,200 mm
MF1M
HP613
Carbide
PVD-coated



Configurable features



Bore diameter tolerance \geq IT6:
- Diameter freely selectable in increments of 0,001 mm
- Can be ordered in tolerance \geq IT6

Specification:
FXR510Ø[diameter][tolerance]MF1M-HP613

G variants:
- Diameter freely selectable in increments of 0,001 mm
- From tolerance \geq 4 μ m orderable (G variant, see page 320)

G variant specification:
FXR510GØ[diameter][tolerance]MF1M-HP613

Dimensions of configurable series IT6

d ₁	d ₂	l ₁	l ₂	l ₃	l ₄	l ₅	z
2,800 - 3,700	4	65	12	28	37	34	4
3,701 - 4,700	6	75	12	36	39	34	4
4,701 - 6,200	6	75	12	36	39	35	4
6,201 - 7,200	8	100	16	36	64	59	6
7,201 - 8,200	8	100	16	36	64	60	6
8,201 - 9,200	10	100	20	40	60	55	6
9,201 - 10,200	10	120	20	40	80	76	6
10,201 - 11,200	12	120	20	45	75	70	6
11,201 - 12,200	12	120	20	45	75	71	6
12,201 - 14,200	14	130	22	45	85	80	6
14,201 - 15,200	16	130	22	48	82	77	6
15,201 - 16,200	16	150	25	48	102	97	6
16,201 - 18,200	18	150	25	48	102	97	8
18,201 - 20,200	20	150	25	50	100	95	8

IT6 tolerance example:
FXR510Ø16.350H6MF1M-HP613

Bore diameter d₁ = 16.350 H6

G variant example:
FXR510GØ16.350-4MF1M-HP613

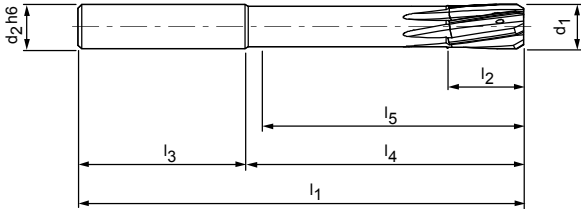
Special tool diameter d₁ = 16.350 -4 μ m

FixReam

Fixed design, left-hand fluted, for through bores
FXR510

Design:

Reamer diameter: 2,800–20,200 mm
Lead: MF1M
Cutting material: HC614
Carbide
CVD-coated



Configurable features



Bore diameter tolerance \geq IT6:
- Diameter freely selectable in increments of 0,001 mm
- Can be ordered in tolerance \geq IT6

Specification:
FXR510Ø[diameter][tolerance]MF1M-HC614

G variants:
- Diameter freely selectable in increments of 0,001 mm
- From tolerance \geq 4 μ m orderable (G variant, see page 320)

G variant specification:
FXR510GØ[diameter][tolerance]MF1M-HC614

Dimensions of configurable series IT6

d ₁	d ₂	l ₁	l ₂	l ₃	l ₄	l ₅	z
2,800 - 3,700	4	65	12	28	37	34	4
3,701 - 4,700	6	75	12	36	39	34	4
4,701 - 6,200	6	75	12	36	39	35	4
6,201 - 7,200	8	100	16	36	64	59	6
7,201 - 8,200	8	100	16	36	64	60	6
8,201 - 9,200	10	100	20	40	60	55	6
9,201 - 10,200	10	120	20	40	80	76	6
10,201 - 11,200	12	120	20	45	75	70	6
11,201 - 12,200	12	120	20	45	75	71	6
12,201 - 14,200	14	130	22	45	85	80	6
14,201 - 15,200	16	130	22	48	82	77	6
15,201 - 16,200	16	150	25	48	102	97	6
16,201 - 18,200	18	150	25	48	102	97	8
18,201 - 20,200	20	150	25	50	100	95	8

IT6 tolerance example:
FXR510Ø16.350H6MF1M-HC614

Bore diameter d₁ = 16.350 H6

G variant example:
FXR510GØ16.350-4MF1M-HC614

Special tool diameter d₁ = 16.350 -4 μ m

Dimensions in mm.
For cutting data recommendations, see end of chapter.

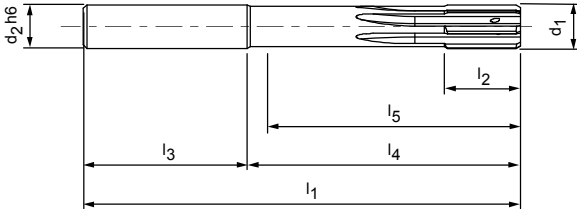
FixReam

Fixed design, straight fluted, for through bores
FXR500

Design:

Reamer diameter:
Lead:
Cutting material:

3.701-20,200 mm
MG0A
HP622
Carbide
PVD-coated



Configurable features



Bore diameter tolerance \geq IT6:
- Diameter freely selectable in increments of 0,001 mm
- Can be ordered in tolerance \geq IT6

Specification:
FXR500Ø[diameter][tolerance]MG0A-HP622

G variants:
- Diameter freely selectable in increments of 0,001 mm
- From tolerance \geq 4 μ m orderable (G variant, see page 320)

G variant specification:
FXR500GØ[diameter][tolerance]MG0A-HP622

Dimensions of configurable series IT6

d ₁	d ₂	l ₁	l ₂	l ₃	l ₄	l ₅	z
3,701 - 4,700	6	75	12	36	39	34	4
4,701 - 6,200	6	75	12	36	39	35	4
6,201 - 7,200	8	100	16	36	64	59	6
7,201 - 8,200	8	100	16	36	64	60	6
8,201 - 9,200	10	100	20	40	60	55	6
9,201 - 10,200	10	120	20	40	80	76	6
10,201 - 11,200	12	120	20	45	75	70	6
11,201 - 12,200	12	120	20	45	75	71	6
12,201 - 14,200	14	130	22	45	85	80	6
14,201 - 15,200	16	130	22	48	82	77	6
15,201 - 16,200	16	150	25	48	102	97	6
16,201 - 18,200	18	150	25	48	102	97	8
18,201 - 20,200	20	150	25	50	100	95	8

IT6 tolerance example:
FXR500Ø16.350H6MG0A-HP622

Bore diameter d₁ = 16.350 H6

G variant example:
FXR500GØ16.350-4MG0A-HP622

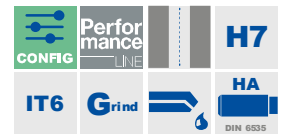
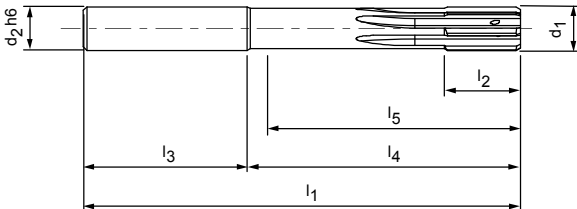
Special tool diameter d₁ = 16.350 -4 μ m

FixReam

Fixed design, straight fluted, for through bores
FXR500

Design:

Reamer diameter: 3.701–20,200 mm
Lead: MF0A
Cutting material: HP141
Carbide
PVD-coated



Preferred series in H7

d ₁ H7	Dimensions						z	Specification	Order no.
	d ₂ h6	l ₁	l ₂	l ₃	l ₄	l ₅			
5,000	6	75	12	36	39	35	4	FXR500Ø5,000H7MF0A-HP141	30570824
6,000	6	75	12	36	39	35	4	FXR500Ø6,000H7MF0A-HP141	30570826
8,000	8	100	16	36	64	60	6	FXR500Ø8,000H7MF0A-HP141	30570830
10,000	10	120	20	40	80	76	6	FXR500Ø10,000H7MF0A-HP141	30570834
12,000	12	120	20	45	75	71	6	FXR500Ø12,000H7MF0A-HP141	30570838

Configurable features



Bore diameter tolerance ≥ IT6:
- Diameter freely selectable in increments of 0,001 mm
- Can be ordered in tolerance ≥ IT6

Specification:
FXR500Ø[diameter][tolerance]MF0A-HP141

G variants:
- Diameter freely selectable in increments of 0,001 mm
- Can be ordered from tolerance ≥ 5 μm (G variant, see page 320)

G variant specification:
FXR500GØ[diameter][tolerance]MF0A-HP141

Dimensions of configurable series IT6

d ₁	d ₂	l ₁	l ₂	l ₃	l ₄	l ₅	z
3,701 – 4,700	6	75	12	36	39	34	4
4,701 – 6,200	6	75	12	36	39	35	4
6,201 – 7,200	8	100	16	36	64	59	6
7,201 – 8,200	8	100	16	36	64	60	6
8,201 – 9,200	10	100	20	40	60	55	6
9,201 – 10,200	10	120	20	40	80	76	6
10,201 – 11,200	12	120	20	45	75	70	6
11,201 – 12,200	12	120	20	45	75	71	6
12,201 – 14,200	14	130	22	45	85	80	6
14,201 – 15,200	16	130	22	48	82	77	6
15,201 – 16,200	16	150	25	48	102	97	6
16,201 – 18,200	18	150	25	48	102	97	8
18,201 – 20,200	20	150	25	50	100	95	8

IT6 tolerance example:
FXR500Ø16.350H6MF0A-HP141

Bore diameter d₁ = 16,350 H6

G variant example:
FXR500GØ16.350-5MF0A-HP141

Special tool diameter d₁ = 16,350 -5 μm

Dimensions in mm.
For cutting data recommendations, see end of chapter.

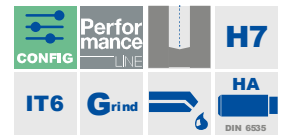
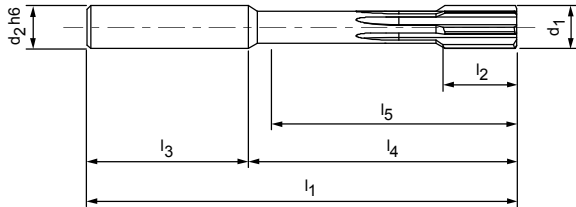
FixReam

Fixed design, straight fluted, for blind bores
FXR505

Design:

Reamer diameter:
Lead:
Cutting material:

2,800–20,200 mm
MV0A
HP145
Carbide
PVD-coated



Preferred series in H7

d ₁ H7	Dimensions						z	Specification	Order no.
	d ₂ h6	l ₁	l ₂	l ₃	l ₄	l ₅			
4,000	6	75	12	36	39	34	4	FXR505Ø4,000H7MV0A-HP145	30570747
5,000	6	75	12	36	39	34	4	FXR505Ø5,000H7MV0A-HP145	30570749
6,000	6	75	12	36	39	34	4	FXR505Ø6,000H7MV0A-HP145	30570751
7,000	8	100	16	36	64	58	6	FXR505Ø7,000H7MV0A-HP145	30570753
8,000	8	100	16	36	64	58	6	FXR505Ø8,000H7MV0A-HP145	30570755
9,000	10	100	20	40	60	54	6	FXR505Ø9,000H7MV0A-HP145	30570757
10,000	10	120	20	40	80	74	6	FXR505Ø10,000H7MV0A-HP145	30570759
11,000	12	120	20	45	75	68	6	FXR505Ø11,000H7MV0A-HP145	30570761
12,000	12	120	20	45	75	68	6	FXR505Ø12,000H7MV0A-HP145	30570763
13,000	14	130	22	45	85	78	6	FXR505Ø13,000H7MV0A-HP145	30570764
14,000	14	130	22	45	85	78	6	FXR505Ø14,000H7MV0A-HP145	30570765
15,000	16	130	22	48	82	75	6	FXR505Ø15,000H7MV0A-HP145	30570766
16,000	16	150	25	48	102	95	6	FXR505Ø16,000H7MV0A-HP145	30570767
17,000	18	150	25	48	102	95	6	FXR505Ø17,000H7MV0A-HP145	30570768
18,000	18	150	25	48	102	95	6	FXR505Ø18,000H7MV0A-HP145	30570769
19,000	20	150	25	50	100	92	6	FXR505Ø19,000H7MV0A-HP145	30570770

Dimensions in mm.

For cutting data recommendations, see end of chapter.

FXR505 | Fixed design, straight fluted

Configurable features

**Bore diameter tolerance \geq IT6:**

- Diameter freely selectable in increments of 0,001 mm
- Can be ordered in tolerance \geq IT6

**Specification:**

FXR505Ø[diameter][tolerance]MV0A-HP145

G variants:

- Diameter freely selectable in increments of 0,001 mm
- From tolerance \geq 4 μ m orderable (G variant, see page 320)

G variant specification:

FXR505GØ[diameter][tolerance]MV0A-HP145

Dimensions of configurable series IT6

d_1	d_2	l_1	l_2	l_3	l_4	l_5	z
2,800 - 3,350	4	65	12	37	28	33	4
3,351 - 3,700	4	65	12	28	37	33	4
3,701 - 6,200	6	75	12	36	39	34	4
6,201 - 8,200	8	100	16	36	64	58	6
8,201 - 9,200	10	100	20	40	60	54	6
9,201 - 10,200	10	120	20	40	80	74	6
10,201 - 12,200	12	120	20	45	75	68	6
12,201 - 14,200	14	130	22	45	85	78	6
14,201 - 15,200	16	130	22	48	82	75	6
15,201 - 16,200	16	150	25	48	102	95	6
16,201 - 18,200	18	150	25	48	102	95	6
18,201 - 20,200	20	150	25	50	100	92	6

IT6 tolerance example:

FXR505Ø16.350H6MV0A-HP145

Bore diameter $d_1 = 16.350$ H6**G variant example:**

FXR505GØ16.350-4MV0A-HP145

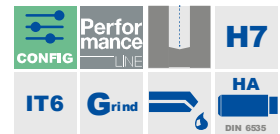
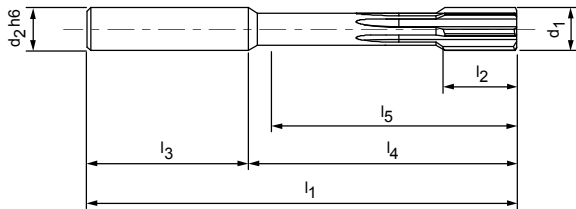
Special tool diameter $d_1 = 16.350 -4 \mu$ m

FixReam

Fixed design, straight fluted, for blind bores
FXR505

Design:

Reamer diameter: 2,800–20,200 mm
Lead: MT0A
Cutting material: HP145 Carbide
PVD-coated



Preferred series in H7

d ₁ H7	Dimensions						z	Specification	Order no.
	d ₂ h6	l ₁	l ₂	l ₃	l ₄	l ₅			
4,000	6	75	12	36	39	34	4	FXR505Ø4,000H7MT0A-HP145	30570797
5,000	6	75	12	36	39	34	4	FXR505Ø5,000H7MT0A-HP145	30570799
6,000	6	75	12	36	39	34	4	FXR505Ø6,000H7MT0A-HP145	30570801
7,000	8	100	16	36	64	58	6	FXR505Ø7,000H7MT0A-HP145	30570803
8,000	8	100	16	36	64	58	6	FXR505Ø8,000H7MT0A-HP145	30570805
10,000	10	120	20	40	80	74	6	FXR505Ø10,000H7MT0A-HP145	30570809
12,000	12	120	20	45	75	68	6	FXR505Ø12,000H7MT0A-HP145	30570813

Configurable features

Bore diameter tolerance ≥ IT6:

- Diameter freely selectable in increments of 0,001 mm
- Can be ordered in tolerance ≥ IT6

Specification:
FXR505Ø[diameter][tolerance]MT0A-HP145

G variants:

- Diameter freely selectable in increments of 0,001 mm
- From tolerance ≥ 4 µm orderable (G variant, see page 320)

G variant specification:
FXR505GØ[diameter][tolerance]MT0A-HP145

Dimensions of configurable series IT6

d ₁	d ₂	l ₁	l ₂	l ₃	l ₄	l ₅	z
2,800 - 3,350	4	65	12	37	28	33	4
3,351 - 3,700	4	65	12	28	37	33	4
3,701 - 6,200	6	75	12	36	39	34	4
6,201 - 8,200	8	100	16	36	64	58	6
8,201 - 9,200	10	100	20	40	60	54	6
9,201 - 10,200	10	120	20	40	80	74	6
10,201 - 12,200	12	120	20	45	75	68	6
12,201 - 14,200	14	130	22	45	85	78	6
14,201 - 15,200	16	130	22	48	82	75	6
15,201 - 16,200	16	150	25	48	102	95	6
16,201 - 18,200	18	150	25	48	102	95	6
18,201 - 20,200	20	150	25	50	100	92	6

IT6 tolerance example:

FXR505Ø16.350H6MT0A-HP145

Bore diameter d₁ = 16.350 H6

G variant example:

FXR505GØ16.350-4MT0A-HP145

Special tool diameter d₁ = 16.350 -4 µm

Dimensions in mm.

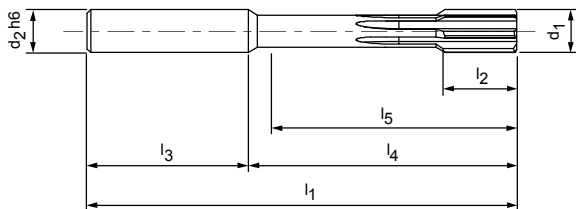
For cutting data recommendations, see end of chapter.

FixReam

Fixed design, straight fluted, for blind bores
FXR505

Design:

Reamer diameter: 2,800–20,200 mm
Lead: MVOA
Cutting material: HP622
Carbide
PVD-coated



Configurable features



Bore diameter tolerance \geq IT6:
- Diameter freely selectable in increments of 0,001 mm
- Can be ordered in tolerance \geq IT6

Specification:
FXR505Ø[diameter][tolerance]MVOA-HP622

G variants:
- Diameter freely selectable in increments of 0,001 mm
- From tolerance \geq 4 μ m orderable (G variant, see page 320)

G variant specification:
FXR505GØ[diameter][tolerance]MVOA-HP622

Dimensions of configurable series IT6

d ₁	d ₂	l ₁	l ₂	l ₃	l ₄	l ₅	z
2,800 - 3,350	4	65	12	37	28	33	4
3,351 - 3,700	4	65	12	28	37	33	4
3,701 - 6,200	6	75	12	36	39	34	4
6,201 - 8,200	8	100	16	36	64	58	6
8,201 - 9,200	10	100	20	40	60	54	6
9,201 - 10,200	10	120	20	40	80	74	6
10,201 - 12,200	12	120	20	45	75	68	6
12,201 - 14,200	14	130	22	45	85	78	6
14,201 - 15,200	16	130	22	48	82	75	6
15,201 - 16,200	16	150	25	48	102	95	6
16,201 - 18,200	18	150	25	48	102	95	6
18,201 - 20,200	20	150	25	50	100	92	6

IT6 tolerance example:
FXR505Ø16.350H6MVOA-HP622

Bore diameter d₁ = 16.350 H6

G variant example:
FXR505GØ16.350-4MVOA-HP622

Special tool diameter d₁ = 16.350 -4 μ m

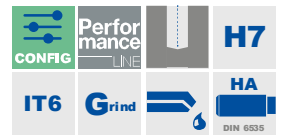
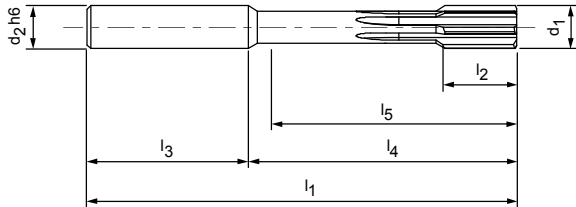
FixReam

Fixed design, straight fluted, for blind bores
FXR505

Design:

Reamer diameter:
Lead:
Cutting material:

2,800–20,200 mm
MV0A
HU612
Carbide
uncoated



Preferred series in H7

d ₁ H7	Dimensions						z	Specification	Order no.
	d ₂ h6	l ₁	l ₂	l ₃	l ₄	l ₅			
4,000	6	75	12	36	39	34	4	FXR505Ø4.000H7MV0A-HU612	30570694
5,000	6	75	12	36	39	34	4	FXR505Ø5.000H7MV0A-HU612	30570696
6,000	6	75	12	36	39	34	4	FXR505Ø6.000H7MV0A-HU612	30570698
7,000	8	100	16	36	64	58	6	FXR505Ø7.000H7MV0A-HU612	30570700
8,000	8	100	16	36	64	58	6	FXR505Ø8.000H7MV0A-HU612	30570702
9,000	10	100	20	40	60	54	6	FXR505Ø9.000H7MV0A-HU612	30570704
10,000	10	120	20	40	80	74	6	FXR505Ø10.000H7MV0A-HU612	30570706
11,000	12	120	20	45	75	68	6	FXR505Ø11.000H7MV0A-HU612	30570708
12,000	12	120	20	45	75	68	6	FXR505Ø12.000H7MV0A-HU612	30570710
13,000	14	130	22	45	85	78	6	FXR505Ø13.000H7MV0A-HU612	30570711
14,000	14	130	22	45	85	78	6	FXR505Ø14.000H7MV0A-HU612	30570712
15,000	16	130	22	48	82	75	6	FXR505Ø15.000H7MV0A-HU612	30570713
16,000	16	150	25	48	102	95	6	FXR505Ø16.000H7MV0A-HU612	30570714
17,000	18	150	25	48	102	95	6	FXR505Ø17.000H7MV0A-HU612	30570715
18,000	18	150	25	48	102	95	6	FXR505Ø18.000H7MV0A-HU612	30570716
19,000	20	150	25	50	100	92	6	FXR505Ø19.000H7MV0A-HU612	30570717

Dimensions in mm.

For cutting data recommendations, see end of chapter.

FXR505 | Fixed design, straight fluted

Configurable features

**Bore diameter tolerance \geq IT6:**

- Diameter freely selectable in increments of 0,001 mm
- Can be ordered in tolerance \geq IT6

**Specification:**

FXR505Ø[diameter][tolerance]MV0A-HU612

G variants:

- Diameter freely selectable in increments of 0,001 mm
- Can be ordered from tolerance \geq 3 μ m (G variant, see page 320)

G variant specification:

FXR505GØ[diameter][tolerance]MV0A-HU612

Dimensions of configurable series IT6

d_1	d_2	l_1	l_2	l_3	l_4	l_5	z
2,800 - 3,350	4	65	12	37	28	33	4
3,351 - 3,700	4	65	12	28	37	33	4
3,701 - 6,200	6	75	12	36	39	34	4
6,201 - 8,200	8	100	16	36	64	58	6
8,201 - 9,200	10	100	20	40	60	54	6
9,201 - 10,200	10	120	20	40	80	74	6
10,201 - 12,200	12	120	20	45	75	68	6
12,201 - 14,200	14	130	22	45	85	78	6
14,201 - 15,200	16	130	22	48	82	75	6
15,201 - 16,200	16	150	25	48	102	95	6
16,201 - 18,200	18	150	25	48	102	95	6
18,201 - 20,200	20	150	25	50	100	92	6

IT6 tolerance example:

FXR505Ø16.350H6MV0A-HU612

Bore diameter $d_1 = 16.350$ H6**G variant example:**

FXR505GØ16.350-3MV0A-HU612

Special tool diameter $d_1 = 16.350 - 3 \mu$ m

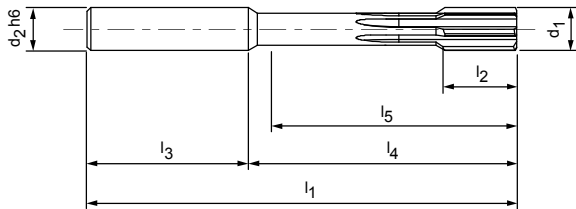
FixReam

Fixed design, straight fluted, for blind bores
FXR505

Design:

Reamer diameter:
Lead:
Cutting material:

2,800–20,200 mm
MT0A
HP613
Carbide
PVD-coated



Configurable features



Bore diameter tolerance \geq IT6:
- Diameter freely selectable in increments of 0,001 mm
- Can be ordered in tolerance \geq IT6

Specification:
FXR505Ø[diameter][tolerance]MT0A-HP613

G variants:
- Diameter freely selectable in increments of 0,001 mm
- From tolerance \geq 4 μ m orderable (G variant, see page 320)

G variant specification:
FXR505GØ[diameter][tolerance]MT0A-HP613

Dimensions of configurable series IT6

d ₁	d ₂	l ₁	l ₂	l ₃	l ₄	l ₅	z
2,800 - 3,350	4	65	12	37	28	33	4
3,351 - 3,700	4	65	12	28	37	33	4
3,701 - 6,200	6	75	12	36	39	34	4
6,201 - 8,200	8	100	16	36	64	58	6
8,201 - 9,200	10	100	20	40	60	54	6
9,201 - 10,200	10	120	20	40	80	74	6
10,201 - 12,200	12	120	20	45	75	68	6
12,201 - 14,200	14	130	22	45	85	78	6
14,201 - 15,200	16	130	22	48	82	75	6
15,201 - 16,200	16	150	25	48	102	95	6
16,201 - 18,200	18	150	25	48	102	95	6
18,201 - 20,200	20	150	25	50	100	92	6

IT6 tolerance example:
FXR505Ø16.350H6MT0A-HP613

Bore diameter d₁ = 16.350 H6

G variant example:
FXR505GØ16.350-4MT0A-HP613

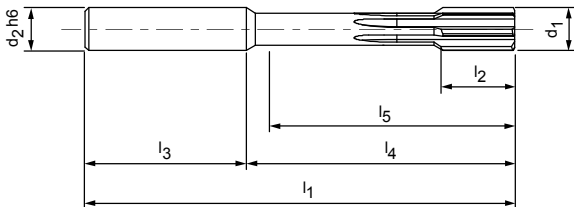
Special tool diameter d₁ = 16.350 -4 μ m

FixReam

Fixed design, straight fluted, for blind bores
FXR505

Design:

Reamer diameter: 2,800–20,200 mm
Lead: MVOA
Cutting material: HC614
Carbide
CVD-coated



Configurable features



Bore diameter tolerance \geq IT6:

- Diameter freely selectable in increments of 0,001 mm
- Can be ordered in tolerance \geq IT6

Specification:

FXR505Ø[diameter][tolerance]MVOA-HC614

G variants:

- Diameter freely selectable in increments of 0,001 mm
- From tolerance \geq 4 μ m orderable (G variant, see page 320)

G variant specification:

FXR505GØ[diameter][tolerance]MVOA-HC614

Dimensions of configurable series IT6

d_1	d_2	l_1	l_2	l_3	l_4	l_5	z
2,800 - 3,350	4	65	12	37	28	33	4
3,351 - 3,700	4	65	12	28	37	33	4
3,701 - 6,200	6	75	12	36	39	34	4
6,201 - 8,200	8	100	16	36	64	58	6
8,201 - 9,200	10	100	20	40	60	54	6
9,201 - 10,200	10	120	20	40	80	74	6
10,201 - 12,200	12	120	20	45	75	68	6
12,201 - 14,200	14	130	22	45	85	78	6
14,201 - 15,200	16	130	22	48	82	75	6
15,201 - 16,200	16	150	25	48	102	95	6
16,201 - 18,200	18	150	25	48	102	95	6
18,201 - 20,200	20	150	25	50	100	92	6

IT6 tolerance example:

FXR505Ø16.350H6MVOA-HC614

Bore diameter $d_1 = 16.350$ H6

G variant example:

FXR505GØ16.350-4MVOA-HC614

Special tool diameter $d_1 = 16.350$ -4 μ m

FixReam

Fixed design, straight fluted, for blind bores
FXR505

Design:

Reamer diameter:

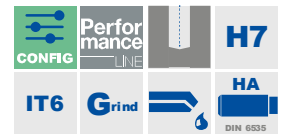
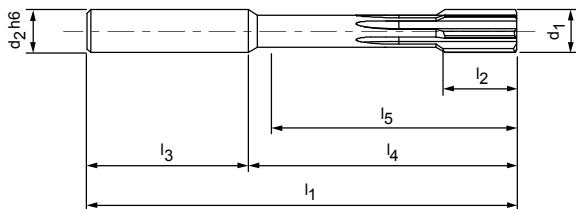
2,800–20,200 mm

Lead:

MT0A

Cutting material:

HP141
Carbide
PVD-coated



Preferred series in H7

d ₁ H7	Dimensions						z	Specification	Order no.
	d ₂ h6	l ₁	l ₂	l ₃	l ₄	l ₅			
4,000	6	75	12	36	39	34	4	FXR505Ø4,000H7MT0A-HP141	30570847
5,000	6	75	12	36	39	34	4	FXR505Ø5,000H7MT0A-HP141	30570849
6,000	6	75	12	36	39	34	4	FXR505Ø6,000H7MT0A-HP141	30570851
8,000	8	100	16	36	64	58	6	FXR505Ø8,000H7MT0A-HP141	30570855
10,000	10	120	20	40	80	74	6	FXR505Ø10,000H7MT0A-HP141	30570859
12,000	12	120	20	45	75	68	6	FXR505Ø12,000H7MT0A-HP141	30570863

Dimensions in mm.

For cutting data recommendations, see end of chapter.

FXR505 | Fixed design, straight fluted

Configurable features

**Bore diameter tolerance \geq IT6:**

- Diameter freely selectable in increments of 0,001 mm
- Can be ordered in tolerance \geq IT6

**Specification:**

FXR505Ø[diameter][tolerance]MT0A-HP141

G variants:

- Diameter freely selectable in increments of 0,001 mm
- Can be ordered from tolerance \geq 5 μ m (G variant, see page 320)

G variant specification:

FXR505GØ[diameter][tolerance]MT0A-HP141

Dimensions of configurable series IT6

d_1	d_2	l_1	l_2	l_3	l_4	l_5	z
2,800 - 3,350	4	65	12	37	28	33	4
3,351 - 3,700	4	65	12	28	37	33	4
3,701 - 6,200	6	75	12	36	39	34	4
6,201 - 8,200	8	100	16	36	64	58	6
8,201 - 9,200	10	100	20	40	60	54	6
9,201 - 10,200	10	120	20	40	80	74	6
10,201 - 12,200	12	120	20	45	75	68	6
12,201 - 14,200	14	130	22	45	85	78	6
14,201 - 15,200	16	130	22	48	82	75	6
15,201 - 16,200	16	150	25	48	102	95	6
16,201 - 18,200	18	150	25	48	102	95	6
18,201 - 20,200	20	150	25	50	100	92	6

IT6 tolerance example:

FXR505Ø16.350H6MT0A-HP141

Bore diameter $d_1 = 16.350$ H6**G variant example:**

FXR505GØ16.350-5MT0A-HP141

Special tool diameter $d_1 = 16.350 -5 \mu$ m

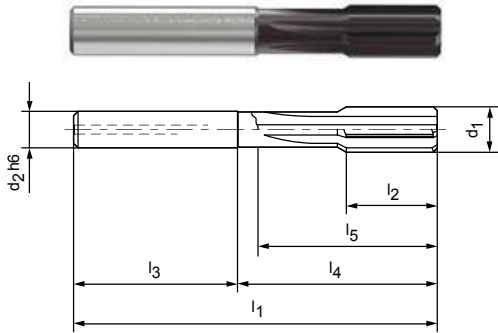
FixReam

Fixed design, straight fluted, for blind bores
FXR503-short

Design:

Reamer diameter:
Lead:
Cutting material:

2,800–20,100 mm
MC1F
HP145
Carbide
PVD-coated



Configurable features



Bore diameter tolerance \geq IT6:
- Diameter freely selectable in increments of 0,001 mm
- Can be ordered in tolerance \geq IT6

Specification:
FXR503Ø[diameter][tolerance]MC1F-HP145

G variants:
- Diameter freely selectable in increments of 0,001 mm
- From tolerance \geq 4 μ m orderable (G variant, see page 320)

G variant specification:
FXR503GØ[diameter][tolerance]MC1F-HP145

Dimensions of configurable series IT6

d ₁	d ₂	l ₁	l ₂	l ₃	l ₄	l ₅	z
2,800 - 4,050	4	56	12	28	28	24	4
4,051 - 5,100	6	64	12	36	28	23	4
5,101 - 5,600	6	64	12	36	28	24	4
6,101 - 6,600	8	75	16	36	39	32	6
6,601 - 7,100	8	75	16	36	39	34	6
7,101 - 8,100	8	75	16	36	39	35	6
8,101 - 10,100	8	75	20	36	39	35	6
10,101 - 11,600	10	80	20	40	40	35	6
11,601 - 13,100	12	90	22	45	45	40	6
13,101 - 15,100	14	90	22	45	45	40	6
15,101 - 18,100	16	100	25	48	52	47	8
18,101 - 20,100	18	100	25	48	52	47	8

IT6 tolerance example:
FXR503Ø16.350H6MC1F-HP145

Bore diameter d₁ = 16.350 H6

G variant example:
FXR503GØ16.350-4MC1F-HP145

Special tool diameter d₁ = 16.350 -4 μ m



Cutting data recommendations for FixReam FXR

Feed and cutting speed

FXR510 | FXR505

Cutting material: HP145 | Lead: MF1M | MTOA

MMG*	Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed v _c (m/min)			
			Internal cooling	External cooling	MQL	
P	P4, P4.1	Stainless steels, ferritic and martensitic	40	20	30	
	P6, P6.1	Stainless cast steel, ferritic and martensitic	40	20	30	
M	M1, M1.1	Stainless steels, austenitic	< 700	40	20	30
	M1, M1.2	Stainless steels, ferritic/austenitic (duplex)	< 1000	30	15	20
	M2, M2.1	Stainless/heat-resistant cast steel, austenitic	< 700	40	20	30
	M3, M3.1	Stainless cast steel, ferritic/austenitic (duplex)	< 1000	30	15	20

FXR510 | FXR505

Cutting material: HP145 | Lead: MG1M | MVOA

MMG*	Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed v _c (m/min)			
			Internal cooling	External cooling	MQL	
P	P1, P1.1	Structural, free-cutting, case hardened and heat-treated steels, non-alloy	< 700	180	90	150
	P1, P1.2	Structural, free-cutting, case hardened and heat-treated steels, non-alloy	< 1200	140	70	115
	P2, P2.1	Nitrided, case hardened and heat-treated steels, alloy	< 900	180	90	150
	P2, P2.2	Nitrided, case hardened and heat-treated steels, alloy	< 1400	140	70	115
	P3, P3.1	Tool, bearing, spring and high-speed steels**	< 800	180	90	150
	P3, P3.2	Tool, bearing, spring and high-speed steels**	< 1000	140	70	110
	P3, P3.3	Tool, bearing, spring and high-speed steels**	< 1500	120	60	90
	P6, P5.1	Cast steel		140	75	100
K	K1, K1.1	Cast iron with lamellar graphite (grey cast iron), GJL	< 300	120	100	100
	K2, K2.1	Cast iron with spheroidal graphite, GJS	< 500	150	105	130
	K2, K2.2	Cast iron with spheroidal graphite, GJS	≤ 800	120	85	98
	K2, K2.3	Cast iron with spheroidal graphite, GJS	> 800	90	55	70
	K3, K3.1	Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM	< 500	90	55	70
	K3, K3.2	Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM	> 500	90	55	70

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

	Feed f_z (mm/rev) with drill diameter						
	z 4	z 4	z 6	z 6	z 6	z 6	z 8
	< 5,000	> 5,000 – 6,200	> 6,200 – 8,000	> 8,000 – 12,000	> 12,000 – 16,000	> 16,000 – 16,200	> 16,200 – 20,200
	0,020	0,040	0,060	0,080	0,100	0,120	0,120
	0,020	0,040	0,060	0,080	0,100	0,120	0,120
	0,020	0,040	0,060	0,080	0,100	0,120	0,120
	0,020	0,040	0,060	0,080	0,100	0,120	0,120
	0,020	0,040	0,060	0,080	0,100	0,120	0,120
	0,020	0,040	0,060	0,080	0,100	0,120	0,120

	Feed f_z (mm/rev) with drill diameter						
	z 4	z 4	z 6	z 6	z 6	z 6	z 8
	< 5,000	> 5,000 – 6,200	> 6,200 – 8,000	> 8,000 – 12,000	> 12,000 – 16,000	> 16,000 – 16,200	> 16,200 – 20,200
	0,050	0,080	0,080	0,140	0,180	0,180	0,190
	0,050	0,080	0,080	0,140	0,180	0,180	0,190
	0,050	0,080	0,080	0,140	0,180	0,180	0,190
	0,050	0,080	0,080	0,140	0,180	0,180	0,190
	0,050	0,080	0,080	0,140	0,180	0,180	0,190
	0,050	0,080	0,080	0,140	0,180	0,180	0,190
	0,050	0,080	0,080	0,140	0,180	0,180	0,190
	0,050	0,080	0,080	0,140	0,180	0,180	0,190
	0,080	0,100	0,100	0,170	0,220	0,220	0,230
	0,080	0,100	0,100	0,170	0,220	0,220	0,230
	0,080	0,100	0,100	0,170	0,220	0,220	0,230
	0,080	0,100	0,100	0,170	0,220	0,220	0,230
	0,080	0,100	0,100	0,170	0,220	0,220	0,230
	0,080	0,100	0,100	0,170	0,220	0,220	0,230

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendations for FixReam FXR

Feed and cutting speed

FXR503–short

Cutting material: HP145 | Lead: MC1F

MMG*	Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed v _c (m/min)			
			Internal cooling	External cooling	MQL	
P	P1.1	Structural, free-cutting, case hardened and heat-treated steels, non-alloy	< 700	180	90	150
	P1.2	Structural, free-cutting, case hardened and heat-treated steels, non-alloy	< 1200	140	70	115
	P2.1	Nitrided, case hardened and heat-treated steels, alloy	< 900	180	90	150
	P2.2	Nitrided, case hardened and heat-treated steels, alloy	< 1400	140	70	115
	P3.1	Tool, bearing, spring and high-speed steels**	< 800	180	90	150
	P3.2	Tool, bearing, spring and high-speed steels**	< 1000	140	70	110
	P3.3	Tool, bearing, spring and high-speed steels**	< 1500	120	60	90
	P6	P5.1	Cast steel		140	75
K	K1.1	Cast iron with lamellar graphite (grey cast iron), GJL	< 300	120	100	100
	K2.1	Cast iron with spheroidal graphite, GJS	< 500	150	105	130
	K2.2	Cast iron with spheroidal graphite, GJS	≤ 800	120	85	98
	K2.3	Cast iron with spheroidal graphite, GJS	> 800	90	55	70
	K3.1	Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM	< 500	90	55	70
	K3.2	Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM	> 500	90	55	70

FXR505 | FXR500

Cutting material: HP622 | Lead: MV0A | MGOA

MMG*	Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed v _c (m/min)			
			Internal cooling	External cooling	MQL	
N	N1.1	Aluminium, non-alloy and alloy < 3 % Si		250	125	190
	N1.2	Aluminium, alloy ≤ 7 % Si		250	125	190
	N1.3	Aluminium, alloy > 7-12 % Si		250	125	190
	N1.4	Aluminium, alloy > 12 % Si		250	125	190

FXR505 | FXR510

Cutting material: HU612 | Lead: MV0A | MG1M

MMG*	Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed v _c (m/min)			
			Internal cooling	External cooling	MQL	
N2	N2.1	Copper, unalloyed and low-alloyed	< 300	50	25	
	N2.2	Copper, alloy	> 300	50	25	
	N2.3	Brass, bronze, gunmetal	< 1200	50	25	40

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

	Feed f_z (mm/rev) with drill diameter						
	z 4	z 4	z 6	z 6	z 6	z 8	z 8
	< 5,000	> 5,000 – 6,100	> 6,100 – 8,000	> 8,000 – 12,000	> 12,000 – 15,100	> 15,100 – 16,000	> 16,000 – 20,100
	0,050	0,080	0,080	0,140	0,180	0,180	0,190
	0,050	0,080	0,080	0,140	0,180	0,180	0,190
	0,050	0,080	0,080	0,140	0,180	0,180	0,190
	0,050	0,080	0,080	0,140	0,180	0,180	0,190
	0,050	0,080	0,080	0,140	0,180	0,180	0,190
	0,050	0,080	0,080	0,140	0,180	0,180	0,190
	0,050	0,080	0,080	0,140	0,180	0,180	0,190
	0,050	0,080	0,080	0,140	0,180	0,180	0,190
	0,08	0,10	0,10	0,17	0,22	0,22	0,23
	0,08	0,10	0,10	0,17	0,22	0,22	0,23
	0,08	0,10	0,10	0,17	0,22	0,22	0,23
	0,08	0,10	0,10	0,17	0,22	0,22	0,23
	0,08	0,10	0,10	0,17	0,22	0,22	0,23
	0,08	0,10	0,10	0,17	0,22	0,22	0,23

	Feed f_z (mm/rev) with drill diameter						
	z 4	z 4	z 6	z 6	z 6	z 6	z 6
	< 5,000	> 5,000 – 6,200	> 6,200 – 8,000	> 8,000 – 12,000	> 12,000 – 16,000	> 16,000 – 16,200	> 16,200 – 20,200
	0,120	0,150	0,150	0,210	0,250	0,250	0,300
	0,120	0,150	0,150	0,210	0,250	0,250	0,300
	0,120	0,150	0,150	0,210	0,250	0,250	0,300
	0,120	0,150	0,150	0,210	0,250	0,250	0,300

	Feed f_z (mm/rev) with drill diameter						
	z 4	z 4	z 6	z 6	z 6	z 6	z 8
	< 5,000	> 5,000 – 6,200	> 6,200 – 8,000	> 8,000 – 12,000	> 12,000 – 16,000	> 16,000 – 16,200	> 16,200 – 20,200
	0,040	0,050	0,050	0,060	0,100	0,100	0,100
	0,040	0,050	0,050	0,060	0,100	0,100	0,100
	0,040	0,050	0,050	0,060	0,100	0,100	0,100

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendations for FixReam FXR

Feed and cutting speed

FXR510 | FXR505

Cutting material: HP613 | Lead: MF1M | MTOA

MMG*	Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed v _c (m/min)			
			Internal cooling	External cooling	MQL	
S	S1.1	Titanium, titanium alloys	< 400	25	10	15
	S2.1	Titanium, titanium alloys	< 1200	25	10	15
	S2.2	Titanium, titanium alloys	> 1200	25	10	15
	S3.1	Nickel, non-alloy and alloy	< 900	25	10	15
	S3.2	Nickel, non-alloy and alloy	> 900	25	10	15
	S4.1	High-temperature super alloy Ni, Co and Fe-based		25	10	15
	S5.1	Tungsten and molybdenum alloys		25	10	15

FXR510 | FXR505

Cutting material: HC614 | Lead: MF1M | MVOA

MMG*	Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed v _c (m/min)			
			Internal cooling	External cooling	MQL	
C	C1.1	Plastic matrix, aramide fibre-reinforced (AFRP)		50	25	30
	C1.2	Plastic matrix (thermosetting), CFRP/GFRP		50	25	30
	C1.3	Plastic matrix (thermoplastic), CFRP/GFRP		50	25	30

FXR500 | FXR505

Cutting material: HP141 | Lead: MFOA | MTOA

MMG*	Workpiece material	Strength/hardness [N/mm ²] [HRC]	Cutting speed v _c (m/min)			
			Internal cooling	External cooling	MQL	
H	H1.1	Hardened steel / cast steel	< 44	50	20	30
	H1.2	Hardened steel / cast steel	< 55	10	5	5

	Feed f_z (mm/rev) with drill diameter						
	z 4	z 4	z 6	z 6	z 6	z 6	z 8
	< 5,000	> 5,000 – 6,200	> 6,200 – 8,000	> 8,000 – 12,000	> 12,000 – 16,000	> 16,000 – 16,200	> 16,200 – 20,200
	0,020	0,040	0,060	0,080	0,100	0,100	0,100
	0,020	0,040	0,060	0,080	0,100	0,100	0,100
	0,020	0,040	0,060	0,080	0,100	0,100	0,100
	0,020	0,040	0,060	0,080	0,100	0,100	0,100
	0,020	0,040	0,060	0,080	0,100	0,100	0,100
	0,020	0,040	0,060	0,080	0,100	0,100	0,100
	0,020	0,040	0,060	0,080	0,100	0,100	0,100

	Feed f_z (mm/rev) with drill diameter						
	z 4	z 4	z 6	z 6	z 6	z 6	z 8
	< 5,000	> 5,000 – 6,200	> 6,200 – 8,000	> 8,000 – 12,000	> 12,000 – 16,000	> 16,000 – 16,200	> 16,200 – 20,200
	0,060	0,100	0,100	0,100	0,100	0,100	0,100
	0,060	0,100	0,100	0,100	0,100	0,100	0,100
	0,060	0,100	0,100	0,100	0,100	0,100	0,100

	Feed f_z (mm/rev) with drill diameter						
	z 4	z 4	z 6	z 6	z 6	z 6	z 6
	< 5,000	> 5,000 – 6,200	> 6,200 – 8,000	> 8,000 – 12,000	> 12,000 – 16,000	> 16,000 – 16,200	> 16,200 – 20,200
	0,015	0,025	0,020	0,040	0,050	0,050	0,050
	0,015	0,025	0,020	0,040	0,050	0,050	0,050

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.