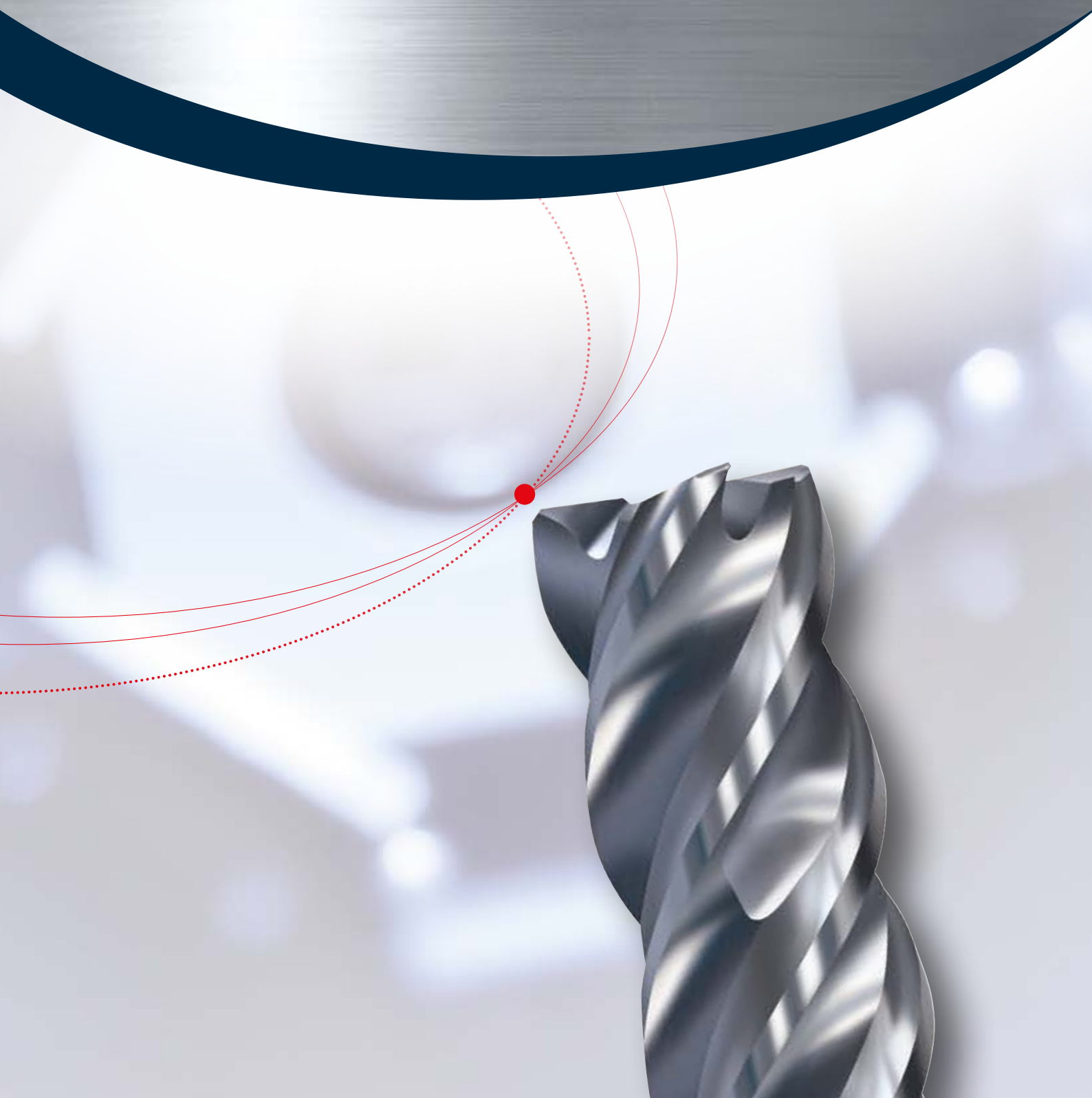


passion  
for precision



# High-performance milling cutter **NX-NVD**



# Universal high performance with a double groove and variable helix

The **NX-NVD** high-performance milling cutter with patented double groove geometry and variable helix is designed for use in high-performance cutting, where the greatest demands are placed on process security.

In contrast to conventional roughing cutters, these milling tools are also suitable for processes that are optimised and place high demands on component quality such as shape and positional tolerances as well as surface qualities.

Compared to conventional tools, significant benefits can be achieved in these target areas, which result in a higher productivity, lower tool costs and an improved price-performance ratio.

The features of the **NX-NVD** milling cutters to be emphasised are their rigidity and stability and the resistance to tool failure as a result of breakage in connexion with above points.

Slot end mills as well as contour milling cutters with the highest feed rates do not do not compete with this tool. The **NX-NVD** can also be used for simple finishing operations.

Users appreciate these features so much that such tools are preferred for modern dynamic milling strategies like **trochoidal milling**; process security and, at the same time, high metal removal capability are important for these processes. Using **NX-NVD** tools enables you to reach these targets without difficulty, which has a positive impact on the machining and tool costs.

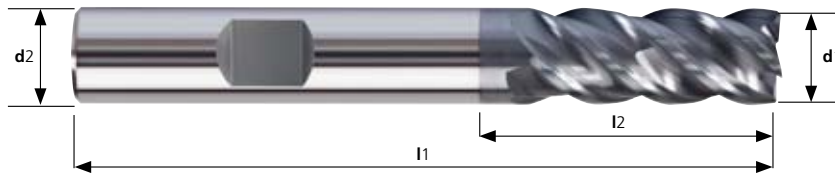
## The advantages:

- **Extreme metal removal rates** in HPC technology with high feed rates and infeeds
- **Universal applicability** for roughing and finishing
- **Extreme process security**
- **Excellent suitability for trochoidal milling**



# Cylindrical end mills NX-NVD

Smooth-edged, normal version



	<b>Rm</b> 850-1100	<b>Rm</b> 1100-1300	<b>Rm</b> 1300-1500	<b>HRC</b> 48-56	<b>HRC</b> 56-60		<b>Ti</b> Titanium	<b>Cast Iron</b> <b>Tool steel</b>
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Example: Order-N°.								POLYCHROM	
		Coating	Article N°	Ø-Code					
		P	15322	.220					
Ø Code	d1 e8	d2 h6	l1	l2	45°	α	Z		
.220	4	6	57	8	0.10	4.0°	4	●	
.260	5	6	57	10	0.15	2.5°	4	●	
.300	6	6	57	12	0.15	0.0°	4	●	
.391	8	8	63	19	0.15	0.0°	4	●	
.450	10	10	72	23	0.20	0.0°	4	●	
.501	12	12	83	27	0.20	0.0°	4	●	
.610	16	16	92	32	0.20	0.0°	4	●	
.682	20	20	104	39	0.20	0.0°	4	●	

## Multiple resharpening

Tools of the **NX-NVD** series can be resharpened multiple times. The patented and complex geometry requires manufacturer knowledge for an optimal preparation. Exactly that is ensured by FRAISA ReTool and it also guarantees a maximum economic efficiency when using **NX-NVD** tools.

## NX-NVD Series

The tools of the **NX-NVD** series are offered in three different cylindrical versions: two length versions (Art. 15222 / 15322, Art. 15223 / 15323) and a version with a short cutting edge and neck (Art. 15242 / 15342). Additionally, tool variants with a corner radius in one length version (Art. 15268 / 15368) are included in the current range.

## Application



## Material

Steel  
850 - 1100 N/mm<sup>2</sup>



d1 [mm]	z	v <sub>c</sub> [m/min]	f <sub>z</sub> [mm]	a <sub>p</sub> [mm]	a <sub>e</sub> [mm]	n [min <sup>-1</sup> ]	v <sub>f</sub> [mm/min]	Q [cm <sup>3</sup> /min]
4	4	160	0.025	6.0	1.6	12735	1275	12.0
5	4	160	0.035	7.5	2.0	10185	1425	21.5
6	4	160	0.040	9.0	2.4	8490	1360	29.5
8	4	160	0.055	12.0	3.2	6365	1400	54.0
10	4	160	0.065	15.0	4.0	5095	1325	79.5
12	4	160	0.080	18.0	4.8	4245	1360	117.5
16	4	160	0.090	24.0	6.4	3185	1145	176.0
20	4	160	0.110	30.0	8.0	2545	1120	269.0

Steel  
1100 - 1300 N/mm<sup>2</sup>



4	4	120	0.025	6.0	1.6	9550	955	9.0
5	4	120	0.035	7.5	2.0	7640	1070	16.0
6	4	120	0.040	9.0	2.4	6365	1020	22.0
8	4	120	0.055	12.0	3.2	4775	1050	40.5
10	4	120	0.065	15.0	4.0	3820	995	59.5
12	4	120	0.080	18.0	4.8	3185	1020	88.0
16	4	120	0.090	24.0	6.4	2385	860	132.0
20	4	120	0.110	30.0	8.0	1910	840	201.5

Tool steel  
hardened  
52 - 56 HRC



4	4	60	0.015	6.0	1.6	4775	285	2.5
5	4	60	0.020	7.5	2.0	3820	305	4.5
6	4	60	0.020	9.0	2.4	3185	255	5.5
8	4	60	0.030	12.0	3.2	2385	285	11.0
10	4	60	0.035	15.0	4.0	1910	265	16.0
12	4	60	0.040	18.0	4.8	1590	255	22.0
16	4	60	0.050	24.0	6.4	1195	240	37.0
20	4	60	0.060	30.0	8.0	955	230	55.0

Titanium alloy,  
hardened  
> 300 HB  
[Ti6Al4V]



4	4	50	0.015	6.0	1.6	3980	240	2.5
5	4	50	0.020	7.5	2.0	3185	255	4.0
6	4	50	0.020	9.0	2.4	2655	210	4.5
8	4	50	0.025	12.0	3.2	1990	240	9.0
10	4	50	0.035	15.0	4.0	1590	225	13.5
12	4	50	0.040	18.0	4.8	1325	210	18.0
16	4	50	0.050	24.0	6.4	995	200	30.5
20	4	50	0.060	30.0	8.0	795	190	45.5

## Application



## Material

Steel  
850 - 1100 N/mm<sup>2</sup>



d1 [mm]	z	v <sub>c</sub> [m/min]	f <sub>z</sub> [mm]	a <sub>p</sub> [mm]	a <sub>e</sub> [mm]	n [min <sup>-1</sup> ]	v <sub>f</sub> [mm/min]	Q [cm <sup>3</sup> /min]
4	4	130	0.020	5.0	4	10345	830	16.5
5	4	130	0.025	6.3	5	8275	830	26.0
6	4	130	0.025	7.5	6	6895	690	31.0
8	4	130	0.035	10.0	8	5175	725	58.0
10	4	130	0.045	12.5	10	4140	745	93.0
12	4	130	0.055	15.0	12	3450	760	137.0
16	4	130	0.065	20.0	16	2585	670	214.5
20	4	130	0.080	25.0	20	2070	660	330.0

Steel  
1100 - 1300 N/mm<sup>2</sup>



4	4	100	0.020	5.0	4	7960	635	12.5
5	4	100	0.025	6.3	5	6365	635	20.0
6	4	100	0.025	7.5	6	5305	530	24.0
8	4	100	0.035	10.0	8	3980	555	44.5
10	4	100	0.045	12.5	10	3185	575	72.0
12	4	100	0.055	15.0	12	2655	585	105.5
16	4	100	0.065	20.0	16	1990	515	165.0
20	4	100	0.080	25.0	20	1590	510	255.0

Tool steel  
hardened  
52 - 56 HRC



4	4	40	0.015	4.0	4	3185	190	3.0
5	4	40	0.015	5.0	5	2545	155	4.0
6	4	40	0.020	6.0	6	2120	170	6.0
8	4	40	0.025	8.0	8	1590	160	10.0
10	4	40	0.030	10.0	10	1275	155	15.5
12	4	40	0.040	12.0	12	1060	170	24.5
16	4	40	0.045	16.0	16	795	145	37.0
20	4	40	0.055	20.0	20	635	140	56.0

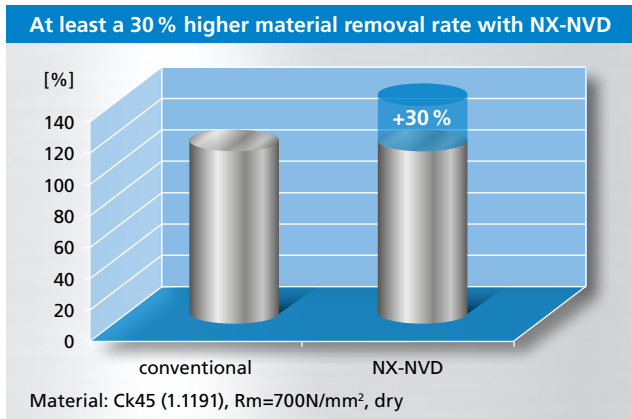
Titanium alloy,  
hardened  
> 300 HB  
[Ti6Al4V]



4	4	40	0.010	5.0	4	3185	125	2.5
5	4	40	0.015	6.3	5	2545	155	5.0
6	4	40	0.020	7.5	6	2120	170	7.5
8	4	40	0.025	10.0	8	1590	160	13.0
10	4	40	0.030	12.5	10	1275	155	19.5
12	4	40	0.040	15.0	12	1060	170	30.5
16	4	40	0.045	20.0	16	795	145	46.5
20	4	40	0.055	25.0	20	635	140	70.0

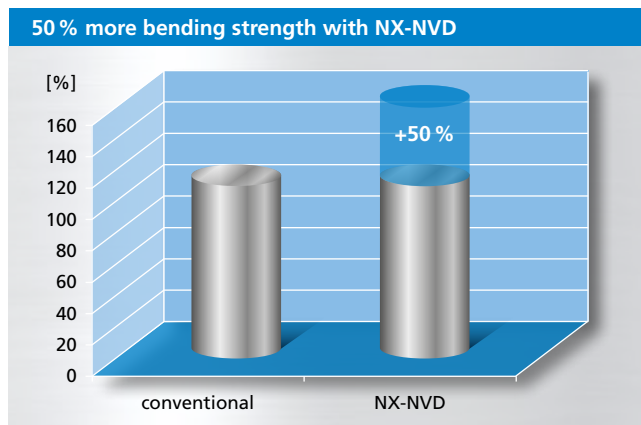
## Lower tool costs

Due to the higher resistance to breakage, the tool can be used with the highest cutting depth possible. This means that the wear is uniformly spread across the entire cutting edge length, which results in longer tool life thus leading to lower tool costs. A very robust and rigid geometry enables a process-safe cutting process. The combination of the high level of rigidity and the variable helix prevents vibrations. The tool's extremely high resistance to breakage as well as the negative cutting geometry make it ideally suited for all applications which require the performance of process control checks be over very long periods.



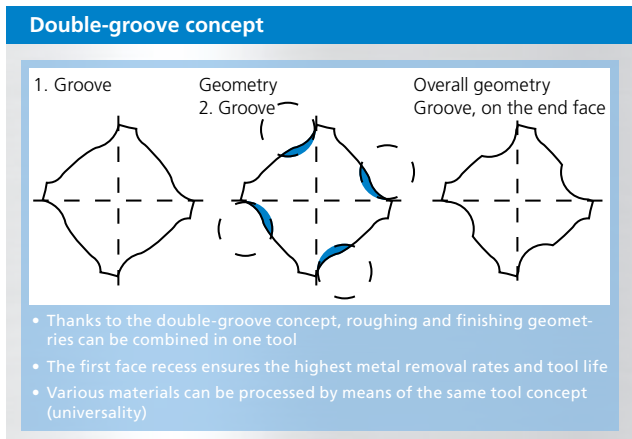
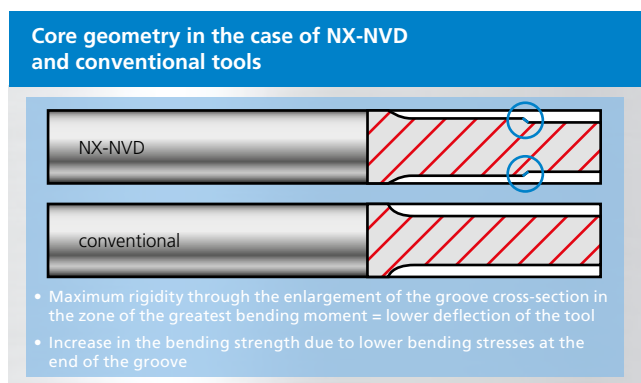
## Patented double-groove geometry

The **NX-NVD** tools distinguish themselves from conventional, smooth-edged solid carbide milling tools by their patented double-groove geometry and variable helix. Both geometric elements ensure the tool's highest rigidity and resistance to breakage possible.



## High metal removal rate

When using the **NX-NVD**, significantly higher infeeds can be selected compared to conventional tools. This advantage can mainly be attributed to the double groove as it provides a higher resistance to breakage at the critical area at the end of the groove. This enables an increase of the metal removal rate by 30 %, which leads to a significant reduction of the machining costs. This considerable cost reduction can be achieved as not only the machine running times but also the idle times can be reduced. The number of cuts for machining and the resultant no-load operations can be reduced to a minimum.



## Field of application

By means of the **NX-NVD** series tools, a lot of materials such as forms used for plastic moulds can be machined in thermally untreated or annealed conditions, mild or low alloy steel, as well as thermally treated mild or low alloy steel and titanium alloys.

## Coating

**NX-NVD** is coated with the tried and tested polychrom coating by FRAISA. Polychrom offers an excellent protection against abrasive wear. The coating also optimally protects the tool from the effects of thermal load.



Wo können Fragen zum Produkt gestellt werden?

If you have any question, please send an email to [mail.ch@fraisa.com](mailto:mail.ch@fraisa.com). You may also directly contact our local customer consultant.

The FRAISA application engineers will be happy to advise you.

For further information, please refer to [www.fraisa.com](http://www.fraisa.com)



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



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for precision

