

passion  
for precision



## **MFC – Multi-Functional Cutting**

Up to 96 different applications per tool



New cutting data  
calculator

**ToolExpert**  
**MFC**

# Multi-functionality is the key factor for simplifying the entire manufacturing process

Interacting with state-of-the-art CAD/CAM systems, **MFC** tools offer an incomparable level of **multi-functionality**, enabling **96 applications** with only **one tool** and thus creating an **incredible cost-cutting potential**.

**MFC – Multi-Functional-Cutting** is the ideal processing solution for the **Industrial Internet**. The required knowledge of the best **tool, type of application and cutting data** is easily accessible via our in-house developed **ToolExpert MFC**.

This new multi-functionality offers **great savings potential** in purchasing, in tool preparation, in setting up the machine and, not least, in terms of tool costs.

**CAD/CAM systems** offer a **broad range of efficient processing strategies**. The **challenge for manufacturers** is to optimally select the right milling strategy and tool for each specific application.

For that reason, the aim of **MFC** product development was to create a powerful generation of tools that are suitable for a wide range of milling strategies and materials. The **entire manufacturing process is therefore simplified without compromising on performance**.

[ 2 ]

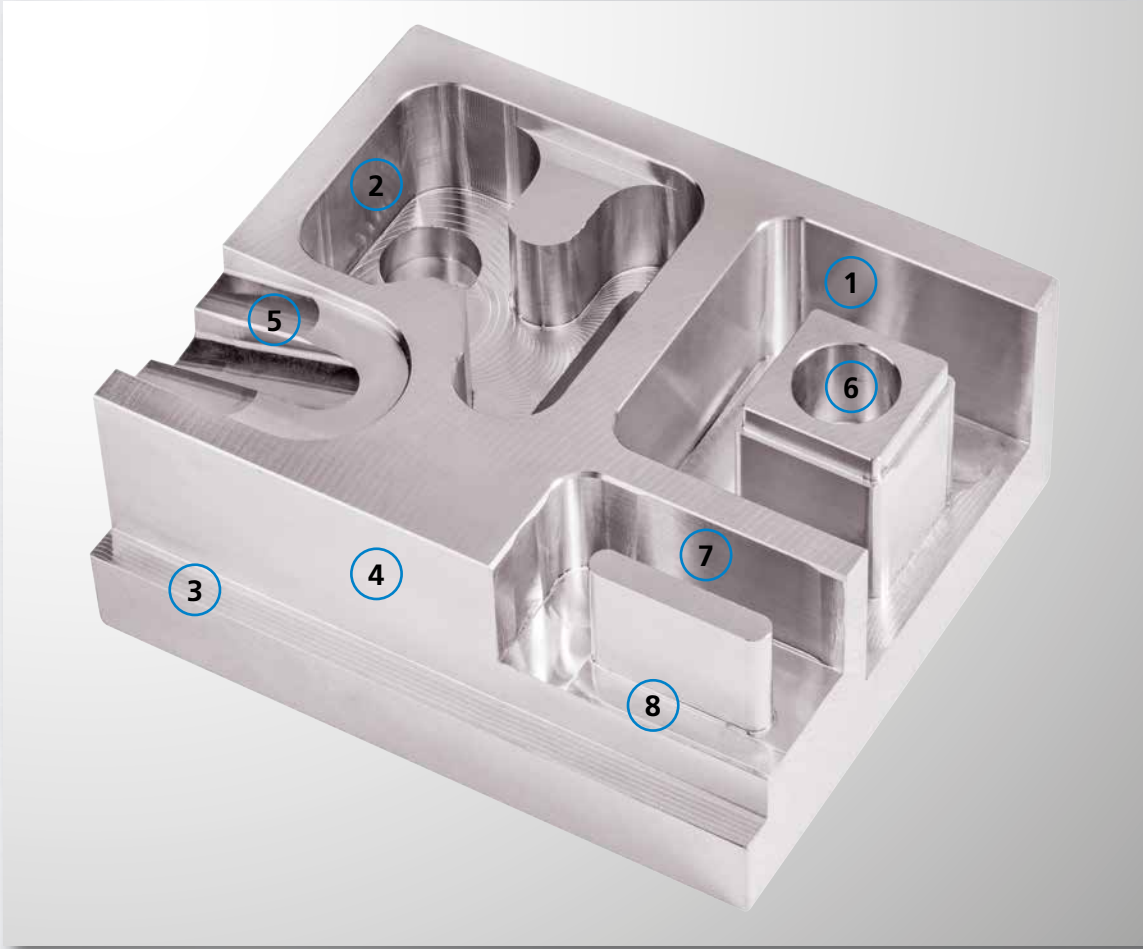
## The advantages

- **Simplified tool procurement**  
thanks to multi-functionality
- **Reduced machine setup times**  
thanks to a smaller range of tools
- **Reduced capital commitment**  
for tools and tool holders
- **Reduced programming time**  
thanks to the application knowledge stored in ToolExpert MFC
- **More process reliability and reproducibility**  
with chip breaker and central air and cooling channel
- **Reduced costs**  
thanks to optimal tool use and time-saving in the manufacturing process
- **Outstanding productivity and competitiveness**  
working together with CAD/CAM systems
- **Optimal life cycle**  
with ToolCare® tool management

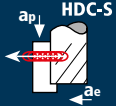
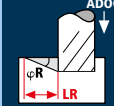

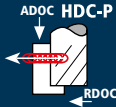
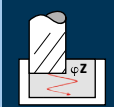





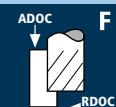
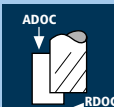
## Up to 96 different applications per tool

The unique multi-functionality of the new **MFC** tools covers 12 groups of materials, each of which can be combined with eight specific applications. This range of performance is new and uniquely large!

### The ranges of application of MB-NVDS tools



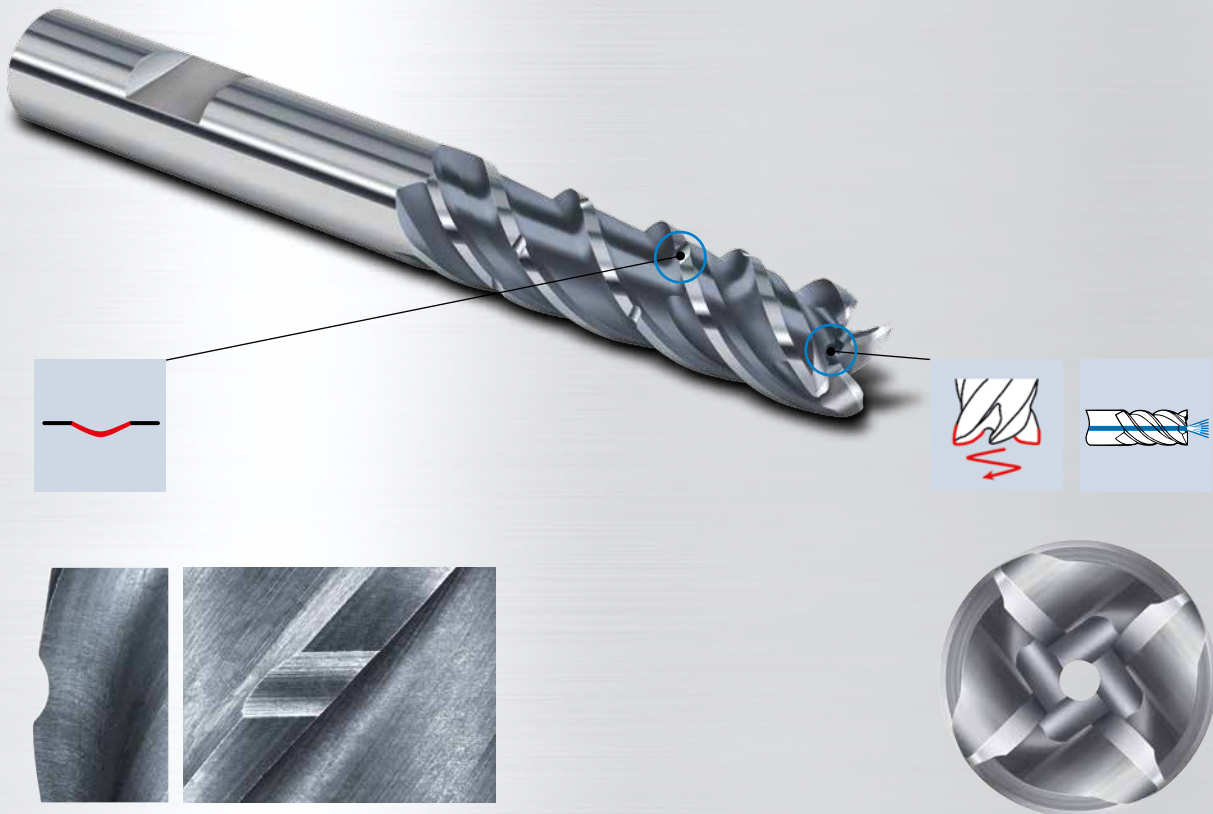
[ 3 ]

HDC roughing		Penetration		Tools	
1	 <p><b>HDC-S</b>  <math>a_{p1}</math>  <math>a_e</math></p> <p><b>Tool 2</b>  <math>d1 = 1/4''</math>  <math>ADOC = 3/4''</math></p>	 <p><math>\psi R</math>  <math>LR</math></p> <p><b>Tool 1</b>  <math>d1 = 3/8''</math>  <math>\phi R = 17^\circ</math></p>	5	 <p><b>Tool1:</b>  P98202.432  MB-NVDS fl4  Standard version</p>	
2	 <p><b>HDC-P</b>  <math>ADOC</math>  <math>RDOC</math></p> <p><b>Tool 1</b>  <math>d1 = 3/8''</math>  <math>ADOC = 3/5''</math></p>	 <p><math>\psi Z</math></p> <p><b>Tool 2</b>  <math>d1 = 1/4''</math>  <math>\phi Z = 12^\circ</math>  <math>ADOC = 5/8''</math></p>	6	 <p><b>Tool2:</b>  P98112.312  MB-NVDS fl4  Long length version</p>	
Finishing		HPC roughing		 See for yourself the impressive performance of the <b>MB-NVDS</b> cutter in our video 	
3	 <p><b>PF</b>  <math>ADOC</math>  <math>RDOC</math></p> <p><b>Tool 2</b>  <math>d1 = 1/4''</math>  <math>ADOC = 3/4''</math></p>	 <p><math>ADOC</math></p> <p><b>Tool 1</b>  <math>d1 = 3/8''</math>  <math>ADOC = 9/16''</math></p>	7		
4	 <p><b>F</b>  <math>ADOC</math>  <math>RDOC</math></p>	 <p><math>ADOC</math>  <math>RDOC</math></p>	8		

# The **technology** of the multi-functional **MFC tools** with central air and cooling channel

The new MFC technologies: Penetration edge, central air and cooling channel and chip management

[ 4 ]



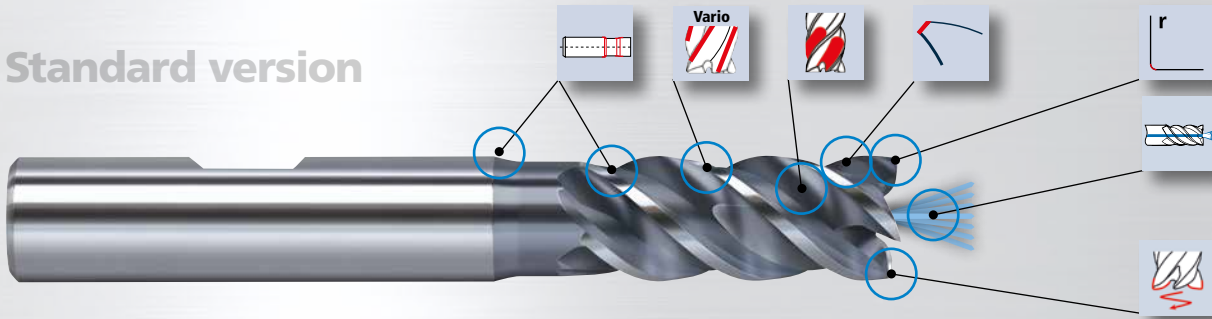
## Chip management for all medium length and long length versions

- Working in combination with the central air and cooling channel, the chips are reliably flushed out of the processing area
- The design of the chip breaker and its manufacturing technology have been specially developed for multifunctional cutting
- Suitable for HPC, HDC, penetration and finishing

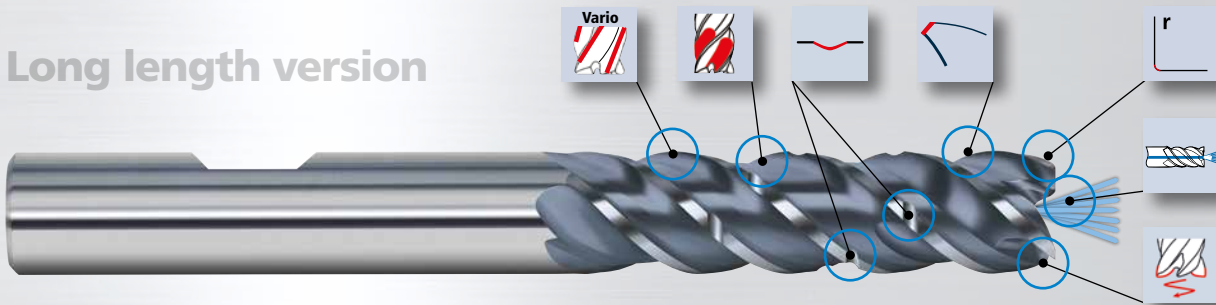
## Combination of penetration edge and central air and cooling channel

- Provides outstanding process reliability in terms of chip removal when penetrating and processing inner contours
- Is 40% stronger and therefore more efficient than lateral channels
- Is able to process a wider range of materials due to the better cooling effect of the cutting corners
- Longer tool life with same efficiency due to improved chip removal

## Standard version



## Long length version



### Tools with central air and cooling channel

- The tool is designed with a central, continuous bore that acts as an air and cooling channel
- Perfect chip removal, particularly for inner contours
- Better cooling of the cutting edge, thus allowing a higher thermal and mechanical workload as well as a broader range of materials



### Tools with chip management

- The tool has a special chip breaking design
- Shorter chip lengths at high axial infeed rates, improving chip removal from both the component and the machine
- Improved automation and process reliability
- High multi-functionality of the smooth-cutting tool is retained



### Small corner radius

- The cylindrical tool has a small corner radius to reinforce the cutting edge
- Greater thermal and mechanical workload and therefore increased efficiency



### Milling tool with variable helix angle

- Minimization of oscillations and vibrations
- Higher metal removal rate and longer tool life



### Milling tool with scaled slot

- Enlarges the chip space
- Optimized chip removal
- High axial and radial infeed rates possible



### Milling tool with special protective chamfer

- Reinforcement of the main cutting edge against chipping
- High tooth feed rates for smooth-edged tools



### Smooth transitions

- The shaft-neck-cutting edge transitions are designed with smooth gradients and radii
- Improved tool rigidity and therefore less radial deflection
- Higher mechanical workload and therefore improved performance



### High-performance penetration edge

- Easy-cutting, high-performance penetration edge for high penetration angles
- Higher performance, longer tool life and improved process reliability for penetration
- High functionality with ToolExpert-HelixRamp cutting data

# Quick, simple, reliable: **ToolExpert MFC**

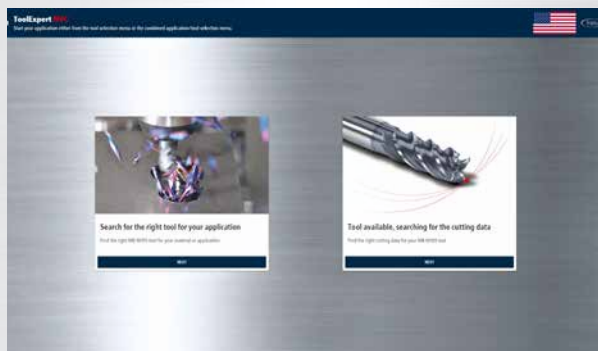
## Knowledge of the application technology = **ToolExpert MFC**

The **ToolExpert MFC** cutting data software has been developed for the new **MFC** cutters designed with a central air and cooling channel. The software is easy to launch via the FRAISA website: [www.fraisa.com/us/toolexpert-mfc](http://www.fraisa.com/us/toolexpert-mfc).

With just a few clicks, you select the application, material, and tool and obtain the parameters that need to be programmed for your machine control system or the CAM. **ToolExpert MFC** is fast, simple, and reliable to use.

### How to use ToolExpert MFC

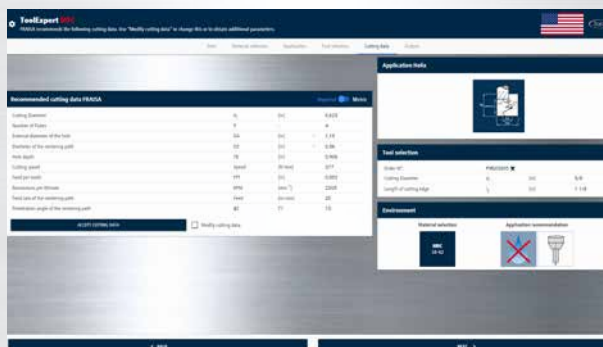
[ 6 ]



1. Home page



2. Application



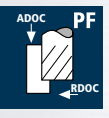
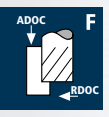


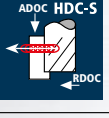
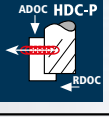
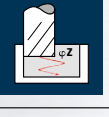
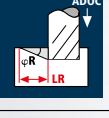
3. Cutting data output



The **MB-NVDS** multi-functionality with eight specific applications in 12 groups of materials provides a range of applications with over 30,000 cutting parameters. Due to this exceptional data volume, **ToolExpert MFC** replaces the previously used cutting data page. **ToolExpert MFC** is regularly updated to include the latest application knowledge.

The ranges of application and processing suitability of MFC tools

The current overview is integrated in **ToolExpert MFC**.

		MFC	Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-52	HRC 52-56	GG(G)	Inox normal	Inox difficult	Ti	Tool Steel Cold Work high alloyed	Tool Steel Hot Work high alloyed	
Finishing		P98102/P98202 P8102/P8202													
		P98112/P98212 P8112/P8212													
		P98102/P98202 P8102/P8202													
		P98112/P98212 P8112/P8212													
HPC roughing		P98102/P98202 P8102/P8202													
		P98112/P98212 P8112/P8212													
		P98102/P98202 P8102/P8202													
		P98112/P98212 P8112/P8212													
HDC roughing		P98102/P98202 P8102/P8202	Excellent	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
		P98112/P98212 P8112/P8212	Excellent	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Excellent	
		P98102/P98202 P8102/P8202	Excellent	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
		P98112/P98212 P8112/P8212													
Penetration		P98102/P98202 P8102/P8202						Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
		P98112/P98212 P8112/P8212	Excellent	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
		P98102/P98202 P8102/P8202							Good	Excellent	Excellent	Excellent	Excellent	Excellent	
		P98112/P98212 P8112/P8212								Good	Excellent	Excellent	Excellent	Excellent	

[ 7 ]

Legend:

Processing suitability = Excellent Good Satisfactory





This way to the new cutting data calculator **ToolExpert MFC**













Here, you will be provided with further information on the FRAISA Group.



The fastest way to our E-Shop can be found here.

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