

Your technology partner for cost-effective machining

# FixReam 700

# FixReam 700

## Reconditioning enables the cost per part to be considerably reduced

The FixReam 700 was developed to increase economic efficiency through effective reconditioning. Thanks to an expansion screw, the multi-bladed reamer can be expanded in diameter before regrinding. As a result, all functional surfaces can be reground, both on the lead as well as on the tool diameter. This allows the reamer to be reused up to 9 times.

### 1 30% better roundness and cylindrical form

- Thanks to patented geometry

### 2 Optimal chip shape

- New, innovative leads enable better chip shape

### 3 Up to 9 uses

- Possible through expansion screw for compensation before regrinding



## Features

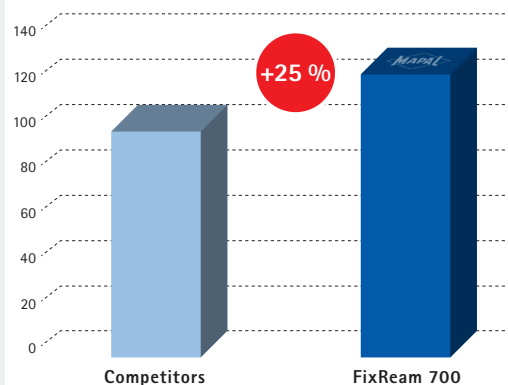
### Configurable features:

- $\emptyset$  area: 9.900 - 32.200 mm
- Bore diameter: Tolerance  $\geq$  IT6
- Tool diameter: Tolerance  $\geq 3 \mu\text{m}$  in increments of 0.001 mm
- Further carbide-coated and cermet-coated variants to follow in Q2 2024

### Dimensions:

- Available as a short and long design
- For through bores and blind bores
- Preferred series available from stock in H7: 10.000 - 32.000 mm

## TOOL LIFE ACHIEVED [%]



### Workpiece material: 42CrMoS4

Machining length: 45.000 mm  
 Nominal  $\emptyset$ : 12.000 mm  
 n: 3448 rpm  
 $v_f$ : 3448 mm/min  
 $v_c$ : 130 m/min  
 z: 6

# FixReam 700

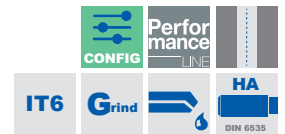
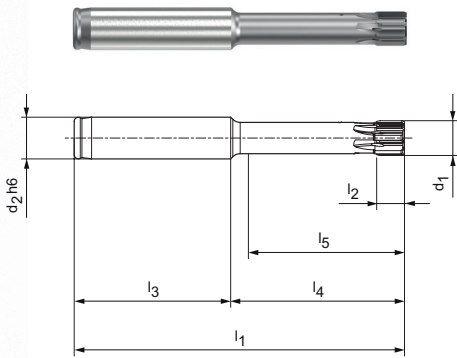
Expanding design, short, for through bore  
FXR702

## Design:

Reamer diameter: 9.900 - 32.200 mm  
Lead: LA1G  
Cutting material: CU111  
Uncoated cermet

## Application:

The expansion system is therefore only suitable for compensation prior to re-grinding and not for setting or re-adjusting the diameter.



## Preferred series in H7

d <sub>1</sub> H7	Dimensions						z	Specification	Order no.
	d <sub>2</sub> h6	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>			
10,000	12	95	8	45	50	45	6	FXR702Ø10.000H7LA1G-CU111	31460929
12,000	12	95	8	45	50	45	6	FXR702Ø12.000H7LA1G-CU111	31460960
14,000	12	95	8	45	50	45	6	FXR702Ø14.000H7LA1G-CU111	31460961
16,000	16	100	12	50	50	45	6	FXR702Ø16.000H7LA1G-CU111	31460962
18,000	16	100	12	50	50	45	6	FXR702Ø18.000H7LA1G-CU111	31460963
20,000	20	120	12	60	60	55	6	FXR702Ø20.000H7LA1G-CU111	31460964
22,000	20	120	12	60	60	55	6	FXR702Ø22.000H7LA1G-CU111	31460965
24,000	20	120	12	60	60	55	6	FXR702Ø24.000H7LA1G-CU111	31460966
25,000	20	120	12	60	60	55	6	FXR702Ø25.000H7LA1G-CU111	31460967
28,000	25	135	12	60	75	70	6	FXR702Ø28.000H7LA1G-CU111	31460968
30,000	25	135	12	60	75	70	6	FXR702Ø30.000H7LA1G-CU111	31460969
32,000	25	135	12	60	75	70	6	FXR702Ø32.000H7LA1G-CU111	31460970

## Configurable features



### Bore diameter tolerance ≥ IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance ≥ IT6

### Specification:

FXR702Ø[**Diameter**][**Tolerance**]LA1G-CU111

### G variants:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerances ≥ 3 μm (G variant, see cutting data)

### G variant specification:

FXR702GØ[**Diameter**][**Tolerance**]LA1G-CU111

## Dimensions of configurable series IT6

d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	z
9,900 - 15,899	12	95	8	45	50	45	6
15,900 - 18,899	16	100	12	50	50	45	6
18,900 - 25,899	20	120	12	60	60	55	6
25,900 - 32,200	25	135	12	60	75	70	6

### IT6 tolerance example:

FXR702Ø16.350H6LA1G-CU111

Bore diameter d<sub>1</sub> = 16.350 H6

### G variant example:

FXR702GØ16.350-3LA1G-CU111

Special tool diameter d<sub>1</sub> = 16.350 -3 μm

Dimensions in mm.

For cutting data recommendation, see page 7.

# FixReam 700

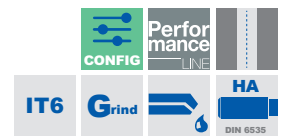
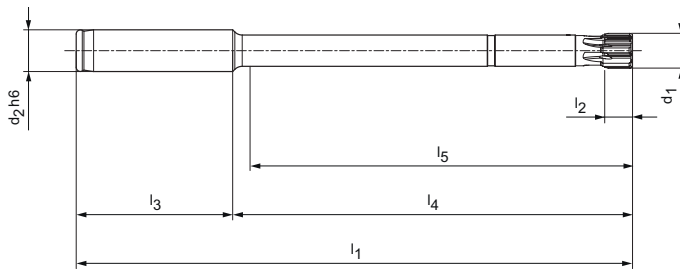
Expanding design, long, for through bore  
FXR700

## Design:

Reamer diameter: 9.900 - 32.200 mm  
Lead: LA1G  
Cutting material: CU111  
Uncoated cermet

## Application:

The expansion system is therefore only suitable for compensation prior to re-grinding and not for setting or re-adjusting the diameter.



## Preferred series in H7

d <sub>1</sub> H7	Dimensions						z	Specification	Order no.
	d <sub>2</sub> h6	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>			
10,000	12	160	8	45	115	110	6	FXR700Ø10.000H7LA1G-CU111	31460971
12,000	12	160	8	45	115	110	6	FXR700Ø12.000H7LA1G-CU111	31460972
14,000	12	160	8	45	115	110	6	FXR700Ø14.000H7LA1G-CU111	31460973
16,000	16	180	12	50	130	125	6	FXR700Ø16.000H7LA1G-CU111	31460974
18,000	16	180	12	50	130	125	6	FXR700Ø18.000H7LA1G-CU111	31460975
20,000	20	200	12	60	140	135	6	FXR700Ø20.000H7LA1G-CU111	31460976
22,000	20	200	12	60	140	135	6	FXR700Ø22.000H7LA1G-CU111	31460977
24,000	20	200	12	60	140	135	6	FXR700Ø24.000H7LA1G-CU111	31460978
25,000	20	200	12	60	140	135	6	FXR700Ø25.000H7LA1G-CU111	31460979
28,000	25	210	12	60	150	145	6	FXR700Ø28.000H7LA1G-CU111	31460980
30,000	25	210	12	60	150	145	6	FXR700Ø30.000H7LA1G-CU111	31460981
32,000	25	210	12	60	150	145	6	FXR700Ø32.000H7LA1G-CU111	31460982

## Configurable features



### Bore diameter tolerance ≥ IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance ≥ IT6

### Specification:

FXR700Ø[Diameter][Tolerance]LA1G-CU111

### G variants:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerances ≥ 3 μm (G variant, see cutting data)

### G variant specification:

FXR700GØ[Diameter][Tolerance]LA1G-CU111

## Dimensions of configurable series IT6

d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	z
9,900 - 15,899	12	160	8	45	115	110	6
15,900 - 18,899	16	180	12	50	130	125	6
18,900 - 25,899	20	200	12	60	140	135	6
25,900 - 32,200	25	210	12	60	150	145	6

### IT6 tolerance example:

FXR700Ø16.350H6LA1G-CU111

Bore diameter d<sub>1</sub> = 16.350 H6

### G variant example:

FXR700GØ16.350-3LA1G-CU111

Special tool diameter d<sub>1</sub> = 16.350 -3 μm

Dimensions in mm.

For cutting data recommendation, see page 7.

# FixReam 700

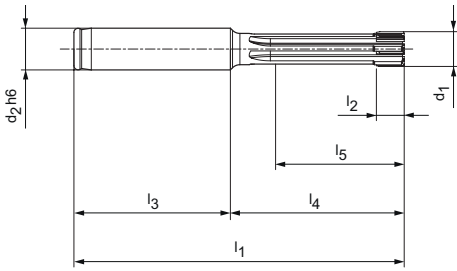
Expanding design, short, for blind bore  
FXR703

**Design:**

Reamer diameter: 9.900 - 32.200 mm  
Lead: LB1G  
Cutting material: CU111  
Uncoated cermet

**Application:**

The expansion system is therefore only suitable for compensation prior to re-grinding and not for setting or re-adjusting the diameter.



**Preferred series in H7**

d <sub>1</sub> H7	Dimensions						z	Specification	Order no.
	d <sub>2</sub> h6	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>			
10,000	12	95	8	45	50	38	6	FXR703Ø10.000H7LB1G-CU111	31460983
12,000	12	95	8	45	50	39	6	FXR703Ø12.000H7LB1G-CU111	31460984
14,000	12	95	8	45	50	39	6	FXR703Ø14.000H7LB1G-CU111	31460985
16,000	16	100	12	50	50	38	6	FXR703Ø16.000H7LB1G-CU111	31460986
18,000	16	100	12	50	50	39	6	FXR703Ø18.000H7LB1G-CU111	31460987
20,000	20	120	12	60	60	45	6	FXR703Ø20.000H7LB1G-CU111	31460988
22,000	20	120	12	60	60	45	6	FXR703Ø22.000H7LB1G-CU111	31460989
24,000	20	120	12	60	60	45	6	FXR703Ø24.000H7LB1G-CU111	31460990
25,000	20	120	12	60	60	45	6	FXR703Ø25.000H7LB1G-CU111	31460991
28,000	25	135	12	60	75	60	6	FXR703Ø28.000H7LB1G-CU111	31460992
30,000	25	135	12	60	75	60	6	FXR703Ø30.000H7LB1G-CU111	31460993
32,000	25	135	12	60	75	60	6	FXR703Ø32.000H7LB1G-CU111	31460994

**Configurable features**

**Bore diameter tolerance ≥ IT6:**

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance ≥ IT6

**Specification:**  
FXR703Ø[**Diameter**][**Tolerance**]LB1G-CU111

**G variants:**

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerances ≥ 3 µm (G variant, see cutting data)

**G variant specification:**  
FXR703GØ[**Diameter**][**Tolerance**]LB1G-CU111

**Dimensions of configurable series IT6**

d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	z
9,900 - 15,899	12	95	8	45	50	38	6
15,899 - 18,899	16	100	12	50	50	38	6
18,900 - 25,899	20	120	12	60	60	45	6
25,900 - 32,200	25	135	12	60	75	60	6

**IT6 tolerance example:**  
FXR703Ø16.350H6LB1G-CU111

Bore diameter d<sub>1</sub> = 16.350 H6

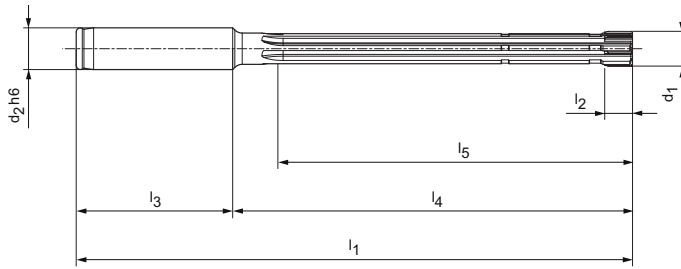
**G variant example:**  
FXR703GØ16.350-3LB1G-CU111

Special tool diameter d<sub>1</sub> = 16.350 -3 µm

Dimensions in mm.  
For cutting data recommendation, see page 7.

# FixReam 700

Expanding design, long, for blind bore  
FXR705



## Design:

Reamer diameter: 9.900 - 32.200 mm  
Lead: LB1G  
Cutting material: CU111  
Uncoated cermet

## Application:

The expansion system is therefore only suitable for compensation prior to re-grinding and not for setting or re-adjusting the diameter.

## Preferred series in H7

d <sub>1</sub> H7	Dimensions						z	Specification	Order no.
	d <sub>2</sub> h6	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>			
10,000	12	160	8	45	115	100	6	FXR705Ø10.000H7LB1G-CU111	31460995
12,000	12	160	8	45	115	100	6	FXR705Ø12.000H7LB1G-CU111	31460996
14,000	12	160	8	45	115	100	6	FXR705Ø14.000H7LB1G-CU111	31460997
16,000	16	180	12	50	130	114	6	FXR705Ø16.000H7LB1G-CU111	31460998
18,000	16	180	12	50	130	115	6	FXR705Ø18.000H7LB1G-CU111	31460999
20,000	20	200	12	60	140	120	6	FXR705Ø20.000H7LB1G-CU111	31461000
22,000	20	200	12	60	140	120	6	FXR705Ø22.000H7LB1G-CU111	31461001
24,000	20	200	12	60	140	120	6	FXR705Ø24.000H7LB1G-CU111	31461002
25,000	20	200	12	60	140	120	6	FXR705Ø25.000H7LB1G-CU111	31461003
28,000	25	210	12	60	150	130	6	FXR705Ø28.000H7LB1G-CU111	31461004
30,000	25	210	12	60	150	130	6	FXR705Ø30.000H7LB1G-CU111	31461005
32,000	25	210	12	60	150	130	6	FXR705Ø32.000H7LB1G-CU111	31461006

## Configurable features



### Bore diameter tolerance ≥ IT6:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered in tolerance ≥ IT6

### Specification:

FXR705Ø[**Diameter**][**Tolerance**]LB1G-CU111

### G variants:

- Diameter freely selectable in increments of 0.001 mm
- Can be ordered from tolerances ≥ 3 μm (G variant, see cutting data)

### G variant specification:

FXR705GØ[**Diameter**][**Tolerance**]LB1G-CU111

## Dimensions of configurable series IT6

d <sub>1</sub>	d <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	z
9,900 - 15,899	12	160	8	45	115	100	6
15,900 - 18,990	16	180	12	50	130	113	6
18,900 - 25,899	20	200	12	60	140	120	6
25,900 - 32,200	25	210	12	60	150	130	6

### IT6 tolerance example:

FXR705Ø16.350H6LB1G-CU111

Bore diameter d<sub>1</sub> = 16.350 H6

### G variant example:

FXR705GØ16.350-3LB1G-CU111

Special tool diameter d<sub>1</sub> = 16.350 -3 μm

Dimensions in mm.

For cutting data recommendation, see page 7.

# Cutting data recommendation for FixReam 700

Feed and cutting speed

## FXR700 | FXR702 | FXR703 | FXR705

Cutting material: CU111 | Lead: LA1G | LB1G

MMG*		Workpiece material	Strength/ Hardness [N/mm <sup>2</sup> ] [HRC]	Cutting speed $v_c$ [m/min]		Feed $f_z$ [mm/rev] with tool diameter	
				Internal cooling		z 6	
						9.900 - 32.200	
P	P1	P1.1	Structural, machining, case hardened and tempering steels, unalloyed	< 700	120	0.150	
		P1.2	Structural, machining, case hardened and tempering steels, unalloyed	< 1,200	120	0.150	
	P2	P2.1	Nitriding, hardening and tempering steels, alloyed	< 900	110	0.150	
		P2.2	Nitriding, hardening and tempering steels, alloyed	< 1,400	110	0.120	
	P3	P3.1	Tool, bearing, spring and high-speed steels**	< 800	110	0.150	
		P3.2	Tool, bearing, spring and high-speed steels**	< 1,000	120	0.150	
P3.3		Tool, bearing, spring and high-speed steels**	< 1,500	120	0.150		
K	K1	K1.1	Cast iron with lamellar graphite (grey cast iron), GJL	< 300	120	0.200	
		K2.1	Cast iron with spheroidal graphite, GJS	< 500	120	0.180	
	K2	K2.2	Cast iron with spheroidal graphite, GJS	≤ 800			
		K2.3	Cast iron with spheroidal graphite, GJS	> 800			

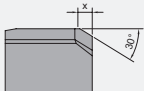
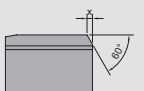
### Tolerances for the G variant/fixed variant FXRXX

Cutting material	Diameter range
Uncoated	
CU111	-0.003

### G variant

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).

### Lead geometry and rake angles

Geometry	Lead geometry			Geometry
	Name	Ø area	Lead length x	
	LA	9.900 - 11,700 mm	0.80 mm	30°
		11.701 - 32,200 mm	1.00 mm	
	LB	9.900 - 32,000 mm	0.25 mm	60°

### Chip shape / rake angle

Rake angle	
Name	Angle
1G	6°

\* MAPAL Machining Groups

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

The specified cutting data are guide values.

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



Discover tool and service solutions now that give you a lead:

## BORE MACHINING

REAMING | FINE BORING

DRILLING FROM SOLID | BORING | COUNTERSINKING

MILLING

CLAMPING

TURNING

ACTUATING

SETTING | MEASURING | DISPENSING

SERVICES