

## COMPANY PROFILE

**VARGUS** is a world leading developer, manufacturer, and supplier of high-quality, precision threading, grooving, turning and hand deburring tools and has been at the forefront of the tooling industry for more than **60 years**.

Established in 1960, **VARGUS** is the cutting tools division of the **NEUMO Ehrenberg Group**, a multinational organization headquartered in Germany.

The **NEUMO Ehrenberg Group** is one of Europe's largest privately owned manufacturers and distributors of industrial stainless steel products, stainless steel flow equipment and metal cutting tools.

A customer-focused organization, **VARGUS Ltd.** is committed to providing products and solutions of the highest quality and excellent value, and is renowned for its technical expertise and uncompromising service.



The company's major product lines are:

### VARDEX

for Thread Turning, Thread Milling, Tapping, Whirling & Gear Milling solutions.

### GROOVEX

provides a wide range of internal and external grooving, parting off, boring and turning applications.

### SHAVIV

is a world leader in hand-deburring solutions for a wide range of materials, and now includes the SV-BURR line of premium carbide burrs.

### V-MILL | V-DRILL

#### Elevate Your Machining Efficiency with VARGUS's NEW V-Mill and V- Drill Series

In the highly competitive field of carbide mills and drills, **VARGUS** proudly introduces the **V-Mill** and **V-Drill** solid carbide series, designed to not only meet, but exceed industry standards with unparalleled efficiency and precision.



## Solid Carbide End Mills

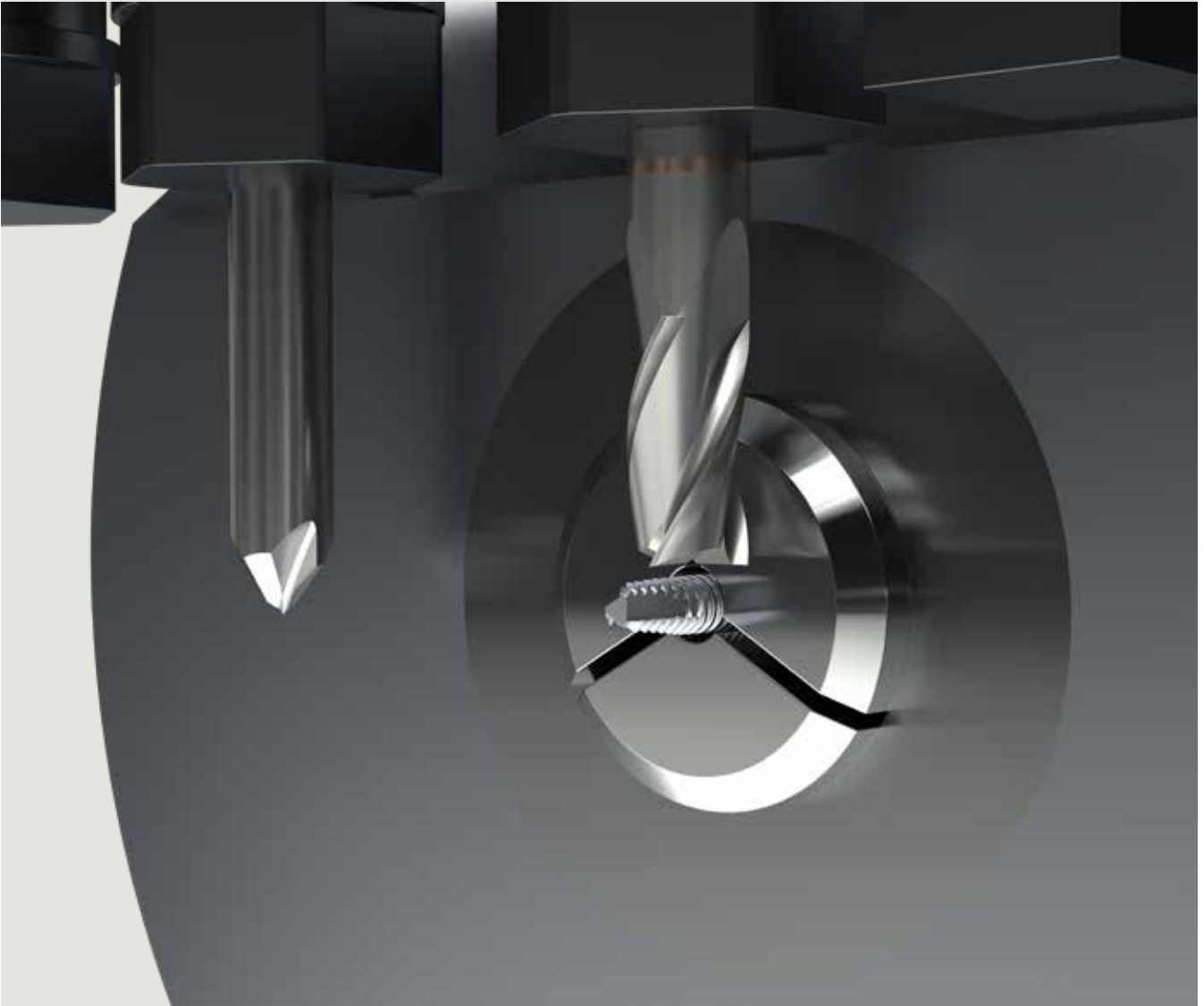
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# V-MILL

Superior Milling Solutions



## High Performance Product Line

- ▶ Solid carbide end mills
- ▶ Diameter range: 0.1 mm (.0039") to 6.0 mm (.236")
- ▶ Multiple tool geometries available
- ▶ Suitable for machining Steel, Stainless Steel, and high-temperature materials
- ▶ Engineered for superior surface finishing

## Features & Benefits:

- ▶ **Optimized Design:** Vargus end mills are meticulously designed to provide maximum stability and efficiency, reducing vibration and enhancing cutting accuracy.
- ▶ **Superior Edge Preparation:** Each end mill edge is prepared to the highest standards, reducing wear and extending tool life.
- ▶ **Advanced Carbide Grade:** Utilizing the latest NANO substrate and coating technologies, our end mills offer superior hardness and heat resistance, ensuring consistent performance in the toughest materials.
- ▶ **Versatility:** Whether working with Stainless Steel, Titanium Alloys, Alloy Steel, or Carbon Steel, V-Mill tools are designed to handle a wide range of applications with ease and reliability.
- ▶ **Tool families with Variable Helix Angle & Unequal Tooth Pitch Design** ( 4 and 5 flutes -VMSC-Z4-V-S, VMSC-Z4-V-S-R, VMSC-Z5-V-S ): These features enhance high-performance cutting by reducing chatter and vibrations, providing smoother and more efficient machining operations.
- ▶ **Unique Ultra Nano Grain and AlCrN Coating:** Combined with special edge preparation, these innovations provide improved cutting edge strength and sharpness, significantly enhancing tool durability and performance.

## Solid Carbide End Mills

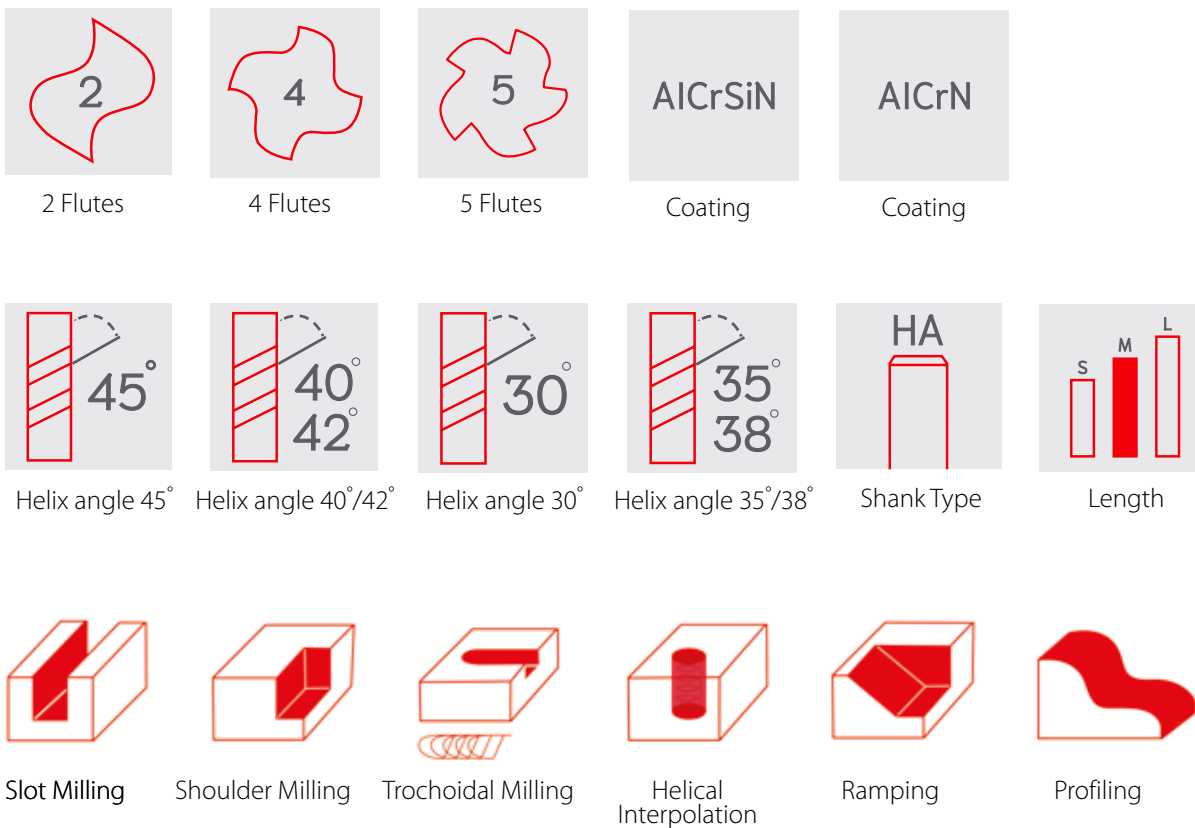
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## V-Mill Ordering Code System

<b>VMS</b>	<b>C</b>	<b>-</b>	<b>001</b>	<b>T</b>	<b>001</b>	<b>/</b>	<b>003</b>	<b>-</b>	<b>Z2</b>	<b>C</b>	<b>04</b>	<b>G</b>	<b>-</b>	<b>VM9</b>
1	2		3	4	5		6		7	8	9	10		12
<b>VMS</b>	<b>B</b>	<b>-</b>	<b>050</b>	<b>T</b>	<b>040</b>	<b>/</b>	<b>200</b>	<b>-</b>	<b>Z2</b>	<b>C</b>	<b>04</b>	<b>G</b>	<b>-</b>	<b>VM9</b>
1	2		3	4	5		6		7	8	9	10		12
<b>VMS</b>	<b>R</b>	<b>-</b>	<b>060</b>	<b>F</b>	<b>160</b>	<b>-</b>	<b>Z4</b>	<b>C</b>	<b>06</b>	<b>G</b>	<b>C02</b>	<b>-</b>	<b>VM9</b>	
1	2		3	4	5		7	8	9	10	11		12	

<b>1 - Line</b> VMS - Vargus Solid Carbide Mills	<b>2 - Geometry</b> C - Cylindrical B - Ballnose R - Rougher	<b>3 - Milling Diameter</b> 001 - 160 - 0.1 mm - 16.0 mm	<b>4 - Helix</b> T - 30° TV - 35°/38° FV - 40°/42° F - 45°	<b>5 - LU- Length of Cut</b> 001 - 160 - 0.1 mm - 36.0 mm
<b>6 - LCF - Neck Length</b> 003 - 200 - 0.3 mm - 20 mm	<b>7 - Z - Number of Flutes</b> Z2 - 2 Flutes Z4 - 4 Flutes Z5 - 5 Flutes	<b>8 - Shank Type</b> C - Cylindrical W - Weldon	<b>9 - Shank Dia. Range</b> 04 - 4.0 mm 06 - 6.0 mm 08 - 8.0 mm 10 - 10.0 mm 12 - 12.0 mm 16 - 16.0 mm	<b>10 - Material</b> G - General Use P - Steel M - Stainless Steel K - Cast Iron N - Aluminum S - Titanium H - Hard Material
<b>12 - BMC Grade</b> VM3 - AlCrN coated VM9 - AlCrSiN coated	<b>11 - Chamfer/Radius</b> C - Chamfer R - Radius  If R/C < 0.1 mm then only R/C shown			

## Solid Carbide End Mills Icons



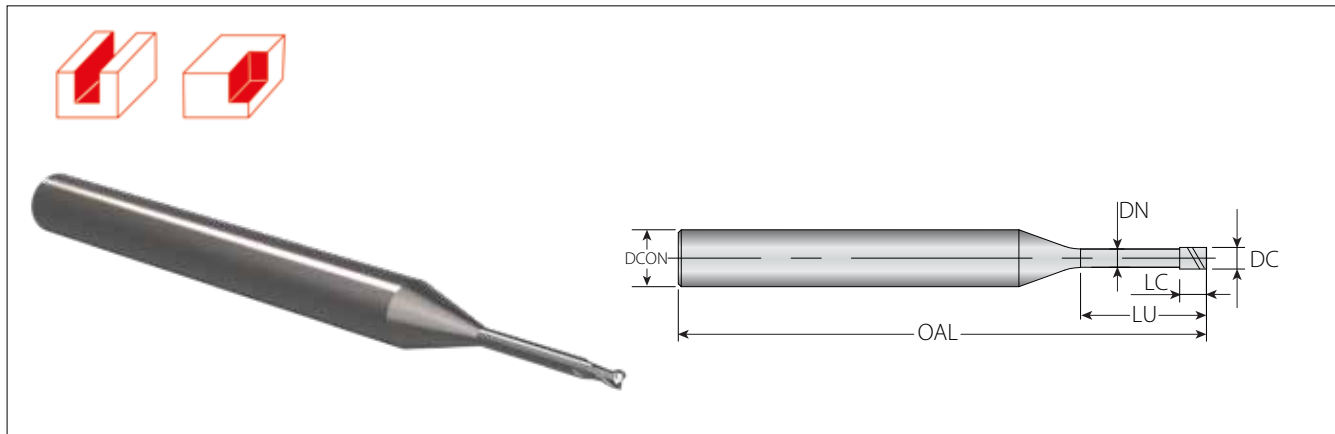
## ISO 13399

Vargus defines the new V-Mill Line according to the ISO 13399 standard.

See the list below of the dimensions used in this catalog.

ISO 13399 is an international technical standard for the computer-interpretable representation and exchange of cutting tools and toolholders. The objective of this standard is to provide a system that allows for a neutral file exchange, and a basis for implementing and sharing product databases and archiving.

ISO 13399 Dimension	Description
DC	Cutting Diameter
DCON	Connection Diameter
APMX	Depth of Cut Maximum
LUX	Neck Length
DN	Neck Diameter
OAL	Overall Length
RE	Corner Radius
CHW	Chamfer Width
FHA	Flute Helix Angle



### Square Head End Mills with Reduced Neck - 2 Flutes

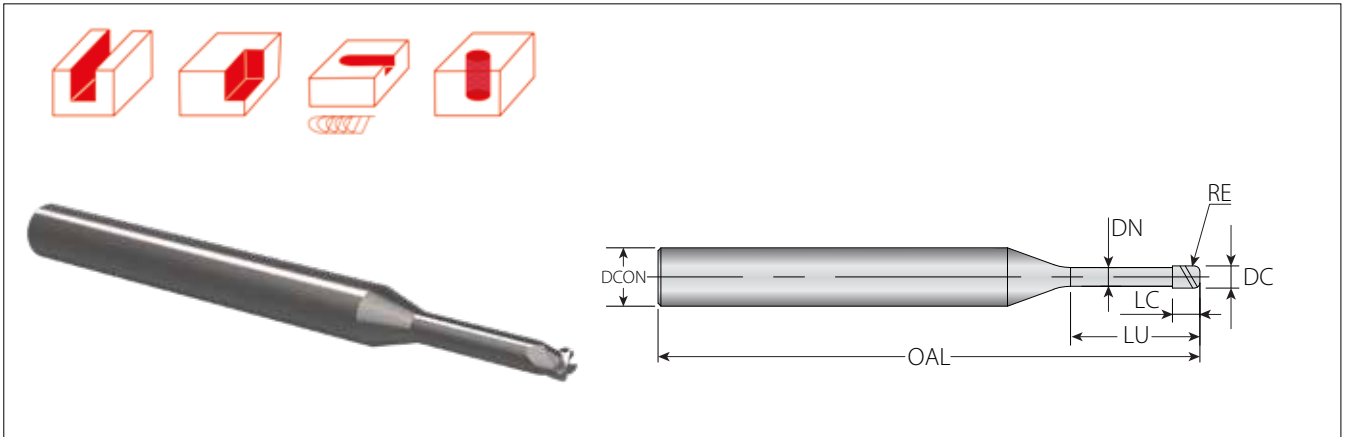
Excellent solution for deep cavity micro/RIB - processing with ultra nano grain and AlCrSiN coating for machining Stainless Steel, Titanium Alloys, Alloy Steel, and Carbon Steel up to HRC55.



Ordering Code	Item No.	Dimensions mm						Grade
		DC	DCON (h5)	LC	LU	DN	OAL	VM9
VMSC-001T001/003-Z2C04G-VM9	G21-00001	0.1	4	0.15	0.3	0.08	50	•
VMSC-002T003/005-Z2C04G-VM9	G21-00002	0.2	4	0.3	0.5	0.17	50	•
VMSC-003T004/010-Z2C04G-VM9	G21-00003	0.3	4	0.45	1	0.27	50	•
VMSC-004T006/010-Z2C04G-VM9	G21-00004	0.4	4	0.6	1	0.37	50	•
VMSC-005T007/010-Z2C04G-VM9	G21-00005	0.5	4	0.75	1	0.47	50	•
VMSC-006T009/020-Z2C04G-VM9	G21-00006	0.6	4	0.9	2	0.57	50	•
VMSC-007T010/020-Z2C04G-VM9	G21-00007	0.7	4	1.05	2	0.67	50	•
VMSC-008T012/040-Z2C04G-VM9	G21-00008	0.8	4	1.2	4	0.76	50	•
VMSC-009T013/060-Z2C04G-VM9	G21-00009	0.9	4	1.35	6	0.86	50	•
VMSC-010T015/020-Z2C04G-VM9	G21-00010	1	4	1.5	2	0.96	50	•
VMSC-010T015/060-Z2C04G-VM9	G21-00011	1	4	1.5	6	0.96	50	•
VMSC-012T018/060-Z2C04G-VM9	G21-00012	1.2	4	1.8	6	1.15	50	•
VMSC-014T021/060-Z2C04G-VM9	G21-00013	1.4	4	2.1	6	1.34	50	•
VMSC-015T022/060-Z2C04G-VM9	G21-00014	1.5	4	2.25	6	1.44	50	•
VMSC-016T024/060-Z2C04G-VM9	G21-00015	1.6	4	2.4	6	1.54	50	•
VMSC-018T027/060-Z2C04G-VM9	G21-00016	1.8	4	2.7	6	1.73	50	•
VMSC-020T030/040-Z2C04G-VM9	G21-00017	2	4	3	4	1.92	50	•
VMSC-020T030/080-Z2C04G-VM9	G21-00018	2	4	3	8	1.92	50	•
VMSC-025T037/080-Z2C04G-VM9	G21-00019	2.5	4	3.75	8	2.4	50	•
VMSC-030T045/080-Z2C06G-VM9	G21-00020	3	6	4.5	8	2.88	55	•
VMSC-040T060/120-Z2C06G-VM9	G21-00021	4	6	6	12	3.86	60	•
VMSC-050T075/200-Z2C06G-VM9	G21-00022	5	6	7.5	20	4.85	70	•
VMSC-060T090/200-Z2C06G-VM9	G21-00023	6	6	9	20	5.85	70	•

• In Stock





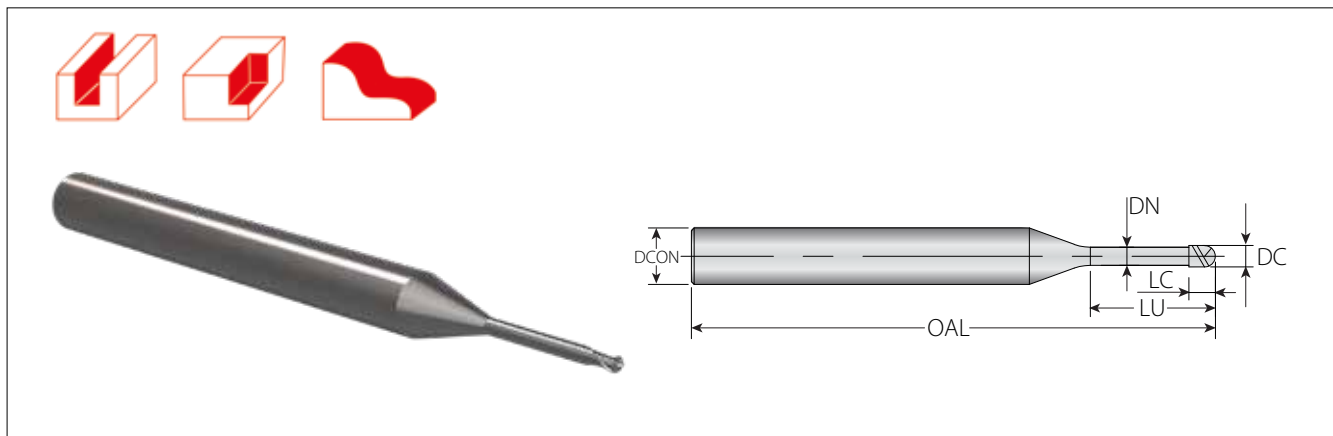
## Corner Radius End Mills with Reduced Neck - 4 Flutes

Excellent solution for 4 flutes for deep cavity micro/RIB - processing with ultra nano grain and AlCrSiN coating for machining Stainless Steel, Titanium Alloys, Alloy Steel, and Carbon Steel up to HRC55.



Ordering Code	Item No.	Dimensions mm							Grade	
		DC	DCON (h5)	RE	LC	LU	DN	OAL	VM9	
VMSC-010T010/020-Z4C04GR-VM9	G21-00024	1	4	0.05	0.8	4	0.96	50	•	
VMSC-010T010/020-Z4C04GR01-VM9	G21-00025	1	4	0.1	0.8	8	0.96	50	•	
VMSC-020T030/040-Z4C04GR-VM9	G21-00026	2	4	0.05	1.6	4	1.92	50	•	
VMSC-020T030/040-Z4C04GR01-VM9	G21-00027	2	4	0.1	1.6	8	1.92	50	•	
VMSC-030T045/080-Z4C06GR01-VM9	G21-00028	3	6	0.1	2.4	8	2.88	60	•	
VMSC-030T045/160-Z4C06GR01-VM9	G21-00097	3	6	0.1	2.4	16	2.88	60	•	
VMSC-040T060/120-Z4C06GR01-VM9	G21-00029	4	6	0.1	3.2	12	3.86	60	•	
VMSC-040T060/200-Z4C06GR01-VM9	G21-00098	4	6	0.1	3.2	20	3.86	60	•	
VMSC-050T075/200-Z4C06GR01-VM9	G21-00030	5	6	0.1	4	20	4.85	70	•	
VMSC-050T075/400-Z4C06GR01-VM9	G21-00099	5	6	0.1	4	40	4.85	90	•	
VMSC-060T090/300-Z4C06GR02-VM9	G21-00031	6	6	0.2	4.8	30	5.85	80	•	
VMSC-060T090/540-Z4C06GR02-VM9	G21-00100	6	6	0.2	4.8	54	5.85	100	•	

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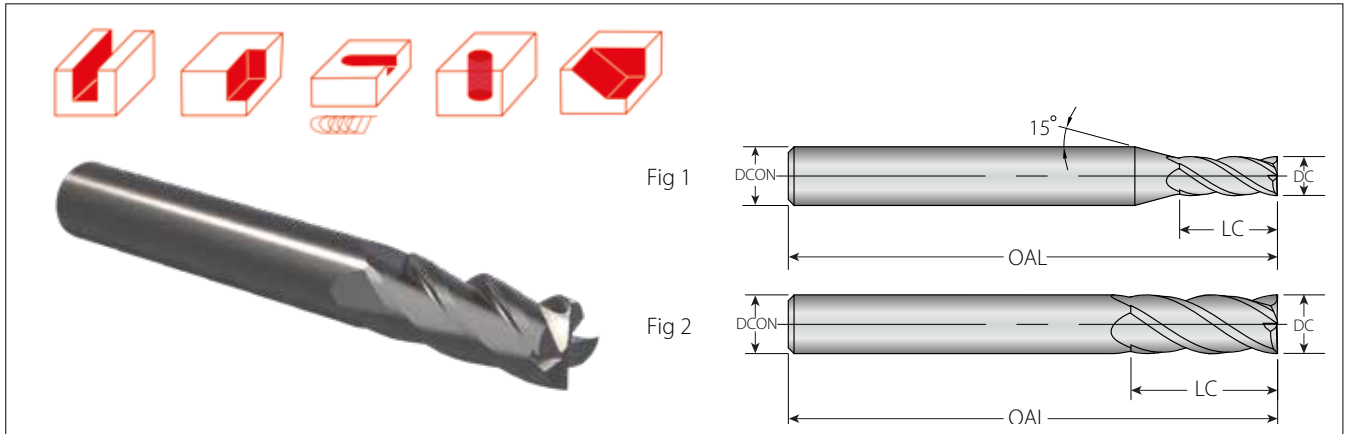
### Ball Nose End Mills with Reduced Neck - 2 Flutes

Excellent solution for deep cavity micro/RIB - processing with ultra nano grain and AlCrSiN coating for machining Stainless Steel, Titanium Alloys, Alloy Steel, and Carbon Steel up to HRC55. Excellent for the precise Medical and Mold industries.



Ordering Code	Item No.	Dimensions mm						Grade
		DC	DCON (h5)	LC	LU	DN	OAL	VM9
VMSB-001T001/002-Z2C04G-VM9	G21-00032	0.1	4	0.08	0.2	0.08	50	•
VMSB-002T001/010-Z2C04G-VM9	G21-00033	0.2	4	0.16	1	0.17	50	•
VMSB-003T002/010-Z2C04G-VM9	G21-00034	0.3	4	0.24	1	0.27	50	•
VMSB-004T003/010-Z2C04G-VM9	G21-00035	0.4	4	0.32	1	0.37	50	•
VMSB-005T004/010-Z2C04G-VM9	G21-00036	0.5	4	0.4	1	0.47	50	•
VMSB-006T004/010-Z2C04G-VM9	G21-00037	0.6	4	0.48	1	0.57	50	•
VMSB-007T005/020-Z2C04G-VM9	G21-00038	0.7	4	0.56	2	0.67	50	•
VMSB-008T006/040-Z2C04G-VM9	G21-00039	0.8	4	0.64	2	0.76	50	•
VMSB-009T007/060-Z2C04G-VM9	G21-00040	0.9	4	0.72	2	0.86	50	•
VMSB-010T008/020-Z2C04G-VM9	G21-00041	1	4	0.8	2	0.96	50	•
VMSB-011T008/020-Z2C04G-VM9	G21-00042	1.1	4	0.88	2	1.06	50	•
VMSB-012T009/040-Z2C04G-VM9	G21-00043	1.2	4	0.96	4	1.15	50	•
VMSB-014T011/080-Z2C04G-VM9	G21-00044	1.4	4	1.12	8	1.34	50	•
VMSB-015T012/080-Z2C04G-VM9	G21-00045	1.5	4	1.2	8	1.44	50	•
VMSB-016T012/080-Z2C04G-VM9	G21-00046	1.6	4	1.28	8	1.54	50	•
VMSB-018T014/080-Z2C04G-VM9	G21-00047	1.8	4	1.44	8	1.73	50	•
VMSB-020T016/080-Z2C04G-VM9	G21-00048	2	4	1.6	8	1.92	50	•
VMSB-025T024/100-Z2C04G-VM9	G21-00049	2.5	4	2	10	2.4	50	•
VMSB-030T024/100-Z2C06G-VM9	G21-00050	3	6	2.4	10	2.88	55	•
VMSB-035T028/150-Z2C06G-VM9	G21-00051	3.5	6	2.8	15	3.36	60	•
VMSB-040T032/160-Z2C06G-VM9	G21-00052	4	6	3.2	16	3.86	60	•
VMSB-050T040/200-Z2C06G-VM9	G21-00053	5	6	4	20	4.85	65	•
VMSB-060T060/200-Z2C06G-VM9	G21-00054	6	6	6	20	5.85	65	•

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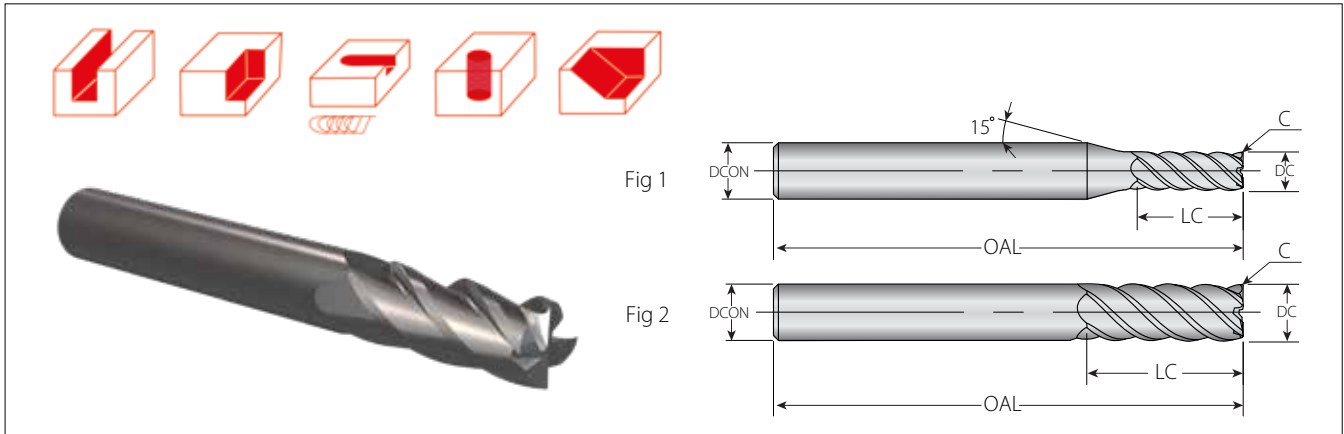
**Square Head End Mills with Variable Helix - 4 Flutes**

The 4-flute tools with variable helix angles are designed for high-performance machining of Stainless Steel, Alloy Steel, and Carbon Steel up to HRC55 hardness. This design reduces vibration and noise during machining. The ultra-fine grain structure, AlCrSiN coating, and special edge preparation improve cutting edge strength and sharpness. This allows for higher metal removal rates and longer tool life.



Ordering Code	Item No.	Dimensions mm				Grade
		DC	DCON (h6)	LC	OAL	
VMSC-020TV060-Z4C04G-VM9	G21-00055	2	4	6	50	•
VMSC-025TV080-Z4C04G-VM9	G21-00056	2.5	4	8	50	•
VMSC-030TV090-Z4C04G-VM9	G21-00057	3	4	9	50	•
VMSC-040TV110-Z4C04G-VM9	G21-00058	4	4	11	50	•
VMSC-050TV130-Z4C06G-VM9	G21-00059	5	6	13	50	•
VMSC-060TV160-Z4C06G-VM9	G21-00060	6	6	16	50	•
VMSC-080TV200-Z4C08G-VM9	G21-00061	8	8	20	60	•
VMSC-100TV250-Z4C10G-VM9	G21-00062	10	10	25	75	•
VMSC-120TV300-Z4C12G-VM9	G21-00063	12	12	30	75	•
VMSC-160TV360-Z4C16G-VM9	G21-00064	16	16	36	100	•

• In Stock



**Square Head End Mills with Variable Helix & Tooth Pitch - 4 Flutes**  
**Specially Designed for Machining Stainless & Alloy Steel**

The 4-flute tools with variable helix angles are designed for high-performance machining of Stainless Steel, Alloy Steel, and Carbon Steel up to HRC55 hardness. This design reduces vibration and noise during machining. The ultra-fine grain structure, AlCrSiN coating, and special edge preparation improve cutting edge strength and sharpness. This allows for higher metal removal rates and longer tool life.

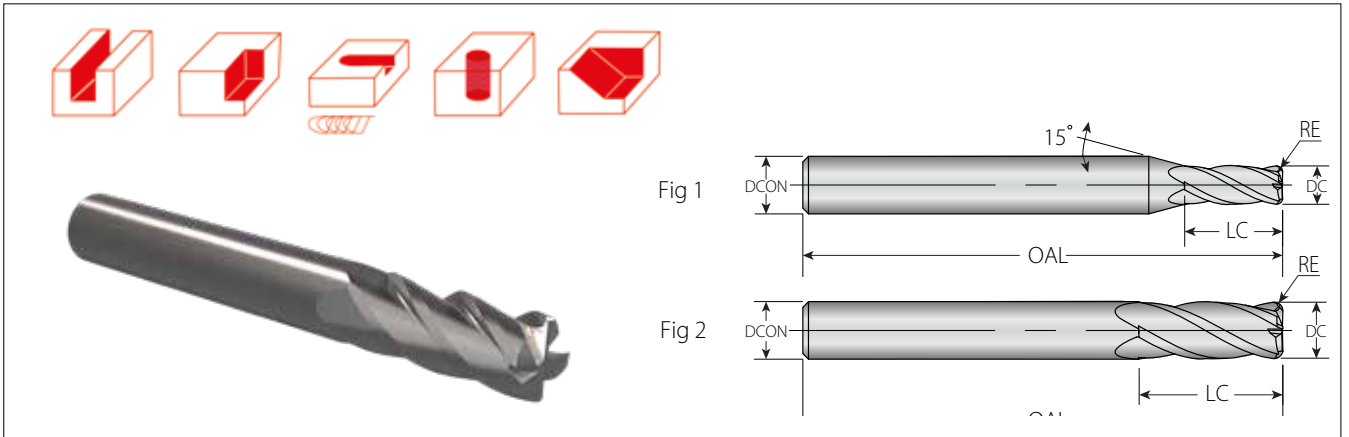
The AlCrN coating prevents thermal cracking when using emulsion coolant.

These tools are suitable for Aerospace and Medical industry applications.



Ordering Code	Item No.	Dimensions mm					Chamfer C	Grade
		DC	DCON (h6)	LC	OAL			
VMSC-020FV060-Z4C04SC-VM3	G21-00065	2	4	6	50	0.02	•	
VMSC-030FV090-Z4C04SC-VM3	G21-00066	3	4	9	50	0.03	•	
VMSC-040FV110-Z4C04SC-VM3	G21-00067	4	4	11	50	0.04	•	
VMSC-050FV130-Z4C06SC-VM3	G21-00068	5	6	13	50	0.05	•	
VMSC-060FV160-Z4C06SC-VM3	G21-00069	6	6	16	50	0.06	•	
VMSC-080FV200-Z4C08SC-VM3	G21-00070	8	8	20	60	0.08	•	
VMSC-100FV250-Z4C10SC01-VM3	G21-00071	10	10	25	75	0.1	•	
VMSC-120FV300-Z4C12SC01-VM3	G21-00072	12	12	30	75	0.1	•	
VMSC-160FV360-Z4C16SC01-VM3	G21-00073	16	16	36	100	0.1	•	

• In Stock



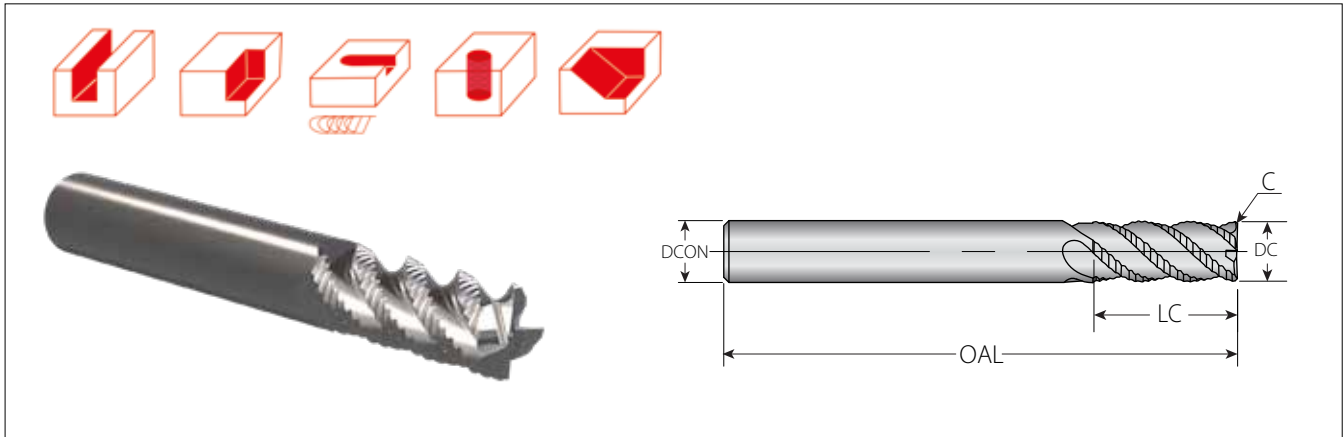
**Reinforced Corner Radius End Mills with Variable Helix & Tooth Pitch - 4 Flutes**  
Specially Designed for Machining Stainless & Alloy Steel

The 4-flute tools with variable helix angles are designed for high-performance machining of Stainless Steel, Alloy Steel, and Carbon Steel up to HRC55 hardness. This design reduces vibration and noise during machining. The ultra-fine grain structure, AlCrSiN coating, and special edge preparation improve cutting edge strength and sharpness. This allows for higher metal removal rates and longer tool life. The AlCrN coating prevents thermal cracking when using emulsion coolant.



Ordering Code	Item No.	Dimensions mm					Grade
		DC	DCON (h6)	LC	OAL	RE	
VMSC-020FV060-Z4C04SR02-VM3	G21-00074	2	4	6	50	0.2	•
VMSC-030FV090-Z4C04SR03-VM3	G21-00075	3	4	9	50	0.3	•
VMSC-040FV110-Z4C04SR03-VM3	G21-00076	4	4	11	50	0.3	•
VMSC-050FV130-Z4C06SR05-VM3	G21-00077	5	6	13	50	0.5	•
VMSC-060FV160-Z4C06SR05-VM3	G21-00078	6	6	16	50	0.5	•
VMSC-080FV200-Z4C08SR05-VM3	G21-00079	8	8	20	60	0.5	•
VMSC-100FV250-Z4C10SR05-VM3	G21-00080	10	10	25	75	0.5	•
VMSC-120FV300-Z4C12SR05-VM3	G21-00081	12	12	30	75	0.5	•
VMSC-160FV360-Z4C16SR05-VM3	G21-00082	16	16	36	100	0.5	•

• In Stock

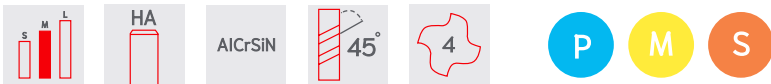


### Square End Mill with Roughing Geometry - 4 Flutes

The 4-flute tools with variable helix angles are designed for high-performance machining of Stainless Steel, Alloy Steel, and Carbon Steel up to HRC55 hardness.

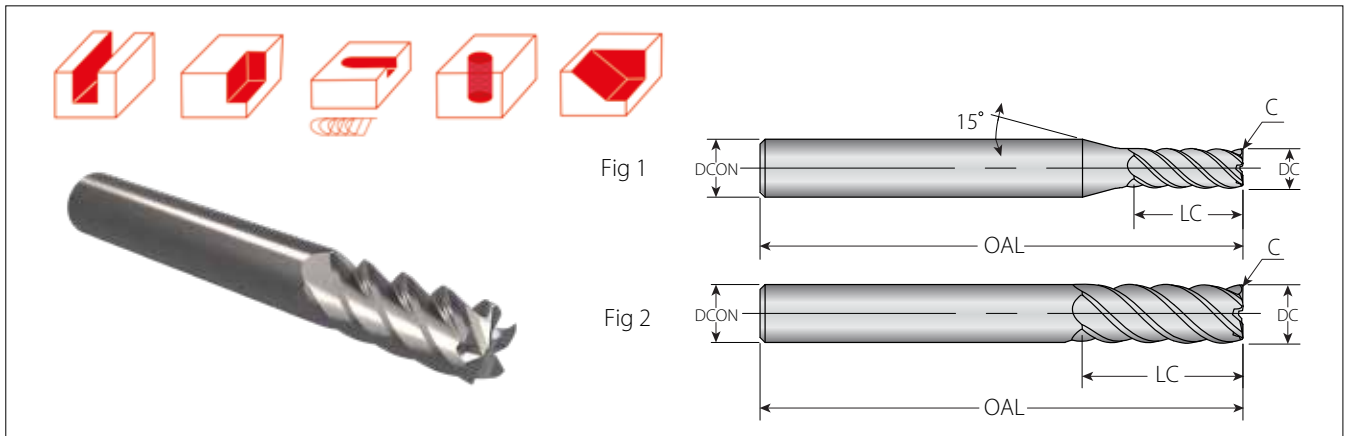
This design reduces vibration and noise during machining.

The ultra-fine grain structure, AlCrSiN coating, and special edge preparation improve cutting edge strength and sharpness. This allows for higher metal removal rates and longer tool life.



Ordering Code	Item No.	Dimensions mm					Chamfer C	Grade
		DC	DCON (h6)	LC	OAL	VM9		
VMSR-060F160-Z4C06GC02-VM9	G21-00083	6	6	16	50	0.2	•	
VMSR-080F200-Z4C08GC02-VM9	G21-00084	8	8	20	60	0.2	•	
VMSR-100F250-Z4C10GC03-VM9	G21-00085	10	10	25	75	0.3	•	
VMSR-120F300-Z4C12GC03-VM9	G21-00086	12	12	30	75	0.3	•	
VMSR-160F360-Z4C16GC04-VM9	G21-00087	16	16	36	100	0.4	•	

• In Stock



**Square Head End Mills with Variable Helix & Tooth Pitch - 5 Flutes**  
Specially Designed for Machining Stainless & Alloy Steel

The 5-flute tools with variable helix angles are designed for high-performance machining of Stainless Steel, Alloy Steel, and Carbon Steel up to HRC55 hardness. This design reduces vibration and noise during machining. The ultra-fine grain structure, AlCrSiN coating, and special edge preparation improve cutting edge strength and sharpness. This allows for higher metal removal rates and longer tool life. The AlCrN coating prevents thermal cracking when using emulsion coolant. These tools are suitable for Aerospace and Medical industry applications.



Ordering Code	Item No.	Dimensions mm					Grade
		DC	DCON (h6)	LC	OAL	Chamfer C	VM3
VMSC-020FV060-Z5C04SC-VM3	G21-00088	2	4	6	50	0.02	•
VMSC-030FV090-Z5C04SC-VM3	G21-00089	3	4	9	50	0.03	•
VMSC-040FV110-Z5C04SC-VM3	G21-00090	4	4	11	50	0.04	•
VMSC-050FV130-Z5C06SC-VM3	G21-00091	5	6	13	50	0.05	•
VMSC-060FV160-Z5C06SC-VM3	G21-00092	6	6	16	50	0.06	•
VMSC-080FV200-Z5C08SC-VM3	G21-00093	8	8	20	60	0.08	•
VMSC-100FV250-Z5C10SC01-VM3	G21-00094	10	10	25	75	0.1	•
VMSC-120FV300-Z5C12SC01-VM3	G21-00095	12	12	30	75	0.1	•
VMSC-160FV360-Z5C16SC01-VM3	G21-00096	16	16	36	100	0.1	•

• In Stock

## General Milling Roughers and Variable Helix -1

Tool Family Groups: **VMSC Z4-G** | **VMSC Z4-S** | **VMSC Z4-S-R** | **VMSR Z4-G**

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min]		F [mm/rev]		
							<b>ae(mm)≤30% ap(mm)=2XD</b>		
					Coolant		Dia.	Dia.	Dia.
				Air	Emulsion	2.0-5.0	6.0-10	12.0-16.0	
<b>P</b> Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	150-220	120-170	0.03-0.06	0.05-0.10	0.05-0.12
	2		Medium Carbon (C=0.25-0.55%)	150	140-210	100-150			
	3		High Carbon (C=0.55-0.85%)	170					
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	140-210	100-150			
	5		Hardened	275					
	6		Hardened	350					
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	120-200	80-140			
	8		Hardened	325					
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	120-200	80-140			
	10		High Alloy (alloying elements >5%)	225					
<b>M</b> Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	Not recommended	40-90	0.02-0.05	0.02-0.08	0.03-0.12
	12		Hardened	330					
	13	Stainless Steel Austenitic	Austenitic	180					
	14		Super Austenitic	200					
	15	Stainless Steel Cast Ferritic	Non Hardened	200					
	16		Hardened	330					
	17	Stainless Steel Cast Austenitic	Austenitic	200					
	18		Hardened	330					
<b>S</b> Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	Not recommended	20-50	0.01-0.03	0.02-0.07	0.03-0.11
	20		Aged (iron based)	280					
	21		Annealed (nickel or cobalt based)	250					
	22		Aged (nickel or cobalt based)	350					
	23		Titanium Alloys	Pure 99.5 Ti					

## General Milling Roughers and Variable Helix -2

Tool Family Groups: **VMSC Z4-G** | **VMSC Z4-S** | **VMSC Z4-S-R** | **VMSR Z4-G**

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min]		F [mm/rev]		
							<b>ae(mm)≤75% ap(mm)=2XD</b>		
					Coolant		Dia.	Dia.	Dia.
				Air	Emulsion	2.0-5.0	6.0-10	12.0-16.0	
<b>P</b> Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	150-220	120-170	0.02-0.04	0.02-0.06	0.03-0.08
	2		Medium Carbon (C=0.25-0.55%)	150	140-210	100-150			
	3		High Carbon (C=0.55-0.85%)	170					
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180	140-210	100-150			
	5		Hardened	275					
	6		Hardened	350					
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	120-200	80-140			
	8		Hardened	325					
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	120-200	80-140			
	10		High Alloy (alloying elements >5%)	225					
<b>M</b> Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	Not recommended	40-90	0.02-0.04	0.03-0.06	0.03-0.08
	12		Hardened	330					
	13	Stainless Steel Austenitic	Austenitic	180					
	14		Super Austenitic	200					
	15	Stainless Steel Cast Ferritic	Non Hardened	200					
	16		Hardened	330					
	17	Stainless Steel Cast Austenitic	Austenitic	200					
	18		Hardened	330					
<b>S</b> Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	Not recommended	20-50	0.01-0.03	0.03-0.06	0.03-0.1
	20		Aged (iron based)	280					
	21		Annealed (nickel or cobalt based)	250					
	22		Aged (nickel or cobalt based)	350					
	23		Titanium Alloys	Pure 99.5 Ti					



# General Milling Roughers and Variable Helix -3

Tool Family Groups: **VMSC Z4-G | VMSC Z4-S | VMSC Z4-S-R | VMSR Z4-G**

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min]		F [mm/rev]		
					Coolant		ae=100% ap(mm) =2.0XD *		
					Air	Emulsion	Dia.	Dia.	Dia.
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	150-220	120-170	0.02-0.04	0.02-0.05	0.03-0.07
	2		Medium Carbon (C=0.25-0.55%)	150	140-210	100-150			
	3		High Carbon (C=0.55-0.85%)	170					
	4	Low Alloy Steel (alloying elements ≤5%)	Non Hardened	180	140-210	100-150			
	5		Hardened	275					
	6		Hardened	350					
	7	High Alloy Steel (alloying elements >5%)	Annealed	200	120-200	80-140			
	8		Hardened	325					
	9	Cast Steel	Low Alloy (alloying elements <5%)	200					
	10		High Alloy (alloying elements >5%)	225					
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200			Not recommended	40-90	0.02-0.04
	12		Hardened	330					
	13	Stainless Steel Austenitic	Austenitic	180					
	14		Super Austenitic	200					
	15	Stainless Steel Non Hardened	200						
	16	Cast Ferritic Hardened	330						
	17	Stainless Steel Austenitic	200						
	18	Cast Austenitic Hardened	330						
S Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	Not recommended	20-50	0.01-0.02	0.03-0.05	0.03-0.08
	20		Aged (iron based)	280					
	21		Annealed (nickel or cobalt based)	250					
	22		Aged (nickel or cobalt based)	350					
	23		Titanium Alloys	Pure 99.5 Ti					

\* For M and S materials, the ap max is 1.5XD.

# V-Mill Recommended Cutting Conditions for RIB Processing -1

Tool Family Groups: **VMSC-Z2 | VMSB-Z2 | VSMC-Z4 R**

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min]		Tool Dia =0.1-1.9 mm ap=Dx0.02 / ae=Dx0.1					
					Coolant		Tool Dia =2.0-6.0 mm ap=Dx0.04 / ae=Dx0.3					
					Air	Emulsion	Fz [mm/t]					
P Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	150-220	120-170	0.002-0.004	0.002-0.004	0.003-0.005	0.003-0.006	0.004-0.007	0.008-0.016
	2		Medium Carbon (C=0.25-0.55%)	150	140-210	100-150						
	3		High Carbon (C=0.55-0.85%)	170								
	4	Low Alloy Steel (alloying elements ≤5%)	Non Hardened	180	140-210	100-150						
	5		Hardened	275								
	6		Hardened	350								
	7	High Alloy Steel (alloying elements >5%)	Annealed	200	120-200	80-140						
	8		Hardened	325								
	9	Cast Steel	Low Alloy (alloying elements <5%)	200								
	10		High Alloy (alloying elements >5%)	225								
M Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200			Not recommended	75-120	0.002-0.003	0.001-0.003	0.003-0.005	0.004-0.007
	12		Hardened	330								
	13	Stainless Steel Austenitic	Austenitic	180								
	14		Super Austenitic	200								
	15	Stainless Steel Non Hardened	200									
	16	Cast Ferritic Hardened	330									
	17	Stainless Steel Austenitic	200									
	18	Cast Austenitic Hardened	330									
S Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	Not recommended	30-60	0.001-0.002	0.001-0.002	0.002-0.004	0.002-0.005	0.003-0.006	0.003-0.008
	20		Aged (iron based)	280								
	21		Annealed (nickel or cobalt based)	250								
	22		Aged (nickel or cobalt based)	350								
	23		Titanium Alloys	Pure 99.5 Ti								

## V-Mill Recommended Cutting Conditions for RIB Processing -2

Tool Family Groups: VMSC-Z2 | VMSB-Z2 | VSMC-Z4 R

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min]		Tool Dia =0.1-1.9 mm ap=Dx0.03 / ae=Dx0.2					
							Tool Dia =2.0-6.0 mm ap=Dx0.05 / ae=Dx0.45					
					Coolant		Fz [mm/t]					
					Air	Emulsion	Dia.	Dia.	Dia.	Dia.	Dia.	Dia.
						0.1-0.3	0.4-0.7	0.8-1.0	1.1-1.9	2.0-4.0	4.0-6.0	
<b>P</b> Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	150-220	120-170	0.001-0.003	0.001-0.004	0.002-0.004	0.002-0.005	0.004-0.007	0.006-0.013
	2		Medium Carbon (C=0.25-0.55%)	150	140-210	100-150						
	3		High Carbon (C=0.55-0.85%)	170								
	4	Low Alloy Steel (alloying elements ≤5%)	Non Hardened	180	140-210	100-150						
	5		Hardened	275								
	6		Hardened	350								
	7	High Alloy Steel (alloying elements >5%)	Annealed	200	120-200	80-140						
	8		Hardened	325								
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	120-200	80-140						
	10		High Alloy (alloying elements >5%)	225								
<b>M</b> Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	Not recommended	75-120	0.001-0.003	0.001-0.004	0.002-0.004	0.002-0.004	0.004-0.006	0.006-0.01
	12		Hardened	330								
	13	Stainless Steel Austenitic	Austenitic	180								
	14		Super Austenitic	200								
	15	Stainless Steel Cast Ferritic	Non Hardened	200								
	16		Hardened	330								
	17	Stainless Steel Cast Austenitic	Austenitic	200								
	18		Hardened	330								
<b>S</b> Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	Not recommended	30-60	0.001-0.002	0.002-0.003	0.002-0.004	0.002-0.004	0.004-0.005	0.006-0.007
	20		Aged (iron based)	280								
	21		Annealed (nickel or cobalt based)	250								
	22		Aged (nickel or cobalt based)	350								
	23		Titanium Alloys	Pure 99.5 Ti								

## V-Mill Recommended Cutting Conditions for RIB Processing -3

Tool Family Groups: VMSC-Z2 | VMSB-Z2 | VSMC-Z4 R

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min]		Tool Dia =0.1-1.9mm ap=Dx0.015/ ae=D					
							Tool Dia =2.0-6.0mm ap=Dx0.04/ ae=D					
					Coolant		Fz [mm/t]					
					Air	Emulsion	Dia.	Dia.	Dia.	Dia.	Dia.	Dia.
						0.1-0.3	0.4-0.7	0.8-1.0	1.1-1.9	2.0-4.0	4.0-6.0	
<b>P</b> Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	150-220	120-170	0.001-0.003	0.001-0.004	0.002-0.005	0.004-0.005	0.004-0.006	0.006-0.01
	2		Medium Carbon (C=0.25-0.55%)	150	140-210	100-150						
	3		High Carbon (C=0.55-0.85%)	170								
	4	Low Alloy Steel (alloying elements ≤5%)	Non Hardened	180	140-210	100-150						
	5		Hardened	275								
	6		Hardened	350								
	7	High Alloy Steel (alloying elements >5%)	Annealed	200	120-200	80-140						
	8		Hardened	325								
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	120-200	80-140						
	10		High Alloy (alloying elements >5%)	225								
<b>M</b> Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	Not recommended	75-120	0.001-0.003	0.001-0.003	0.002-0.004	0.003-0.004	0.003-0.005	0.006-0.01
	12		Hardened	330								
	13	Stainless Steel Austenitic	Austenitic	180								
	14		Super Austenitic	200								
	15	Stainless Steel Cast Ferritic	Non Hardened	200								
	16		Hardened	330								
	17	Stainless Steel Cast Austenitic	Austenitic	200								
	18		Hardened	330								
<b>S</b> Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	Not recommended	30-60	0.001-0.002	0.002-0.003	0.002-0.004	0.002-0.004	0.004-0.006	0.004-0.008
	20		Aged (iron based)	280								
	21		Annealed (nickel or cobalt based)	250								
	22		Aged (nickel or cobalt based)	350								
	23		Titanium Alloys	Pure 99.5 Ti								

# General Milling Semi-Finish -1

Tool Family Groups: **VMSC Z5-S** | **VMSC Z4-S** | **VMSC Z4-S-R**

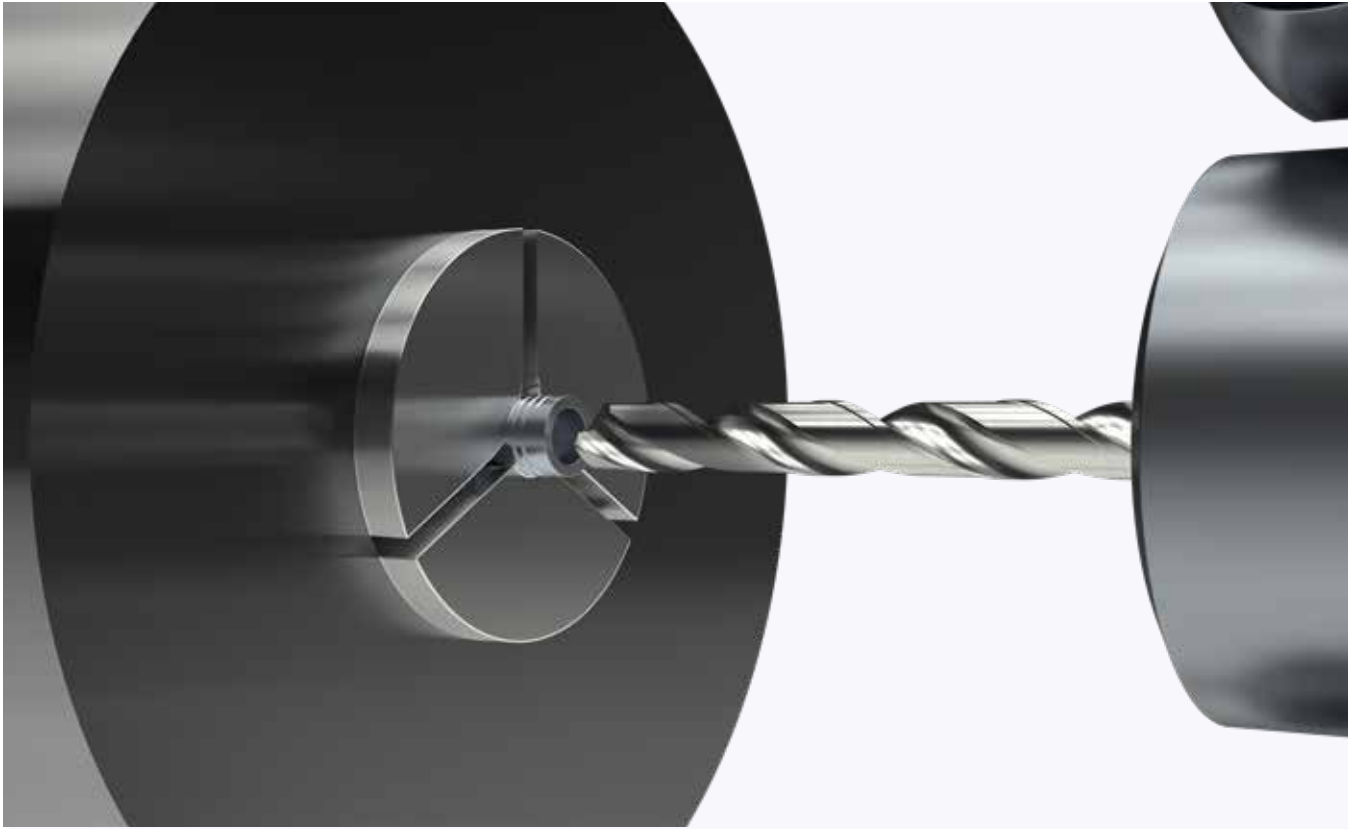


Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min]		F [mm/rev]			
							ae(mm)>=5% ap(mm)=MAX			
					Coolant		Dia.	Dia.	Dia.	
					Air	Emulsion	2.0-5.0	6.0-10	12.0-16.0	
<b>P</b> Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	180-250	150-200	0.03-0.06	0.05-0.10	0.05-0.12	
	2		Medium Carbon (C=0.25-0.55%)	150	160-230	120-180				
	3		High Carbon (C=0.55-0.85%)	170						
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180						140-210
	5		Hardened	275						
	6		Hardened	350						
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	140-210	100-160				
	8		Hardened	325						
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	140-210	100-160				
	10		High Alloy (alloying elements >5%)	225						
<b>M</b> Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	Not recommended	100-160	0.02-0.05	0.02-0.08	0.03-0.8	
	12		Hardened	330						
	13	Stainless Steel Austenitic	Austenitic	180		80-120				
	14		Super Austenitic	200						
	15	Stainless Steel Cast Ferritic	Non Hardened	200						
	16		Hardened	330						
	17	Stainless Steel Cast Austenitic	Austenitic	200						
	18		Hardened	330						
<b>S</b> Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	Not recommended		20-50	0.01-0.03	0.02-0.07	0.03-0.11
	20		Aged (iron based)	280			20-45			
	21		Annealed (nickel or cobalt based)	250		15-30				
	22		Aged (nickel or cobalt based)	350		15-30				
	23		Titanium Alloys	Pure 99.5 Ti		400Rm	35-55			

# General Milling Semi-Finish -2

Tool Family Groups: **VMSC Z5-S** | **VMSC Z4-S** | **VMSC Z4-S-R**

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min]		F [mm/rev]			
							ae(mm)>=15% ap(mm)=MAX			
					Coolant		Dia.	Dia.	Dia.	
					Air	Emulsion	2.0-5.0	6.0-10	12.0-16.0	
<b>P</b> Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	180-250	150-200	0.03-0.06	0.05-0.10	0.05-0.12	
	2		Medium Carbon (C=0.25-0.55%)	150	160-230	120-180				
	3		High Carbon (C=0.55-0.85%)	170						
	4	Low Alloy Steel (alloying elements≤5%)	Non Hardened	180						140-210
	5		Hardened	275						
	6		Hardened	350						
	7	High Alloy Steel (alloying elements>5%)	Annealed	200	140-210	100-160				
	8		Hardened	325						
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	140-210	100-160				
	10		High Alloy (alloying elements >5%)	225						
<b>M</b> Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	Not recommended	100-160	0.02-0.05	0.02-0.08	0.03-0.8	
	12		Hardened	330						
	13	Stainless Steel Austenitic	Austenitic	180		80-120				
	14		Super Austenitic	200						
	15	Stainless Steel Cast Ferritic	Non Hardened	200						
	16		Hardened	330						
	17	Stainless Steel Cast Austenitic	Austenitic	200						
	18		Hardened	330						
<b>S</b> Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	Not recommended		20-50	0.01-0.03	0.02-0.07	0.03-0.11
	20		Aged (iron based)	280			20-45			
	21		Annealed (nickel or cobalt based)	250		15-30				
	22		Aged (nickel or cobalt based)	350		15-30				
	23		Titanium Alloys	Pure 99.5 Ti		400Rm	35-55			



# V-DRILL

Accurate Drilling Solutions



Introducing the NEW V-Drill line of high-performance solid carbide drills. The VARGUS V-Drill series revolutionizes ultra-high efficiency machining for Stainless Steel, Titanium Alloys, Alloy Steel, and Carbon Steel. Our advanced engineering optimizes drill design, enhances edge preparation surface quality, and incorporates cutting-edge NANO Substrate and Coating technologies. The result is a tool that delivers exceptional performance, longevity, and precision.

## High Performance Product Line

- ▶ Solid Carbide Drills diameter range: 1.0 mm (.039") to 6.0 mm (.236")
- ▶ 3XD and 5XD, with and without Coolant thru for machining Stainless and Titanium
- ▶ Center (NC) Drills - 90° and 120°

## Features & Benefits:

- ▶ **Optimized Design:** Engineered for maximum stability and efficiency, Vargus drills reduce vibration and enhance cutting accuracy.
- ▶ **Superior Edge Preparation:** Each drill edge is prepared to the highest standards, minimizing wear, ensuring repeatability, and extending tool life.
- ▶ **Advanced Carbide Grade:** Our drills utilize the latest NANO Substrate and Coating technologies, providing superior hardness and heat resistance for consistent performance in the toughest materials.
- ▶ **Versatility:** V-Drill tools are designed to handle a wide range of applications with ease and reliability, whether working with Stainless Steel, Titanium Alloys, Alloy Steel, or Carbon Steel.

## Solid Carbide Drills

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## V-Drill Ordering Code System

VDS	-	0200	-	0100	-	04	-	Z2	-	3D	-	C	-	VM10
1		2		3		4		5		6		7		8

<b>1 - Line</b> VDS - Vargus Solid Carbide Drills	<b>2 - Drill Diameter Range</b> 0100 - 0600 - 1.0 mm - 6.0 mm	<b>3 - LU - Max Drill Depth Range</b> 0048 - 0368 - 4.8 mm - 36.8 mm	<b>4 - Shank Diameter</b> 04 - 4.0 mm 06 - 6.0 mm	<b>5 - Z - Number of Flutes</b> Z2 - 2 Flutes
<b>6 - Max Depth</b> 3XD 5XD	<b>7 - Coolant</b> C - Coolant Thru	<b>8 - BMC Grade</b> VM10 - AlTiN coated		

## V-Drill Center Drill

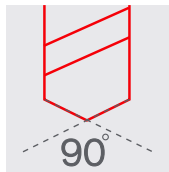
VDSC	-	090	-	0005	-	04	-	Z2	-	2D	-	VM8
1		2		3		4		5		6		7

<b>1 - Line</b> VDSC - Vargus Solid Carbide Center Drills	<b>2 - Drill Type</b> 090 - 90° 120 - 120°	<b>3 - LU - Max Drill Depth Range</b> 0005 - 0017 - 5.0 mm - 17 mm	<b>4 - Shank Diameter Range</b> 04 - 12 - 4.0 mm - 12 mm	<b>5 - Z - Number of Flutes</b> Z2 - 2 Flutes
<b>6 - Max Depth</b> 2XD	<b>7 - BMC Grade</b> VM8 - AlTiN coated			

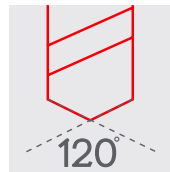
## Solid Carbide Drills Icons



2 Flutes



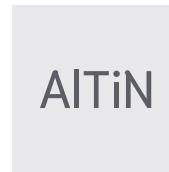
NC Drill 90°



NC Drill 120°



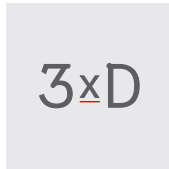
AlTiN Nano Grade



AlTiN Grade



Drilling Depth  
2XD



Drilling Depth  
3XD



Drilling Depth  
5XD



Coolant Holes



Drilling



Center Drill

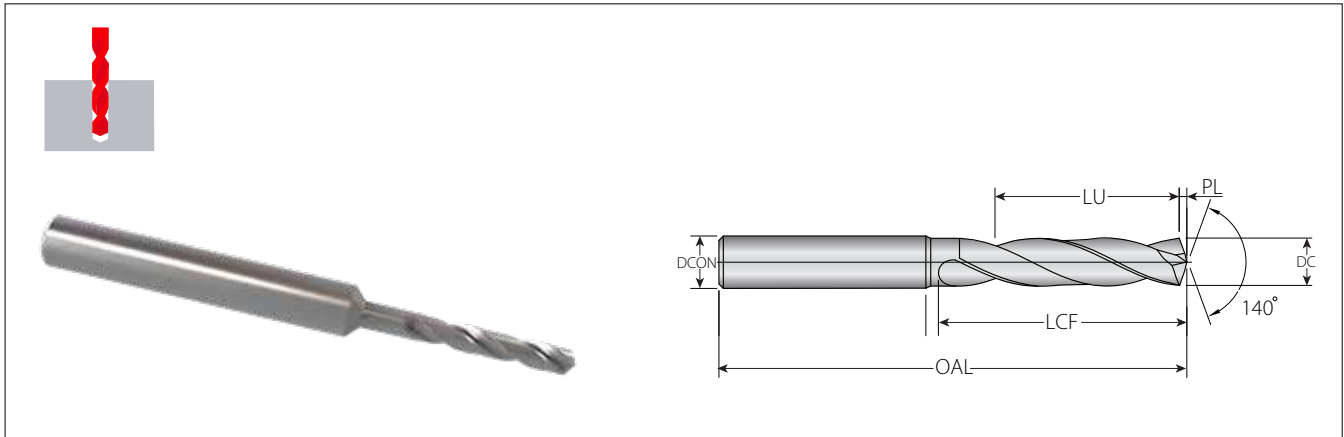
## ISO 13399

Vargus defines the new V-Drill Line according to the ISO 13399 standard.

See the list below of the dimensions used in this catalog.

ISO 13399 is an international technical standard for the computer-interpretable representation and exchange of cutting tools and toolholders. The objective of this standard is to provide a system that allows for a neutral file exchange, and a basis for implementing and sharing product databases and archiving.

ISO 13399 Dimension	Description
DC	Cutting Diameter
DCON	Connection Diameter
APMX	Depth of Cut Maximum
LUX	Neck Length
OAL	Overall Length
LCF	Length Chip Flute
SIG	Point Angle
PL	Point Length



### 3XD Coated Twist Drills

These drills feature a unique point design for high performance and better chip removal. They have an ultra-fine grain structure and AlTiN coating, making them suitable for machining Stainless Steel, Titanium Alloys, Alloy Steel, and Carbon Steel. The coating provides excellent wear resistance.



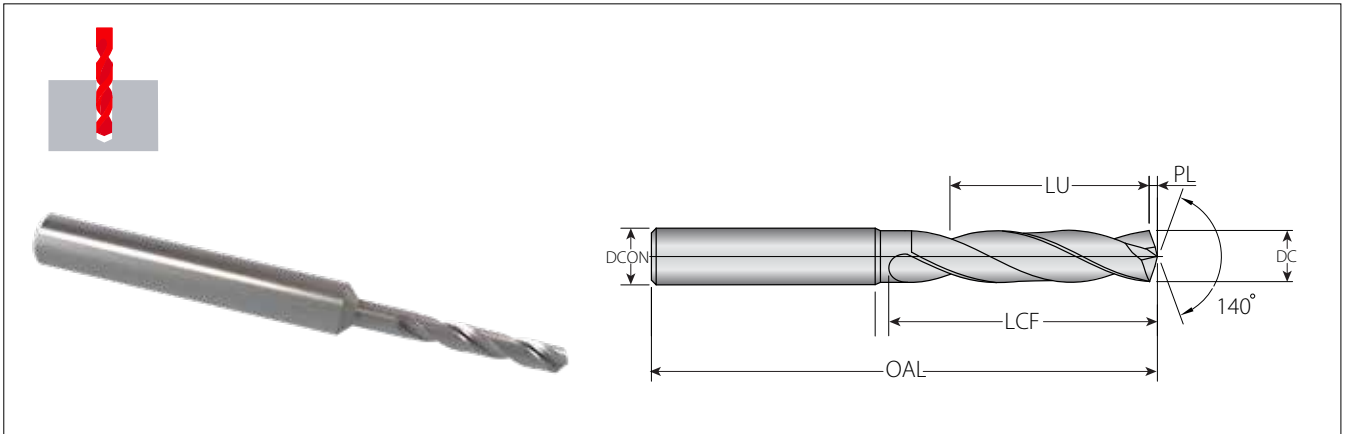
Ordering Code	Item No.	Dimensions mm							Grade
		DC	DCON (h6) *	LU	PL	LCF	LS	OAL	
VDS-0100-0055-04-Z2-3D-VM10	G20-00001	1	4	5.5	0.18	7	30	45	•
VDS-0110-0054-04-Z2-3D-VM10	G20-00002	1.1	4	5.4	0.2	7	30	45	•
VDS-0120-0052-04-Z2-3D-VM10	G20-00003	1.2	4	5.2	0.22	7	30	45	•
VDS-0125-0051-04-Z2-3D-VM10	G20-00004	1.25	4	5.1	0.23	7	30	45	•
VDS-0130-0051-04-Z2-3D-VM10	G20-00005	1.3	4	5.1	0.24	7	30	45	•
VDS-0140-0049-04-Z2-3D-VM10	G20-00006	1.4	4	4.9	0.25	7	30	45	•
VDS-0145-0048-04-Z2-3D-VM10	G20-00007	1.45	4	4.8	0.26	7	30	45	•
VDS-0150-0068-04-Z2-3D-VM10	G20-00008	1.5	4	6.8	0.27	9	38	55	•
VDS-0160-0066-04-Z2-3D-VM10	G20-00009	1.6	4	6.6	0.29	9	38	55	•
VDS-0165-0065-04-Z2-3D-VM10	G20-00010	1.65	4	6.5	0.30	9	38	55	•
VDS-0170-0065-04-Z2-3D-VM10	G20-00011	1.7	4	6.5	0.31	9	38	55	•
VDS-0175-0064-04-Z2-3D-VM10	G20-00012	1.75	4	6.4	0.32	9	38	55	•
VDS-0180-0063-04-Z2-3D-VM10	G20-00013	1.8	4	6.3	0.33	9	38	55	•
VDS-0185-0009-04-Z2-3D-VM10	G20-00014	1.85	4	6.2	0.34	9	38	55	•
VDS-0190-0062-04-Z2-3D-VM10	G20-00015	1.9	4	6.2	0.35	9	38	55	•
VDS-0195-0061-04-Z2-3D-VM10	G20-00016	1.95	4	6.1	0.35	9	38	55	•
VDS-0200-0100-04-Z2-3D-VM10	G20-00017	2	4	10.0	0.36	13	36	55	•
VDS-0205-0099-04-Z2-3D-VM10	G20-00018	2.05	4	9.9	0.37	13	36	55	•
VDS-0210-0099-04-Z2-3D-VM10	G20-00019	2.1	4	9.9	0.38	13	36	55	•
VDS-0215-0098-04-Z2-3D-VM10	G20-00020	2.15	4	9.8	0.39	13	36	55	•
VDS-0220-0097-04-Z2-3D-VM10	G20-00021	2.2	4	9.7	0.40	13	36	55	•
VDS-0230-0096-04-Z2-3D-VM10	G20-00022	2.3	4	9.6	0.42	13	36	55	•
VDS-0240-0134-04-Z2-3D-VM10	G20-00023	2.4	4	13.4	0.44	17	33	55	•
VDS-0250-0133-04-Z2-3D-VM10	G20-00024	2.5	4	13.3	0.45	17	33	55	•

• In Stock

\* Shank DIN 6535HA



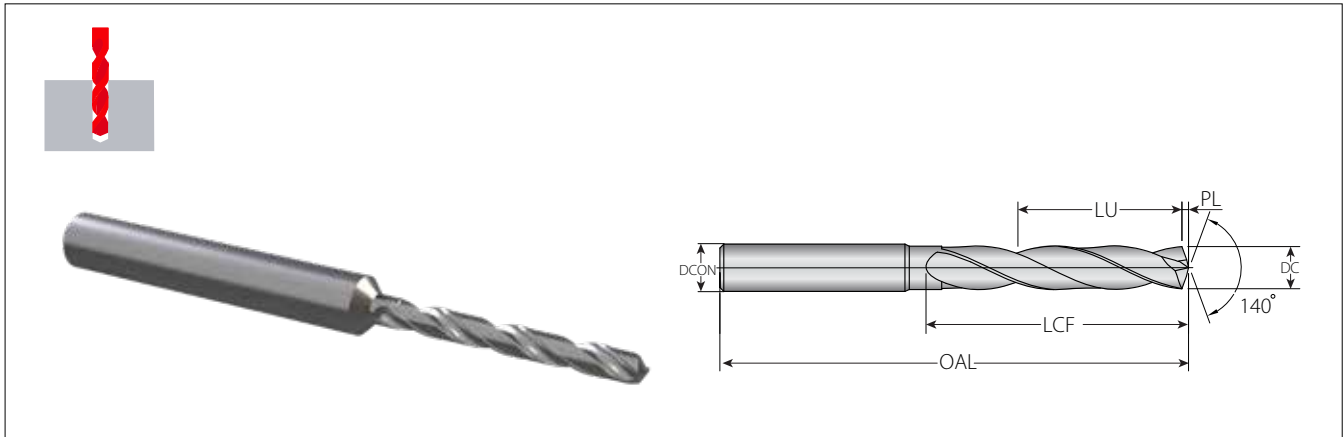
# VDS 3XD (con't)



Ordering Code	Item No.	Dimensions mm					Drill Hole			Grade
		DC	DCON (h6) *	LU	PL	LCF	LS	OAL	VM10	
VDS-0260-0131-04-Z2-3D-VM10	G20-00025	2.6	4	13.1	0.47	17	33	55	•	
VDS-0270-0130-04-Z2-3D-VM10	G20-00026	2.7	4	13.0	0.49	17	33	55	•	
VDS-0275-0129-04-Z2-3D-VM10	G20-00027	2.75	4	12.9	0.50	17	33	55	•	
VDS-0280-0128-04-Z2-3D-VM10	G20-00028	2.8	4	12.8	0.51	17	33	55	•	
VDS-0290-0127-04-Z2-3D-VM10	G20-00029	2.9	4	12.7	0.53	17	33	55	•	
VDS-0300-0155-04-Z2-3D-VM10	G20-00030	3	4	15.5	0.55	20	36	62	•	
VDS-0310-0154-04-Z2-3D-VM10	G20-00031	3.1	4	15.4	0.56	20	36	62	•	
VDS-0315-0153-04-Z2-3D-VM10	G20-00032	3.15	4	15.3	0.57	20	36	62	•	
VDS-0320-0152-04-Z2-3D-VM10	G20-00033	3.2	4	15.2	0.58	20	36	62	•	
VDS-0325-0151-04-Z2-3D-VM10	G20-00034	3.25	4	15.1	0.59	20	36	62	•	
VDS-0330-0149-04-Z2-3D-VM10	G20-00035	3.3	4	15.1	0.60	20	36	62	•	
VDS-0340-0148-04-Z2-3D-VM10	G20-00036	3.4	4	14.9	0.62	20	36	62	•	
VDS-0350-0146-04-Z2-3D-VM10	G20-00037	3.5	4	14.8	0.64	20	36	62	•	
VDS-0360-0145-04-Z2-3D-VM10	G20-00038	3.6	4	14.6	0.66	20	36	62	•	
VDS-0370-0183-04-Z2-3D-VM10	G20-00039	3.7	4	14.5	0.67	20	36	62	•	
VDS-0380-0182-04-Z2-3D-VM10	G20-00040	3.8	4	18.3	0.69	24	36	66	•	
VDS-0390-0180-04-Z2-3D-VM10	G20-00041	3.9	4	18.2	0.71	24	36	66	•	
VDS-0400-0179-06-Z2-3D-VM10	G20-00042	4	6	18.0	0.73	24	36	66	•	
VDS-0410-0177-06-Z2-3D-VM10	G20-00043	4.1	6	17.9	0.75	24	36	66	•	
VDS-0420-0176-06-Z2-3D-VM10	G20-00044	4.2	6	17.7	0.76	24	36	66	•	
VDS-0425-0176-06-Z2-3D-VM10	G20-00045	4.25	6	17.6	0.77	24	36	66	•	
VDS-0430-0176-06-Z2-3D-VM10	G20-00046	4.3	6	17.6	0.78	24	36	66	•	
VDS-0440-0174-06-Z2-3D-VM10	G20-00047	4.4	6	17.4	0.8	24	36	66	•	
VDS-0450-0173-06-Z2-3D-VM10	G20-00048	4.5	6	17.3	0.82	24	36	66	•	
VDS-0460-0171-06-Z2-3D-VM10	G20-00049	4.6	6	17.1	0.84	24	36	66	•	
VDS-0465-0170-06-Z2-3D-VM10	G20-00050	4.65	6	17	0.85	24	36	66	•	
VDS-0470-0170-06-Z2-3D-VM10	G20-00051	4.7	6	17	0.86	24	36	66	•	
VDS-0480-0208-06-Z2-3D-VM10	G20-00052	4.8	6	20.8	0.87	28	36	66	•	
VDS-0490-0207-06-Z2-3D-VM10	G20-00053	4.9	6	20.7	0.89	28	36	66	•	
VDS-0500-0205-06-Z2-3D-VM10	G20-00054	5	6	20.5	0.91	28	36	66	•	
VDS-0510-0204-06-Z2-3D-VM10	G20-00055	5.1	6	20.4	0.93	28	36	66	•	
VDS-0520-0205-06-Z2-3D-VM10	G20-00056	5.2	6	20.5	0.95	28	36	66	•	
VDS-0530-0201-06-Z2-3D-VM10	G20-00057	5.3	6	20.1	0.96	28	36	66	•	
VDS-0540-0199-06-Z2-3D-VM10	G20-00058	5.4	6	19.9	0.98	28	36	66	•	
VDS-0550-0198-06-Z2-3D-VM10	G20-00059	5.5	6	19.8	1	28	36	66	•	
VDS-0560-0197-06-Z2-3D-VM10	G20-00060	5.6	6	19.7	1.01	28	36	66	•	
VDS-0570-0196-06-Z2-3D-VM10	G20-00061	5.7	6	19.6	1.02	28	36	66	•	
VDS-0580-0193-06-Z2-3D-VM10	G20-00062	5.8	6	19.3	1.06	28	36	66	•	
VDS-0590-0192-06-Z2-3D-VM10	G20-00063	5.9	6	19.2	1.07	28	36	66	•	
VDS-0600-0190-06-Z2-3D-VM10	G20-00064	6	6	19	1.09	28	36	66	•	

• In Stock

\* Shank DIN 6535HA



### 5XD Twist Drills

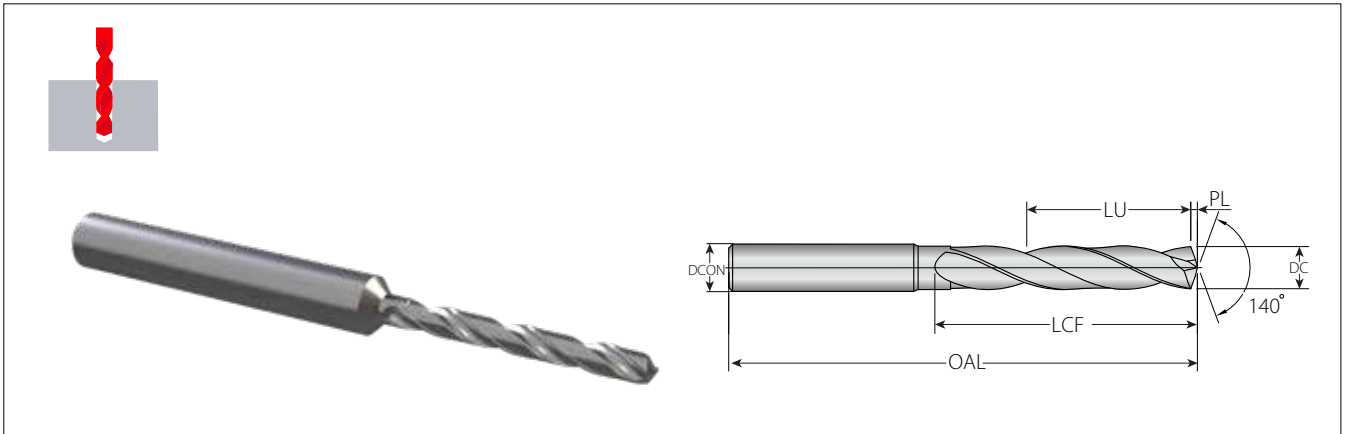
These drills feature a unique point design for high performance and better chip removal. They have an ultra-fine grain structure and AlTiN coating, making them suitable for machining Stainless Steel, Titanium Alloys, Alloy Steel, and Carbon Steel. The coating provides excellent wear resistance.



Ordering Code	Item No.	Dimensions mm						Grade
		DC	DCON (h6) *	LU	PL	LCF	OAL	
VDS-0100-0075-04-Z2-5D-VM10	G20-00065	1	4	7.5	0.18	9	45	●
VDS-0110-0074-04-Z2-5D-VM10	G20-00066	1.1	4	7.4	0.2	9	45	●
VDS-0120-0072-04-Z2-5D-VM10	G20-00067	1.2	4	7.2	0.22	9	45	●
VDS-0130-0071-04-Z2-5D-VM10	G20-00068	1.3	4	7.1	0.24	9	45	●
VDS-0140-0069-04-Z2-5D-VM10	G20-00069	1.4	4	6.9	0.25	9	45	●
VDS-0150-0098-04-Z2-5D-VM10	G20-00070	1.5	4	9.8	0.27	12	55	●
VDS-0160-0096-04-Z2-5D-VM10	G20-00071	1.6	4	9.6	0.29	12	55	●
VDS-0170-0095-04-Z2-5D-VM10	G20-00072	1.7	4	9.5	0.31	12	55	●
VDS-0180-0093-04-Z2-5D-VM10	G20-00073	1.8	4	9.3	0.33	12	55	●
VDS-0190-0092-04-Z2-5D-VM10	G20-00074	1.9	4	9.2	0.35	12	55	●
VDS-0200-0150-04-Z2-5D-VM10	G20-00075	2	4	15	0.36	18	62	●
VDS-0210-0149-04-Z2-5D-VM10	G20-00076	2.1	4	14.9	0.38	18	62	●
VDS-0220-0147-04-Z2-5D-VM10	G20-00077	2.2	4	14.7	0.4	18	62	●
VDS-0230-0146-04-Z2-5D-VM10	G20-00078	2.3	4	14.6	0.42	18	62	●
VDS-0240-0184-04-Z2-5D-VM10	G20-00079	2.4	4	18.4	0.44	22	62	●
VDS-0250-0183-04-Z2-5D-VM10	G20-00080	2.5	4	18.3	0.45	22	62	●
VDS-0260-0181-04-Z2-5D-VM10	G20-00081	2.6	4	18.1	0.47	22	62	●
VDS-0270-0180-04-Z2-5D-VM10	G20-00082	2.7	4	18	0.49	22	62	●
VDS-0280-0178-04-Z2-5D-VM10	G20-00083	2.8	4	17.8	0.51	22	62	●
VDS-0290-0177-04-Z2-5D-VM10	G20-00084	2.9	4	17.7	0.53	22	62	●

● In Stock

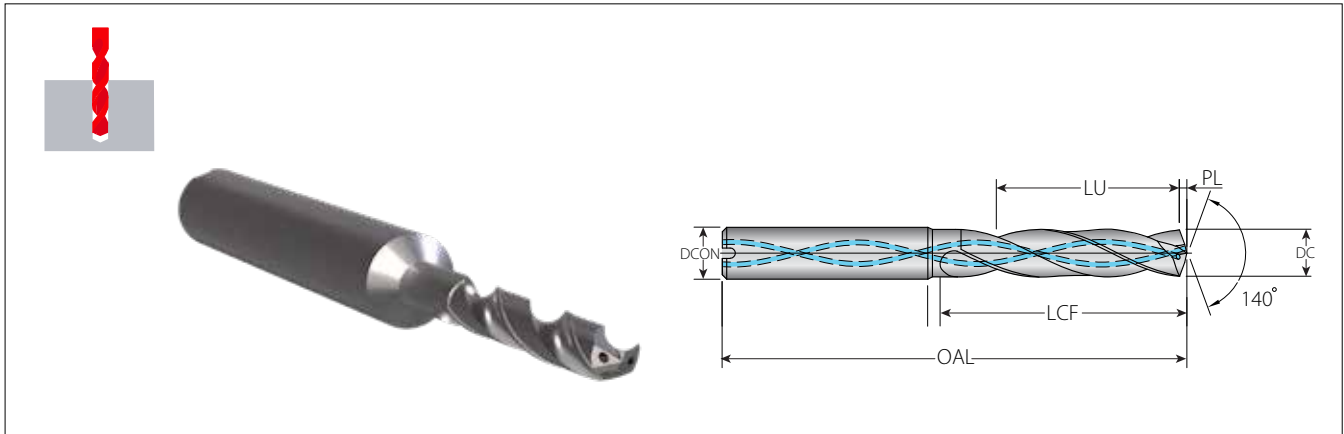
\* Shank DIN 6535HA



Ordering Code	Item No.	Dimensions mm						Grade
		DC	DCON (h6) *	LU	PL	LCF	OAL	
VDS-0300-0235-06-Z2-5D-VM10	G20-00085	3	6	23.5	0.55	28	66	•
VDS-0310-0234-06-Z2-5D-VM10	G20-00086	3.1	6	23.4	0.56	28	66	•
VDS-0320-0232-06-Z2-5D-VM10	G20-00087	3.2	6	23.2	0.58	28	66	•
VDS-0330-0231-06-Z2-5D-VM10	G20-00088	3.3	6	23.1	0.6	28	66	•
VDS-0340-0229-06-Z2-5D-VM10	G20-00089	3.4	6	22.9	0.62	28	66	•
VDS-0350-0228-06-Z2-5D-VM10	G20-00090	3.5	6	22.8	0.64	28	66	•
VDS-0360-0226-06-Z2-5D-VM10	G20-00091	3.6	6	22.6	0.66	28	66	•
VDS-0370-0225-06-Z2-5D-VM10	G20-00092	3.7	6	22.5	0.67	28	66	•
VDS-0380-0303-06-Z2-5D-VM10	G20-00093	3.8	6	30.3	0.69	36	74	•
VDS-0390-0302-06-Z2-5D-VM10	G20-00094	3.9	6	30.2	0.71	36	74	•
VDS-0400-0300-06-Z2-5D-VM10	G20-00095	4	6	30	0.73	36	74	•
VDS-0410-0299-06-Z2-5D-VM10	G20-00096	4.1	6	29.9	0.75	36	74	•
VDS-0420-0297-06-Z2-5D-VM10	G20-00097	4.2	6	29.7	0.76	36	74	•
VDS-0430-0296-06-Z2-5D-VM10	G20-00098	4.3	6	29.6	0.78	36	74	•
VDS-0440-0294-06-Z2-5D-VM10	G20-00099	4.4	6	29.4	0.8	36	74	•
VDS-0450-0293-06-Z2-5D-VM10	G20-00100	4.5	6	29.3	0.82	36	74	•
VDS-0460-0291-06-Z2-5D-VM10	G20-00101	4.6	6	29.1	0.84	36	74	•
VDS-0470-0290-06-Z2-5D-VM10	G20-00102	4.7	6	29	0.86	36	74	•
VDS-0480-0368-06-Z2-5D-VM10	G20-00103	4.8	6	36.8	0.87	44	82	•
VDS-0490-0367-06-Z2-5D-VM10	G20-00104	4.9	6	36.7	0.89	44	82	•
VDS-0500-0365-06-Z2-5D-VM10	G20-00105	5	6	36.5	0.91	44	82	•
VDS-0510-0364-06-Z2-5D-VM10	G20-00106	5.1	6	36.4	0.93	44	82	•
VDS-0520-0362-06-Z2-5D-VM10	G20-00107	5.2	6	36.2	0.95	44	82	•
VDS-0530-0361-06-Z2-5D-VM10	G20-00108	5.3	6	36.1	0.96	44	82	•
VDS-0540-0359-06-Z2-5D-VM10	G20-00109	5.4	6	35.9	0.98	44	82	•
VDS-0550-0358-06-Z2-5D-VM10	G20-00110	5.5	6	35.8	1	44	82	•
VDS-0560-0356-06-Z2-5D-VM10	G20-00111	5.6	6	35.6	1.02	44	82	•
VDS-0570-0355-06-Z2-5D-VM10	G20-00112	5.7	6	35.5	1.04	44	82	•
VDS-0580-0353-06-Z2-5D-VM10	G20-00113	5.8	6	35.3	1.06	44	82	•
VDS-0590-0352-06-Z2-5D-VM10	G20-00114	5.9	6	35.2	1.07	44	82	•
VDS-0600-0350-06-Z2-5D-VM10	G20-00115	6	6	35	1.09	44	82	•

• In Stock

\* Shank DIN 6535HA



### 3XD Coated Twist Drills with Coolant Thru

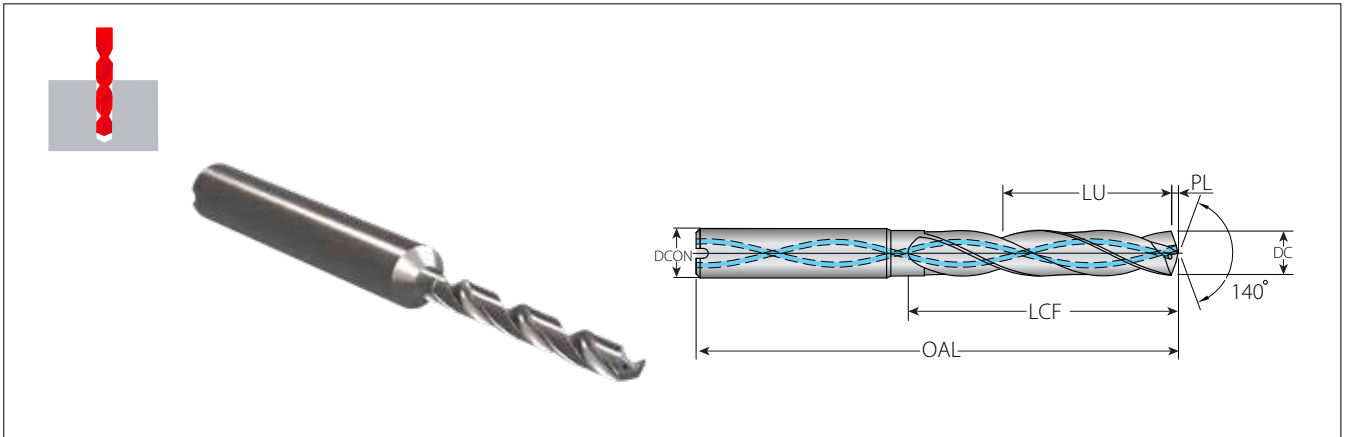
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Ordering Code	Item No.	Dimensions mm						Grade
		DC	DCON (h6) *	LU	PL	LCF	OAL	VM10
VDS-0200-0010-04-Z2-3D-CVM10	G20-00116	2	4	10	0.36	13	55	•
VDS-0250-0133-04-Z2-3D-CVM10	G20-00117	2.5	4	13.3	0.45	17	55	•
VDS-0300-0155-04-Z2-3D-CVM10	G20-00118	3	4	15.5	0.55	20	62	•
VDS-0350-0148-04-Z2-3D-CVM10	G20-00119	3.5	4	14.8	0.64	20	62	•
VDS-0400-0180-60-Z2-3D-CVM10	G20-00120	4	6	18	0.73	24	66	•
VDS-0450-0173-60-Z2-3D-CVM10	G20-00121	4.5	6	17.3	0.82	24	66	•
VDS-0500-0205-60-Z2-3D-CVM10	G20-00122	5	5	20.5	0.91	28	66	•
VDS-0550-0198-60-Z2-3D-CVM10	G20-00123	5.5	5.5	19.8	1	28	66	•
VDS-0600-0190-60-Z2-3D-CVM10	G20-00124	6	6	19	1.09	28	66	•

• In Stock

\* Shank DIN 6535HA



### 5XD Coated Twist Drills with Coolant Thru

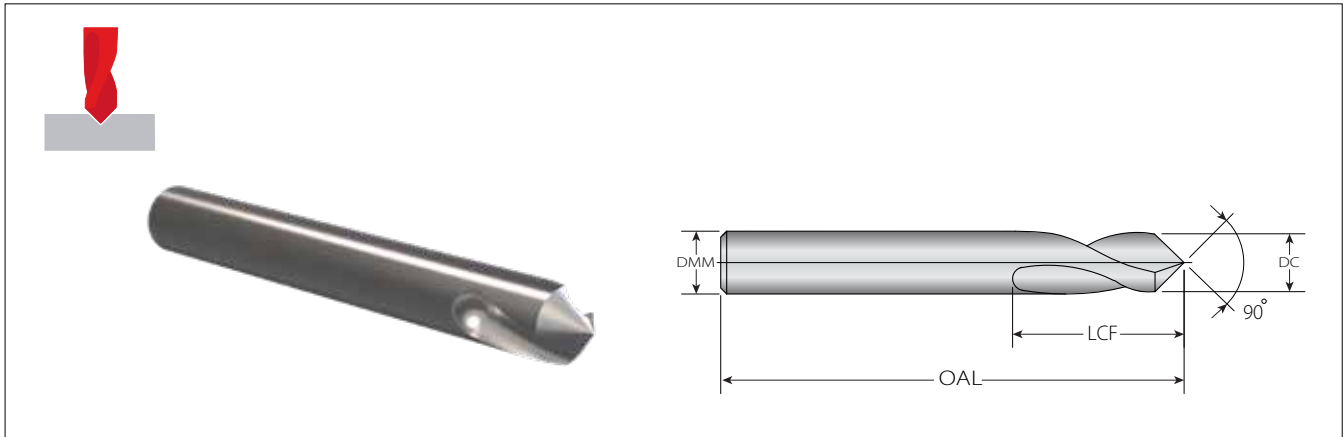
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Ordering Code	Item No.	Dimensions mm						Grade
		DC	DCON (h6) *	LU	PL	LCF	OAL	VM10
VDS-0200-0150-04-Z2-5D-C-VM10	G20-00125	2	4	15	0.36	18	62	•
VDS-0250-0183-04-Z2-5D-C-VM10	G20-00126	2.5	4	18.3	0.45	22	62	•
VDS-0300-0235-06-Z2-5D-C-VM10	G20-00127	3	6	23.5	0.55	28	66	•
VDS-0350-0228-06-Z2-5D-C-VM10	G20-00128	3.5	6	22.8	0.64	28	66	•
VDS-0400-0300-06-Z2-5D-C-VM10	G20-00129	4	6	30	0.73	36	74	•
VDS-0450-0293-06-Z2-5D-C-VM10	G20-00130	4.5	6	29.3	0.82	36	74	•
VDS-0500-0365-06-Z2-5D-C-VM10	G20-00131	5	6	36.5	0.91	44	82	•
VDS-0550-0358-06-Z2-5D-C-VM10	G20-00132	5.5	6	35.8	1	44	82	•
VDS-0600-0350-06-Z2-5D-C-VM10	G20-00133	6	6	35	1.09	44	82	•

• In Stock

\* Shank DIN 6535HA



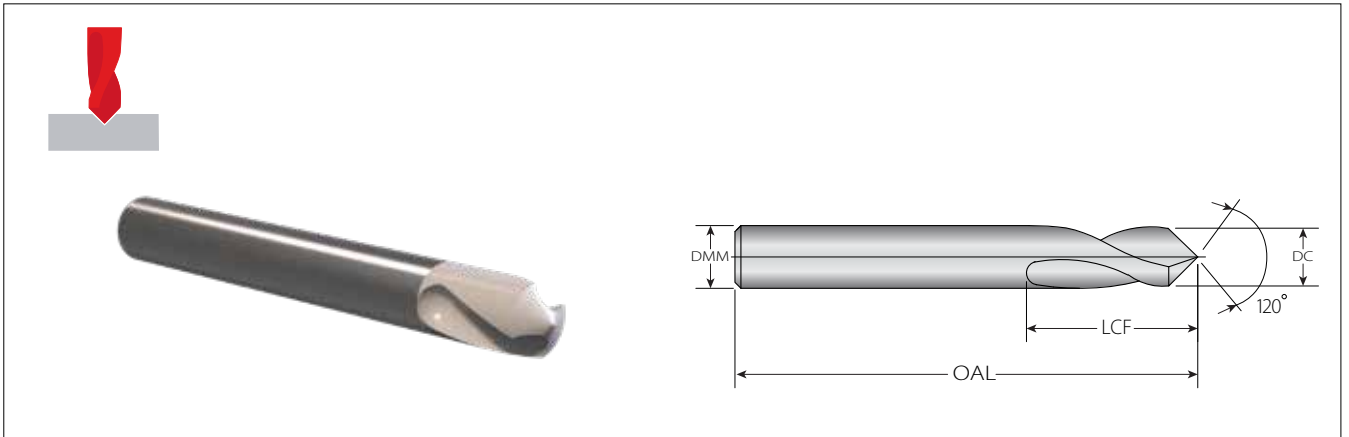
**90° NC Center Drills**

90° NC Center drills are suitable for chamfering and drilling center holes. Excellent for machining Stainless Steel, Titanium Alloys, Alloy Steel, and Carbon Steel.



Ordering Code	Item No.	Dimensions mm					Grade
		DC	D <small>CON</small> (h6)	LU	LCF	OAL	VM8
VDSC-090-0005-04-Z2-2D-VM8	G20-00134	4	4	5.33	8	50	•
VDSC-090-0007-05-Z2-2D-VM8	G20-00135	5	5	6.67	10	62	•
VDSC-090-0010-06-Z2-2D-VM8	G20-00136	6	6	10	15	66	•
VDSC-090-0011-08-Z2-2D-VM8	G20-00137	8	8	11.33	17	79	•
VDSC-090-0013-10-Z2-2D-VM8	G20-00138	10	10	13.33	20	89	•
VDSC-090-0017-12-Z2-2D-VM8	G20-00139	12	12	16.67	25	102	•

• In Stock



**120° NC Center Drills**

120° NC Center drills are suitable for chamfering and drilling center holes. Excellent for machining Stainless Steel, Titanium Alloys, Alloy Steel, and Carbon Steel.



Ordering Code	Item No.	Dimensions mm					Grade
		DC	DCON (h6)	LU	LCF	OAL	VM8
VDSC-120-0067-05-Z2-2D-VM8	G20-00140	5	5	6.67	10	62	•
VDSC-120-0010-06-Z2-2D-VM8	G20-00141	6	6	10	15	66	•
VDSC-120-0011-08-Z2-2D-VM8	G20-00142	8	8	11.33	17	79	•
VDSC-120-0013-10-Z2-2D-VM8	G20-00143	10	10	13.33	20	89	•
VDSC-120-0017-12-Z2-2D-VM8	G20-00144	12	12	16.67	25	102	•

• In Stock

# Recommended Grades and Cutting Speeds Vc [m/min]

## Tool Family Groups: VDS-3XD | VDS-3XD C

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min]		F [mm/rev]		F [mm/rev]
					3xD		Dia.	Dia.	Dia.
					External Coolant	Internal Coolant	1.0-1.9	2.0-2.9	3.0-6.0
<b>P</b> Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	80-100	90-130	0.01-0.08	0.02-0.08	0.08-0.16
	2		Medium Carbon (C=0.25-0.55%)	150	70-90	80-120			
	3		High Carbon (C=0.55-0.85%)	170					
	4	Low Alloy Steel (alloying elements ≤5%)	Non Hardened	180	70-90	80-120			
	5		Hardened	275					
	6		Hardened	350					
	7	High Alloy Steel (alloying elements >5%)	Annealed	200	70-90	80-120			
	8		Hardened	325					
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	70-90	80-120			
	10		High Alloy (alloying elements >5%)	225					
<b>M</b> Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	20-50	40-70	0.02-0.05	0.02-0.06	0.03-0.08
	12		Hardened	330	20-40	40-60			
	13	Stainless Steel Austenitic	Austenitic	180					
	14		Super Austenitic	200					
	15	Stainless Steel Cast Ferritic	Non Hardened	200					
	16		Hardened	330					
	17	Stainless Steel Cast Austenitic	Austenitic	200					
	18		Hardened	330					
<b>S</b> Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200			no	15-35	0.01-0.04
	20		Aged (iron based)	280					
	21		Annealed (nickel or cobalt based)	250					
	22		Aged (nickel or cobalt based)	350					
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	25-45				

## Tool Family Groups: VDS-5XD | VDS-5XD C

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min]		F [mm/rev]		F [mm/rev]
					5xD		Dia.	Dia.	Dia.
					External Coolant	Internal Coolant	1.0-1.9	2.0-2.9	3.0-6.0
<b>P</b> Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	70-90	70-110	0.01-0.08	0.02-0.08	0.08-0.16
	2		Medium Carbon (C=0.25-0.55%)	150	60-80	60-100			
	3		High Carbon (C=0.55-0.85%)	170					
	4	Low Alloy Steel (alloying elements ≤5%)	Non Hardened	180	60-80	60-100			
	5		Hardened	275					
	6		Hardened	350					
	7	High Alloy Steel (alloying elements >5%)	Annealed	200	60-80	60-100			
	8		Hardened	325					
	9	Cast Steel	Low Alloy (alloying elements <5%)	200	60-80	60-100			
	10		High Alloy (alloying elements >5%)	225					
<b>M</b> Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	20-50	40-70	0.02-0.05	0.02-0.06	0.03-0.08
	12		Hardened	330	20-40	40-60			
	13	Stainless Steel Austenitic	Austenitic	180					
	14		Super Austenitic	200					
	15	Stainless Steel Cast Ferritic	Non Hardened	200					
	16		Hardened	330					
	17	Stainless Steel Cast Austenitic	Austenitic	200					
	18		Hardened	330					
<b>S</b> Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200			no	15-35	0.01-0.04
	20		Aged (iron based)	280					
	21		Annealed (nickel or cobalt based)	250					
	22		Aged (nickel or cobalt based)	350					
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	25-40				



## Tool Family Groups: VDSC 90 | VDSC 120

Material Group	Vargus No.	Material		Hardness Brinell HB	Vc [m/min]	F [mm/rev]		
						Dia.	Dia.	Dia.
						1.0-1.9	2.0-2.9	3.0-6.0
<b>P</b> Steel	1	Unalloyed Steel	Low Carbon (C=0.1-0.25%)	125	90-130	0.01-0.08	0.02-0.08	0.08-0.16
	2		Medium Carbon (C=0.25-0.55%)	150	80-120			
	3		High Carbon (C=0.55-0.85%)	170	70-100			
	4	Low Alloy Steel (alloying elements ≤ 5%)	Non Hardened	180	70-120			
	5		Hardened	275	70-100			
	6		Hardened	350	60-80			
	7	High Alloy Steel (alloying elements > 5%)	Annealed	200				
	8		Hardened	325				
	9	Cast Steel	Low Alloy (alloying elements < 5%)	200	50-70			
	10		High Alloy (alloying elements > 5%)	225				
<b>M</b> Stainless Steel	11	Stainless Steel Ferritic	Non Hardened	200	40-70	0.02-0.05	0.02-0.06	0.03-0.08
	12		Hardened	330	40-60			
	13	Stainless Steel Austenitic	Austenitic	180				
	14		Super Austenitic	200				
	15	Stainless Steel Cast Ferritic	Non Hardened	200				
	16		Hardened	330				
	17	Stainless Steel Cast Austenitic	Austenitic	200				
	18		Hardened	330				
<b>S</b> Heat Resistant Material	19	High Temperature Alloys	Annealed (iron based)	200	15-35	0.01-0.04	0.02-0.05	0.02-0.06
	20		Aged (iron based)	280				
	21		Annealed (nickel or cobalt based)	250				
	22		Aged (nickel or cobalt based)	350				
	23	Titanium Alloys	Pure 99.5 Ti	400Rm	25-45			



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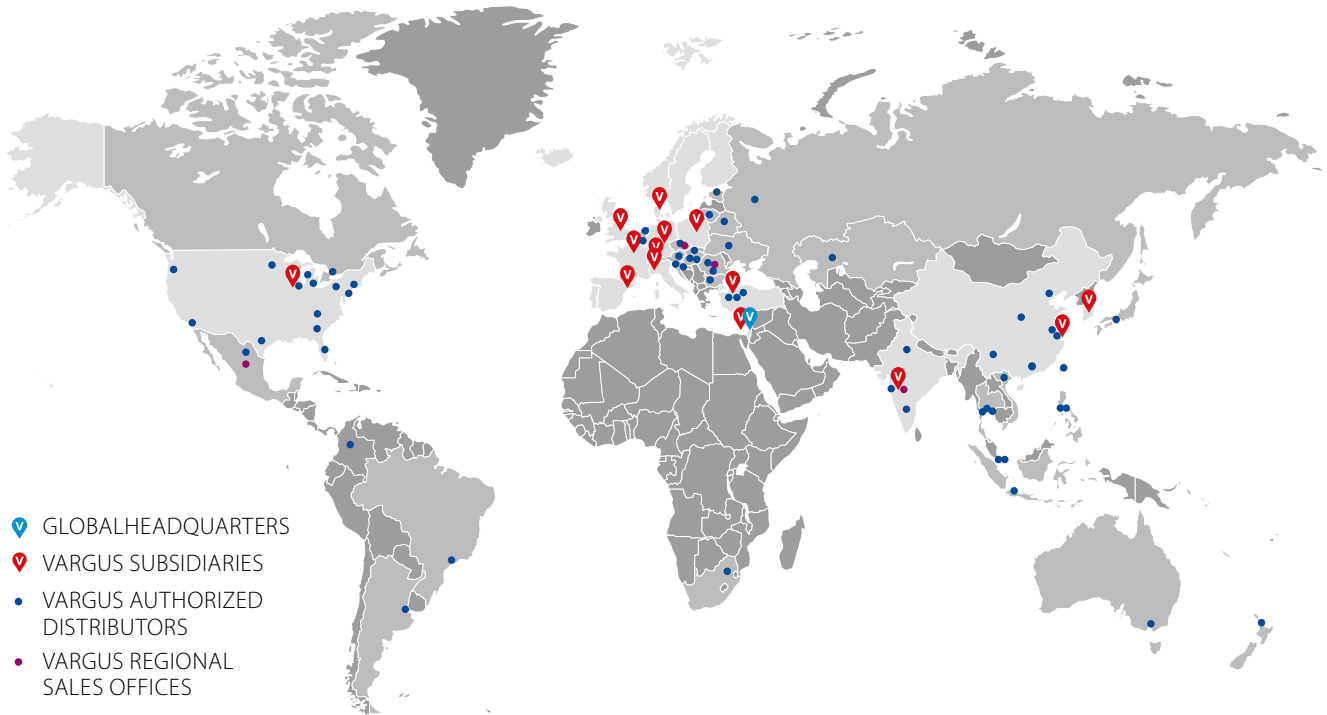
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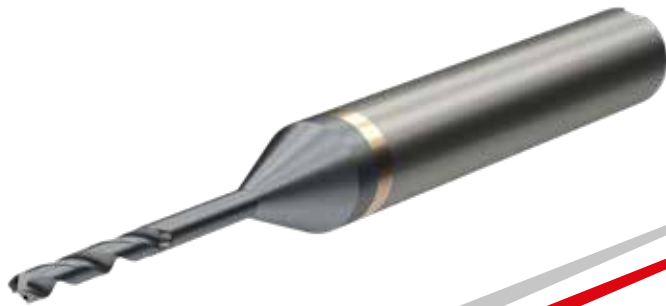
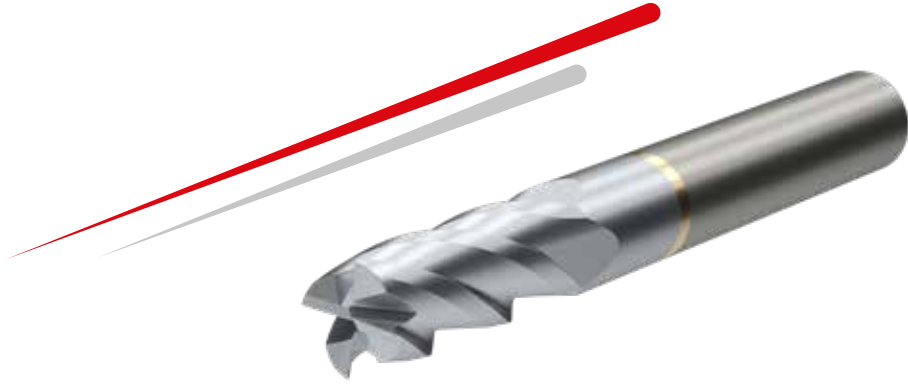
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