passion for precision



FRAISA sets new standards

**High-feed cutting in hardened steels** with **XFeed-H** 



Available online

FRAISA ToolExpert® With the new **XFeed-H** milling cutter, FRAISA has produced the perfect tool for realizing HFC processes in hardened steels. Very high feed rates, high cutting speeds and minimal axial engagement depths characterize the strategy of High Feed Cutting (HFC). As a result, this milling concept allows the line-by-line machining of 3D contours in hardened steels – efficiently and quickly.

High chip removal rates are achieved by means of maximum feed rates, with the cutting geometry and the precisely configured machining parameters being coordinated perfectly with one another. The new HFC milling cutter has been designed especially for use in mold and tool making and for machining hardened steels.

The **XFeed-H** guarantees high productivity while keeping tool costs low – especially when high track speeds can be realized on highly dynamic machines. The high process stability of the **XFeed-H** means it is predestined for applications that run autonomously.

The design of the penetration edge of the **XFeed-H** is the key to its performance. A very fine-grained and high-hard carbide forms the basis of the cutting edge to enable it to safely absorb the high mechanical and thermal stresses it is subjected to. An extremely hard and temperature-resistant coating protects the cutting edge. The machining parameters, which are perfectly matched to the cutting edge, shift the main load away from the cutting edge, guaranteeing a long tool life and high process stability.

# The advantages:

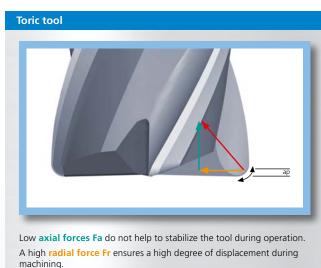
- Shorter throughput times:
  From the blank to very close to the final contour (near net shape) in one process hardened workpieces can be machined efficiently and throughput times drastically reduced
- Productivity increase thanks to increased chip removal rates resulting from maximum feed rates and robust tool design
- Near-net-shape result thanks to small axial steps during roughing
- Easy programming in the CAM system
- **Optimum automation** thanks to reliable application

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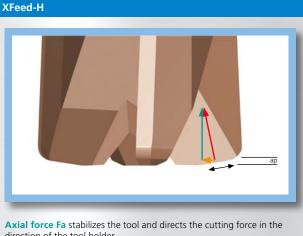
# Penetration edge facilitates excellent performance

The shape of the end cutting edge of the **XFeed-H** greatly increases the effective length of the cutting edge. As a result, the mechanical stress and wear are optimally distributed along the end cutting edge. Feed rates and therefore also the chip removal rate can be significantly increased.

Due to the lack of a curved cutting edge, the tooth face width can be increased, giving the tool extra stability. The forces resulting from the high feed rate are consequently absorbed with ease.



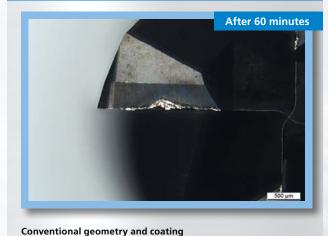
The **cutting force Fc** acts only on the area of the radius, meaning **wear** is also concentrated only on the radius. This massively increases the risk of chipping of the cutting edge.



direction of the tool holder.

Radial force Fr ensures minimal displacement during machining.

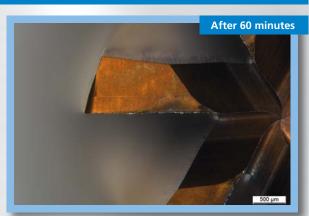
Result: The cutting force Fc is distributed across the end cutting edge (6x cutting depth ap) and this consequently reduces the degree of wear and the risk of cutting edge chipping at high feed rates.



Vc = 60 m/min, n = 3,200 rpm fz = 0.146 mm/z, vf = 1,890 mm/min, ap = 0.15 mm, ae = 3.3 mm

Wear on toric tool

### Wear on XFeed-H



# XFeed-H with DURO-Si coating Vc = 60 m/min, n = 3,200 rpm fz = 0.146 mm/z, vf = 2,790 mm/min, ap = 0.15 mm, ae = 3.3 mm

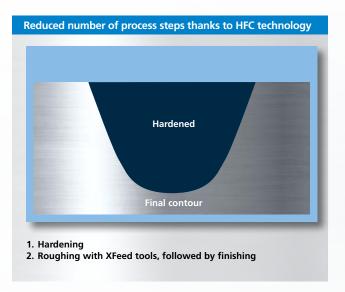
# **Shorter throughput times**

In conventional work sequences, mold blanks are machined before being hardened and finished with a machining allowance. Idle times before and after the hardening process result in high throughput times.

The big advantage of HFC milling cutters is that the entire milling process can be carried out after the mold has been hardened

This significantly shortens the throughput time for mold production. Small, axial line steps ensure near-net-shape roughing of the hardened workpiece. This saves time and money as subsequent finishing processes can be implemented much faster.

# Machining allowance hardened Before hardening 1. Machining before hardening 2. Hardening of the pre-milled mold 3. Final contour machining of the hardened mold



# **Optimum automation**

Autonomous manufacturing continues to gain ground. Process reliability is the key to success here The perfect interaction between the cutting parameters from ToolExpert and the tool geometry forms a sound foundation for long and highly productive operating times.

Advantages when using the tools:

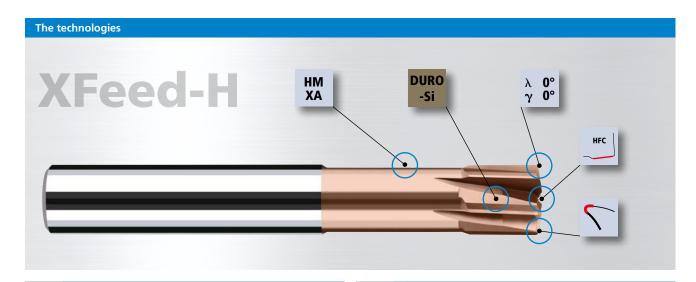
- Optimum operating parameters can be found quickly and reliably
- Use of perfectly coordinated, tool- and material-specific cutting data
- CAD data for selected tools is available for download



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# High productivity thanks to effective edge geometry



HM High-hard

High-hard, temperature-resistant cutting material HM-XA

λ 0° γ 0° Compact end cutting edge

Combines cutting ability and stability

HFC

HFC edge geometry

• Allows high feed rates

• Reduces increase in wear



**Cutting edge conditioning** 

Stabilizes the cutting edge

• Counteracts chipping of the cutting edge

Duro -Si

Superhard coating containing silicon

• Significantly reduces abrasive wear

High number of teeth (d1 ≥ 6 mm)

Allows high feed rates

### XFeed-H tool family

The new HFC milling cutters from FRAISA are available in three different lengths with throats 3xd, 4.5xd and 6xd long.

# All HFC milling cutters can be reconditioned after use.

**FRAISA ReTool®** offers an all-round service that restores used tools to their original performance level – using the very latest technology and in a resource-friendly way. Our ability to provide this performance guarantee is a priority of our team of experts right from very early on in product development. The outcome: mint-condition tools as productive as they were the first day they were used.



# Over 30 years' experience in tool reconditioning:

Our competence center in Germany is Europe's largest service center for carbide milling tools.

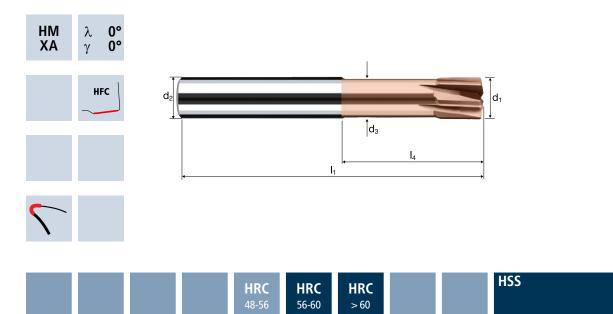


Video on our service product: FRAISA ReTool®

# High feed end mills XFeed-H

Cylindrical neck, 3xd





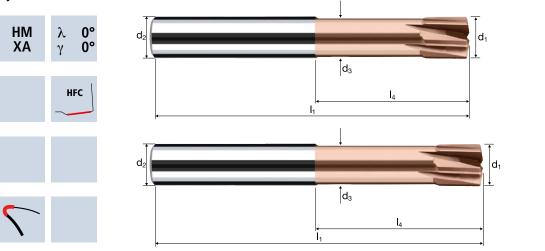
			- ·	A (1 L A10	I							DURO-Si
	Example: Order-N°.		Coating	Article-N°.	ø-Code	<b>1</b>						
			Н	7610	100							H7610
<b>Ø</b> Code	<b>d</b> <sub>1</sub> e8	<b>d<sub>2</sub></b> h5	d <sub>3</sub>		I <sub>1</sub>	l <sub>3</sub>	I <sub>4</sub>	ap <sub>max</sub>	R <sub>theo.</sub>	α	z	
100	1.00	6.00	0.95		57	3.00	13.08	0.04	0.09	11.5°	4	•
140	2.00	6.00	1.90		57	6.00	14.31	0.08	0.18	8.5°	4	•
180	3.00	6.00	2.80		57	9.00	15.63	0.12	0.27	6.0°	4	•
220	4.00	6.00	3.70		57	12.00	16.95	0.16	0.36	3.8°	4	•
260	5.00	6.00	4.60		57	15.00	18.27	0.20	0.45	1.8°	4	•
300	6.00	6.00	5.50		57	19.34	20.00	0.25	0.54	0.0°	6	•
391	8.00	8.00	7.40		63	25.29	26.00	0.33	0.72	0.0°	6	•
450	10.00	10.00	9.20		72	30.20	31.00	0.41	0.90	0.0°	6	•
501	12.00	12.00	11.00		83	36.13	37.00	0.50	1.08	0.0°	6	•
610	16.00	16.00	15.00		92	42.13	43.00	0.69	1.44	0.0°	6	•

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# High feed end mills XFeed-H

Cylindrical neck, 4.5xd Cylindrical neck, 6xd



**HRC** 

56-60

**HRC** 

> 60

HRC



HSS

			Coating	Article-N°.	ø-Code							DURO-Si
	Example <b>Order-N</b>		H 7614 180			٦						H7614
<b>Ø</b> Code	<b>d</b> <sub>1</sub> e8	<b>d<sub>2</sub></b> h5	d <sub>3</sub>		I <sub>1</sub>	l <sub>3</sub>	I <sub>4</sub>	ap <sub>max</sub>	R <sub>theo.</sub>	α	z	
180	3.00	6.00	2.80		66	18.00	24.63	0.12	0.27	3.7°	4	•
220	4.00	6.00	3.70		69	24.00	28.95	0.16	0.36	2.1°	4	•
260	5.00	6.00	4.60		75	30.00	33.27	0.20	0.45	1.0°	4	•
300	6.00	6.00	5.50		80	42.34	43.00	0.25	0.54	0.0°	6	•
391	8.00	8.00	7.40		90	52.29	53.00	0.33	0.72	0.0°	6	•
450	10.00	10.00	9.20		105	63.20	64.00	0.41	0.90	0.0°	6	•
501	12.00	12.00	11.00		120	73.13	74.00	0.50	1.08	0.0°	6	•
610	16.00	16.00	15.00		135	85.13	86.00	0.69	1.44	0.0°	6	•







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The fastest way to our E-Shop.

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