2020 Focus Products

Vietnam Edition

WIDIA SHINKI™

Brand Portfolio

Custom Round Tools Manufactured by WIDIA SHINKI in Vietnam

WIDIA SHINKI

Indexable Turning, Grooving, Cut-Off, Milling, and Drilling

WIDIA

Solid Carbide and HSS End Mills

WIDIA HANITA

Taps

WIDIA GTD

Machining Centre Tooling

ERICKSON

Quick-Change Tooling

KM

WIDIA SHINKI

2019 Products Catalogue

WIDIA SHINKI VIETNAM FACTORY

**Lot CN1-12B-2, Hoa Lac Hi-Tech Park, Ha Bang Commune,
Thach That District, Hanoi**

WIDIA SHINKI PRODUCTS

Leading Technology Round Tools for Aluminium.
Manufactured in Hoa Lac Hi-Tech Industrial Zone.
Consistent High Quality and Fast Deliveries.

WIDIA SHINKI is able to supply specially-requested round tools to fit the tolerance and shape required by the customer.

WIDIA SHINKI PRODUCTS (continued)

WIDIA SHINKI provides proven experience in cutting tool manufacturing solutions. Round tools created in the WIDIA SHINKI factory are optimized for cutting conditions seen in automotive and motorcycle component machining.

Tools manufactured in the WIDIA SHINKI factory feature optimized carbide and PCD tips to machine the aluminum bodies of mobile devices. Devices include cell phones, computers, and tablets, in the electonic communication market.

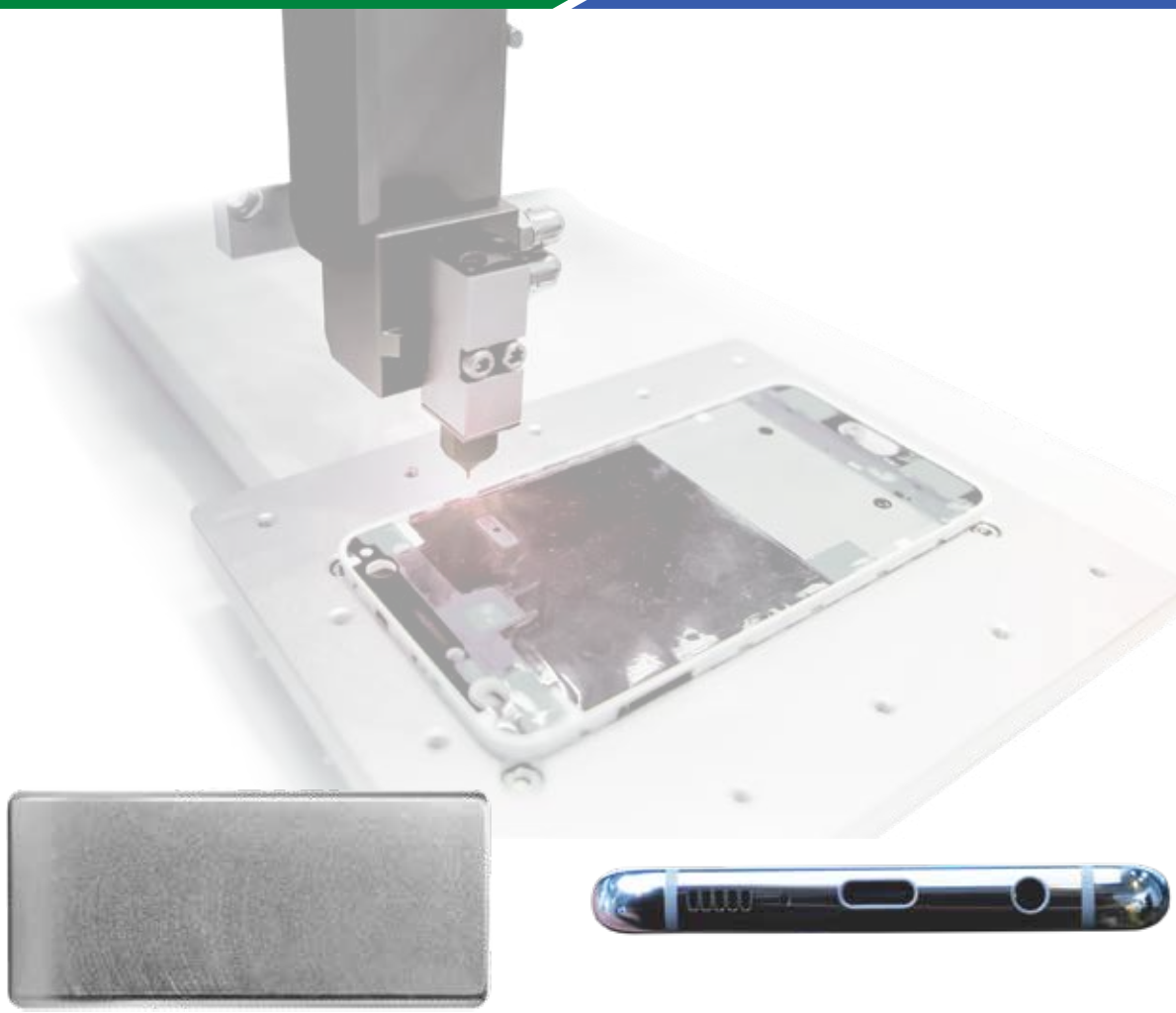
Conventional cast iron cylinder blocks are manufactured through sand casting, where material allowances are not uniform. WK15CT grade offers a perfect combination of toughness and wear-resistance to solve this challenge.

A throttle body / carburetor is a key part of the fuel system, requiring tight tolerances. Single tool PCD solution for drilling and reaming provided the required accuracy, repeatability, and productivity.

Transmission covers require burr free machining and a smooth surface finish. PCD grades and smart cutter designs ensure longer tool life, stable processes, and superior surface finishes.

TRANSPORTATION

WIDIA has aided in the development of the automotive industry by providing verified cutting tools for applications in steel, cast iron, and aluminium automotive component creation.



Aluminium frames of phones and laptops are machined using flat, side, and rough machining techniques.

Small speaker processing requires tiny, yet very precise flat bottoming drills.

ELECTRONICS

WIDIA SHINKI is able to manufacture high volumes of specialty round tool solutions for machining aluminium components in the 3C market.

AUTOMOTIVE TECHNOLOGY

WIDIA™ internal turning products create smooth cuts in cast iron to create components like engine blocks. The engine block serves as the main structure to house the engine and any other critical components that make a vehicle move.

Tapping products like HSS taps can be used to create threaded holes in the brake caliper. These components are important because they eventually slow or stop the vehicle from moving.

WIDIA face milling products provide productivity in milling alloyed steel to create smooth connecting rods that withstand many stresses from the piston.

TRANSPORTATION

WIDIA has aided in the development of the automotive industry by providing verified cutting tools for applications in steel, cast iron, and aluminium automotive component creation.

AEROSPACE TECHNOLOGY

WIDIA™ tooling solutions enhance productivity in an array of industries, but automotive-component manufacturing and aerospace experience some of the greatest successes.

WIDIA HANITA

WIDIA drills for composite machining utilise PCD and diamond coatings made for the machining of aerospace CFRP (Carbon Fibre Reinforced Plastics).

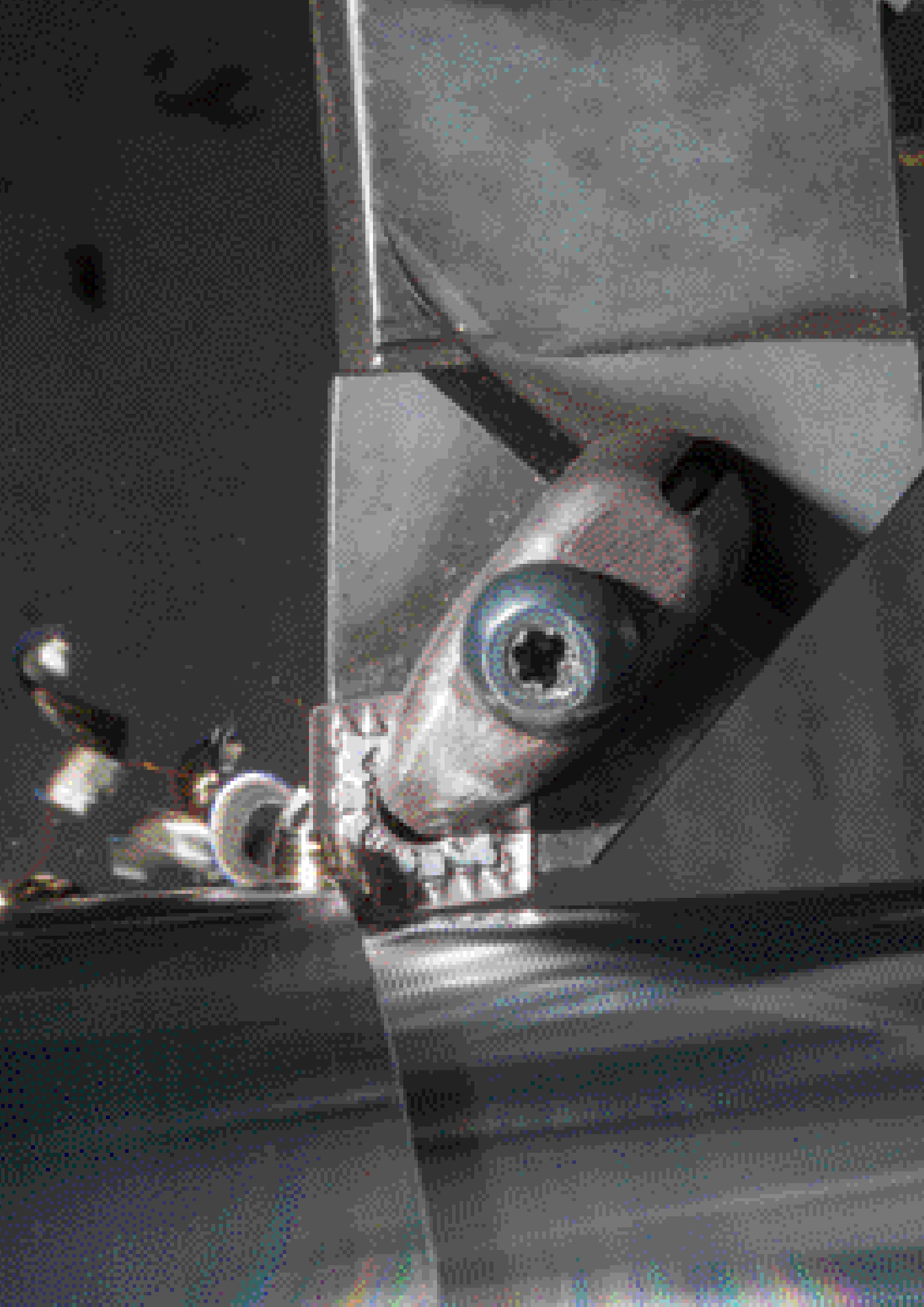
These coatings enable longer tool life at much higher machining speeds.

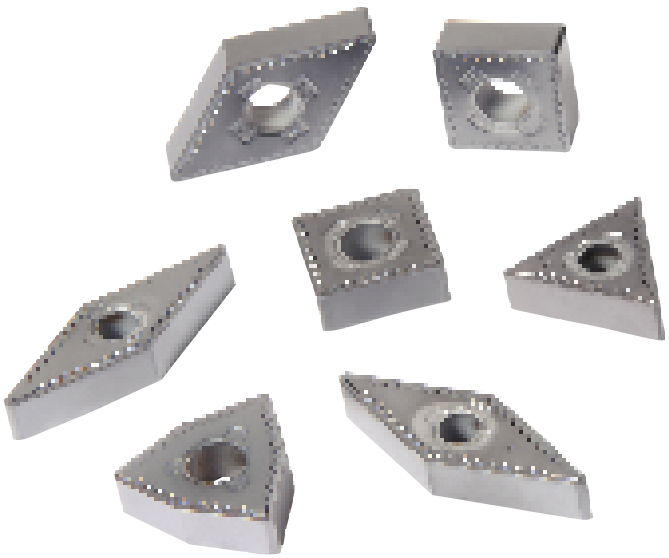
Integral Blade Rotor (IBR) machining end mills are designed to match a multi-level machining process for the airfoils, followed by the fillet feature, which works for roughing and finishing operations.

WIDIA-Hanita™ end mills produce consistent performance each and every run, allowing the production of more parts per tool and less downtime, while machining tough materials like INCONEL® depressor fine seals.

AEROSPACE

WIDIA offers machining strategies and innovative tooling technology specifically engineered for the aerospace industry to increase productivity and reduce costs.



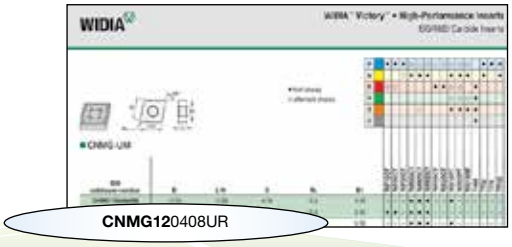


WIDIA™ Inserts

Catalogue Numbering System

How Do Catalogue Numbers Work?

Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



CNMG120408UR

C	N	M	G	12
Insert Shape	Insert Clearance Angle	Tolerance Class	Insert Features	Size

C — Insert Shape

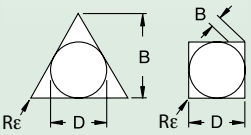
H	Hexagon 120°	
O	Octagon 135°	
P	Pentagon 108°	
R	Round —	
S	Square 90°	
T	Triangular 60°	
C **D** **E** **M** **V**	Rhomboid 80° 55° 75° 86° 35°	
W	Trigon 80° with enlarged corner angles	
L	Rectangular 90°	
A **B** **N/K**	Parallelogram 85° 82° 55°	

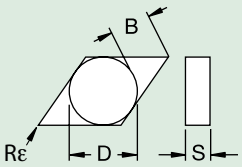
N — Insert Clearance Angle

A	3°	
B	5°	
C	7°	
D	15°	
E	20°	
F	25°	
G	30°	
N	0°	
P	11°	
O	Indicated for other clearance angles requiring descriptions.	

M — Tolerance Class

Tolerances apply prior to edge prep and coating





D = Theoretical diameter of the insert inscribed circle
S = Thickness
B = See figures below

G — Insert Features

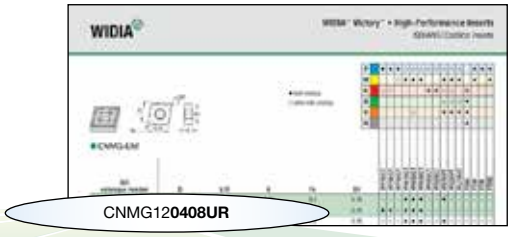
N	
R	
F	
A	
M	
G	
W	
T	
Q	
U	
B	
H	
C	
J	
X **V**	Special Design

12 — Size

	Code for mm cutting edge length "L10"						
"D" mm	C	D	R	S	T	V	W
3,97	S4	04	03	03	06	–	–
4,76	04	05	04	04	08	08	S3
5,56	05	06	05	05	09	09	03
6,00	–	–	06	–	–	–	–
6,35	06	07	06	06	11	11	04
7,94	08	09	07	07	13	13	05
8,00	–	–	08	–	–	–	–
9,52	09	11	09	09	16	16	06
10,00	–	–	10	–	–	–	–
11,11	11	13	11	11	19	19	07
12,00	–	–	12	–	–	–	–
12,70	12	15	12	12	22	22	08
14,29	14	17	14	14	24	24	09
15,88	16	19	15	15	27	27	10
16,00	–	–	16	–	–	–	–
17,46	17	21	17	17	30	30	11
19,05	19	23	19	19	33	33	13
20,00	–	–	20	–	–	–	–
22,22	22	27	22	22	38	38	15
25,00	–	–	25	–	–	–	–
25,40	25	31	25	25	44	44	17
31,75	32	38	31	31	54	54	21
32,00	–	–	32	–	–	–	–

tolerance class	tolerance on "D"	tolerance on "B"	tolerance on "S"
C	±0,025	±0,013	±0,025
H	±0,013	±0,013	±0,025
E	±0,025	±0,025	±0,025
G	±0,025	±0,025	±0,013
M	See tables on next page		±0,013
U	See tables on next page		±0,013

By referencing this easy-to-use guide, you can identify the correct product to meet your needs.



04	08			UR
Thickness S	Corner Radius "Rε"	Hand of Insert (optional)	Cutting Edge (optional)	Chipbreaker (optional)

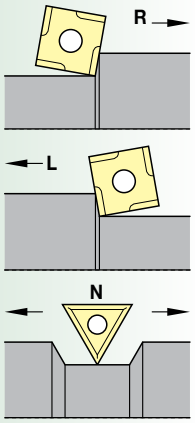
symbol	thickness
mm	mm
—	0,79
T0	1,00
01	1,59
T1	1,98
02	2,38
03	3,18
T3	3,97
04	4,76
05	5,56
06	6,35
07	7,94
9	9,52
11	11,11
12	12,70

symbol	corner radius
mm	mm
X0	0,04
01	0,1
02	0,2
04	0,4
08	0,8
12	1,2
16	1,6
20	2,0
24	2,4
28	2,8
32	3,2
00	round insert
M0	round insert
—	round insert

R = Right hand

L = Left hand

N = Neutral



F		Sharp
E		Rounded
T		Chamfered
S		Chamfered and Rounded
K		Double-Chamfered
P		Double-Chamfered and Rounded

13	=	Railroad Light
CT	=	Copy Turning
FF	=	Fine Finishing
FP	=	Finish Positive
FW	=	Finish Wiper
ML	=	Medium Light
MR	=	Medium Roughing
MW	=	Medium Wiper
RH	=	Roughing Heavy
T	=	Negative Land
UF	=	Universal Finishing
UM	=	Universal Medium
UR	=	Universal Roughing
.NMP	=	Sharp Medium
MP	=	Medium Positive
FS	=	Finishing High-Temp(S)
MS	=	Medium High-Temp(S)
MU	=	Medium Universal
SR	=	Super Roughing
65	=	Heavy Roughing

"D"	± Tolerance on "D" Class M Tolerance			Class U Tolerance
	Shapes S, T, C, R, & W	Shape D	Shape V	Shapes S, T, & C
mm	mm	mm	mm	mm
3,97	0,05	–	–	–
4,76	0,05	–	–	0,08
5,56	0,05	0,05	0,05	0,08
6,35	0,05	0,05	0,05	0,08
7,94	0,05	0,05	0,05	0,08
9,52	0,05	0,05	0,05	0,08
11,11	0,08	0,08	0,08	0,13
12,70	0,08	0,08	0,08	0,13
14,29	0,08	0,08	0,08	0,13
15,88	0,10	0,10	0,10	0,18
17,46	0,10	0,10	0,10	0,18
19,05	0,10	0,10	0,10	0,18
22,22	0,13	–	–	0,25
25,40	0,13	–	–	0,25
31,75	0,15	–	–	0,25

"D"	± Tolerance on "B" Class M Tolerance			Class U Tolerance
	Shapes S, T, C, R, & W	Shape D	Shape V	Shapes S, T, & C
mm	mm	mm	mm	mm
3,97	0,08	–	–	–
4,76	0,08	–	–	0,13
5,56	0,08	0,11	–	0,13
6,35	0,08	0,11	–	0,13
7,94	0,08	0,11	–	0,13
9,52	0,08	0,11	0,18	0,13
11,11	0,13	0,15	–	–
12,70	0,13	0,15	0,25	0,20
14,29	0,13	0,15	–	–
15,88	0,15	0,18	–	0,27
17,46	0,15	0,18	–	0,27
19,05	0,15	0,18	–	0,27
22,22	0,15	–	–	0,38
25,40	0,18	–	–	0,38
31,75	0,20	–	–	0,38

WIDIA™ Victory™ • High-Performance Inserts

Catalogue Numbering System

A system of grades, geometries, and application guidelines to provide optimal solutions for your metalcutting needs. It's easy to determine which WIDIA™ chip-control cutting tool will work best in your specific workpiece materials and applications!

WIDIA VICTORY

W	P	15	C	T
Brand	Primary Workpiece Material	Application Range*	Insert Material	Application

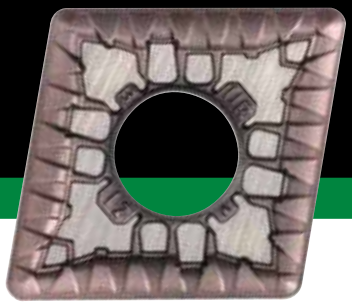
P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials
U	Universal Machining

05	=	fine finishing
10	=	finishing
15	=	medium to roughing
20	=	
25	=	
30	=	roughing
35	=	
40	=	heaviest roughing
45	=	
50	=	

*Samples shown are based on turning and will differ within applications

H	=	Uncoated Carbide
C	=	Carbide + CVD
P	=	Carbide + PVD
T	=	Cermet
Y	=	Ceramics
D	=	Diamond
B	=	PcBN
S	=	HSS
E	=	HSS-E
M	=	HSS-E-PM

T	=	Turning
M	=	Milling
H	=	Holemaking
D	=	Solid Drills
E	=	Solid End Mills
G	=	Taps
R	=	Reamer
V	=	Thread Mills



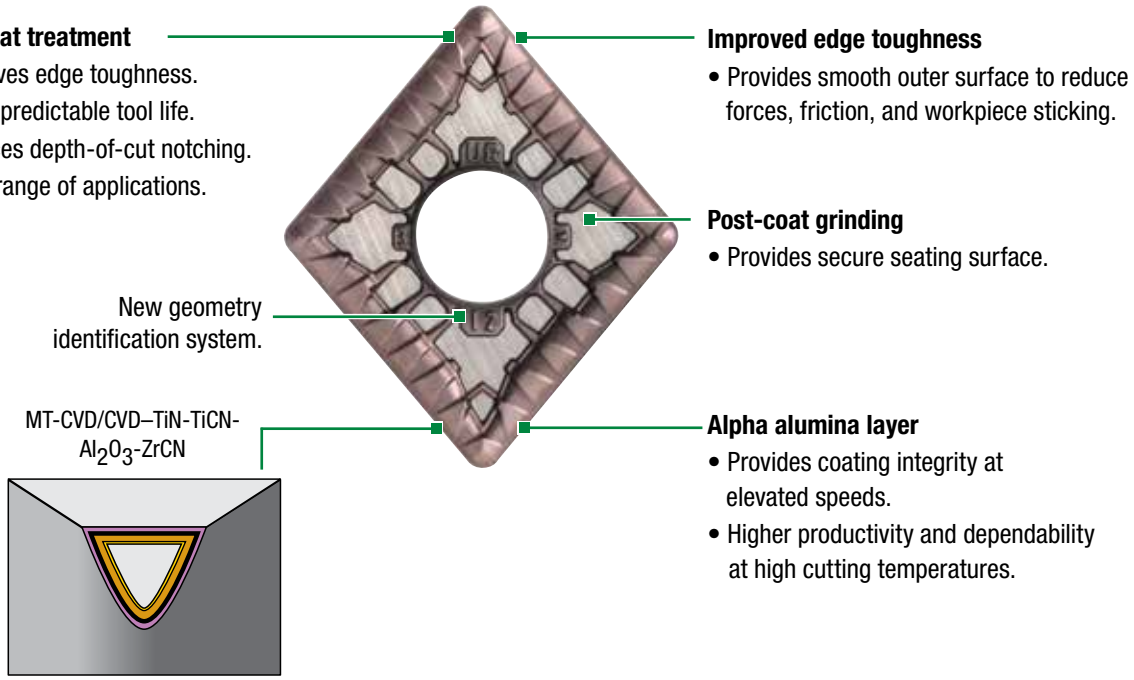
A Complete High-Performance Turning Portfolio • WIDIA Victory

Specifically engineered multilayer coating provides high-speed capability for finishing to roughing operations. New geometries enhance chip control for better tool life and superior surface finshes.

- Market-leading technology.
- Longer tool life.
- Higher productivity through increased speed capability.

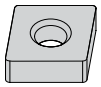
Steel and Stainless Steel Grades

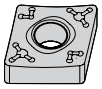
- Reduced cycle times — high speed and feed capability.
- Long tool life — new multilayer coating provides better wear resistance.
- Proven seating — smooth and secure seating surface.
- Outer layer is bronze-colored for easier wear detection.

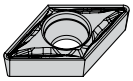
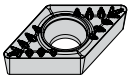
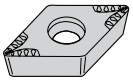
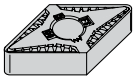
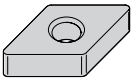
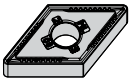


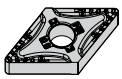
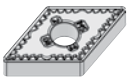
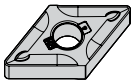
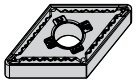
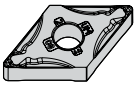
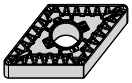
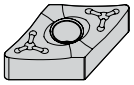
Turning

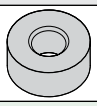
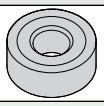
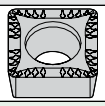
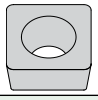
Victory™ ISO Turning Inserts

CCMT-FP • Finishing Positive	CCMT-MP • Medium Positive	CCMT-MU • Medium Universal	CCMW • Medium Wiper	CNGG-FS • Finishing Sharp	CNGP • Medium Machining	CNMA • Roughing	CNMG-ML • Medium Light
							

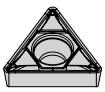
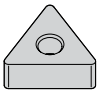
CNMG-MR • Medium Roughing	CNMG-MS • Medium Sharp	CNMG-RH • Roughing Heavy	CNMG-UF • Universal Finishing	CNMG-UM • Universal Medium	CNMG-UR • Universal Roughing	CNMM-65 • Single Sided • Roughing	CNMM-8 • Single Sided • Heavy Roughing
							

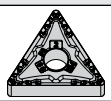
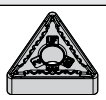
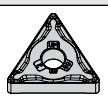
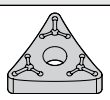
CNMM-SR • Single Sided • Super Roughing	CNMP • Sharp Machining	DCMT-FP • Finishing Positive	DCMT-MP • Medium Positive	DCMT-MU • Medium Universal	DNGG-FS • Finishing Sharp	DNMA • Roughing	DNMG-ML • Medium Light
							

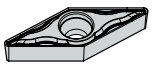
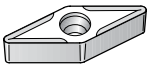
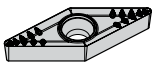
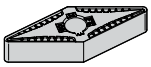
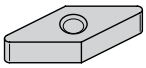
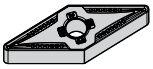
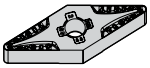
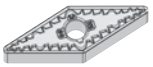
DNMG-MR • Medium Roughing	DNMG-MS • Medium Sharp	DNMG-RH • Roughing Heavy	DNMG-UF • Universal Finishing	DNMG-UM • Universal Medium	DNMG-UR • Universal Roughing	DNMM-65 • Single Sided • Roughing	RCMT
							

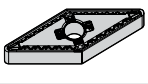
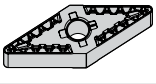
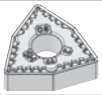
RCMX	RNMA • Roughing	RNMG-RH • Roughing Heavy	SCMT-FP • Finishing Positive	SCMT-MP • Medium Positive	SCMT-MU • Medium Universal	SCMW • Medium Wiper	SNGG-FS • Finishing Sharp
							

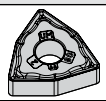
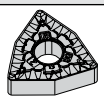
SNMA • Roughing	SNMG-ML • Medium Light	SNMG-MR • Medium Roughing	SNMG-MS • Medium Sharp	SNMG-RH • Roughing Heavy	SNMG-UF • Universal Finishing	SNMG-UM • Universal Medium	SNMG-UR • Universal Roughing
							

SNMM-65 • Single Sided • Roughing	SNMM-8 • Single Sided • Heavy Roughing	SNMM-SR • Single Sided • Super Roughing	TCMT-FP • Finishing Positive	TCMT-MP • Medium Positive	TCMT-MU • Medium Universal	TNGG-FS • Finishing Sharp	TNMA • Roughing
							

TNMG-ML • Medium Light	TNMG-MR • Medium Roughing	TNMG-MS • Medium Sharp	TNMG-RH • Roughing Heavy	TNMG-UF • Universal Finishing	TNMG-UM • Universal Medium	TNMG-UR • Universal Roughing	TNMM-65 • Single Sided • Roughing
							

VBMT-FP • Finishing Positive	VBMT • Medium	VBMT-MP • Medium Positive	VNGG-FS • Finishing Sharp	VNMA • Roughing	VNMG-ML • Medium Light	VNMG-MR • Medium Roughing	VNMG-MS • Medium Sharp
							

VNMG-UF • Universal Finishing	VNMG-UR • Universal Roughing	WNGG-FS • Finishing Sharp	WNMA • Roughing	WNMG-ML • Medium Light	WNMG-MR • Medium Roughing	WNMG-MS • Medium Sharp	WNMG-RH • Roughing Heavy
							

WNMG-UF • Universal Finishing	WNMG-UM • Universal Medium	WNMG-UR • Universal Roughing
		

order number	catalogue number	grade
CCMT-FP • Finishing Positive		
4168778	CCMT060202FP	WM25CT
4169857	CCMT060202FP	WP15CT
4170140	CCMT060202FP	WP25CT
4170032	CCMT060204FP	WK20CT
4168779	CCMT060204FP	WM25CT
4169858	CCMT060204FP	WP15CT
4170141	CCMT060204FP	WP25CT
5684337	CCMT060204FP	WS10PT
5684340	CCMT060204FP	WS25PT
4170084	CCMT09T304FP	WK20CT
4168782	CCMT09T304FP	WM25CT
4169860	CCMT09T304FP	WP15CT
4170294	CCMT09T304FP	WP25CT
5684341	CCMT09T304FP	WS10PT
5684343	CCMT09T304FP	WS25PT
4170085	CCMT09T308FP	WK20CT
4168741	CCMT09T308FP	WM15CT
4169861	CCMT09T308FP	WP15CT
4170295	CCMT09T308FP	WP25CT
5684338	CCMT09T308FP	WS25PT
4170296	CCMT120404FP	WP25CT
4170297	CCMT120408FP	WP25CT
CCMT-MP • Medium Positive		
4170237	CCMT060204MP	WK20CT
4168906	CCMT060204MP	WM25CT
4170197	CCMT060204MP	WP15CT
4170217	CCMT060204MP	WP25CT
4170218	CCMT09T304MP	WP25CT
4170239	CCMT09T308MP	WK20CT
4168908	CCMT09T308MP	WM25CT
4170199	CCMT09T308MP	WP15CT
4170219	CCMT09T308MP	WP25CT
4168909	CCMT09T312MP	WM25CT
4170240	CCMT120408MP	WK20CT
4170221	CCMT120408MP	WP25CT
4170241	CCMT120412MP	WK20CT
4170222	CCMT120412MP	WP25CT
CCMT-MU • Medium Universal		
5623421	CCMT090304MU	WM25CT
5623420	CCMT090304MU	WP25CT
5623423	CCMT090308MU	WM25CT
5623425	CCMT090308MU	WP15CT
5623424	CCMT090308MU	WP25CT
5623432	CCMT09T304MU	WK20CT
5623427	CCMT09T304MU	WM25CT
5623431	CCMT09T304MU	WP15CT
5623430	CCMT09T304MU	WP25CT
5623428	CCMT09T304MU	WS10PT
5623426	CCMT09T304MU	WS25PT
5623433	CCMT09T308MU	WK20CT
5623435	CCMT09T308MU	WM25CT
5623434	CCMT09T308MU	WP15CT
5623436	CCMT09T308MU	WP25CT
5623439	CCMT09T308MU	WP35CT
5623438	CCMT09T308MU	WS10PT
5623437	CCMT09T308MU	WS25PT
5623441	CCMT120408MU	WK20CT
5623442	CCMT120408MU	WM25CT
5623443	CCMT120408MU	WP25CT
CCMW • Medium Wiper		
4170369	CCMW090304	WK20CT
4170370	CCMW090308	WK20CT
4170371	CCMW09T304	WK20CT

order number	catalogue number	grade
CNGG-FS • Finishing Sharp		
5548576	CNGG120401FS	WS10PT
5548575	CNGG120402FS	WS10PT
5548577	CNGG120404FS	WS10PT
5538204	CNGG120404FS	WS25PT
5548578	CNGG120408FS	WS10PT
CNGP • Medium Machining		
5549137	CNGP120401	WS10PT
5549207	CNGP120404	WU10HT
5549139	CNGP120404	WS10PT
5549208	CNGP120408	WU10HT
5549190	CNGP120408	WS10PT
CNMA • Roughing		
4171596	CNMA120408	WK05CT
4171864	CNMA120408	WK20CT
4171865	CNMA120412	WK20CT
4171866	CNMA120416	WK20CT
4171868	CNMA160612	WK20CT
4171869	CNMA160616	WK20CT
4171871	CNMA190612	WK20CT
4171872	CNMA190616	WK20CT
CNMG-ML • Medium Light		
4171390	CNMG120404ML	WK20CT
4171059	CNMG120404ML	WP15CT
4170458	CNMG120404ML	WP25CT
4171658	CNMG120408ML	WK05CT
4171391	CNMG120408ML	WK20CT
4171060	CNMG120408ML	WP15CT
4170459	CNMG120408ML	WP25CT
4171392	CNMG120412ML	WK20CT
4170460	CNMG120412ML	WP25CT
CNMG-MR • Medium Roughing		
4170546	CNMG120404MR	WP25CT
4170043	CNMG120404MR	WP35CT
4172955	CNMG120408MR	WM25CT
4171131	CNMG120408MR	WP15CT
4170547	CNMG120408MR	WP25CT
4170044	CNMG120408MR	WP35CT
4171132	CNMG120412MR	WP15CT
4170548	CNMG120412MR	WP25CT
4170045	CNMG120412MR	WP35CT
4170549	CNMG160608MR	WP25CT
4171135	CNMG160612MR	WP15CT
4170550	CNMG160612MR	WP25CT
4171136	CNMG160616MR	WP15CT
4172961	CNMG190612MR	WM25CT
4170552	CNMG190612MR	WP25CT
4172962	CNMG190616MR	WM25CT
4170563	CNMG190616MR	WP25CT

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(Victory ISO Turning Inserts — continued)

order number	catalogue number	grade
CNMG-MS • Medium Sharp		
5908742	CNMG120404MS	WS10PT
5908743	CNMG120404MS	WS25PT
5908745	CNMG120408MS	WS10PT
5908746	CNMG120408MS	WS25PT
5908748	CNMG120412MS	WS10PT
5908749	CNMG120412MS	WS25PT
5908754	CNMG160608MS	WS10PT
5908755	CNMG160608MS	WS25PT
5908759	CNMG160612MS	WU10HT
5908757	CNMG160612MS	WS10PT
5908758	CNMG160612MS	WS25PT
5908762	CNMG190608MS	WU10HT
5908761	CNMG190608MS	WS25PT
5908764	CNMG190612MS	WS25PT
CNMG-RH • Roughing Heavy		
4171903	CNMG120408RH	WK20CT
4173035	CNMG120408RH	WM25CT
4170979	CNMG120408RH	WP15CT
4171504	CNMG120408RH	WP25CT
5684356	CNMG120408RH	WP35CT
4171904	CNMG120412RH	WK20CT
4173036	CNMG120412RH	WM25CT
4170980	CNMG120412RH	WP15CT
4171505	CNMG120412RH	WP25CT
4171698	CNMG120412RH	WP35CT
4171905	CNMG120416RH	WK20CT
4170981	CNMG120416RH	WP15CT
4171699	CNMG120416RH	WP35CT
4171906	CNMG160608RH	WK20CT
4173038	CNMG160608RH	WM25CT
4170982	CNMG160608RH	WP15CT
4171507	CNMG160608RH	WP25CT
4171700	CNMG160608RH	WP35CT
4171907	CNMG160612RH	WK20CT
4170983	CNMG160612RH	WP15CT
4171508	CNMG160612RH	WP25CT
4171701	CNMG160612RH	WP35CT
4171908	CNMG160616RH	WK20CT
4170984	CNMG160616RH	WP15CT
4171509	CNMG160616RH	WP25CT
4171702	CNMG160616RH	WP35CT
4171510	CNMG190608RH	WP25CT
4171703	CNMG190608RH	WP35CT
4171910	CNMG190612RH	WK20CT
4173042	CNMG190612RH	WM25CT
4170986	CNMG190612RH	WP15CT
4171511	CNMG190612RH	WP25CT
4171704	CNMG190612RH	WP35CT
4171911	CNMG190616RH	WK20CT
4173043	CNMG190616RH	WM25CT
4171512	CNMG190616RH	WP25CT
4171705	CNMG190616RH	WP35CT
4171523	CNMG190624RH	WP25CT
CNMG-UF • Universal Finishing		
4169353	CNMG120404UF	WM15CT
5645600	CNMG120404UF	WS10PT
4169354	CNMG120408UF	WM15CT
5645588	CNMG120408UF	WS10PT
CNMG-UM • Universal Medium		
4172380	CNMG120404UM	WM25CT
4172335	CNMG120408UM	WM15CT
4172381	CNMG120408UM	WM25CT
4172411	CNMG120408UM	WM35CT
5645219	CNMG120408UM	WP25CT
4172382	CNMG120412UM	WM25CT

order number	catalogue number	grade
CNMG-UR • Universal Roughing		
4169444	CNMG120404UR	WM25CT
4170500	CNMG120404UR	WP25CT
5680085	CNMG120408UR	WK20CT
4169407	CNMG120408UR	WM15CT
4169445	CNMG120408UR	WM25CT
4169480	CNMG120408UR	WM35CT
4171093	CNMG120408UR	WP15CT
4170501	CNMG120408UR	WP25CT
4169960	CNMG120408UR	WP35CT
5301400	CNMG120408UR	WS10PT
5301402	CNMG120408UR	WS25PT
4171419	CNMG120412UR	WK20CT
4169446	CNMG120412UR	WM25CT
4169481	CNMG120412UR	WM35CT
4171094	CNMG120412UR	WP15CT
4170502	CNMG120412UR	WP25CT
4169961	CNMG120412UR	WP35CT
5301413	CNMG120412UR	WS10PT
5301416	CNMG120412UR	WS25PT
4169447	CNMG120416UR	WM25CT
5680170	CNMG120416UR	WS25PT
4169448	CNMG160608UR	WM25CT
4170504	CNMG160608UR	WP25CT
4171422	CNMG160612UR	WK20CT
4169449	CNMG160612UR	WM25CT
4170505	CNMG160612UR	WP25CT
4171423	CNMG160616UR	WK20CT
4169450	CNMG160616UR	WM25CT
4169485	CNMG160616UR	WM35CT
4171098	CNMG160616UR	WP15CT
4170506	CNMG160616UR	WP25CT
5578901	CNMG160616UR	WS25PT
4169451	CNMG190612UR	WM25CT
4170507	CNMG190612UR	WP25CT
4169964	CNMG190612UR	WP35CT
5512536	CNMG190612UR	WS25PT
4169487	CNMG190616UR	WM35CT
5579234	CNMG190616UR	WS25PT
CNMM-65 • Single Sided • Roughing		
5698347	CNMM12040865	WM25CT
5698348	CNMM12040865	WP15CT
5698349	CNMM12040865	WP25CT
5698360	CNMM12040865	WP35CT
5698362	CNMM12041265	WP15CT
5698368	CNMM16061265	WM25CT
5698370	CNMM16061265	WP25CT
5698374	CNMM19061265	WM25CT
5491016	CNMM19061265	WP25CT
5698376	CNMM19061265	WP35CT
5698377	CNMM19061665	WM25CT
5698378	CNMM19061665	WP15CT
5698410	CNMM19062465	WP15CT
5698411	CNMM19062465	WP25CT
CNMM-8 • Single Sided • Heavy Roughing		
5418451	CNMM1906168	WP25CT

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(Victory ISO Turning Inserts — continued)

order number	catalogue number	grade
CNMM-SR • Single Sided • Super Roughing		
5696642	CNMM190616SR	WM25CT
5696643	CNMM190616SR	WP15CT
5696644	CNMM190624SR	WP35CT
5696645	CNMM250924SR	WP15CT
5696646	CNMM250924SR	WP25CT
5696647	CNMM250924SR	WP35CT
CNMP • Sharp Machining		
4173552	CNMP120404	WM25CT
4172439	CNMP120404	WS10PT
4173653	CNMP120408	WM25CT
4172440	CNMP120408	WS10PT
4172614	CNMP120408	WS25PT
DCMT-FP • Finishing Positive		
4170300	DCMT070204FP	WP25CT
4168790	DCMT11T302FP	WM25CT
4170302	DCMT11T302FP	WP25CT
4168765	DCMT11T304FP	WM15CT
4168791	DCMT11T304FP	WM25CT
4169997	DCMT11T304FP	WP15CT
4170303	DCMT11T304FP	WP25CT
4168792	DCMT11T308FP	WM25CT
4169998	DCMT11T308FP	WP15CT
4170304	DCMT11T308FP	WP25CT
4170306	DCMT150404FP	WP25CT
4170001	DCMT150408FP	WP15CT
4170307	DCMT150408FP	WP25CT
DCMT-MP • Medium Positive		
4170242	DCMT11T304MP	WK20CT
4170201	DCMT11T304MP	WP15CT
4170223	DCMT11T304MP	WP25CT
4170243	DCMT11T308MP	WK20CT
4168912	DCMT11T308MP	WM25CT
4170202	DCMT11T308MP	WP15CT
4170224	DCMT11T308MP	WP25CT
4170213	DCMT11T312MP	WP15CT
DCMT-MU • Medium Universal		
5623587	DCMT11T304MU	WK20CT
5623581	DCMT11T304MU	WM25CT
5623585	DCMT11T304MU	WP15CT
5623583	DCMT11T304MU	WP25CT
5623582	DCMT11T304MU	WS10PT
5623584	DCMT11T304MU	WS25PT
5623589	DCMT11T308MU	WK20CT
5623588	DCMT11T308MU	WM25CT
5623600	DCMT11T308MU	WP15CT
6128278	DCMT11T308MU	WP25CT
5623601	DCMT11T308MU	WS10PT
5623603	DCMT11T308MU	WS25PT
5623604	DCMT150408MU	WM25CT
5623608	DCMT150408MU	WP25CT
5623610	DCMT150408MU	WS25PT
6128283	DCMT150412MU	WP25CT
DNGG-FS • Finishing Sharp		
5548678	DNGG150604FS	WS10PT
5548679	DNGG150608FS	WS10PT
DNMA • Roughing		
4171873	DNMA110408	WK20CT
4171874	DNMA110412	WK20CT
4171637	DNMA150608	WK05CT
4171878	DNMA150608	WK20CT
4171879	DNMA150612	WK20CT
4171880	DNMA150616	WK20CT

order number	catalogue number	grade
DNMG-ML • Medium Light		
4171394	DNMG110404ML	WK20CT
4171062	DNMG110404ML	WP15CT
4170461	DNMG110404ML	WP25CT
4171068	DNMG150604ML	WP15CT
4170485	DNMG150604ML	WP25CT
4171400	DNMG150608ML	WK20CT
4171069	DNMG150608ML	WP15CT
4170486	DNMG150608ML	WP25CT
4171070	DNMG150612ML	WP15CT
4170487	DNMG150612ML	WP25CT
DNMG-MR • Medium Roughing		
4170568	DNMG150604MR	WP25CT
4173023	DNMG150608MR	WM25CT
4171144	DNMG150608MR	WP15CT
4170569	DNMG150608MR	WP25CT
4171145	DNMG150612MR	WP15CT
DNMG-MS • Medium Sharp		
5908792	DNMG150604MS	WS10PT
5908793	DNMG150604MS	WS25PT
5908795	DNMG150608MS	WS10PT
5908796	DNMG150608MS	WS25PT
5908799	DNMG150612MS	WS25PT
DNMG-RH • Roughing Heavy		
4171524	DNMG150408RH	WP25CT
4171914	DNMG150608RH	WK20CT
4170991	DNMG150608RH	WP15CT
4171526	DNMG150608RH	WP25CT
4171709	DNMG150608RH	WP35CT
4171915	DNMG150612RH	WK20CT
4170992	DNMG150612RH	WP15CT
4171527	DNMG150612RH	WP25CT
4171710	DNMG150612RH	WP35CT
DNMG-UF • Universal Finishing		
4169361	DNMG150604UF	WM15CT
4169387	DNMG150604UF	WM25CT
4169362	DNMG150608UF	WM15CT
DNMG-UM • Universal Medium		
4172383	DNMG110404UM	WM25CT
4172389	DNMG150604UM	WM25CT
4172390	DNMG150608UM	WM25CT
4172391	DNMG150612UM	WM25CT
DNMG-UR • Universal Roughing		
4169488	DNMG110408UR	WM35CT
4170509	DNMG110408UR	WP25CT
4171431	DNMG150608UR	WK20CT
4169427	DNMG150608UR	WM15CT
4169456	DNMG150608UR	WM25CT
4169492	DNMG150608UR	WM35CT
4171105	DNMG150608UR	WP15CT
4170513	DNMG150608UR	WP25CT
4169969	DNMG150608UR	WP35CT
5579276	DNMG150608UR	WS25PT
5680172	DNMG150612UR	WK05CT
4171432	DNMG150612UR	WK20CT
4169428	DNMG150612UR	WM15CT
4171106	DNMG150612UR	WP15CT
4170514	DNMG150612UR	WP25CT
4169494	DNMG150616UR	WM35CT
4171107	DNMG150616UR	WP15CT

(continued)

(Victory ISO Turning Inserts — continued)

order number	catalogue number	grade
DNMM-65 • Single Sided • Roughing		
5698413	DNMM15060865	WP15CT
5698414	DNMM15060865	WP25CT
5698415	DNMM15060865	WP35CT
5494773	DNMM15061265	WP25CT
RCMT		
4170478	RCMT0602M0	WK20CT
4169975	RCMT0602M0	WP15CT
4170536	RCMT0602M0	WP25CT
4170479	RCMT0803M0	WK20CT
4169976	RCMT0803M0	WP15CT
4170537	RCMT0803M0	WP25CT
4170480	RCMT10T3M0	WK20CT
4169977	RCMT10T3M0	WP15CT
4170538	RCMT10T3M0	WP25CT
4170752	RCMT10T3M0	WP35CT
4170481	RCMT1204M0	WK20CT
4169978	RCMT1204M0	WP15CT
4170539	RCMT1204M0	WP25CT
4170803	RCMT1204M0	WP35CT
4170482	RCMT1606M0	WK20CT
4169979	RCMT1606M0	WP15CT
4170804	RCMT1606M0	WP35CT
RCMX		
4170543	RCMX2006M0T	WK20CT
4169980	RCMX2006M0T	WP15CT
4170541	RCMX2006M0T	WP25CT
4170805	RCMX2006M0T	WP35CT
RNMA • Roughing		
4171881	RNMA120400	WK20CT
RNMG-RH • Roughing Heavy		
4170996	RNMG120400RH	WP15CT
SCMT-FP • Finishing Positive		
4170309	SCMT09T308FP	WP25CT
4170311	SCMT120408FP	WP25CT
SCMT-MP • Medium Positive		
4170245	SCMT09T308MP	WK20CT
4170227	SCMT09T308MP	WP25CT
4170247	SCMT120408MP	WK20CT
4170215	SCMT120408MP	WP15CT
4170229	SCMT120408MP	WP25CT
4168917	SCMT120412MP	WM25CT
4170230	SCMT120412MP	WP25CT
SCMT-MU • Medium Universal		
5623447	SCMT09T304MU	WM25CT
5623449	SCMT09T308MU	WK20CT
5623448	SCMT09T308MU	WM25CT
5623464	SCMT09T308MU	WP25CT
5623462	SCMT09T308MU	WP35CT
5623460	SCMT09T308MU	WS10PT
SCMW • Medium Wiper		
4170380	SCMW120408	WK20CT
SNGG-FS • Finishing Sharp		
5549997	SNGG120408FS	WU10HT
SNMA • Roughing		
4171882	SNMA120408	WK20CT
4171883	SNMA120412	WK20CT
4171885	SNMA150608	WK20CT
4171889	SNMA190616	WK20CT
SNMG-ML • Medium Light		
4171403	SNMG120404ML	WK20CT
4171404	SNMG120408ML	WK20CT
4170489	SNMG120408ML	WP25CT
4171074	SNMG120412ML	WP15CT
4170490	SNMG120412ML	WP25CT

order number	catalogue number	grade
SNMG-MR • Medium Roughing		
4171146	SNMG120408MR	WP15CT
4170571	SNMG120408MR	WP25CT
4170057	SNMG120408MR	WP35CT
5684355	SNMG120412MR	WP25CT
4173029	SNMG150612MR	WM25CT
4171147	SNMG150612MR	WP15CT
4170572	SNMG190612MR	WP25CT
SNMG-MS • Medium Sharp		
5908847	SNMG120408MS	WS10PT
5908848	SNMG120408MS	WS25PT
5908922	SNMG120412MS	WU10HT
5908850	SNMG120412MS	WS10PT
SNMG-RH • Roughing Heavy		
4171918	SNMG120408RH	WK20CT
4170998	SNMG120408RH	WP15CT
4171533	SNMG120408RH	WP25CT
4171715	SNMG120408RH	WP35CT
4171919	SNMG120412RH	WK20CT
4170999	SNMG120412RH	WP15CT
4171534	SNMG120412RH	WP25CT
4171716	SNMG120412RH	WP35CT
4171535	SNMG120416RH	WP25CT
4171921	SNMG150608RH	WK20CT
4171001	SNMG150608RH	WP15CT
4171536	SNMG150608RH	WP25CT
4171922	SNMG150612RH	WK20CT
4171002	SNMG150612RH	WP15CT
4171537	SNMG150612RH	WP25CT
4171923	SNMG150616RH	WK20CT
4171003	SNMG150616RH	WP15CT
4171538	SNMG150616RH	WP25CT
4171720	SNMG150616RH	WP35CT
4171925	SNMG190612RH	WK20CT
4173056	SNMG190612RH	WM25CT
4171005	SNMG190612RH	WP15CT
4171540	SNMG190612RH	WP25CT
4171722	SNMG190612RH	WP35CT
4171926	SNMG190616RH	WK20CT
SNMG-UF • Universal Finishing		
5645610	SNMG120404UF	WS10PT
SNMG-UM • Universal Medium		
4172393	SNMG120404UM	WM25CT
4172394	SNMG120408UM	WM25CT
4172424	SNMG120408UM	WM35CT
4172395	SNMG120412UM	WM25CT
4172425	SNMG120412UM	WM35CT

(continued)

(Victory ISO Turning Inserts — continued)

order number	catalogue number	grade
SNMG-UR • Universal Roughing		
4171434	SNMG120408UR	WK20CT
4169458	SNMG120408UR	WM25CT
4171108	SNMG120408UR	WP15CT
4170516	SNMG120408UR	WP25CT
4169989	SNMG120408UR	WP35CT
4169459	SNMG120412UR	WM25CT
4171109	SNMG120412UR	WP15CT
4170517	SNMG120412UR	WP25CT
4169990	SNMG120412UR	WP35CT
4169460	SNMG120416UR	WM25CT
5680173	SNMG120416UR	WS25PT
4171437	SNMG150612UR	WK20CT
4169461	SNMG150612UR	WM25CT
4170518	SNMG150612UR	WP25CT
4169991	SNMG150612UR	WP35CT
4171112	SNMG150616UR	WP15CT
4170519	SNMG150616UR	WP25CT
4171439	SNMG190612UR	WK20CT
4169500	SNMG190612UR	WM35CT
4170520	SNMG190612UR	WP25CT
4169464	SNMG190616UR	WM25CT
SNMM-65 • Single Sided • Roughing		
5696553	SNMM12040865	WM25CT
5696554	SNMM12040865	WP25CT
5696555	SNMM12040865	WP35CT
5696557	SNMM12041265	WP25CT
5696615	SNMM19061665	WP15CT
SNMM-8 • Single Sided • Heavy Roughing		
6128309	SNMM1906168	WP25CT
5429112	SNMM2507248	WP15CT
5429111	SNMM2507248	WP25CT
5370813	SNMM2507248	WP35CT
SNMM-SR • Single Sided • Super Roughing		
5696648	SNMM190616SR	WM25CT
5478876	SNMM190616SR	WP15CT
5478877	SNMM190616SR	WP25CT
5429119	SNMM250724SR	WP25CT
5946214	SNMM250724SR	WP35CT
5402173	SNMM250924SR	WM25CT
5382277	SNMM250924SR	WP15CT
5382390	SNMM250924SR	WP25CT
5373074	SNMM250924SR	WP35CT
TCMT-FP • Finishing Positive		
4168800	TCMT110202FP	WM25CT
4168801	TCMT110204FP	WM25CT
4170006	TCMT110204FP	WP15CT
4170313	TCMT110204FP	WP25CT
4170008	TCMT16T304FP	WP15CT
4170315	TCMT16T304FP	WP25CT
4170100	TCMT16T308FP	WK20CT
4170316	TCMT16T308FP	WP25CT
TCMT-MP • Medium Positive		
4170232	TCMT16T304MP	WP25CT
4170251	TCMT16T308MP	WK20CT
4168919	TCMT16T308MP	WM25CT
4170216	TCMT16T308MP	WP15CT
4170233	TCMT16T308MP	WP25CT
4170252	TCMT16T312MP	WK20CT
TCMT-MU • Medium Universal		
5623616	TCMT16T304MU	WK20CT
5623613	TCMT16T304MU	WM25CT
5623614	TCMT16T304MU	WP15CT
5623615	TCMT16T304MU	WP25CT
5623617	TCMT16T304MU	WS25PT
5623618	TCMT16T308MU	WK20CT
5623619	TCMT16T308MU	WM25CT
5623621	TCMT16T308MU	WP15CT
5623620	TCMT16T308MU	WP25CT
5623622	TCMT16T308MU	WS10PT

order number	catalogue number	grade
TNGG-FS • Finishing Sharp		
5538231	TNGG160404FS	WS25PT
TNMA • Roughing		
4171890	TNMA160408	WK20CT
4171894	TNMA220412	WK20CT
4171895	TNMA220416	WK20CT
TNMG-ML • Medium Light		
4171075	TNMG160404ML	WP15CT
4170491	TNMG160404ML	WP25CT
4171410	TNMG160408ML	WK20CT
4171076	TNMG160408ML	WP15CT
4170492	TNMG160408ML	WP25CT
4171077	TNMG160412ML	WP15CT
TNMG-MR • Medium Roughing		
4171150	TNMG160404MR	WP15CT
4170573	TNMG160404MR	WP25CT
4171151	TNMG160408MR	WP15CT
4170574	TNMG160408MR	WP25CT
4171152	TNMG160412MR	WP15CT
TNMG-MS • Medium Sharp		
5908928	TNMG160404MS	WS25PT
5908930	TNMG160408MS	WS10PT
5908931	TNMG160408MS	WS25PT
TNMG-RH • Roughing Heavy		
4171927	TNMG160408RH	WK20CT
4171007	TNMG160408RH	WP15CT
4171542	TNMG160408RH	WP25CT
4171725	TNMG160412RH	WP35CT
TNMG-UF • Universal Finishing		
5432605	TNMG160404UF	WS10PT
TNMG-UM • Universal Medium		
5550226	TNMG160404UM	WS10PT
4172397	TNMG160408UM	WM25CT
TNMG-UR • Universal Roughing		
4171441	TNMG160408UR	WK20CT
4169465	TNMG160408UR	WM25CT
4171115	TNMG160408UR	WP15CT
4170522	TNMG160408UR	WP25CT
5579395	TNMG160408UR	WS25PT
4169466	TNMG160412UR	WM25CT
4169502	TNMG160412UR	WM35CT
4170523	TNMG160412UR	WP25CT
5680175	TNMG160412UR	WS25PT
4171443	TNMG160416UR	WK20CT
4171117	TNMG160416UR	WP15CT
TNMM-65 • Single Sided • Roughing		
5696619	TNMM16040865	WP35CT
5696621	TNMM22040865	WP15CT
5696622	TNMM22040865	WP25CT
5696623	TNMM22040865	WP35CT
VBMT-FP • Finishing Positive		
4168809	VBMT160402FP	WM25CT
4170321	VBMT160402FP	WP25CT
4170103	VBMT160404FP	WK20CT
4168776	VBMT160404FP	WM15CT
4168810	VBMT160404FP	WM25CT
4170013	VBMT160404FP	WP15CT
4170322	VBMT160404FP	WP25CT
4168811	VBMT160408FP	WM25CT
4170014	VBMT160408FP	WP15CT
4170323	VBMT160408FP	WP25CT

(continued)

(Victory ISO Turning Inserts — continued)

order number	catalogue number	grade
VBMT • Medium		
4169983	VBMT160404	WP15CT
4170553	VBMT160404	WP25CT
4170807	VBMT160404	WP35CT
4169984	VBMT160408	WP15CT
4170554	VBMT160408	WP25CT
4170808	VBMT160408	WP35CT
VBMT-MP • Medium Positive		
4168921	VBMT160404MP	WM25CT
4170235	VBMT160404MP	WP25CT
4170254	VBMT160408MP	WK20CT
4168922	VBMT160408MP	WM25CT
4170236	VBMT160408MP	WP25CT
VNGG-FS • Finishing Sharp		
5548684	VNGG160401FS	WS10PT
5548683	VNGG160402FS	WS10PT
VNMA • Roughing		
4171897	VNMA160408	WK20CT
VNMG-ML • Medium Light		
4171079	VNMG160404ML	WP15CT
4170495	VNMG160404ML	WP25CT
4171414	VNMG160408ML	WK20CT
4170496	VNMG160408ML	WP25CT
VNMG-MR • Medium Roughing		
4171157	VNMG160408MR	WP15CT
4170580	VNMG160408MR	WP25CT
VNMG-MS • Medium Sharp		
5908944	VNMG160404MS	WS10PT
5908945	VNMG160404MS	WS25PT
5908947	VNMG160408MS	WS10PT
5908948	VNMG160408MS	WS25PT
VNMG-UF • Universal Finishing		
4169372	VNMG160404UF	WM15CT
5645616	VNMG160404UF	WS10PT
VNMG-UR • Universal Roughing		
4171449	VNMG160408UR	WK20CT
4169473	VNMG160408UR	WM25CT
4170529	VNMG160408UR	WP25CT
4171450	VNMG160412UR	WK20CT
4169474	VNMG160412UR	WM25CT
4170530	VNMG160412UR	WP25CT
5680176	VNMG160412UR	WS10PT
WNGG-FS • Finishing Sharp		
5538234	WNGG080404FS	WS25PT
5550004	WNGG080408FS	WU10HT
5548688	WNGG080408FS	WS10PT
5538235	WNGG080408FS	WS25PT
WNMA • Roughing		
4171654	WNMA080408	WK05CT
4171900	WNMA080408	WK20CT
4171655	WNMA080412	WK05CT
4171901	WNMA080412	WK20CT
WNMG-ML • Medium Light		
4171678	WNMG080404ML	WK05CT
4171417	WNMG080404ML	WK20CT
4171083	WNMG080404ML	WP15CT
4170498	WNMG080404ML	WP25CT
4171679	WNMG080408ML	WK05CT
4171418	WNMG080408ML	WK20CT
4171084	WNMG080408ML	WP15CT
4170499	WNMG080408ML	WP25CT
WNMG-MR • Medium Roughing		
4173033	WNMG080408MR	WM25CT
4171158	WNMG080408MR	WP15CT
4170581	WNMG080408MR	WP25CT
4170067	WNMG080408MR	WP35CT
4170582	WNMG080412MR	WP25CT
4170068	WNMG080412MR	WP35CT

order number	catalogue number	grade
WNMG-MS • Medium Sharp		
5908967	WNMG060408MS	WS25PT
5908969	WNMG080404MS	WS10PT
5908970	WNMG080404MS	WS25PT
5908974	WNMG080408MS	WU10HT
5908972	WNMG080408MS	WS10PT
5908973	WNMG080408MS	WS25PT
WNMG-RH • Roughing Heavy		
4171932	WNMG080408RH	WK20CT
4173064	WNMG080408RH	WM25CT
4171019	WNMG080408RH	WP15CT
4171554	WNMG080408RH	WP25CT
4171736	WNMG080408RH	WP35CT
4171933	WNMG080412RH	WK20CT
4173065	WNMG080412RH	WM25CT
4171020	WNMG080412RH	WP15CT
4171555	WNMG080412RH	WP25CT
4171737	WNMG080412RH	WP35CT
4171556	WNMG080416RH	WP25CT
WNMG-UF • Universal Finishing		
5645619	WNMG080404UF	WS10PT
5645623	WNMG080408UF	WS10PT
4169378	WNMG080412UF	WM15CT
WNMG-UM • Universal Medium		
4172403	WNMG060404UM	WM25CT
4172377	WNMG080404UM	WM15CT
4172406	WNMG080404UM	WM25CT
4172435	WNMG080404UM	WM35CT
4172378	WNMG080408UM	WM15CT
4172407	WNMG080408UM	WM25CT
4172436	WNMG080408UM	WM35CT
4172408	WNMG080412UM	WM25CT
5645269	WNMG080412UM	WS10PT
WNMG-UR • Universal Roughing		
4169475	WNMG060408UR	WM25CT
4171453	WNMG080408UR	WK20CT
4169442	WNMG080408UR	WM15CT
4169476	WNMG080408UR	WM25CT
4169509	WNMG080408UR	WM35CT
4171127	WNMG080408UR	WP15CT
4170533	WNMG080408UR	WP25CT
4170040	WNMG080408UR	WP35CT
4171454	WNMG080412UR	WK20CT
4169443	WNMG080412UR	WM15CT
4169477	WNMG080412UR	WM25CT
4169510	WNMG080412UR	WM35CT
4171128	WNMG080412UR	WP15CT
4170534	WNMG080412UR	WP25CT
4170041	WNMG080412UR	WP35CT
5579420	WNMG080412UR	WS10PT

Tools for Turning

Modern machining operations performed on CNC machine tools and flexible production facilities require high-performance tools that provide straightforward design and application versatility. WIDIA™ offers an extensive range of toolholders for turning to meet even the most exacting production demands across a broad spectrum of workpiece shapes and sizes.

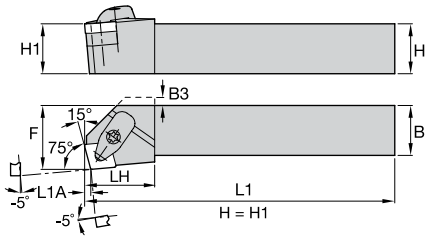
Whatever your operation requirements — from light finishing cuts at very high cutting speeds to heavy roughing applications — there is a WIDIA solution to meet your needs. The complete programme includes toolholders for pin-, screw-, or clamp-type holding.

D-Style Clamping

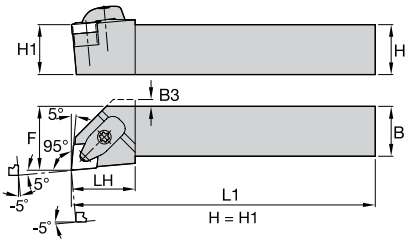
- Used for negative style inserts.
- Clamp assembly contains clamp, screw, and retaining ring.
- Quick insert indexing.
- Ensures insert repeatability and seating.
- Reduced chatter and extended tool life.

S-Style Clamping

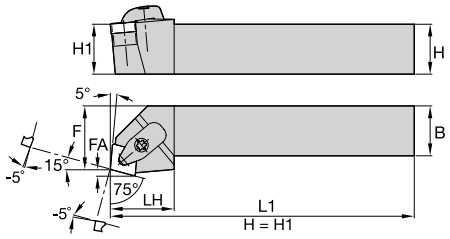
- Screw clamping system for positive indexable inserts.
- Compact design for high reliability and cost efficiency.
- Carbide shim for additional tool protection.



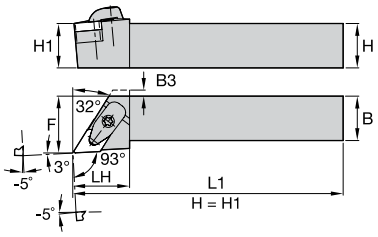
order number	catalogue number	gage insert	H (mm)	B (mm)	F (mm)	L1 (mm)	LH (mm)	B3 (mm)
DCKN 75°								
right hand								
5697857	**DCKNR2525M12KC04**	CN..120408	25	25	32,0	150	32,0	–
left hand								
5697854	**DCKNL2525M12KC04**	CN..120408	25	25	32,0	150	32,0	–



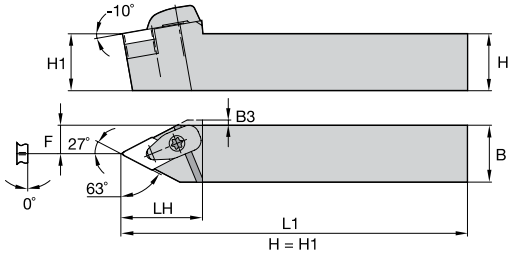
order number	catalogue number	gage insert	H (mm)	B (mm)	F (mm)	L1 (mm)	LH (mm)	B3 (mm)
DCLN 95°								
right hand								
5697893	**DCLNR2525M12KC04**	CN..120408	25	25	32,0	150	32,0	–
5697894	**DCLNR2525M16KC06**	CN..160612	25	25	32,0	150	33,0	–
left hand								
5697884	**DCLNL2525M12KC04**	CN..120408	25	25	32,0	150	32,0	–
5697885	**DCLNL2525M16KC06**	CN..160612	25	25	32,0	150	33,0	–



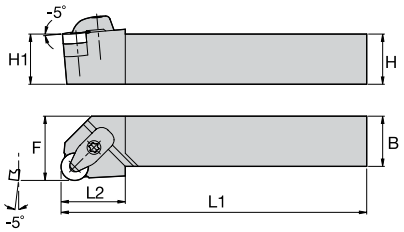
order number	catalogue number	gage insert	FA (mm)	B (mm)	F (mm)	L1 (mm)	LH (mm)	B3 (mm)
DCRN 75°								
right hand								
5697904	**DCRNR2525M12KC04**	CN..120408	25	25	32,0	150	32,0	3,34
left hand								
5697900	**DCRNL2525M12KC04**	CN..120408	25	25	32,0	150	32,0	3,34



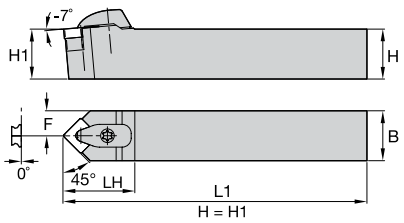
order number	catalogue number	gage insert	H (mm)	B (mm)	F (mm)	L1 (mm)	LH (mm)	B3 (mm)
DDJN 93°								
right hand								
5697930	**DDJNR2525M15KC06**	DN..150608	25	25	32,0	150	32,0	–
left hand								
5697920	**DDJNL2525M15KC06**	DN..150608	25	25	32,0	150	32,0	–



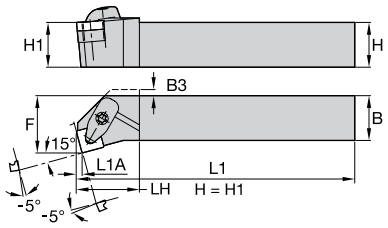
order number	catalogue number	gage insert	H (mm)	B (mm)	F (mm)	L1 (mm)	LH (mm)	B3 (mm)
DDNN 63°								
right hand								
5697942	**DDNNR2525M15KC06**	DN..150608	25	25	13,0	150	40,0	–
left hand								
5697936	**DDNNL2525M15KC06**	DN..150608	25	25	13,0	150	40,0	–



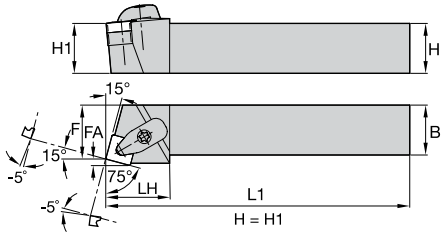
order number	catalogue number	gage insert	H (mm)	B (mm)	F (mm)	L1 (mm)	LH (mm)
DRGN							
right hand							
5697948	**DRGNR2525M12KC04**	RN..120400	25	25	32,0	150	32,0



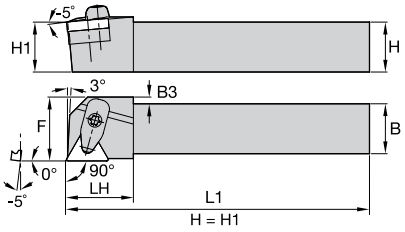
order number	catalogue number	gage insert	H (mm)	B (mm)	F (mm)	L1 (mm)	LH (mm)
DSDN 45º							
neutral							
5697955	**DSDNN2525M12KC04**	SN..120408	25	25	12,0	150	36,0



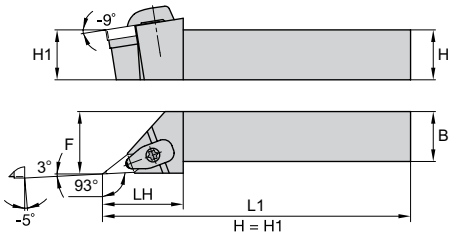
order number	catalogue number	gage insert	FA (mm)	B (mm)	F (mm)	L1 (mm)	LH (mm)	L1A (mm)	B3 (mm)
DSKN 75°									
right hand **5696686**	**DSKNR2525M12KC04**	SN..120408	25	25	32,0	150	32,0	3,05	4,0
left hand **5696682**	**DSKNL2525M12KC04**	SN..120408	25	25	32,0	150	32,0	3,05	4,0



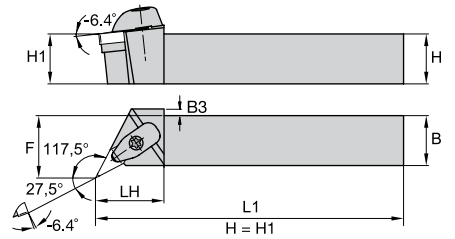
order number	catalogue number	gage insert	H (mm)	B (mm)	F (mm)	L1 (mm)	LH (mm)	B3 (mm)
DSRN 75°								
right hand **5696704**	**DSRNR2525M12KC04**	SN..120408	25	25	27,0	150	32,0	3,3
left hand **5696700**	**DSRNL2525M12KC04**	SN..120408	25	25	27,0	150	32,0	3,3



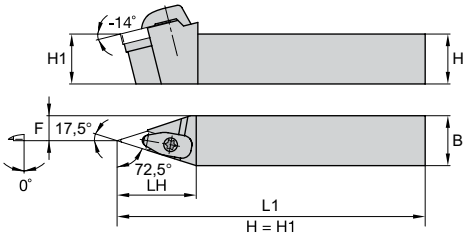
order number	catalogue number	gage insert	H (mm)	B (mm)	F (mm)	L1 (mm)	LH (mm)	B3 (mm)
DTGN 90°								
right hand **5696730**	**DTGNR2525M16KC04**	TN..160408	25	25	32,0	150	25,0	–
left hand **5696728**	**DTGNL2525M16KC04**	TN..160408	25	25	32,0	150	25,0	–



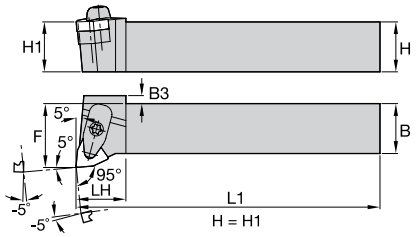
order number	catalogue number	gage number	H (mm)	B (mm)	F (mm)	L1 (mm)	LH (mm)
DVJN 93°							
right hand **5696738**	**DVJNR2525M16KC04**	VN..160408	25	25	32,0	150	46,0
left hand **5696733**	**DVJNL2525M16KC04**	VN..160408	25	25	32,0	150	46,0



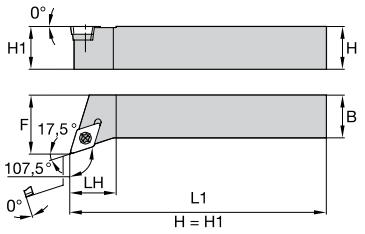
order number	catalogue number	gage number	H (mm)	B (mm)	F (mm)	L1 (mm)	LH (mm)	B3 (mm)
DVON 117,5°								
right hand **5696746**	**DVONR2525M16KC04**	VN..160408	25	25	32,0	150	38,0	-
left hand **5696743**	**DVONL2525M16KC04**	VN..160408	25	25	32,0	150	38,0	-



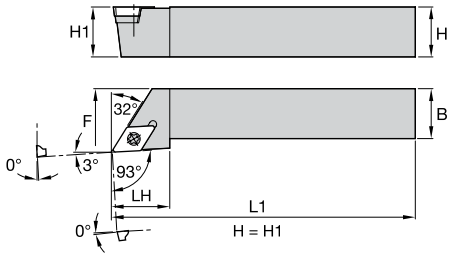
order number	catalogue number	gage number	H (mm)	B (mm)	F (mm)	L1 (mm)	LH (mm)
DVVN 72,5°							
neutral **5696749**	**DVVNN2525M16KC04**	VN..160408	25	25	12,0	150	48,0



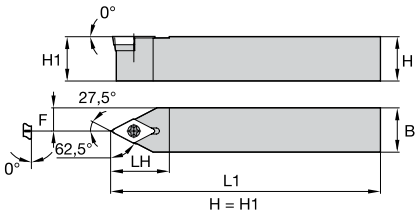
order number	catalogue number	gage number	H (mm)	B (mm)	F (mm)	L1 (mm)	LH (mm)	B3 (mm)
DWLN 95°								
right hand **5696760**	**DWLNR2525M08KC04**	WN..080408	25	25	32,0	150	25,0	4,0
left hand **5696754**	**DWLNL2525M08KC04**	WN..080408	25	25	32,0	150	25,0	4,0



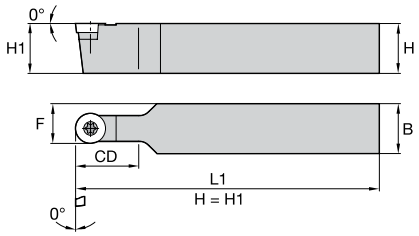
order number	catalogue number	gage insert	H (mm)	B (mm)	F (mm)	L1 (mm)	LH (mm)
SDHC 107,5°							
right hand							
3879440	**SDHCR2525M11**	DC..11T308	**25**	25	32,0	150	20,0
left hand							
3879438	**SDHCL2525M11**	**DC..11T308**	**25**	25	32,0	150	20,0



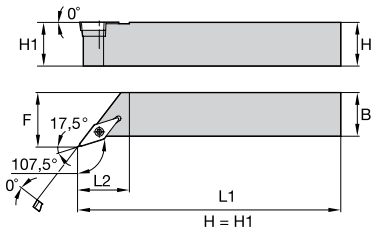
order number	catalogue number	gage insert	H (mm)	B (mm)	F (mm)	L1 (mm)	LH (mm)
SDJC 93°							
right hand							
3879461	**SDJCR2525M11**	DC..11T308	25	25	32,0	150	22,0
left hand							
3879453	**SDJCL2525M11**	**DC..11T308**	**25**	25	32,0	150	22,0



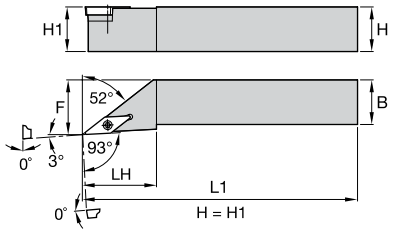
order number	catalogue number	gage insert	H (mm)	B (mm)	F (mm)	L1 (mm)	LH (mm)
SDNC 62,5°							
neutral							
3879849	**SDNCN2525M11**	DC..11T308	25	25	12,5	150	25,0



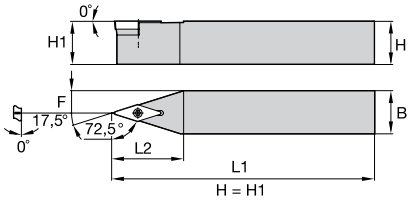
order number	catalogue number	gage insert	H (mm)	B (mm)	F (mm)	L1 (mm)	CD (mm)
SRDC							
neutral							
3900183	**SRDCN2525M06**	RC..0602M0	25	25	15,0	150	19,7
3879737	**SRDCN2525M08**	RC..0803M0	25	25	16,5	150	25,0
3879734	**SRDCN2525M10**	RC..10T3M0	25	25	17,5	150	25,0
3879738	**SRDCN2525M12**	RC..1204M0	25	25	18,5	150	25,0



order number	catalogue number	gage insert	H (mm)	B (mm)	F (mm)	L1 (mm)	L2 (mm)
SVHB 107,5°							
right hand							
3879765	**SVHBR2525M16**	VB..160408	25	25	32,0	150	28,0
left hand							
3879766	**SVHBL2525M16**	VB..160408	25	25	32,0	150	28,0



order number	catalogue number	gage insert	H (mm)	B (mm)	F (mm)	L1 (mm)	LH (mm)
SVJB 93°							
right hand							
3879775	**SVJBR2525M16**	VB..160408	25	25	32,0	150	35,0
left hand							
3879774	**SVJBL2525M16**	VB..160408	25	25	32,0	150	35,0

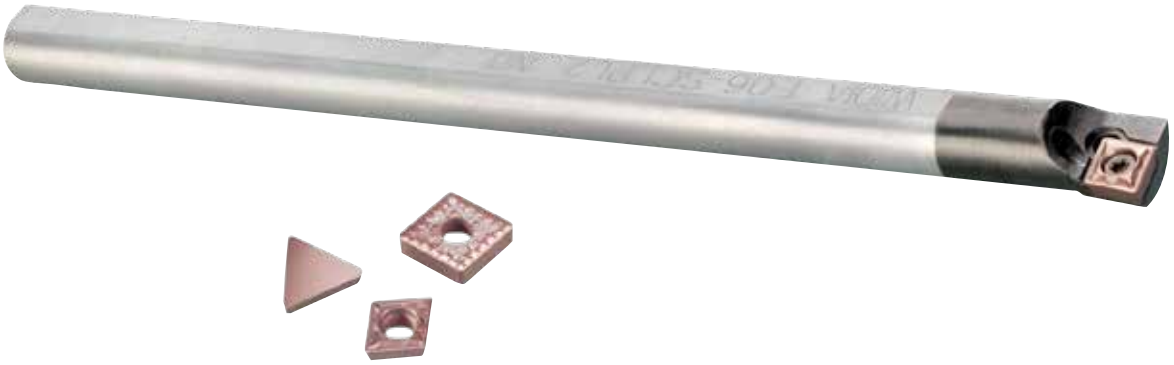


order number	catalogue number	gage insert	H (mm)	B (mm)	F (mm)	L1 (mm)	L2 (mm)
SVVB 72,5°							
neutral							
3879778	**SVVBN2525M16**	VB..160408	25	25	12,5	150	33,0

Tools for Boring

Today's modern boring operations require the most reliable, high-performance tools. WIDIA™ offers an extensive range of toolholders for boring to meet even the most precise production demands across a broad spectrum of workpiece shapes and sizes.

WIDIA boring bars, available with both a conventional steel shank or a vibration-resistant carbide shank and coolant hole, guarantee consistent results and enhanced production reliability.

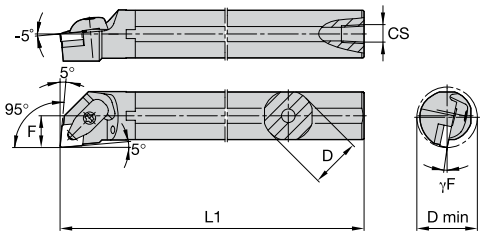


D-Style Clamping

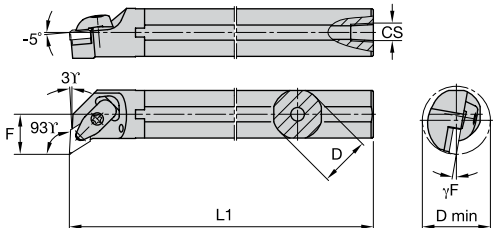
- Used for negative style inserts.
- Clamp assembly contains clamp, screw, and retaining ring.
- Quick insert indexing.
- Ensures insert repeatability and seating.
- Reduced chatter and extended tool life.

S-Style Clamping

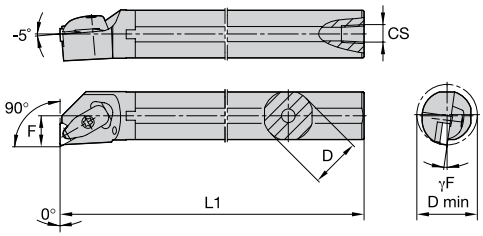
- Screw clamping system for positive indexable inserts.
- Compact design for high reliability and cost efficiency.
- Carbide shim for additional tool protection.



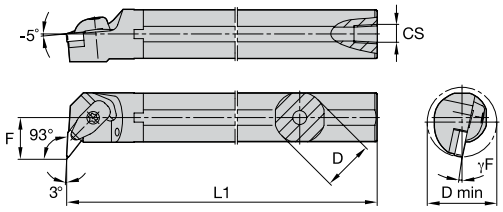
order number	catalogue number	gage insert	D (mm)	D min (mm)	F (mm)	L1 (mm)	CS	γF (deg)
A-DCLN 95°								
right hand								
5696071	**A25RDCLNR12KC04**	CN.120408	25	32,0	17,0	200	1/4-18 NPT	-12.0
5696073	**A32SDCLNR12KC04**	CN.120408	32	40,0	22,0	250	1/4-18 NPT	-12.0
left hand								
5696072	**A25RDCLNL12KC04**	CN.120408	25	32,0	17,0	200	1/4-18 NPT	-12.0
5696074	**A32SDCLNL12KC04**	CN.120408	32	40,0	22,0	250	1/4-18 NPT	-12.0



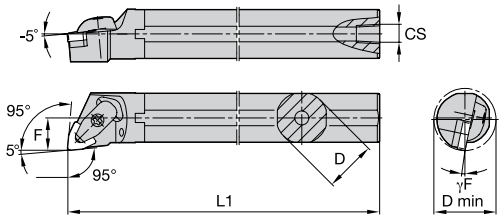
order number	catalogue number	gage insert	D (mm)	D min (mm)	F (mm)	L1 (mm)	CS	γF (deg)
A-DDUN 93°								
right hand								
5696211	**A32SDDUNR11KC04**	DN..110408	32	40,0	22,0	250	1/4-18 NPT	-12.0
5696213	**A32SDDUNR15KC06**	DN..150608	32	40,0	22,0	250	1/4-18 NPT	-12.0
left hand								
5696214	**A32SDDUNL15KC06**	DN..150608	32	40,0	22,0	250	1/4-18 NPT	-12.0



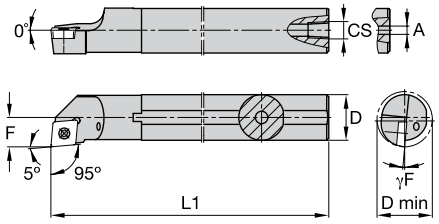
order number	catalogue number	gage insert	D (mm)	D min (mm)	F (mm)	L1 (mm)	CS	γF (deg)
A-DTFN 90°								
right hand								
5696219	**A25RDTFNR16KC04**	TN..160408	25	32,0	17,0	200	1/4-18 NPT	-14.0
5696261	**A32SDTFNR16KC04**	TN..160408	32	40,0	22,0	250	1/4-18 NPT	-12.0
left hand								
5696260	**A25RDTFNL16KC04**	TN..160408	25	32,0	17,0	200	1/4-18 NPT	-14.0



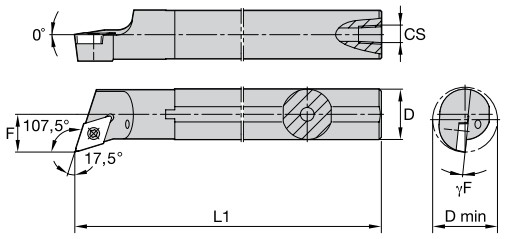
order number	catalogue number	gage insert	D (mm)	D min (mm)	F (mm)	L1 (mm)	CS	γF (deg)
A-DVUN 93°								
right hand								
5696263	**A32SDVUNR16KC04**	VN..160408	32	40,0	22,0	250	1/4-18 NPT	-9.0
left hand								
5696264	**A32SDVUNL16KC04**	VN..160408	32	40,0	22,0	250	1/4-18 NPT	-9.0



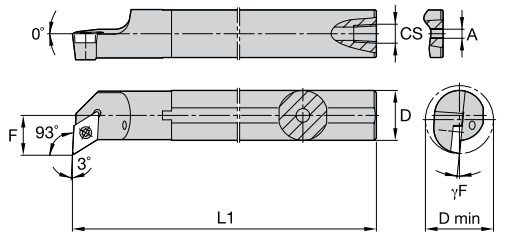
order number	catalogue number	gage insert	D (mm)	D min (mm)	F (mm)	L1 (mm)	CS	γF (deg)
A-DWLN 95°								
right hand								
5696269	**A25RDWLNR08KC04**	WN..080408	25	32,0	17,0	200	1/4-18 NPT	-12.0
5696281	**A32SDWLNR08KC04**	WN..080408	32	40,0	22,0	250	1/4-18 NPT	-14.0
left hand								
5696268	**A25RDWLNL06KC04**	WN..060408	25	32,0	17,0	200	1/4-18 NPT	-14.0
5696280	**A25RDWLNL08KC04**	WN..080408	25	32,0	17,0	200	1/4-18 NPT	-12.0
5696282	**A32SDWLNL08KC04**	WN..080408	32	40,0	22,0	250	1/4-18 NPT	-14.0



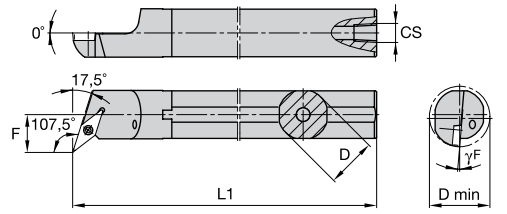
order number	catalogue number	gage insert	D (mm)	D min (mm)	F (mm)	L1 (mm)	A (mm)	CS	γF (deg)
A-SCLC 95°									
right hand									
3883269	**A20SSCLCR09**	CC..09T308	20	25,0	13,0	250	4	1/8-27 NPT	-5.0
left hand									
3883270	**A20SSCLCL09**	CC..09T308	20	25,0	13,0	250	–	1/8-27 NPT	-5.0



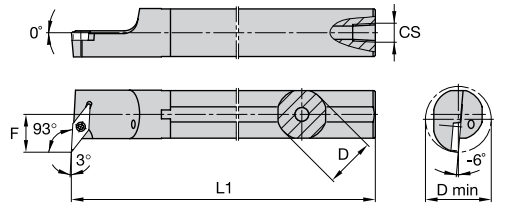
order number	catalogue number	gage insert	D (mm)	D min (mm)	F (mm)	L1 (mm)	CS	γF (deg)
A-SDQC 107,5°								
right hand								
3883474	**A20SSDQCR11**	DC..11T308	20	25,0	13,0	250	1/8-27 NPT	-5.0
3883462	**A25TSDQCR11**	DC..11T308	25	32,0	17,0	300	1/4-18 NPT	-4.0
left hand								
3883475	**A20SSDQCL11**	DC..11T308	20	25,0	13,0	250	1/8-27 NPT	-5.0
3883473	**A25TSDQCL11**	DC..11T308	25	32,0	17,0	300	1/4-18 NPT	-4.0



order number	catalogue number	gage insert	D (mm)	D min (mm)	F (mm)	L1 (mm)	CS	γF (deg)
A-SDUC 93°								
right hand								
3883291	**A20SSDUCR11**	DC..11T308	20	25,0	13,0	250	1/8-27 NPT	-5.0
3883288	**A25TSDUCR11**	DC..11T308	25	32,0	17,0	300	1/8-27 NPT	-4.0
left hand								
3883292	**A20SSDUCL11**	DC..11T308	20	25,0	13,0	250	1/8-27 NPT	-5.0
3883290	**A25TSDUCL11**	DC..11T308	25	32,0	17,0	300	1/8-27 NPT	-4.0



order number	catalogue number	gage insert	D (mm)	D min (mm)	F (mm)	L1 (mm)	CS	γF (deg)
A-SVQB 107,5°								
right hand								
3883434	**A25TSVQBR16**	VB..160408	25	32,0	17,0	300	1/4-18 NPT	-6.0
left hand								
3883435	**A25TSVQBL16**	VB..160408	25	32,0	17,0	300	1/4-18 NPT	-6.0



order number	catalogue number	gage insert	D (mm)	D min (mm)	F (mm)	L1 (mm)	CS
A-SVUB 93°							
right hand							
3883438	**A25TSVUBR16**	VB..160408	25	32,0	17,0	300	1/4-18 NPT
left hand							
3883439	**A25TSVUBL16**	VB..160408	25	32,0	17,0	300	1/4-18 NPT

Victory™ -UR Geometry

-UR geometry offers a roughing solution for high-temp materials.

Available in WS10PT™ and WS25PT™, the -UR geometry provides smooth chip forming and improved coolant flow for increased tool life. This positive geometry, with its unique chipbreaker without inflection points, reduces cutting forces and improves depth-of-cut (DOC) notching resistance, while still providing superior edge stability.

To learn more, contact your local Authorised Distributor or visit **widia.com**.

WIDIA™ VICTORY

WMT™ System

One Platform for Grooving, Face Grooving, Cut-Off, and Profiling

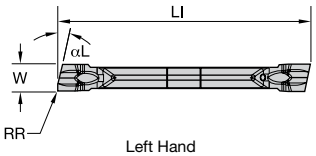
The WMT platform is the economical and reliable option for all your grooving, cut-off, turning, and profiling applications. Trust the WMT system to ensure precise insert positioning and provide only the most accurate machining with exceptionally fast cycle times and superior performance.

Versatile and Well-Constructed

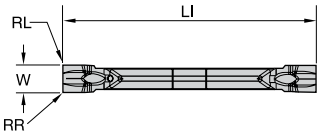
- Specifically designed to increase speeds and feeds.
- Excellent geometry for even your most demanding deep grooving applications.
- The WMT system enables heavy stock removal in turning applications.
- Ensures finer surface finishes and a long, reliable tool life.

WMT™ Toolholders

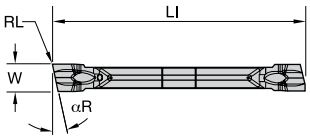
- Outstanding system rigidity and clamping capabilities.
- Guarantees fast cycle times and limited turret indexes.
- Precise insert positioning for accurate machining.
- Double-V shape means operator-friendly insert indexing and optimum insert positioning.



Left Hand

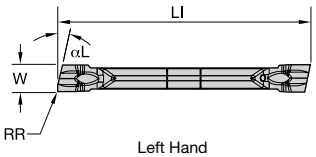


Neutral
RR = RL on neutral inserts

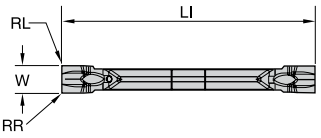


Right Hand

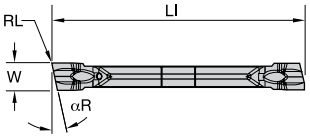
order number	catalogue number	grade	seat size	W (mm)	RL (mm)	RR (mm)	LI (mm)	αR	αL
WMT-CM • Cut-Off Medium									
right hand									
4169672	**WMTC015R12CM08**	**WU25PT**	1	1,50	0,08	–	19,28	12	–
4169670	**WMTC015R05CM08**	**WU25PT**	1	1,50	0,08	–	19,31	5	–
4169675	**WMTC020R05CM08**	**WU25PT**	2	2,00	0,08	–	19,26	5	–
4169678	**WMTC020R12CM08**	**WU25PT**	2	2,00	0,08	–	19,26	12	–
4169684	**WMTC030R05CM17**	**WU25PT**	3	3,00	0,17	–	25,40	5	–
4169688	**WMTC030R12CM17**	**WU25PT**	3	3,00	0,17	–	25,40	12	–
neutral									
4169668	**WMTC015N00CM08**	**WU25PT**	1	1,50	0,08	0,08	19,30	–	–
4169673	**WMTC020N00CM08**	**WU25PT**	2	2,00	0,08	0,08	19,21	–	–
4169682	**WMTC030N00CM17**	**WU25PT**	3	3,00	0,17	0,17	25,40	–	–
4169692	**WMTC040N00CM17**	**WU25PT**	4	4,00	0,17	0,17	25,40	–	–
left hand									
4169671	**WMTC015L05CM08**	**WU25PT**	1	1,50	–	0,08	19,31	–	5
4169677	**WMTC020L05CM08**	**WU25PT**	2	1,99	–	0,08	19,21	–	5
4169680	**WMTC020L12CM08**	**WU25PT**	2	2,00	–	0,08	19,25	–	12
4169686	**WMTC030L05CM17**	**WU25PT**	3	3,00	–	0,17	25,40	–	5
4169690	**WMTC030L12CM17**	**WU25PT**	3	3,00	–	0,17	25,40	–	12



Left Hand

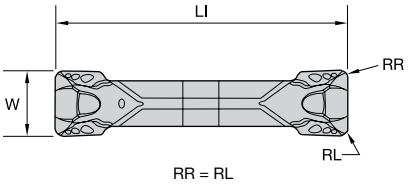


Neutral
RR = RL on neutral inserts

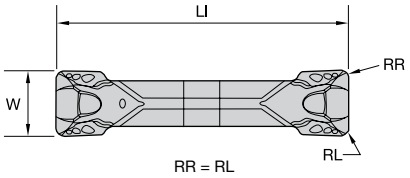


Right Hand

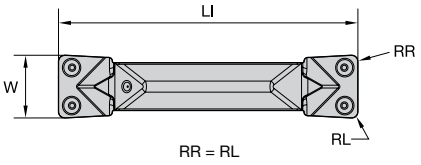
order number	catalogue number	grade	seat size	W (mm)	RL (mm)	RR (mm)	LI (mm)	αR	αL
WMT-CM • Cut-Off Medium with Wiper									
right hand									
4169676	**WMTC020R05CMW08**	**WU25PT**	2	2,00	0,08	–	19,20	5	–
4169679	**WMTC020R12CMW08**	**WU25PT**	2	2,00	0,08	–	19,27	12	–
4169685	**WMTC030R05CMW17**	**WU25PT**	3	3,00	0,17	–	25,40	5	–
4169689	**WMTC030R12CMW17**	**WU25PT**	3	3,00	0,17	–	25,40	12	–
neutral									
4169669	**WMTC015N00CMW08**	**WU25PT**	1	1,50	0,08	0,08	19,30	–	–
4169674	**WMTC020N00CMW08**	**WU25PT**	2	2,00	0,08	0,08	19,21	–	–
4169683	**WMTC030N00CMW17**	**WU25PT**	3	3,00	0,17	0,17	25,40	–	–
left hand									
4169681	**WMTC020L12CMW08**	**WU25PT**	2	2,00	–	0,08	19,27	–	12
4169687	**WMTC030L05CMW17**	**WU25PT**	3	3,00	–	0,17	25,40	–	5
4169691	**WMTC030L12CMW17**	**WU25PT**	3	3,00	–	0,17	25,40	–	12



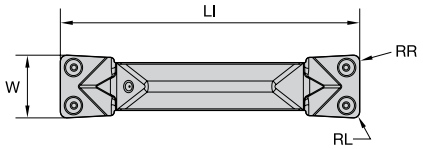
order number	catalogue number	grade	seat size	W (mm)	RR (mm)	LI (mm)
WMT-U-PT • Moulded • Plunge, Groove, and Turn Inserts						
neutral						
4169554	**WMTS205M2U02PT**	**WP10CT**	2	2,05	0,15	19,23
4169555	**WMTS205M2U02PT**	**WP25CT**	2	2,05	0,15	19,23
4116131	**WMTS205M2U02PT**	**WU10PT**	2	2,05	0,15	19,23
4116132	**WMTS205M2U02PT**	**WU25PT**	2	2,05	0,15	19,23
4169556	**WMTS305M3U03PT**	**WP10CT**	3	3,05	0,31	25,81
4169557	**WMTS305M3U03PT**	**WP25CT**	3	3,05	0,31	25,81
4113568	**WMTS305M3U03PT**	**WU10PT**	3	3,05	0,31	25,81
4113569	**WMTS305M3U03PT**	**WU25PT**	3	3,05	0,31	25,81
4169558	**WMTS305M3U06PT**	**WP10CT**	3	3,05	0,61	25,78
4169559	**WMTS305M3U06PT**	**WP25CT**	3	3,05	0,61	25,78
4113570	**WMTS305M3U06PT**	**WU10PT**	3	3,05	0,61	25,78
4113571	**WMTS305M3U06PT**	**WU25PT**	3	3,05	0,61	25,78
4169560	**WMTS405M4U03PT**	**WP10CT**	4	4,05	0,31	25,53
4169561	**WMTS405M4U03PT**	**WP25CT**	4	4,05	0,31	25,53
4113577	**WMTS405M4U03PT**	**WU10PT**	4	4,05	0,31	25,53
4113578	**WMTS405M4U03PT**	**WU25PT**	4	4,05	0,31	25,53
4169562	**WMTS405M4U06PT**	**WP10CT**	4	4,05	0,61	25,53
4169563	**WMTS405M4U06PT**	**WP25CT**	4	4,05	0,61	25,53
4113579	**WMTS405M4U06PT**	**WU10PT**	4	4,05	0,61	25,53
4113580	**WMTS405M4U06PT**	**WU25PT**	4	4,05	0,61	25,53
4169564	**WMTS505M5U03PT**	**WP10CT**	5	5,05	0,30	28,76
4169565	**WMTS505M5U03PT**	**WP25CT**	5	5,05	0,30	28,76
4116148	**WMTS505M5U03PT**	**WU10PT**	5	5,05	0,30	28,76
4116149	**WMTS505M5U03PT**	**WU25PT**	5	5,05	0,30	28,76
4169566	**WMTS505M5U06PT**	**WP10CT**	5	5,05	0,61	28,76
4169567	**WMTS505M5U06PT**	**WP25CT**	5	5,05	0,61	28,76
4116150	**WMTS505M5U06PT**	**WU10PT**	5	5,05	0,61	28,76
4116151	**WMTS505M5U06PT**	**WU25PT**	5	5,05	0,61	28,76
4169568	**WMTS605M6U03PT**	**WP10CT**	6	6,05	0,30	28,76
4169569	**WMTS605M6U03PT**	**WP25CT**	6	6,05	0,30	28,76
4117253	**WMTS605M6U03PT**	**WU10PT**	6	6,05	0,30	28,76
4117254	**WMTS605M6U03PT**	**WU25PT**	6	6,05	0,30	28,76
4169570	**WMTS605M6U06PT**	**WP10CT**	6	6,05	0,59	28,76
4169571	**WMTS605M6U06PT**	**WP25CT**	6	6,05	0,59	28,76
4117255	**WMTS605M6U06PT**	**WU10PT**	6	6,05	0,59	28,76
4117256	**WMTS605M6U06PT**	**WU25PT**	6	6,05	0,59	28,76



order number	catalogue number	grade	seat size	W (mm)	RR (mm)	LI (mm)
WMT-P-PT • Precision • Plunge, Groove, and Turn Inserts						
neutral						
4116129	**WMTS200M2P02PT**	**WU10PT**	2	2,00	0,15	19,10
4116130	**WMTS200M2P02PT**	**WU25PT**	2	2,00	0,15	19,10
4113566	**WMTS300M3P03PT**	**WU10HT**	3	3,00	0,31	25,65
4113563	**WMTS300M3P03PT**	**WU10PT**	3	3,00	0,31	25,65
4113565	**WMTS300M3P06PT**	**WU10PT**	3	3,00	0,61	25,65
4113564	**WMTS300M3P03PT**	**WU25PT**	3	3,00	0,31	25,65
4113567	**WMTS300M3P06PT**	**WU25PT**	3	3,00	0,61	25,65
4113573	**WMTS400M4P03PT**	**WU10HT**	4	4,00	0,31	25,40
4113572	**WMTS400M4P03PT**	**WU10PT**	4	4,00	0,31	25,40
4113575	**WMTS400M4P06PT**	**WU10PT**	4	4,00	0,60	25,40
4113574	**WMTS400M4P03PT**	**WU25PT**	4	4,00	0,31	25,40
4113576	**WMTS400M4P06PT**	**WU25PT**	4	4,00	0,60	25,40
4116145	**WMTS500M5P03PT**	**WU10HT**	5	5,00	0,30	28,63
4116143	**WMTS500M5P03PT**	**WU10PT**	5	5,00	0,30	28,63
4116146	**WMTS500M5P06PT**	**WU10PT**	5	5,00	0,61	28,63
4116144	**WMTS500M5P03PT**	**WU25PT**	5	5,00	0,30	28,63
4116147	**WMTS500M5P06PT**	**WU25PT**	5	5,00	0,61	28,63
4117239	**WMTS600M6P03PT**	**WU10PT**	6	6,00	0,30	28,63
4117241	**WMTS600M6P06PT**	**WU10PT**	6	6,00	0,58	28,63
4117240	**WMTS600M6P03PT**	**WU25PT**	6	6,00	0,30	28,63
4117242	**WMTS600M6P06PT**	**WU25PT**	6	6,00	0,58	28,63
4117259	**WMTS800M8P15PT**	**WU10PT**	8	8,00	1,50	28,57
4117258	**WMTS800M8P06PT**	**WU25PT**	8	8,00	0,61	28,57
4117260	**WMTS800M8P15PT**	**WU25PT**	8	8,00	1,50	28,57

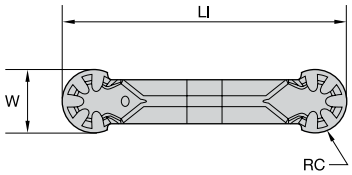


order number	catalogue number	grade	seat size	W (mm)	RR (mm)	LI (mm)
WMT-U-PH • Moulded • Plunge, Groove, and Turn Inserts						
neutral						
5346392	**WMTS305M3U03PH**	**WU10PT**	3	3,05	0,30	25,81
5346394	**WMTS305M3U06PH**	**WU10PT**	3	3,05	0,60	25,81
5346393	**WMTS305M3U03PH**	**WU25PT**	3	3,05	0,30	25,81
5346395	**WMTS305M3U06PH**	**WU25PT**	3	3,05	0,60	25,81
5346396	**WMTS405M4U03PH**	**WU10PT**	4	4,05	0,30	25,53
5346398	**WMTS405M4U06PH**	**WU10PT**	4	4,05	0,60	25,53
5346397	**WMTS405M4U03PH**	**WU25PT**	4	4,05	0,30	25,53
5346399	**WMTS405M4U06PH**	**WU25PT**	4	4,05	0,60	25,53
5346400	**WMTS505M5U03PH**	**WU10PT**	5	5,05	0,30	28,76
5346402	**WMTS505M5U06PH**	**WU10PT**	5	5,05	0,60	28,76
5346401	**WMTS505M5U03PH**	**WU25PT**	5	5,05	0,30	28,76
5346403	**WMTS505M5U06PH**	**WU25PT**	5	5,05	0,60	28,76
5346404	**WMTS605M6U03PH**	**WU10PT**	6	6,05	0,30	28,76
5346406	**WMTS605M6U06PH**	**WU10PT**	6	6,05	0,60	28,76
5346405	**WMTS605M6U03PH**	**WU25PT**	6	6,05	0,30	28,76
5346407	**WMTS605M6U06PH**	**WU25PT**	6	6,05	0,60	28,76

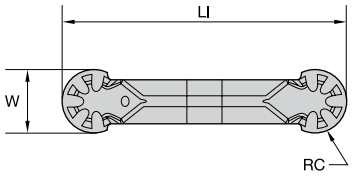


RR = RL

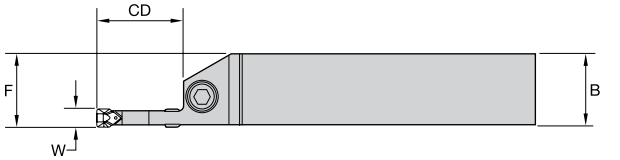
order number	catalogue number	grade	seat size	W (mm)	RR (mm)	LI (mm)
WMT-P-PH • Precision • Plunge, Groove, and Turn Inserts						
neutral						
5346414	**WMTS300M3P03PH**	**WU10HT**	3	3,00	0,30	25,65
5346412	**WMTS300M3P03PH**	**WU10PT**	3	3,00	0,30	25,65
5346415	**WMTS300M3P06PH**	**WU10PT**	3	3,00	0,60	25,65
5346413	**WMTS300M3P03PH**	**WU25PT**	3	3,00	0,30	25,65
5346416	**WMTS300M3P06PH**	**WU25PT**	3	3,00	0,60	25,65
5346420	**WMTS400M4P03PH**	**WU10HT**	4	4,00	0,30	25,40
5346418	**WMTS400M4P03PH**	**WU10PT**	4	4,00	0,30	25,40
5346421	**WMTS400M4P06PH**	**WU10PT**	4	4,00	0,60	25,40
5346419	**WMTS400M4P03PH**	**WU25PT**	4	4,00	0,30	25,40
5346422	**WMTS400M4P06PH**	**WU25PT**	4	4,00	0,60	25,40
5346426	**WMTS500M5P03PH**	**WU10HT**	5	5,00	0,30	28,63
5346424	**WMTS500M5P03PH**	**WU10PT**	5	5,00	0,30	28,63
5346427	**WMTS500M5P06PH**	**WU10PT**	5	5,00	0,60	28,63
5346425	**WMTS500M5P03PH**	**WU25PT**	5	5,00	0,30	28,63
5346428	**WMTS500M5P06PH**	**WU25PT**	5	5,00	0,60	28,63
5346430	**WMTS600M6P03PH**	**WU10PT**	6	6,00	0,30	28,63
5346432	**WMTS600M6P06PH**	**WU10PT**	6	6,00	0,60	28,63
5346431	**WMTS600M6P03PH**	**WU25PT**	6	6,00	0,30	28,63
5346433	**WMTS600M6P06PH**	**WU25PT**	6	6,00	0,60	28,63

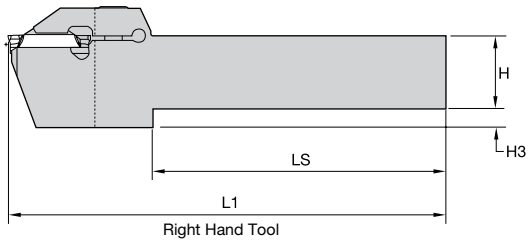


order number	catalogue number	grade	seat size	W (mm)	RC (mm)	LI (mm)
WMT-U-PC • Moulded • Grooving and Profiling Inserts						
neutral						
4170172	**WMTR305M3UPC**	**WU10PT**	3	3,05	1,53	25,53
4170173	**WMTR305M3UPC**	**WU25PT**	3	3,05	1,53	25,53
4170177	**WMTR405M4UPC**	**WU10PT**	4	4,05	2,03	25,58
4170178	**WMTR405M4UPC**	**WU25PT**	4	4,05	2,03	25,58
4170182	**WMTR505M5UPC**	**WU10PT**	5	5,05	2,53	29,01
4170183	**WMTR505M5UPC**	**WU25PT**	5	5,05	2,53	29,01
4170187	**WMTR605M6UPC**	**WU10PT**	6	6,05	3,03	28,77
4170188	**WMTR605M6UPC**	**WU25PT**	6	6,05	3,03	28,77
4170189	**WMTR605M6UPC**	**WP10CT**	6	6,05	3,03	28,77
4170192	**WMTR805M8UPC**	**WU10PT**	8	8,05	4,03	29,22
4170193	**WMTR805M8UPC**	**WU25PT**	8	8,05	4,03	29,22



order number	catalogue number	grade	seat size	W (mm)	RC (mm)	LI (mm)
WMT-P-PC • Precision • Grooving and Profiling Inserts						
neutral						
4170170	**WMTR300M3PPC**	**WU10PT**	3	3,00	1,50	25,40
4170171	**WMTR300M3PPC**	**WU25PT**	3	3,00	1,50	25,40
4170176	**WMTR400M4PPC**	**WU25PT**	4	4,00	2,00	25,45
4170180	**WMTR500M5PPC**	**WU10PT**	5	5,00	2,50	28,88
4170181	**WMTR500M5PPC**	**WU25PT**	5	5,00	2,50	28,88
4170185	**WMTR600M6PPC**	**WU10PT**	6	6,00	3,00	28,65
4170186	**WMTR600M6PPC**	**WU25PT**	6	6,00	3,00	28,65
4170190	**WMTR800M8PPC**	**WU10PT**	8	8,00	4,00	29,08





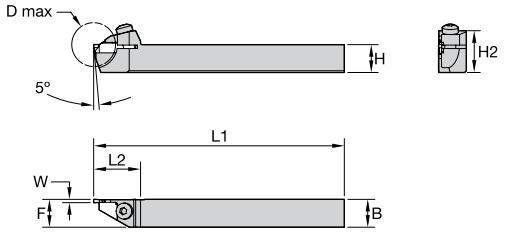
Right Hand Tool

order number	catalogue number	seat size	W (mm)	H (mm)	B (mm)	CD (mm)	F (mm)	H3 (mm)	L1 (mm)	LS (mm)
Integral Toolholders • O.D. Grooving and Cut-Off										
right hand										
3650516	**WMTSR2525M116**	1	1,50	25,00	25,00	17,00	25,00	-	150	116
3650456	**WMTSR1616K216**	2	2,00	16,00	16,00	16,50	16,00	6,22	125	101
3650458	**WMTSR2020K216**	2	2,00	20,00	20,00	16,50	20,00	–	125	92
3650506	**WMTSR2525M216**	2	2,00	25,00	25,00	16,50	25,00	–	150	116
3650460	**WMTSR1616K311**	3	3,00	16,00	16,00	11,00	16,00	-	125	93
3650462	**WMTSR1616K322**	3	3,00	16,00	16,00	22,00	16,00	5,00	125	85
3650468	**WMTSR2020K311**	3	3,00	20,00	20,00	11,00	20,00	–	125	93
3650470	**WMTSR2020K322**	3	3,00	20,00	20,00	22,00	20,00	5,00	125	85
3650479	**WMTSR2525M311**	3	3,00	25,00	25,00	11,00	25,00	–	150	118
3650481	**WMTSR2525M322**	3	3,00	25,00	25,00	22,00	25,00	–	150	110
3653751	**WMTSR2020K20**	4	4,00	20,00	20,00	22,00	20,00	5,00	125	83
3650504	**WMTSR2020K411**	4	4,00	20,00	20,00	11,00	20,00	–	125	92
3650483	**WMTSR2525M422**	4	4,00	25,00	25,00	22,00	25,00	–	150	109
3650473	**WMTSR2020K514**	5	5,00	20,00	20,00	14,00	20,00	–	125	88
3650475	**WMTSR2020L525**	5	5,00	20,00	20,00	15,00	20,00	5,00	140	93
3650485	**WMTSR2525M514**	5	5,00	25,00	25,00	14,00	25,00	–	150	115
3650487	**WMTSR2525M525**	5	5,00	25,00	25,00	25,00	25,00	–	150	104
3650489	**WMTSR2525M614**	6	6,00	25,00	25,00	14,00	25,00	–	150	114
3650491	**WMTSR2525M625**	6	6,00	25,00	25,00	25,00	25,00	–	150	104

(continued)

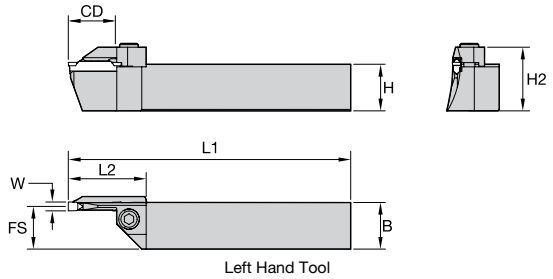
(Integral Toolholders • O.D. Grooving and Cut-Off — continued)

order number	catalogue number	seat size	W (mm)	H (mm)	B (mm)	CD (mm)	F (mm)	H3 (mm)	L1 (mm)	LS (mm)
Integral Toolholders • O.D. Grooving and Cut-Off *(continued)*										
left hand										
3650457	**WMTSL1616K216**	2	2,00	16,00	16,00	16,50	16,00	6,22	125	101
3650459	**WMTSL2020K216**	2	2,00	20,00	20,00	16,50	20,00	–	125	92
3650507	**WMTSL2525M216**	2	2,00	25,00	25,00	16,50	25,00	–	150	116
3650463	**WMTSL1616K322**	3	3,00	16,00	16,00	22,00	16,00	5,00	125	85
3650469	**WMTSL2020K311**	3	3,00	20,00	20,00	11,00	20,00	–	125	93
3650471	**WMTSL2020K322**	3	3,00	20,00	20,00	22,00	20,00	5,00	125	85
3650480	**WMTSL2525M311**	3	3,00	25,00	25,00	11,00	25,00	–	150	118
3650482	**WMTSL2525M322**	3	3,00	25,00	25,00	22,00	25,00	–	150	110
3653763	**WMTSL2525M11**	4	4,00	25,00	25,00	11,00	25,00	-	150	117
3650484	**WMTSL2525M422**	4	4,00	25,00	25,00	22,00	25,00	–	150	109
3650474	**WMTSL2020K514**	5	5,00	20,00	20,00	14,00	20,00	–	125	88
3650486	**WMTSL2525M514**	5	5,00	25,00	25,00	14,00	25,00	–	150	113
3650488	**WMTSL2525M525**	5	5,00	25,00	25,00	25,00	25,00	–	150	104
3650490	**WMTSL2525M614**	6	6,00	25,00	25,00	14,00	25,00	–	150	114
3650493	**WMTSL2525M625**	6	6,00	25,00	25,00	25,00	25,00	–	150	104



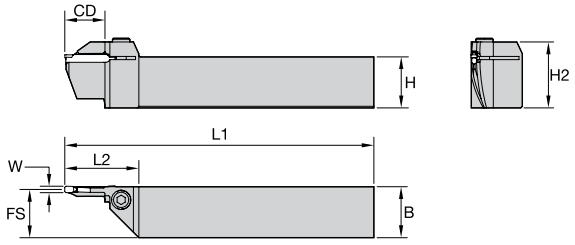
Left Hand Tool

order number	catalogue number	seat size	W (mm)	H (mm)	B (mm)	F (mm)	D max (mm)	H2 (mm)	L1 (mm)	L2 (mm)
Integral Toolholders for Swiss-Style Machines • Swiss Grooving and Cut-Off										
right hand										
3650508	**WMTCR1010H110**	1	1,50	10,00	10,00	10,00	20	16	100	21
3650510	**WMTCR1212H110**	1	1,50	12,00	12,00	12,00	20	18	100	21
3650512	**WMTCR1616K113**	1	1,50	16,00	15,86	16,00	26	24	125	24
3653413	**WMTCR1010H210**	2	2,00	10,00	10,00	10,00	20	16	100	21
3653415	**WMTCR1212H210**	2	2,00	12,00	12,00	12,00	20	18	100	21
3653417	**WMTCR1616K213**	2	2,00	16,00	15,84	16,00	26	24	125	24
3539162	**WMTCR1212H213**	2	2,00	12,00	11,84	12,00	26	23,83	100	27,7
left hand										
3650509	**WMTCL1010H110**	1	1,50	10,00	10,00	10,00	20	16	100	21
3650513	**WMTCL1616K113**	1	1,50	16,00	15,86	16,00	26	24	125	24
3650511	**WMTCL1212H110**	1	1,50	12,00	12,00	12,00	20	18	100	21
3653414	**WMTCL1010H210**	2	2,00	10,00	10,00	10,00	20	16	100	21
3653416	**WMTCL1212H210**	2	2,00	12,00	12,00	12,00	20	18	100	21
3539163	**WMTCL1212H213**	2	2,00	12,00	11,84	12,00	26	23,83	100	27,7
3653418	**WMTCL1616K213**	2	2,00	16,00	15,84	16,00	26	24	125	24



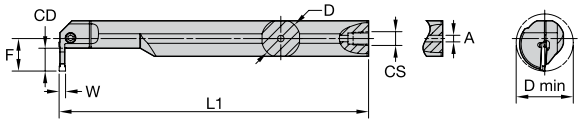
Left Hand Tool

order number	catalogue number	seat size	W (mm)	H (mm)	B (mm)	FS (mm)	CD (mm)	D max (mm)	D min (mm)	H2 (mm)	L1 (mm)	L2 (mm)
Integral Toolholders for Face Grooving • Curve Out												
right hand												
3653421	**WMTBR2525M313-038-052**	3	3,00	24,84	24,84	23,50	13,00	52	38	32	150	34
3653423	**WMTBR2525M316-052-070**	3	3,00	24,84	24,84	23,50	16,00	70	52	32	150	34
3653425	**WMTBR2525M316-070-100**	3	3,00	24,84	24,84	23,50	16,00	100	70	32	150	34
3653427	**WMTBR2525M319-100-205**	3	3,00	25,00	24,84	23,50	19,00	205	100	32	150	37
3653764	**WMTBR2525M412-032-052**	4	4,00	24,84	24,84	23,00	12,50	52	32	32	150	34
3653766	**WMTBR2525M415-052-070**	4	4,00	24,84	24,84	23,00	15,50	70	52	32	150	34
left hand												
3653422	**WMTBL2525M313-038-052**	3	3,00	24,84	24,84	23,50	13,00	52	38	32	150	34
3653424	**WMTBL2525M316-052-070**	3	3,00	24,84	24,84	23,50	16,00	70	52	32	150	34
3653426	**WMTBL2525M316-070-100**	3	3,00	24,84	24,84	23,50	16,00	100	70	32	150	34
3653428	**WMTBL2525M319-100-205**	3	3,00	24,84	24,84	23,50	19,00	205	100	32	150	37
3653765	**WMTBL2525M412-032-052**	4	4,00	24,84	24,84	23,00	12,50	52	32	32	150	34
3653771	**WMTBL2525M418-100-205**	4	4,00	24,84	24,84	23,00	18,50	205	100	32	150	37



Left Hand Tool

order number	catalogue number	seat size	W (mm)	H (mm)	B (mm)	FS (mm)	CD (mm)	D max (mm)	D min (mm)	H2 (mm)	L1 (mm)	L2 (mm)
Integral Toolholders for Face Grooving • Curve In												
right hand												
3634282	**WMTAR2525M316-070-100**	3	3,00	24,84	24,84	23,50	15,88	100	70	32	150	34
3634284	**WMTAR2525M319-100-205**	3	3,00	24,84	24,84	23,50	19,05	205	100	32	150	37
left hand												
3634285	**WMTAL2525M319-100-205**	3	3,00	24,84	24,84	23,50	19,05	205	100	32	150	37



Right Hand Tool

order number	catalogue number	seat size	W (mm)	F (mm)	CD (mm)	D (mm)	D min (mm)	L1 (mm)	A (mm)	CS
Integral I.D. Grooving Boring Bars										
right hand										
5423874	**A25RWMTER0316M**	3	3,00	26,00	16,00	25,00	41	200	6,40	1/4-18 NPT
5423875	**A32SWMTER0319M**	3	3,00	29,00	19,00	32,00	47	250	6,40	1/4-18 NPT
5423876	**A25RWMTER0416M**	4	4,00	26,00	16,00	25,00	41	200	6,40	1/4-18 NPT
5423877	**A32SWMTER0419M**	4	4,00	29,00	19,00	32,00	47	250	6,40	1/4-18 NPT
5423878	**A32SWMTER0519M**	5	5,00	29,00	19,00	32,00	47	250	6,40	1/4-18 NPT
left hand										
5423882	**A25RWMTEL0316M**	3	3,00	26,00	16,00	25,00	41	200	6,40	1/4-18 NPT
5423883	**A32SWMTEL0319M**	3	3,00	29,00	19,00	32,00	47	250	6,40	1/4-18 NPT
5423884	**A25RWMTEL0416M**	4	4,00	26,00	16,00	25,00	41	200	6,40	1/4-18 NPT
5423885	**A32SWMTEL0419M**	4	4,00	29,00	19,00	32,00	47	250	6,40	1/4-18 NPT
5423886	**A32SWMTEL0519M**	5	5,00	29,00	19,00	32,00	47	250	6,40	1/4-18 NPT

WGC

The Most Versatile Tool on the Market in Grooving, Profiling, and Cut-Off Operations

4 Benefits in 1

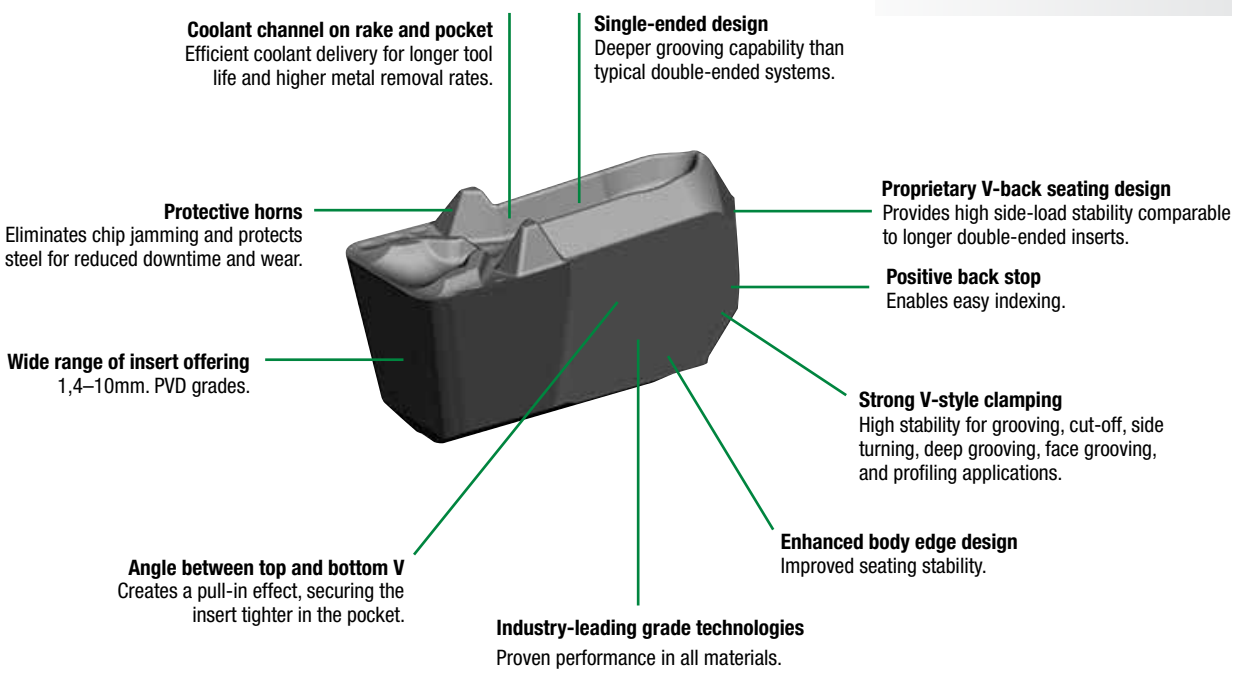
Versatile
Grooving, profiling, and cut-off operations

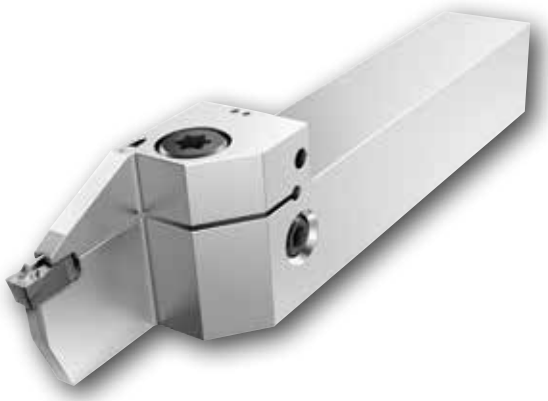
Simple
Easy to select and apply

Stable
Triple-V seating for secure clamping

Productive
Low cutting forces in through coolant for better chip evacuation

Proprietary negative chip geometry
Added chip control in steel, cast, stainless, and hardened materials.





Grooving

First choice for external grooving applications in most workpiece materials.

Through coolant capability and efficient coolant delivery for enhanced productivity.

Available in integral and modular style toolholders.

Groove width: 2–10mm.

Cut-Off

Specially engineered chipbreakers for effective parting/cut-off and deep grooving.

Positive geometry for lower forces.

Secure seating offers greatest stability.

Groove width: 1,4–8mm.

Profiling

Full radius chipbreaker for multi-directional turning and generating complex profiles.

Rigid design ensures smooth surface finish.

Groove width: 3–8mm.

WGC

Grooving, Cut-Off, and Profiling

Grooving
Precision Moulded

P M N S

PT-Positive Rake

P M K H

PN-Negative Rake

Cut-Off
Precision Moulded

P M N S

F-Fine

P K

M-Medium

P M

R-Rough

Profiling
Precision Moulded

P M N S

PR-Full Radius

NOTE: Use the NOVO™ software to select appropriate tooholder and insert.

Our Solution to CPC Reduction

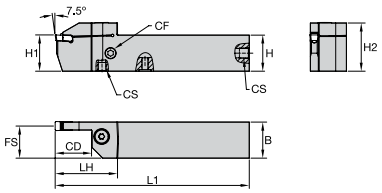
K Cast Iron

Holder: WGC-WG0612M06U08PN WU25PT
Grade: WU10PT
Diameter (ØT): 28mm
No. of Edges: 1 (2 for competition)

WIDIA™ SHINING MOMENT

Specifications	Competitor	WIDIA WGC
Cutting Diameter	28	28
Cutting Edges	2	1
Grade	P10	WU25PT
Cutting Speed (Vc)	125	125
Spindle Speed (n)	1421	1421
Feed (mm/rev)	0.1	0.1
Cutting Depth (ap)	4	4
Turning Length (l)	17	17
Total Time/Piece	0.12	0.12
Pieces/Edge	100	125
Life/Edge (min)	11.96	14.95
MRR (cm^3/min/in^3/min)	50	50

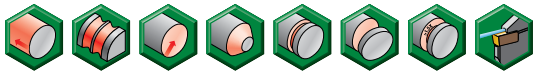
▼ Integral Straight • Metric

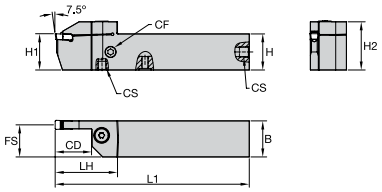


order number	catalogue number	SSC	CD	H1	H	B	H2	L1	FS	LH	CF	CS	Torx clamp screw	Torx clamp screw	Torx
right hand															
6461946	**WGCSMR2020K0216**	2	16	20	20	20	27	125	19	31	–	–	**–**	**MS1160**	T20
6461948	**WGCSMR2525M0216**	2	16	25	25	25	32	150	24	31	–	–	**–**	**MS1160**	T20
6461950	**WGCSMR2020K0222**	2	22	20	20	20	29	125	19	38	–	–	**MS2091**	**–**	25 IP
6461952	**WGCSMR2525M0226**	2	26	25	25	25	34	150	24	42	–	–	**MS2091**	**–**	25 IP
6462003	**WGCSMR2020K0316C**	3	16	20	20	20	29	125	19	37	M8X1	M8X1	**MS1595**	**–**	T30
6462004	**WGCSMR2525M0316C**	3	16	25	25	25	34	150	24	37	G1/8-28	G1/8-28	**MS1595**	**–**	T30
6462005	**WGCSMR2020K0322C**	3	22	20	20	20	30	125	19	43	M8X1	M8X1	**MS1595**	**–**	T30
6462006	**WGCSMR2525M0326C**	3	26	25	25	25	35	150	24	47	G1/8-28	G1/8-28	**MS1595**	**–**	T30
6462007	**WGCSMR2020K0416C**	4	16	20	20	20	29	125	18	37	M8X1	M8X1	**MS1595**	**–**	T30
6462008	**WGCSMR2525M0416C**	4	16	25	25	25	34	150	23	37	G1/8-28	G1/8-28	**MS1595**	**–**	T30
6462009	**WGCSMR2020K0422C**	4	22	20	20	20	30	125	18	43	M8X1	M8X1	**MS1595**	**–**	T30
6462010	**WGCSMR2525M0426C**	4	26	25	25	25	35	150	23	47	G1/8-28	G1/8-28	**MS1595**	**–**	T30
6462061	**WGCSMR3232P0426C**	4	26	32	32	32	42	170	30	47	G1/8-28	G1/8-28	**MS1970**	**–**	T30
6462062	**WGCSMR3232P0432C**	4	32	32	32	32	42	170	30	53	G1/8-28	G1/8-28	**MS1970**	**–**	T30
6462063	**WGCSMR2525M0516C**	5	16	25	25	25	34	150	23	37	G1/8-28	G1/8-28	**MS1970**	**–**	T30
6462064	**WGCSMR2525M0526C**	5	26	25	25	25	35	150	23	47	G1/8-28	G1/8-28	**MS1970**	**–**	T30
6462065	**WGCSMR3232P0526C**	5	26	32	32	32	42	170	30	47	G1/8-28	G1/8-28	**MS1970**	**–**	T30
6462066	**WGCSMR3232P0532C**	5	32	32	32	32	42	170	30	53	G1/8-28	G1/8-28	**MS1970**	**–**	T30
6462067	**WGCSMR2525M0616C**	6	16	25	25	25	34	150	22	37	G1/8-28	G1/8-28	**MS1970**	**–**	T30
6462068	**WGCSMR2525M0626C**	6	26	25	25	25	35	150	22	47	G1/8-28	G1/8-28	**MS1970**	**–**	T30
6462069	**WGCSMR3232P0626C**	6	26	32	32	32	42	170	29	47	G1/8-28	G1/8-28	**MS1970**	**–**	T30
6462070	**WGCSMR3232P0632C**	6	32	32	32	32	44	170	29	55	G1/8-28	G1/8-28	**MS1490**	**–**	T45
6462071	**WGCSMR4040R0640C**	6	40	40	40	40	52	200	37	63	G1/8-28	G1/8-28	**MS1490**	**–**	T45
6462072	**WGCSMR2525M0826C**	8	26	25	25	25	36	150	21	49	G1/8-28	G1/8-28	**MS1490**	**–**	T45
6462073	**WGCSMR3232P0826C**	8	26	32	32	32	43	170	28	49	G1/8-28	G1/8-28	**MS1490**	**–**	T45
6462074	**WGCSMR3232P0832C**	8	32	32	32	32	44	170	28	55	G1/8-28	G1/8-28	**MS1490**	**–**	T45
6462075	**WGCSMR4040R0840C**	8	40	40	40	40	52	200	36	63	G1/8-28	G1/8-28	**MS1490**	**–**	T45
6462076	**WGCSMR3232P1032C**	10	32	32	32	32	44	170	28	55	G1/8-28	G1/8-28	**MS1490**	**–**	T45
6462077	**WGCSMR4040R1040C**	10	40	40	40	40	52	200	36	63	G1/8-28	G1/8-28	**MS1490**	**–**	T45
left hand															
6461954	**WGCSML2020K0216**	2	16	20	20	20	27	125	19	31	–	–	**–**	**MS1160**	T20
6461956	**WGCSML2525M0216**	2	16	25	25	25	32	150	24	31	–	–	**–**	**MS1160**	T20
6461958	**WGCSML2020K0222**	2	22	20	20	20	29	125	19	38	–	–	**MS2091**	**–**	25 IP
6461960	**WGCSML2525M0226**	2	26	25	25	25	34	150	24	42	–	–	**MS2091**	**–**	25 IP
6462078	**WGCSML2020K0316C**	3	16	20	20	20	29	125	19	37	M8X1	M8X1	**MS1595**	**–**	T30
6462079	**WGCSML2525M0316C**	3	16	25	25	25	34	150	24	37	G1/8-28	G1/8-28	**MS1595**	**–**	T30
6462080	**WGCSML2020K0322C**	3	22	20	20	20	30	125	19	43	M8X1	M8X1	**MS1595**	**–**	T30
6462091	**WGCSML2525M0326C**	3	26	25	25	25	35	150	24	47	G1/8-28	G1/8-28	**MS1595**	**–**	T30
6462092	**WGCSML2020K0416C**	4	16	20	20	20	29	125	18	37	M8X1	M8X1	**MS1595**	**–**	T30

(continued)

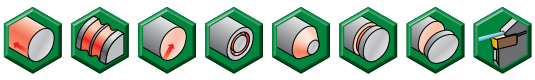
(Integral Straight • Metric — continued)



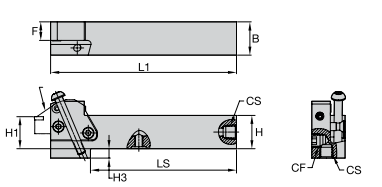


order number	catalogue number	SSC	CD	H1	H	B	H2	L1	FS	LH	CF	CS	Torx clamp screw	Torx clamp screw	Torx
6462093	**WGCSML2525M0416C**	4	16	25	25	25	34	150	23	37	G1/8-28	G1/8-28	**MS1595**	–	T30
6462094	**WGCSML2020K0422C**	4	22	20	20	20	30	125	18	43	M8X1	M8X1	**MS1595**	–	T30
6462095	**WGCSML2525M0426C**	4	26	25	25	25	35	150	23	47	G1/8-28	G1/8-28	**MS1595**	–	T30
6462096	**WGCSML3232P0426C**	4	26	32	32	32	42	170	30	47	G1/8-28	G1/8-28	**MS1970**	–	T30
6462097	**WGCSML3232P0432C**	4	32	32	32	32	42	170	30	53	G1/8-28	G1/8-28	**MS1970**	–	T30
6462098	**WGCSML2525M0516C**	5	16	25	25	25	34	150	23	37	G1/8-28	G1/8-28	**MS1970**	–	T30
6462099	**WGCSML2525M0526C**	5	26	25	25	25	35	150	23	47	G1/8-28	G1/8-28	**MS1970**	–	T30
6462100	**WGCSML3232P0526C**	5	26	32	32	32	42	170	30	47	G1/8-28	G1/8-28	**MS1970**	–	T30
6462101	**WGCSML3232P0532C**	5	32	32	32	32	42	170	30	53	G1/8-28	G1/8-28	**MS1970**	–	T30
6462102	**WGCSML2525M0616C**	6	16	25	25	25	34	150	22	37	G1/8-28	G1/8-28	**MS1970**	–	T30
6462103	**WGCSML2525M0626C**	6	26	25	25	25	35	150	22	47	G1/8-28	G1/8-28	**MS1970**	–	T30
6462104	**WGCSML3232P0626C**	6	26	32	32	32	42	170	29	47	G1/8-28	G1/8-28	**MS1970**	–	T30
6462105	**WGCSML3232P0632C**	6	32	32	32	32	44	170	29	55	G1/8-28	G1/8-28	**MS1490**	–	T45
6462106	**WGCSML4040R0640C**	6	40	40	40	40	52	200	37	63	G1/8-28	G1/8-28	**MS1490**	–	T45
6462107	**WGCSML2525M0826C**	8	26	25	25	25	36	150	21	49	G1/8-28	G1/8-28	**MS1490**	–	T45
6462108	**WGCSML3232P0826C**	8	26	32	32	32	43	170	28	49	G1/8-28	G1/8-28	**MS1490**	–	T45
6462109	**WGCSML3232P0832C**	8	32	32	32	32	44	170	28	55	G1/8-28	G1/8-28	**MS1490**	–	T45
6462110	**WGCSML4040R0840C**	8	40	40	40	40	52	200	36	63	G1/8-28	G1/8-28	**MS1490**	–	T45
6462111	**WGCSML3232P1032C**	10	32	32	32	32	44	170	28	55	G1/8-28	G1/8-28	**MS1490**	–	T45
6462112	**WGCSML4040R1040C**	10	40	40	40	40	52	200	36	63	G1/8-28	G1/8-28	**MS1490**	–	T45

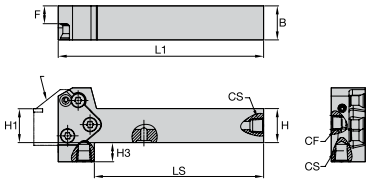
NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the insert.



▼ WGCMS-C • Metric



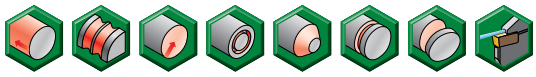
M50 Blade



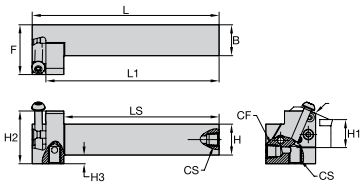
M65 Blade

order number	catalogue number	B	H	H1	L1	F	CS	CF	LS	H3	blade size	blade screw	Torx	clamping screw	Torx
right hand															
6499222	**WGCMSR2525M50C**	25	25	25	138,75	13,84	G 1/8-28	G 1/8-28	109,00	7,00	50	**MS1162**	T25	**MS2002**	T25
6499223	**WGCMSR2525M65C**	25	25	25	150,00	13,00	G 1/8-28	G 1/8-28	122,00	–	65	**MS1163**	T30	**–**	–
6499224	**WGCMSR3232P50C**	32	32	32	158,75	20,08	G 1/8-28	G 1/8-28	133,62	–	50	**MS1162**	T25	**MS2002**	T25
6499225	**WGCMSR3232P65C**	32	32	32	170,00	20,00	G 1/8-28	G 1/8-28	142,00	21,75	65	**MS1163**	T30	**–**	–
left hand															
6499226	**WGCMSL2525M50C**	25	25	25	138,75	13,84	G 1/8-28	G 1/8-28	109,00	7,00	50	**MS1162**	T25	**MS2002**	T25
6499227	**WGCMSL2525M65C**	25	25	25	150,00	13,00	G 1/8-28	G 1/8-28	122,00	29,00	65	**MS1163**	T30	**–**	–
6499228	**WGCMSL3232P50C**	32	32	32	158,75	20,08	G 1/8-28	G 1/8-28	133,62	–	50	**MS1162**	T25	**MS2002**	T25
6499229	**WGCMSL3232P65C**	32	32	32	170,00	20,00	G 1/8-28	G 1/8-28	142,00	21,75	65	**MS1163**	T30	**–**	–

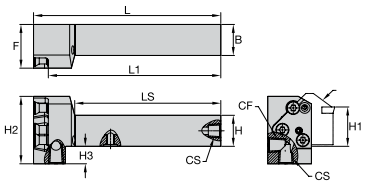
NOTE: WGCMS..: Right-hand holder uses right-hand blades.
WGCME..: Right-hand holder uses left-hand blades.
M50 blade and clamp screw torque equals 8–10 Nm (71–88 in. lbs.).
M65 blade and clamp screw torque equals 18–20 Nm (159–177 in. lbs.).



▼ WGCME-C • Metric



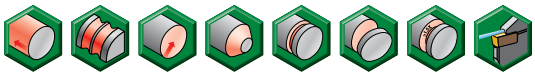
M50 Blade



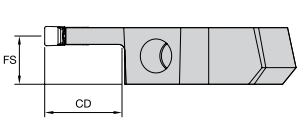
M65 Blade

order number	catalogue number	B	H	H1	L	L1	LS	F	CS	CF	H2	H3	blade size	blade screw	Torx	clamping screw	Torx
right hand																	
6498953	**WGCMER2525M65C**	25	25	25	150,00	138,15	117,00	35,00	G 1/8-28	G 1/8-28	54,00	14,00	65	**MS1163**	T30	**–**	–
6498954	**WGCMER2525M50C**	25	25	25	150,25	139,25	125,25	40,00	G 1/8-28	G 1/8-28	42,41	7,00	50	**MS1162**	T25	**MS2002**	T25
6498955	**WGCMER3232P65C**	32	32	32	170,00	158,15	137,00	35,00	G 1/8-28	G 1/8-28	54,00	7,00	65	**MS1163**	T30	**–**	–
6498956	**WGCMER3232P50C**	32	32	32	170,25	159,25	145,25	40,00	G 1/8-28	G 1/8-28	42,41	–	50	**MS1162**	T25	**MS2002**	T25
left hand																	
6498957	**WGCMEL2525M65C**	25	25	25	150,00	138,15	117,00	35,00	G 1/8-28	G 1/8-28	54,00	14,00	65	**MS1163**	T30	**–**	–
6498958	**WGCMEL2525M50C**	25	25	25	150,25	139,25	125,25	40,00	G 1/8-28	G 1/8-28	42,41	7,00	50	**MS1162**	T25	**MS2002**	T25
6498959	**WGCMEL3232P65C**	32	32	32	170,00	158,15	137,00	35,00	G 1/8-28	G 1/8-28	54,00	7,00	65	**MS1163**	T30	**–**	–
6498960	**WGCMEL3232P50C**	32	32	32	170,25	159,25	145,25	40,00	G 1/8-28	G 1/8-28	42,41	–	50	**MS1162**	T25	**MS2002**	T25

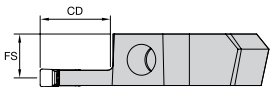
NOTE: WGCMS..: Right-hand holder uses right-hand blades.
WGCME..: Right-hand holder uses left-hand blades.
M50 blade and clamp screw torque equals 8–10 Nm (71–88 in. lbs.).
M65 blade and clamp screw torque equals 18–20 Nm (159–177 in. lbs.).



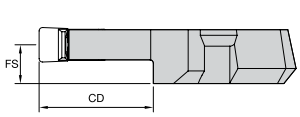
▼ Modular Straight Blade with Coolant



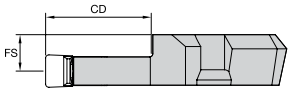
Left Hand



Right Hand



Left Hand

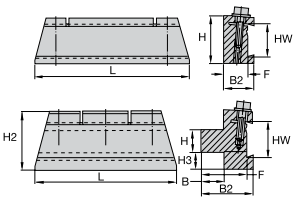


Right Hand

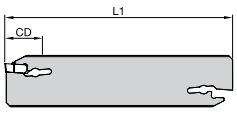
order number	catalogue number	SSC	CD	FS	blade size
right hand					
6498457	WGCM50R1F12M	1F	12,0	11,00	50
6498458	WGCM50R0212M	2	12,0	10,88	50
6498459	WGCM50R0216M	2	16,0	10,88	50
6498460	WGCM50R0312MC	3	12,0	10,43	50
6498861	WGCM50R0322MC	3	22,0	10,43	50
6498862	WGCM50R0412MC	4	12,0	9,93	50
6498863	WGCM50R0422MC	4	22,0	9,93	50
6498864	WGCM50R0432MC	4	32,0	9,93	50
6498865	WGCM50R0512MC	5	12,0	9,43	50
6498866	WGCM50R0516MC	5	16,0	9,43	50
6498867	WGCM50R0526MC	5	26,0	9,43	50
6498868	WGCM50R0532MC	5	32,0	9,43	50
6498869	WGCM65R0616MC	6	16,0	9,88	65
6498870	WGCM65R0626MC	6	26,0	9,88	65
6498881	WGCM65R0632MC	6	32,0	9,88	65
6498882	WGCM65R0816MC	8	16,0	9,00	65
6498883	WGCM65R0826MC	8	26,0	9,00	65
left hand					
6498884	WGCM50L1F12M	1F	12,0	11,00	50
6498885	WGCM50L0212M	2	12,0	10,88	50
6498886	WGCM50L0216M	2	16,0	10,88	50
6498887	WGCM50L0312MC	3	12,0	10,43	50
6498888	WGCM50L0322MC	3	22,0	10,43	50
6498889	WGCM50L0412MC	4	12,0	9,93	50
6498890	WGCM50L0422MC	4	22,0	9,93	50
6498891	WGCM50L0432MC	4	32,0	9,93	50
6498892	WGCM50L0512MC	5	12,0	9,43	50
6498893	WGCM50L0516MC	5	16,0	9,43	50
6498894	WGCM50L0526MC	5	26,0	9,43	50
6498895	WGCM50L0532MC	5	32,0	9,43	50
6498896	WGCM65L0616MC	6	16,0	9,88	65
6498897	WGCM65L0626MC	6	26,0	9,88	65
6498898	WGCM65L0632MC	6	32,0	9,88	65
6498899	WGCM65L0816MC	8	16,0	9,00	65
6498900	WGCM65L0826MC	8	26,0	9,00	65

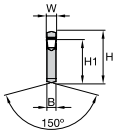
NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the insert.
Through the pocket coolant available in seat sizes 3 and higher.

▼ Blade Holders • Metric

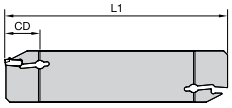


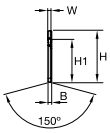
order number	catalogue number	HW	H	B	F	H2	B2	H3	L	cap screw	wrench
2007826	**12251222000**	26	20,0	18,0	33,0	40	38	8	100	**12148036000**	**12148041300**
2021635	**12251222500**	32	25,0	20,0	35,0	50	40	10	125	**12148036000**	**12148041300**
2008159	**12251233200**	53	32,0	25,0	50,0	82	57	30	160	**12146013400**	**12148041400**
2021723	**12251234000**	53	40,0	40,0	58,0	82	65	22	160	**12146013400**	**12148041400**



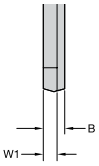


Straight





Reinforced



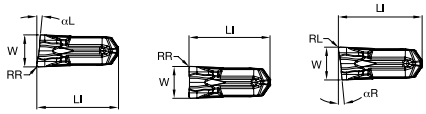
▼ Double-Ended Cut-Off Blade

order number	catalogue number	SSC	H	W	W1	H1	L1	B	CD	assembly wrench
neutral hand										
6498987	**WGCBSN19G1B14**	1B	19	1,4	1,15	15,5	90	1,80	14	**SCW5E**
6498988	**WGCBSN26J1B15**	1B	26	1,4	1,15	21,5	110	1,80	15	**SCW5E**
6498989	**WGCBSN19G1F16**	1F	19	1,6	1,30	15,5	90	1,80	16	**SCW5E**
6498990	**WGCBSN26J1F17**	1F	26	1,6	1,30	21,5	110	1,80	17	**SCW5E**
6499211	**WGCBSN19G0220**	2	19	2,0	–	15,5	90	1,65	–	**SCW5E**
6499212	**WGCBSN26J0230**	2	26	2,0	–	21,5	110	1,65	–	**SCW5E**
6499213	**WGCBSN32M0250**	2	32	2,0	–	25,1	150	1,65	–	**SCW5E**
6499215	**WGCBSN32M0350**	3	32	3,0	–	25,1	150	2,40	–	**SCW5E**
6499214	**WGCBSN26J0340**	3	36	3,0	–	21,5	110	2,40	–	**SCW5E**
6499216	**WGCBSN26J0440**	4	26	4,0	–	21,5	110	3,40	–	**SCW5E**
6499217	**WGCBSN32M0450**	4	32	4,0	–	25,1	150	3,40	–	**SCW5E**
6499218	**WGCBSN32M0560**	5	32	5,0	–	25,1	150	4,40	–	**SCW5E**
6499219	**WGCBSN32M0660**	6	32	6,0	–	25,1	150	5,40	–	**SCW8E**
6499220	**WGCBSN32M0860**	8	32	8,0	–	25,1	150	7,00	–	**SCW8E**
6499221	**WGCBSN52X08120**	8	53	8,0	–	45,3	260	7,00	–	**SCW8E**

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the insert.

▼ Spare Parts

screw catalogue number	screw order number	torque Nm	torque in. lbs.	thread	socket	wrench catalogue number	wrench order number
MS1160	**1099645**	**7**	**62**	**M5**	**T20**	**KT20**	**1022703**
MS1162	**1127019**	**9**	**80**	**M6**	**T25**	**KT25**	**1022725**
MS1163	**1124104**	**18**	**159**	**M8**	**T30**	**KT30L**	**1099676**
MS1273	**1020977**	**4**	**35.4**	**M4**	**T15**	**KT15**	**1022701**
MS1490	**2263299**	**17**	**151**	**M8**	**T45**	**KT45**	**1018227**
MS1595	**1094300**	**12**	**106**	**M6**	**T30**	**KT30**	**1099676**
MS1970	**1106668**	**12**	**106**	**M6**	**T30**	**KT30**	**1099676**
MS2002	**1621087**	**9**	**80**	**M6**	**T25**	**KT25**	**1022725**
MS2091	**1931147**	**9**	**80**	**M5**	**25IP**	**K25IP**	**2050113**



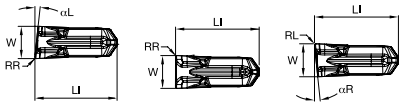
Left Hand Neutral Right Hand

● first choice
○ alternate choice

P		●
M		●
K		○
N		○
S		●
H		

▼ F Precision Moulded • Metric

catalogue number	SSC	W	W tol ±	LI	αR	αL	RR	RL	WU25PT
WC014M1BL06F01	1B	1,40	0,050	9,00	–	6	0,15	–	**6470544**
WC014M1BN00F01	1B	1,40	0,050	9,00	–	–	0,15	0,15	**6470545**
WC014M1BR06F01	1B	1,40	0,050	9,02	6	–	–	0,15	**6470546**
WC020M02L06F02	2	2,00	0,050	9,00	–	6	0,20	–	**6470547**
WC020M02N00F02	2	2,00	0,050	9,00	–	–	0,20	0,20	**6470548**
WC020M02R06F02	2	2,00	0,050	9,00	6	–	–	0,20	**6470549**
WC030M03L06F02	3	3,00	0,075	9,60	–	6	0,20	–	**6470550**
WC030M03N00F02	3	3,00	0,075	9,60	–	–	0,20	0,20	**6470561**
WC030M03R06F02	3	3,00	0,075	9,60	6	–	–	–	**6470562**
WC040M04L06F02	4	4,00	0,075	10,19	–	6	0,20	–	**6470563**
WC040M04N00F02	4	4,00	0,075	10,19	–	–	0,20	0,20	**6470564**
WC040M04R06F02	4	4,00	0,075	10,19	6	–	–	0,20	**6470565**
WC050M05N00F03	5	5,00	0,075	12,24	–	–	0,30	0,30	**6470566**

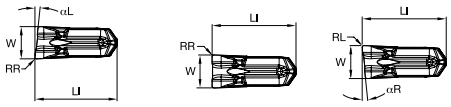


Left Hand Neutral Right Hand

▼ M Precision Moulded • Metric

catalogue number	SSC	W	W tol ±	LI	αR	αL	RR	RL	WU25PT
WC014M1BL06M02	1B	1,40	0,050	9,02	–	6	–	0,20	**6461828**
WC014M1BN00M01	1B	1,40	0,050	9,01	–	–	0,15	0,15	**6461829**
WC014M1BR06M02	1B	1,40	0,050	9,02	6	–	–	0,20	**6461830**
WC020M02L06M02	2	2,00	0,050	8,97	–	6	–	0,20	**6461861**
WC020M02N00M02	2	2,00	0,050	8,98	–	–	0,20	0,20	**6461862**
WC020M02R06M02	2	2,00	0,050	9,00	6	–	–	0,20	**6461863**
WC030M03L06M02	3	3,00	0,075	9,61	–	6	–	0,20	**6461864**
WC030M03N00M02	3	3,00	0,075	9,60	–	–	0,20	0,20	**6461865**
WC030M03R06M02	3	3,00	0,075	9,61	6	–	–	0,20	**6461866**
WC040M04L06M02	4	4,00	0,075	10,19	–	6	0,20	–	**6461867**
WC040M04N00M02	4	4,00	0,075	10,20	–	–	0,20	0,20	**6461868**
WC040M04R06M02	4	4,00	0,050	10,20	6	–	–	0,20	**6461869**
WC050M05N00M03	5	5,00	0,075	12,25	–	–	0,30	0,30	**6461870**
WC060M06N00M03	6	6,00	0,075	14,59	–	–	0,30	0,30	**6461881**
WC080M08N00M04	8	8,00	0,075	17,46	–	–	0,40	0,40	**6461882**

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.



Left Hand | Neutral | Right Hand

● first choice
○ alternate choice

P		●
M		●
K		○
N		○
S		●
H		

▼ R Precision Moulded • Metric

catalogue number	SSC	W	W tol ±	LI	αR	αL	RR	RL	WU25PT
WC020M02L06R02	2	2,00	0,050	8,97	–	6	0,20	–	**6470426**
WC020M02N00R02	2	2,00	0,050	8,98	–	–	0,20	0,20	**6470427**
WC020M02R06R02	2	2,00	0,050	8,97	6	–	–	0,20	**6470428**
WC030M03L06R02	3	3,00	0,075	9,61	–	6	0,20	–	**6470429**
WC030M03N00R02	3	3,00	0,075	9,60	–	–	0,20	0,20	**6470430**
WC030M03R06R02	3	3,00	0,075	9,61	6	–	–	0,20	**6470461**
WC040M04N00R02	4	4,00	0,075	10,20	–	–	0,20	0,20	**6470462**
WC050M05N00R03	5	5,00	0,075	12,25	–	–	0,30	0,30	**6470463**
WC060M06N00R03	6	6,00	0,075	14,59	–	–	0,30	0,30	**6470464**
WC080M08N00R04	8	8,00	0,075	17,46	–	–	0,40	0,40	**6470465**

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.

P M K N S

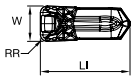
WU25PT™

Advanced Universal Grade with Hard PVD AlTiN Coating and Fine-Grain Substrate

This new and improved coating improves edge stability with wide range speed and feed capabilities.

The WU25PT grade is ideal for general machining of most steels, stainless steels, high-temp alloys, titanium, irons, and non-ferrous materials in a wide range of speeds and feeds with improved edge toughness for interrupted cuts and high feed rates.

For more information, visit **widia.com.**

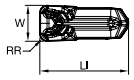


● first choice
○ alternate choice

P		●
M		●
K		○
N		○
S		●
H		

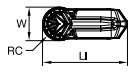
▼ PT Precision Moulded • Metric

catalogue number	SSC	W	W tol ±	RR	LI	WU25PT
WG0212M02U02PT	2	2,13	0,050	0,20	8,97	**6461734**
WG0251M02U02PT	2	2,51	0,050	0,20	8,97	**6461735**
WG0312M03U02PT	3	3,13	0,075	0,20	9,60	**6461736**
WG0312M03U04PT	3	3,13	0,075	0,40	9,60	**6461737**
WG0412M04U04PT	4	4,13	0,075	0,40	10,19	**6461738**
WG0412M04U08PT	4	4,13	0,075	0,80	10,19	**6461739**
WG0512M05U04PT	5	5,13	0,075	0,40	12,25	**6461740**
WG0512M05U08PT	5	5,13	0,075	0,80	12,25	**6461821**
WG0612M06U04PT	6	6,13	0,075	0,40	14,59	**6461822**
WG0612M06U08PT	6	6,13	0,075	0,80	14,59	**6461823**
WG0712M06U08PT	6	7,13	0,075	0,80	14,59	**6461824**
WG0812M08U08PT	8	8,13	0,075	0,80	17,45	**6461825**
WG0812M08U12PT	8	8,13	0,075	1,20	17,45	**6461826**
WG1012M10U12PT	10	10,13	0,075	1,20	20,75	**6461827**



▼ PN Precision Moulded • Metric

catalogue number	SSC	W	W tol ±	RR	LI	WU25PT
WG0212M02U02PN	2	2,13	0,050	0,20	8,97	**6470850**
WG0251M02U02PN	2	2,51	0,050	0,20	8,97	**6471041**
WG0312M03U02PN	3	3,13	0,075	0,20	9,60	**6471042**
WG0312M03U04PN	3	3,13	0,075	0,40	9,60	**6471043**
WG0412M04U04PN	4	4,13	0,075	0,40	10,20	**6471044**
WG0412M04U08PN	4	4,13	0,075	0,80	10,20	**6471045**
WG0512M05U04PN	5	5,13	0,075	0,40	12,24	**6471046**
WG0512M05U08PN	5	5,13	0,075	0,80	12,24	**6471047**
WG0612M06U04PN	6	6,13	0,075	0,40	14,59	**6471048**
WG0612M06U08PN	6	6,13	0,075	0,80	14,59	**6471049**
WG0812M08U08PN	8	8,13	0,075	0,80	17,46	**6471050**
WG0812M08U12PN	8	8,13	0,075	1,20	17,46	**6471062**
WG1012M10U12PN	10	10,13	0,075	1,20	20,75	**6471064**



▼ PC Full Radius Precision Ground • Metric

catalogue number	SSC	W	W tol ±	RC	LI	WU25PT
WR0200M02P00PC	2	2,00	0,025	1,00	8,91	**6470467**
WR0300M03P00PC	3	3,00	0,025	1,50	9,54	**6470468**
WR0400M04P00PC	4	4,00	0,025	2,00	10,13	**6470469**
WR0500M05P00PC	5	5,00	0,025	2,50	12,18	**6470470**
WR0600M06P00PC	6	6,00	0,025	3,00	14,52	**6470481**
WR0800M08P00PC	8	8,00	0,025	4,00	17,41	**6470482**

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.

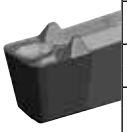
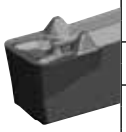
WGC

WGC Feed Rates

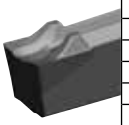
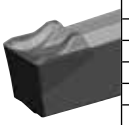
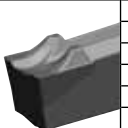
▼ Plunge feed rates

● first choice
○ alternate choice

P	Steel	K	Cast Iron	S	High-Temp Alloys
M	Stainless Steel	N	Non-Ferrous	H	Hardened Materials

Chip Control	Description	Insert Geometry	Seat Size (SSC)	Corner Radius	Starting Conditions	Plunge Feed Rates mm/rev
				mm	mm	0,05 0,10 0,15 0,20 0,25 0,30 0,35
-PT	Positive rake angle for lower cutting forces.		1F	0,2	0,06	
			2	0,2	0,08	
			3	0,2	0,09	
				0,4	0,11	
			4	0,4	0,12	
				0,8	0,15	
			5	0,4	0,15	
				0,8	0,16	
			6	0,4	0,15	
				0,8	0,18	
				1,2	0,20	
			8	0,8	0,20	
				1,2	0,22	
			10	1,2	0,24	
-PN	Stable negative cutting edge allowing for more aggressive applications.		1F	0,2	0,06	
			2	0,2	0,08	
			3	0,2	0,09	
				0,4	0,11	
			4	0,4	0,12	
				0,8	0,15	
			5	0,4	0,15	
				0,8	0,16	
			6	0,4	0,15	
				0,8	0,18	
				1,2	0,20	
			8	0,8	0,20	
				1,2	0,22	
			10	1,2	0,24	

▼ Cut-Off Feed Rates

Geometry	Description	Insert Geometry	Seat Size (SSC)	Starting Conditions	Cut-Off Feed Rates mm/rev
				mm	0,05 0,10 0,15 0,20 0,25 0,30 0,35 0,40
-F	Positive geometry for reduced cutting forces.		1B	0,06	
			2	0,07	
			3	0,09	
			4	0,11	
			5	0,13	
-M	Stable cutting edge for aggressive feed rates. Primarily in cast iron.		1B	0,06	
			2	0,07	
			3	0,09	
			4	0,11	
			5	0,14	
			6	0,16	
			8	0,14	
-R	Most stable cutting edge for steel.		2	0,10	
			3	0,14	
			4	0,16	
			5	0,19	
			6	0,21	
			8	0,23	

NOTE: For cut-off inserts with a lead angle, maximum feed rate should be reduced by up to 40%.

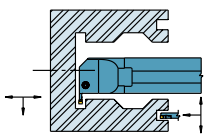
Maximum Feed Rate Values

Data above is for P and K material groups. **Maximum** feed rates should be adjusted by multiplying max feed rate values by following factors for shown material groups.

Material Group	Feed Factor
M	0.8
N	1.2
S	0.8
H	0.5

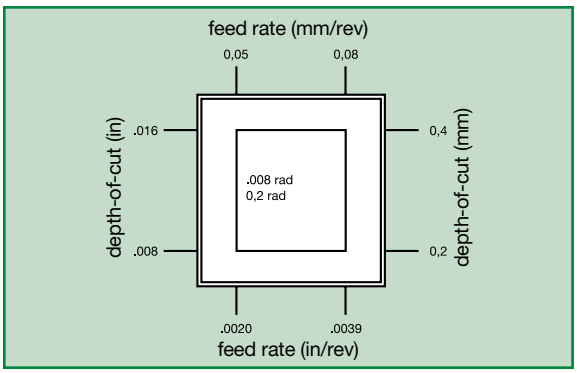
I.D. and Face Grooving

For I.D. and face grooving applications, reduce feed rate by 20%.

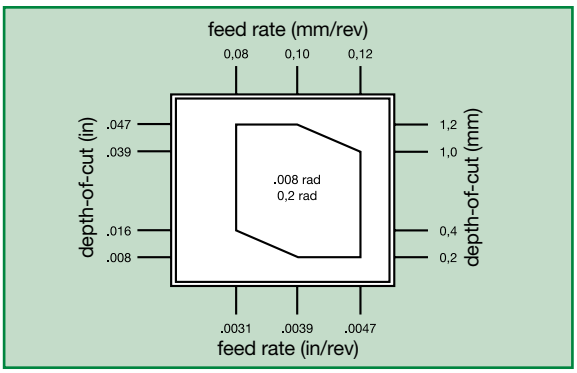


Turn and profile feed rates

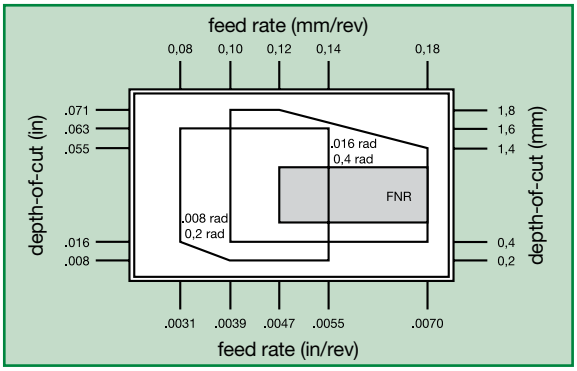
Seat Size 1F



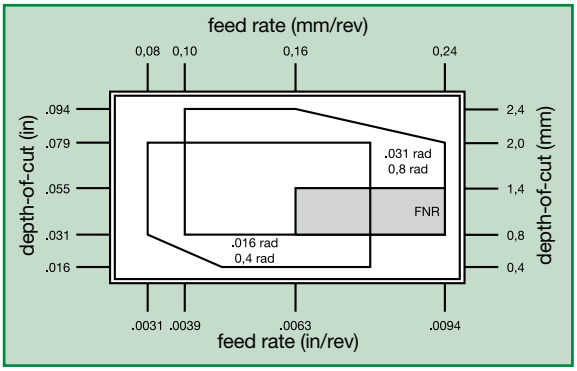
Seat Size 2



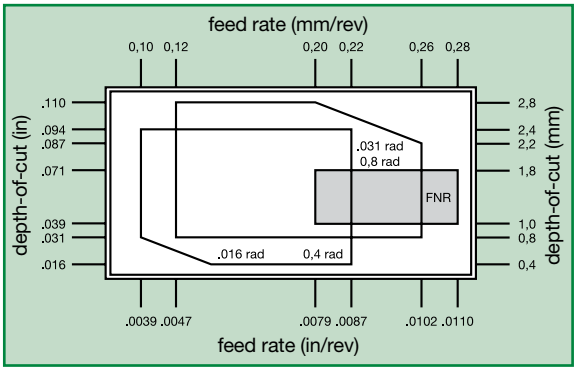
Seat Size 3



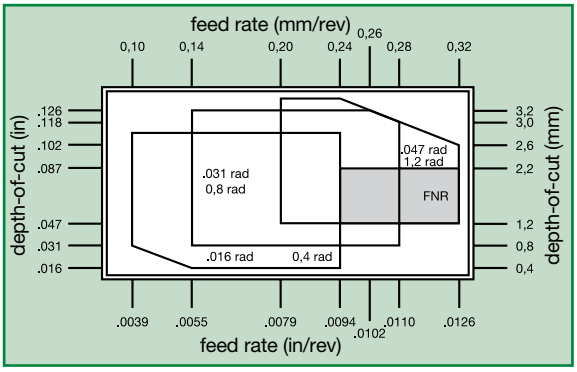
Seat Size 4



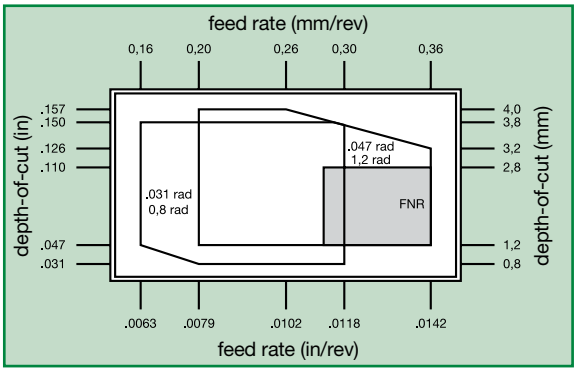
Seat Size 5



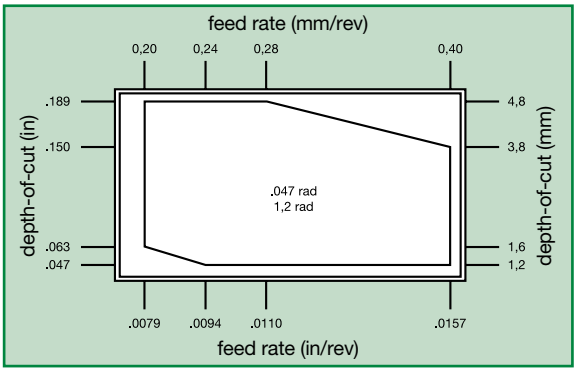
Seat Size 6



Seat Size 8



Seat Size 10



** FNR = Full Nose Radius*

Maximum Feed Rate Values

	Material Group	Feed Factor
Data above is for P and K material groups. **Maximum** feed rates should be adjusted by multiplying max feed rate values by following factors for shown material groups.	M	0.8
	N	1.2
	S	0.8
	H	0.5

▼ Recommended Starting Speeds • Inch and Metric

Material Group		WU25PT					
		Inch			Metric		
P	0–1	360	**740**	880	110	**225**	270
	2	360	**520**	880	110	**160**	260
	3	360	**410**	800	110	**125**	235
	4	200	**290**	540	60	**90**	160
	5	320	**530**	680	100	**160**	210
	6	280	**400**	600	85	**120**	185
M	1	300	**550**	800	90	**170**	245
	2	300	**500**	800	90	**150**	245
	3	300	**450**	700	90	**140**	210
K	1	320	**480**	760	100	**145**	225
	2	240	**400**	560	70	**120**	170
	3	160	**280**	400	50	**85**	120
N	1–2	400	**1440**	2560	120	**440**	780
	3	–	**–**	–	–	**–**	–
	4	320	**960**	1600	100	**290**	490
	5	240	**440**	640	70	**135**	195
	6	320	**560**	800	100	**170**	245
S	1	25	**125**	200	8	**40**	60
	2	25	**100**	250	8	**30**	75
	3	50	**125**	250	15	**40**	75
	4	25	**175**	350	8	**50**	110

*NOTE: FIRST choice starting speeds are in **bold** type.*
As the average chip thickness increases, the speed should be decreased.

Internal Coolant Delivery

Geometry placement is a key factor to coolant delivery!

Engineers positioned WGC geometry in the perfect position to spread the coolant across the cutting edge for maximum performance.

Coolant parameters

WGC is capable of both low and high pressure coolant up 350 bar (5076 psi) with no lower limit.
Tech Tip — If performance is not being achieved due to the machine pump's inability to provide pressure, even if volume is acceptable, flood coolant should also be applied.

Performance

Internal tests have shown up to 30% increased tool life.
Tech Tip — Regular maintenance of coolant filtration system required to achieve maximum performance.

Coolant entry

WGC offers multiple coolant ports for convenience.

▼ Coolant Kit

				Component Description														
				1/16 NPTF MALE TO JIC MALE	1/8 NPTF MALE TO JIC MALE	M8 X 1.25 MALE TO JIC MALE	M8 X 1.0 MALE TO JIC MALE	G1/8 MALE TO JIC MALE	M10 MALE TO JIC MALE	MALE JIC TO FEMALE JIC ELBOW	HEAVY DUTY 200MM COOLANT HOSE	HEAVY DUTY 300MM COOLANT HOSE	UNIV 200MM FLEX COOLANT HOSE	UNIV 300MM FLEX COOLANT HOSE	M8X1.0 BANJO 200MM FLEX HOSE	G1/8 BANJO 200MM FLEX HOSE	M8X1.0 BANJO 300MM FLEX HOSE	G1/8 BANJO 300MM FLEX HOSE
				Component Order Number														
				6145374	6145375	6145378	6475041	6145376	6145377	6145379	6145380	6145381	6432549	6432550	6475043	6475045	6475047	6475049
																		
Kit Description	**Order Number**	**Shank Size**	**Coolant Pressure**															
Universal 200mm flex hose coolant kit	**6475019**	12–40mm 1/2–1-1/2"	200 Bar 2,901 psi		●	●	●	●	●	●			●					
Universal 300mm flex hose coolant kit	**6475021**	12–40mm 1/2–1-1/2"	200 Bar 2,901 psi	●	●	●	●	●	●	●				●				
M8x1.0 banjo 200mm flex hose coolant kit	**6475023**	12–20mm 1/2–3/4"	200 Bar 2,901 psi					●	●	●					●			
M8x1.0 banjo 300mm flex hose coolant kit	**6475025**	12–20mm 1/2–3/4"	200 Bar 2,901 psi					●	●	●							●	
G 1/8 banjo 200mm flex hose coolant kit	**6475027**	25–40mm 1–1-1/2"	200 Bar 2,901 psi					●	●	●						●		
G 1/8 banjo 300mm flex hose coolant kit	**6475029**	25–40mm 1–1-1/2"	200 Bar 2,901 psi					●	●	●								●
Universal 200mm heavy-duty coolant kit	**6145372**	25–40mm 1–1-1/2"	350 Bar* 5,076 psi*	●	●			●	●	●	●							
Universal 300mm heavy-duty coolant kit	**6145373**	25–40mm 1–1-1/2"	350 Bar* 5,076 psi*	●	●			●	●	●		●						

** Max pressure for seat size 02 holders is 200 bar/2901 psi.*

Individual Kit Component List

order number	catalogue number	description
6145374	1-16NPTF-JIC	Straight fitting, 1/16 NPTF male thread to JIC male thread
6145375	1-8NPTF-JIC	Straight fitting, 1/8 NPTF male thread to JIC male thread
6145378	M8X1.25-JIC	Straight fitting, M8 x 1.25 male thread to JIC male thread
6475041	M8X1-JIC	Straight fitting, M8 x 1.0 male thread to JIC male thread
6145376	G18-JIC	Straight fitting, G 1/8 male thread to JIC male thread
6145377	M10X1.5-JIC	Straight fitting, M10 x 1.5 male thread to JIC male thread
6145379	JICM-JICF-ELB	Elbow fitting, male JIC thread to female JIC thread
6145380	COOL-HOSE-200-HD	Heavy Duty 200mm Coolant hose with JIC female fitting both ends
6145381	COOL-HOSE-300-HD	Heavy Duty 300mm Coolant hose with JIC female fitting both ends
6432549	COOL-HOSE-200-FLEX	Flexible braided 200mm Coolant hose with JIC female fitting both ends
6432550	COOL-HOSE-300-FLEX	Flexible braided 300mm Coolant hose with JIC female fitting both ends
6475043	M8X1-BAN-JIC-HOSE-200	Flexible braided 200mm Coolant hose, M8 x 1.0 male thread to JIC female thread. Contains (1) M8x1.0 banjo bolt and (2) M8 bonded washers
6475045	G18-BAN-JIC-HOSE-200	Flexible braided 200mm Coolant hose, G 1/8 male thread to JIC female thread. Contains (1) G 1/8 banjo bolt and (2) G 1/8 bonded washers
6475047	M8X1-BAN-JIC-HOSE-300	Flexible braided 300mm Coolant hose, M8 x 1.0 male thread to JIC female thread. Contains (1) M8x1.0 banjo bolt and (2) M8 bonded washers
6475049	G18-BAN-JIC-HOSE-300	Flexible braided 300mm Coolant hose, G 1/8 male thread to JIC female thread. Contains (1) G 1/8 banjo bolt and (2) G 1/8 bonded washers

Coolant Accessories

The items shown below are not part of any coolant kits shown on previous pages.

order number	catalogue number	description
6145382	M6X1-JIC	Straight fitting, M6 x 1.0 male thread to JIC male thread
6145383	JICM-JICM-STR	Straight fitting, JIC male thread to JIC male thread
6145386	G14-G18-RED	Straight fitting, G 1/4 male thread to G 1/8th male thread
6475058	R18-JIC	Straight fitting, 1/8 BSPT male thread to JIC male thread
6475059	R14-JIC	Straight fitting, 1/4 BSPT male thread to JIC male thread

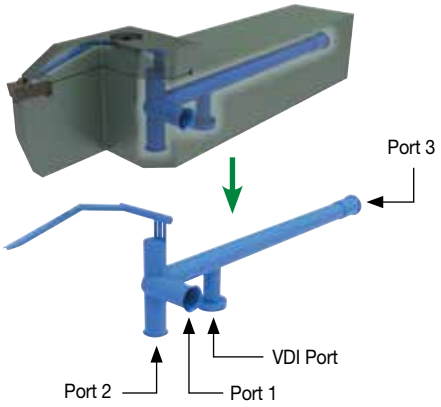
Coolant Spare Parts

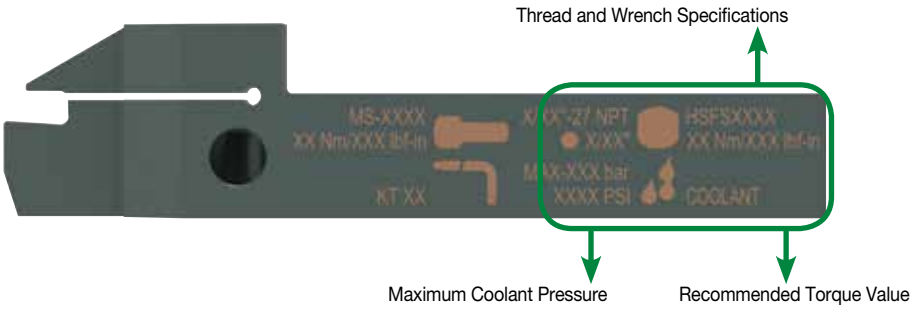
Included in kits; part of components.

order number	catalogue number	description
6475051	M8X1-BAN-BOLT	Banjo bolt, M8 x 1.0 male thread
6475053	G18-BAN-BOLT	Banjo bolt, G1/8 male thread
6475060	M6-BON-WASHER	M6 bonded washer
6475055	M8-BON-WASHER	M8 bonded washer
6475061	M10-BON-WASHER	M10 bonded washer
6475056	G18-BON-WASHER	G 1/8 bonded washer

Internal Coolant Delivery Guidelines

1. WGC system capable of 5076 psi (350 bar).
2. Toolholder delivered with four entry holes.
3. A quality filtration system is necessary to prevent blockages in the toolholder that will affect coolant flow and performance.
4. Machines without a proper filtering system may require modification or an inline filter.
    - For pressure >1015 psi [70 bar], use 10–20 µm filter.
    - For pressure <1015 psi [70 bar], 50–100 µm.
    - Using fine filters in low-pressure applications may affect flow rate.





General Safety Guidelines

1. All safety doors and mechanisms must be in place before trying out the internal coolant to avoid any danger to the operator in the event of a failure.
2. Use the correct pipe fittings to connect the holders to the system. Ensure the maximum pressure recommended for the fittings are not exceeded.
3. While implementing pressure >1160 psi [80 bar], increase the pressure in steps to ensure proper functioning of insert clamping and leak-free joints.
4. While indexing inserts, ensure the pocket is free from chips and/or dirt. Also, inspect the insert and make sure there are no blockages in the coolant canal.
5. Periodically check all hoses and fittings for damage and wear for proper functioning of the system. This check should also include filters.

Internal Coolant Delivery Performance

Internal coolant offers a clear advantage in tool life and chip forming/evacuation vs. external coolant in difficult conditions and in high-pressure coolant.

Example: Chipbreaking in plunging of steel.

Flood Coolant

Material steel ST52;
Insert size 6mm; f = 0,25 mm/U

Internal Coolant

1,087 psi
(75 bar)

2,900 psi
(200 bar)

Low Pressure — If performance is at risk due to low coolant pressure, apply internal coolant in combination with external coolant to increase volume.

Recommendation to improve tool life and/or productivity: Apply high pressure coolant: 80–350 bar recommended.

VDI Assemblies

The WGC internal coolant delivery can be leveraged with VDI holding systems with both traditional or Quick-Change coolant connections.

Indexable Milling

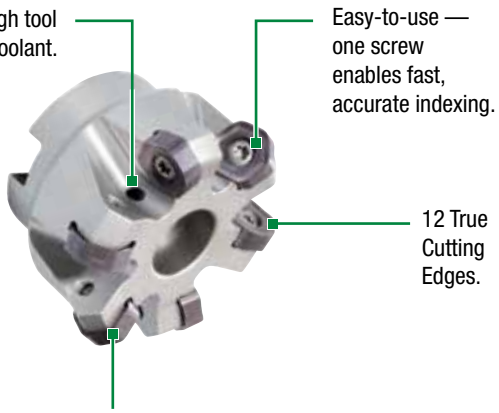
M1200 Mini Series

One Series Meets Every Face Milling Need

For consistent performance, look no further than the WIDIA™ Victory™ M1200 Mini. This easy-to-use product ensures great tool life, reduced machining time, and maximum productivity.

- Low cost per edge and high productivity.
- Reduced cutting forces due to soft cutting action.
- Significantly increased Metal Removal Rates (MRR).
- Victory™ M1200 Mini available in 15°, 45°, and 59° lead.
- WIDIA premium milling grades.
- Excellent tool life in light to heavy machining.
- Shorter machining cycle times.

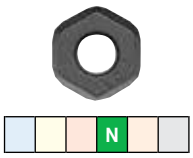
Best-in-class face milling platform to boost productivity on taper 40 spindle milling machines and driven tools.



Comprehensive standard offering for coarse, medium, and fine pitch cutter bodies to match all shop floor needs.

Latest soft cutting edge insert design for all material groups

-FNLDJ



Machining Aluminium

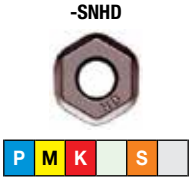
-ENLD

Light Machining

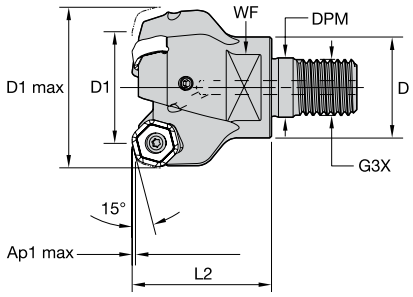
-SNGD

General Purpose

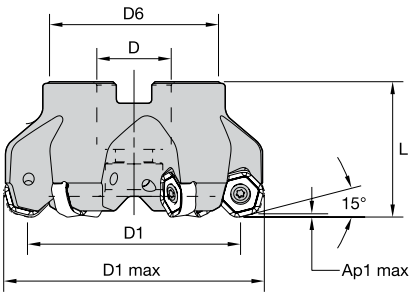
-SNHD



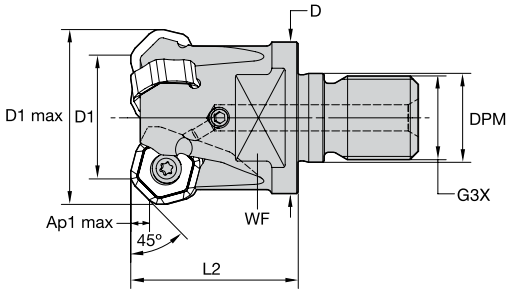
Heavy Machining



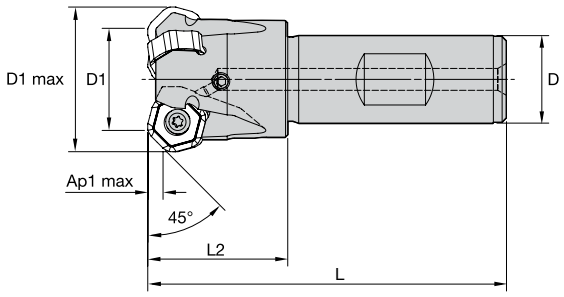
order number	catalogue number	D1 (mm)	D1 max (mm)	D (mm)	DPM (mm)	G3X	L1 (mm)	WF (mm)	Ap1 max (mm)	Z	max RPM	coolant supply
Victory™ M1200 Mini HF • Screw-On End Mills												
4136875	**M1200HF025Z03M16HN07**	25	39,1	29	17	M16	32	22	1,7	3	20000	Yes



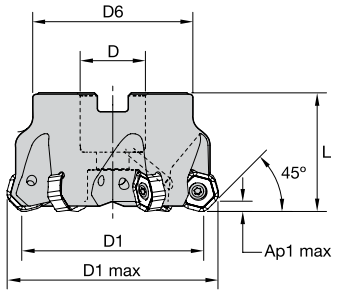
order number	catalogue number	D1 (mm)	D1 max (mm)	D (mm)	D6 (mm)	L (mm)	Ap1 max (mm)	Z	max RPM	coolant supply
Victory M1200 Mini HF • Shell Mills										
4136884	**M1200HF040Z05HN07**	40	54,1	22	38	40	1,7	5	15800	Yes
4136885	**M1200HF050Z05HN07**	50	64,1	22	38	40	1,7	5	12700	Yes
4136886	**M1200HF063Z06HN07**	63	77,1	22	50	40	1,7	6	10100	Yes
4136887	**M1200HF080Z08HN07**	80	94,1	27	60	50	1,7	8	7900	Yes



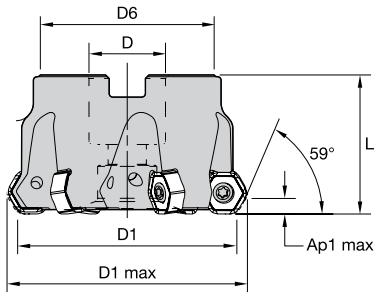
order number	catalogue number	D1 (mm)	D1 max (mm)	D (mm)	DPM (mm)	G3X	L1 (mm)	WF (mm)	Ap1 max (mm)	Z	max RPM	coolant supply
Victory M1200 Mini • Screw-On End Mills												
3957840	**M1200D025Z03M16HN07**	25	33,7	29	17	M16	32	22	3,5	3	20000	Yes
3957841	**M1200D032Z03M16HN07**	32	40,7	29	17	M16	40	22	3,5	3	17600	Yes
3957842	**M1200D032Z04M16HN07**	32	40,7	29	17	M16	40	22	3,5	4	17600	Yes



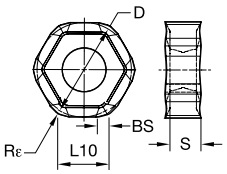
order number	catalogue number	D1 (mm)	D1 max (mm)	D (mm)	L (mm)	L2 (mm)	Ap1 max (mm)	Z	max RPM	coolant supply
Victory™ M1200 Mini • Weldon® Shanks										
3958012	**M1200D025Z03B20HN07**	25	33,7	20	82	32	3,5	3	20000	Yes
3958023	**M1200D032Z03B25HN07**	32	40,7	25	97	40	3,5	3	17600	Yes
3958024	**M1200D032Z04B25HN07**	32	40,7	25	97	40	3,5	4	17600	Yes



order number	catalogue number	D1 (mm)	D1 max (mm)	D (mm)	D6 (mm)	L (mm)	Ap1 max (mm)	Z	max RPM	coolant supply
Victory M1200 Mini • Shell Mills										
3957995	**M1200D040Z04HN07**	40	48,7	22	38	40	3,5	4	15800	Yes
3957996	**M1200D040Z05HN07**	40	48,7	22	38	40	3,5	5	15800	Yes
3957997	**M1200D050Z04HN07**	50	58,7	22	38	40	3,5	4	12700	Yes
3957998	**M1200D050Z05HN07**	50	58,7	22	38	40	3,5	5	12700	Yes
3957999	**M1200D050Z06HN07**	50	58,7	22	38	40	3,5	6	12700	Yes
3958000	**M1200D063Z04HN07**	63	71,7	22	50	40	3,5	4	10100	Yes
3958001	**M1200D063Z06HN07**	63	71,7	22	50	40	3,5	6	10100	Yes
3958002	**M1200D063Z08HN07**	63	71,7	22	50	40	3,5	8	10100	Yes
3958003	**M1200D080Z05HN07**	80	88,7	27	60	50	3,5	5	7900	Yes
3958004	**M1200D080Z08HN07**	80	88,7	27	60	50	3,5	8	7900	Yes
3958005	**M1200D080Z10HN07**	80	88,7	27	60	50	3,5	10	7900	Yes
3958006	**M1200D100Z06HN07**	100	108,7	32	80	50	3,5	6	6300	Yes
3958007	**M1200D100Z09HN07**	100	108,7	32	80	50	3,5	9	6300	Yes
3958008	**M1200D100Z12HN07**	100	108,7	32	80	50	3,5	12	6300	Yes



order number	catalogue number	D1 (mm)	D1 max (mm)	D (mm)	D6 (mm)	L (mm)	Ap1 max (mm)	Z	max RPM	coolant supply
Victory™ M1200 Mini HD • Shell Mills										
4136863	**M1200HD040Z05HN07**	40	46,8	22	38	40	4,7	5	15800	Yes
4136865	**M1200HD050Z05HN07**	50	56,8	22	38	40	4,7	5	12700	Yes
4136867	**M1200HD063Z06HN07**	63	69,8	22	50	40	4,7	6	10100	Yes
4136868	**M1200HD080Z05HN07**	80	86,8	27	60	50	4,7	5	7900	Yes
4136869	**M1200HD080Z08HN07**	80	86,8	27	60	50	4,7	8	7900	Yes
4136870	**M1200HD100Z06HN07**	100	106,7	32	80	50	4,7	6	6300	Yes
4136871	**M1200HD100Z09HN07**	100	106,7	32	80	50	4,7	9	6300	Yes
4136872	**M1200HD125Z08HN07**	125	131,7	40	90	63	4,7	8	5050	Yes
4136873	**M1200HD125Z12HN07**	125	131,7	40	90	63	4,7	12	5050	Yes



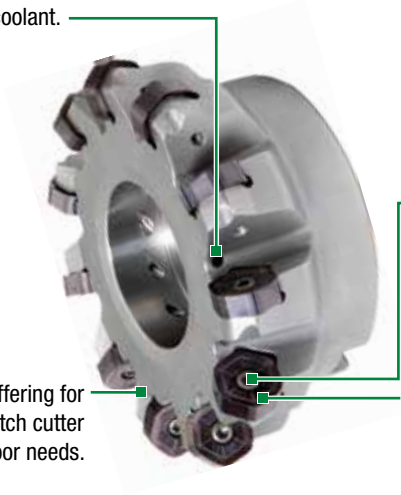
order number	catalogue number	grade	cutting edges	D (mm)	L10 (mm)	S (mm)	BS (mm)	Rε (mm)	hm (mm)
HNGJ-LDJ									
3954332	**HNGJ0704ANFNLDJ**	**THM-U**	12	12,7	6,80	4,48	1,60	1,20	0,08
HNGJ-LD									
5895291	**HNGJ0704ANENLD**	**WP25PM**	12	12,7	6,80	4,48	1,60	1,20	0,08
5528975	**HNGJ0704ANENLD**	**WS30PM**	12	12,7	6,80	4,48	1,60	1,20	0,08
5895292	**HNGJ0704ANENLD**	**WP35CM**	12	12,7	6,80	4,48	1,60	1,20	0,08
5550905	**HNGJ0704ANENLD**	**WP40PM**	12	12,7	6,80	4,48	1,60	1,20	0,08
6180295	**HNGJ0704ANENLD**	**WS40PM**	12	12,7	6,80	4,48	1,60	1,20	0,08
6180300	**HNGJ070432ANENLD**	**WS40PM**	12	12,7	6,80	4,48	–	3,21	0,08
HNPJ-GD									
5427374	**HNPJ0704ANSNGD**	**WK15CM**	12	12,7	6,80	4,45	1,27	1,20	0,10
5895293	**HNPJ0704ANSNGD**	**WP25PM**	12	12,7	6,80	4,45	1,27	1,20	0,10
5528976	**HNPJ0704ANSNGD**	**WS30PM**	12	12,7	6,80	4,45	1,27	1,20	0,10
5895294	**HNPJ0704ANSNGD**	**WP35CM**	12	12,7	6,80	4,45	1,27	1,20	0,10
5550906	**HNPJ0704ANSNGD**	**WP40PM**	12	12,7	6,80	4,45	1,27	1,20	0,10
6180297	**HNPJ0704ANSNGD**	**WS40PM**	12	12,7	6,80	4,45	1,27	1,20	0,10
HNPJ-HD									
5427375	**HNPJ0704ANSNHD**	**WK15CM**	12	12,7	6,80	4,41	1,25	1,20	0,14
5895295	**HNPJ0704ANSNHD**	**WP25PM**	12	12,7	6,80	4,41	1,25	1,20	0,14
5895296	**HNPJ0704ANSNHD**	**WP35CM**	12	12,7	6,80	4,41	1,25	1,20	0,14
5550907	**HNPJ0704ANSNHD**	**WP40PM**	12	12,7	6,80	4,41	1,25	1,20	0,14
6180299	**HNPJ0704ANSNHD**	**WS40PM**	12	12,7	6,80	4,41	1,25	1,20	0,14
5895297	**HNPJ070432ANSNHD**	**WP40PM**	12	12,7	6,80	4,42	–	3,20	0,14
6180311	**HNPJ070432ANSNHD**	**WS40PM**	12	12,7	6,80	4,42	–	3,20	0,14

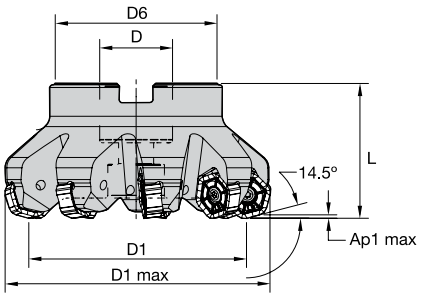
M1200 Series

One Series Meets Every Face Milling Need

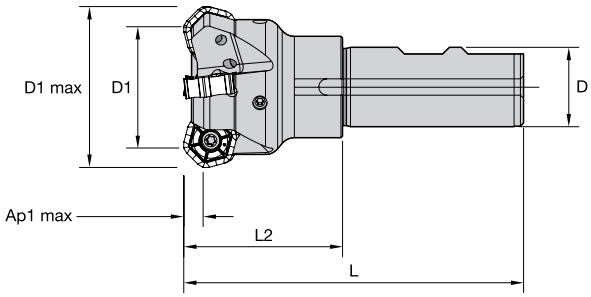
- Low cost per edge; high productivity.
- 14.5–59° lead angles.
- One series meets every face milling need.
- Available in WIDIA™ premium milling grades.
- Better tool life in light to heavy machining.

Best-in-class face milling platform to boost productivity on taper 50 spindle milling machines.

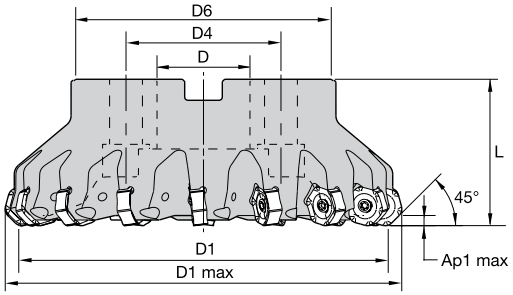




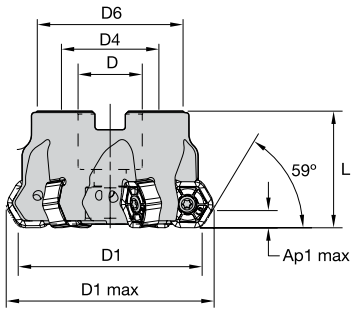
order number	catalogue number	D1 (mm)	D1 max (mm)	D (mm)	D6 (mm)	L (mm)	Ap1 max (mm)	Z	max RPM	coolant supply
Victory™ M1200 HF • Shell Mills										
3750370	**M1200HF050Z04HN09**	50	67,9	22	38	40	2,2	4	11400	Yes
3750372	**M1200HF063Z05HN09**	63	80,9	22	50	40	2,2	5	8950	Yes
3750434	**M1200HF080Z06HN09**	80	97,9	27	60	50	2,2	6	7300	Yes
3750435	**M1200HF100Z08HN09**	100	117,9	32	80	50	2,2	8	5900	Yes



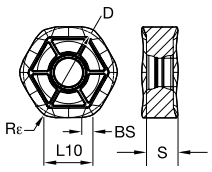
order number	catalogue number	D1 (mm)	D1 max (mm)	D (mm)	L (mm)	L2 (mm)	Ap1 max (mm)	Z	max RPM	coolant supply
Victory M1200 • Weldon® Shank										
3325311	**M1200D040Z04B25HN09**	40	51,0	25	107	50	4,5	4	15800	Yes



order number	catalogue number	D1 (mm)	D1 max (mm)	D (mm)	D4 (mm)	D6 (mm)	L (mm)	Ap1 max (mm)	Z	max RPM	coolant supply
Victory M1200 • Shell Mills											
3957970	**M1200D040Z03HN09**	40	51,0	22	–	39	40	4,4	3	15800	Yes
3957971	**M1200D040Z04HN09**	40	51,0	22	–	39	40	4,4	4	15800	Yes
3325312	**M1200D050Z04HN09**	50	61,0	22	–	38	40	4,5	4	12700	Yes
3325693	**M1200D050Z05HN09**	50	61,0	22	–	38	40	4,5	5	12700	Yes
3650535	**M1200D063Z04HN09**	63	74,0	22	–	50	40	4,5	4	10100	Yes
3093594	**M1200D063Z06HN09**	63	74,0	22	–	50	40	4,5	6	10100	Yes
3025376	**M1200D063Z07HN09**	63	74,0	22	–	50	40	4,5	7	10100	Yes
3650536	**M1200D080Z05HN09**	80	91,0	27	–	60	50	4,5	5	7900	Yes
3081507	**M1200D080Z06HN09**	80	91,0	27	–	60	50	4,5	6	7900	Yes
3025377	**M1200D080Z09HN09**	80	91,0	27	–	60	50	4,5	9	7900	Yes
3650537	**M1200D100Z06HN09**	100	111,0	32	–	80	50	4,5	6	6300	Yes
3325694	**M1200D100Z08HN09**	100	111,0	32	–	80	50	4,5	8	6300	Yes
3025378	**M1200D100Z11HN09**	100	111,0	32	–	80	50	4,5	11	6300	Yes
3081508	**M1200D125Z10HN09**	125	135,9	40	–	90	63	4,5	10	5050	Yes
3066119	**M1200D160Z16HN09**	160	171,0	40	66,7	110	63	4,5	16	3900	Yes



order number	catalogue number	D1 (mm)	D1 max (mm)	D (mm)	D4 (mm)	D6 (mm)	L (mm)	Ap1 max (mm)	Z	max RPM	coolant supply
Victory™ M1200 HD • Shell Mills											
4152116	**M1200HD063Z06HN09**	63	71,5	22	–	50	40	6,0	6	10100	Yes
4152117	**M1200HD080Z05HN09**	80	88,5	27	–	60	50	6,0	5	7900	Yes
4152118	**M1200HD080Z08HN09**	80	88,5	27	–	60	50	6,0	8	7900	Yes
4152119	**M1200HD100Z06HN09**	100	108,5	32	–	80	50	6,0	6	6300	Yes
4152120	**M1200HD100Z08HN09**	100	108,5	32	–	80	50	6,0	8	6300	Yes
4152123	**M1200HD160Z09HN09**	160	168,5	40	66,7	110	63	6,0	9	3900	Yes



order number	catalogue number	grade	cutting edges	D (mm)	L10 (mm)	S (mm)	BS (mm)	Rε (mm)	hm (mm)
HNGJ-LDJ									
3606383	**HNGJ0905ANFNLDJ**	**THM-U**	12	16	8,58	5,56	1,80	1,20	0,02
HNGJ-LD (not for M1200 HF Shell Mills)									
5895346	**HNGJ0905ANENLD**	**WP25PM**	12	16	8,58	5,56	1,80	1,20	0,05
5895347	**HNGJ0905ANENLD**	**WP35CM**	12	16	8,58	5,56	1,80	1,20	0,05
5895348	**HNGJ0905ANENLD**	**WP40PM**	12	16	8,58	5,56	1,80	1,20	0,05
5528973	**HNGJ0905ANENLD**	**WS30PM**	12	16	8,58	5,56	1,80	1,20	0,05
6180276	**HNGJ0905ANENLD**	**WS40PM**	12	16	8,58	5,56	1,80	1,20	0,05
HNPJ-GD									
5427372	**HNPJ0905ANSNGD**	**WK15CM**	12	16	8,58	5,56	1,80	1,20	0,10
5895374	**HNPJ0905ANSNGD**	**WP25PM**	12	16	8,58	5,56	1,80	1,20	0,10
5895375	**HNPJ0905ANSNGD**	**WP35CM**	12	16	8,58	5,56	1,80	1,20	0,10
5550908	**HNPJ0905ANSNGD**	**WP40PM**	12	16	8,58	5,56	1,80	1,20	0,10
6180278	**HNPJ0905ANSNGD**	**WS40PM**	12	16	8,58	5,56	1,80	1,20	0,10
HNGJ-GD									
5427370	**HNGJ0905ANSNGD**	**WK15CM**	12	16	8,58	5,56	1,80	1,20	0,10
5400965	**HNGJ0905ANSNGD**	**WP25PM**	12	16	8,58	5,56	1,80	1,20	0,10
5895349	**HNGJ0905ANSNGD**	**WP35CM**	12	16	8,58	5,56	1,80	1,20	0,10
5895350	**HNGJ0905ANSNGD**	**WP40PM**	12	16	8,58	5,56	1,80	1,20	0,10
5528974	**HNGJ0905ANSNGD**	**WS30PM**	12	16	8,58	5,56	1,80	1,20	0,10
6180280	**HNGJ0905ANSNGD**	**WS40PM**	12	16	8,58	5,56	1,80	1,20	0,10
HNPJ-HD									
5895378	**HNPJ090543ANSNHD**	**WP25PM**	12	16	8,50	5,44	–	4,34	0,13
5895379	**HNPJ090543ANSNHD**	**WP35CM**	12	16	8,50	5,44	–	4,34	0,13
5895380	**HNPJ090543ANSNHD**	**WP40PM**	12	16	8,50	5,44	–	4,34	0,13
6180294	**HNPJ090543ANSNHD**	**WS40PM**	12	16	8,50	5,44	–	4,34	0,13
5427371	**HNPJ0905ANSNHD**	**WK15CM**	12	16	8,59	5,46	1,66	1,20	0,18
5895376	**HNPJ0905ANSNHD**	**WP25PM**	12	16	8,59	5,46	1,66	1,20	0,18
5895377	**HNPJ0905ANSNHD**	**WP35CM**	12	16	8,59	5,46	1,66	1,20	0,18
5550909	**HNPJ0905ANSNHD**	**WP40PM**	12	16	8,59	5,46	1,66	1,20	0,18
6180279	**HNPJ0905ANSNHD**	**WS40PM**	12	16	8,59	5,46	1,66	1,20	0,18
HNGJ-HD									
5895371	**HNGJ0905ANSNHD**	**WP25PM**	12	16	8,59	5,46	1,66	1,20	0,17
5895372	**HNGJ0905ANSNHD**	**WP35CM**	12	16	8,59	5,46	1,66	1,20	0,17
5895373	**HNGJ0905ANSNHD**	**WP40PM**	12	16	8,59	5,46	1,66	1,20	0,17
6180291	**HNGJ0905ANSNHD**	**WS40PM**	12	16	8,59	5,46	1,66	1,20	0,17
6180292	**HNGJ090543ANSNHD**	**WS40PM**	12	16	8,49	5,44	–	4,35	0,20

The NOVO™ Application Provides the Digital Power

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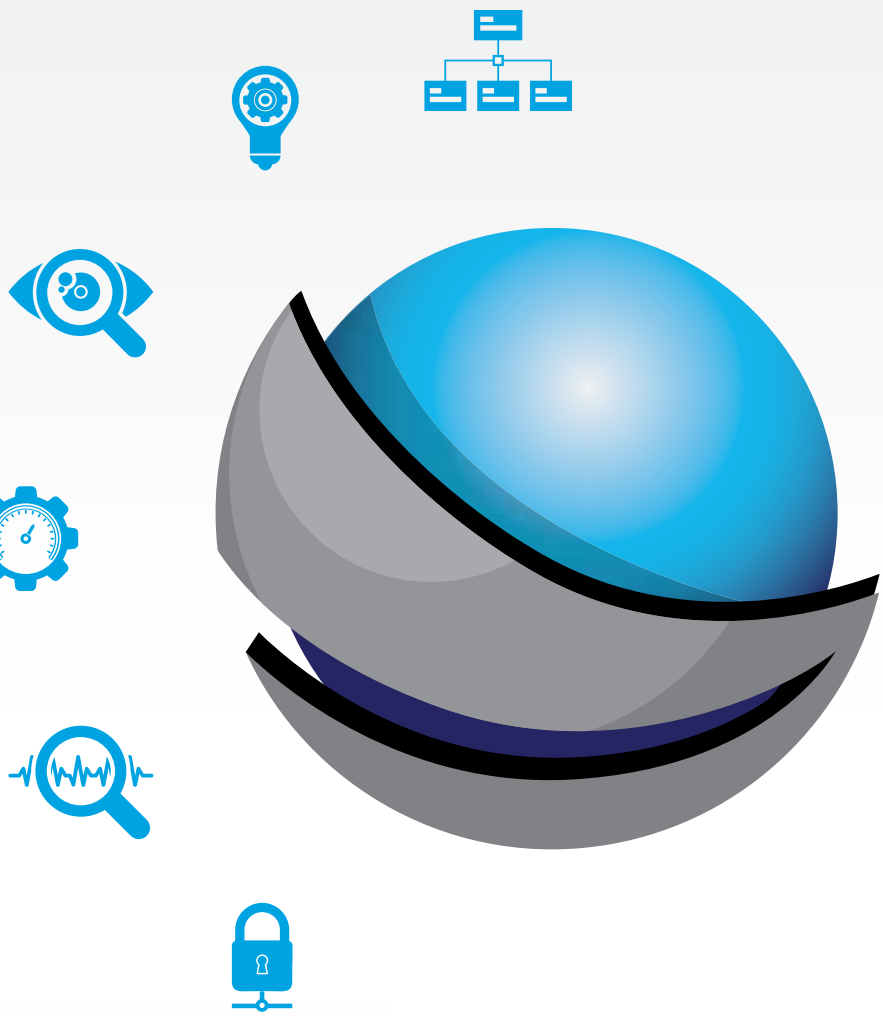


Export Compatibility to Mastercam®

Select tools, save into “job lists”.

Interactive feed & speed calculators.

Find inventory availability.

Download 2-D and 3-D models.

Easy interface with many CAM and tool management data systems.

NOVO™

WIDIA.COM/NOVO

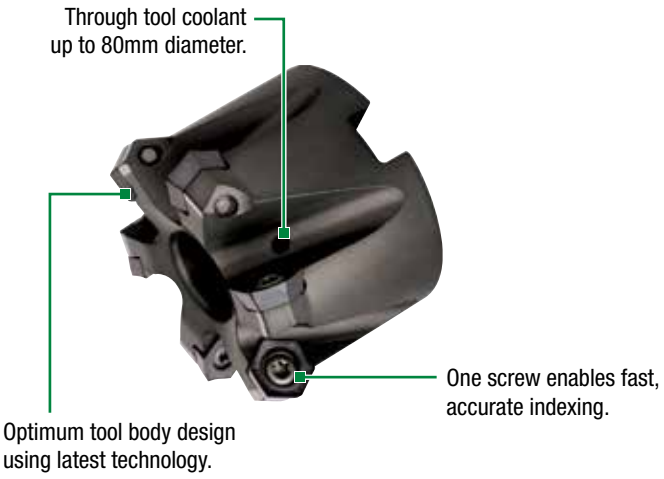
M640 Series

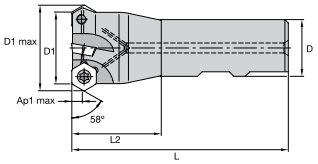
When Low Cutting Forces Are Required

The M640 platform is the first choice when high productivity, superior finish operations, and soft cutting performance are a priority. With six effective cutting edges and a streamlined body design, this easy-to-use tool is ideal, even for low-power machines.

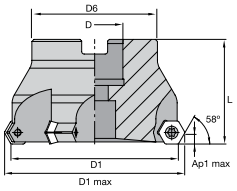
- Highly positive rake angle means extremely low cutting forces.
- Available in geometries and grades for all applications.
- Easy-to-use for fast, accurate indexing.

All pockets are machined into preheated material for excellent runout and pocket strength.

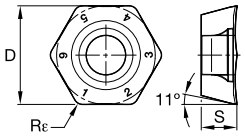




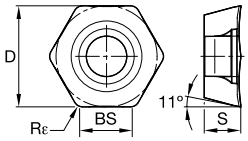
order number	catalogue number	D1 (mm)	D1 max (mm)	D (mm)	L (mm)	L2 (mm)	Ap1 max (mm)	Z	max RPM	coolant supply
M640 • Weldon® Shank										
2263165	**12395405200**	32	38,4	32	100	40	4,8	4	29500	Yes



order number	catalogue number	D1 (mm)	D1 max (mm)	D (mm)	D6 (mm)	L (mm)	Ap1 max (mm)	Z	max RPM	coolant supply
M640 • Shell Mills										
2263132	**12395410200**	50	56,4	22	47	40	4,8	4	19000	Yes
2263154	**12395410400**	63	69,4	22	50	40	4,8	5	15000	Yes
2263156	**12395410600**	80	86,4	27	60	50	4,8	6	11500	Yes
2263158	**12395410800**	100	106,4	32	78	50	4,8	7	9500	No



order number	catalogue number	grade	cutting edges	D (mm)	S (mm)	Rε (mm)	hm (mm)
HPGT-LDAL							
2288106	**HPGT06T3DZFRLDAL**	**THM**	6	11	4,00	0,90	0,08
HPGT-LD							
5895784	**HPGT06T3DZERLD**	**WP25PM**	6	11	3,99	0,98	0,08
5895785	**HPGT06T3DZERLD**	**WP40PM**	6	11	3,99	0,98	0,08
6180312	**HPGT06T3DZERLD**	**WS40PM**	6	11	3,99	0,98	0,08
HPGT-GD							
2288066	**HPGT06T3DZENGD**	**TN7535**	6	11	3,97	0,98	0,10
5427387	**HPGT06T3DZENGD**	**WK15CM**	6	11	3,97	0,98	0,10
5528978	**HPGT06T3DZENGD**	**WS30PM**	6	11	3,97	0,98	0,10
5895783	**HPGT06T3DZENGD**	**WP40PM**	6	11	3,97	0,98	0,10
5895782	**HPGT06T3DZENGD**	**WP25PM**	6	11	3,97	0,98	0,10
6180313	**HPGT06T3DZENGD**	**WS40PM**	6	11	3,97	0,98	0,10
HPPT-GD							
6180315	**HPPT06T3DZENGD**	**WS40PM**	6	11	3,97	0,98	0,10



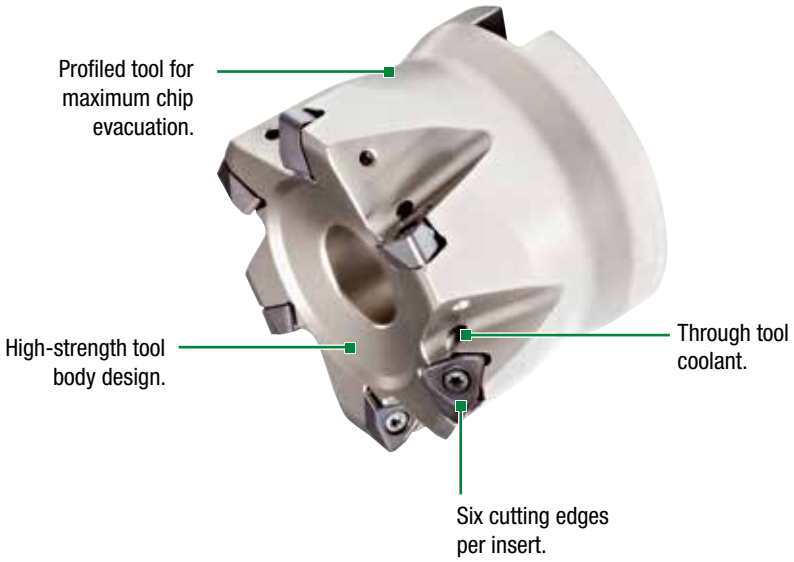
order number	catalogue number	grade	cutting edges	D (mm)	S (mm)	BS (mm)	Rε (mm)	hm (mm)
HPGT-GD Wiper								
5427388	**HPGT06T3DZERGD3W**	**WK15CM**	3	11	4,00	2,88	0,98	0,10
5895787	**HPGT06T3DZERGD3W**	**WP40PM**	3	11	4,00	2,88	0,98	0,10
5895786	**HPGT06T3DZERGD3W**	**WP25PM**	3	11	4,00	2,88	0,98	0,10
6180316	**HPGT06T3DZERGD3W**	**WS40PM**	3	11	4,00	2,88	0,98	0,10

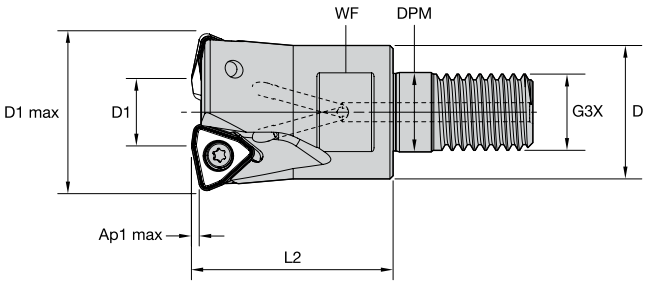
M370™ Series

High-Feed Applications

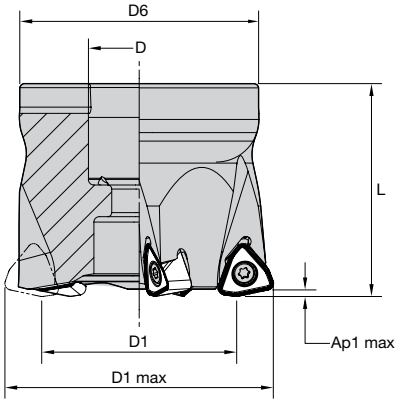
Designed for high feed rate productivity, M370 Series provides the latest insert technology with outstanding performance and reliability. Its double-sided concept and six cutting edges provide security and optimal metal removal with an efficient cost per edge.

- Double-sided design offers six cutting edges per insert.
- Extremely high metal removal rates.
- First choice for high-feed roughing applications.

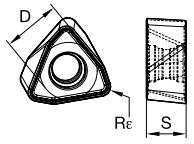




order number	catalogue number	D1 max (mm)	D1 (mm)	D (mm)	DPM (mm)	G3X	L2 (mm)	WF (mm)	Ap1 max (mm)	Z	max ramp angle	max RPM	coolant supply
M370 • IC08 • Screw-On End Mills													
4056186	**M370D025Z02M12WO08**	25	11	21	12,5	M12	35	17	1,3	2	2.1	46000	Yes
4170918	**M370D025Z03M12WO08**	25	11	21	12,5	M12	35	17	1,3	3	2.1	46000	Yes
4056187	**M370D032Z04M16WO08**	32	18	29	17,0	M16	43	24	1,3	4	1.4	38700	Yes
4056188	**M370D042Z05M16WO08**	42	28	29	17,0	M16	43	24	1,3	5	1.0	32500	Yes



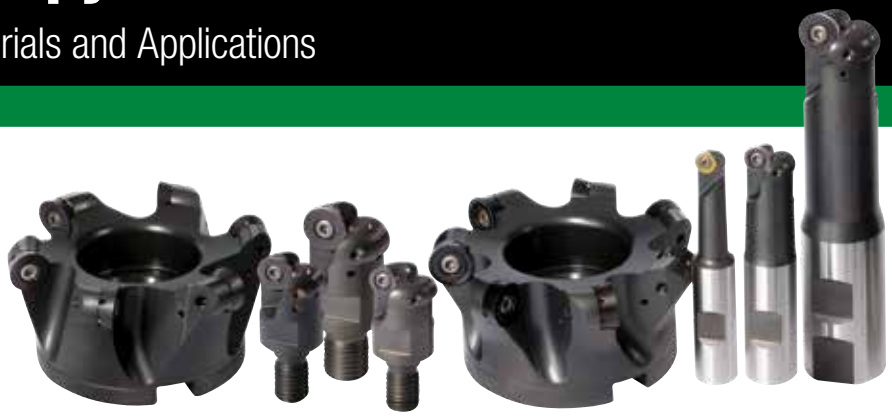
order number	catalogue number	D1 max (mm)	D1 (mm)	D (mm)	D6 (mm)	L (mm)	Ap1 max (mm)	Z	max ramp angle	max RPM	coolant supply
M370 • IC08 • Shell Mills											
4056193	**M370D040Z04WO08**	40	26	16	37	40	1,3	4	1.1	33500	Yes
4170922	**M370D040Z05WO08**	40	26	16	37	40	1,3	5	1.1	33500	Yes
4008276	**M370D050Z05WO08**	50	36	22	44	40	1,3	5	0.8	29200	Yes
4171223	**M370D050Z06WO08**	50	36	22	44	40	1,3	6	0.8	29200	Yes
4056194	**M370D052Z05WO08**	52	38	22	44	50	1,3	5	0.5	28600	Yes
4171224	**M370D052Z06WO08**	52	38	22	44	50	1,3	6	0.8	28600	Yes
4056195	**M370D063Z06WO08**	63	49	22	60	50	1,3	6	0.7	25500	Yes
4008277	**M370D066Z06WO08**	66	52	27	60	50	1,3	6	0.6	24900	Yes
4171225	**M370D080Z07WO08**	80	66	27	60	50	1,3	7	0.5	24900	Yes



order number	catalogue number	grade	cutting edges	D (mm)	S (mm)	Rε (mm)
WOEJ-MM						
4113916	**WOEJ080412SRMM**	**TN7535**	6	7,79	4,70	1,22
5520248	**WOEJ080412SRMM**	**WS30PM**	6	7,79	4,70	1,22
5544753	**WOEJ080412SRMM**	**WP40PM**	6	7,79	4,70	1,22
5564597	**WOEJ080412SRMM**	**WP25PM**	6	7,79	4,70	1,22
6333665	**WOEJ080412SRMM**	**WS40PM**	6	7,79	4,70	1,22
WOEJ-MH						
4068517	**WOEJ080412SRMH**	**TN7535**	6	7,79	4,75	1,22
5427443	**WOEJ080412SRMH**	**WK15CM**	6	7,79	4,75	1,22
5544752	**WOEJ080412SRMH**	**WP40PM**	6	7,79	4,75	1,22
5564596	**WOEJ080412SRMH**	**WP25PM**	6	7,79	4,75	1,22
6333664	**WOEJ080412SRMH**	**WS40PM**	6	7,79	4,75	1,22

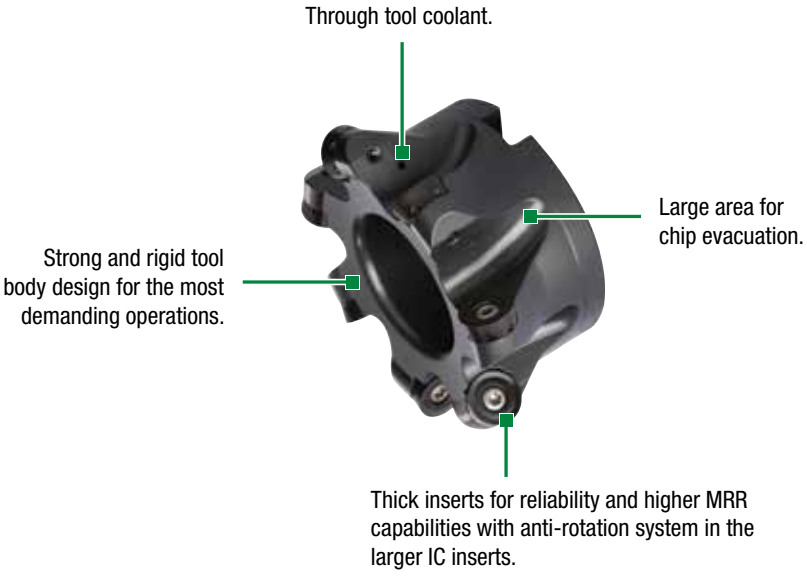
M100™ Series Copy Mills

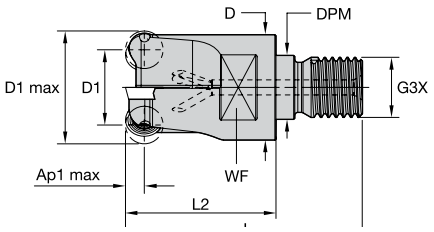
Versatile Platform for All Materials and Applications



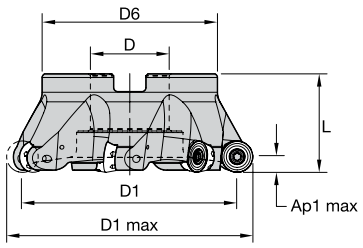
A trusted multipurpose solution for profiling and copy applications, the M100 Series ensures a reliable platform for all of your copy milling, face milling, helical interpolation, and roughing needs. The strong and rigid body design ensures superior results in even the most demanding operations.

- Thick inserts ensure reliability and consistent results.
- Anti-rotation systems in larger IC inserts provide higher MRR capabilities.
- Increased chip evacuation and through tool coolant for enhanced performance.

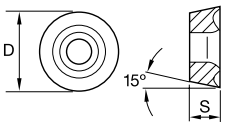




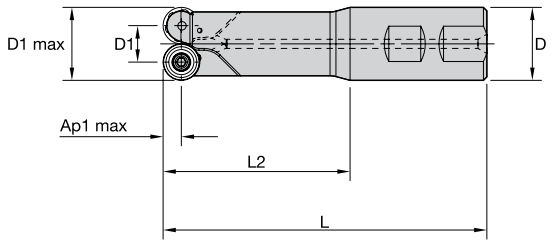
order number	catalogue number	D1 max (mm)	D1 (mm)	D (mm)	DPM (mm)	G3X	L (mm)	L2 (mm)	WF (mm)	Ap1 max (mm)	Z	max ramp angle	max RPM	coolant supply
M100 Series • IC12 • Screw-On End Mills														
2021374	**12391050200**	24	12	22	12,5	M12	52	30	19	6,0	2	10.0	23000	Yes
2021378	**12391051000**	35	23	28	17,0	M16	63	40	22	6,0	3	10.8	19000	Yes
2021379	**12391051200**	40	28	28	17,0	M16	63	40	22	6,0	4	8.3	17000	Yes



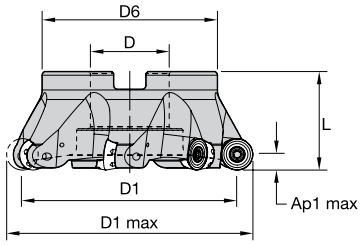
order number	catalogue number	D1 max (mm)	D1 (mm)	D (mm)	D6 (mm)	L (mm)	Ap1 max (mm)	Z	max ramp angle	max RPM	coolant supply
M100 Series • IC12 • Shell Mills											
2021342	**12391020000**	50	38	22	40	40	6,0	4	6.8	15000	Yes
2021361	**12391024000**	52	40	22	40	40	6,0	4	6.5	15000	Yes
2021343	**12391020200**	63	51	27	48	40	6,0	5	4.5	14000	Yes
2021344	**12391020400**	80	68	27	60	50	6,0	6	3.5	12000	Yes
2021345	**12391020600**	100	88	32	78	50	6,0	6	2.5	11000	No



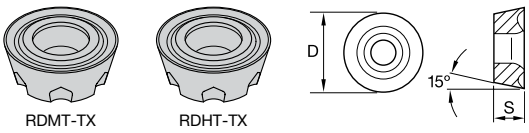
order number	catalogue number	grade	number of indexes	D (mm)	S (mm)	hm (mm)
RDHT-TX						
2020775	**RDHT1204M0TX**	**TN7525**	6	12,00	4,76	0,12
RDHW-MH						
2012484	**RDHW1204M0MH**	**TN2510**	6	12,00	4,76	0,14
RDPT-MMX						
5176975	**RDPT1204M0SMMX**	**TN7535**	6	12,00	4,76	0,18
5176974	**RDPT1204M0SMMX**	**TN6540**	6	12,00	4,76	0,18
6412898	**RDPT1204M0SMMX4**	**WS40PM**	4	12,00	4,76	–
RDMT-TX						
2109552	**RDMT1204M0TX**	**TN2510**	6	12,00	4,76	0,15
2012544	**RDMT1204M0TX**	**THM**	6	12,00	4,76	0,15
2020763	**RDMT1204M0TX**	**TN7525**	6	12,00	4,76	0,15
2957430	**RDMT1204M0TX**	**TN6525**	6	12,00	4,76	0,15
2957432	**RDMT1204M0TX**	**TN6540**	6	12,00	4,76	0,15
2109542	**RDMT1204M0TX**	**TN7535**	6	12,00	4,76	0,15
5520247	**RDMT1204M0TX**	**WS30PM**	6	12,00	4,76	0,15
RDMW-TX						
2109440	**RDMW1204M0TX**	**TN7525**	6	12,00	4,76	0,15
2012594	**RDMW1204M0TX**	**TN2510**	6	12,00	4,76	0,15
2020741	**RDMW1204M0TX**	**TN7535**	6	12,00	4,76	0,15
3353281	**RDMW1204M0TX**	**TN6540**	6	12,00	4,76	0,15
5427441	**RDMW1204M0TX**	**WK15CM**	6	12,00	4,76	0,15



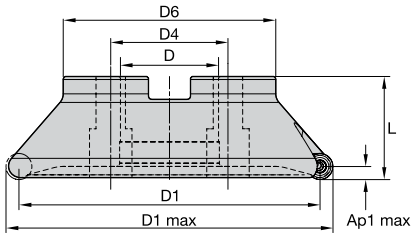
order number	catalogue number	D1 max (mm)	D1 (mm)	D (mm)	L (mm)	L2 (mm)	Ap1 max (mm)	Z	max ramp angle	max RPM	coolant supply
M100 Series • Weldon® Shank RD1605..											
2021341	**12391013800**	32	16	32	142	82	8,0	2	7.8	19000	Yes



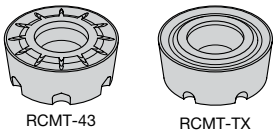
order number	catalogue number	D1 max (mm)	D1 (mm)	D (mm)	D6 (mm)	L (mm)	Ap1 max (mm)	Z	max ramp angle	max RPM	coolant supply
M100 Series • Shell Mills RD1605..											
2021347	**12391021000**	50	34	22	40	40	8,0	4	10.3	13000	Yes
2021348	**12391021200**	63	47	27	48	40	8,0	4	7.0	12000	Yes
2021349	**12391021400**	80	64	27	60	50	8,0	5	4.8	10000	Yes

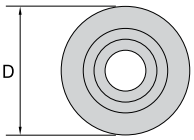


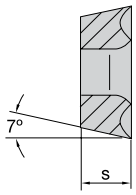
order number	catalogue number	grade	D (mm)	S (mm)	hm (mm)
RDMT-TX					
2020767	**RDMT1605M0TX**	**TN7525**	16,00	5,56	0,18
2957533	**RDMT1605M0TX**	**TN6540**	16,00	5,56	0,18
2207645	**RDMT1605M0TX**	**TN7535**	16,00	5,56	0,18
RDMW-TX					
2020749	**RDMW1605M0TX**	**TN7535**	16,00	5,56	0,15
3523083	**RDMW1605M0TX**	**TN6540**	16,00	5,56	0,15



order number	catalogue number	D1 max (mm)	D1 (mm)	D (mm)	D4 (mm)	D6 (mm)	L (mm)	Ap1 max (mm)	Z	max ramp angle	max RPM	coolant supply
M100 Series • Shell Mills RC1606..												
2021358	**12391023400**	50	34	22	–	40	40	8.0	4	6.0	13000	Yes
2021359	**12391023600**	52	36	22	–	40	40	8.0	4	5.8	13000	Yes
2021357	**12391023200**	63	47	27	–	48	40	8.0	5	4.0	12000	Yes
2021352	**12391022000**	80	64	27	–	60	50	8.0	6	2.8	10000	Yes
2021353	**12391022200**	100	84	32	–	78	50	8.0	7	2.3	9000	No
2021354	**12391022400**	125	109	40	–	89	50	8.0	8	1.8	8000	No
2021355	**12391022600**	160	144	40	67	90	63	8.0	9	1.3	7000	No







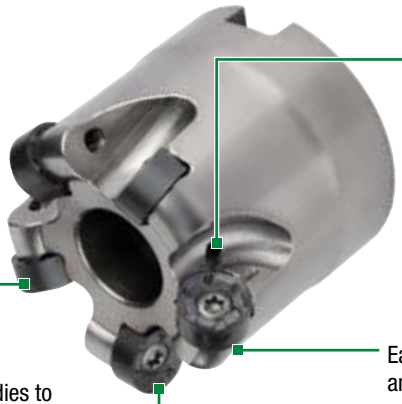
order number	catalogue number	grade	D (mm)	S (mm)	hm (mm)
RCMT-43					
2067140	**RCMT1606M043M**	**TN7535**	16,00	6,35	0,20
2020771	**RCMT1606M043M**	**TN7525**	16,00	6,35	0,20
2957537	**RCMT1606M043M**	**TN6540**	16,00	6,35	0,20
RCMT-TX					
2012416	**RCMT1606M0TX**	**TN2510**	16,00	6,35	0,24
2012418	**RCMT1606M0TX**	**TN7525**	16,00	6,35	0,24
2020781	**RCMT1606M0TX**	**TN7535**	16,00	6,35	0,24
2957427	**RCMT1606M0TX**	**TN6540**	16,00	6,35	0,24
2957535	**RCMT1606M0TX**	**TN6525**	16,00	6,35	0,24
5427442	**RCMT1606M0TX**	**WK15CM**	16,00	6,35	0,24

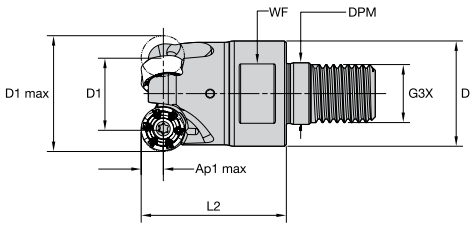
M200™ Series

Double-Sided Round Insert

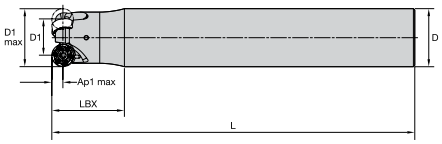
Revolutionary double-sided round insert, capable of running in multiple types of milling operations and workpiece materials, increases customers' productivity with the most efficient cost per edge.

- Up to 12 cutting edges per insert.
- Effective anti-rotation feature.
- Able to apply in all type of materials and milling applications.
- Latest WIDIA™ Victory™ grades offered.

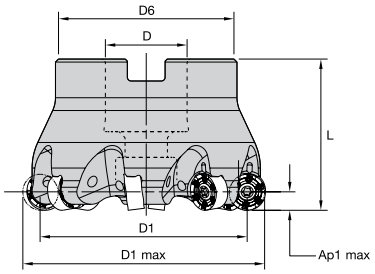




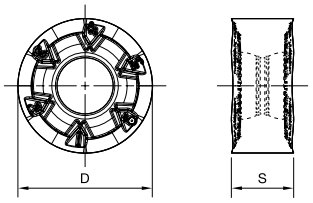
order number	catalogue number	D1 max (mm)	D1 (mm)	D (mm)	DPM (mm)	G3X	L2 (mm)	WF (mm)	Ap1 max (mm)	Z	max ramp angle	max RPM	coolant supply
M200 Series • IC12 • Screw-On End Mills													
4147560	**M200D32Z03M16RN12**	32	20	29	17,0	M16	40	24	3,0	3	0.5	39160	Yes
4147561	**M200D35Z03M16RN12**	35	23	29	17,0	M16	40	24	3,0	3	0.4	37440	Yes



order number	catalogue number	D1 max (mm)	D1 (mm)	D (mm)	L (mm)	LBX	Ap1 max (mm)	Z	max ramp angle	max RPM	coolant supply
M200 Series • Cylindrical End Mills											
4147566	**M200D32Z03A32RN12L200**	32	20	32	200	40	3,0	3	0.5	39160	Yes



order number	catalogue number	D1 max (mm)	D1 (mm)	D (mm)	D6 (mm)	L (mm)	Ap1 max (mm)	Z	max ramp angle	max RPM	coolant supply
M200 Series • Shell Mills											
4147568	**M200D40Z04RN12**	40	28	16	38	40	3,0	4	0.4	35020	Yes
4147569	**M200D50Z04RN12**	50	38	22	42	40	3,0	4	0.5	31330	Yes
4147570	**M200D50Z05RN12**	50	38	22	42	40	3,0	5	0.3	31330	Yes
4147571	**M200D52Z05RN12**	52	40	22	49	50	3,0	5	0.5	30720	Yes
4147572	**M200D63Z05RN12**	63	51	22	49	50	3,0	5	0.5	27910	Yes
4147573	**M200D63Z07RN12**	63	51	22	49	50	3,0	7	0.3	27910	Yes
4147574	**M200D66Z07RN12**	66	54	27	60	50	3,0	7	0.3	27260	Yes
4147575	**M200D80Z06RN12**	80	68	27	60	50	3,0	6	0.5	24760	Yes
4147576	**M200D80Z08RN12**	80	68	27	60	50	3,0	8	0.2	24760	Yes
4147577	**M200D100Z07RN12**	100	88	32	78	50	3,0	7	0.2	22150	Yes
4147578	**M200D100Z09RN12**	100	88	32	78	50	3,0	9	0.2	22150	Yes



order number	catalogue number	grade	number of indexes	D (mm)	S (mm)	hm (mm)
RNGJ-ALP						
6065661	**RNGJ1204M0FALP**	**WN25PM**	12	12,00	4,75	0,02
RNGJ-ML						
5123863	**RNGJ1204M0EML**	**WP25PM**	12	12,00	4,75	0,04
5520350	**RNGJ1204M0EML**	**WS30PM**	12	12,00	4,75	0,04
6408153	**RNGJ1204M0EML**	**WS40PM**	12	12,00	4,75	0,04
5123864	**RNGJ1204M0EML**	**WU35PM**	12	12,00	4,75	0,04
RNGJ-MM						
5123867	**RNGJ1204M0SMM**	**WP25PM**	12	12,00	4,75	0,09
5123869	**RNGJ1204M0SMM**	**WP35CM**	12	12,00	4,75	0,09
5520351	**RNGJ1204M0SMM**	**WS30PM**	12	12,00	4,75	0,09
5123868	**RNGJ1204M0SMM**	**WU35PM**	12	12,00	4,75	0,09
RNGJ-MH						
5123900	**RNGJ1204M0SMH**	**WK15PM**	12	12,00	4,75	0,19
5123901	**RNGJ1204M0SMH**	**WP25PM**	12	12,00	4,75	0,19
5123903	**RNGJ1204M0SMH**	**WP35CM**	12	12,00	4,75	0,19
6408154	**RNGJ1204M0SMH**	**WS40PM**	12	12,00	4,75	0,19
5123902	**RNGJ1204M0SMH**	**WU35PM**	12	12,00	4,75	0,19
RNPJ-MM						
5276361	**RNPJ1204M0SMM**	**WP25PM**	12	12,00	4,75	0,09
5276360	**RNPJ1204M0SMM**	**WP35CM**	12	12,00	4,75	0,09
5542329	**RNPJ1204M0SMM**	**WP40PM**	12	12,00	4,75	0,09
5476634	**RNPJ1204M0SMM**	**WU35PM**	12	12,00	4,75	0,09
6344113	**RNPJ1204M0SMM**	**WS40PM**	12	12,00	4,75	0,09
RNPJ-MH						
5276366	**RNPJ1204M0SMH**	**WK15CM**	12	12,00	4,75	0,18
5276364	**RNPJ1204M0SMH**	**WP25PM**	12	12,00	4,75	0,18
5276363	**RNPJ1204M0SMH**	**WP35CM**	12	12,00	4,75	0,18
5542340	**RNPJ1204M0SMH**	**WP40PM**	12	12,00	4,75	0,18
5476635	**RNPJ1204M0SMH**	**WU35PM**	12	12,00	4,75	0,18

WIDIA™ Victory™

NEW!

WS40PM

Breakthrough in the latest substrate and coating technology to boost productivity in **stainless steels and high-temp alloys**

Advanced Milling Grade for Titanium

Multilayer PVD AlTiN-TiN Coating

- Improved chemical and abrasive wear resistance.
- Consistent tool life performance.
- Primarily for wet machining. Also great results in dry machining.

New Medium-Grained Substrate

- Minimises tendency for thermal cracking.
- Excellent fatigue resistance and edge strength.
- Rich in cobalt content for improved toughness.

widia.com

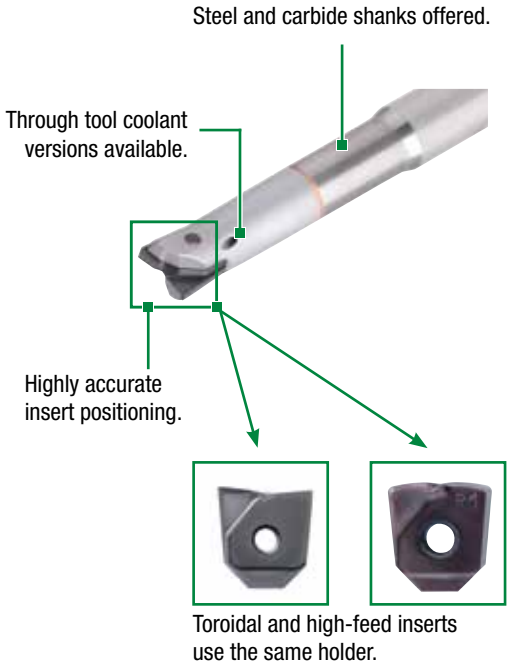
WIDIA™

M270™ Series

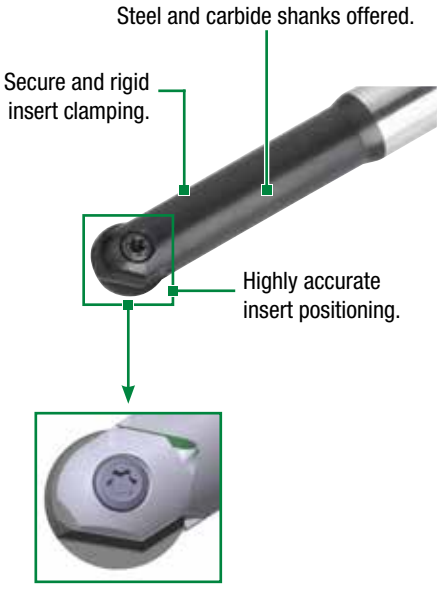
For Secure and Rigid Insert Clamping

With precision-engineered ball nose, toroidal, and new high-feed inserts, the M270 Series provides the highest accuracy and insert stability for exceptional reliability and performance.

- Ball nose and toroidal tools for semi-finishing through finishing.
- Performance-boosting High-Feed (HF) inserts offered standard.
- V-shaped contact faces enable maximum stability and accuracy.

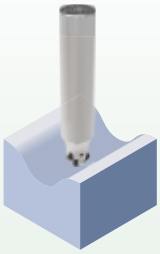


Toroidal and high-feed inserts use the same holder.



Two contact faces in V-shape provide more insert rigidity and accuracy.

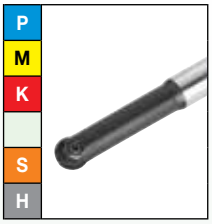
Copy Mills



M270™ Ball Nose

Max depth of cut: 5–16mm

Diameter: 10–32mm



M270 Toroidal

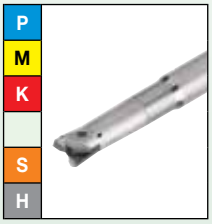
Max depth of cut: 0,3–4mm

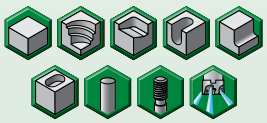
Diameter: 10–20mm

M270 High Feed

Max depth of cut: 0,6–1,1mm

Diameter: 10–20mm





Insert Offering

Ball nose inserts
BF/BR

Toroidal inserts
TF

High-Feed inserts
HF

VXF™

Victory™ X-feed™ • Next Level of High-Feed Milling

VXF is a high-feed productivity booster designed to establish new industry standards with market-leading milling grades like WS40PM.

VXF™-07 and VXF™-12 Series

VXF-07: Ap1 max: 0,9mm
VXF-07: fz max: 2,0 mm/z

VXF-12: Ap1 max: 2,5mm
VXF-12: fz max: 2,0 mm/z

16.5° lead angle redistributes cutting forces in the spindle z-axis direction.

Feed rates up to 2,0 mm/z significantly reduce machining cycle times.

Optimised cutter body and chip gash design perfectly serves high-feed requirements.

PSTS inserts for powerful low cost per edge high-feed milling.

Cutters with internal coolant supply.

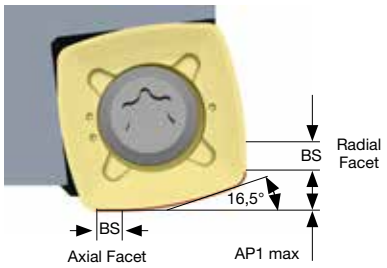
Nickel-plated surface protection.

VXF™-07 and VXF™-12

4-Edged, Victory™ X-Feed™ Mills

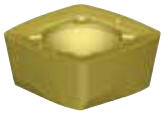
- 16.5° lead angle redistributes cutting forces in the spindle z-axis direction.
- Greatly reduces tool deflection and vibrations for improved tool life.
- Suitable for long tool reach.
- Unique integrated radial wiping facet to achieve a nice wall finish at pocket and helical interpolation milling.
- Durable cutting edges qualified to machine a wide range of materials.
- WS40PM — best-in-class milling grade for machining stainless steel and HTA.

Perfect combination of round and square insert style.



Specifically engineered chipbreakers for powerful high-feed milling.

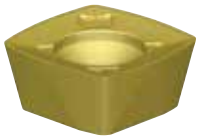
-MM
VXF-07



P M S

First choice for Soft Steel, Stainless Steel, and High-Temp Alloys. Best fit for pocketing and profiling operations.

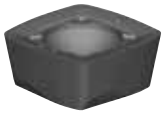
-MM
VXF-12



P M S

First choice for Soft Steel, Stainless Steel, and High-Temp Alloys. Best fit for pocketing and profiling operations.

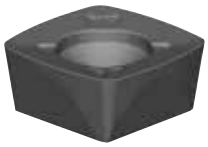
-MH
VXF-07



P H

First choice for P3 and P4 materials. Stronger edge protection for heavy roughing jobs and hardened steel up to 48HRc.

-MH
VXF-12



P

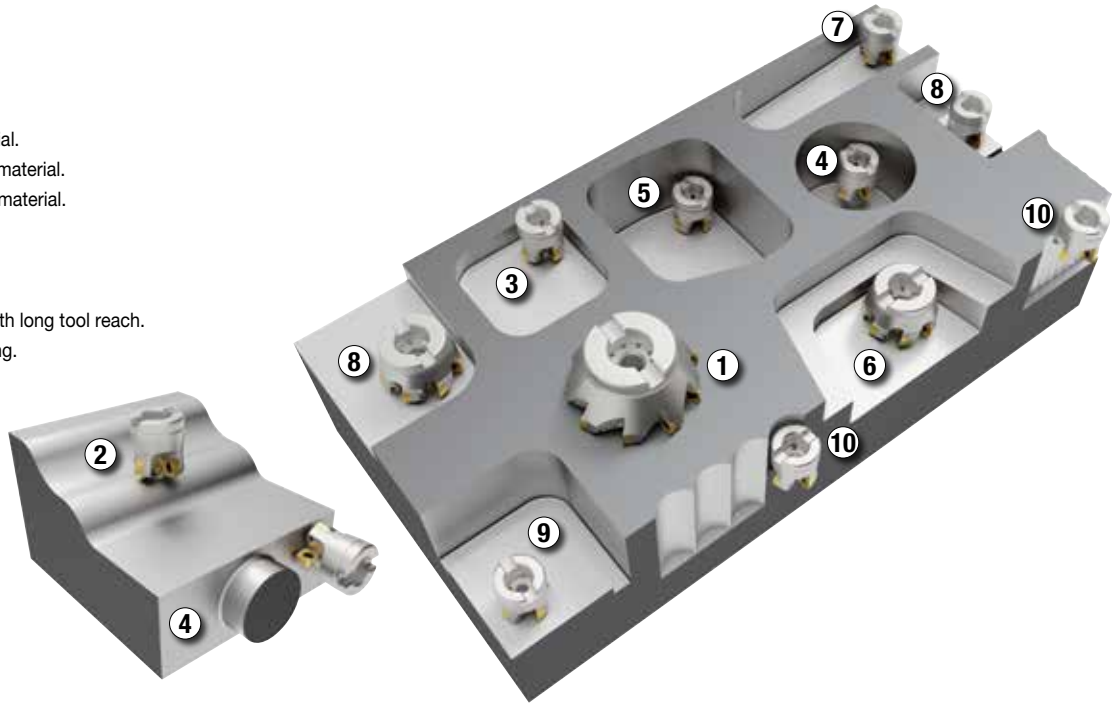
First choice for P3 and P4 materials. Stronger edge protection for heavy roughing jobs.

Lower Cutting Forces

Geometry Strengthening/Stronger Cutting Edge Protection

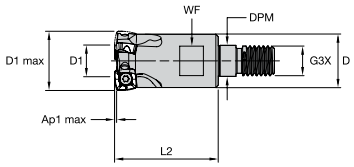
Applications

1. Face milling.
2. 3D profile milling.
3. Pocket milling into full material.
4. Helical interpolation into full material.
5. Deep pocket milling into full material.
6. Dynamic/trochoidal milling.
7. Aggressive ramp milling.
8. Contour Milling.
9. Face milling deep cavities with long tool reach.
10. Z-axis contour plunge milling.



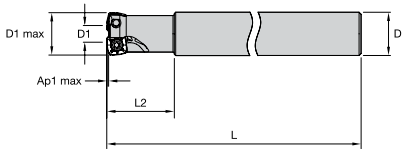
VXF™-07 and VXF™-12

Victory™ High-Feed Mills • VXF™-07 Series



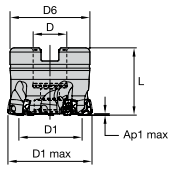
Screw-On End Mills

order number	catalogue number	D1 max	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
6597130	VXF016Z02M08XP07	16	7	13	8,5	M8	25	11	0,9	2	5.9°	65000	Yes	0,03
6597151	VXF020Z03M10XP07	20	11	18	10,5	M10	35	15	0,9	3	3.4°	57000	Yes	0,07
6597152	VXF025Z04M12XP07	25	16	21	12,5	M12	35	18	0,9	4	2.2°	49000	Yes	0,09
6597153	VXF032Z05M16XP07	32	23	29	17,0	M16	43	24	0,9	5	1.4°	41500	Yes	0,22



Cylindrical End Mills

order number	catalogue number	D1 max	D1	D	L	L2	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
6597154	VXF016Z02A16XP07L180	16	7	16	180	25	0,9	2	5.9°	65000	Yes	0,24
6597155	VXF018Z02A18XP07L180	18	9	18	180	25	0,9	2	5.4°	61000	Yes	0,31
6597156	VXF020Z03A20XP07L190	20	11	20	190	32	0,9	3	3.4°	57000	Yes	0,41
6597157	VXF025Z04A25XP07L200	25	16	25	200	40	0,9	4	2.2°	49000	Yes	0,69



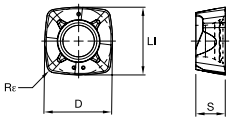
Shell Mills

order number	catalogue number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
6597158	VXF040Z05S16XP07	40	31	16	38	32	0,9	5	1.0°	35000	Yes	0,19
6597159	VXF050Z07S22XP07	50	41	22	42	40	0,9	7	.7°	31300	Yes	0,33

Spare Parts

D1 max	insert screw	Nm	wrench
16 - 50	12148067200	1,7	12148086600

NOTE: Please order wrench separately.

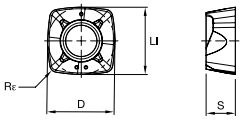


● first choice
○ alternate choice

P	●	●	○			
M	●	●	●			
K	○			●		
N						
S	●	○	●			
H				●		

▼ XPPT-MM • Best Fit for Pocketing and Profiling Operations

ISO catalogue number	cutting edges	LI	S	D	Rε	WP25PM	WP40PM	WS40PM	WU10PM
XPPT070308ERMM	4	7,30	3,17	7,30	0,80	6595819	–	6595820	–



▼ XPPW-MH • Dedicated Geometry for Heavy Roughing

ISO catalogue number	cutting edges	LI	S	D	Rε	WP25PM	WP40PM	WS40PM	WU10PM
XPPW070310SRMH	4	7,30	3,17	7,30	1,00	–	6595770	–	6595769

▼ Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	XPPT-MM	WP25PM	**XPPT-MM**	**WS40PM**	XPPW-MH	WP40PM
P3–P4	XPPT-MM	WP25PM	**XPPT-MM**	**WS40PM**	XPPW-MH	WP40PM
P5–P6	XPPT-MM	WP25PM	**XPPT-MM**	**WS40PM**	XPPW-MH	WP40PM
M1–M2	XPPT-MM	WS40PM	**XPPT-MM**	**WS40PM**	XPPW-MH	WP40PM
M3	XPPT-MM	WS40PM	**XPPT-MM**	**WS40PM**	XPPW-MH	WP40PM
K1–K2	XPPW-MH	WU10PM	**XPPW-MH**	**WU10PM**	XPPW-MH	WU10PM
K3	XPPW-MH	WU10PM	**XPPW-MH**	**WU10PM**	XPPW-MH	WU10PM
S1–S2	XPPT-MM	WP25PM	**XPPT-MM**	**WS40PM**	–	–
S3	XPPT-MM	WS40PM	**XPPT-MM**	**WS40PM**	–	–
S4	XPPT-MM	WS40PM	**XPPT-MM**	**WS40PM**	–	–
H1	XPPW-MH	WU10PM	**XPPW-MH**	**WU10PM**	–	–

VXF™-07

Victory™ High-Feed Mills • VXF-07 Series

▼ Recommended Starting Speeds [m/min]*

Material Group		WP25PM			WP40PM			WS40PM			WU10PM		
P	1	395	**340**	325	355	**310**	295	–	**–**	–	–	**–**	–
	2	330	**290**	240	300	**260**	215	–	**–**	–	–	**–**	–
	3	305	**260**	210	275	**235**	190	–	**–**	–	–	**–**	–
	4	270	**220**	180	245	**205**	160	–	**–**	–	–	**–**	–
	5	220	**205**	180	205	**185**	160	205	**175**	145	–	**–**	–
	6	200	**150**	120	180	**140**	110	180	**130**	95	–	**–**	–
M	1	245	**215**	200	235	**205**	185	250	**205**	170	–	**–**	–
	2	220	**190**	155	210	**180**	150	215	**175**	145	–	**–**	–
	3	170	**145**	115	155	**140**	110	175	**130**	100	–	**–**	–
K	1	275	**245**	220	–	**–**	–	–	**–**	–	355	**320**	290
	2	215	**190**	180	–	**–**	–	–	**–**	–	275	**245**	230
	3	180	**160**	145	–	**–**	–	–	**–**	–	235	**210**	190
S	1	50	**40**	30	50	**40**	35	50	**40**	30	–	**–**	–
	2	50	**40**	30	50	**40**	35	50	**40**	30	–	**–**	–
	3	60	**50**	30	60	**50**	35	60	**50**	30	–	**–**	–
	4	85	**60**	40	80	**60**	40	70	**60**	35	–	**–**	–
H	1	145	**110**	85	–	**–**	–	–	**–**	–	190	**155**	110

*NOTE: FIRST choice starting speeds are in **bold** type. As the average chip thickness increases, the speed should be decreased.*
**Material groups P, M, K, and H show recommended starting speeds for dry machining. For wet machining, reduce speed by 20%.*
**Material groups N and S show recommended starting speeds for wet machining. Not recommended for dry machining.*

▼ Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

At 0,60 Axial Depth of Cut (AP1)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..MM	0,46	**1,32**	2,43	0,32	**0,89**	1,53	0,24	**0,65**	1,09	0,21	**0,56**	0,94	0,19	**0,52**	0,85	.E..MM
.S..MH	0,84	**1,84**	3,12	0,59	**1,21**	1,85	0,43	**0,87**	1,30	0,38	**0,75**	1,12	0,34	**0,69**	1,02	.S..MH

At 0,70 Axial Depth of Cut (AP1)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..MM	0,42	**1,21**	2,20	0,30	**0,83**	1,41	0,22	**0,60**	1,01	0,19	**0,52**	0,87	0,18	**0,48**	0,79	.E..MM
.S..MH	0,78	**1,68**	2,79	0,55	**1,12**	1,71	0,40	**0,81**	1,21	0,35	**0,70**	1,04	0,32	**0,64**	0,94	.S..MH

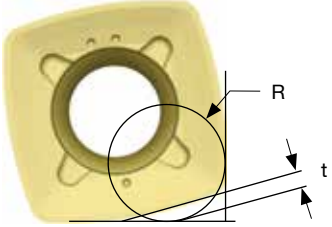
At 0,90 Axial Depth of Cut (AP1)

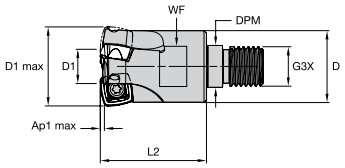
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..MM	0,37	**1,06**	1,89	0,27	**0,73**	1,24	0,20	**0,53**	0,89	0,17	**0,46**	0,77	0,16	**0,42**	0,70	.E..MM
.S..MH	0,68	**1,46**	2,35	0,48	**0,98**	1,49	0,36	**0,71**	1,07	0,31	**0,62**	0,92	0,28	**0,56**	0,84	.S..MH

NOTE: Use "Light Machining" values as starting feed rate.

▼ CAM Programming

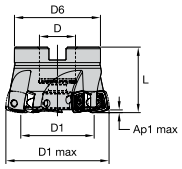
Programming Data			
insert size	insert radius	R (to be programmed)	t
07	0,8	1,4	0,4
	1,0	1,5	0,4





Screw-On End Mills

order number	catalogue number	D1 max	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
6596723	**VXF032Z03M16XD12**	32	14	29	17,0	M16	43	24	2,5	3	1.8°	31500	Yes	0,19



Shell Mills

order number	catalogue number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
6596725	**VXF040Z04S22XD12**	40	22	22	38	40	2,5	4	1.4°	26500	Yes	0,18
6596727	**VXF042Z04S22XD12**	42	24	22	38	40	2,5	4	1.3°	25500	Yes	0,20
6596728	**VXF050Z04S22XD12**	50	32	22	48	40	2,5	4	.9°	22500	Yes	0,31
6596729	**VXF052Z05S22XD12**	52	34	22	48	40	2,5	5	.8°	22000	Yes	0,32
6596730	**VXF063Z05S22XD12**	63	45	22	53	40	2,5	5	.6°	19500	Yes	0,47
6596732	**VXF066Z06S27XD12**	66	48	27	53	45	2,5	6	.5°	19000	Yes	0,56
6596733	**VXF080Z06S27XD12**	80	62	27	55	50	2,5	6	.5°	17000	Yes	0,89
6596734	**VXF100Z07S32XD12**	100	82	32	65	50	2,5	7	.3°	15000	Yes	1,38

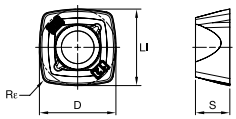
Spare Parts

D1 max	insert screw	Nm	wrench
32 - 100	**12148007200**	3,8	**12148099400**

NOTE: Please order wrench separately.

VXF™-12

Victory™ High-Feed Mills • VXF™-12 Series

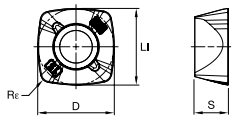


● first choice
○ alternate choice

P	●	●	○	
M	●	●	●	
K	○			
N				
S	●	○	●	
H				

▼ XDPT-MM • Best Fit for Pocketing and Profiling Operations

ISO catalogue number	cutting edges	LI	S	D	Rε	WP25PM	WP40PM	WS40PM
XDPT120512ERMM	4	12,70	5,56	12,70	1,20	6596438	-	6596439



▼ XDPT-MH • Dedicated Geometry for Heavy Roughing

ISO catalogue number	cutting edges	LI	S	D	Rε	WP25PM	WP40PM	WS40PM
XDPT120515SRMH	4	12,70	5,56	12,70	1,50	-	6596440	-

▼ Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	XDPT-MM	WP25PM	**XDPT-MM**	**WS40PM**	XDPT-MH	WP40PM
P3–P4	XDPT-MM	WP25PM	**XDPT-MM**	**WS40PM**	XDPT-MH	WP40PM
P5–P6	XDPT-MM	WP25PM	**XDPT-MM**	**WS40PM**	XDPT-MH	WP40PM
M1–M2	XDPT-MM	WS40PM	**XDPT-MM**	**WS40PM**	XDPT-MH	WP40PM
M3	XDPT-MM	WS40PM	**XDPT-MM**	**WS40PM**	XDPT-MH	WP40PM
S1–S2	XDPT-MM	WP25PM	**XDPT-MM**	**WS40PM**	XDPT-MH	WP40PM
S3	XDPT-MM	WS40PM	**XDPT-MM**	**WS40PM**	XDPT-MH	WP40PM
S4	XDPT-MM	WS40PM	**XDPT-MM**	**WS40PM**	XDPT-MH	WP40PM

▼ Recommended Starting Speeds [m/min]*

Material Group		WP25PM			WP40PM			WS40PM		
P	1	395	**340**	325	355	**310**	295	–	**–**	–
	2	330	**290**	240	300	**260**	215	–	**–**	–
	3	305	**260**	210	275	**235**	190	–	**–**	–
	4	270	**220**	180	245	**205**	160	–	**–**	–
	5	220	**205**	180	205	**185**	160	205	**175**	145
	6	200	**150**	120	180	**140**	110	180	**130**	95
M	1	245	**215**	200	235	**205**	185	250	**205**	170
	2	220	**190**	155	210	**180**	150	215	**175**	145
	3	170	**145**	115	155	**140**	110	175	**130**	100
S	1	50	**40**	30	50	**40**	35	50	**40**	30
	2	50	**40**	30	50	**40**	35	50	**40**	30
	3	60	**50**	30	60	**50**	35	60	**50**	30
	4	85	**60**	40	80	**60**	40	70	**60**	35

*NOTE: FIRST choice starting speeds are in **bold** type. As the average chip thickness increases, the speed should be decreased.*
**Material groups P, M, K, and H show recommended starting speeds for dry machining. For wet machining, reduce speed by 20%.*
**Material groups N and S show recommended starting speeds for wet machining. Not recommended for dry machining.*

▼ Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

At 1,30 Axial Depth of Cut (AP1)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..MM	0,49	**1,59**	2,52	0,35	**1,13**	1,78	0,26	**0,84**	1,31	0,23	**0,73**	1,14	0,21	**0,67**	1,04	.E..MM
.S..MH	0,70	**1,80**	2,76	0,51	**1,28**	1,94	0,38	**0,95**	1,44	0,33	**0,83**	1,25	0,30	**0,76**	1,14	.S..MH

At 1,70 Axial Depth of Cut (AP1)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..MM	0,43	**1,39**	2,20	0,31	**0,99**	1,56	0,23	**0,74**	1,15	0,20	**0,64**	1,00	0,19	**0,59**	0,92	.E..MM
.S..MH	0,62	**1,57**	2,41	0,45	**1,12**	1,70	0,33	**0,84**	1,26	0,29	**0,73**	1,10	0,27	**0,67**	1,00	.S..MH

At 2,50 Axial Depth of Cut (AP1)

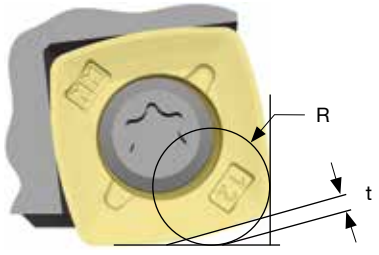
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..MM	0,36	**1,15**	1,81	0,26	**0,83**	1,29	0,19	**0,62**	0,96	0,17	**0,54**	0,83	0,15	**0,49**	0,76	.E..MM
.S..MH	0,51	**1,30**	1,99	0,37	**0,93**	1,41	0,28	**0,70**	1,05	0,24	**0,61**	0,91	0,22	**0,55**	0,83	.S..MH

NOTE: Use "Light Machining" values as starting feed rate.

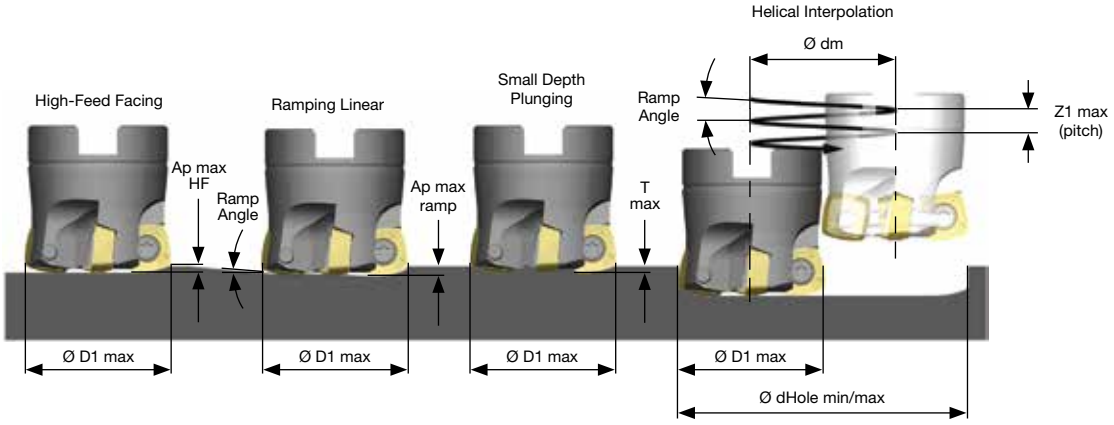
▼ CAM Programming

Programming Data

insert size	insert radius	R (to be programmed)	t
12	1,2	2,7	0,97
	1,5	2,8	0,95

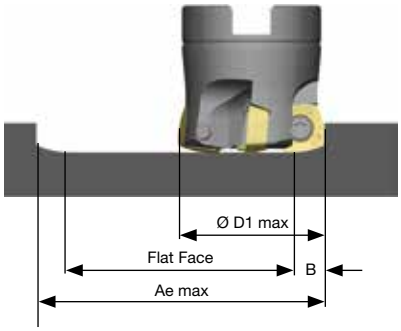


Best Practices



	D1 max	High-Feed Facing: Ap max HF	Ramping Linear: Ramp Angle max	Ramping Linear: Ap max Ramp	Helical Interpolation: Ramp Angle max	Helical Interpolation: d Hole min	Helical Interpolation: d Hole max	Helical Interpolation: Z1 max Helical	Small Depth Plunging: T max
VXF-07	16	0,60	5,9	0,60	5,9	22,0	30,0	0,60	0,45
	18	0,60	5,4	0,60	5,4	24,0	32,0	0,60	0,45
	20	0,60	3,4	0,60	3,4	30,0	38,0	0,60	0,30
	25	0,60	2,2	0,60	2,2	40,0	48,0	0,60	0,30
	32	0,60	1,4	0,60	1,4	54,0	62,0	0,60	0,30
	40	0,60	1,0	0,60	1,0	70,0	78,0	0,60	0,30
VXF-12	50	0,60	0,7	0,60	0,7	90,0	98,0	0,60	0,30
	32	1,30	1,8	1,80	1,8	42,0	62,0	1,80	0,80
	40	1,30	1,4	1,80	1,4	58,0	78,0	1,80	0,80
	42	1,30	1,3	1,80	1,3	62,0	82,0	1,80	0,80
	50	1,30	0,9	1,80	0,9	78,0	98,0	1,80	0,80
	52	1,30	0,8	1,80	0,8	82,0	102,0	1,80	0,80
	63	1,30	0,6	1,80	0,6	104,0	124,0	1,80	0,80
	66	1,30	0,5	1,80	0,5	110,0	130,0	1,80	0,80
	80	1,30	0,5	1,80	0,5	138,0	158,0	1,80	0,80
	100	1,30	0,3	1,80	0,3	178,0	198,0	1,80	0,80

Ødm = ØHole–ØD1 max
Z1 = Ødm x 3,14 x tan ramp angle. Z1 ≤ Z1 max and ≤ ramp angle max
Ramp angle = arc tan x ((Z1)/Ødm x 3,14))



	D1 max	B
VXF-07	16–50	4,20
VXF-12	32–100	9,10

Ae max ≤ 2 x ØD1 max–2 x B
Flat Face = Ae max–2 x B

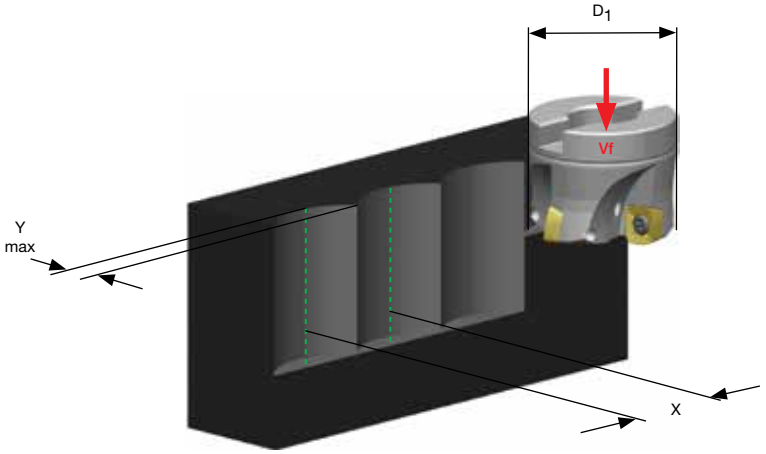
▼ Z-Axis Plunge Milling

VXF-07

cutting diameter (D1)	Y max	X
16	3,0	12,49
18	3,0	13,41
20	3,0	14,28
25	3,0	16.24
32	3,0	18.65
40	3,0	21.07
50	3,0	23.74

VXF-12

cutting diameter (D1)	Y max	X
32	9,0	28,77
40	9,0	33,40
42	9,0	34,46
50	9,0	38,41
52	9,0	39,34
63	9,0	44,09
66	9,0	45,29
80	9,0	50,55
100	9,0	57,23



▼ Feed Rate Guide • Z-Axis Plunge Milling • fz (mm/tooth)

Light Machining	General Purpose	Heavy Machining

	Insert Geometry	Recommended Starting Feed per Tooth (Fz)			Insert Geometry	Y max
VXF-07	.E..MM	0,06	**0,15**	–	.E..MM	3,0
	.S..MH	0,10	**0,20**	–	.S..MH	3,0
VXF-12	.E..MM	0,07	**0,20**	0,30	.E..MM	9,0
	.S..MH	0,10	**0,25**	0,35	.S..MH	9,0

VSM

The Most Versatile 90° Shoulder Mill Platform in the WIDIA™ Portfolio.

2-Edged, 90° Victory™ Shoulder Mill (VSM)

High-performance, robust, highly positive, 90° shoulder milling platform with advanced ramping capability.

Delivers low horsepower consumption, versatility, and soft cutting action.

Latest WIDIA™ Victory grades, 4 geometries, and a well-rounded steel body portfolio covers multiple material types and applications from light, precise machining to medium roughing.

VSM11™

Ap Capabilities: Up to 11mm

Screw-On End Mills: 16–40mm

Weldon® End Mills: 12–32mm

Cylindrical End Mills: 12–32mm

Shell Mills: 40–125mm

M4000 Cartridge Milling System: 125–315mm

VSM17™

Ap Capabilities: Up to 16,4mm

Screw-On End Mills: 25–40mm

Weldon End Mills: 25–40mm

Cylindrical End Mills: 25–40mm

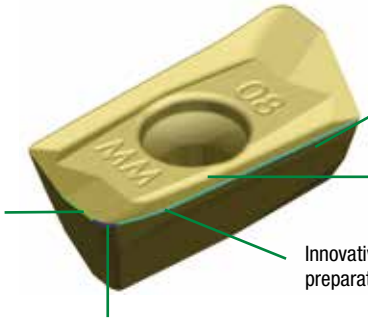
Shell Mills: 40–160mm

M4000 Cartridge Milling System: 125–315mm

VSM11™

2 Edged, 90° Victory™ Shoulder Mill (VSM)

- True 90° shoulder milling platform; up to Ap1 max = 11mm.
- Aggressive ramping capability up to 10° with end mills with a diameter of 16mm.
- Optimised chip gash for improved cutter stability and chip flow.
- Well-guided internal coolant supply to the cutting edge.
- Best-in-class milling grade WS40PM boosts productivity when machining stainless steel and high-temp alloys.



Additional margin on the clearance face to strengthen the cutting edge.

Super-positive rake design for soft cutting action and low machine power consumption.

Embedded wiper facet for great surface floor finish.

Innovative cutting edge preparation to improve tool life.

Multiple corner nose radii R0.2 to R3.1 available; includes uses for aerospace applications.

See me in action!

Geometries for all material groups in shoulder milling applications.

-ALP

N

Roughing and finishing of aluminium alloys.
High precision.
Periphery ground.

-PCD

N

Roughing and finishing of aluminium alloys.
Abrasive non-ferrous materials.
High precision.
Periphery ground.

-ML

P M S H

Light machining and finishing.
First choice for stainless steel and titanium.
Periphery ground.

-MM

P M K S H

Medium machining.
First choice for general purpose.
Precision pressed to size.

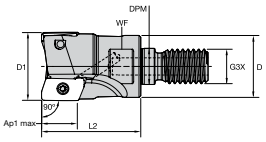
-MH

P M K S

First choice for heavy-duty machining.
Steel and cast iron materials.
Precision pressed to size.

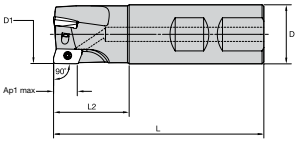
Finishing Capabilities/Lower Cutting Forces

Geometry Strengthening



▼ Screw-On End Mills

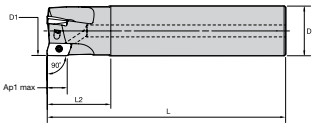
order number	catalogue number	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
5417011	VSM11D016Z02M08XD11	16	13	8,5	M8	25	10	11,5	2	10.0°	41400	Yes	0,02
5417013	VSM11D020Z03M10XD11	20	18	10,5	M10	28	15	11,6	3	7.8°	35100	Yes	0,05
5417015	VSM11D025Z04M12XD11	25	21	12,5	M12	32	17	11,5	4	5.3°	30200	Yes	0,08
5417017	VSM11D032Z04M16XD11	32	29	17,0	M16	40	24	11,4	4	3.6°	25800	Yes	0,18
5417019	VSM11D040Z06M16XD11	40	29	17,0	M16	40	24	11,4	6	2.6°	22600	Yes	0,24



▼ Weldon® End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
5416454	VSM11D012Z01B16XD11	12	16	70	21	11,7	1	3.7°	53100	Yes	0,08
5416455	VSM11D016Z02B16XD11	16	16	70	21	11,5	2	10.0°	41400	Yes	0,09
5416457	VSM11D020Z02B20XD11	20	20	81	30	11,6	2	7.8°	35100	Yes	0,15
5416458	VSM11D020Z03B20XD11	20	20	81	30	11,6	3	7.8°	35100	Yes	0,16
5416459	VSM11D025Z03B25XD11	25	25	88	31	11,5	3	5.3°	30200	Yes	0,27
5416480	VSM11D025Z04B25XD11	25	25	88	31	11,5	4	5.3°	30200	Yes	0,28
5416481	VSM11D030Z04B25XD11	30	25	88	31	11,5	4	3.2°	26900	Yes	0,30
5416482	VSM11D032Z04B32XD11	32	32	100	39	11,4	4	3.6°	25800	Yes	0,51
5416483	VSM11D032Z05B32XD11	32	32	100	39	11,4	5	3.6°	25800	Yes	0,52

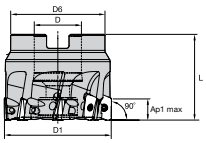
NOTE: Weldon type not recommended for finishing operations.



▼ Cylindrical End Mills (Regular and Long Version)

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
5416632	VSM11D012Z01A16XD11L100	12	16	100	25	11,7	1	3.7°	53100	Yes	0,13
5416633	VSM11D016Z02A16XD11L100	16	16	100	31	11,5	2	10.0°	41400	Yes	0,12
5416700	VSM11D016Z02A16XD11L170	16	16	170	25	11,5	2	10.0°	41400	Yes	0,23
5416701	VSM11D018Z02A16XD11L170	18	16	170	25	11,6	2	9.7°	37900	Yes	0,23
5416634	VSM11D020Z02A20XD11L110	20	20	110	31	11,6	2	7.8°	35100	Yes	0,22
5416702	VSM11D020Z02A20XD11L170	20	20	170	41	11,6	2	7.8°	35100	Yes	0,35
5416635	VSM11D020Z03A20XD11L110	20	20	110	31	11,6	3	7.8°	35100	Yes	0,23
5416703	VSM11D020Z03A20XD11L170	20	20	170	41	11,6	3	7.8°	35100	Yes	0,36
5416704	VSM11D022Z03A20XD11L170	22	20	170	30	11,5	3	6.6°	32900	Yes	0,37
5416636	VSM11D025Z03A25XD11L120	25	25	120	33	11,5	3	5.3°	30200	Yes	0,39
5416705	VSM11D025Z03A25XD11L210	25	25	210	50	11,5	3	5.3°	30200	Yes	0,70
5416637	VSM11D025Z04A25XD11L120	25	25	120	33	11,5	4	5.3°	30200	Yes	0,40
5416706	VSM11D025Z04A25XD11L210	25	25	210	50	11,5	4	5.3°	30200	Yes	0,72
5416638	VSM11D032Z03A32XD11L130	32	32	130	41	11,4	3	3.6°	25800	Yes	0,70
5416707	VSM11D032Z03A32XD11L250	32	32	250	65	11,4	3	3.6°	25800	Yes	1,39
5416639	VSM11D032Z05A32XD11L130	32	32	130	41	11,4	5	3.6°	25800	Yes	0,71

NOTE: Standard milling cutters will accept insert nose radii up to 1,6mm without modification.
For tool body modification instructions, see page 107.



▼ Shell Mills

order number	catalogue number	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
5416316	VSM11D040Z04S016XD11	40	16	37	40	11,4	4	2.6°	22600	Yes	0,22
5416317	VSM11D040Z06S016XD11	40	16	37	40	11,4	6	2.6°	22600	Yes	0,22
5416318	VSM11D050Z05S022XD11	50	22	44	40	11,3	5	1.9°	19900	Yes	0,33
5416319	VSM11D050Z08S022XD11	50	22	44	40	11,3	8	1.9°	19900	Yes	0,33
5416340	VSM11D063Z06S022XD11	63	22	44	40	11,3	6	1.5°	17500	Yes	0,50
5416341	VSM11D063Z09S022XD11	63	22	44	40	11,3	9	1.5°	17500	Yes	0,52
5416342	VSM11D080Z08S027XD11	80	27	60	50	11,3	8	1.1°	15300	Yes	1,14
5416345	VSM11D100Z09S032XD11	100	32	80	50	11,3	9	.9°	13600	Yes	1,79
5416347	VSM11D125Z011S040XD11	125	40	80	63	11,3	11	.7°	12100	Yes	3,01

▼ Spare Parts

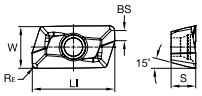
D1	insert screw	Nm	wrench
12 - 125	192.432	1,0	170.028

For M4000 cartridge milling system, please see page 115.

VSM11
M4000CA-XDPT11
(MM6152926)
P M K S

WIDIA VICTORY

Inserts for VSM11 Series



● first choice
○ alternate choice

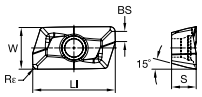
P							○	●	●		○	●				
M							●	○	●	●	●	●				
K			●	●			○	○								
N		●			●	●										
S							●		○	●	●	●				
H																

catalogue number	cutting edges	LI	BS	S	W	Rε	hm	WDN10U	WK15CM	WK15PM	WN10HM	WN25PM	WP25PM	WP35CM	WP40PM	WS30PM	NEW! WS40PM	WU35PM
XDCW110404PDFRPCD	1	13,43	2,10	4,00	6,90	0,40	0,02	5415420	-	-	-	-	-	-	-	-	-	-
XDCW110408PDFRPCD	1	13,44	1,70	4,00	6,90	0,80	0,02	5415421	-	-	-	-	-	-	-	-	-	-
XDCT110402PDFRALP	2	13,42	2,29	4,00	6,90	0,20	–	-	-	-	6407444	6407445	-	-	-	-	-	-
XDCT110404PDFRALP	2	13,43	2,09	4,00	6,90	0,40	0,02	-	-	-	5933940	5417054	-	-	-	-	-	-
XDCT110408PDFRALP	2	13,44	1,69	4,00	6,90	0,80	0,02	-	-	-	5936171	5417053	-	-	-	-	-	-
XDCT110412PDFRALP	2	13,44	1,29	4,00	6,90	1,20	0,02	-	-	-	6055634	6055635	-	-	-	-	-	-
XDCT110416PDFRALP	2	13,44	0,88	4,00	6,89	1,60	0,02	-	-	-	6055598	6055599	-	-	-	-	-	-
XDCT110420PDFRALP	2	13,44	0,49	4,00	6,89	2,00	–	-	-	-	6407446	6407447	-	-	-	-	-	-
XDCT110424PDFRALP	2	13,44	0,16	4,00	6,88	2,40	0,02	-	-	-	6055600	6055631	-	-	-	-	-	-
XDCT110432PDFRALP	2	12,86	–	4,00	6,89	3,20	0,02	-	-	-	6055632	6055633	-	-	-	-	-	-
XDCT110404PDERML	2	13,43	2,09	4,00	6,90	0,40	0,04	-	-	6242456	-	-	5536671	5536670	5642230	-	6180174	-
XDCT110408PDERML	2	13,44	1,69	4,00	6,90	0,80	0,04	-	5415549	6242457	-	-	5415548	5415547	5545065	5517826	6180173	5415546
XDCT110412PDERML	2	13,44	1,29	4,00	6,90	1,20	–	-	-	-	-	-	6408003	-	-	-	6408002	-
XDCT110416PDERML	2	13,44	0,88	4,00	6,89	1,60	0,04	-	-	-	-	-	5964861	-	5964810	-	6408004	-
XDCT110420PDERML	2	13,44	0,49	4,00	6,89	2,00	–	-	-	-	-	-	-	-	-	-	6408005	-
XDCT110424PDERML	2	13,44	0,16	4,00	6,88	2,40	–	-	-	-	-	-	-	-	-	-	6408006	-

(continued)

(Inserts for VSM11 Series — continued)

WIDIA VICTORY



● first choice
○ alternate choice

		WDN10U	WK15CM	WK15PM	WN10HM	WN25PM	WP25PM	WP35CM	WP40PM	WS30PM	WS40PM	WU35PM
P							○	●	●		○	●
M							●	○	●	●	●	●
K			●	●			○	○				
N		●			●	●						
S							●		○	●		●
H											NEW!	

▼ Inserts for VSM11 Series

catalogue number	cutting edges	LI	BS	S	W	Rε	hm	WDN10U	WK15CM	WK15PM	WN10HM	WN25PM	WP25PM	WP35CM	WP40PM	WS30PM	WS40PM	WU35PM
XDCT110432PDERML	2	12,86	–	4,00	6,89	3,20	–	-	-	-	-	-	-	-	-	-	6408007	-
XDPT110404PDSRMM	2	13,49	2,06	4,13	6,94	0,39	0,06	-	5415428	6242458	-	-	5642237	5415450	5642231	-	6180149	-
XDPT110408PDSRMM	2	13,50	1,66	4,13	6,94	0,78	0,06	-	5415315	6242459	-	-	5415319	5415318	5545063	5519921	6180148	5415317
XDPT110412PDSRMM	2	13,44	1,29	4,00	6,90	1,20	0,06	-	5415310	-	-	-	5415314	5415313	5642232	-	6180150	5415312
XDPT110416PDSRMM	2	13,51	0,85	4,13	6,95	1,60	0,06	-	5415250	-	-	-	5415254	5415253	5642233	-	6180172	-
XDPT110420PDSRMM	2	13,51	0,45	4,13	6,95	2,00	0,06	-	-	-	-	-	5980399	5980400	5980398	-	6408095	-
XDPT110424PDSRMM	2	13,37	–	4,01	6,94	2,40	0,06	-	-	-	-	-	5901355	-	5901354	-	6408096	-
XDPT110431PDSRMM	2	12,94	–	4,01	6,94	3,10	0,06	-	5415422	-	-	-	5415426	5415425	5642234	5517827	6279204	-
XDPT110408PDSRMH	2	13,44	1,68	4,00	6,90	0,79	0,13	-	5415255	-	-	-	-	5415257	5545064	-	6408098	5415256
XDPT110412PDSRMH	2	13,44	1,29	4,00	6,90	1,20	0,13	-	5415360	-	-	-	-	5415362	5642235	-	6408099	-
XDPT110416PDSRMH	2	13,44	0,90	4,00	6,90	1,59	0,13	-	5415364	-	-	-	-	5415366	5642236	-	6408100	-

NOTE: XDCT11: High-precision periphery ground inserts.
XDPT11: Precision-pressed and sintered-to-size inserts.

▼ Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	XDCT-ML	WP40PM	**XDPT-MM**	**WP40PM**	XDPT-MH	WP40PM
P3–P4	XDCT-ML	WP40PM	**XDPT-MM**	**WP40PM**	XDPT-MH	WP40PM
P5–P6	XDPT-MM	WP25PM	**XDPT-MM**	**WP35CM**	XDPT-MH	WP40PM
M1–M2	XDCT-ML	WS40PM	**XDPT-MM**	**WS40PM**	XDPT-MH	WS40PM
M3	XDCT-ML	WS40PM	**XDPT-MM**	**WS40PM**	XDPT-MH	WS40PM
K1–K2	XDCT-ML	WK15CM	**XDPT-MM**	**WK15CM**	XDPT-MH	WK15CM
K3	XDCT-ML	WP35CM	**XDPT-MM**	**WP35CM**	XDPT-MH	WP35CM
N1–N2	XDCT-ALP	WN10HM	**XDCT-ALP**	**WN25PM**	XDCT-ALP	WN25PM
N3	XDCW-PCD	WDN10U	**XDCW-PCD**	**WDN10U**	XDCW-PCD	WDN10U
S1–S2	XDCT-ML	WP25PM	**XDPT-MM**	**WS40PM**	XDPT-MH	WS40PM
S3	XDCT-ML	WS40PM	**XDPT-MM**	**WS40PM**	XDPT-MH	WS40PM
S4	XDCT-ML	WS40PM	**XDPT-MM**	**WS40PM**	XDPT-MH	WS40PM
H1	XDCT-ML	WP25PM	**XDPT-MM**	**WP25PM**	–	–

▼ Recommended Starting Speeds [m/min]*

Material Group		WDN10U			WK15CM			WK15PM			WN10HM			WN25PM			WP25PM		
P	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	330	**285**	270
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	275	**240**	200
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	255	**215**	175
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	225	**185**	150
	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	185	**170**	150
	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	165	**125**	100
M	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	205	**180**	165
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	185	**160**	130
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	140	**120**	95
K	1	–	–	–	420	**385**	340	270	**245**	215	–	–	–	–	–	–	230	**205**	185
	2	–	–	–	335	**295**	275	210	**190**	175	–	–	–	–	–	–	180	**160**	150
	3	–	–	–	280	**250**	230	175	**160**	145	–	–	–	–	–	–	150	**135**	120
N	1	4010	**3505**	2990	–	–	–	–	–	–	795	**695**	600	1075	**945**	875	–	–	–
	2	1600	**1495**	1400	–	–	–	–	–	–	795	**695**	600	945	**875**	760	–	–	–
	3	1600	**1495**	1400	–	–	–	–	–	–	560	**485**	420	945	**875**	760	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	40	**35**	25
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	40	**35**	25
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	50	**40**	25
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	70	**50**	35
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	120	**90**	70

Material Group		WP35CM			WP40PM			WS30PM			WS40PM			WU35PM		
P	1	455	**395**	370	295	**260**	245	–	–	–	–	–	–	260	**230**	215
	2	280	**255**	230	250	**215**	180	–	–	–	–	–	–	220	**190**	160
	3	255	**230**	205	230	**195**	160	–	–	–	–	–	–	200	**170**	140
	4	190	**175**	160	205	**170**	135	–	–	–	–	–	–	180	**150**	120
	5	260	**230**	210	170	**155**	135	–	–	–	170	**145**	120	150	**135**	120
	6	160	**135**	110	150	**115**	90	–	–	–	150	**110**	80	130	**100**	80
M	1	205	**185**	155	195	**170**	155	225	**200**	185	210	**170**	140	170	**150**	135
	2	185	**160**	140	175	**150**	125	205	**180**	145	180	**145**	120	155	**130**	110
	3	145	**130**	115	130	**115**	90	155	**135**	105	145	**110**	85	115	**100**	80
K	1	295	**265**	240	–	–	–	–	–	–	–	–	–	–	–	–
	2	235	**210**	190	–	–	–	–	–	–	–	–	–	–	–	–
	3	195	**175**	160	–	–	–	–	–	–	–	–	–	–	–	–
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	45	**40**	30	40	**35**	25	35	**30**	25
	2	–	–	–	–	–	–	45	**40**	30	40	**35**	25	35	**30**	25
	3	–	–	–	–	–	–	55	**45**	30	50	**40**	25	45	**35**	25
	4	–	–	–	–	–	–	70	**60**	40	60	**50**	30	60	**45**	30
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

*NOTE: FIRST choice starting speeds are in **bold** type. As the average chip thickness increases, the speed should be decreased.*
**Material groups P, M, K, and H show recommended starting speeds for dry machining. For wet machining, reduce speed by 20%.*
**Material groups N and S show recommended starting speeds for wet machining. Not recommended for dry machining.*

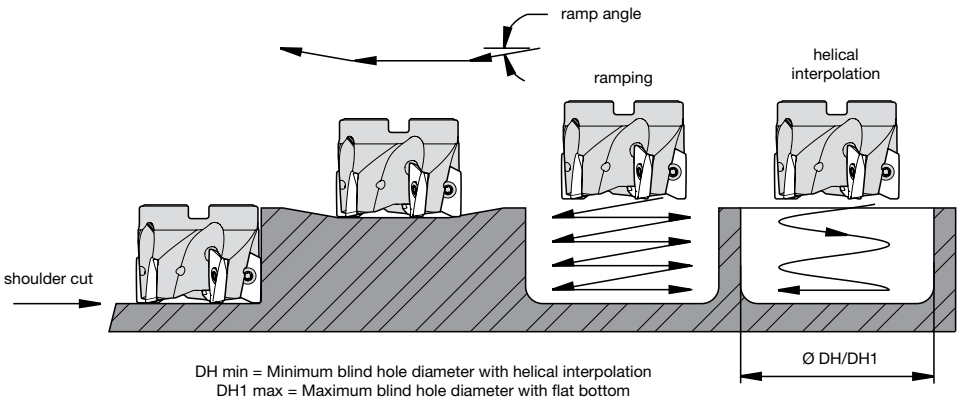
Light Machining	General Purpose	Heavy Machining

▼ Recommended Starting Feeds [mm]

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..PCD	0,12	**0,18**	0,29	0,08	**0,13**	0,21	0,06	**0,10**	0,16	0,06	**0,09**	0,14	0,05	**0,08**	0,12	.F..PCD
.F..ALP	0,12	**0,22**	0,31	0,08	**0,16**	0,23	0,06	**0,12**	0,17	0,06	**0,10**	0,15	0,05	**0,10**	0,14	.F..ALP
.E..ML	0,17	**0,27**	0,36	0,13	**0,20**	0,26	0,10	**0,15**	0,19	0,08	**0,13**	0,17	0,08	**0,12**	0,16	.E..ML
.S..MM	0,23	**0,32**	0,47	0,17	**0,23**	0,34	0,13	**0,17**	0,25	0,11	**0,15**	0,22	0,10	**0,14**	0,20	.S..MM
.S..MH	0,23	**0,37**	0,56	0,17	**0,27**	0,40	0,13	**0,20**	0,30	0,11	**0,17**	0,26	0,10	**0,16**	0,24	.S..MH

NOTE: Use "Light Machining" values as starting feed rate.

Best Practices

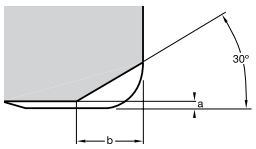


DH min = Minimum blind hole diameter with helical interpolation
DH1 max = Maximum blind hole diameter with flat bottom

cutting diameter (D1)	max RPM	max ramp angle to steel body interference	max flat-bottom hole diameter (DH1 max)	min hole diameter (DH min)
16	41400	10.00°	32,00	19,00
20	35100	7.80°	40,00	27,00
25	30200	5.30°	50,00	37,00
32	25800	3.60°	64,00	51,00
40	22600	2.60°	80,00	67,00
50	19900	2.00°	100,00	87,00
63	17500	2.00°	126,00	113,00
80	15300	1.00°	160,00	147,00
100	13600	0.90°	200,00	187,00
125	12100	0.70°	250,00	237,00

NOTE: For DH1 max, subtract the insert corner radius from the max hole diameter.

Modification Instructions for Use of Larger Radii Inserts *(Shoulder Mills and Helical Mills)*

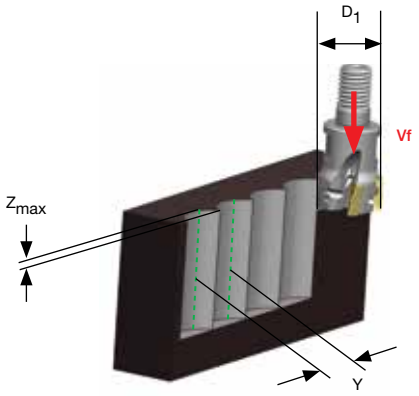


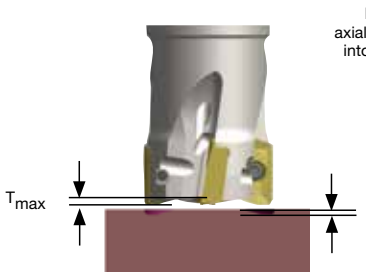
insert corner radius	material to remove a	b
2,0–3,2mm	0,2mm	1,8mm

NOTE: Standard milling cutters will accept insert nose radii up to 1,6mm without modification.

▼ VSM11 Z-Axis Plunging

cutting diameter (D1)	Z max	Y
16	6,4	15,68
18	6,4	17,23
20	6,4	18,66
22	6,4	19,98
25	6,4	21,82
32	6,4	25,60
40	6,4	29,33
50	6,4	33,41
63	6,4	38,07
80	6,4	43,41
100	6,4	48,95
125	6,4	55,10
160	6,4	62,71

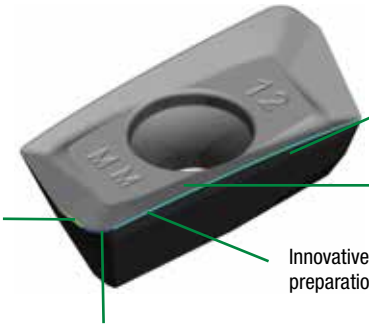




VSM17™

2 Edged, 90° Victory™ Shoulder Mill (VSM)

- True 90° shoulder milling platform; up to Ap1 max = 16mm.
- Aggressive ramping capability up to 8.8° with end mills with a diameter of 25mm.
- Optimised chip gash for improved cutter stability and chip flow.
- Well-guided internal coolant supply to the cutting edge.
- Best-in-class milling grade WS40PM boosts productivity when machining stainless steel and high-temp alloys.



Additional margin on the clearance face to strengthen the cutting edge.

Super-positive rake design for soft cutting action and low machine power consumption.

Embedded wiper facet for great surface floor finish.

Innovative cutting edge preparation to improve tool life.

Multiple corner nose radii R0.4 to R6.0 available; includes uses for aerospace applications.

Geometries for all material groups in shoulder milling applications.

- ALP

N

Roughing and finishing of aluminium alloys. High precision. Periphery ground.

-ML

P M S H

Light machining and finishing. First choice for stainless steel and titanium. Periphery ground.

-MM

P M K S H

Medium machining. First choice for general purpose. Precision pressed to size.

-MH

P M K S

First choice for heavy-duty machining. Steel and cast iron materials. Precision pressed to size.

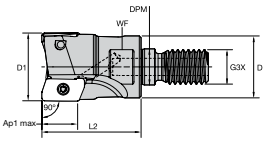
Finishing Capabilities/Lower Cutting Forces

Geometry Strengthening

2x Higher Metal Removal Rate!

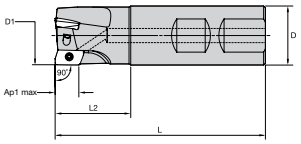
WIDIA™ CUSTOMER VICTORY

Specifications	Before VSM	WIDIA™
Workpiece	–	K2 – Ductile Iron
Insert	–	XDPT170408PESRMM
Grade	–	WK15CM
Cutter	–	VSM17D080Z7S27XD17
Diameter	–	80mm
No. cutting edges (z)	6	7
Vc	160 m/min	210 m/min
Feed rate (fz)	0,078mm	**0,11mm**
Vf	298 mm/min	**665 mm/min**
Ap	3mm	**3mm**
ae	60mm	**60mm**
MRR	54 cm^3min	**120 cm^3min**
Coolant	Dry	**Dry**



▼ Screw-On End Mills

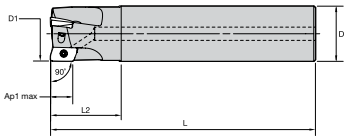
order number	catalogue number	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
5988091	VSM17D025Z02M12XD17	25	21	12,5	M12	35	17	16,4	2	8.8°	41800	Yes	0,08
5988092	VSM17D032Z03M16XD17	32	29	17,0	M16	40	24	16,3	3	5.7°	34700	Yes	0,17
5988131	VSM17D40Z03M016XD17	40	29	17,0	M16	40	24	16,2	3	4.0°	29800	Yes	0,20
5988093	VSM17D040Z04M16XD17	40	29	17,0	M16	40	24	16,2	4	4.0°	29800	Yes	0,20



▼ Weldon® End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
5988102	VSM17D025Z02B25XD17	25	25	90	33	16,4	2	8.8°	41800	Yes	0,26
5988103	VSM17D032Z03B32XD17	32	32	100	39	16,3	3	5.7°	34700	Yes	0,48
5988104	VSM17D040Z04B40XD17	40	40	110	39	16,2	4	4.0°	29800	Yes	0,87

NOTE: Weldon type not recommended for finishing operations.



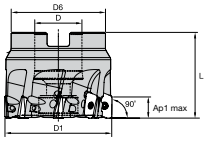
▼ Cylindrical End Mills (Regular and Long Version)

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
5988055	VSM17D025Z02A25XD17L110	25	25	110	44	16,4	2	8.8°	41800	Yes	0,32
5988056	VSM17D025Z02A25XD17L170	25	25	170	44	16,4	2	8.8°	41800	Yes	0,54
5988107	VSM17D032Z02A32XD17L120	32	32	120	50	16,3	2	5.7°	34700	Yes	0,60
5988108	VSM17D032Z02A32XD17L210	32	32	210	50	16,3	2	5.7°	34700	Yes	1,14
5988057	VSM17D032Z03A32XD17L120	32	32	120	50	16,3	3	5.7°	34700	Yes	0,60
5988058	VSM17D032Z03A32XD17L210	32	32	210	50	16,3	3	5.7°	34700	Yes	1,13
5988109	VSM17D040Z03A32XD17L130	40	32	130	50	16,2	3	4.0°	29800	Yes	0,77
5988110	VSM17D040Z03A32XD17L250	40	32	250	50	16,2	3	4.0°	29800	Yes	1,49
5988059	VSM17D040Z04A32XD17L130	40	32	130	50	16,2	4	4.0°	29800	Yes	0,77
5988060	VSM17D040Z04A32XD17L250	40	32	250	50	16,2	4	4.0°	29800	Yes	1,49

NOTE: Standard milling cutters will accept insert nose radii up to 2,0mm without modification.
For tool body modification instructions, see page 114.

VSM17™

Victory™ Shoulder Mills • VSM17 Series



Shell Mills

order number	catalogue number	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
5988094	**VSM17D040Z04S16XD17**	40	16	37	40	16,2	4	4.0°	29800	Yes	0,19
5988095	**VSM17D050Z04S22XD17**	50	22	45	40	16,1	4	3.0°	25800	Yes	0,28
5988096	**VSM17D050Z05S22XD17**	50	22	45	40	16,1	5	3.0°	25800	Yes	0,29
5988134	**VSM17D050Z06S22XD17**	50	22	45	40	16,1	6	3.0°	25800	Yes	0,28
5988097	**VSM17D063Z05S22XD17**	63	22	50	40	16,0	5	2.1°	22400	Yes	0,45
5988135	**VSM17D063Z06S22XD17**	63	22	50	40	16,0	6	2.1°	22400	Yes	0,45
5988098	**VSM17D080Z06S27XD17**	80	27	60	50	15,9	6	1.6°	19500	Yes	0,98
5988133	**VSM17D080Z07S27XD17**	80	27	60	50	15,9	7	1.6°	19500	Yes	0,96
5988099	**VSM17D100Z08S32XD17**	100	32	80	50	15,8	8	1.2°	17200	Yes	1,63
5988100	**VSM17D125Z09S40XD17**	125	40	90	63	15,7	9	.9°	15200	Yes	2,94
5988101	**VSM17D160Z12S40XD17**	160	40	100	63	15,8	12	.7°	13300	Yes	3,66

NOTE: Standard milling cutters will accept insert nose radii up to 2,0mm without modification.
For tool body modification instructions, see page 114.

Spare Parts

D1	insert screw	Nm	wrench
25 - 160	**191.725**	3,5	**170.025**

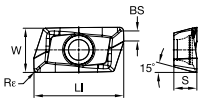
For M4000 cartridge milling system, please see page 115.

VSM17
M4000CA-XDPT17
(MM6152927)

P M K S

WIDIA VICTORY

▼ Inserts for VSM17 Series



● first choice
○ alternate choice

P						○	●	●	○	●						
M						●	○	●	●	●						
K	●	●				○	○									
N			●	●												
S						●		○	●	●						
H																

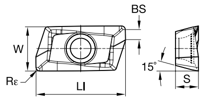
catalogue number	cutting edges	LI	BS	S	W	Rε	hm	WK15CM	WK15PM	WN10HM	WN25PM	WP25PM	WP35CM	WP40PM	WS40PM (NEW!)	WU35PM
XDCT170404PEFRALP	2	19,15	2,62	4,90	9,60	0,40	0,02	■	■	6007341	6007220	■	■	■	■	■
XDCT170408PEFRALP	2	19,15	2,22	4,90	9,60	0,80	0,02	■	■	6007345	6007344	■	■	■	■	■
XDCT170412PEFRALP	2	19,16	1,82	4,90	9,60	1,20	0,02	■	■	6007342	6001537	■	■	■	■	■
XDCT170416PEFRALP	2	19,17	1,42	4,90	9,60	1,60	0,02	■	■	■	6001256	■	■	■	■	■
XDCT170420PEFRALP	2	19,17	1,01	4,90	9,60	2,00	0,02	■	■	■	6001254	■	■	■	■	■
XDCT170424PEFRALP	2	19,17	0,63	4,90	9,60	2,40	0,02	■	■	■	6001252	■	■	■	■	■
XDCT170432PEFRALP	2	18,85	–	4,88	9,59	3,20	0,02	■	■	■	6001240	■	■	■	■	■
XDCT170440PEFRALP	2	18,33	–	4,87	9,59	4,00	0,02	■	■	■	6001238	■	■	■	■	■
XDCT170460PEFRALP	2	17,02	–	4,80	9,56	6,00	0,02	■	■	■	6118070	■	■	■	■	■
XDCT170404PEERML	2	19,15	2,62	4,90	9,60	0,40	0,04	■	■	■	■	5989010	■	■	■	■
XDCT170408PEERML	2	19,15	2,22	4,90	9,60	0,80	0,04	■	■	■	■	5988983	5988982	5988981	6180180	■
XDCT170412PEERML	2	19,16	1,82	4,90	9,60	1,20	0,04	■	■	■	■	5988988	5988987	5988986	6180211	■
XDCT170416PEERML	2	19,17	1,42	4,90	9,60	1,60	0,04	■	■	■	■	6001257	■	■	6425261	■
XDCT170420PEERML	2	19,17	1,01	4,90	9,60	2,00	0,04	■	■	■	■	6001255	■	■	6425263	■
XDCT170424PEERML	2	19,17	0,63	4,90	9,60	2,40	0,04	■	■	■	■	6001253	■	■	6425264	■
XDCT170432PEERML	2	18,85	–	4,89	9,59	3,20	0,04	■	■	■	■	6001251	■	■	6425265	■

(continued)

(Inserts for VSM17 Series — continued)

WIDIA VICTORY

▼ Inserts for VSM17 Series



● first choice
○ alternate choice

	WK15CM	WK15PM	WN10HM	WN25PM	WP25PM	WP35CM	WP40PM	WS40PM (NEW!)	WU35PM
P					○	●	●	○	●
M					●	○	●	●	●
K	●	●			○	○			
N			●	●					
S					●		○	●	●
H									

catalogue number	cutting edges	LI	BS	S	W	Rε	hm	WK15CM	WK15PM	WN10HM	WN25PM	WP25PM	WP35CM	WP40PM	WS40PM	WU35PM
XDCT170440PEERML	2	18,33	–	4,87	9,59	4,00	0,04	–	–	–	–	6001239	–	–	6425266	–
XDCT170460PEERML	2	17,02	–	4,80	9,56	6,00	0,04	–	–	–	–	–	–	6118069	6232053	–
XDPT170404PESRMM	2	19,15	2,52	4,90	9,60	0,40	0,10	–	–	–	–	–	–	5987689	–	5987690
XDPT170408PESRMM	2	19,15	2,15	4,90	9,60	0,80	0,10	5987948	6242460	–	–	5987949	5987947	5987946	6180212	5987950
XDPT170412PESRMM	2	19,16	1,77	4,90	9,60	1,20	0,10	5988138	–	–	–	5988151	5988140	5988139	6180213	5988152
XDPT170416PESRMM	2	19,17	1,38	4,90	9,60	1,60	0,10	5988153	–	–	–	5988155	5988156	5988154	6180214	–
XDPT170420PESRMM	2	19,17	0,99	4,90	9,60	2,00	0,10	–	–	–	–	5988158	5988160	5988159	6425145	–
XDPT170424PESRMM	2	19,17	0,62	4,90	9,60	2,40	0,10	–	–	–	–	5988203	–	5988202	6425146	–
XDPT170432PESRMM	2	18,85	–	4,89	9,59	3,20	0,10	–	–	–	–	5988206	5988204	5988205	6277261	–
XDPT170440PESRMM	2	18,33	–	4,87	9,59	4,00	0,10	–	–	–	–	5988970	–	5988969	6425147	–
XDPT170408PESRMH	2	19,15	2,10	4,91	9,60	0,80	0,13	5989053	–	–	–	–	5989054	5989052	6425148	–
XDPT170412PESRMH	2	19,16	1,73	4,91	9,60	1,20	0,13	5991817	–	–	–	–	5991816	5991815	6425149	–

NOTE: XDCT17: High-precision periphery ground inserts.
XDPT17: Precision-pressed and sintered-to-size inserts.

Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	XDCT-ML	WP40PM	**XDPT-MM**	**WP40PM**	XDPT-MH	WP40PM
P3–P4	XDCT-ML	WP40PM	**XDPT-MM**	**WP40PM**	XDPT-MH	WP40PM
P5–P6	XDPT-MM	WP25PM	**XDPT-MM**	**WP35CM**	XDPT-MH	WP40PM
M1–M2	XDCT-ML	WS40PM	**XDPT-MM**	**WS40PM**	XDPT-MM	WS40PM
M3	XDCT-ML	WS40PM	**XDPT-MM**	**WS40PM**	XDPT-MH	WS40PM
K1–K2	XDPT-MM	WK15CM	**XDPT-MM**	**WK15CM**	XDPT-MH	WK15CM
K3	XDPT-MM	WP35CM	**XDPT-MM**	**WP35CM**	XDPT-MH	WP35CM
N1–N2	XDCT-ALP	WN10HM	**XDCT-ALP**	**WN25PM**	XDCT-ALP	WN25PM
N3	XDCT-ALP	WN10HM	**XDCT-ALP**	**WN25PM**	XDCT-ALP	WN25PM
S1–S2	XDCT-ML	WP25PM	**XDPT-MM**	**WS40PM**	XDPT-MM	WS40PM
S3	XDCT-ML	WS40PM	**XDPT-MM**	**WS40PM**	XDPT-MM	WS40PM
S4	XDCT-ML	WS40PM	**XDPT-MM**	**WS40PM**	XDPT-MM	WS40PM
H1	–	–	**–**	**–**	–	–

Recommended Starting Speeds [m/min]*

Material Group		WK15CM			WK15PM			WN10HM			WN25PM			WP25PM			WP35CM			WP40PM			WS40PM			WU35PM		
P	1	–	–	–	–	–	–	–	–	–	–	–	–	330	**285**	270	455	**395**	370	295	**260**	245	–	–	–	260	**230**	215
	2	–	–	–	–	–	–	–	–	–	–	–	–	275	**240**	200	280	**255**	230	250	**215**	180	–	–	–	220	**190**	160
	3	–	–	–	–	–	–	–	–	–	–	–	–	255	**215**	175	255	**230**	205	230	**195**	160	–	–	–	200	**170**	140
	4	–	–	–	–	–	–	–	–	–	–	–	–	225	**185**	150	190	**175**	160	205	**170**	135	–	–	–	180	**150**	120
	5	–	–	–	–	–	–	–	–	–	–	–	–	185	**170**	150	260	**230**	210	170	**155**	135	170	**145**	120	150	**135**	120
	6	–	–	–	–	–	–	–	–	–	–	–	–	165	**125**	100	160	**135**	110	150	**115**	90	150	**110**	80	130	**100**	80
M	1	–	–	–	–	–	–	–	–	–	–	–	–	205	**180**	165	205	**185**	155	195	**170**	155	210	**170**	140	170	**150**	135
	2	–	–	–	–	–	–	–	–	–	–	–	–	185	**160**	130	185	**160**	140	175	**150**	125	180	**145**	120	155	**130**	110
	3	–	–	–	–	–	–	–	–	–	–	–	–	140	**120**	95	145	**130**	115	130	**115**	90	145	**110**	85	115	**100**	80
K	1	420	**385**	340	270	**245**	215	–	–	–	–	–	–	230	**205**	185	295	**265**	240	–	–	–	–	–	–	–	–	–
	2	335	**295**	275	210	**190**	175	–	–	–	–	–	–	180	**160**	150	235	**210**	190	–	–	–	–	–	–	–	–	–
	3	280	**250**	230	175	**160**	145	–	–	–	–	–	–	150	**135**	120	195	**175**	160	–	–	–	–	–	–	–	–	–
N	1	–	–	–	–	–	–	795	**695**	600	1075	**945**	875	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	795	**695**	600	945	**875**	760	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	560	**485**	420	945	**875**	760	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	40	**35**	25	–	–	–	–	–	–	40	**35**	25	35	**30**	25
	2	–	–	–	–	–	–	–	–	–	–	–	–	40	**35**	25	–	–	–	–	–	–	40	**35**	25	35	**30**	25
	3	–	–	–	–	–	–	–	–	–	–	–	–	50	**40**	25	–	–	–	–	–	–	50	**40**	25	45	**35**	25
	4	–	–	–	–	–	–	–	–	–	–	–	–	70	**50**	35	–	–	–	–	–	–	60	**50**	30	60	**45**	30
H	1	–	–	–	–	–	–	–	–	–	–	–	–	120	**90**	70	–	–	–	–	–	–	–	–	–	–	–	–

*NOTE: FIRST choice starting speeds are in **bold** type. As the average chip thickness increases, the speed should be decreased.*
**Material groups P, M, K, and H show recommended starting speeds for dry machining. For wet machining, reduce speed by 20%.*
**Material groups N and S show recommended starting speeds for wet machining. Not recommended for dry machining.*

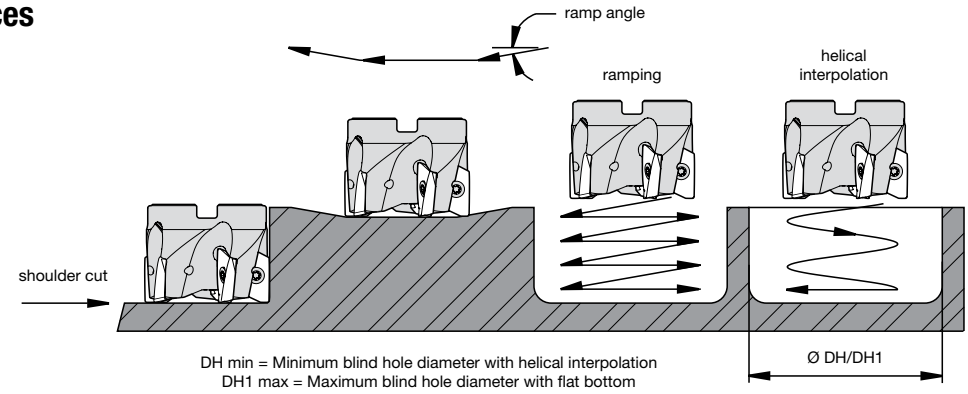
Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..ALP	0,12	**0,23**	0,40	0,08	**0,17**	0,29	0,06	**0,13**	0,22	0,06	**0,11**	0,19	0,05	**0,10**	0,18	.F..ALP
.E..ML	0,16	**0,35**	0,46	0,12	**0,25**	0,33	0,09	**0,19**	0,25	0,08	**0,16**	0,22	0,07	**0,15**	0,20	.E..ML
.S..MM	0,16	**0,40**	0,64	0,12	**0,29**	0,46	0,09	**0,22**	0,34	0,08	**0,19**	0,30	0,07	**0,18**	0,28	.S..MM
.S..MH	0,23	**0,46**	0,74	0,17	**0,33**	0,54	0,13	**0,25**	0,40	0,11	**0,22**	0,35	0,10	**0,20**	0,32	.S..MH

NOTE: Use "Light Machining" values as starting feed rate.

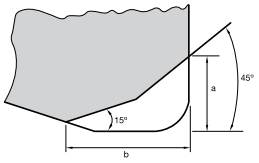
Best Practices



cutting diameter (D1)	max RPM	max ramp angle to steel body interference	max flat-bottom hole diameter (DH1 max)	min hole diameter (DH min)
25	41800	8,8°	50	32
32	34700	5,7°	64	46
40	29800	4,0°	80	62
50	25800	3,0°	100	82
63	22400	2,1°	126	108
80	19500	1,6°	160	142
100	17200	1,2°	200	182
125	15200	0,9°	150	132
160	13300	0,7°	320	302

NOTE: For DH1 max, subtract the insert corner radius from the max hole diameter.

Modification Instructions for Use of Larger Radii Inserts *(Shoulder Mills and Helical Mills)*

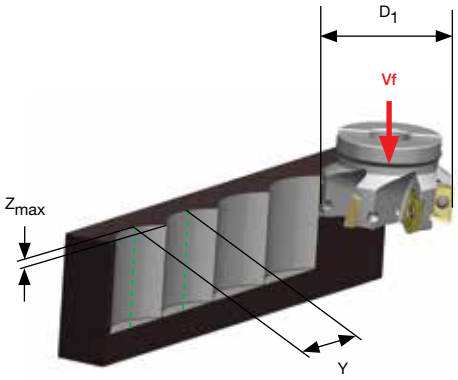


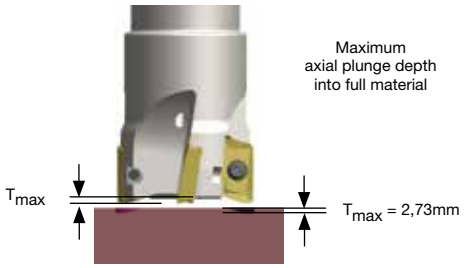
insert corner radius	material to remove a	b
2,4–4,0mm	2	3
4,0–6,0mm	4	5

NOTE: Standard milling cutters will accept insert nose radii up to 2,0mm without modification.

▼ VSM17 Z-Axis Plunging

cutting diameter (D1)	Z max	Y
25	9	24,00
32	9	28,77
40	9	33,41
50	9	38,42
63	9	44,09
80	9	50,56
100	9	57,24
125	9	64,62
160	9	73,73



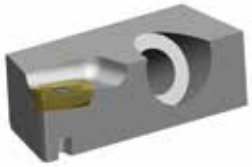


M4000 Cartridge Milling System

Supporting the latest WIDIA™ 90° shoulder milling technology up to D1 = 315mm.

- Roughing and finishing with a single tool.
- Quick cartridge stop feature.
- Easy runout adjustment.
- Easy change of cartridges with different insert styles and lead angles.

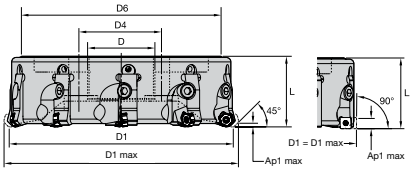
VSM11™
M4000CA-XDPT11
(MM6152926)



VSM17™
M4000CA-XDPT17
(MM6152927)

VSM490™-10
M4000CA-XN10
(MM6433216)

VSM490™-15
M4000CA-XN15
(MM6357989)



▼ Cartridge Milling System

order number	catalogue number	D1	D	D4	D6	L	number of cartridges	max RPM	coolant supply	kg
4136343	**M4000D125Z06ADJ**	125	40	–	108	68,0	6	2000	No	3,34
4136344	**M4000D125Z08ADJ**	125	40	–	108	68,0	8	2000	No	3,51
4136345	**M4000D160Z08ADJ**	160	40	66,7	137	63,0	8	1800	No	5,19
4136346	**M4000D160Z12ADJ**	160	40	66,7	137	63,0	12	1800	No	5,20
4136347	**M4000D200Z10ADJ**	200	60	101,6	178	63,0	10	1500	No	8,02
4136348	**M4000D200Z14ADJ**	200	60	101,6	178	80,0	14	1500	No	12,57
4136349	**M4000D250Z12ADJ**	250	60	101,6	228	63,0	12	1200	No	13,53
4136350	**M4000D250Z18ADJ**	250	60	101,6	228	63,0	18	1200	No	13,90
4136351	**M4000D315Z16ADJ**	315	60	101,6	293	80,0	16	1000	No	25,08
4136352	**M4000D315Z22ADJ**	315	60	101,6	293	80,0	22	1000	No	25,42

▼ Spare Parts

D1	cartridge screw	Nm	wedge	adjusting screw	hex wrench
125 - 315	**MS1294**	20,0	**12748308500**	**12748600900**	**MW3**

VSM490™

The Ultimate Shoulder Milling Solution for Step-Down Applications

4-Edged, Double-Sided 90° Victory™ Shoulder Mill (VSM)

Delivers high surface quality and productivity in shoulder milling applications, including multiple passes (step-down) applications.

Eliminates finishing operations in many applications.

Versatile: steel, cast iron, stainless steel, titanium, aluminium; from roughing to finishing applications.

Double-sided strong insert with 4 cutting edges; high positive geometry for lower cutting forces.

VSM490™-10

Ap Capabilities: Up to 10mm

Screw-On End Mills: 16–32mm

Weldon® End Mills: 16–32mm

Cylindrical End Mills: 16–32mm

Shell Mills: 40–125mm

Shell Mills JIS: 80–125mm

M4000 Cartridge Milling System: 125–315mm

VSM490™-15

Ap Capabilities: Up to 15mm

Screw-On End Mills: 25–35mm

Weldon End Mills: 25–40mm

Cylindrical End Mills: 25–32mm

Shell Mills: 40–160mm

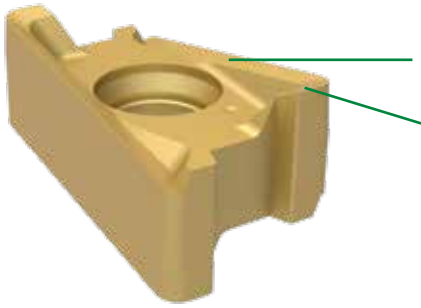
Shell Mills JIS: 80–160mm

M4000 Cartridge Milling System: 125–315mm

VSM490™-10

4-Edged, Double-Sided 90° Victory™ Shoulder Mill

- True 90° roughing tool with embedded finishing capabilities all in one tool.
- Up to Ap1 max = 10mm.
- Best-in-class wall finish in axial stepping-down jobs.
- Lower cutting forces and real soft cutting action.
- Perfect fit for taper 40 spindles and driven units.



Super-positive rake design for low machine power consumption.

Integrated wiper facet for great surface floor finish.

Four insert geometries for all material groups in shoulder milling applications.

-ALP

N

For non-ferrous materials.

-ML

P M K S H

First choice for stainless steel, light machining, and finishing jobs.

-MM

P M K S H

First choice for general purpose in all material groups.

-MH

P K

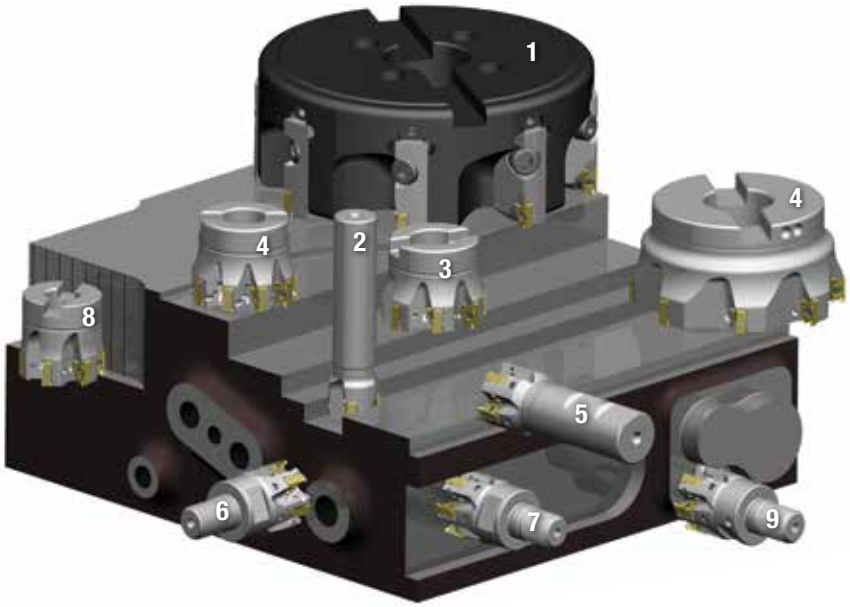
First choice for HPC roughing cast iron. Strongest edge protection with additional margins.

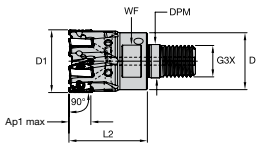
Finishing Capabilities/Lower Cutting Forces

Geometry Strengthening

Applications

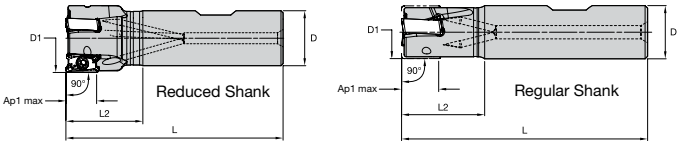
1. Face milling with modular M4000 cartridge milling system.
2. Full slotting with 100% radial engagement.
3. Shoulder milling with step-down capabilities and great wall finish.
4. Shoulder milling with low axial and high radial engagement.
5. Shoulder milling with low radial and high axial engagement.
6. HPC face milling. Excellent choice to clean up castings.
7. Trochoidal slot milling.
8. Z-axis plunge milling.
9. Contour milling.





Screw-On End Mills

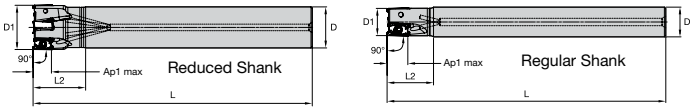
order number	catalogue number	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	max RPM	coolant supply	kg
6425553	VSM490D016Z02M08XN10	16	13	8,5	M8	25	10	10,0	2	48000	Yes	0,03
6425554	VSM490D020Z03M10XN10	20	18	10,5	M10	28	15	10,0	3	40200	Yes	0,05
6425555	VSM490D025Z04M12XN10	25	21	12,5	M12	32	17	10,0	4	34300	Yes	0,09
6425556	VSM490D032Z05M16XN10	32	29	17,0	M16	40	24	10,0	5	29200	Yes	0,20
6425557	VSM490D032Z06M16XN10	32	29	17,0	M16	40	24	10,0	6	29200	Yes	0,20



Weldon® End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max RPM	coolant supply	kg
6425558	VSM490D016Z02B16XN10	16	16	74	25	10,0	2	48000	Yes	0,09
6425559	VSM490D020Z02B20XN10	20	20	79	28	10,0	2	40200	Yes	0,16
6425560	VSM490D020Z03B20XN10	20	20	79	28	10,0	3	40200	Yes	0,16
6425571	VSM490D025Z03B20XN10	25	20	79	28	10,0	3	34300	Yes	0,18
6425572	VSM490D025Z03B25XN10	25	25	89	32	10,0	3	34300	Yes	0,29
6425573	VSM490D025Z04B25XN10	25	25	89	32	10,0	4	34300	Yes	0,29
6425574	VSM490D032Z04B25XN10	32	25	89	32	10,0	4	29200	Yes	0,29
6425575	VSM490D032Z05B25XN10	32	25	89	32	10,0	5	29200	Yes	0,33

NOTE: Weldon type not recommended for finishing operations.

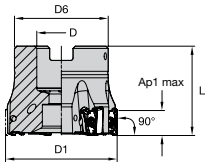


Cylindrical End Mills (Regular and Long Version)

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max RPM	coolant supply	kg
6425502	VSM490D016Z02A16XN10L090	16	16	90	25	10,0	2	48000	Yes	0,12
6425503	VSM490D016Z02A16XN10L150	16	16	150	25	10,0	2	48000	Yes	0,21
6425504	VSM490D018Z02A16XN10L150	18	16	150	25	10,0	2	43500	Yes	0,21
6425506	VSM490D020Z02A20XN10L150	20	20	150	28	10,0	2	40200	Yes	0,33
6425505	VSM490D020Z03A20XN10L090	20	20	90	28	10,0	3	40200	Yes	0,19
6425507	VSM490D020Z03A20XN10L150	20	20	150	28	10,0	3	40200	Yes	0,33
6425508	VSM490D022Z03A20XN10L150	22	20	150	28	10,0	3	37500	Yes	0,34
6425509	VSM490D025Z03A20XN10L100	25	20	100	28	10,0	3	34300	Yes	0,23
6425511	VSM490D025Z03A25XN10L170	25	25	170	43	10,0	3	34300	Yes	0,60
6425510	VSM490D025Z04A25XN10L100	25	25	100	43	10,0	4	34300	Yes	0,33
6425512	VSM490D025Z04A25XN10L170	25	25	170	43	10,0	4	34300	Yes	0,59
6425513	VSM490D028Z04A25XN10L170	28	25	170	32	10,0	4	31800	Yes	0,61
6425514	VSM490D032Z04A25XN10L110	32	25	110	32	10,0	4	29200	Yes	0,41
6425516	VSM490D032Z04A25XN10L200	32	25	200	32	10,0	4	29200	Yes	0,75
6425515	VSM490D032Z05A25XN10L110	32	25	110	32	10,0	5	29200	Yes	0,41
6425517	VSM490D032Z05A25XN10L200	32	25	200	32	10,0	5	29200	Yes	0,75

VSM490™-10

Victory™ Shoulder Mills • VSM490-10 Series



▼ Shell Mills

order number	catalogue number	D1	D	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
6425434	VSM490D040Z04S16XN10	40	16	37	40	10,0	4	25400	Yes	0,23
6425435	VSM490D040Z06S16XN10	40	16	37	40	10,0	6	25400	Yes	0,23
6425436	VSM490D040Z07S16XN10	40	16	37	40	10,0	7	25400	Yes	0,23
6425437	VSM490D050Z05S22XN10	50	22	42	40	10,0	5	22300	Yes	0,31
6425438	VSM490D050Z07S22XN10	50	22	42	40	10,0	7	22300	Yes	0,35
6425439	VSM490D050Z09S22XN10	50	22	42	40	10,0	9	22300	Yes	0,32
6425440	VSM490D063Z05S22XN10	63	22	49	40	10,0	5	19500	Yes	0,56
6425481	VSM490D063Z07S22XN10	63	22	49	40	10,0	7	19500	Yes	0,56
6425482	VSM490D063Z09S22XN10	63	22	49	40	10,0	9	19500	Yes	0,56
6425483	VSM490D080Z06S27XN10	80	27	60	50	10,0	6	17100	Yes	1,10
6425484	VSM490D080Z08S27XN10	80	27	60	50	10,0	8	17100	Yes	1,11
6425485	VSM490D080Z10S27XN10	80	27	60	50	10,0	10	17100	Yes	1,12
6425486	VSM490D100Z08S32XN10	100	32	80	50	10,0	8	15200	Yes	1,73
6425487	VSM490D100Z12S32XN10	100	32	80	50	10,0	12	15200	Yes	1,74
6425488	VSM490D125Z10S40XN10	125	40	90	63	10,0	10	13500	Yes	3,18
6425489	VSM490D125Z14S40XN10	125	40	90	63	10,0	14	13500	Yes	3,20

▼ Shell Mills • Japanese Industry Standard (JIS)

order number	catalogue number	D1	D	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
6425490	VSM490D080Z06S254XN10JIS	80	25,40	50	50	10,0	6	17100	Yes	0,93
6425491	VSM490D080Z08S254XN10JIS	80	25,40	50	50	10,0	8	17100	Yes	0,94
6425492	VSM490D100Z08S3175XN10JIS	100	31,75	60	50	10,0	8	15200	Yes	1,41
6425493	VSM490D125Z10S381XN10JIS	125	38,10	80	63	10,0	10	13500	Yes	3,02

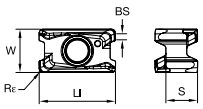
▼ Spare Parts

D1	insert screw	Nm	wrench
16 - 125	MS2263	1,5	DT9IP

For M4000 cartridge milling system, please see page 115.

VSM490-10
M4000CA-XN10
(MM6433216)

P M K S



● first choice
○ alternate choice

P					○	●	●	○
M					●	○	●	●
K	●	●			○	○		
N				●				
S					●		○	●
H								●

▼ VSM490-10 Series Inserts

catalogue number	cutting edges	LI	S	W	BS	Rε	hm	WK15CM	WK15PM	WN25PM	WP25PM	WP35CM	WP40PM	NEW! WS40PM	WU10PM
XNGU100404ERALP	4	11,66	4,83	6,60	1,37	0,40	0,02	-	-	6425382	-	-	-	-	-
XNGU100408ERALP	4	11,66	4,83	6,60	1,00	0,80	0,02	-	-	6425411	-	-	-	-	-
XNGU100404ERML	4	11,66	4,83	6,60	1,37	0,40	0,02	-	-	-	6425414	-	-	6425415	-
XNGU100408ERML	4	11,66	4,83	6,60	1,00	0,80	0,02	-	-	-	6425369	-	-	6425370	6425421
XNGU100404SRMM	4	11,66	4,83	6,60	1,37	0,40	0,08	-	-	-	6425416	-	-	6425417	-
XNGU100408SRMM	4	11,66	4,83	6,60	1,00	0,80	0,08	-	-	-	6425422	-	-	6425423	6425424
XNGU100408SRMH	4	11,66	4,83	6,60	0,90	0,80	0,08	6425359	-	-	6425356	6425360	6425357	-	-
XNPU100408ERML	4	11,60	4,83	6,60	0,90	0,80	0,02	-	6425366	-	6425367	-	-	6425368	-
XNPU100408SRMM	4	11,60	4,83	6,60	0,90	0,80	0,08	6425364	6425270	-	6425361	6425365	6425363	6425362	-
XNPU100412SRMM	4	11,61	4,83	6,60	0,50	1,20	0,08	6425355	-	-	6425352	-	6425354	6425353	-
XNPU100416SRMM	4	11,61	4,83	6,60	0,10	1,60	0,08	-	-	-	6425267	-	6425269	6425268	-

NOTE: XNGU: High-precision periphery ground inserts.
XNPU: Precision-pressed and sintered-to-size inserts.

VSM490™-10

Victory™ Shoulder Mills • VSM490-10 Series

▼ Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	XNGU-ML	WP40PM	**XNPU-MM**	**WP40PM**	XNPU-MM	WP40PM
P3–P4	XNGU-ML	WP40PM	**XNPU-MM**	**WP40PM**	XNPU-MM	WP40PM
P5–P6	XNGU-MM	WP25PM	**XNPU-MM**	**WP35CM**	XNPU-MM	WP40PM
M1–M2	XNGU-ML	WS40PM	**XNGU-ML**	**WS40PM**	XNPU-MM	WS40PM
M3	XNGU-ML	WS40PM	**XNGU-ML**	**WS40PM**	XNPU-MM	WS40PM
K1–K2	XNPU-ML	WK15PM	**XNGU-MH**	**WK15CM**	XNGU-MH	WK15CM
K3	XNPU-MM	WK15PM	**XNGU-MH**	**WP35CM**	XNGU-MH	WP35CM
N1–N2	XNGU-ALP	WN25PM	**XNGU-ALP**	**WN25PM**	XNGU-ALP	WN25PM
N3	XNGU-ALP	WN25PM	**XNGU-ALP**	**WN25PM**	XNGU-ALP	WN25PM
S1–S2	XNGU-ML	WP25PM	**XNGU-ML**	**WS40PM**	XNPU-MM	WS40PM
S3	XNGU-ML	WS40PM	**XNGU-ML**	**WS40PM**	XNPU-MM	WS40PM
S4	XNGU-ML	WS40PM	**XNGU-ML**	**WS40PM**	XNPU-MM	WS40PM
H1	XNGU-ML	WU10PM	**XNGU-MM**	**WU10PM**	–	–

▼ Recommended Starting Speeds [m/min]*

Material Group		WK15CM			WK15PM			WN25PM			WP25PM			WP35CM			WP40PM			WS40PM			WU10PM		
P	1	–	–	–	–	–	–	–	–	–	330	**285**	270	455	**395**	370	295	**260**	245	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	275	**240**	200	280	**255**	230	250	**215**	180	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	255	**215**	175	255	**230**	205	230	**195**	160	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	225	**185**	150	190	**175**	160	205	**170**	135	–	–	–	–	–	–
	5	–	–	–	–	–	–	–	–	–	185	**170**	150	260	**230**	210	170	**155**	135	170	**145**	120	–	–	–
	6	–	–	–	–	–	–	–	–	–	165	**125**	100	160	**135**	110	150	**115**	90	150	**110**	80	–	–	–
M	1	–	–	–	–	–	–	–	–	–	205	**180**	165	205	**185**	155	195	**170**	155	210	**170**	140	–	–	–
	2	–	–	–	–	–	–	–	–	–	185	**160**	130	185	**160**	140	175	**150**	125	180	**145**	120	–	–	–
	3	–	–	–	–	–	–	–	–	–	140	**120**	95	145	**130**	115	130	**115**	90	145	**110**	85	–	–	–
K	1	420	**385**	340	270	**245**	215	–	–	–	230	**205**	185	295	**265**	240	–	–	–	–	–	–	295	**265**	240
	2	335	**295**	275	210	**190**	175	–	–	–	180	**160**	150	235	**210**	190	–	–	–	–	–	–	230	**205**	190
	3	280	**250**	230	175	**160**	145	–	–	–	150	**135**	120	195	**175**	160	–	–	–	–	–	–	195	**175**	160
N	1	–	–	–	–	–	–	1075	**945**	875	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	945	**875**	760	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	945	**875**	760	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	40	**35**	25	–	–	–	–	–	–	40	**35**	25	–	–	–
	2	–	–	–	–	–	–	–	–	–	40	**35**	25	–	–	–	–	–	–	40	**35**	25	–	–	–
	3	–	–	–	–	–	–	–	–	–	50	**40**	25	–	–	–	–	–	–	50	**40**	25	–	–	–
	4	–	–	–	–	–	–	–	–	–	70	**50**	35	–	–	–	–	–	–	60	**50**	30	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	160	**130**	90

*NOTE: FIRST choice starting speeds are in **bold** type. As the average chip thickness increases, the speed should be decreased.*
**Material groups P, M, K, and H show recommended starting speeds for dry machining. For wet machining, reduce speed by 20%.*
**Material groups N and S show recommended starting speeds for wet machining. Not recommended for dry machining.*

▼ Recommended Starting Feeds [mm]

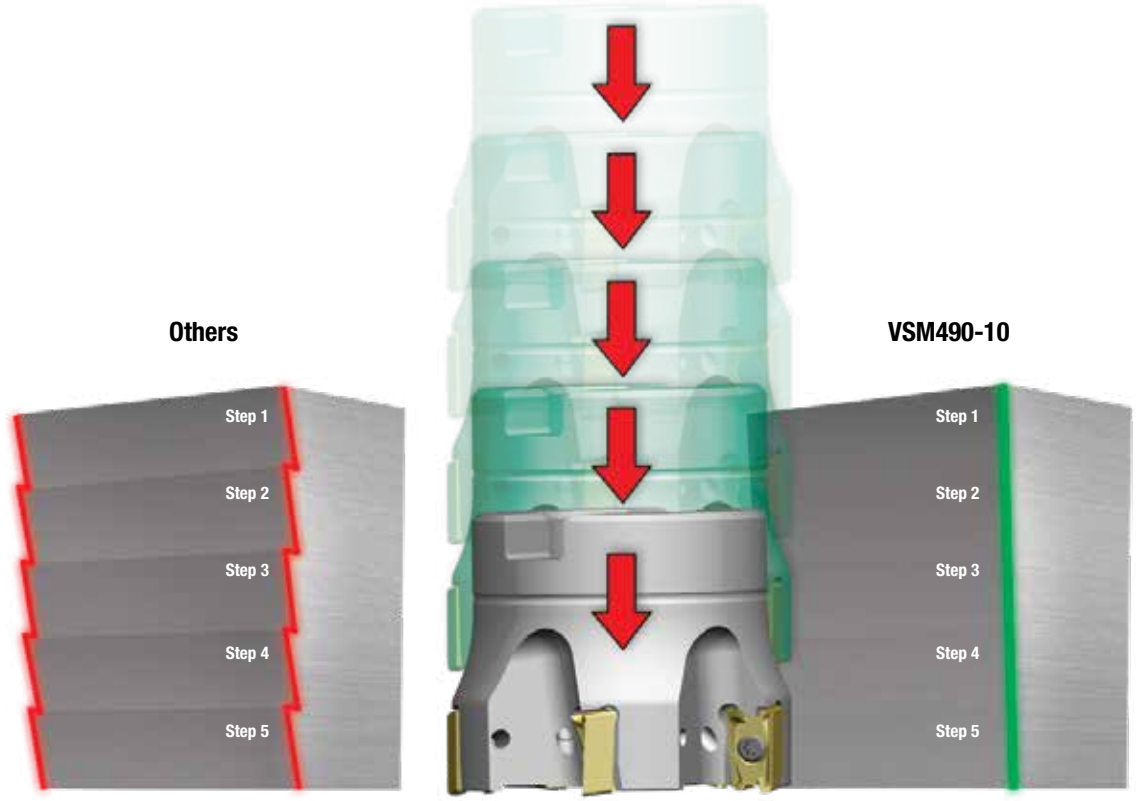
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..ALP	0,12	**0,23**	0,32	0,08	**0,17**	0,23	0,06	**0,13**	0,18	0,06	**0,11**	0,15	0,05	**0,10**	0,14	.E..ALP
.E..ML	0,18	**0,28**	0,37	0,13	**0,20**	0,27	0,10	**0,15**	0,20	0,09	**0,13**	0,17	0,08	**0,12**	0,16	.E..ML
.S..MM	0,23	**0,35**	0,46	0,17	**0,25**	0,33	0,13	**0,19**	0,25	0,11	**0,17**	0,22	0,10	**0,15**	0,20	.S..MM
.S..MH	0,23	**0,43**	0,58	0,17	**0,31**	0,42	0,13	**0,23**	0,31	0,11	**0,20**	0,27	0,10	**0,18**	0,25	.S..MH

NOTE: Use "Light Machining" values as starting feed rate.

Best Practices

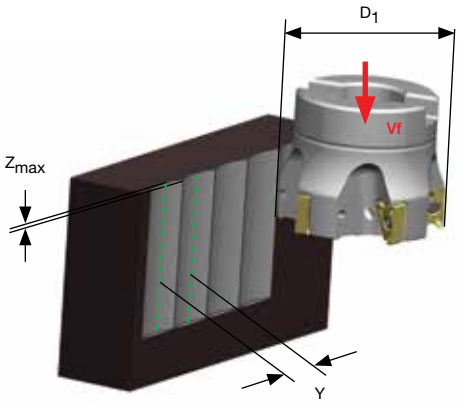
Best-in-class wall finish with VSM490-10 at axial stepping-down jobs. For many shop floor setups, no additional finishing is required and has a positive impact on shorter machining time and lower tooling cost.



Excellent wall finish with VSM490-10

▼ VSM490-10 Z-Axis Plunge Milling

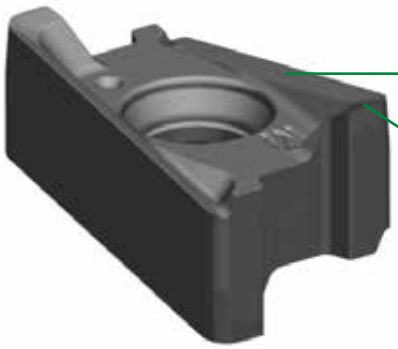
cutting diameter (D1)	Z max	Y
16	1,5	9,33
18	1,5	9,95
20	1,5	10,54
22	1,5	11,09
25	1,5	11,87
28	1,5	12,61
32	1,5	13,53
40	1,5	15,20
50	1,5	17,06
63	1,5	19,21
80	1,5	21,70
100	1,5	24,31
125	1,5	27,22



VSM490™-15

4 Edged, Double-Sided 90° Victory™ Shoulder Mill

- True 90° roughing tool with embedded finishing capabilities all in one tool.
- Up to Ap1 max = 15mm.
- Best-in-class wall finish in axial stepping-down jobs.
- Lower cutting forces and real soft cutting action.
- Perfect fit for taper 50 spindles.
- Coarse, medium, and fine pitch shell mills available.



Super-positive rake design for low machine power consumption.

Integrated wiper facet for great surface floor finish.

See me in action!

Four geometries for all material groups in shoulder milling applications.

-ALP

N

For non-ferrous materials.

-ML

P M S

First choice for stainless steel. Lower cutting forces.

-MM

P M K S

First choice, especially when machining steels.

-MH

P K

First choice for cast iron, and also recommended for heavy applications.

Finishing Capabilities/Lower Cutting Forces

Geometry Strengthening

Wall Quality

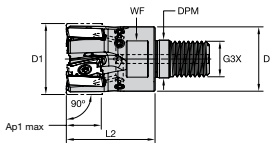
WIDIA™ CUSTOMER VICTORY

Competitor Tool

Traditional tools are designed to achieve a 90° wall, but exhibit poor performance when machining walls in multiple passes.

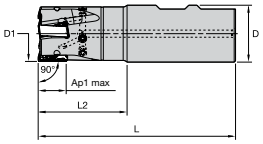
VSM490-15

VSM490-15 eliminates the mismatch and minimises the marks left behind in step-down milling operations. By increasing wall quality and avoiding a second tool, productivity increases significantly.



▼ Screw-On End Mills

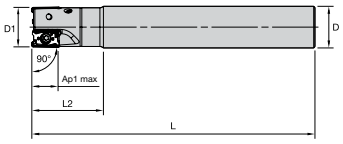
order number	catalogue number	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	max RPM	coolant supply	kg
5873211	**VSM490D025Z02M12XN15**	25	21	12,5	M12	32	17	15,0	2	26700	Yes	0,18
5873212	**VSM490D032Z03M16XN15**	32	29	17,0	M16	40	24	15,0	3	22000	Yes	0,18
5873213	**VSM490D032Z04M16XN15**	32	29	17,0	M16	40	24	15,0	4	22000	Yes	0,18
5873214	**VSM490D035Z04M16XN15**	35	29	17,0	M16	40	24	15,0	4	20600	Yes	0,19



▼ Weldon® End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max RPM	coolant supply	kg
5710285	**VSM490D025Z02B25XN15**	25	25	89	32	15,0	2	26700	Yes	0,28
5710286	**VSM490D032Z03B32XN15**	32	32	111	50	15,0	3	22000	Yes	0,58
5873215	**VSM490D040Z03B32XN15**	40	32	111	50	15,0	3	18800	Yes	0,65

NOTE: Weldon type not recommended for finishing operations.

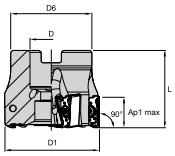


▼ Cylindrical End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max RPM	coolant supply	kg
5873216	**VSM490D025Z02A25XN15L100**	25	25	100	43	15,0	2	26700	Yes	0,32
5710287	**VSM490D025Z02A25XN15L170**	25	25	170	43	15,0	2	26700	Yes	0,59
5873217	**VSM490D032Z03A32XN15L110**	32	32	110	49	15,0	3	22000	Yes	0,59
5710288	**VSM490D032Z03A32XN15L200**	32	32	200	50	15,0	3	22000	Yes	1,14
5873218	**VSM490D032Z04A32XN15L110**	32	32	110	49	15,0	4	22000	Yes	0,58
5873219	**VSM490D032Z04A32XN15L200**	32	32	200	50	15,0	4	22000	Yes	1,14

VSM490™-15

Victory™ Shoulder Mills • VSM490-15 Series



Shell Mills

order number	catalogue number	D1	D	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
5710289	VSM490D040Z04S16XN15	40	16	37	40	15,0	4	18800	Yes	0,20
5710520	VSM490D040Z05S16XN15	40	16	37	40	15,0	5	18800	Yes	0,19
5873221	VSM490D050Z04S22XN15	50	22	42	40	15,0	4	16300	Yes	0,28
5710521	VSM490D050Z05S22XN15	50	22	42	40	15,0	5	16300	Yes	0,28
5710522	VSM490D050Z06S22XN15	50	22	42	40	15,0	6	16300	Yes	0,28
5873222	VSM490D063Z05S22XN15	63	22	50	40	15,0	5	14200	Yes	0,50
5710523	VSM490D063Z06S22XN15	63	22	50	40	15,0	6	14200	Yes	0,49
5710524	VSM490D063Z07S22XN15	63	22	50	40	15,0	7	14200	Yes	0,48
5873223	VSM490D080Z05S27XN15	80	27	60	50	15,0	5	12300	Yes	1,03
5710525	VSM490D080Z07S27XN15	80	27	60	50	15,0	7	12300	Yes	1,03
5873224	VSM490D080Z09S27XN15	80	27	60	50	15,0	9	12300	Yes	1,04
5710526	VSM490D100Z08S32XN15	100	32	80	50	15,0	8	10900	Yes	1,61
5873225	VSM490D100Z11S32XN15	100	32	80	50	15,0	11	10900	Yes	1,64
5873226	VSM490D125Z09S40XN15	125	40	90	63	15,0	9	9600	Yes	2,96
5873227	VSM490D125Z12S40XN15	125	40	90	63	15,0	12	9600	Yes	3,11
5873228	VSM490D160Z12S40XN15	160	40	110	63	15,0	12	8400	Yes	4,80

Shell Mills • Japanese Industry Standard (JIS)

order number	catalogue number	D1	D	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
6342806	VSM490D080Z05S254XN15JIS	80	25,40	50	50	15,0	5	12300	Yes	0,89
6342807	VSM490D080Z07S254XN15JIS	80	25,40	50	50	15,0	7	12300	Yes	0,87
6342808	VSM490D100Z08S3175XN15JIS	100	31,76	60	50	15,0	8	10900	Yes	1,23
6342809	VSM490D125Z09S381XN15JIS	125	38,10	80	63	15,0	9	9600	Yes	2,81
6342810	VSM490D160Z12S508XN15JIS	160	50,80	100	63	15,0	12	8400	Yes	4,88

Spare Parts

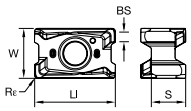
D1	insert screw	Nm	wrench
25 - 160	MS-2071	3,5	DT15IP

For M4000 cartridge milling system, please see page 115.

VSM490-15

M4000CA-XN15
(MM6357989)

P M K S



● first choice
○ alternate choice

P					○	●	●	○	●							
M					●	○	●	●	●							
K	●	●			○	○										
N				●												
S					●		○	●	●							
H																

▼ VSM490-15 Series Inserts

catalogue number	cutting edges	LI	S	W	BS	Rε	hm	WK15CM	WK15PM	WN25PM	WP25PM	WP35CM	WP40PM	WS40PM NEW!	WU35PM
XNGU15T604ERALP	4	16,20	6,88	10,00	2,20	0,40	0,03	-	-	6082644	-	-	-	-	-
XNGU15T608ERALP	4	16,20	6,88	10,00	1,80	0,80	0,03	-	-	6082645	-	-	-	-	-
XNGU15T604ERML	4	16,20	6,88	10,00	2,20	0,40	0,08	-	-	-	5890821	-	5890822	6180323	5890823
XNGU15T608ERML	4	16,20	6,88	10,00	1,80	0,80	0,08	-	6242523	-	5873481	-	5873482	6180324	5873483
XNGU15T604SRMM	4	16,20	6,88	10,00	2,20	0,40	0,10	-	6242521	-	5949204	-	5949205	-	5949206
XNGU15T608SRMM	4	16,20	6,88	10,00	1,90	0,80	0,10	-	6242522	-	5710527	-	5710528	-	5710529
XNGU15T612SRMM	4	16,20	6,88	10,00	1,50	1,20	0,08	6234707	-	-	-	-	-	-	-
XNGU15T608SRMH	4	16,20	6,88	10,00	1,80	0,80	0,10	6003725	6003724	-	6003570	6003723	6003721	-	6003722
XNGU15T616SRMH	4	16,20	6,88	10,00	1,00	1,60	0,10	6030380	6030378	-	6030376	6030377	-	-	-
XNPU15T608ERML	4	16,10	6,88	10,00	1,90	0,80	0,08	-	-	-	5883097	-	5883098	-	5883099
XNPU15T608SRMM	4	16,10	6,88	10,00	1,90	0,80	0,10	5873420	5873419	-	5873415	5873418	5873416	6180320	5873417
XNPU15T612SRMM	4	16,10	6,88	10,00	1,50	1,20	0,10	5890763	5890762	-	5890728	5890761	5890729	6180321	5890730
XNPU15T616SRMM	4	16,10	6,88	10,00	1,10	1,60	0,10	5883522	5883521	-	5883447	5883450	5883448	6180322	5883449
XNPU15T620SRMM	4	16,10	6,88	10,00	0,70	2,00	0,10	6030375	-	-	6030372	6030374	6030373	-	-

NOTE: XNGU: High-precision periphery ground inserts.
XNPU: Precision-pressed and sintered-to-size inserts.

VSM490™-15

Victory™ Shoulder Mills • VSM490-15 Series

▼ Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	XNGU-ML	WP40PM	**XNPU-MM**	**WP40PM**	XNPU-MM	WP40PM
P3–P4	XNGU-ML	WP40PM	**XNPU-MM**	**WP40PM**	XNPU-MM	WP40PM
P5–P6	XNGU-MM	WP25PM	**XNPU-MM**	**WP35CM**	XNPU-MM	WP40PM
M1–M2	XNGU-ML	WS40PM	**XNGU-ML**	**WS40PM**	XNPU-MM	WS40PM
M3	XNGU-ML	WS40PM	**XNGU-ML**	**WS40PM**	XNPU-MM	WS40PM
K1–K2	XNPU-MM	WK15PM	**XNGU-MH**	**WK15CM**	XNGU-MH	WK15CM
K3	XNPU-MM	WK15PM	**XNGU-MH**	**WP35CM**	XNGU-MH	WP35CM
N1–N2	XNGU-ALP	WN25PM	**XNGU-ALP**	**WN25PM**	XNGU-ALP	WN25PM
N3	XNGU-ALP	WN25PM	**XNGU-ALP**	**WN25PM**	XNGU-ALP	WN25PM
S1–S2	XNGU-ML	WP25PM	**XNGU-ML**	**WS40PM**	XNPU-MM	WS40PM
S3	XNGU-ML	WS40PM	**XNGU-ML**	**WS40PM**	XNPU-MM	WS40PM
S4	XNGU-ML	WS40PM	**XNGU-ML**	**WS40PM**	XNPU-MM	WS40PM
H1	–	–	**–**	**–**	–	–

▼ Recommended Starting Speeds [m/min]*

Material Group		WK15CM			WK15PM			WN25PM			WP25PM			WP35CM			WP40PM			WS40PM			WU35PM		
P	1	–	**–**	–	–	**–**	–	–	**–**	–	330	**285**	270	455	**395**	370	295	**260**	245	–	**–**	–	260	**230**	215
	2	–	**–**	–	–	**–**	–	–	**–**	–	275	**240**	200	280	**255**	230	250	**215**	180	–	**–**	–	220	**190**	160
	3	–	**–**	–	–	**–**	–	–	**–**	–	255	**215**	175	255	**230**	205	230	**195**	160	–	**–**	–	200	**170**	140
	4	–	**–**	–	–	**–**	–	–	**–**	–	225	**185**	150	190	**175**	160	205	**170**	135	–	**–**	–	180	**150**	120
	5	–	**–**	–	–	**–**	–	–	**–**	–	185	**170**	150	260	**230**	210	170	**155**	135	170	**145**	120	150	**135**	120
	6	–	**–**	–	–	**–**	–	–	**–**	–	165	**125**	100	160	**135**	110	150	**115**	90	150	**110**	80	130	**100**	80
M	1	–	**–**	–	–	**–**	–	–	**–**	–	205	**180**	165	205	**185**	155	195	**170**	155	210	**170**	140	170	**150**	135
	2	–	**–**	–	–	**–**	–	–	**–**	–	185	**160**	130	185	**160**	140	175	**150**	125	180	**145**	120	155	**130**	110
	3	–	**–**	–	–	**–**	–	–	**–**	–	140	**120**	95	145	**130**	115	130	**115**	90	145	**110**	85	115	**100**	80
K	1	420	**385**	340	270	**245**	215	–	**–**	–	230	**205**	185	295	**265**	240	–	**–**	–	–	**–**	–	–	**–**	–
	2	335	**295**	275	210	**190**	175	–	**–**	–	180	**160**	150	235	**210**	190	–	**–**	–	–	**–**	–	–	**–**	–
	3	280	**250**	230	175	**160**	145	–	**–**	–	150	**135**	120	195	**175**	160	–	**–**	–	–	**–**	–	–	**–**	–
N	1	–	**–**	–	–	**–**	–	1075	**945**	875	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–	945	**875**	760	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	945	**875**	760	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
S	1	–	**–**	–	–	**–**	–	–	**–**	–	40	**35**	25	–	**–**	–	–	**–**	–	40	**35**	25	35	**30**	25
	2	–	**–**	–	–	**–**	–	–	**–**	–	40	**35**	25	–	**–**	–	–	**–**	–	40	**35**	25	35	**30**	25
	3	–	**–**	–	–	**–**	–	–	**–**	–	50	**40**	25	–	**–**	–	–	**–**	–	50	**40**	25	45	**35**	25
	4	–	**–**	–	–	**–**	–	–	**–**	–	70	**50**	35	–	**–**	–	–	**–**	–	60	**50**	30	60	**45**	30
H	1	–	**–**	–	–	**–**	–	–	**–**	–	120	**90**	70	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–

*NOTE: FIRST choice starting speeds are in **bold** type. As the average chip thickness increases, the speed should be decreased.*
**Material groups P, M, K, and H show recommended starting speeds for dry machining. For wet machining, reduce speed by 20%.*
**Material groups N and S show recommended starting speeds for wet machining. Not recommended for dry machining.*

▼ Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..ALP	0,11	**0,23**	0,35	0,08	**0,17**	0,25	0,06	**0,13**	0,19	0,05	**0,11**	0,16	0,05	**0,10**	0,15	.E..ALP
.E..ML	0,17	**0,31**	0,46	0,13	**0,23**	0,33	0,09	**0,17**	0,25	0,08	**0,15**	0,22	0,08	**0,14**	0,20	.E..ML
.S..MM	0,22	**0,40**	0,64	0,16	**0,29**	0,46	0,12	**0,22**	0,34	0,10	**0,19**	0,30	0,10	**0,18**	0,28	.S..MM
.S..MH	0,23	**0,45**	0,74	0,17	**0,33**	0,54	0,13	**0,24**	0,40	0,11	**0,21**	0,35	0,10	**0,20**	0,32	.S..MH

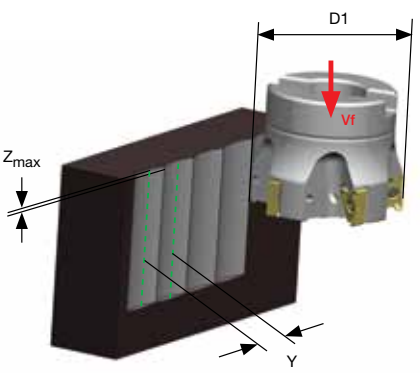
NOTE: Use "Light Machining" values as starting feed rate.

Best Practices

▼ VSM490-15 Z-Axis Plunge

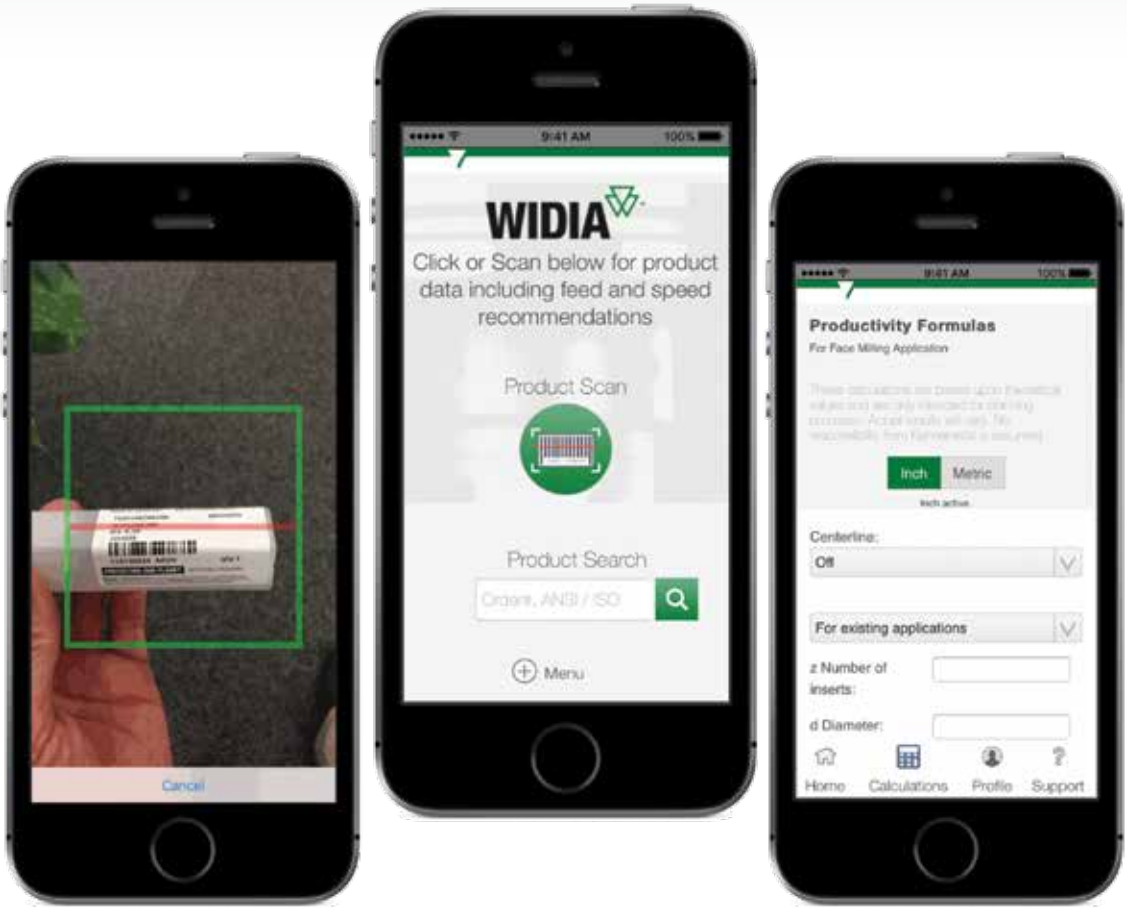
cutting diameter (D1)	Z max	Y
25	2,4	14,73
32	2,4	16,86
35	2,4	17,69
40	2,4	19,00

cutting diameter (D1)	Z max	Y
50	2,4	21,38
63	2,4	24,12
80	2,4	27,29
100	2,4	30,61
125	2,4	34,31
160	2,4	38,90



Machining Central App from WIDIA™

The fastest, easiest way to get feeds and speeds.



SCAN

With the new WIDIA app, product data is just a quick scan away. Now, when you're on the floor and need to quickly access the speeds and feeds of your favorite WIDIA tool, the WIDIA app gives you reliable information in just a few seconds.

SEARCH

Don't have a barcode? The new WIDIA app includes another simple search technique — just type the tool's corresponding order number or the ANSI or ISO catalogue number into the search bar. You'll get the same reliable data as if you'd scanned the tool's barcode. It's simple and quick — no interruption in production!

CALCULATE

Have a specific machining need that our recommended speeds and feeds don't quite address? Try out our three NOVO™ based calculators. Both end milling and face milling calculators are available. Simply fill in the blank fields, and our calculators will quickly provide the data you need.

DOWNLOAD THE **WIDIA MACHINING CENTRAL** MOBILE APP

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WIDIA™

VSM890™-12

Unique 8-Edged Solution for Shoulder and Face Milling

8-Edged, Double-Sided True 90° Victory™ Shoulder-Face Mill (VSM)

Superior Metal Removal Rates (MRR) delivered through high-performance grades and chipbreakers.

Coarse, medium, and fine pitch cutter density to perfectly translate machining capability into higher productivity.

New pocket seat design for improved insert seating and great stability at roughing applications.

Applicable in a wide range of workpiece materials: aluminium, steel, cast iron, titanium, stainless steel, and high-temp alloys.

Comprehensive standard offering for cutter bodies and inserts to address light machining to heavy roughing jobs.

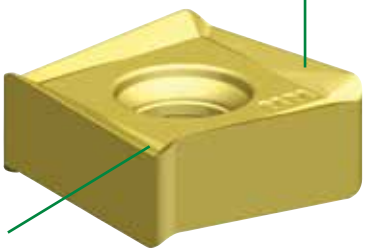
Available in the new WU10PM and WS40PM grades.

Weldon® End Mills: 32mm
Shell Mills: 40–250mm

VSM890™-12

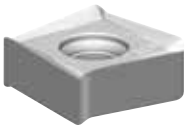
8-Edged, Double-Sided True 90° Victory™ Shoulder-Face Mill

- True 90° wall and stepping down capability.
- Axial depth of cut capability; Ap1 max up to 9,8mm.
- Optimised chip gash design for proper chip evacuation.
- User-friendly pocket numbering system.
- Cutter bodies with internal coolant supply.
- Less bur creation on the workpiece.



Unique insert rake design to reduce and perfectly balance axial and radial cutting forces. Engineered for light machining to heavy roughing in all material groups.

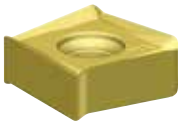
-ALP



N

First choice for Non-Ferrous materials.

-ML



P M S

First choice for Stainless Steel, light machining, and finishing jobs.

-MM

P M K S H

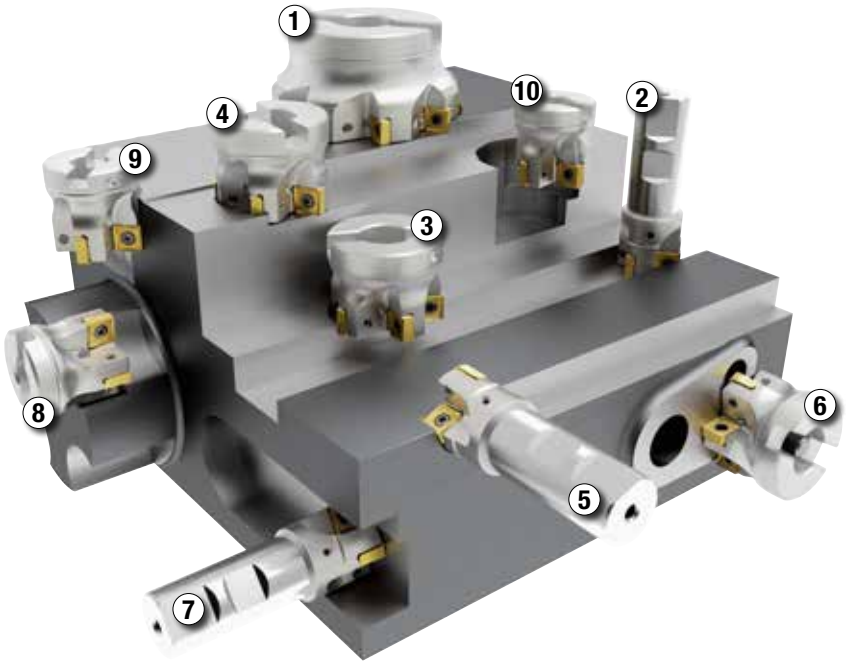
First choice for general purpose in all workpiece materials. Engineered for high-feed rates.

Finishing Capabilities/Lower Cutting Forces

Geometry Strengthening/Stronger Cutting Edge Protection

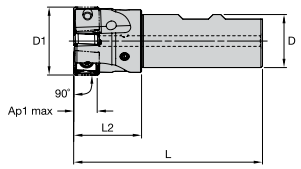
Applications

1. Face milling.
2. Full slotting with 100% radial engagement.
3. Shoulder milling with stepping down and great wall finish.
4. Shoulder milling with low axial and high radial engagement.
5. Shoulder milling with low radial and high axial engagement.
6. HPC face milling. First choice to clean up castings.
7. Dynamic/trochoidal slot milling.
8. Z-axis plunge milling.
9. Z-axis contour plunge milling.
10. Z-axis zig-zag slot plunge milling.



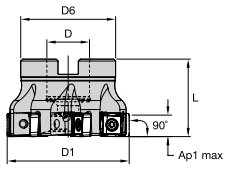
VSM890™-12

Victory™ Shoulder-Face Mills • VSM890™-12 Series



▼ Weldon® End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max RPM	coolant supply	kg
6596066	VSM890D032Z03B25SN12	32	25	89	32	9,8	3	33200	Yes	0,31



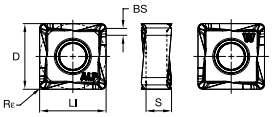
▼ Shell Mills

order number	catalogue number	D1	D	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
6596067	VSM890D040Z04S16SN12	40	16	39	40	9,8	4	28000	Yes	0,20
6596068	VSM890D050Z04S22SN12	50	22	49	40	9,8	4	24100	Yes	0,32
6596069	VSM890D050Z05S22SN12	50	22	49	40	9,8	5	24100	Yes	0,32
6596070	VSM890D063Z05S22SN12	63	22	49	40	9,8	5	20800	Yes	0,48
6596111	VSM890D063Z07S22SN12	63	22	49	40	9,8	7	20800	Yes	0,45
6596112	VSM890D080Z05S27SN12	80	27	60	50	9,8	5	18000	Yes	0,96
6596113	VSM890D080Z07S27SN12	80	27	60	50	9,8	7	18000	Yes	1,03
6596114	VSM890D080Z09S27SN12	80	27	60	50	9,8	9	18000	Yes	1,01
6596115	VSM890D100Z06S32SN12	100	32	78	50	9,8	6	15800	Yes	1,69
6596116	VSM890D100Z08S32SN12	100	32	78	50	9,8	8	15800	Yes	1,56
6596117	VSM890D100Z11S32SN12	100	32	78	50	9,8	11	15800	Yes	1,53
6596118	VSM890D125Z07S40SN12	125	40	89	63	9,8	7	13900	Yes	2,79
6596119	VSM890D125Z10S40SN12	125	40	89	63	9,8	10	13900	Yes	2,98
6596121	VSM890D125Z14S40SN12	125	40	89	63	9,8	14	13900	Yes	2,86
6596122	VSM890D160Z08S40SN12	160	40	110	63	9,8	8	12200	Yes	4,10
6596123	VSM890D160Z12S40SN12	160	40	110	63	9,8	12	12200	Yes	4,15
6596124	VSM890D160Z16S40SN12	160	40	110	63	9,8	16	12200	Yes	8,97
6596125	VSM890D200Z10S60SN12	200	60	130	63	9,8	10	10800	Yes	5,62
6596126	VSM890D200Z14S60SN12	200	60	130	63	9,8	14	10800	Yes	5,59
6596127	VSM890D200Z22S60SN12	200	60	130	63	9,8	22	10800	Yes	5,67
6596128	VSM890D250Z16S60SN12	250	60	130	63	9,8	16	9600	Yes	8,10

▼ Spare Parts

D1	insert screw	Nm	wrench
32 - 250	MS-2071	4,0	DT15IP

NOTE: Please order Torx Plus driver separately.

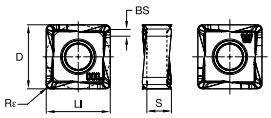


● first choice
○ alternate choice

P					●	●	●	○	
M					●	○	●	●	
K	●	●		○	○			●
N			●						
S				●		○	●		
H								●

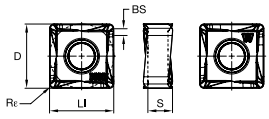
▼ SNHX-ALP • For Aluminium and Other Non-Ferrous Alloys

ISO catalogue number	cutting edges	LI	S	D	BS	Rε	WK15CM	WK15PM	WN25PM	WP25PM	WP35CM	WP40PM	WS40PM	WU10PM
SNHX120408PNERALP	8	12,00	4,61	12,00	1,34	0,80	▮	▮	6596397	▮	▮	▮	▮	▮



▼ SNHX-ML • Precision Finishing and Light Machining

ISO catalogue number	cutting edges	LI	S	D	BS	Rε	WK15CM	WK15PM	WN25PM	WP25PM	WP35CM	WP40PM	WS40PM	WU10PM
SNHX120408PNERML	8	12,00	4,61	12,00	1,34	0,80	▮	▮	▮	6596398	▮	▮	6596399	▮



▼ SNHX-MM • Universal Geometry for Medium Machining

ISO catalogue number	cutting edges	LI	S	D	BS	Rε	WK15CM	WK15PM	WN25PM	WP25PM	WP35CM	WP40PM	WS40PM	WU10PM
SNHX120408PNSRMM	8	12,00	4,61	12,00	1,34	0,80	▮	▮	▮	6596431	▮	6596432	6596433	6596400

▼ SNPX-MM • Universal Geometry for Heavy Roughing

ISO catalogue number	cutting edges	LI	S	D	BS	Rε	WK15CM	WK15PM	WN25PM	WP25PM	WP35CM	WP40PM	WS40PM	WU10PM
SNPX120408PNSRMM	8	12,00	4,61	12,00	1,34	0,80	6595550	6595546	▮	6595547	6595571	6595548	6595549	▮

VSM890™-12

Victory™ Shoulder-Face Mills • VSM890-12 Series

Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	SNHX-ML	WS40PM	**SNPX-MM**	**WP40PM**	SNPX-MM	WP40PM
P3–P4	SNHX-ML	WS40PM	**SNPX-MM**	**WP40PM**	SNPX-MM	WP40PM
P5–P6	SNHX-ML	WP25PM	**SNPX-MM**	**WP35CM**	SNPX-MM	WP40PM
M1–M2	SNHX-ML	WS40PM	**SNHX-ML**	**WS40PM**	SNPX-MM	WS40PM
M3	SNHX-ML	WS40PM	**SNHX-ML**	**WS40PM**	SNPX-MM	WS40PM
K1–K2	SNPX-MM	WK15PM	**SNPX-MM**	**WK15CM**	SNPX-MM	WK15CM
K3	SNPX-MM	WK15PM	**SNPX-MM**	**WP35CM**	SNPX-MM	WP35CM
N1–N2	SNHX-ALP	WN25PM	**SNHX-ALP**	**WN25PM**	SNHX-ALP	WN25PM
N3	SNHX-ALP	WN25PM	**SNHX-ALP**	**WN25PM**	SNHX-ALP	WN25PM
S1–S2	SNHX-ML	WP25PM	**SNHX-ML**	**WS40PM**	SNPX-MM	WS40PM
S3	SNHX-ML	WS40PM	**SNHX-ML**	**WS40PM**	SNPX-MM	WS40PM
S4	SNHX-ML	WS40PM	**SNHX-ML**	**WS40PM**	SNPX-MM	WS40PM
H1	SNHX-MM	WU10PM	**SNHX-MM**	**WU10PM**	–	–

Recommended Starting Speeds [m/min]*

Material Group		WK15CM			WK15PM			WN25PM			WP25PM			WP35CM			WP40PM			WS40PM			WU10PM		
P	1	–	–	–	–	–	–	–	–	–	330	**285**	270	455	**395**	370	295	**260**	245	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	275	**240**	200	280	**255**	230	250	**215**	180	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	255	**215**	175	255	**230**	205	230	**195**	160	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	225	**185**	150	190	**175**	160	205	**170**	135	–	–	–	–	–	–
	5	–	–	–	–	–	–	–	–	–	185	**170**	150	260	**230**	210	170	**155**	135	170	**145**	120	–	–	–
	6	–	–	–	–	–	–	–	–	–	165	**125**	100	160	**135**	110	150	**115**	90	150	**110**	80	–	–	–
M	1	–	–	–	–	–	–	–	–	–	205	**180**	165	205	**185**	155	195	**170**	155	210	**170**	140	–	–	–
	2	–	–	–	–	–	–	–	–	–	185	**160**	130	185	**160**	140	175	**150**	125	180	**145**	120	–	–	–
	3	–	–	–	–	–	–	–	–	–	140	**120**	95	145	**130**	115	130	**115**	90	145	**110**	85	–	–	–
K	1	420	**385**	340	270	**245**	215	–	–	–	230	**205**	185	295	**265**	240	–	–	–	–	–	–	295	**265**	240
	2	335	**295**	275	210	**190**	175	–	–	–	180	**160**	150	235	**210**	190	–	–	–	–	–	–	230	**205**	190
	3	280	**250**	230	175	**160**	145	–	–	–	150	**135**	120	195	**175**	160	–	–	–	–	–	–	195	**175**	160
N	1	–	–	–	–	–	–	1075	**945**	875	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	945	**875**	760	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	945	**875**	760	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	40	**35**	25	–	–	–	–	–	–	40	**35**	25	–	–	–
	2	–	–	–	–	–	–	–	–	–	40	**35**	25	–	–	–	–	–	–	40	**35**	25	–	–	–
	3	–	–	–	–	–	–	–	–	–	50	**40**	25	–	–	–	–	–	–	50	**40**	25	–	–	–
	4	–	–	–	–	–	–	–	–	–	70	**50**	35	–	–	–	–	–	–	60	**50**	30	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	160	**130**	90

*NOTE: FIRST choice starting speeds are in **bold** type. As the average chip thickness increases, the speed should be decreased.*
**Material groups P, M, K, and H show recommended starting speeds for dry machining. For wet machining, reduce speed by 20%.*
**Material groups N and S show recommended starting speeds for wet machining. Not recommended for dry machining.*

Light Machining	General Purpose	Heavy Machining

Recommended Starting Feeds [mm]

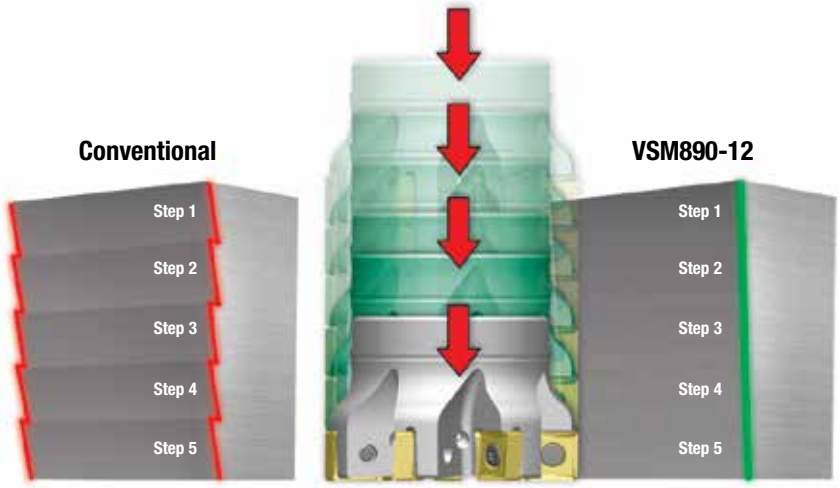
Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..ALP	0,12	**0,28**	0,43	0,08	**0,20**	0,31	0,06	**0,15**	0,23	0,06	**0,13**	0,20	0,05	**0,12**	0,18	.E..ALP
.E..ML	0,17	**0,32**	0,60	0,13	**0,23**	0,44	0,09	**0,18**	0,33	0,08	**0,15**	0,28	0,08	**0,14**	0,26	.E..ML
.S..MM	0,23	**0,36**	0,82	0,17	**0,26**	0,59	0,13	**0,20**	0,44	0,11	**0,17**	0,38	0,10	**0,16**	0,35	.S..MM

NOTE: Use "Light Machining" values as starting feed rate.

Best Practices

True 90° roughing tool with embedded finishing capabilities all in one tool.

Best-in-class wall finish with VSM890-12 in axial stepping-down jobs. For many shop floor setups, no additional finishing is required resulting in shorter machining time and lower tooling cost.



Excellent wall finish with VSM890-12

Coarse Pitch

- Unstable setup.
- Low spindle power.
- High axial depth of cut Ap1.
- Low feed rate.
- Machining aluminium.
- Driven tools.

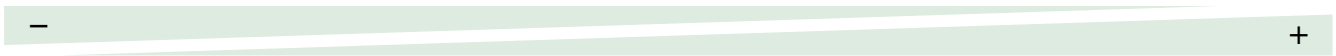
Medium Pitch

- Regular setup.
- Regular spindle power.
- Medium feed rate.

Fine Pitch

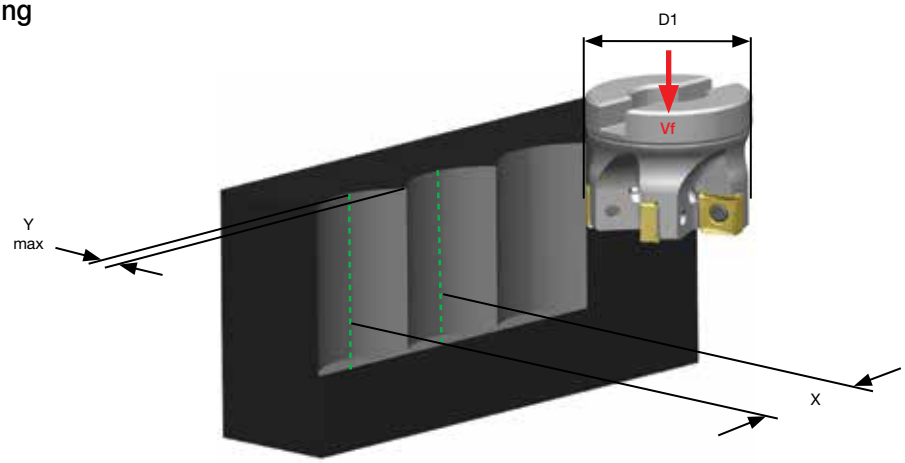
- Rigid setup.
- High spindle power.
- Low axial depth of cut Ap1.
- High feed rate.
- Boost productivity and cut into cycle time.

Machining Stability



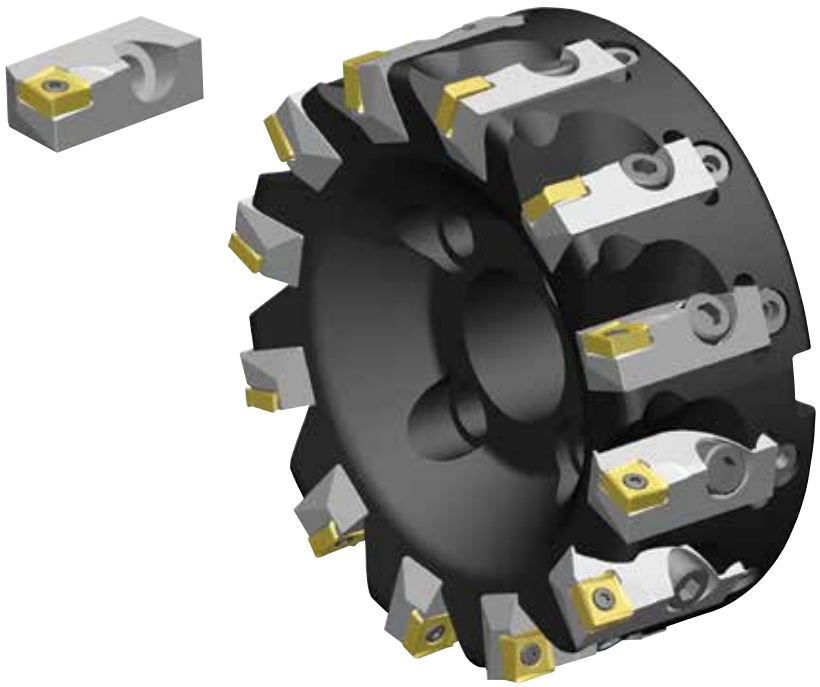
VSM890-12 Z-Axis Plunge Milling

cutting diameter (D1)	Y max	X
32	8,9	28,68
40	8,9	33,27
50	8,9	38,25
63	8,9	43,89
80	8,9	50,31
100	8,9	56,95
125	8,9	64,29
160	8,9	73,34
200	8,9	82,48
250	8,9	92,65



VSM890-12 Cartridge for M4000

M4000CA-SNHX12
(MM6602179)



WIDIA™ Tunable Tooling

Internal dampening package eliminates chatter, vibration, and harmonics in all your deep-hole boring applications!

- Proprietary features provide superior surface finish and increased productivity.
- Wide product offering — from boring bars, extensions, and holders to rotating adaptors and modular sections.
- Reduce setup time with KM™ Quick Change Tooling — now an ISO Standard!
- Customise WIDIA pre-tuned boring bars — after they're on the machine — to optimise performance in your specific machining operations.

For tighter tolerances, reduced scrap rates, and improved tool life, you can rely on WIDIA Tunable Tooling!

To learn more, contact your local Authorised Distributor or visit **widia.com**

WIDIA™

VHSC

True High-Speed Aluminium Profiling and Pocket Milling Cutter

Proprietary pocket design allows multiple insert radii for one body definition. The insert also maintains axial positioning regardless of the size of the insert corner nose radius.

Victory™ High-Speed Cutting

Up to vc = 3000 m/min

High-Speed Cutting Cylindrical End Mills: 25–32mm

High-Speed Cutting Monoblocks: 25–50mm

High-Speed Shell Mills: 40–80mm

VHSC Victory™ High-Speed Cutting

- Developed specifically to achieve true HSC cutting of aluminium components up to 3000 m/min.
- Latest cutter body technology allows for heavy feeding and ramping.
- Flutes and internal coolant channels engineered to support improved chip evacuation.
- Best-in-class solution for thin-walled machining.
- Productivity booster up to 8600 cm^3/min MRR.

High-Speed Cutting Inserts XDET-ALP

- First choice for non-ferrous materials.
- Super-positive ALP geometry with polished rake to reduce built-up edge.
- Wear-resistant micro-grain carbide grade.
- Precision periphery ground.

FR-ALP

N

Sharp cutting edge “F” preparation for roughing and finishing jobs.

ER-ALP

N

Honed cutting edge “E” preparation for heavy roughing jobs and demanding castings.

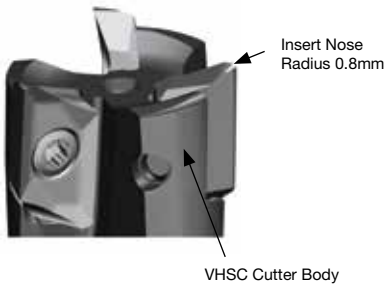
Finishing Capabilities/Lower Cutting Forces

Geometry Strengthening

User-friendly Setup Makes a Big Difference

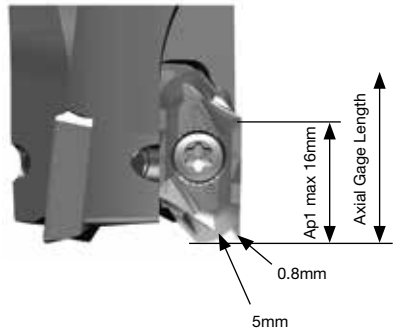
Large Corner Radius

Small Corner Radius

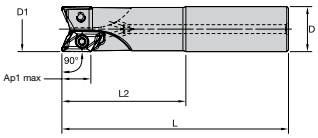


- Unique feature has a great impact on significant cost savings.
- Only one cutter body needed to load inserts with corner nose radii from R0.4 to R6.0 max.
- All other suppliers require modification and rebalance of the cutter body.

Insert Overlay



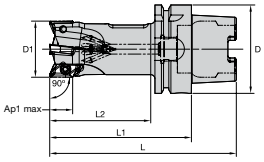
- Axial gage length on the cutter body will always be the same, no matter which insert nose radius is applied.
- Preferred by CNC programmers and operators.
- Ap1 max will always remain 16mm, no matter which insert nose radius is applied.



▼ High-Speed Cutting Cylindrical End Mills

order number	catalogue number	D1	D	L	L2	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
6425258	**VHSC025Z02A25XD16**	25	25	131	75	16	2	14.7°	50000	Yes	0,39
6425259	**VHSC032Z02A32XD16**	32	32	135	75	16	2	11.4°	41500	Yes	0,65
6425260	**VHSC032Z03A32XD16**	32	32	135	75	16	3	11.4°	41500	Yes	0,65

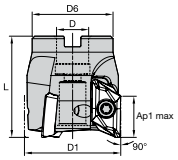
NOTE: Pre-balanced to G6.3/30000 RPM.



▼ High-Speed Cutting Monoblocks • HSK63A

order number	catalogue number	D1	D	L	L1	L2	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
6425447	**VHSC025Z02HSK63XD16**	25	63	133	101	75	16	2	14.5°	51000	Yes	0,81
6425449	**VHSC032Z03HSK63XD16**	32	63	133	101	75	16	3	11.4°	41500	Yes	0,91
6425451	**VHSC040Z04HSK63XD16**	40	63	133	101	75	16	4	7.8°	35000	Yes	1,09
6425453	**VHSC050Z04HSK63XD16**	50	63	133	101	75	15	4	7.8°	30000	Yes	1,41

NOTE: Pre-Balanced G6.3/30000 RPM.



▼ High-Speed Cutting Shell Mills

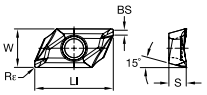
order number	catalogue number	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	coolant supply	kg
6425291	**VHSC040Z03S16XD16**	40	16	32	45	16	3	7.6°	35000	Yes	0,20
6425292	**VHSC050Z04S22XD16**	50	22	45	45	16	4	7.8°	30000	Yes	0,31
6425293	**VHSC063Z04S22XD16**	63	22	50	45	16	4	5.9°	26000	Yes	0,55
6425294	**VHSC080Z05S27XD16**	80	27	55	50	16	5	4.4°	22500	Yes	0,89

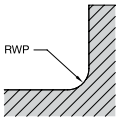
▼ Spare Parts

D1	insert screw	Nm	Torx driver
25 - 80	**DP5009A**	6,1	**DT20IP**

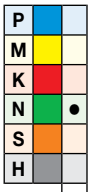
NOTE: It is important to change the screw each time the insert is changed to ensure the highest security.
A dynamometric key and the correct insert screw torque value are key for HSC applications.
Adjustable torque wrench (order number 6197561) and Torx Plus 20 bit (order number 6205891) may be purchased separately.

WIDIA VICTORY





● first choice
○ alternate choice



▼ High-Speed Cutting Inserts XDET-ALP

catalogue number	cutting edges	LI	S	W	BS	Rε	RWP*	hm	WN10HM
XDET16M5PDFRALP	2	22,92	5,00	11,25	1,42	0,30	0,30	0,02	6425772
XDET16M504FRALP	2	23,02	5,00	11,25	1,27	0,40	0,40	0,02	6425773
XDET16M508FRALP	2	23,02	5,00	11,25	0,87	0,80	0,80	0,02	6425774
XDET16M520FRALP	2	23,02	5,00	11,25	0,58	2,10	2,00	0,02	6425775
XDET16M530ERALP	2	23,02	5,00	11,25	0,48	3,10	3,00	0,03	6425776
XDET16M530FRALP	2	23,02	5,00	11,25	0,48	3,10	3,00	0,02	6425777
XDET16M540ERALP	2	23,02	5,00	11,25	0,60	4,10	4,00	0,03	6425778
XDET16M540FRALP	2	23,02	5,00	11,25	0,60	4,10	4,00	0,02	6425779
XDET16M550FRALP	2	23,02	5,00	11,25	0,24	5,20	5,00	0,02	6425780

NOTE: RWP = Resultant workpiece radius.*

▼ Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
N1–N2	.F..ALP	WN10HM	**.F..ALP**	**WN10HM**	.E..ALP	WN10HM
N3	.F..ALP	WN10HM	**.F..ALP**	**WN10HM**	.E..ALP	WN10HM

▼ Recommended Starting Speeds For Wet Machining [m/min]

Material Group		WN10HM		
N	1	2950	**1800**	875
	2	2950	**1800**	875
	3	1600	**850**	480

*NOTE: FIRST choice starting speeds are in **bold** type.*
As the average chip thickness increases, the speed should be decreased.

VHSC

Victory™ Shoulder Mills • VHSC16

Light Machining	General Purpose	Heavy Machining

▼ Recommended Starting Feeds [mm]

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..ALP	0,12	**0,45**	0,81	0,08	**0,33**	0,58	0,06	**0,25**	0,43	0,06	**0,21**	0,38	0,05	**0,20**	0,35	.F..ALP
.E..ALP	0,15	**0,50**	0,92	0,11	**0,36**	0,66	0,08	**0,27**	0,50	0,07	**0,24**	0,43	0,07	**0,22**	0,40	.E..ALP

NOTE: Use "Light Machining" values as starting feed rate.

Recommendations for High Speed Machining at 8000 RPM or above

- Check spindle condition:
  - Runout
  - Clamping of the attachment in traction
  - Marking and cleanliness
- Check that the tool is suitable for the required use.
- Inserts must be locked positively in the pocket and secured using the torx screw provided. The screw must be torqued to the correct value as indicated in the charts on the product pages.
- Because of heavy force to the screw, it is important to change the screw when changing the insert.
- Check the balancing of the assembled tool: cutter body, inserts, and attachment.
- Before start up, note the maximum RPM engraved on the tool. The maximum RPM is linked to a precise balancing value.
- Ensure that the field of application of the tool shown in our technical documents and technological parameters is observed:

Ae (mm)	Width of cut, lateral engagement (radial)
ap (mm)	Axial depth of cut
fz (mm/tooth)	mm per tooth
n (RPM)	Revolutions per minute

WIDIA™ cannot accept responsibility for misuse of this product due to:

- Non-observance of the above instructions
- Machine without casing
- Incorrect clamping of workpieces
- No safety device on the machine
- Any misuse or incorrect clamping

The optimum rotation must be determined by condition of the spindle. The spindle must be rigid to run at these higher RPMs.

Under no circumstances must any attempt be made to repair this tool. The only permitted maintenance is the indexing or replacement of the inserts.

When assembling the cutter to a Shrink Fit holder, the maximum protrusion cannot exceed 10% of the reach of tool.

Balancing:

- Cylindrical shank and HSK63A integral shanks are designed and balanced to G6.3 at 30000 RPM for diameters up to 50mm.
- Cylindrical shank tools mounted in a Shrink Fit holder or any other chuck mill holder + inserts + screws must be re-inspected for balance as an assembly by the end-user when at or exceeding 8000 RPM. End-user must balance the assembly at a G6.3 at 30000 RPM maximum.
- Shell mills are not balanced. These tools must be re-inspected for balance as an assembly, cutter + inserts + screws by the end-user for high speed machining at 8000 RPM or above. End-user must balance the assembly at a G6.3 value minimum.
- Balancing requires removing some material by drilling or milling operations.
- For each new shell mill installed on the same toolholder, re-balance the assembly.

Tighten the bolt between the shell mill and toolholder; with lubricant, apply the torque value of:

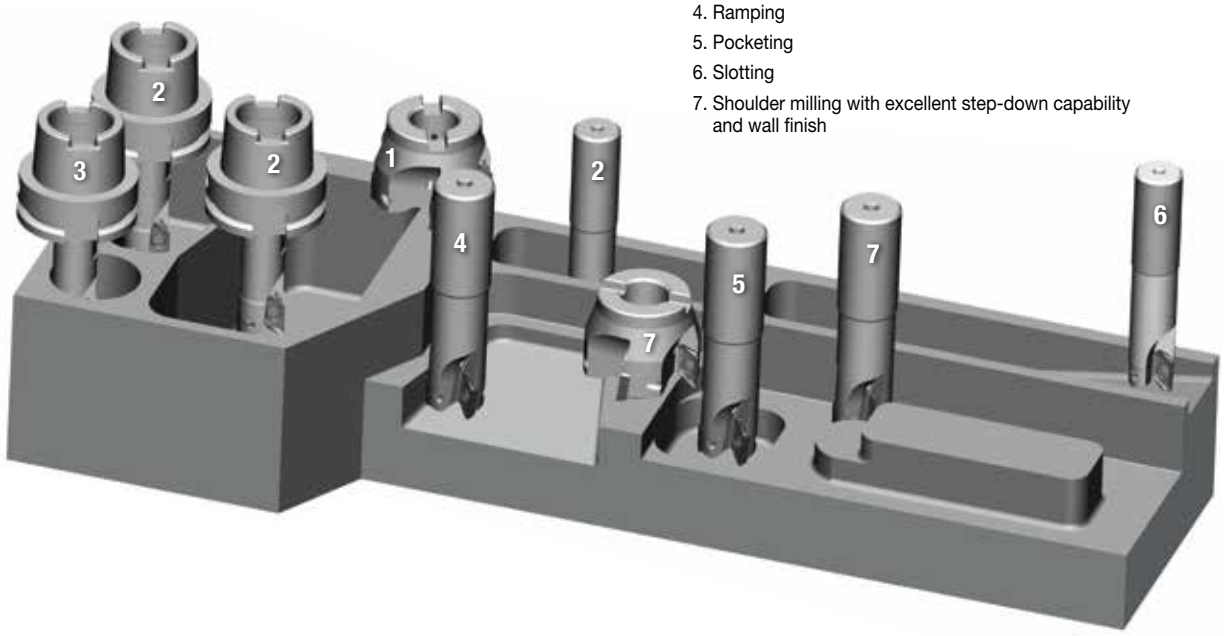
Thread sizes (mm)	Cutter Bore Size (mm)	Torque Values Nm
M6	13	10
M8	16	30
M10	22	50
M12	27	80
M16	32	110
M20	40	120

▼ Machinability by Materials • Aluminium

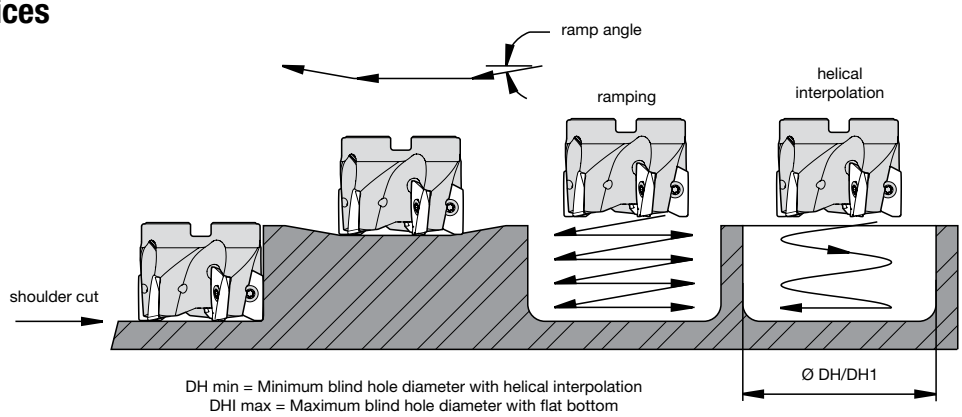
Alloy Group	Alloy Designation	Chemical Composition Limits (WT%)												Typical Temper	Rm (Mpa)	Machinability Chip Formation	Machinability
		Cu	Si	Fe	Mn	Mg	Zn	Cr	Ti	Pb	Bi	Al	Others				
Al	1050	0.05	0.25	0.40	0.50	0.05	0.05	–	–	–	–	99.50min	–	H14	105	D	A
	1100	0.05–0.20	Si+Fe 1.00 max	–	0.05	–	0.10	–	–	–	–	99.00min	–	H14	90	D	A
AlCu	2011	5.00–6.00	0.40	0.70	–	–	0.30	–	–	0.20	0.60	remaining	–	T3	310	A	A
	2014	3.90–5.00	0.50–1.20	0.70	0.40–1.20	0.20–0.80	0.25	0.10	0.15	–	–	remaining	–	T6	430	B	A
	2017	3.50–4.50	0.20–0.80	0.70	0.40–1.00	0.40–0.80	0.25	0.10	0.15	–	–	remaining	–	T4	390	B	A
	2024	3.80–4.90	0.50	0.50	0.30–0.90	1.20–1.80	0.25	0.10	0.15	–	–	remaining	–	T4	465	B	A
	2218	3.50–4.50	0.90	1	0.20	1.20–1.80	0.25	0.10	–	–	–	remaining	Ni1.7–2.3	T72	331	B	B
	2224	3.80–4.40	0.12	0.15	0.30–0.90	1.20–1.80	0.25	0.10	0.15	–	–	remaining	–	–	–	A	A
AlMn	3003	0.05–0.20	0.60	0.70	1.00–1.50	–	0.10	–	–	–	–	remaining	–	H14	140	D	B
AlSi	4032	0.50–1.30	11.00–13.50	1	–	0.80–1.30	0.25	0.10	–	–	–	remaining	Ni0.5–1.3	T6	379	B	D
AlMg	5083	0.10	0.40	0.40	0.40–1.00	4.00–4.90	0.25	0.05–0.25	0.15	–	–	remaining	–	H112	335	C	A
AlMgSi	6061	0.15–0.40	0.40–0.80	0.70	0.15	0.80–1.20	0.25	0.04–0.35	0.15	–	–	remaining	–	T6	300	C	B
	6063	0.10	0.20–0.60	0.35	0.10	0.45–0.90	0.10	0.10	0.10	–	–	remaining	–	T5	200	C	B
	6070	0.15–0.40	1.00–1.70	0.50	0.40–1.00	0.50–1.20	0.25	0.10	0.15	–	–	remaining	–	T6	379	C	C
	6151	0.35	0.60–1.20	1	0.20	0.45–0.80	0.25	0.15–0.35	0.15	–	–	remaining	–	T6	–	C	C
	6262	0.15–0.40	0.40–0.80	0.70	0.15	0.80–1.20	0.25	0.04–0.14	0.15	0.40	0.70	remaining	–	T9	400	B	B
	6351	0.10	0.70–1.30	0.50	0.40–0.80	0.40–0.80	0.20	–	0.20	–	–	remaining	–	T6	310	D	C
	6463	0.20	0.20–0.60	0.15	0.05	0.45–0.90	0.05	–	–	–	–	remaining	–	T6	241	C	B
AlZn	7001	1.60–2.60	0.35	0.40	0.20	2.60–3.40	6.80–8.00	0.18–0.35	0.20	–	–	remaining	–	O	–	B	A
	7003	0.20	0.30	0.35	0.30	0.50–1.00	5.00–6.50	0.20	0.20	–	–	remaining	Zr0.05–0.25	T5	400	B	A
	7050	2.00–2.60	0.12	0.15	0.10	1.90–2.60	5.70–6.70	0.04	0.06	–	–	remaining	Zr0.08–0.15	T73	530	B	A
	7075	1.20–2.00	0.40	0.50	0.30	2.10–2.90	5.10–6.10	0.18–0.28	0.20	–	–	remaining	–	T6	570	B	A
	7178	1.60–2.40	0.40	0.50	0.30	2.40–3.10	6.30–7.30	0.18–0.35	0.20	–	–	remaining	–	T6	600	B	A
	7475	1.20–1.90	0.10	0.12	0.06	1.90–2.60	5.20–6.20	0.18–0.25	0.06	–	–	remaining	–	T61	565	B	A

Machinability: A (Excellent), B (Good to Excellent), C (Good), D (Not Good)

1. Face milling
2. First choice for deep pocketing and thin wall machining
3. Boring by circular interpolation into full material
4. Ramping
5. Pocketing
6. Slotting
7. Shoulder milling with excellent step-down capability and wall finish



Best Practices



DH min = Minimum blind hole diameter with helical interpolation
DHI max = Maximum blind hole diameter with flat bottom

▼ Ramp Angle

cutter diameter	Max. Ramping Angle Related to Insert Corner Nose Radius and Cutter D1						
	Facet	R0.4	R0.8	R2.0	R3.0	R4.0	R5.0
25	14,8°	14,8°	14,8°	9,4°	18,8°	9,0°	11,2°
32	11,4°	11,4°	11,4°	11,9°	12,4°	13,1°	13,8°
40	7,6°	7,6°	7,6°	7,8°	8,1°	8,5°	8,8°
50	7,8°	7,5°	7,8°	7,7°	7,9°	8,4°	8,8°
63	5,8°	5,6°	5,9°	5,7°	5,8°	6,1°	6,3°
80	4,4°	4,2°	4,4°	4,2°	4,3°	4,5°	4,7°

▼ Helical Min. Hole and Helical Max. Hole

cutter diameter	DH min	DH1 max
25	30,3	48,8
32	43,5	62,0
40	59,5	78,0
50	79,5	98,0
63	105,5	124,0
80	139,5	158,0

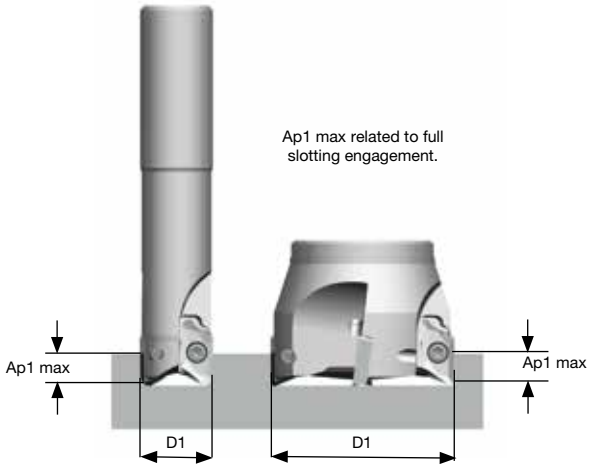
▼ Ap1 max at Helical Interpolation for 360° Tool Path

cutter diameter	Helical Interpolation depth Ap1 max for 360° tool path
25	4,06
32	4,06
40	4,06
50	4,06
63	4,06
80	4,06

NOTE: Ap max depending on cutter diameter, rigidity of the cutter, rigidity of the machine, and size of the flute.

▼ Ap1 max at Full Slotting

cutting diameter (D1)	Number of inserts Z	Ap1 max
25	2	7,5
32	2	11,0
32	3	6,0
40	3	9,0
50	4	9,0
63	4	11,0
80	5	11,0



Designed to Make Your Workplace More Productive

WIDIA™ X-Feed™

WIDIA-branded X-Feed tooling was created as an application-specific portfolio to remove as much material as possible in the shortest amount of time, using a shallow depth of cut to achieve higher MRR and boost productivity.

FEED → HIGH-FEED MILLING → BOOST PRODUCTIVITY

Victory™ X-Feed For Machining Stainless Steel and Titanium

AEROSPACE

70NS Series

Designed for circular plunging and ramping, 3D machining, face milling, and pocketing applications.

Victory X-Feed To Speed Up High-Feed Machining

VXF™-7 and VXF™-12 Series

VXF is a high-feed productivity booster designed to establish new industry standards with market-leading milling grades like WS40PM.

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WIDIA™

Solid End Milling

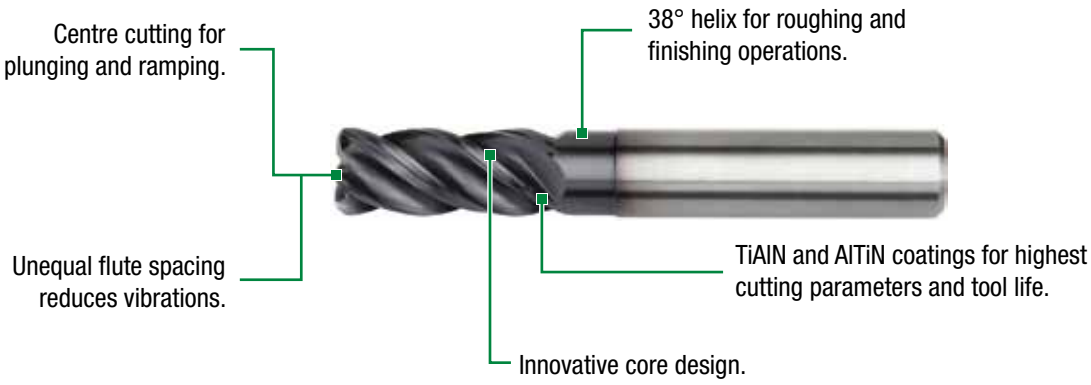
VariMill I™

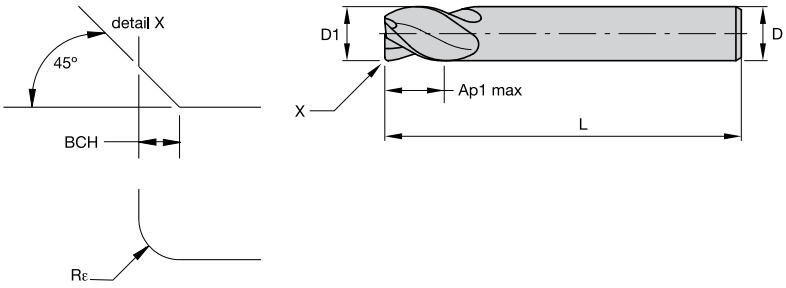
High-Performance Solid Carbide End Mills

VariMill I offers plunging, slotting, and profiling at the highest possible feed rates for a wide range of materials. They are designed to provide maximum Metal Removal Rates (MRR) and to achieve superior surface conditions. A wide range of diameters and corner configurations, such as chamfer, radii, and sharp edges, are available from stock.

- High-performance universal tools for almost all workpiece materials.
- Roughing and finishing with one tool.
- Various length-of-cut, long reach and necked versions, ball nose, corner chamfer, and corner radius available.

WIDIA HANITA

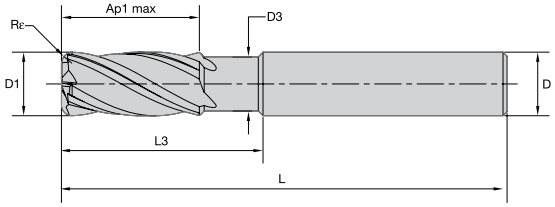




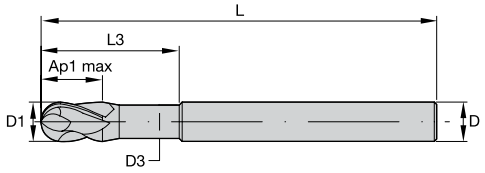
order number	catalogue number	grade	D1 (mm)	D (mm)	length of cut Ap1 max (mm)	L (mm)	Rε (mm)	BCH (mm)	number of flutes	Adaptor Style Machine Side
Series 4777 • VariMill I • Victory™ Grades										
5576753	**477704001T**	**WP15PE**	4,0	6	12,00	55	0,20	–	4	Straight-Cylindrical
5576751	**477704002T**	**WP15PE**	4,0	6	12,00	55	–	0,40	4	Straight-Cylindrical
5576752	**477704002W**	**WP15PE**	4,0	6	12,00	55	–	0,40	4	Weldon®
5576754	**4777040Z2T**	**WP15PE**	4,0	6	12,00	55	–	–	4	Straight-Cylindrical
5576755	**477705002T**	**WP15PE**	5,0	6	13,00	57	–	0,40	4	Straight-Cylindrical
5576756	**477705002W**	**WP15PE**	5,0	6	13,00	57	–	0,40	4	Weldon
5576757	**477705012T**	**WP15PE**	5,0	6	13,00	57	0,20	–	4	Straight-Cylindrical
5576758	**4777050Z2T**	**WP15PE**	5,0	6	13,00	57	–	–	4	Straight-Cylindrical
5576759	**477706002T**	**WP15PE**	6,0	6	13,00	57	–	0,40	4	Straight-Cylindrical
5576760	**477706002W**	**WP15PE**	6,0	6	13,00	57	–	0,40	4	Weldon
5576761	**477706012T**	**WP15PE**	6,0	6	13,00	57	0,20	–	4	Straight-Cylindrical
5576762	**4777060Z2T**	**WP15PE**	6,0	6	13,00	57	–	–	4	Straight-Cylindrical
5576763	**477707003T**	**WP15PE**	7,0	8	16,00	63	–	0,40	4	Straight-Cylindrical
5576764	**477707003W**	**WP15PE**	7,0	8	16,00	63	–	0,40	4	Weldon
5576765	**477707013T**	**WP15PE**	7,0	8	16,00	63	0,20	–	4	Straight-Cylindrical
5576766	**4777070Z3T**	**WP15PE**	7,0	8	16,00	63	–	–	4	Straight-Cylindrical
5576767	**477708003T**	**WP15PE**	8,0	8	16,00	63	–	0,40	4	Straight-Cylindrical
5576768	**477708003W**	**WP15PE**	8,0	8	16,00	63	–	0,40	4	Weldon
5576769	**477708013T**	**WP15PE**	8,0	8	16,00	63	0,20	–	4	Straight-Cylindrical
5576770	**4777080Z3T**	**WP15PE**	8,0	8	16,00	63	–	–	4	Straight-Cylindrical
5576771	**477709004T**	**WP15PE**	9,0	10	19,00	72	–	0,50	4	Straight-Cylindrical
5576773	**477709014T**	**WP15PE**	9,0	10	19,00	72	0,20	–	4	Straight-Cylindrical
5576774	**4777090Z4T**	**WP15PE**	9,0	10	19,00	72	–	–	4	Straight-Cylindrical
5576775	**477710004T**	**WP15PE**	10,0	10	22,00	72	–	0,50	4	Straight-Cylindrical
5576776	**477710004W**	**WP15PE**	10,0	10	22,00	72	–	0,50	4	Weldon
5576777	**477710024T**	**WP15PE**	10,0	10	22,00	72	0,30	–	4	Straight-Cylindrical
5576778	**4777100Z4T**	**WP15PE**	10,0	10	22,00	72	–	–	4	Straight-Cylindrical
5576779	**4777110Z5T**	**WP15PE**	11,0	12	26,00	83	–	–	4	Straight-Cylindrical
5576790	**477712005T**	**WP15PE**	12,0	12	26,00	83	–	0,50	4	Straight-Cylindrical
5576791	**477712005W**	**WP15PE**	12,0	12	26,00	83	–	0,50	4	Weldon
5576792	**477712025T**	**WP15PE**	12,0	12	26,00	83	0,30	–	4	Straight-Cylindrical
5576793	**4777120Z5T**	**WP15PE**	12,0	12	26,00	83	–	–	4	Straight-Cylindrical
5576794	**477714015T**	**WP15PE**	14,0	14	26,00	83	–	0,50	4	Straight-Cylindrical
5576795	**477714014W**	**WP15PE**	14,0	14	26,00	83	–	0,50	4	Weldon
5576796	**477716006T**	**WP15PE**	16,0	16	32,00	92	–	0,50	4	Straight-Cylindrical
5576797	**477716006W**	**WP15PE**	16,0	16	32,00	92	–	0,50	4	Weldon
5576798	**477716026T**	**WP15PE**	16,0	16	32,00	92	0,30	–	4	Straight-Cylindrical
5576799	**4777160Z6T**	**WP15PE**	16,0	16	32,00	92	–	–	4	Straight-Cylindrical
5576810	**477718018T**	**WP15PE**	18,0	18	32,00	92	–	0,50	4	Straight-Cylindrical
5576812	**477720007T**	**WP15PE**	20,0	20	38,00	104	–	0,50	4	Straight-Cylindrical
5576813	**477720007W**	**WP15PE**	20,0	20	38,00	104	–	0,50	4	Weldon
5576814	**47772002T**	**WP15PE**	20,0	20	38,00	104	0,30	–	4	Straight-Cylindrical
5576815	**4777200Z7T**	**WP15PE**	20,0	20	38,00	104	–	–	4	Straight-Cylindrical
5576816	**477725008T**	**WP15PE**	25,0	25	45,00	121	–	0,50	4	Straight-Cylindrical
5576817	**477725008W**	**WP15PE**	25,0	25	45,00	121	–	0,50	4	Weldon

Solid End Milling

VariMill I™



order number	catalogue number	grade	D1 (mm)	D (mm)	D3 (mm)	length of cut Ap1 max (mm)	L3 (mm)	L (mm)	Rε (mm)	number of flutes	Adaptor Style Machine Side
Series 47N7 • VariMill I • With Neck											
3462457	**47N706002LT**	**TiALN-LT**	6,0	6	5,5	13,00	21,00	57	0,50	4	Straight-Cylindrical
3462459	**47N706012LT**	**TiALN-LT**	6,0	6	5,5	13,00	21,00	57	1,00	4	Straight-Cylindrical
3462462	**47N708003LT**	**TiALN-LT**	8,0	8	7,5	16,00	27,00	63	0,50	4	Straight-Cylindrical
3462464	**47N708013LT**	**TiALN-LT**	8,0	8	7,5	16,00	27,00	63	1,00	4	Straight-Cylindrical
3462468	**47N710004LT**	**TiALN-LT**	10,0	10	9,5	22,00	32,00	72	0,50	4	Straight-Cylindrical
3462470	**47N710014LT**	**TiALN-LT**	10,0	10	9,5	22,00	32,00	72	1,00	4	Straight-Cylindrical
3462473	**47N710034LT**	**TiALN-LT**	10,0	10	9,5	22,00	32,00	72	2,00	4	Straight-Cylindrical
3462475	**47N712005LT**	**TiALN-LT**	12,0	12	11,5	26,00	38,00	83	0,50	4	Straight-Cylindrical
3462477	**47N712015LT**	**TiALN-LT**	12,0	12	11,5	26,00	38,00	83	1,00	4	Straight-Cylindrical
3462480	**47N712035LT**	**TiALN-LT**	12,0	12	11,5	26,00	38,00	83	2,00	4	Straight-Cylindrical
3462482	**47N712045LT**	**TiALN-LT**	12,0	12	11,5	26,00	38,00	83	4,00	4	Straight-Cylindrical
3462484	**47N716006LT**	**TiALN-LT**	16,0	16	15	32,00	44,00	92	1,00	4	Straight-Cylindrical
3462486	**47N716016LT**	**TiALN-LT**	16,0	16	15	32,00	44,00	92	2,00	4	Straight-Cylindrical
3462488	**47N716026LT**	**TiALN-LT**	16,0	16	15	32,00	44,00	92	4,00	4	Straight-Cylindrical
3462491	**47N720007MT**	**ALTIN-MT**	20,0	20	19	38,00	55,00	104	1,00	4	Straight-Cylindrical
3462492	**47N720017LT**	**TiALN-LT**	20,0	20	19	38,00	55,00	104	2,00	4	Straight-Cylindrical



order number	catalogue number	grade	D1 (mm)	D (mm)	D3 (mm)	length of cut Ap1 max (mm)	L3 (mm)	L (mm)	number of flutes	Adaptor Style Machine Side
Series 47N0 • VariMill I • Ball Nose • Victory™ Grades										
5576818	**47N005002T**	**WP15PE**	5,0	6	4,70	9,00	15,00	57	4	Straight-Cylindrical
5576819	**47N006002T**	**WP15PE**	6,0	6	5,64	10,00	15,00	57	4	Straight-Cylindrical
5576820	**47N008003T**	**WP15PE**	8,0	8	7,52	12,00	20,00	63	4	Straight-Cylindrical
5576821	**47N010004T**	**WP15PE**	10,0	10	9,4	14,00	25,00	72	4	Straight-Cylindrical
5576822	**47N012005T**	**WP15PE**	12,0	12	11,28	16,00	30,00	83	4	Straight-Cylindrical
5576823	**47N016006T**	**WP15PE**	16,0	16	15,04	22,00	38,00	92	4	Straight-Cylindrical
5576824	**47N020007T**	**WP15PE**	20,0	20	18,80	26,00	50,00	104	4	Straight-Cylindrical

A **Powerful History** of **High Performance**

For more than 90 years, WIDIA™ brand products and services have defined excellence in innovation, technology, and customer service. From the world's first patent for carbide indexable inserts to the development of the world's first coated grades, WIDIA delivers extreme results, no matter what the challenge.

From turning, indexable milling, solid end milling, holemaking, tapping, and tooling systems — WIDIA offers a broad range of solutions. Match the most expansive portfolio of precision-engineered products and engineered solution services available today with a global, specialised network of Authorised Distributor partners, and you have the tools you need — and the power that only comes from WIDIA.

WIDIA™ GTD™ WIDIA™ HANITA™ WIDIA™

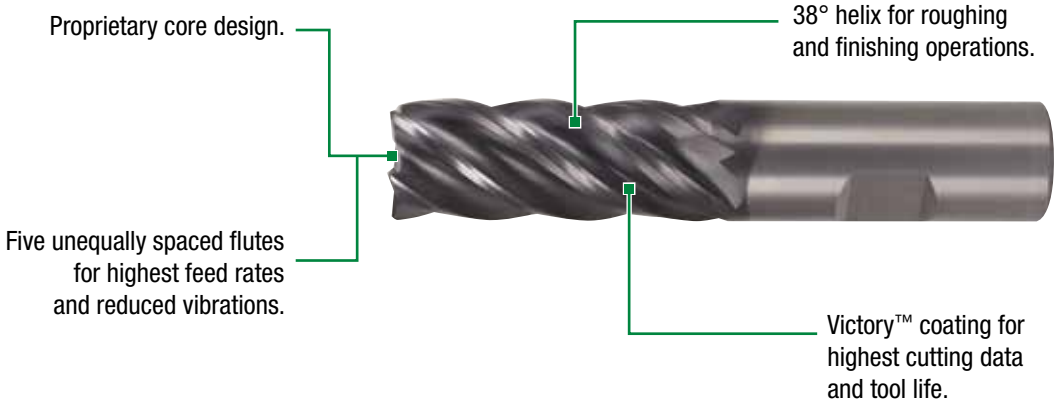
VariMill II™

High-Performance Solid Carbide End Mills

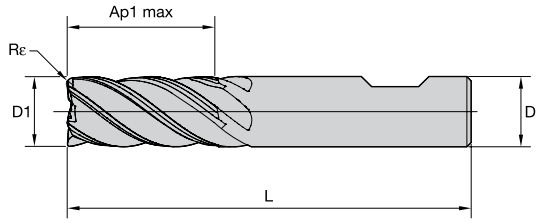
WIDIA HANITA

VariMill II end mills are the proven leader in the field of high-performance, chatter-free machining. They are designed to provide maximum metal removal rates and to achieve supreme surface conditions. Utilising an innovative and proprietary design with unequal flute spacing, VariMill II carbide end mills provide users with the most versatile technology available, capable of outperforming other high-performance tools.

- 1 x D slotting in titanium and stainless steels with five unequally spaced flutes.
- Roughing and finishing with one tool.
- Various lengths-of-cut; necked and corner radius versions available.



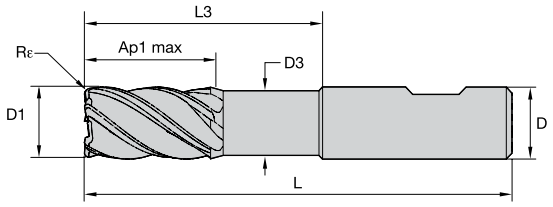
WIDIA VICTORY



order number	catalogue number	grade	D1 (mm)	D (mm)	length of cut Ap1 max (mm)	L (mm)	Rε (mm)	number of flutes	Adaptor Style Machine Side
Series 577C • VariMill II • With Centre Cut • Victory™ Grades									
5578866	**577C04002T**	**WP15PE**	4,0	6	11,00	55	0,25	5	Straight-Cylindrical
5578867	**577C04002W**	**WP15PE**	4,0	6	11,00	55	0,25	5	Weldon®
5578868	**577C04012T**	**WP15PE**	4,0	6	11,00	55	—	5	Straight-Cylindrical
5578990	**577C05002T**	**WP15PE**	5,0	6	13,00	57	0,25	5	Straight-Cylindrical
5578991	**577C05002W**	**WP15PE**	5,0	6	13,00	57	0,25	5	Weldon
5578992	**577C06002T**	**WP15PE**	6,0	6	13,00	57	0,40	5	Straight-Cylindrical
5578993	**577C06002W**	**WP15PE**	6,0	6	13,00	57	0,40	5	Weldon
5578994	**577C06012T**	**WP15PE**	6,0	6	13,00	57	—	5	Straight-Cylindrical
5578997	**577C08003T**	**WP15PE**	8,0	8	19,00	63	0,50	5	Straight-Cylindrical
5578998	**577C08003W**	**WP15PE**	8,0	8	19,00	63	0,50	5	Weldon
5578999	**577C08013T**	**WP15PE**	8,0	8	19,00	63	—	5	Straight-Cylindrical
5579023	**577C10004T**	**WP15PE**	10,0	10	22,00	72	0,50	5	Straight-Cylindrical
5579024	**577C10004W**	**WP15PE**	10,0	10	22,00	72	0,50	5	Weldon
5579025	**577C10014T**	**WP15PE**	10,0	10	22,00	72	—	5	Straight-Cylindrical
5579026	**577C12005T**	**WP15PE**	12,0	12	26,00	83	0,75	5	Straight-Cylindrical
5579027	**577C12005W**	**WP15PE**	12,0	12	26,00	83	0,75	5	Weldon
5579028	**577C12015T**	**WP15PE**	12,0	12	26,00	83	—	5	Straight-Cylindrical
5579029	**577C14004T**	**WP15PE**	14,0	14	26,00	83	0,75	5	Straight-Cylindrical
5579040	**577C14004W**	**WP15PE**	14,0	14	26,00	83	0,75	5	Weldon
5579041	**577C14014T**	**WP15PE**	14,0	14	26,00	83	—	5	Straight-Cylindrical
5579042	**577C16006T**	**WP15PE**	16,0	16	32,00	92	0,75	5	Straight-Cylindrical
5579043	**577C16006W**	**WP15PE**	16,0	16	32,00	92	0,75	5	Weldon
5579044	**577C16016T**	**WP15PE**	16,0	16	32,00	92	—	5	Straight-Cylindrical
5579047	**577C20007T**	**WP15PE**	20,0	20	38,00	104	0,75	5	Straight-Cylindrical
5579048	**577C20007W**	**WP15PE**	20,0	20	38,00	104	0,75	5	Weldon
5579049	**577C20017T**	**WP15PE**	20,0	20	38,00	104	—	5	Straight-Cylindrical

Solid End Milling

VariMill II™



order number	catalogue number	grade	D1 (mm)	D (mm)	D3 (mm)	length of cut Ap1 max (mm)	L3 (mm)	L (mm)	Rε (mm)	number of flutes	Adaptor Style Machine Side
Series 57NC • VariMill II • With Neck • With Centre Cut • Victory™ Grades											
5598906	**57NC06002T**	**WS15PE**	6,0	6	5,64	13,00	18,00	63	–	5	Straight-Cylindrical
5598907	**57NC06022T**	**WS15PE**	6,0	6	5,64	13,00	18,00	63	0,50	5	Straight-Cylindrical
5598909	**57NC06032T**	**WS15PE**	6,0	6	5,64	13,00	18,00	63	1,00	5	Straight-Cylindrical
5599071	**57NC06042W**	**WS15PE**	6,0	6	5,64	13,00	18,00	63	1,50	5	Weldon
5599072	**57NC08003T**	**WS15PE**	8,0	8	7,52	19,00	24,00	76	–	5	Straight-Cylindrical
5599073	**57NC08023T**	**WS15PE**	8,0	8	7,52	19,00	24,00	76	0,50	5	Straight-Cylindrical
5599074	**57NC08023W**	**WS15PE**	8,0	8	7,52	19,00	24,00	76	0,50	5	Weldon
5599075	**57NC08033T**	**WS15PE**	8,0	8	7,52	19,00	24,00	76	1,00	5	Straight-Cylindrical
5599076	**57NC08033W**	**WS15PE**	8,0	8	7,52	19,00	24,00	76	1,00	5	Weldon
5599077	**57NC08053W**	**WS15PE**	8,0	8	7,52	19,00	24,00	76	2,00	5	Weldon
5599078	**57NC10004T**	**WS15PE**	10,0	10	9,4	22,00	30,00	76	–	5	Straight-Cylindrical
5599079	**57NC10024T**	**WS15PE**	10,0	10	9,4	22,00	30,00	76	0,50	5	Straight-Cylindrical
5599080	**57NC10024W**	**WS15PE**	10,0	10	9,4	22,00	30,00	76	0,50	5	Weldon
5599081	**57NC10034T**	**WS15PE**	10,0	10	9,4	22,00	30,00	76	1,00	5	Straight-Cylindrical
5599082	**57NC10034W**	**WS15PE**	10,0	10	9,4	22,00	30,00	76	1,00	5	Weldon
5599083	**57NC10054T**	**WS15PE**	10,0	10	9,4	22,00	30,00	76	2,00	5	Straight-Cylindrical
5599085	**57NC12005T**	**WS15PE**	12,0	12	11,28	26,00	36,00	83	–	5	Straight-Cylindrical
5599086	**57NC12025T**	**WS15PE**	12,0	12	11,28	26,00	36,00	83	0,50	5	Straight-Cylindrical
5599087	**57NC12025W**	**WS15PE**	12,0	12	11,28	26,00	36,00	83	0,50	5	Weldon
5599088	**57NC12035T**	**WS15PE**	12,0	12	11,28	26,00	36,00	83	1,00	5	Straight-Cylindrical
5599090	**57NC12055T**	**WS15PE**	12,0	12	11,28	26,00	36,00	83	2,00	5	Straight-Cylindrical
5599091	**57NC12055W**	**WS15PE**	12,0	12	11,28	26,00	36,00	83	2,00	5	Weldon
5599092	**57NC16006T**	**WS15PE**	16,0	16	15,04	32,00	48,00	100	–	5	Straight-Cylindrical
5599093	**57NC16026T**	**WS15PE**	16,0	16	15,04	32,00	48,00	100	0,50	5	Straight-Cylindrical
5598905	**57NC16026W**	**WS15PE**	16,0	16	15,04	32,00	48,00	100	0,50	5	Weldon
5599094	**57NC16036T**	**WS15PE**	16,0	16	15,04	32,00	48,00	100	1,00	5	Straight-Cylindrical
5599095	**57NC16036W**	**WS15PE**	16,0	16	15,04	32,00	48,00	100	1,00	5	Weldon
5599096	**57NC16056T**	**WS15PE**	16,0	16	15,04	32,00	48,00	100	2,00	5	Straight-Cylindrical
5599098	**57NC16076T**	**WS15PE**	16,0	16	15,04	32,00	48,00	100	3,00	5	Straight-Cylindrical
5599099	**57NC16076W**	**WS15PE**	16,0	16	15,04	32,00	48,00	100	3,00	5	Weldon
5599100	**57NC20007T**	**WS15PE**	20,0	20	18,8	38,00	60,00	115	–	5	Straight-Cylindrical
5599101	**57NC20027T**	**WS15PE**	20,0	20	18,8	38,00	60,00	115	0,50	5	Straight-Cylindrical
5599102	**57NC20027W**	**WS15PE**	20,0	20	18,8	38,00	60,00	115	0,50	5	Weldon
5599103	**57NC20037T**	**WS15PE**	20,0	20	18,8	38,00	60,00	115	1,00	5	Straight-Cylindrical
5599104	**57NC20037W**	**WS15PE**	20,0	20	18,8	38,00	60,00	115	1,00	5	Weldon
5599105	**57NC20057T**	**WS15PE**	20,0	20	18,8	38,00	60,00	115	2,00	5	Straight-Cylindrical
5599107	**57NC20077T**	**WS15PE**	20,0	20	18,8	38,00	60,00	115	3,00	5	Straight-Cylindrical
5599108	**57NC20077W**	**WS15PE**	20,0	20	18,8	38,00	60,00	115	3,00	5	Weldon
5599112	**57NC25028T**	**WS15PE**	25,0	20	23,50	45,00	75,00	135	0,50	5	Straight-Cylindrical
5599116	**57NC25058T**	**WS15PE**	25,0	20	23,50	45,00	75,00	135	2,00	5	Straight-Cylindrical

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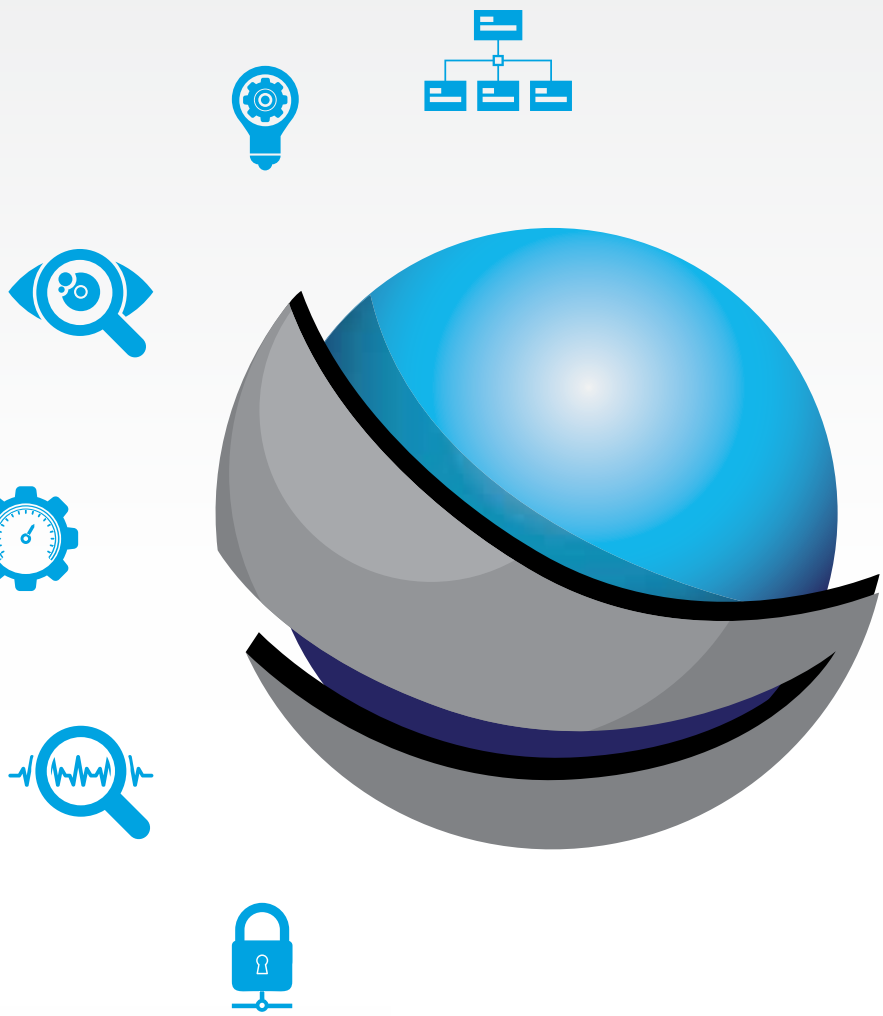

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Interactive feed & speed calculators.

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NOVO™

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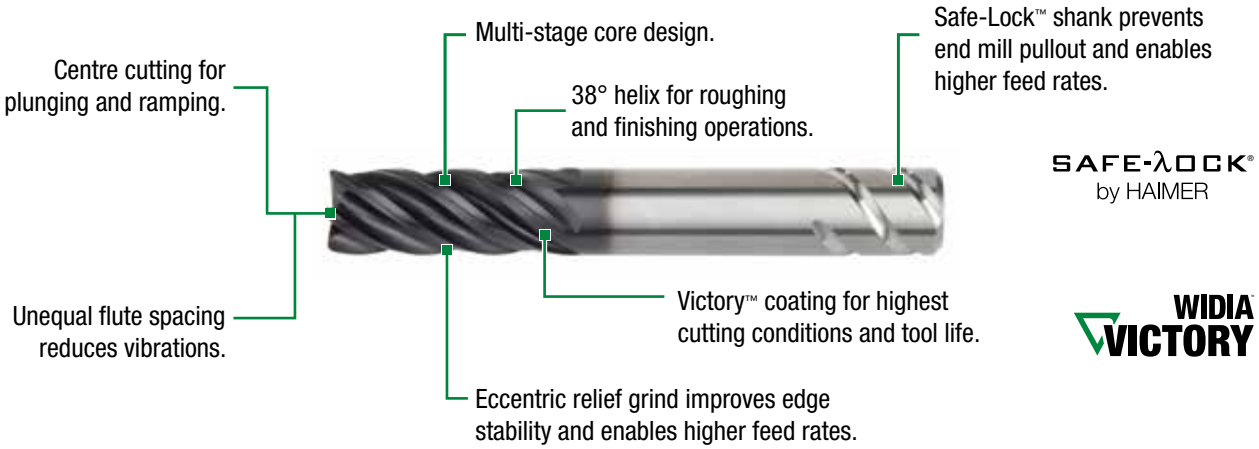
VariMill II™ ER

High-Performance Solid Carbide End Mills

Engineered with Eccentric Relief (ER) grind at the cutting edges for greater edge strength, enabling higher metal removal rates and increased productivity. The new VariMill II ER is the first WIDIA™ off-the-shelf end mill available with Safe-Lock™ by HAIMER, providing excellent stability, eliminating end mill pullout, and increasing concentric tool clamping. Though primarily designed for roughing and finishing applications in the aerospace industry, VariMill II ER can be used as a solution for any titanium or stainless steel application and is capable of slotting, ramping, and plunging.

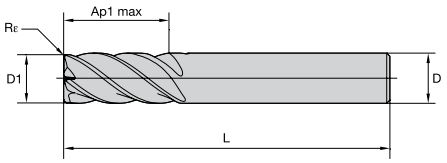
WIDIA HANITA

- High-performance tools for titanium and stainless steel workpiece materials.
- Roughing and finishing with one tool, lowering tool costs.
- Various radius and necked versions available.
- Standard offering with Safe-Lock™ by HAIMER.

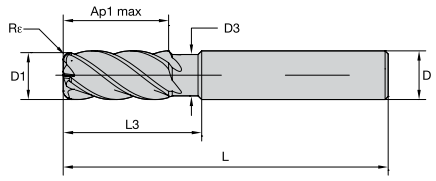


SAFE-LOCK® by HAIMER

WIDIA VICTORY



order number	catalogue number	grade	D1 (mm)	D (mm)	length of cut Ap1 max (mm)	L (mm)	Rε (mm)	number of flutes	Adaptor Style Machine Side
Series 577E • VariMill II™ ER • Victory™ Grades									
5599176	**577E12015W**	**WS15PE**	12,0	12	26,00	83	0,75	5	Weldon
5599177	**577E16006V**	**WS15PE**	16,0	16	32,00	92	–	5	Safe-Lock
5599178	**577E16016V**	**WS15PE**	16,0	16	32,00	92	0,75	5	Safe-Lock
5599179	**577E16016W**	**WS15PE**	16,0	16	32,00	92	0,75	5	Weldon
5599180	**577E20007V**	**WS15PE**	20,0	20	38,00	104	–	5	Safe-Lock
5599181	**577E20017V**	**WS15PE**	20,0	20	38,00	104	0,75	5	Safe-Lock
5599182	**577E20017W**	**WS15PE**	20,0	20	38,00	104	0,75	5	Weldon



order number	catalogue number	grade	D1 (mm)	D (mm)	D3 (mm)	length of cut Ap1 max (mm)	L3 (mm)	L (mm)	Rε (mm)	number of flutes	Adaptor Style Machine Side
Series 57NE • VariMill II ER • With Neck • Victory Grades											
5599122	**57NE10004T**	**WS15PE**	10,0	10	9,4	22,00	30,00	76	–	5	Straight-Cylindrical
5599123	**57NE10024T**	**WS15PE**	10,0	10	9,4	22,00	30,00	76	0,50	5	Straight-Cylindrical
5599124	**57NE10024W**	**WS15PE**	10,0	10	9,4	22,00	30,00	76	0,50	5	Weldon
5599125	**57NE10034T**	**WS15PE**	10,0	10	9,4	22,00	30,00	76	1,00	5	Straight-Cylindrical
5599126	**57NE10034W**	**WS15PE**	10,0	10	9,4	22,00	30,00	76	1,00	5	Weldon
5599127	**57NE10054T**	**WS15PE**	10,0	10	9,4	22,00	30,00	76	2,00	5	Straight-Cylindrical
5599128	**57NE10054W**	**WS15PE**	10,0	10	9,4	22,00	30,00	76	2,00	5	Weldon
5599129	**57NE12005V**	**WS15PE**	12,0	12	11,28	26,00	36,00	83	–	5	Safe-Lock
5599130	**57NE12025V**	**WS15PE**	12,0	12	11,28	26,00	36,00	83	0,50	5	Safe-Lock
5599131	**57NE12025W**	**WS15PE**	12,0	12	11,28	26,00	36,00	83	0,50	5	Weldon
5599132	**57NE12035V**	**WS15PE**	12,0	12	11,28	26,00	36,00	83	1,00	5	Safe-Lock
5599133	**57NE12035W**	**WS15PE**	12,0	12	11,28	26,00	36,00	83	1,00	5	Weldon
5599134	**57NE12055V**	**WS15PE**	12,0	12	11,28	26,00	36,00	83	2,00	5	Safe-Lock
5599135	**57NE12055W**	**WS15PE**	12,0	12	11,28	26,00	36,00	83	2,00	5	Weldon
5599136	**57NE16006V**	**WS15PE**	16,0	16	15,04	32,00	48,00	100	–	5	Safe-Lock
5599137	**57NE16026V**	**WS15PE**	16,0	16	15,04	32,00	48,00	100	0,50	5	Safe-Lock
5599138	**57NE16026W**	**WS15PE**	16,0	16	15,04	32,00	48,00	100	0,50	5	Weldon
5599139	**57NE16036V**	**WS15PE**	16,0	16	15,04	32,00	48,00	100	1,00	5	Safe-Lock
5599140	**57NE16036W**	**WS15PE**	16,0	16	15,04	32,00	48,00	100	1,00	5	Weldon
5599141	**57NE16056V**	**WS15PE**	16,0	16	15,04	32,00	48,00	100	2,00	5	Safe-Lock
5599142	**57NE16056W**	**WS15PE**	16,0	16	15,04	32,00	48,00	100	2,00	5	Weldon
5599143	**57NE20007V**	**WS15PE**	20,0	20	18,8	38,00	60,00	115	–	5	Safe-Lock
5599145	**57NE20027W**	**WS15PE**	20,0	20	18,8	38,00	60,00	115	0,50	5	Weldon
5599146	**57NE20037V**	**WS15PE**	20,0	20	18,8	38,00	60,00	115	1,00	5	Safe-Lock
5599148	**57NE20057V**	**WS15PE**	20,0	20	18,8	38,00	60,00	115	2,00	5	Safe-Lock
5599160	**57NE20087V**	**WS15PE**	20,0	20	18,8	38,00	60,00	115	4,00	5	Safe-Lock
5599161	**57NE20087W**	**WS15PE**	20,0	20	18,8	38,00	60,00	115	4,00	5	Weldon
5599165	**57NE25038V**	**WS15PE**	25,0	25	23,50	45,00	75,00	135	1,00	5	Safe-Lock

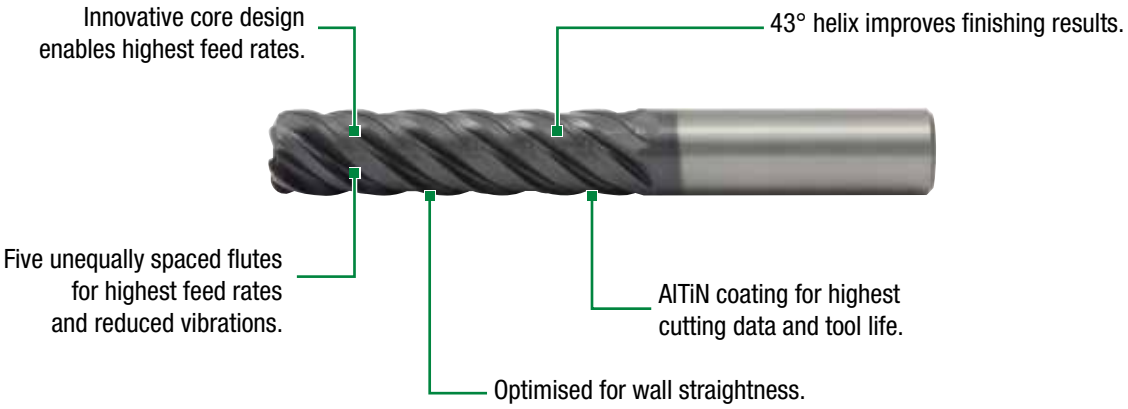
VariMill II™ Long

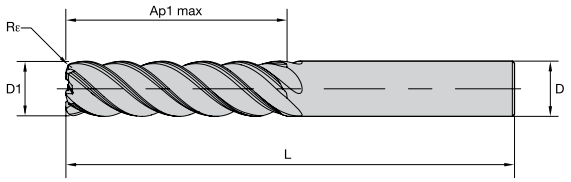
High-Performance Solid Carbide End Mills

Designed to achieve highest surface quality and tool life in titanium, stainless steels, and steels. Innovative core and tool geometry design enable chatter-free corner machining in one pass. VariMill II Long covers 4 x D lengths-of-cut for semi-finishing and fine finishing operations with radii and sharp corner versions from stock.

- Tailored 43° helix improves surface finish.
- Less passes in side milling with 4 x D length-of-cut capability.
- One tool for semi-finishing and fine finishing operations.
- No need for feed rate reduction when machining corners.

WIDIA™ HANITA™





order number	catalogue number	grade	D1 (mm)	D (mm)	length of cut Ap1 max (mm)	L (mm)	Rε (mm)	number of flutes	Adaptor Style Machine Side
Series 5718 • VariMill II Long • 4 x D Length of Cut									
5096567	**571806012MT**	**ALTIN-MT**	6,0	6	24,00	76	0,50	5	Straight-Cylindrical
5096568	**571806022MT**	**ALTIN-MT**	6,0	6	24,00	76	1,00	5	Straight-Cylindrical
5096660	**571808013MT**	**ALTIN-MT**	8,0	8	32,00	76	0,50	5	Straight-Cylindrical
5096661	**571808023MT**	**ALTIN-MT**	8,0	8	32,00	76	1,00	5	Straight-Cylindrical
4124297	**571810004MT**	**ALTIN-MT**	10,0	10	40,00	100	–	5	Straight-Cylindrical
5096662	**571810014MT**	**ALTIN-MT**	10,0	10	40,00	100	0,50	5	Straight-Cylindrical
5096666	**571812015MT**	**ALTIN-MT**	12,0	12	48,00	125	0,50	5	Straight-Cylindrical
4124298	**571812005MT**	**ALTIN-MT**	12,0	12	48,00	125	–	5	Straight-Cylindrical
5096667	**571812025MT**	**ALTIN-MT**	12,0	12	48,00	125	1,00	5	Straight-Cylindrical
5096755	**571814054MT**	**ALTIN-MT**	14,0	14	56,00	120	4,00	5	Straight-Cylindrical
4124300	**571816006MT**	**ALTIN-MT**	16,0	16	64,00	141	–	5	Straight-Cylindrical
5096756	**571816016MT**	**ALTIN-MT**	16,0	16	64,00	141	0,50	5	Straight-Cylindrical
5096757	**571816026MT**	**ALTIN-MT**	16,0	16	64,00	141	1,00	5	Straight-Cylindrical
5096758	**571816036MT**	**ALTIN-MT**	16,0	16	64,00	141	2,00	5	Straight-Cylindrical
5096759	**571816046MT**	**ALTIN-MT**	16,0	16	64,00	141	3,00	5	Straight-Cylindrical
5096800	**571816056MT**	**ALTIN-MT**	16,0	16	64,00	141	4,00	5	Straight-Cylindrical
4124302	**571820007MT**	**ALTIN-MT**	20,0	20	80,00	150	–	5	Straight-Cylindrical
5096805	**571820017MT**	**ALTIN-MT**	20,0	20	80,00	150	0,50	5	Straight-Cylindrical
5096806	**571820027MT**	**ALTIN-MT**	20,0	20	80,00	150	1,00	5	Straight-Cylindrical
5096807	**571820037MT**	**ALTIN-MT**	20,0	20	80,00	150	2,00	5	Straight-Cylindrical
5096808	**571820047MT**	**ALTIN-MT**	20,0	20	80,00	150	3,00	5	Straight-Cylindrical
5096809	**571820057MT**	**ALTIN-MT**	20,0	20	80,00	150	4,00	5	Straight-Cylindrical
4124323	**571825008MT**	**ALTIN-MT**	25,0	25	100,00	170	–	5	Straight-Cylindrical
5096860	**571825018MT**	**ALTIN-MT**	25,0	25	100,00	170	0,50	5	Straight-Cylindrical
5096861	**571825028MT**	**ALTIN-MT**	25,0	25	100,00	170	1,00	5	Straight-Cylindrical
5096862	**571825038MT**	**ALTIN-MT**	25,0	25	100,00	170	2,00	5	Straight-Cylindrical
5096863	**571825048MT**	**ALTIN-MT**	25,0	25	100,00	170	3,00	5	Straight-Cylindrical

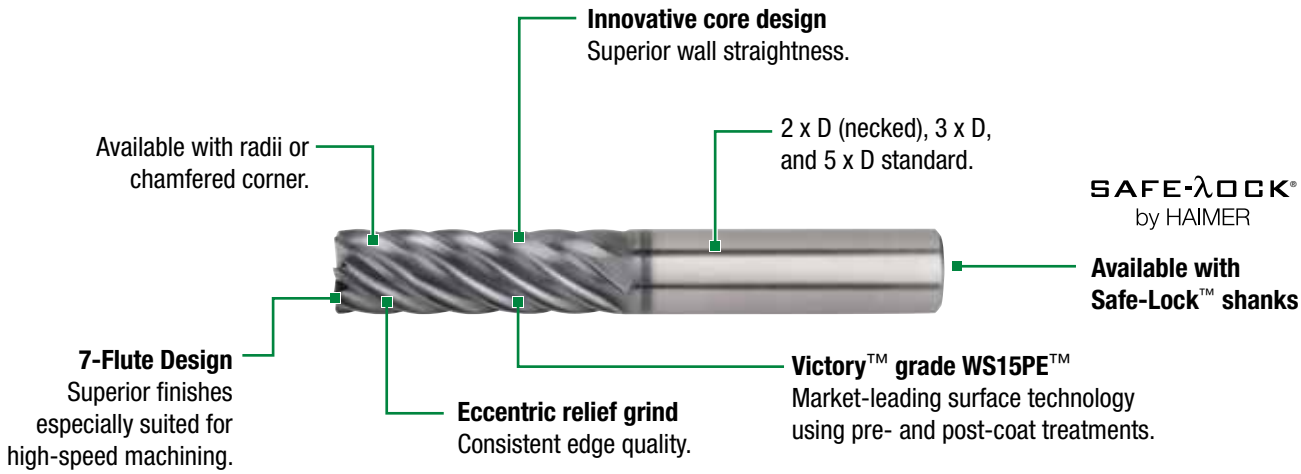
VariMill III™ ER

High-Performance Solid Carbide End Mills

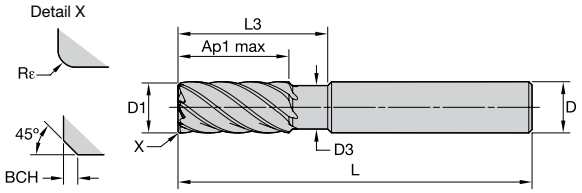
The trend towards more efficiency and increased productivity using high-speed machining techniques such as trochoidal and peel milling will continue to be a focus for aerospace components. The new VariMill III ER is designed to provide the highest Metal Removal Rates (MRR) and extended tool life in the most demanding materials in the aerospace industry. VariMill III ER is designed to be applied in titanium and stainless steel workpiece materials for both semi-finishing and finishing applications.

WIDIA HANITA

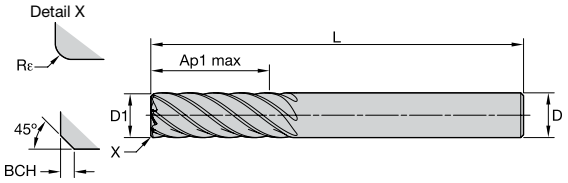
- 7-flute eccentric relief design provides edge strength along with high productivity.
- Superior surface finishes and wall straightness capability from specialised core.
- Finishing and semi-finishing at up to 30% of the diameter with one tool.
- First choice for high-speed machining in difficult-to-cut workpiece materials.



WIDIA VICTORY



order number	catalogue number	grade	D1 (mm)	D (mm)	D3 (mm)	length of cut Ap1 max (mm)	L3 (mm)	L (mm)	Rε (mm)	BCH (mm)	number of flutes	Adaptor Style Machine Side
Series 77NE • VariMill III ER • With Neck • Victory™ Grades												
5978039	**77NE10004T**	**WS15PE**	10,0	10	9,40	22,00	30,00	76	–	0,50	7	Straight-Cylindrical
5978040	**77NE10024T**	**WS15PE**	10,0	10	9,40	22,00	30,00	76	0,50	–	7	Straight-Cylindrical
5978096	**77NE12005T**	**WS15PE**	12,0	12	11,28	26,00	36,00	83	–	0,50	7	Straight-Cylindrical
5978097	**77NE12025T**	**WS15PE**	12,0	12	11,28	26,00	36,00	83	0,50	–	7	Straight-Cylindrical
5978104	**77NE16006T**	**WS15PE**	16,0	16	15,04	32,00	48,00	100	–	0,50	7	Straight-Cylindrical
5978105	**77NE16026T**	**WS15PE**	16,0	16	15,04	32,00	48,00	100	0,50	–	7	Straight-Cylindrical
5978112	**77NE20007T**	**WS15PE**	20,0	20	18,80	38,00	60,00	115	–	0,50	7	Straight-Cylindrical
5978113	**77NE20027T**	**WS15PE**	20,0	20	18,80	38,00	60,00	115	0,50	–	7	Straight-Cylindrical



order number	catalogue number	grade	D1 (mm)	D (mm)	length of cut Ap1 max (mm)	L (mm)	Rε (mm)	BCH (mm)	number of flutes	Adaptor Style Machine Side
Series 771E 772E • VariMill III ER • Victory Grades										
5978092	**771E10004T**	**WS15PE**	10,0	10	30,00	76	–	0,50	7	Straight-Cylindrical
5978093	**771E10024T**	**WS15PE**	10,0	10	30,00	76	0,50	–	7	Straight-Cylindrical
5978094	**772E10004T**	**WS15PE**	10,0	10	50,00	100	–	0,50	7	Straight-Cylindrical
5978095	**772E10024T**	**WS15PE**	10,0	10	50,00	100	0,50	–	7	Straight-Cylindrical
5978098	**771E12005T**	**WS15PE**	12,0	12	36,00	100	–	0,50	7	Straight-Cylindrical
5978099	**771E12025T**	**WS15PE**	12,0	12	36,00	100	0,50	–	7	Straight-Cylindrical
5978100	**772E12005T**	**WS15PE**	12,0	12	60,00	125	–	0,50	7	Straight-Cylindrical
5978102	**772E12005V**	**WS15PE**	12,0	12	60,00	125	–	0,50	7	Safe-Lock™
5978101	**772E12025T**	**WS15PE**	12,0	12	60,00	125	0,50	–	7	Straight-Cylindrical
5978103	**772E12025V**	**WS15PE**	12,0	12	60,00	125	0,50	–	7	Safe-Lock
5978106	**771E16006T**	**WS15PE**	16,0	16	48,00	110	–	0,50	7	Straight-Cylindrical
5978107	**771E16026T**	**WS15PE**	16,0	16	48,00	110	0,50	–	7	Straight-Cylindrical
5978108	**772E16006T**	**WS15PE**	16,0	16	80,00	141	–	0,50	7	Straight-Cylindrical
5978110	**772E16006V**	**WS15PE**	16,0	16	80,00	141	–	0,50	7	Safe-Lock
5978109	**772E16026T**	**WS15PE**	16,0	16	80,00	141	0,50	–	7	Straight-Cylindrical
5978111	**772E16026V**	**WS15PE**	16,0	16	80,00	141	0,50	–	7	Safe-Lock
5978114	**771E20007T**	**WS15PE**	20,0	20	60,00	125	–	0,50	7	Straight-Cylindrical
5978115	**771E20027T**	**WS15PE**	20,0	20	60,00	125	0,50	–	7	Straight-Cylindrical
5978116	**772E20007T**	**WS15PE**	20,0	20	100,00	166	–	0,50	7	Straight-Cylindrical
5978117	**772E20027T**	**WS15PE**	20,0	20	100,00	166	0,50	–	7	Straight-Cylindrical

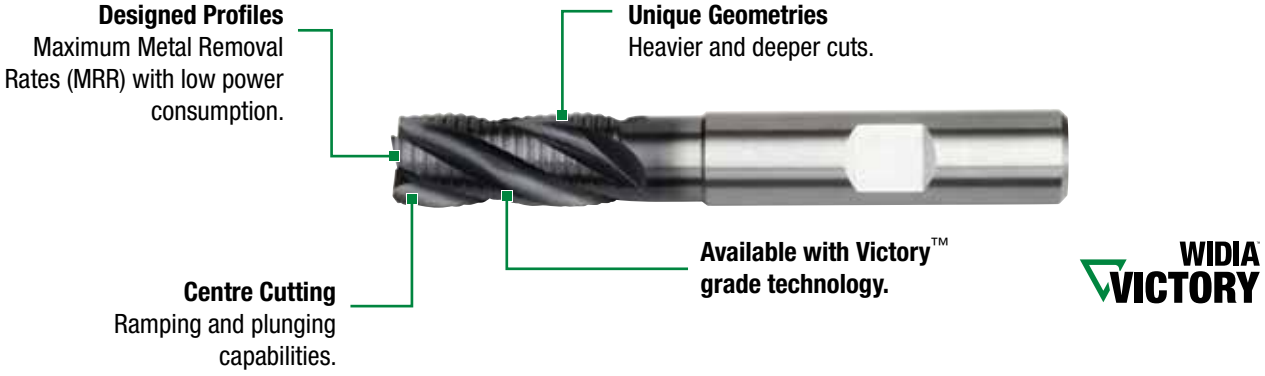
HP ROUGHER

High-Performance Solid Carbide

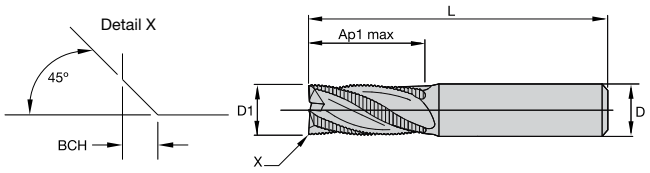
Special proprietary carbide substrates and state-of-the-art surface technology, combined with unique geometries, provides end users with the capability to significantly reduce machining time with heavier and deeper cuts, fewer passes, and faster surface speed. WIDIA™ geometries are uniquely formed and fine-tuned to optimise chip form, size, and evacuation generated by a given workpiece material.

- For all ferrous workpiece materials.
- Low power consumption at high speeds with long tool life.
- Provides maximum metal removal rates in both slotting and profiling operations.
- Alternative solution for productivity gains on light machines.

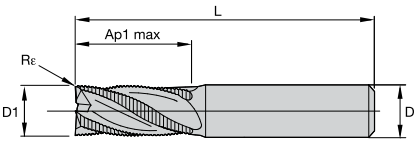
WIDIA HANITA



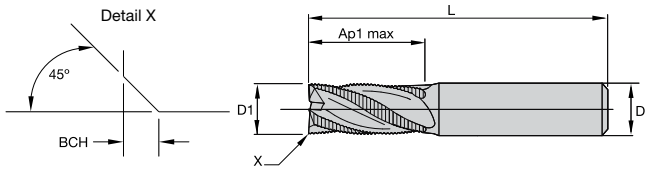
WIDIA VICTORY



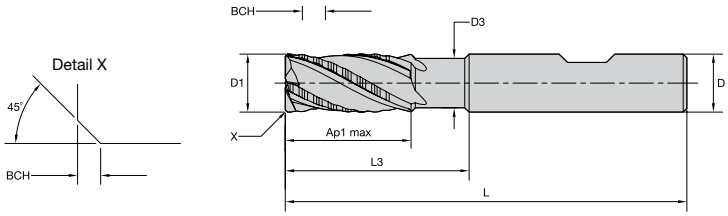
order number	catalogue number	grade	D1 (mm)	D (mm)	length of cut Ap1 max (mm)	L (mm)	BCH (mm)	number of flutes	Adaptor Style Machine Side
Series 4976 • Victory™ Grades									
5560708	**497604002T**	**WP15PE**	4,0	6	8,00	57	0,30	3	Straight-Cylindrical
5560709	**497605002T**	**WP15PE**	5,0	6	13,00	57	0,30	3	Straight-Cylindrical
5560710	**497606002T**	**WP15PE**	6,0	6	13,00	57	0,30	3	Straight-Cylindrical
5560711	**497608003T**	**WP15PE**	8,0	8	16,00	63	0,30	3	Straight-Cylindrical
5560712	**497610004T**	**WP15PE**	10,0	10	22,00	72	0,50	4	Straight-Cylindrical
5560713	**497612005T**	**WP15PE**	12,0	12	26,00	83	0,50	4	Straight-Cylindrical
5560714	**497614014T**	**WP15PE**	14,0	14	26,00	83	0,50	4	Straight-Cylindrical
5560715	**497616006T**	**WP15PE**	16,0	16	32,00	92	0,50	4	Straight-Cylindrical
5560717	**497620007T**	**WP15PE**	20,0	20	38,00	104	0,50	4	Straight-Cylindrical



order number	catalogue number	grade	D1 (mm)	D (mm)	length of cut Ap1 max (mm)	L (mm)	BCH (mm)	number of flutes	Adaptor Style Machine Side
Series 4U80 • Victory™ Grades									
6431246	**4U80M060R2TC**	**ALTIN-MT**	6,0	6	13,00	57	0,30	4	Straight-Cylindrical
6431247	**4U80M080R3TC**	**ALTIN-MT**	8,0	8	16,00	63	0,30	4	Straight-Cylindrical
6431248	**4U80M100R4TE**	**ALTIN-MT**	10,0	10	22,00	72	0,50	4	Straight-Cylindrical
6431249	**4U80M120R5TE**	**ALTIN-MT**	12,0	12	26,00	83	0,50	4	Straight-Cylindrical
6431250	**4U80M160R6TE**	**ALTIN-MT**	16,0	16	32,00	92	0,50	6	Straight-Cylindrical
6431401	**4U80M200R7TG**	**ALTIN-MT**	20,0	20	38,00	104	1,00	6	Straight-Cylindrical
6431402	**4U80M250R8TG**	**ALTIN-MT**	25,0	25	45,00	121	1,00	6	Straight-Cylindrical



order number	catalogue number	grade	D1 (mm)	D (mm)	length of cut Ap1 max (mm)	L (mm)	BCH (mm)	number of flutes	Adaptor Style Machine Side
Series 4U70 • Victory Grades									
5583437	**4U7008003W**	**WP15PE**	8,0	8	16,00	63	1,00	4	Weldon®
5583439	**4U7012005W**	**WP15PE**	12,0	12	26,00	83	0,60	4	Weldon
5583440	**4U7016006W**	**WP15PE**	16,0	16	32,00	92	1,00	6	Weldon
5583431	**4U7016046T**	**WP15PE**	16,0	16	32,00	92	1,12	4	Straight-Cylindrical
5583433	**4U7020047T**	**WP15PE**	20,0	20	38,00	104	0,40	4	Straight-Cylindrical



order number	catalogue number	grade	D1 (mm)	D (mm)	D3 (mm)	length of cut Ap1 max (mm)	L3 (mm)	L (mm)	BCH (mm)	number of flutes	Adaptor Style Machine Side
Series 49N6 • With Neck											
3474585	**49N606002MW**	**ALTIN-MW**	6,0	6	5,5	13,00	21,00	57	0,30	3	Weldon
3474587	**49N608003MW**	**ALTIN-MW**	8,0	8	7,5	16,00	27,00	63	0,30	3	Weldon
3474589	**49N610004MW**	**ALTIN-MW**	10,0	10	9,5	22,00	32,00	72	0,50	4	Weldon
3474591	**49N612005MW**	**ALTIN-MW**	12,0	12	11	26,00	38,00	83	0,50	4	Weldon
3474594	**49N616006MW**	**ALTIN-MW**	16,0	16	15	32,00	44,00	92	0,50	4	Weldon

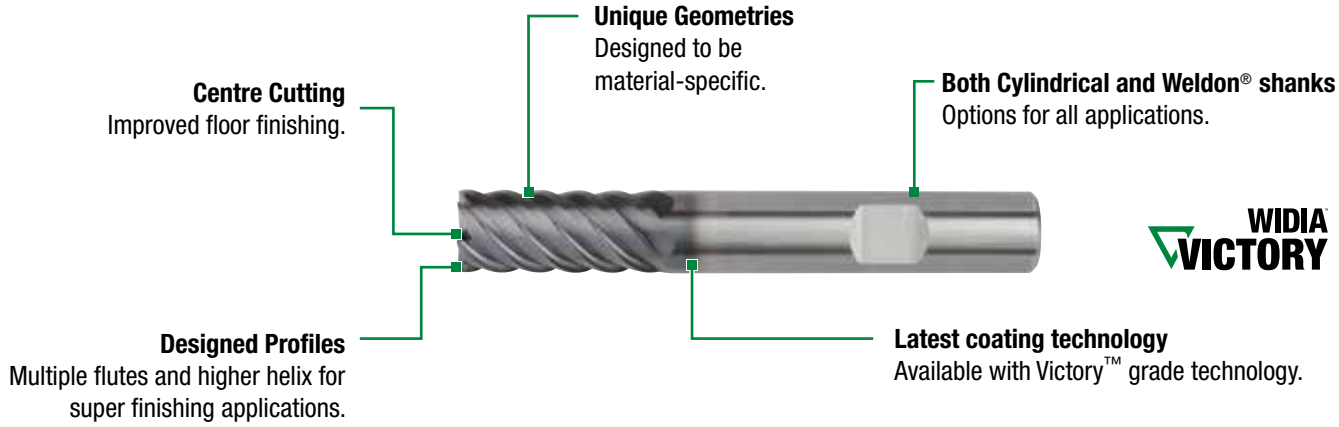
HP Finishers

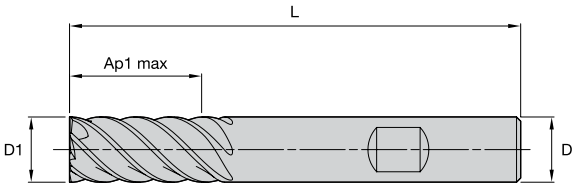
High-Performance Finishing Solid Carbide End Mills

Only the finest carbide substrates with market-leading geometries and state-of-the-art surface technology are used to ensure the very best quality finishing end mills are produced. These tools are fully compliant with NAS, DIN, and JIS specifications. Whether you require higher metal removal rates, improved surface finishes, fewer passes, or longer tool life, WIDIA-Hanita™ high-performance finishing end mills deliver the reliability and consistency you can depend on during your critical finishing operations.

WIDIA HANITA

- Specific geometries targeted for steels, stainless steels, high-temperature alloys, and titanium.
- Stub, regular, long, and extra long lengths for all applications.
- Special designs with higher number of flutes and increased helix angles for super finishing applications.
- Latest coating technology, including Victory™ grades.





order number	catalogue number	grade	D1 (mm)	D (mm)	length of cut Ap1 max (mm)	L (mm)	number of flutes	Adaptor Style Machine Side
Series D507 D517 • Victory™ Grades								
5559100	**D50706002W**	**WP15PE**	6,0	6	10,00	54	6	Weldon®
5559108	**D51706002W**	**WP15PE**	6,0	6	13,00	57	6	Weldon
5559101	**D50708003W**	**WP15PE**	8,0	8	12,00	58	6	Weldon
5559109	**D51708003W**	**WP15PE**	8,0	8	19,00	63	6	Weldon
5559102	**D50710004W**	**WP15PE**	10,0	10	14,00	66	6	Weldon
5559110	**D51710004W**	**WP15PE**	10,0	10	22,00	72	6	Weldon
5559103	**D50712005W**	**WP15PE**	12,0	12	16,00	73	6	Weldon
5559111	**D51712005W**	**WP15PE**	12,0	12	26,00	83	6	Weldon
5559105	**D50716006W**	**WP15PE**	16,0	16	22,00	82	6	Weldon
5559113	**D51716006W**	**WP15PE**	16,0	16	32,00	92	6	Weldon

General Purpose

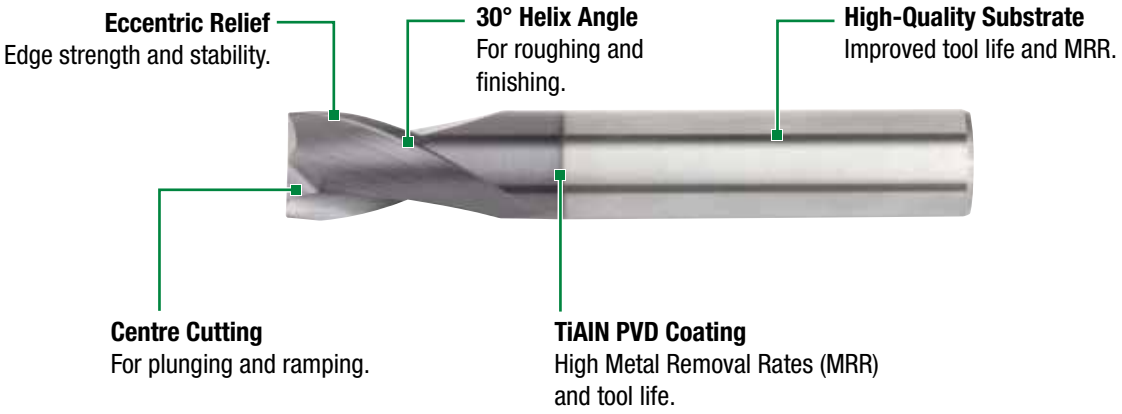
2-Flute End Mills

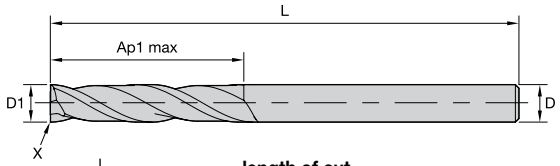
WIDIA HANITA

General purpose offers plunging, slotting, and profiling for a wide range of materials and applications. Designed to provide high metal removal rates and excellent surface conditions at a value price. A wide range of diameters, lengths, and corner styles (such as chamfered, sharp edge, and ball nose) are available from stock.

General Purpose • 2-Flute

- General purpose tools for a wide range of workpiece materials.
- Roughing and finishing with one tool.
- Various lengths-of-cut and overall lengths with different front end designs available.
- Two flutes for high flexibility in unstable conditions.





order number	catalogue number	grade	D1 (mm)	D (mm)	length of cut Ap1 max (mm)	L (mm)	BCH (mm)	number of flutes	Adaptor Style Machine Side
Series 4002 4012 • General Purpose • 2 Flutes									
5873484	40020100T004	TIALN	1,0	3	4,00	38	–	2	Straight-Cylindrical
5873485	40020150T004	TIALN	1,5	3	4,00	38	–	2	Straight-Cylindrical
5873486	40020180T004	TIALN	1,8	3	4,00	38	–	2	Straight-Cylindrical
5873487	40020200T006	TIALN	2,0	3	6,30	38	–	2	Straight-Cylindrical
5873488	40020250T006	TIALN	2,5	3	6,30	38	–	2	Straight-Cylindrical
5873489	40020300T009	TIALN	3,0	3	9,50	38	–	2	Straight-Cylindrical
5873490	40020300T019	TIALN	3,0	3	19,00	63	–	2	Straight-Cylindrical
5873491	40120300T025	TIALN	3,0	3	25,00	75	–	2	Straight-Cylindrical
5873492	40020350T012	TIALN	3,5	4	12,00	50	–	2	Straight-Cylindrical
5873493	40020400T012	TIALN	4,0	4	12,00	50	0,10	2	Straight-Cylindrical
6092621	40020400T012S	TIALN	4,0	4	12,00	50	–	2	Straight-Cylindrical
5873494	40020400T019	TIALN	4,0	4	19,00	63	0,10	2	Straight-Cylindrical
6092622	40020400T019S	TIALN	4,0	4	19,00	63	–	2	Straight-Cylindrical
5873495	40120400T031	TIALN	4,0	4	31,00	75	0,10	2	Straight-Cylindrical
6092623	40120400T031S	TIALN	4,0	4	31,00	75	–	2	Straight-Cylindrical
6092624	40020450T014S	TIALN	4,5	6	14,00	50	–	2	Straight-Cylindrical
5873498	40020500T014	TIALN	5,0	5	14,00	50	0,10	2	Straight-Cylindrical
6092627	40020500T014S	TIALN	5,0	5	14,00	50	–	2	Straight-Cylindrical
5873499	40020500T020	TIALN	5,0	5	20,00	63	0,10	2	Straight-Cylindrical
6092628	40020500T020S	TIALN	5,0	5	20,00	63	–	2	Straight-Cylindrical
5873500	40120500T031	TIALN	5,0	5	31,00	100	0,10	2	Straight-Cylindrical
6092631	40120500T031S	TIALN	5,0	5	31,00	100	–	2	Straight-Cylindrical
5873501	40020550T014	TIALN	5,5	6	14,00	50	0,10	2	Straight-Cylindrical
6092632	40020550T014S	TIALN	5,5	6	14,00	50	–	2	Straight-Cylindrical
5873502	40020600T016	TIALN	6,0	6	16,00	50	0,10	2	Straight-Cylindrical
6092633	40020600T016S	TIALN	6,0	6	16,00	50	–	2	Straight-Cylindrical
5873503	40020600T028	TIALN	6,0	6	28,00	76	0,10	2	Straight-Cylindrical
6092634	40020600T028S	TIALN	6,0	6	28,00	76	–	2	Straight-Cylindrical
5873504	40120600T038	TIALN	6,0	6	38,00	100	0,10	2	Straight-Cylindrical
6092636	40120600T038S	TIALN	6,0	6	38,00	100	–	2	Straight-Cylindrical
5873505	40020700T020	TIALN	7,0	7	20,00	63	0,10	2	Straight-Cylindrical
6092637	40020700T020S	TIALN	7,0	7	20,00	63	–	2	Straight-Cylindrical
5873506	40020800T020	TIALN	8,0	8	20,00	63	0,20	2	Straight-Cylindrical
6092638	40020800T020S	TIALN	8,0	8	20,00	63	–	2	Straight-Cylindrical
5873507	40020800T028	TIALN	8,0	8	28,00	76	0,20	2	Straight-Cylindrical
6092639	40020800T028S	TIALN	8,0	8	28,00	76	–	2	Straight-Cylindrical
5873508	40120800T041	TIALN	8,0	8	41,00	100	0,20	2	Straight-Cylindrical
6092640	40120800T041S	TIALN	8,0	8	41,00	100	–	2	Straight-Cylindrical
5873509	40020900T020	TIALN	9,0	9	20,00	63	0,20	2	Straight-Cylindrical
6092641	40020900T020S	TIALN	9,0	9	20,00	63	–	2	Straight-Cylindrical
5873510	40021000T022	TIALN	10,0	10	22,00	72	0,20	2	Straight-Cylindrical
6092643	40021000T022S	TIALN	10,0	10	22,00	72	–	2	Straight-Cylindrical
5873511	40021000T032	TIALN	10,0	10	32,00	89	0,20	2	Straight-Cylindrical
6092644	40021000T032S	TIALN	10,0	10	32,00	89	–	2	Straight-Cylindrical
5873512	40121000T045	TIALN	10,0	10	45,00	100	0,20	2	Straight-Cylindrical
6092645	40121000T045S	TIALN	10,0	10	45,00	100	–	2	Straight-Cylindrical
5873513	40021100T025	TIALN	11,0	11	25,00	76	0,30	2	Straight-Cylindrical
6092646	40021100T025S	TIALN	11,0	11	25,00	76	–	2	Straight-Cylindrical
5873514	40021200T025	TIALN	12,0	12	25,00	76	0,30	2	Straight-Cylindrical
6092647	40021200T025S	TIALN	12,0	12	25,00	76	–	2	Straight-Cylindrical
5873515	40021200T045	TIALN	12,0	12	45,00	100	0,30	2	Straight-Cylindrical
6092648	40021200T045S	TIALN	12,0	12	45,00	100	–	2	Straight-Cylindrical
5873516	40121200T075	TIALN	12,0	12	75,00	150	0,30	2	Straight-Cylindrical
6092650	40121200T075S	TIALN	12,0	12	75,00	150	–	2	Straight-Cylindrical
5873517	40021400T032	TIALN	14,0	14	32,00	83	0,30	2	Straight-Cylindrical
6092651	40021400T032S	TIALN	14,0	14	32,00	83	–	2	Straight-Cylindrical
5873518	40021400T050	TIALN	14,0	14	50,00	100	0,30	2	Straight-Cylindrical
6092653	40021400T050S	TIALN	14,0	14	50,00	100	–	2	Straight-Cylindrical
5873519	40121400T075	TIALN	14,0	14	75,00	150	0,30	2	Straight-Cylindrical
6092654	40121400T075S	TIALN	14,0	14	75,00	150	–	2	Straight-Cylindrical
5873520	40021600T032	TIALN	16,0	16	32,00	89	0,30	2	Straight-Cylindrical
6092657	40021600T032S	TIALN	16,0	16	32,00	89	–	2	Straight-Cylindrical
5873531	40021600T056	TIALN	16,0	16	56,00	110	0,30	2	Straight-Cylindrical
6092658	40021600T056S	TIALN	16,0	16	56,00	110	–	2	Straight-Cylindrical
5873532	40121600T075	TIALN	16,0	16	75,00	150	0,30	2	Straight-Cylindrical
6092659	40121600T075S	TIALN	16,0	16	75,00	150	–	2	Straight-Cylindrical
5873533	40021800T038	TIALN	18,0	18	38,00	100	0,30	2	Straight-Cylindrical
6092660	40021800T038S	TIALN	18,0	18	38,00	100	–	2	Straight-Cylindrical
5873534	40021800T060	TIALN	18,0	18	60,00	125	0,30	2	Straight-Cylindrical
6092681	40021800T060S	TIALN	18,0	18	60,00	125	–	2	Straight-Cylindrical
5873536	40022000T038	TIALN	20,0	20	38,00	104	0,30	2	Straight-Cylindrical
6092683	40022000T038S	TIALN	20,0	20	38,00	104	–	2	Straight-Cylindrical
6092684	40022000T056S	TIALN	20,0	20	56,00	125	–	2	Straight-Cylindrical
5873538	40122000T075	TIALN	20,0	20	75,00	150	0,30	2	Straight-Cylindrical
6092685	40122000T075S	TIALN	20,0	20	75,00	150	–	2	Straight-Cylindrical

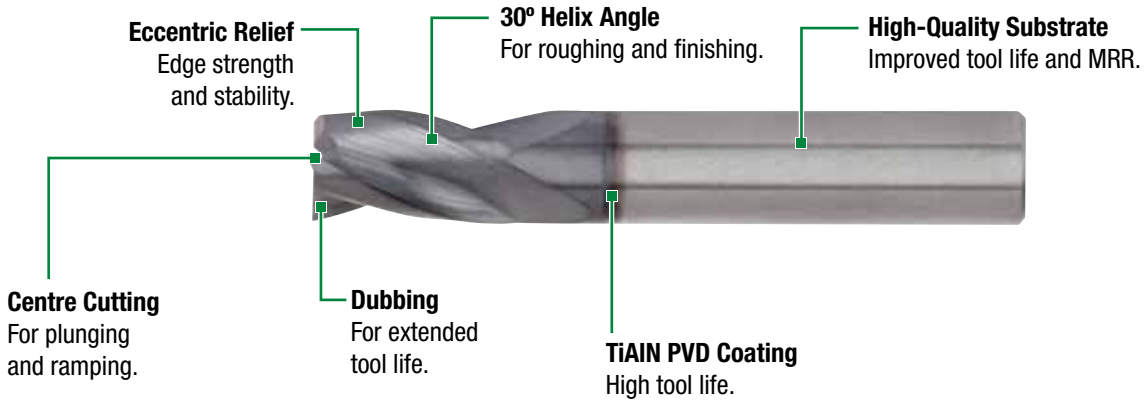
General Purpose

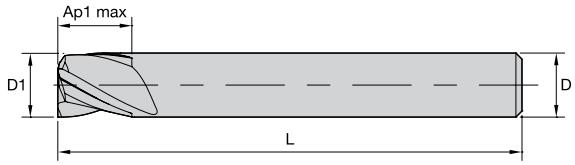
3-Flute End Mills

General purpose offers plunging, slotting, and profiling for a wide range of materials and applications. Designed to provide high metal removal rates and excellent surface conditions at a value price. A wide range of diameters, lengths, and corner styles (such as chamfered and sharp edge) are available from stock.

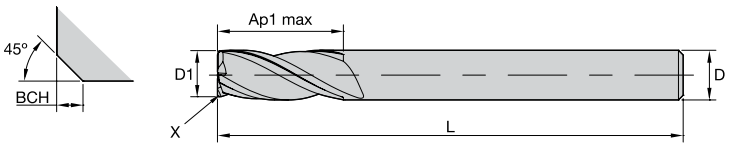
General Purpose • 3-Flute

- General purpose tools for a wide range of workpiece materials.
- Roughing and finishing with one tool.
- Various lengths-of-cut and overall lengths with different front end designs available.
- Three flutes for slotting in unstable conditions.





order number	catalogue number	grade	D1 (mm)	D (mm)	length of cut Ap1 max (mm)	L (mm)	number of flutes	Adaptor Style Machine Side
Series 4003..S 4013..S • General Purpose • 3 Flutes								
6144056	**40030100T004S**	**TIALN**	1,0	3	4,00	38	3	Straight-Cylindrical
6144057	**40030150T004S**	**TIALN**	1,5	3	4,00	38	3	Straight-Cylindrical
6144058	**40030200T006S**	**TIALN**	2,0	3	6,30	38	3	Straight-Cylindrical
6144059	**40030250T006S**	**TIALN**	2,5	3	6,30	38	3	Straight-Cylindrical
6144060	**40030300T009S**	**TIALN**	3,0	3	9,50	38	3	Straight-Cylindrical
6145199	**40130300T019S**	**TIALN**	3,0	6	19,00	63	3	Straight-Cylindrical
6144551	**40030400T012S**	**TIALN**	4,0	4	12,00	50	3	Straight-Cylindrical
6145200	**40130400T019S**	**TIALN**	4,0	4	19,00	63	3	Straight-Cylindrical
6144552	**40030500T014S**	**TIALN**	5,0	6	14,00	50	3	Straight-Cylindrical
6145231	**40130500T020S**	**TIALN**	5,0	6	20,00	63	3	Straight-Cylindrical
6144553	**40030600T016S**	**TIALN**	6,0	6	16,00	50	3	Straight-Cylindrical
6145232	**40130600T028S**	**TIALN**	6,0	6	28,00	75	3	Straight-Cylindrical
6144554	**40030800T019S**	**TIALN**	8,0	8	19,00	63	3	Straight-Cylindrical
6145233	**40130800T028S**	**TIALN**	8,0	8	28,00	75	3	Straight-Cylindrical
6144555	**40031000T022S**	**TIALN**	10,0	10	22,00	76	3	Straight-Cylindrical
6145234	**40131000T032S**	**TIALN**	10,0	10	32,00	89	3	Straight-Cylindrical
6144556	**40031200T025S**	**TIALN**	12,0	12	25,00	75	3	Straight-Cylindrical
6145235	**40131200T045S**	**TIALN**	12,0	12	45,00	100	3	Straight-Cylindrical
6144557	**40031600T032S**	**TIALN**	16,0	16	32,00	89	3	Straight-Cylindrical
6145238	**40131600T056S**	**TIALN**	16,0	16	56,00	110	3	Straight-Cylindrical
6145241	**40132000T064S**	**TIALN**	20,0	20	64,00	125	3	Straight-Cylindrical



order number	catalogue number	grade	D1 (mm)	D (mm)	length of cut Ap1 max (mm)	L (mm)	BCH (mm)	number of flutes	Adaptor Style Machine Side
Series 4003 4013 • General Purpose • 3 Flutes									
6145107	**40030400T012**	**TIALN**	4,0	4	12,00	50	0,10	3	Straight-Cylindrical
6145181	**40130400T019**	**TIALN**	4,0	4	19,00	63	0,10	3	Straight-Cylindrical
6145182	**40130500T020**	**TIALN**	5,0	6	20,00	63	0,10	3	Straight-Cylindrical
6145109	**40030600T016**	**TIALN**	6,0	6	16,00	50	0,10	3	Straight-Cylindrical
6145183	**40130600T028**	**TIALN**	6,0	6	28,00	75	0,10	3	Straight-Cylindrical
6145110	**40030800T019**	**TIALN**	8,0	8	19,00	63	0,20	3	Straight-Cylindrical
6145184	**40130800T028**	**TIALN**	8,0	8	28,00	75	0,20	3	Straight-Cylindrical
6145171	**40031000T022**	**TIALN**	10,0	10	22,00	76	0,20	3	Straight-Cylindrical
6145185	**40131000T032**	**TIALN**	10,0	10	32,00	89	0,20	3	Straight-Cylindrical
6145172	**40031200T025**	**TIALN**	12,0	12	25,00	75	0,30	3	Straight-Cylindrical
6145186	**40131200T045**	**TIALN**	12,0	12	45,00	100	0,30	3	Straight-Cylindrical
6145173	**40031600T032**	**TIALN**	16,0	16	32,00	89	0,30	3	Straight-Cylindrical
6145187	**40131600T056**	**TIALN**	16,0	16	56,00	110	0,30	3	Straight-Cylindrical

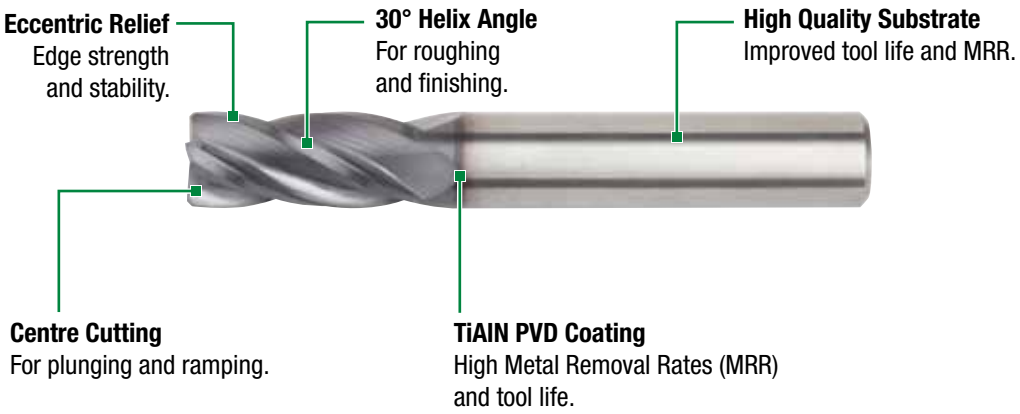
General Purpose

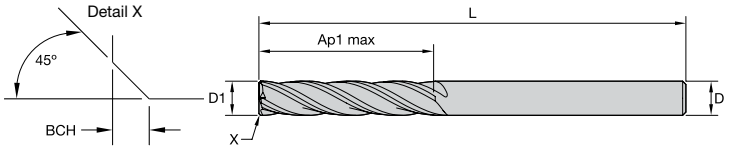
4-Flute End Mills

General purpose offers plunging, slotting, and profiling for a wide range of materials and applications. Designed to provide high metal removal rates and excellent surface conditions at a value price. A wide range of diameters, lengths, and corner styles (such as chamfered, sharp edge, and ball nose) are available from stock.

General Purpose • 4-Flute

- General purpose tools for a wide range of workpiece materials.
- Roughing and finishing with one tool.
- Various lengths-of-cut and overall lengths with different front-end designs available.
- Four flutes for high Metal Removal Rates (MRR) and tool life.





order number	catalogue number	grade	D1 (mm)	D (mm)	length of cut Ap1 max (mm)	L (mm)	BCH (mm)	number of flutes	Adaptor Style Machine Side
Series 4004 4014 4024 • General Purpose • 4 Flutes									
5826016	**40040100T004**	**TIALN**	1,0	3	4,00	38	–	4	Straight-Cylindrical
5826017	**40040150T004**	**TIALN**	1,5	3	4,00	38	–	4	Straight-Cylindrical
5826018	**40040200T006**	**TIALN**	2,0	3	6,30	38	–	4	Straight-Cylindrical
5826019	**40040250T006**	**TIALN**	2,5	3	6,30	38	–	4	Straight-Cylindrical
5826020	**40040300T009**	**TIALN**	3,0	3	9,50	38	–	4	Straight-Cylindrical
5826021	**40140300T019**	**TIALN**	3,0	3	19,00	63	–	4	Straight-Cylindrical
5826022	**40240300T025**	**TIALN**	3,0	3	25,00	75	–	4	Straight-Cylindrical
5826023	**40040350T012**	**TIALN**	3,5	4	12,00	50	–	4	Straight-Cylindrical
5826024	**40040400T011**	**TIALN**	4,0	4	11,00	50	0,10	4	Straight-Cylindrical
6085576	**40040400T011S**	**TIALN**	4,0	4	11,00	50	–	4	Straight-Cylindrical
5826025	**40140400T019**	**TIALN**	4,0	4	19,00	63	0,10	4	Straight-Cylindrical
6085577	**40140400T019S**	**TIALN**	4,0	4	19,00	63	–	4	Straight-Cylindrical
5826026	**40240400T031**	**TIALN**	4,0	4	31,00	75	0,10	4	Straight-Cylindrical
6085578	**40240400T031S**	**TIALN**	4,0	4	31,00	75	–	4	Straight-Cylindrical
5826027	**40040450T014**	**TIALN**	4,5	5	14,00	50	0,10	4	Straight-Cylindrical
6085579	**40040450T014S**	**TIALN**	4,5	5	14,00	50	–	4	Straight-Cylindrical
5826028	**40040500T013**	**TIALN**	5,0	5	13,00	50	0,10	4	Straight-Cylindrical
6085580	**40040500T013S**	**TIALN**	5,0	5	13,00	50	–	4	Straight-Cylindrical
5826029	**40040500T020**	**TIALN**	5,0	5	20,00	63	0,10	4	Straight-Cylindrical
6085581	**40040500T020S**	**TIALN**	5,0	5	20,00	63	–	4	Straight-Cylindrical
5826030	**40140500T030**	**TIALN**	5,0	5	30,00	75	0,10	4	Straight-Cylindrical
6085582	**40140500T030S**	**TIALN**	5,0	5	30,00	75	–	4	Straight-Cylindrical
5826031	**40240500T031**	**TIALN**	5,0	5	31,00	100	0,10	4	Straight-Cylindrical
6085583	**40240500T031S**	**TIALN**	5,0	5	31,00	100	–	4	Straight-Cylindrical
5826032	**40040600T016**	**TIALN**	6,0	6	16,00	50	0,10	4	Straight-Cylindrical
6085584	**40040600T016S**	**TIALN**	6,0	6	16,00	50	–	4	Straight-Cylindrical
5826033	**40140600T028**	**TIALN**	6,0	6	28,00	75	0,10	4	Straight-Cylindrical
6085585	**40140600T028S**	**TIALN**	6,0	6	28,00	75	–	4	Straight-Cylindrical
5826034	**40240600T038**	**TIALN**	6,0	6	38,00	100	0,10	4	Straight-Cylindrical
6085586	**40240600T038S**	**TIALN**	6,0	6	38,00	100	–	4	Straight-Cylindrical
5826035	**40040700T020**	**TIALN**	7,0	8	20,00	63	0,10	4	Straight-Cylindrical
6085587	**40040700T020S**	**TIALN**	7,0	8	20,00	63	–	4	Straight-Cylindrical
5826036	**40040800T020**	**TIALN**	8,0	8	20,00	50	0,20	4	Straight-Cylindrical
6085588	**40040800T020S**	**TIALN**	8,0	8	20,00	50	–	4	Straight-Cylindrical
5826037	**40140800T028**	**TIALN**	8,0	8	28,00	75	0,20	4	Straight-Cylindrical
6085589	**40140800T028S**	**TIALN**	8,0	8	28,00	75	–	4	Straight-Cylindrical
5826038	**40240800T041**	**TIALN**	8,0	8	41,00	100	0,20	4	Straight-Cylindrical
6085590	**40240800T041S**	**TIALN**	8,0	8	41,00	100	–	4	Straight-Cylindrical
5826039	**40040900T020**	**TIALN**	9,0	9	20,00	63	0,20	4	Straight-Cylindrical
6085591	**40040900T020S**	**TIALN**	9,0	9	20,00	63	–	4	Straight-Cylindrical
5826040	**40041000T022**	**TIALN**	10,0	10	22,00	72	0,20	4	Straight-Cylindrical
6085592	**40041000T022S**	**TIALN**	10,0	10	22,00	72	–	4	Straight-Cylindrical
5826041	**40141000T032**	**TIALN**	10,0	10	32,00	89	0,20	4	Straight-Cylindrical
6085593	**40141000T032S**	**TIALN**	10,0	10	32,00	89	–	4	Straight-Cylindrical
5826042	**40241000T045**	**TIALN**	10,0	10	45,00	100	0,20	4	Straight-Cylindrical
6085594	**40241000T045S**	**TIALN**	10,0	10	45,00	100	–	4	Straight-Cylindrical
5826043	**40041200T025**	**TIALN**	12,0	12	25,00	89	0,30	4	Straight-Cylindrical
6085595	**40041200T025S**	**TIALN**	12,0	12	25,00	89	–	4	Straight-Cylindrical
5826044	**40141200T045**	**TIALN**	12,0	12	45,00	100	0,30	4	Straight-Cylindrical
6085596	**40141200T045S**	**TIALN**	12,0	12	45,00	100	–	4	Straight-Cylindrical
5826045	**40241200T075**	**TIALN**	12,0	12	75,00	150	0,30	4	Straight-Cylindrical
6085597	**40241200T075S**	**TIALN**	12,0	12	75,00	150	–	4	Straight-Cylindrical
5826046	**40041400T032**	**TIALN**	14,0	14	32,00	83	0,30	4	Straight-Cylindrical
6085598	**40041400T032S**	**TIALN**	14,0	14	32,00	83	–	4	Straight-Cylindrical
5826047	**40141400T050**	**TIALN**	14,0	14	50,00	100	0,30	4	Straight-Cylindrical
6085599	**40141400T050S**	**TIALN**	14,0	14	50,00	100	–	4	Straight-Cylindrical
5826049	**40241400T075**	**TIALN**	14,0	14	75,00	150	0,30	4	Straight-Cylindrical
6085600	**40241400T075S**	**TIALN**	14,0	14	75,00	150	–	4	Straight-Cylindrical
5826061	**40041600T032**	**TIALN**	16,0	16	32,00	92	0,30	4	Straight-Cylindrical
6085601	**40041600T032S**	**TIALN**	16,0	16	32,00	92	–	4	Straight-Cylindrical
5826062	**40141600T056**	**TIALN**	16,0	16	56,00	110	0,30	4	Straight-Cylindrical
6085602	**40141600T056S**	**TIALN**	16,0	16	56,00	110	–	4	Straight-Cylindrical
5826063	**40241600T075**	**TIALN**	16,0	16	75,00	150	0,30	4	Straight-Cylindrical
6085603	**40241600T075S**	**TIALN**	16,0	16	75,00	150	–	4	Straight-Cylindrical
5826064	**40041800T038**	**TIALN**	18,0	18	38,00	100	0,30	4	Straight-Cylindrical
6085604	**40041800T038S**	**TIALN**	18,0	18	38,00	100	–	4	Straight-Cylindrical
5826065	**40141800T060**	**TIALN**	18,0	18	60,00	125	0,30	4	Straight-Cylindrical
6085605	**40141800T060S**	**TIALN**	18,0	18	60,00	125	–	4	Straight-Cylindrical
5826066	**40241800T075**	**TIALN**	18,0	18	75,00	150	0,30	4	Straight-Cylindrical
6085606	**40241800T075S**	**TIALN**	18,0	18	75,00	150	–	4	Straight-Cylindrical
5826067	**40042000T038**	**TIALN**	20,0	20	38,00	104	0,30	4	Straight-Cylindrical
6085607	**40042000T038S**	**TIALN**	20,0	20	38,00	104	–	4	Straight-Cylindrical
5826068	**40142000T056**	**TIALN**	20,0	20	56,00	125	0,30	4	Straight-Cylindrical
6085608	**40142000T056S**	**TIALN**	20,0	20	56,00	125	–	4	Straight-Cylindrical
5826069	**40242000T075**	**TIALN**	20,0	20	75,00	150	0,30	4	Straight-Cylindrical
6085609	**40242000T075S**	**TIALN**	20,0	20	75,00	150	–	4	Straight-Cylindrical

Modular

VariMill™ Technology Meets Duo-λock® Connection

High-Performance Modular Solid Carbide End Mills

VariMill Modular combines highest runout accuracy and length repeatability with maximum coupling stability. This allows the VariMill Modular system to utilise the full potential of WIDIA™ VariMill cutting geometries and WIDIA Victory™ grades. The flexible VariMill Modular system targets applications like solid carbide end mills.
A wide range of diameters between 10–32mm and multiple corner configurations, such as sharp chamfer and radii, are available from stock.

Increased productivity enabled by the strength of Duo-Lock™ by Haimer and WIDIA connection system.

RUNOUT	MAXIMUM COUPLING	LENGTH
ACCURACY	**STABILITY**	**REPEATABILITY**

VariMill™ Modular

Cutting data and tool life comparable to high-performance solid carbide.

Proprietary VariMill geometries allow roughing and finishing with one tool.

1,5 x D standard cutting edge length allows for less passes.

Up to 1 x D full slotting increases Metal Removal Rates (MRR) and productivity significantly.

Adaptors

Extensive straight and conical shanks, as well as an integral adaptor offering, including CV, PSC, BT, and HSK.

Modular End Mills

High-Performance Modular Solid Carbide End Mills

- High-performance geometries provide highest Metal Removal Rates (MRR).
- Unequal flute spacing reduces vibrations and improves surface finish.
- Intelligent thread ensures stress levels remain below critical values.
- Third-contact surface delivers high stiffness and highest accuracy below 5µm runout.

See me in action!

VariMill™ Modular Series

- Less cutting forces and pressure on cutting edge through tailored axial and radial rake angles.
- Proprietary tapered core provides highest tool stability in roughing and finishing operations.
- Eccentric relief design increases tool life through higher edge stability.

4X47 VariMill Series

- 4 flute.
- New asymmetrical fluting geometry.
- High metal removal rates and tool life in:
  – Stainless steels, steels, and alloyed steels.
  – High-temperature alloys and titanium.

5747 VariMill II™ Series

- 5 flute.
- High metal removal rates and tool life in:
  – Stainless steels, steels, and alloyed steels.
  – Cast iron.
  – High-temperature alloys and titanium.

4547 & 4548 High-Performance Finishing

- Multi-flute finishers.
- Radius corner.
- High metal removal rates and tool life in:
  – Stainless steels and steels.

4U40 High-Performance Roughing 45°

- Multi-flute roughers.
- Radius corner.
- High-temperature geometries.

4969 High-Performance Ball-Nose Roughing

- 4 Flute ball-nose rougher.
- Steel and stainless steel geometries.

4946 High-Performance Roughing 20°

- Multi-flute roughers.
- Chamfer corner.
- Steel and stainless steel geometries.

4XN0 VariMill Series

- 4 flute.
- Stainless steel and steel geometry design.
- Centre cutting ball nose.

4X48 VariMill Series

- 4 flute.
- New asymmetrical fluting geometry.
- Titanium geometry design.
- Extensive radii corner offering.

5748 VariMill II ER Series

- 5 flute.
- Titanium geometry design.
- Eccentric relief for edge stability and strength.
- Extensive radii corner offering.

774E VariMill III™ ER Series

- 7 flute.
- Titanium geometry design.
- Eccentric relief for edge stability and strength.
- Extensive radii corner offering.

5142 & 5143 — AluSurf™

- 2- and 3-flute finishers.
- Radius corner.
- Aluminium geometries.

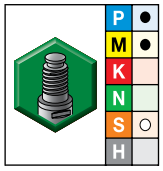
8045 — Corner Rounding

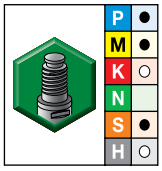
- 4 flute.
- Corner rounding.

8046 — Corner Chamfering

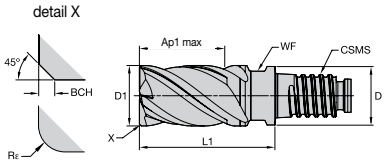
- Multi-flute roughers.
- Chamfer corner.

4X47 • 4X48 • 4 Flute • 38° Helix • Metric





● first choice
○ alternate choice



WIDIA HANITA

4X47 grade WP15PE AlTiN order #	4X48 grade WS15PE AlTiN order #	D1	D	length of cut Ap1 max	L1	CSMS system size	WF	BCH	Rε
6071019	**–**	10,0	9,60	15,00	23	DL10	8,00	0,50	–
–	**6071095**	10,0	9,60	15,00	23	DL10	8,00	–	0,50
–	**6071096**	10,0	9,60	15,00	23	DL10	8,00	–	1,00
–	**6071097**	10,0	9,60	15,00	23	DL10	8,00	–	2,00
6071020	**–**	12,0	11,50	18,00	27	DL12	9,50	0,50	–
–	**6071098**	12,0	11,50	18,00	27	DL12	9,50	–	0,50
–	**6071099**	12,0	11,50	18,00	27	DL12	9,50	–	1,00
–	**6071100**	12,0	11,50	18,00	27	DL12	9,50	–	2,00
6071091	**–**	16,0	15,50	24,00	36	DL16	13,00	0,50	–
–	**6071111**	16,0	15,50	24,00	36	DL16	13,00	–	1,00
–	**6071112**	16,0	15,50	24,00	36	DL16	13,00	–	2,00
–	**6071113**	16,0	15,50	24,00	36	DL16	13,00	–	3,00
6071092	**–**	20,0	19,30	30,00	45	DL20	16,00	0,50	–
–	**6071114**	20,0	19,30	30,00	45	DL20	16,00	–	1,00
–	**6071115**	20,0	19,30	30,00	45	DL20	16,00	–	2,00
–	**6071116**	20,0	19,30	30,00	45	DL20	16,00	–	3,00
–	**6071117**	20,0	19,30	30,00	45	DL20	16,00	–	4,00
6071093	**–**	25,0	24,00	37,50	57	DL25	21,00	0,50	–
–	**6071118**	25,0	24,00	37,50	57	DL25	21,00	–	1,00
–	**6071119**	25,0	24,00	37,50	57	DL25	21,00	–	2,00
–	**6071120**	25,0	24,00	37,50	57	DL25	21,00	–	3,00
–	**6071121**	25,0	24,00	37,50	57	DL25	21,00	–	4,00
6071094	**–**	32,0	31,00	48,00	72	DL32	28,00	0,50	–
–	**6071122**	32,0	31,00	48,00	72	DL32	28,00	–	2,00
–	**6071123**	32,0	31,00	48,00	72	DL32	28,00	–	3,00

NOTE: For application data, please see page 182.

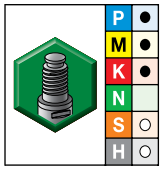
End Mill Tolerances

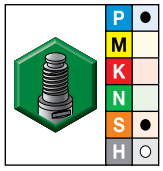
D1	tolerance e8
> 10–18	-0,032/-0,059
> 18–30	-0,040/-0,073
> 30	-0,050/-0,089

Modular End Mills

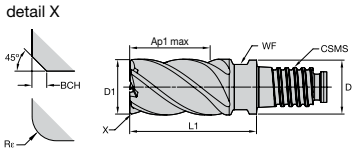
High-Performance DUO-λOCK® Modular End Mills • VariMill™

▼ 5747 • 5748 • 5 Flute • 38° Helix • Metric





● first choice
○ alternate choice



WIDIA HANITA

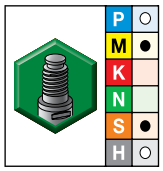
5747 grade WP15PE AlTiN order #	5748 grade WS15PE AlTiN order #	D1	D	length of cut Ap1 max	L1	CSMS system size	WF	BCH	Rε
6071260	–	10,0	9,60	15,00	23	DL10	8,00	0,50	–
–	6071366	10,0	9,60	15,00	23	DL10	8,00	–	0,50
–	6071367	10,0	9,60	15,00	23	DL10	8,00	–	1,00
–	6071368	10,0	9,60	15,00	23	DL10	8,00	–	2,00
6071361	–	12,0	11,50	18,00	27	DL12	9,50	0,50	–
–	6071369	12,0	11,50	18,00	27	DL12	9,50	–	0,50
–	6071370	12,0	11,50	18,00	27	DL12	9,50	–	1,00
–	6071371	12,0	11,50	18,00	27	DL12	9,50	–	2,00
6071362	–	16,0	15,50	24,00	36	DL16	13,00	0,50	–
–	6071372	16,0	15,50	24,00	36	DL16	13,00	–	1,00
–	6071373	16,0	15,50	24,00	36	DL16	13,00	–	2,00
–	6071374	16,0	15,50	24,00	36	DL16	13,00	–	3,00
6071363	–	20,0	19,30	30,00	45	DL20	16,00	0,50	–
–	6071375	20,0	19,30	30,00	45	DL20	16,00	–	1,00
–	6071376	20,0	19,30	30,00	45	DL20	16,00	–	2,00
–	6071377	20,0	19,30	30,00	45	DL20	16,00	–	3,00
–	6071378	20,0	19,30	30,00	45	DL20	16,00	–	4,00
6071364	–	25,0	24,00	37,50	57	DL25	21,00	0,50	–
–	6071379	25,0	24,00	37,50	56	DL25	21,00	–	1,00
–	6071380	25,0	24,00	37,50	56	DL25	21,00	–	2,00
–	6071391	25,0	24,00	37,50	56	DL25	21,00	–	3,00
–	6071392	25,0	24,00	37,50	56	DL25	21,00	–	4,00
6071365	–	32,0	31,00	48,00	72	DL32	28,00	0,50	–
–	6071393	32,0	31,00	48,00	72	DL32	28,00	–	2,00
–	6071394	32,0	31,00	48,00	72	DL32	28,00	–	3,00

NOTE: For application data, please see page 182.

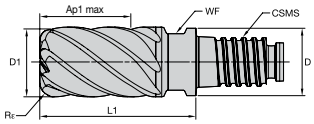
End Mill Tolerances

D1	tolerance e8
> 10–18	-0,032/-0,059
> 18–30	-0,040/-0,073
> 30	-0,050/-0,089

▼ 774E • 7 Flute with Eccentric Relief Grind • 38° Helix • Metric



● first choice
○ alternate choice

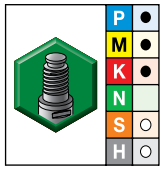


WIDIA HANITA

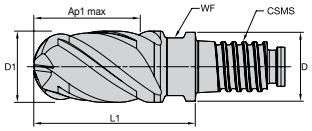
grade WS15PE AlTiN order #	D1	D	length of cut Ap1 max	L1	CSMS system size	WF	Rε
6071475	10,0	9,60	15,00	23	DL10	8,00	0,50
6071476	10,0	9,60	15,00	23	DL10	8,00	1,00
6071477	10,0	9,60	15,00	23	DL10	8,00	2,00
6071478	12,0	11,50	18,00	27	DL12	9,50	0,50
6071479	12,0	11,50	18,00	27	DL12	9,50	1,00
6071480	12,0	11,50	18,00	27	DL12	9,50	2,00
6071521	16,0	15,50	24,00	36	DL16	13,00	1,00
6071522	16,0	15,50	24,00	36	DL16	13,00	2,00
6071523	16,0	15,50	24,00	36	DL16	13,00	3,00
6071524	20,0	19,30	30,00	45	DL20	16,00	1,00
6071525	20,0	19,30	30,00	45	DL20	16,00	2,00
6071526	20,0	19,30	30,00	45	DL20	16,00	3,00
6071527	20,0	19,30	30,00	45	DL20	16,00	4,00
6071528	25,0	24,00	37,50	57	DL25	21,00	1,00
6071529	25,0	24,00	37,50	57	DL25	21,00	2,00
6071530	25,0	24,00	37,50	57	DL25	21,00	3,00
6071531	25,0	24,00	37,50	57	DL25	21,00	4,00
6071532	32,0	31,00	48,00	72	DL32	28,00	2,00
6071533	32,0	31,00	48,00	72	DL32	28,00	3,00

NOTE: For application data, please see page 183.

▼ 4XN0 • 4-Flute Ball Nose • 38° Helix • Metric



● first choice
○ alternate choice



WIDIA HANITA

grade WP15PE AlTiN order #	D1	D	length of cut Ap1 max	L1	CSMS system size	WF
6071128	10,0	9,60	15,00	23	DL10	8,00
6071130	12,0	11,50	18,00	27	DL12	9,50
6071151	16,0	15,50	24,00	36	DL16	13,00
6071152	20,0	19,30	30,00	45	DL20	16,00
6071153	25,0	24,00	37,50	57	DL25	21,00

NOTE: For application data, please see page 184.

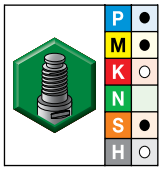
End Mill Tolerances

D1	tolerance e8
> 10–18	-0,032/-0,059
> 18–30	-0,040/-0,073
> 30	-0,050/-0,089

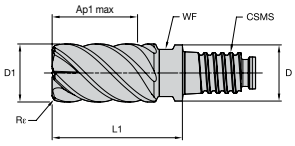
Modular End Mills

High-Performance DUO-λOCK® Modular End Mills • Finishing/Roughing

▼ 4547 • Multi-Flute Finisher • 45° Helix • Metric



● first choice
○ alternate choice



WIDIA HANITA

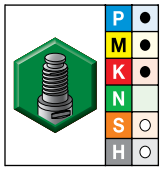
grade WP15PE AlTiN order #	D1	D	length of cut Ap1 max	L1	CSMS system size	WF	Rε	Z U
6127193	10,0	9,60	15,00	23	DL10	8,00	0,50	6
6127194	12,0	11,50	18,00	27	DL12	9,50	0,75	6
6127195	16,0	15,50	24,00	36	DL16	13,00	0,75	6
6127196	20,0	19,30	30,00	45	DL20	16,00	0,75	6
6127197	25,0	24,00	37,50	57	DL25	21,00	0,75	6

NOTE: For application data, please see page 184.
*For more information on the 4548 series, visit **widia.com** or **widia.com/novo**.*

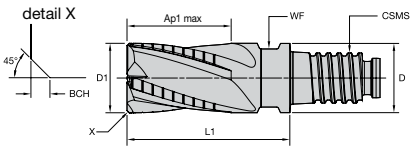
End Mill Tolerances

D1	tolerance e8
> 10–18	-0,032/-0,059
> 18–30	-0,040/-0,073
> 30	-0,050/-0,089

▼ 4946 • High-Performance Roughing • 20° Helix • Metric



● first choice
○ alternate choice



WIDIA HANITA

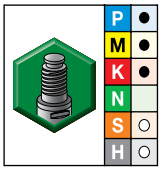
grade WP15PE AlTiN order #	D1	D	length of cut Ap1 max	L1	CSMS system size	WF	BCH	Z U
6127281	10,0	9,60	15,00	23	DL10	8,00	0,50	4
6127282	12,0	11,50	18,00	27	DL12	9,50	0,50	4
6127283	16,0	15,50	24,00	36	DL16	13,00	0,50	4
6127284	20,0	19,30	30,00	45	DL20	16,00	0,50	4
6127285	25,0	24,00	37,50	57	DL25	21,00	0,50	5

NOTE: For application data, please see page 185.

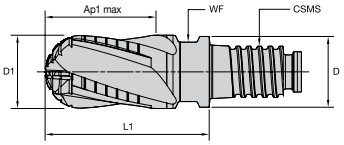
End Mill Tolerances

D1	tolerance d11
> 10–18	-0,050/-0,160
> 18–30	-0,065/-0,195

▼ 4969 • Ball-Nose Roughing • 20° Helix • Metric



● first choice
○ alternate choice



WIDIA HANITA

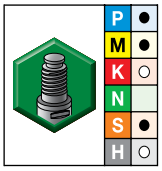
grade WP15PE AlTiN order #	D1	D	length of cut Ap1 max	L1	CSMS system size	WF	Z U
6126824	10,0	9,60	15,00	23	DL10	8,00	4
6126825	12,0	11,50	18,00	27	DL12	9,50	4
6126826	16,0	15,50	24,00	36	DL16	13,00	4
6126827	20,0	19,30	30,00	45	DL20	16,00	4
6126828	25,0	24,00	37,50	57	DL25	21,00	4

NOTE: For application data, please see page 185.

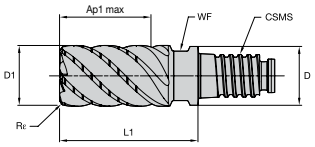
End Mill Tolerances

D1	tolerance d11
> 10–18	-0,050/-0,160
> 18–30	-0,065/-0,195

▼ 4U40 • Roughing • 45° Helix • Metric



● first choice
○ alternate choice



WIDIA HANITA

grade WS15PE AlTiN order #	D1	D	length of cut Ap1 max	L1	CSMS system size	WF	Rε	Z U
6126560	10,0	9,60	15,00	23	DL10	8,00	0,50	4
6126721	12,0	11,50	18,00	27	DL12	9,50	0,75	4
6126722	16,0	15,50	24,00	36	DL16	13,00	0,75	6
6126723	20,0	19,30	30,00	45	DL20	16,00	0,75	6
6126724	25,0	24,00	37,50	57	DL25	21,00	0,75	6

NOTE: For application data, please see page 186.

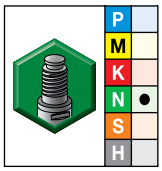
End Mill Tolerances

D1	tolerance e8
> 10–18	-0,032/-0,059
> 18–30	-0,040/-0,073
> 30	-0,050/-0,089

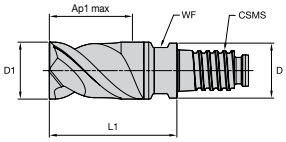
Modular End Mills

High-Performance DUO-λOCK® Modular End Mills • AluSurf™

▼ AluSurf • 5142 • 2 Flute • 45° Helix • Aluminium



● first choice
○ alternate choice



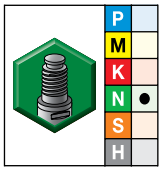
WIDIA HANITA

grade UNCOATED

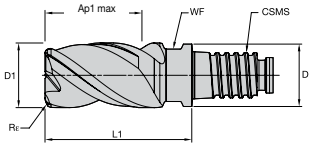
order #	D1	D	length of cut Ap1 max	L1	CSMS system size	WF
6151048	10,0	9,60	15,00	23	DL10	8,00
6151049	12,0	11,50	18,00	27	DL12	9,50
6151050	16,0	15,50	24,00	36	DL16	13,00
6151061	20,0	19,30	30,00	45	DL20	16,00

NOTE: For application data, please see page 186.

▼ AluSurf • 5143 • 3 Flute • 38° Helix • Aluminium



● first choice
○ alternate choice



WIDIA HANITA

grade UNCOATED

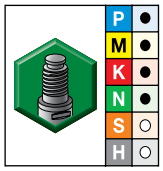
order #	D1	D	length of cut Ap1 max	L1	CSMS system size	WF	Rε
6150886	10,0	9,60	15,00	23	DL10	8,00	0,50
6150887	10,0	9,60	15,00	23	DL10	8,00	1,00
6150888	10,0	9,60	15,00	23	DL10	8,00	2,00
6150889	12,0	11,50	17,50	27	DL12	9,50	0,50
6150890	12,0	11,50	18,00	27	DL12	9,50	1,00
6151011	12,0	11,50	18,00	27	DL12	9,50	2,00
6151013	16,0	15,50	24,00	36	DL16	13,00	1,00
6151014	16,0	15,50	24,00	36	DL16	13,00	2,00
6151015	16,0	15,50	24,00	36	DL16	13,00	3,00
6151016	20,0	19,30	30,00	45	DL20	16,00	1,00
6151017	20,0	19,30	30,00	45	DL20	16,00	2,00
6151018	20,0	19,30	30,00	45	DL20	16,00	3,00
6151019	20,0	19,30	30,00	45	DL20	16,00	4,00
6151020	25,0	24,00	37,50	57	DL25	21,00	1,00
6151021	25,0	24,00	37,50	57	DL25	21,00	2,00
6151022	25,0	24,00	37,50	57	DL25	21,00	3,00
6151024	25,0	24,00	37,50	57	DL25	21,00	4,00

NOTE: For application data, please see page 186.

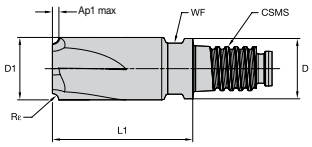
End Mill Tolerances

D1	tolerance e8
> 10–18	-0,032/-0,059
> 18–30	-0,040/-0,073
> 30	-0,050/-0,089

▼ 8045 • Corner Rounding



● first choice
○ alternate choice

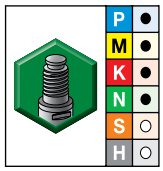


WIDIA HANITA

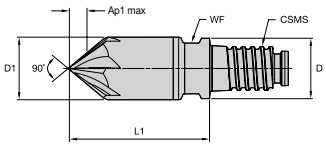
grade WP15PE AlTiN order #	D1	D	length of cut Ap1 max	L1	CSMS system size	WF	Rε	Z U
6127354	10,0	9,60	1,50	23	DL10	8,00	1,50	4
6127355	10,0	9,60	3,00	23	DL10	8,00	3,00	4
6127356	12,0	11,50	1,00	27	DL12	9,50	1,00	4
6127357	12,0	11,50	2,00	27	DL12	9,50	2,00	4
6127358	12,0	11,50	3,00	27	DL12	9,50	3,00	4
6127359	16,0	15,50	2,00	36	DL16	13,00	2,00	4
6127360	16,0	15,50	3,00	36	DL16	13,00	3,00	4
6127381	16,0	15,50	4,00	36	DL16	13,00	4,00	4

NOTE: For application data, please see page 187.

▼ 8046 • Chamfering



● first choice
○ alternate choice



WIDIA HANITA

grade WP15PE AlTiN order #	D1	D	length of cut Ap1 max	L1	CSMS system size	WF	BCH	Z U
6127401	10,0	9,60	2,00	23	DL10	8,00	2,00	4
6127402	12,0	11,50	3,00	27	DL12	9,50	3,00	5
6127403	16,0	15,50	4,00	36	DL16	13,00	4,00	6

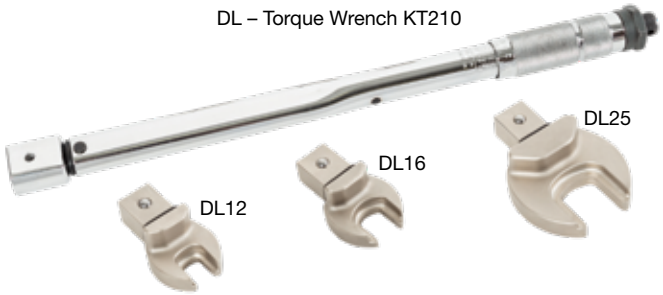
NOTE: For application data, please see page 187.

End Mill Tolerances

D1	tolerance e8
> 10–18	-0,032/-0,059
> 18–30	-0,040/-0,073
> 30	-0,050/-0,089

DUO-λOCK® Accessories

DL – Torque Wrench KT210



▼ Torque Wrench

order number	catalogue number	description	quantity
6390382	**DL - Torque Wrench KT210**	Only Wrench 30-130 Nm	10
6390561	**DL - 12 Key**	Only Key 30 Nm	20
6390562	**DL - 16 Key**	Only Key 60 Nm	20
6390563	**DL - 20 Key**	Only Key 80 Nm	10
6390564	**DL - 25 Key**	Only Key 100 Nm	10
6390565	**DL - 32 Key**	Only Key 130 Nm	10
6390566	**DL10 - Torque Wrench + Key**	Wrench + Key 25 Nm	5

NOTE: Combine basic Duo-Lock™ wrench with selected torque wrench inserts needed.

Modular End Mills

High-Performance DUO-λOCK® Modular End Mills • VariMill™

▼ VariMill™ • 4X47 • 4X48 • Asymmetrical Flute Spacing

Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.						
		A		B	adaptor reach									D1 — Diameter						
					WP15PE WS15PE			WP15PE WS15PE			WP15PE WS15PE									
					Cutting Speed — vc m/min			Cutting Speed — vc m/min			Cutting Speed — vc m/min									
		ap	ae	ap	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0	25,0	32,0
P	0	1,5 x D	0,5 x D	1 x D	150	–	200	135	–	180	135	–	180	fz	0,061	0,070	0,086	0,097	0,105	0,106
	1	1,5 x D	0,5 x D	1 x D	150	–	200	135	–	180	135	–	180	fz	0,061	0,070	0,086	0,097	0,105	0,106
	2	1,5 x D	0,5 x D	1 x D	140	–	190	126	–	171	126	–	171	fz	0,061	0,070	0,086	0,097	0,105	0,106
	3	1,5 x D	0,5 x D	1 x D	120	–	160	108	–	144	108	–	144	fz	0,051	0,060	0,074	0,086	0,097	0,105
	4	1,5 x D	0,5 x D	0,75 x D	90	–	150	81	–	135	81	–	135	fz	0,046	0,053	0,065	0,075	0,083	0,087
	5	1,5 x D	0,5 x D	1 x D	60	–	100	51	–	85	48	–	80	fz	0,041	0,048	0,059	0,069	0,077	0,084
	6	1,5 x D	0,5 x D	0,75 x D	50	–	75	42	–	64	40	–	60	fz	0,034	0,040	0,048	0,055	0,060	0,062
M	1	1,5 x D	0,5 x D	1 x D	90	–	115	72	–	92	63	–	80	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	1,5 x D	0,5 x D	1 x D	60	–	80	48	–	64	42	–	56	fz	0,041	0,048	0,059	0,069	0,077	0,084
	3	1,5 x D	0,5 x D	1 x D	60	–	70	48	–	56	42	–	49	fz	0,034	0,040	0,048	0,055	0,060	0,062
K	1	1,5 x D	0,5 x D	1 x D	120	–	150	108	–	135	108	–	135	fz	0,061	0,070	0,086	0,097	0,105	0,106
	2	1,5 x D	0,5 x D	1 x D	110	–	140	99	–	126	99	–	126	fz	0,051	0,060	0,074	0,086	0,097	0,105
	3	1,5 x D	0,5 x D	1 x D	110	–	130	99	–	117	99	–	117	fz	0,041	0,048	0,059	0,069	0,077	0,084
S	1	1,5 x D	0,3 x D	0,3 x D	50	–	90	40	–	72	30	–	54	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	1,5 x D	0,3 x D	0,3 x D	25	–	40	20	–	32	15	–	24	fz	0,027	0,032	0,039	0,046	0,052	0,057
	3	1,5 x D	0,5 x D	1 x D	60	–	80	48	–	64	36	–	48	fz	0,041	0,048	0,059	0,069	0,077	0,084
	4	1,5 x D	0,5 x D	1 x D	50	–	60	40	–	48	30	–	36	fz	0,038	0,044	0,055	0,063	0,071	0,077
H	1	1,5 x D	0,5 x D	0,75 x D	80	–	140	64	–	112	48	–	84	fz	0,046	0,053	0,065	0,075	0,083	0,087
	2	1,5 x D	0,2 x D	0,5 x D	70	–	120	56	–	96	42	–	72	fz	0,034	0,040	0,048	0,055	0,060	0,062

▼ VariMill II™ • 5747 • 5748 • Unequal Flute Spacing

Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.						
		A		B	adaptor reach									D1 — Diameter						
					WP15PE WS15PE			WP15PE WS15PE			WP15PE WS15PE									
					Cutting Speed — vc m/min			Cutting Speed — vc m/min			Cutting Speed — vc m/min									
		ap	ae	ap	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0	25,0	32,0
P	0	1,5 x D	0,5 x D	1 x D	150	–	200	135	–	180	135	–	180	fz	0,061	0,070	0,086	0,097	0,105	0,106
	1	1,5 x D	0,5 x D	1 x D	150	–	200	135	–	180	135	–	180	fz	0,061	0,070	0,086	0,097	0,105	0,106
	2	1,5 x D	0,5 x D	1 x D	140	–	190	126	–	171	126	–	171	fz	0,061	0,070	0,086	0,097	0,105	0,106
	3	1,5 x D	0,5 x D	1 x D	120	–	160	108	–	144	108	–	144	fz	0,051	0,060	0,074	0,086	0,097	0,105
	4	1,5 x D	0,5 x D	0,75 x D	90	–	150	81	–	135	81	–	135	fz	0,046	0,053	0,065	0,075	0,083	0,087
	5	1,5 x D	0,5 x D	1 x D	60	–	100	51	–	85	48	–	80	fz	0,041	0,048	0,059	0,069	0,077	0,084
	6	1,5 x D	0,5 x D	0,75 x D	50	–	75	42	–	64	40	–	60	fz	0,034	0,040	0,048	0,055	0,060	0,062
M	1	1,5 x D	0,5 x D	1 x D	90	–	115	72	–	92	63	–	80	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	1,5 x D	0,5 x D	1 x D	60	–	80	48	–	64	42	–	56	fz	0,041	0,048	0,059	0,069	0,077	0,084
	3	1,5 x D	0,5 x D	1 x D	60	–	70	48	–	56	42	–	49	fz	0,034	0,040	0,048	0,055	0,060	0,062
K	1	1,5 x D	0,5 x D	1 x D	120	–	150	108	–	135	108	–	135	fz	0,061	0,070	0,086	0,097	0,105	0,106
	2	1,5 x D	0,5 x D	1 x D	110	–	140	99	–	126	99	–	126	fz	0,051	0,060	0,074	0,086	0,097	0,105
	3	1,5 x D	0,5 x D	1 x D	110	–	130	99	–	117	99	–	117	fz	0,041	0,048	0,059	0,069	0,077	0,084
S	1	1,5 x D	0,3 x D	0,3 x D	50	–	90	40	–	72	30	–	54	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	1,5 x D	0,3 x D	0,3 x D	25	–	40	20	–	32	15	–	24	fz	0,027	0,032	0,039	0,046	0,052	0,057
	3	1,5 x D	0,5 x D	1 x D	60	–	80	48	–	64	36	–	48	fz	0,041	0,048	0,059	0,069	0,077	0,084
	4	1,5 x D	0,5 x D	1 x D	50	–	60	40	–	48	30	–	36	fz	0,038	0,044	0,055	0,063	0,071	0,077
H	1	1,5 x D	0,5 x D	0,75 x D	80	–	140	64	–	112	48	–	84	fz	0,046	0,053	0,065	0,075	0,083	0,087
	2	1,5 x D	0,2 x D	0,5 x D	70	–	120	56	–	96	42	–	72	fz	0,034	0,040	0,048	0,055	0,060	0,062

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on diameters >12mm.
For side milling with ap larger than 1 x D, reduce fz by 20%!

▼ VariMill III™ • 774E • Unequal Flute Spacing • Roughing

Material Group		Side Milling (A)		short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A).						
		A		adaptor reach									D1 — Diameter						
				WS15PE			WS15PE			WS15PE									
				Cutting Speed — vc m/min			Cutting Speed — vc m/min			Cutting Speed — vc m/min									
		ap	ae	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0	25,0	32,0
P	4	Ap max	0,3 x D	90	–	150	81	–	135	81	–	135	fz	0,043	0,050	0,061	0,070	0,078	0,082
	5	Ap max	0,3 x D	60	–	100	51	–	85	48	–	80	fz	0,039	0,045	0,056	0,065	0,073	0,079
M	1	Ap max	0,3 x D	90	–	115	72	–	92	63	–	80,5	fz	0,048	0,056	0,070	0,081	0,091	0,099
	2	Ap max	0,3 x D	60	–	80	48	–	64	42	–	56	fz	0,039	0,045	0,056	0,065	0,073	0,079
	3	Ap max	0,3 x D	60	–	70	48	–	56	42	–	49	fz	0,032	0,037	0,046	0,052	0,057	0,058
S	1	Ap max	0,3 x D	50	–	90	40	–	72	30	–	54	fz	0,048	0,056	0,070	0,081	0,091	0,099
	2	Ap max	0,3 x D	25	–	40	20	–	32	15	–	24	fz	0,026	0,030	0,037	0,043	0,049	0,054
	3	Ap max	0,3 x D	60	–	80	48	–	64	36	–	48	fz	0,039	0,045	0,056	0,065	0,073	0,079
	4	Ap max	0,3 x D	50	–	60	40	–	48	30	–	36	fz	0,036	0,041	0,051	0,059	0,067	0,072
H	1	Ap max	0,3 x D	80	–	140	64	–	112	48	–	84	fz	0,043	0,050	0,061	0,070	0,078	0,082
	2	Ap max	0,3 x D	70	–	120	56	–	96	42	–	72	fz	0,032	0,037	0,046	0,052	0,057	0,058

▼ VariMill III • 774E • Unequal Flute Spacing • Finishing

Material Group		Side Milling (A)		short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A).						
		A		adaptor reach									D1 — Diameter						
				WS15PE			WS15PE			WS15PE									
				Cutting Speed — vc m/min			Cutting Speed — vc m/min			Cutting Speed — vc m/min									
		ap	ae	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0	25,0	32,0
P	4	Ap max	0,06 x D	180	–	300	162	–	270	162	–	270	fz	0,052	0,060	0,074	0,084	0,094	0,098
	5	Ap max	0,06 x D	120	–	200	102	–	170	96	–	160	fz	0,046	0,054	0,067	0,078	0,087	0,095
M	1	Ap max	0,06 x D	180	–	230	144	–	184	126	–	161	fz	0,058	0,067	0,084	0,097	0,109	0,118
	2	Ap max	0,06 x D	120	–	160	96	–	128	84	–	112	fz	0,046	0,054	0,067	0,078	0,087	0,095
	3	Ap max	0,06 x D	120	–	140	96	–	112	84	–	98	fz	0,039	0,045	0,055	0,062	0,068	0,070
S	1	Ap max	0,06 x D	100	–	180	80	–	144	60	–	108	fz	0,058	0,067	0,084	0,097	0,109	0,118
	2	Ap max	0,06 x D	50	–	80	40	–	64	30	–	48	fz	0,031	0,036	0,045	0,052	0,059	0,065
	3	Ap max	0,06 x D	120	–	160	96	–	128	72	–	96	fz	0,046	0,054	0,067	0,078	0,087	0,095
	4	Ap max	0,06 x D	100	–	120	80	–	96	60	–	72	fz	0,043	0,050	0,062	0,071	0,080	0,087
H	1	Ap max	0,06 x D	160	–	280	128	–	224	96	–	168	fz	0,052	0,060	0,074	0,084	0,094	0,098
	2	Ap max	0,06 x D	140	–	240	112	–	192	84	–	144	fz	0,039	0,045	0,055	0,062	0,068	0,070

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on diameters >12mm.

Modular End Mills

High-Performance DUO-λOCK® Modular End Mills • VariMill™ Finishing

▼ VariMill Ball Nose • 4XN0 • Asymmetrical Flute Spacing

Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.						
		A		B	adaptor reach									D1 — Diameter						
					WP15PE			WP15PE			WP15PE									
					Cutting Speed — vc m/min			Cutting Speed — vc m/min			Cutting Speed — vc m/min									
		ap	ae	ap	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0	25,0	32,0
P	0	1,25 x D	0,5 x D	1 x D	150	–	200	135	–	180	135	–	180	fz	0,061	0,070	0,086	0,097	0,105	0,106
	1	1,25 x D	0,5 x D	1 x D	150	–	200	135	–	180	135	–	180	fz	0,061	0,070	0,086	0,097	0,105	0,106
	2	1,25 x D	0,5 x D	1 x D	140	–	190	126	–	171	126	–	171	fz	0,061	0,070	0,086	0,097	0,105	0,106
	3	1,25 x D	0,5 x D	1 x D	120	–	160	108	–	144	108	–	144	fz	0,051	0,060	0,074	0,086	0,097	0,105
	4	1,25 x D	0,5 x D	0,75 x D	90	–	150	81	–	135	81	–	135	fz	0,046	0,053	0,065	0,075	0,083	0,087
	5	1,25 x D	0,5 x D	1 x D	60	–	100	51	–	85	48	–	80	fz	0,041	0,048	0,059	0,069	0,077	0,084
	6	1,25 x D	0,5 x D	0,75 x D	50	–	75	42	–	64	40	–	60	fz	0,034	0,040	0,048	0,055	0,060	0,062
M	1	1,25 x D	0,5 x D	1 x D	90	–	115	72	–	92	63	–	80	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	1,25 x D	0,5 x D	1 x D	60	–	80	48	–	64	42	–	56	fz	0,041	0,048	0,059	0,069	0,077	0,084
	3	1,25 x D	0,5 x D	1 x D	60	–	70	48	–	56	42	–	49	fz	0,034	0,040	0,048	0,055	0,060	0,062
K	1	1,25 x D	0,5 x D	1 x D	120	–	150	108	–	135	108	–	135	fz	0,061	0,070	0,086	0,097	0,105	0,106
	2	1,25 x D	0,5 x D	1 x D	110	–	140	99	–	126	99	–	126	fz	0,051	0,060	0,074	0,086	0,097	0,105
	3	1,25 x D	0,5 x D	1 x D	110	–	130	99	–	117	99	–	117	fz	0,041	0,048	0,059	0,069	0,077	0,084
S	1	1 x D	0,3 x D	0,3 x D	50	–	90	40	–	72	30	–	54	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	1 x D	0,3 x D	0,3 x D	25	–	40	20	–	32	15	–	24	fz	0,027	0,032	0,039	0,046	0,052	0,057
	3	1,25 x D	0,5 x D	1 x D	60	–	80	48	–	64	36	–	48	fz	0,041	0,048	0,059	0,069	0,077	0,084
	4	1,25 x D	0,5 x D	1 x D	50	–	60	40	–	48	30	–	36	fz	0,038	0,044	0,055	0,063	0,071	0,077
H	1	1,25 x D	0,5 x D	0,75 x D	80	–	140	64	–	112	48	–	84	fz	0,046	0,053	0,065	0,075	0,083	0,087
	2	1,25 x D	0,2 x D	0,5 x D	70	–	120	56	–	96	42	–	72	fz	0,034	0,040	0,048	0,055	0,060	0,062

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on diameters >12mm.
For side milling with ap larger than 1 x D, reduce fz by 20%!

▼ 4547 • 4548 • Multi-Flute Finisher • Metric

Material Group		Side Milling (A)		short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A).						
		A		adaptor reach									D1 — Diameter						
				WP15PE			WP15PE			WP15PE									
				Cutting Speed — vc m/min			Cutting Speed — vc m/min			Cutting Speed — vc m/min									
		ap	ae	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0	25,0	32,0
P	0	1,5 x D	0,05 x D	150	–	200	135	–	180	135	–	180	fz	0,072	0,083	0,101	0,114	0,124	0,125
	1	1,5 x D	0,05 x D	150	–	200	135	–	180	135	–	180	fz	0,072	0,083	0,101	0,114	0,124	0,125
	2	1,5 x D	0,05 x D	140	–	190	126	–	171	126	–	171	fz	0,072	0,083	0,101	0,114	0,124	0,125
	3	1,5 x D	0,05 x D	120	–	160	108	–	144	108	–	144	fz	0,061	0,070	0,087	0,101	0,114	0,123
	4	1,5 x D	0,05 x D	90	–	150	81	–	135	81	–	135	fz	0,054	0,062	0,077	0,088	0,098	0,102
	5	1,5 x D	0,05 x D	60	–	100	51	–	85	48	–	80	fz	0,048	0,056	0,070	0,081	0,091	0,099
	6	1,5 x D	0,05 x D	50	–	75	42,5	–	63,75	40	–	60	fz	0,040	0,047	0,057	0,065	0,071	0,073
M	1	1,5 x D	0,05 x D	90	–	115	72	–	92	63	–	80,5	fz	0,061	0,070	0,087	0,101	0,114	0,123
	2	1,5 x D	0,05 x D	60	–	80	48	–	64	42	–	56	fz	0,048	0,056	0,070	0,081	0,091	0,099
	3	1,5 x D	0,05 x D	60	–	70	48	–	56	42	–	49	fz	0,040	0,047	0,057	0,065	0,071	0,073
K	1	1,5 x D	0,05 x D	120	–	150	108	–	135	108	–	135	fz	0,072	0,083	0,101	0,114	0,124	0,125
	2	1,5 x D	0,05 x D	110	–	140	99	–	126	99	–	126	fz	0,061	0,070	0,087	0,101	0,114	0,123
	3	1,5 x D	0,05 x D	110	–	130	99	–	117	99	–	117	fz	0,048	0,056	0,070	0,081	0,091	0,099
S	1	1,5 x D	0,05 x D	50	–	90	40	–	72	30	–	54	fz	0,061	0,070	0,087	0,101	0,114	0,123
	2	1,5 x D	0,05 x D	25	–	40	20	–	32	15	–	24	fz	0,032	0,037	0,046	0,054	0,061	0,067
	3	1,5 x D	0,05 x D	25	–	40	20	–	32	15	–	24	fz	0,032	0,037	0,046	0,054	0,061	0,067
	4	1,5 x D	0,05 x D	50	–	60	40	–	48	30	–	36	fz	0,045	0,052	0,064	0,074	0,084	0,090
H	1	1,5 x D	0,05 x D	80	–	140	64	–	112	48	–	84	fz	0,054	0,062	0,077	0,088	0,098	0,102
	2	1,5 x D	0,05 x D	70	–	120	56	–	96	42	–	72	fz	0,040	0,047	0,057	0,065	0,071	0,073

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions.
For smaller taper machining centres, please adjust parameters accordingly on diameters > 12mm.

▼ 4946 • High-Performance Roughing • Metric

Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.						
		A		B	adaptor reach									D1 — Diameter						
					WP15PE			WP15PE			WP15PE									
					Cutting Speed — vc m/min			Cutting Speed — vc m/min			Cutting Speed — vc m/min									
		ap	ae	ap	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0	25,0	32,0
P	0	1,5 x D	0,5 x D	1 x D	120	–	160	108	–	144	108	–	144	fz	0,061	0,070	0,086	0,097	0,105	0,106
	1	1,5 x D	0,5 x D	1 x D	120	–	160	108	–	144	108	–	144	fz	0,061	0,070	0,086	0,097	0,105	0,106
	2	1,5 x D	0,5 x D	1 x D	112	–	152	100,8	–	136,8	100,8	–	136,8	fz	0,061	0,070	0,086	0,097	0,105	0,106
	3	1,5 x D	0,4 x D	0,75 x D	96	–	128	86,4	–	115,2	86,4	–	115,2	fz	0,051	0,060	0,074	0,086	0,097	0,105
	4	1,5 x D	0,3 x D	0,30 x D	72	–	120	64,8	–	108	64,8	–	108	fz	0,046	0,053	0,065	0,075	0,083	0,087
	5	1,5 x D	0,4 x D	0,75 x D	48	–	80	40,8	–	68	38,4	–	64	fz	0,041	0,048	0,059	0,069	0,077	0,084
M	1	1,5 x D	0,4 x D	0,75 x D	72	–	92	57,6	–	73,6	50,4	–	64,4	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	1,5 x D	0,4 x D	0,75 x D	48	–	64	38,4	–	51,2	33,6	–	44,8	fz	0,041	0,048	0,059	0,069	0,077	0,084
	3	1,5 x D	0,4 x D	0,75 x D	48	–	56	38,4	–	44,8	33,6	–	39,2	fz	0,034	0,040	0,048	0,055	0,060	0,062
K	1	1,5 x D	0,5 x D	1 x D	96	–	120	86,4	–	108	86,4	–	108	fz	0,061	0,070	0,086	0,097	0,105	0,106
	2	1,5 x D	0,4 x D	1 x D	88	–	112	79,2	–	100,8	79,2	–	100,8	fz	0,051	0,060	0,074	0,086	0,097	0,105
	3	1,5 x D	0,4 x D	1 x D	88	–	104	79,2	–	93,6	79,2	–	93,6	fz	0,041	0,048	0,059	0,069	0,077	0,084
S	1	1,5 x D	0,4 x D	0,75 x D	40	–	72	32	–	57,6	24	–	43,2	fz	0,051	0,060	0,074	0,086	0,097	0,105
	3	1,5 x D	0,4 x D	0,75 x D	20	–	32	16	–	25,6	12	–	19,2	fz	0,027	0,032	0,039	0,046	0,052	0,057
H	1	1,5 x D	0,3 x D	0,30 x D	64	–	112	51,2	–	89,6	38,4	–	67,2	fz	0,046	0,053	0,065	0,075	0,083	0,087

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters according to system's stability.
For side milling with ap larger than 1 x D, reduce fz by 20%! Do not use cylindrical shank for full slotting!

▼ 4969 • Ball Nose Roughing • Metric

Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.						
		A		B	adaptor reach									D1 — Diameter						
					WP15PE			WP15PE			WP15PE									
					Cutting Speed — vc m/min			Cutting Speed — vc m/min			Cutting Speed — vc m/min									
		ap	ae	ap	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0	25,0	32,0
P	0	1,5 x D	0,5 x D	1 x D	150	–	200	135	–	180	135	–	180	fz	0,061	0,070	0,086	0,097	0,105	0,106
	1	1,5 x D	0,5 x D	1 x D	150	–	200	135	–	180	135	–	180	fz	0,061	0,070	0,086	0,097	0,105	0,106
	2	1,5 x D	0,5 x D	1 x D	140	–	190	126	–	171	126	–	171	fz	0,061	0,070	0,086	0,097	0,105	0,106
	3	1,5 x D	0,4 x D	0,75 x D	120	–	160	108	–	144	108	–	144	fz	0,051	0,060	0,074	0,086	0,097	0,105
	4	1,5 x D	0,3 x D	0,30 x D	90	–	150	81	–	135	81	–	135	fz	0,046	0,053	0,065	0,075	0,083	0,087
	5	1,5 x D	0,4 x D	0,75 x D	60	–	100	51	–	85	48	–	80	fz	0,041	0,048	0,059	0,069	0,077	0,084
	6	1,5 x D	0,3 x D	0,30x D	50	–	75	42,5	–	63,75	40	–	60	fz	0,034	0,040	0,048	0,055	0,060	0,062
M	1	1,5 x D	0,4 x D	0,75 x D	90	–	115	72	–	92	63	–	80,5	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	1,5 x D	0,4 x D	0,75 x D	60	–	80	48	–	64	42	–	56	fz	0,041	0,048	0,059	0,069	0,077	0,084
	3	1,5 x D	0,4 x D	0,75 x D	60	–	70	48	–	56	42	–	49	fz	0,034	0,040	0,048	0,055	0,060	0,062
K	1	1,5 x D	0,5 x D	1 x D	120	–	150	108	–	135	108	–	135	fz	0,061	0,070	0,086	0,097	0,105	0,106
	2	1,5 x D	0,4 x D	1 x D	110	–	140	99	–	126	99	–	126	fz	0,051	0,060	0,074	0,086	0,097	0,105
	3	1,5 x D	0,4 x D	1 x D	110	–	130	99	–	117	99	–	117	fz	0,041	0,048	0,059	0,069	0,077	0,084
S	1	1,5 x D	0,4 x D	0,75 x D	50	–	90	40	–	72	30	–	54	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	1,5 x D	0,3 x D	0,30 x D	25	–	40	20	–	32	15	–	24	fz	0,027	0,032	0,039	0,046	0,052	0,057
	3	1,5 x D	0,3 x D	0,30 x D	25	–	40	20	–	32	15	–	24	fz	0,027	0,032	0,039	0,046	0,052	0,057
	4	1,5 x D	0,3 x D	0,75 x D	50	–	60	40	–	48	30	–	36	fz	0,038	0,044	0,055	0,063	0,071	0,077
H	1	1,5 x D	0,3 x D	0,30 x D	80	–	140	64	–	112	48	–	84	fz	0,046	0,053	0,065	0,075	0,083	0,087
	2	1,5 x D	0,2 x D	0,20 x D	70	–	120	56	–	96	42	–	72	fz	0,034	0,040	0,048	0,055	0,060	0,062
	3	1,5 x D	0,2 x D	0,20 x D	60	–	90	48	–	72	36	–	54	fz	0,027	0,032	0,039	0,046	0,052	0,057

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters accordingly on diameters > 12mm.
For side milling with ap bigger than 1 x D reduce fz by 20%! Do not use cylindrical shank for full slotting!

Modular End Mills

High-Performance DUO-λOCK® Modular End Mills • Roughing/AluSurf™

▼ 4U40 • Roughing

Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.						
		A		B	adaptor reach WS15PE Cutting Speed — vc m/min			adaptor reach WS15PE Cutting Speed — vc m/min			adaptor reach WS15PE Cutting Speed — vc m/min			D1 — Diameter						
		ap	ae	ap	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0	25,0	32,0
P	3	1,0 x D	0,5 x D	0,75 x D	120	–	160	108	–	144	108	–	144	fz	0,051	0,060	0,074	0,086	0,097	0,105
	4	1,0 x D	0,3 x D	0,75 x D	90	–	150	81	–	135	81	–	135	fz	0,046	0,053	0,065	0,075	0,083	0,087
	5	1,0 x D	0,5 x D	0,75 x D	60	–	100	51	–	85	48	–	80	fz	0,041	0,048	0,059	0,069	0,077	0,084
	6	1,0 x D	0,3 x D	0,30 x D	50	–	75	42,5	–	63,75	40	–	60	fz	0,034	0,040	0,048	0,055	0,060	0,062
M	1	1,0 x D	0,4 x D	0,75 x D	90	–	115	72	–	92	63	–	80,5	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	1,0 x D	0,4 x D	0,75 x D	60	–	80	48	–	64	42	–	56	fz	0,041	0,048	0,059	0,069	0,077	0,084
	3	1,0 x D	0,4 x D	0,75 x D	60	–	70	48	–	56	42	–	49	fz	0,034	0,040	0,048	0,055	0,060	0,062
K	1	1,0 x D	0,5 x D	1 x D	120	–	150	108	–	135	108	–	135	fz	0,061	0,070	0,086	0,097	0,105	0,106
	2	1,0 x D	0,5 x D	1 x D	110	–	140	99	–	126	99	–	126	fz	0,051	0,060	0,074	0,086	0,097	0,105
	3	1,0 x D	0,5 x D	1 x D	110	–	130	99	–	117	99	–	117	fz	0,041	0,048	0,059	0,069	0,077	0,084
S	1	1,0 x D	0,3 x D	0,75 x D	50	–	90	40	–	72	30	–	54	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	1,0 x D	0,3 x D	0,75 x D	25	–	40	20	–	32	15	–	24	fz	0,027	0,032	0,039	0,046	0,052	0,057
	3	1,0 x D	0,3 x D	0,75 x D	25	–	40	20	–	32	15	–	24	fz	0,027	0,032	0,039	0,046	0,052	0,057
	4	1,0 x D	0,4 x D	0,75 x D	50	–	60	40	–	48	30	–	36	fz	0,038	0,044	0,055	0,063	0,071	0,077
H	1	1,0 x D	0,3 x D	0,30 x D	80	–	140	64	–	112	48	–	84	fz	0,046	0,053	0,065	0,075	0,083	0,087
	2	1,0 x D	0,2 x D	0,20 x D	70	–	120	56	–	96	42	–	72	fz	0,034	0,040	0,048	0,055	0,060	0,062
	3	1,0 x D	0,2 x D	0,20 x D	60	–	90	48	–	72	36	–	54	fz	0,027	0,032	0,039	0,046	0,052	0,057

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system's stability.
For side milling with ap bigger than 1 x D reduce fz by 20%! Do not use cylindrical shank for full slotting!

▼ AluSurf • 5142 • 5143 • Aluminium

Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.						
		A		B	adaptor reach UNCOATED Cutting Speed — vc m/min			adaptor reach UNCOATED Cutting Speed — vc m/min			adaptor reach UNCOATED Cutting Speed — vc m/min			D1 — Diameter						
		ap	ae	ap	min		max	min		max	min		max	mm	10,0	12,0	16,0	20,0	25,0	32,0
N	1	1,5 x D	0,3 x D	1,0 x D	500	–	2000	400	–	1200	300	–	1200	fz	0,077	0,092	0,122	0,153	0,191	0,245
	2	1,5 x D	0,3 x D	1,0 x D	500	–	1500	400	–	900	300	–	900	fz	0,069	0,083	0,110	0,138	0,172	0,220
	3	1,5 x D	0,3 x D	1,0 x D	500	–	1500	400	–	900	300	–	900	fz	0,054	0,064	0,086	0,107	0,134	0,171
	4	1,5 x D	0,3 x D	1,0 x D	400	–	750	320	–	450	240	–	450	fz	0,054	0,064	0,086	0,107	0,134	0,171
	5	1,5 x D	0,3 x D	1,0 x D	250	–	1000	200	–	600	150	–	600	fz	0,069	0,083	0,110	0,138	0,172	0,220

NOTE: ap for spindle with ceramic bearings multiply by 0.5.
For better surface finish, reduce feed per tooth.
Above parameters are based on ideal conditions. Please adjust parameters according to system's stability.
For side milling with ap bigger than 1 x D, reduce fz by 20%! Do not use cylindrical shank for full slotting!

▼ 8045 Corner Rounding • 8046 Chamfering

Material Group																
		Side Milling (A)		short			medium			long			Recommended feed per tooth (fz = mm/th) for side milling (A).			
		A		adaptor reach									D1 — Diameter			
				WP15PE			WP15PE			WP15PE						
				Cutting Speed — vc m/min			Cutting Speed — vc m/min			Cutting Speed — vc m/min						
		ap	ae	min		max	min		max	min		max	mm	10,0	12,0	16,0
P	0	0,35 x D	0,35 x D	150	–	200	135	–	180	135	–	180	fz	0,058	0,066	0,081
	1	0,35 x D	0,35 x D	150	–	200	135	–	180	135	–	180	fz	0,058	0,066	0,081
	2	0,35 x D	0,35 x D	140	–	190	126	–	171	126	–	171	fz	0,058	0,066	0,081
	3	0,35 x D	0,35 x D	120	–	160	108	–	144	108	–	144	fz	0,048	0,056	0,070
	4	0,35 x D	0,35 x D	90	–	150	81	–	135	81	–	135	fz	0,043	0,050	0,061
	5	0,35 x D	0,35 x D	60	–	100	51	–	85	48	–	80	fz	0,039	0,045	0,056
	6	0,35 x D	0,35 x D	50	–	75	42,5	–	63,75	40	–	60	fz	0,032	0,037	0,046
M	1	0,35 x D	0,35 x D	90	–	115	72	–	92	63	–	80,5	fz	0,048	0,056	0,070
	2	0,35 x D	0,35 x D	60	–	80	48	–	64	42	–	56	fz	0,039	0,045	0,056
	3	0,35 x D	0,35 x D	60	–	70	48	–	56	42	–	49	fz	0,032	0,037	0,046
K	1	0,35 x D	0,35 x D	120	–	150	108	–	135	108	–	135	fz	0,058	0,066	0,081
	2	0,35 x D	0,35 x D	110	–	140	99	–	126	99	–	126	fz	0,048	0,056	0,070
	3	0,35 x D	0,35 x D	110	–	130	99	–	117	99	–	117	fz	0,039	0,045	0,056
N	1	0,35 x D	0,35 x D	500	–	2000	400	–	1600	300	–	1200	fz	0,080	0,096	0,128
	2	0,35 x D	0,35 x D	500	–	1500	400	–	1200	300	–	900	fz	0,072	0,086	0,115
	3	0,35 x D	0,35 x D	500	–	1500	400	–	1200	300	–	900	fz	0,056	0,067	0,090
	4	0,35 x D	0,35 x D	400	–	750	320	–	600	240	–	450	fz	0,056	0,067	0,090
	5	0,35 x D	0,35 x D	250	–	1000	200	–	800	150	–	600	fz	0,072	0,086	0,115
	6	0,35 x D	0,35 x D	100	–	750	80	–	600	60	–	450	fz	0,080	0,096	0,128
	7	0,35 x D	0,35 x D	100	–	750	80	–	600	60	–	450	fz	0,056	0,067	0,090
S	1	0,35 x D	0,35 x D	50	–	90	40	–	72	30	–	54	fz	0,048	0,056	0,070
	2	0,35 x D	0,35 x D	25	–	40	20	–	32	15	–	24	fz	0,026	0,030	0,037
	3	0,35 x D	0,35 x D	25	–	40	20	–	32	15	–	24	fz	0,026	0,030	0,037
	4	0,35 x D	0,35 x D	50	–	60	40	–	48	30	–	36	fz	0,036	0,041	0,051
H	1	0,35 x D	0,35 x D	80	–	140	64	–	112	48	–	84	fz	0,043	0,050	0,061

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system's stability.

▼ System Assembly Information

Please wear sufficient personal safety equipment such as gloves and eye protection during assembly.

1 Clean the Duo-Lock™ cutting insert and shank coupling.

2 Mount the Duo-Lock™ adaptor in a mounting block with a clamping chuck sufficient to enable torque transmission.

3 Screw the Duo-Lock™ cutting tip into adaptor by hand.

Attention: Use of protective gloves is mandatory!

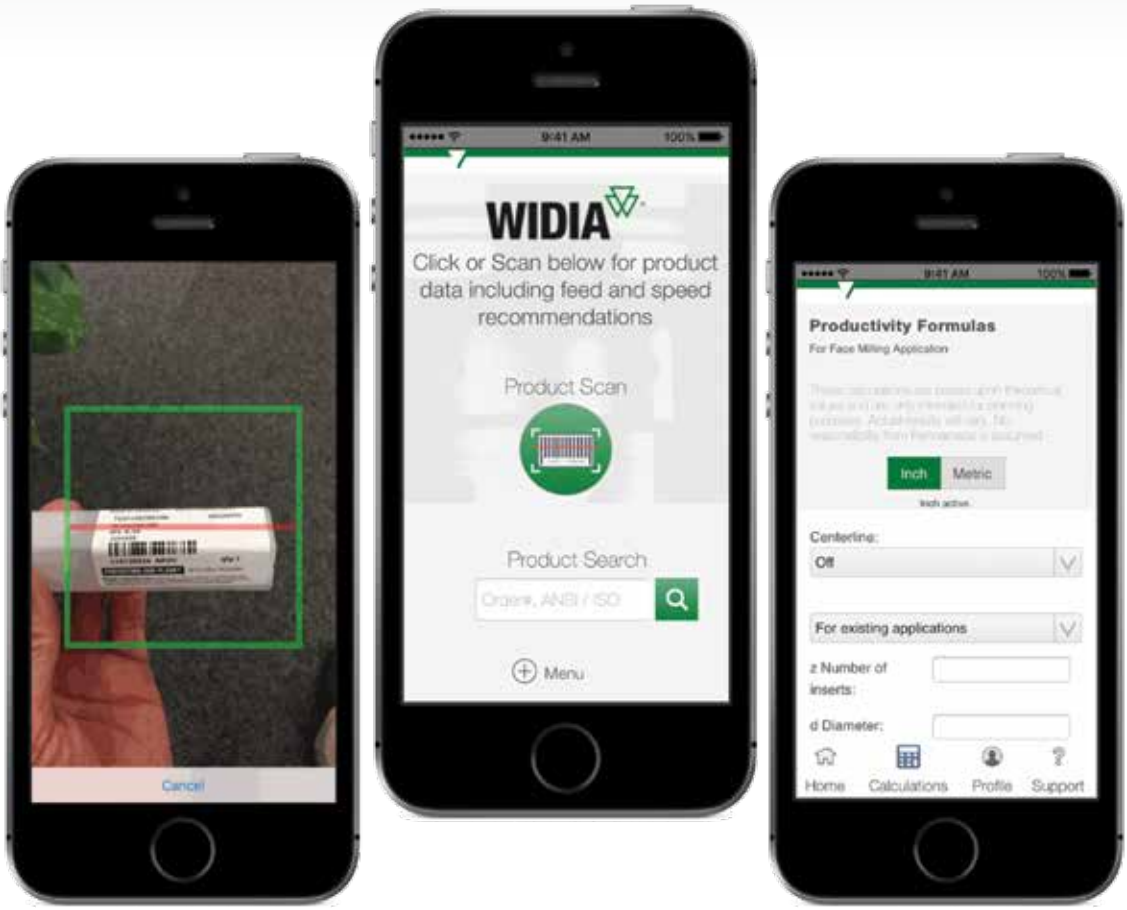
4 A gap of approx. 0,15–0,3mm should be visible.

5 Apply the torque shown in the table. Use of a high quality common torque wrench is mandatory. The ERICKSON™ Torque Master wrench is recommended.

Duo-Lock™ Size	Torque Nm
DL 16	60
DL 20	80
DL 25	100
DL 32	130

Machining Central App from WIDIA™

The fastest, easiest way to get feeds and speeds.



SCAN

With the new WIDIA app, product data is just a quick scan away. Now, when you're on the floor and need to quickly access the speeds and feeds of your favorite WIDIA tool, the WIDIA app gives you reliable information in just a few seconds.

SEARCH

Don't have a barcode? The new WIDIA app includes another simple search technique — just type the tool's corresponding order number or the ANSI or ISO catalogue number into the search bar. You'll get the same reliable data as if you'd scanned the tool's barcode. It's simple and quick — no interruption in production!

CALCULATE

Have a specific machining need that our recommended speeds and feeds don't quite address? Try out our three NOVO™ based calculators. Both end milling and face milling calculators are available. Simply fill in the blank fields, and our calculators will quickly provide the data you need.

DOWNLOAD THE **WIDIA MACHINING CENTRAL** MOBILE APP

widia.com

Download on the App Store

GET IT ON Google Play

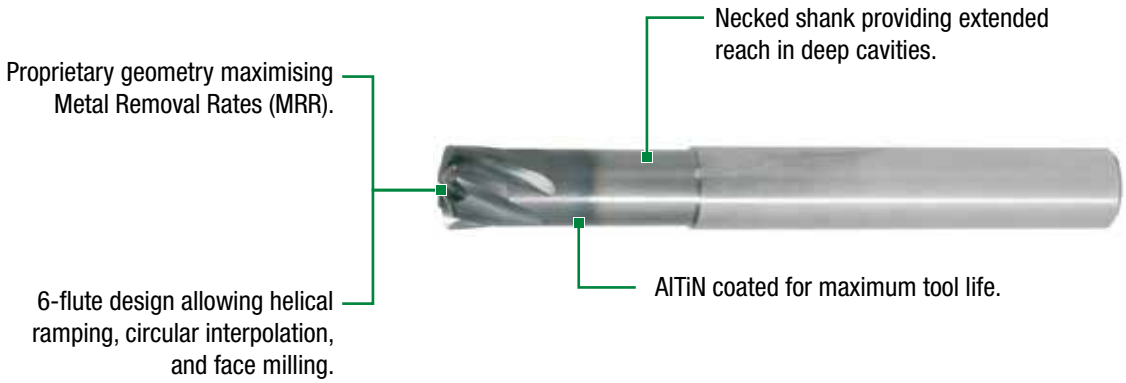
WIDIA™

X-Feed

X-Feed™ End Mills for High-Feed Milling

X-Feed significantly reduces manufacturing time machining heat-treated steels up to 67 HRC hardness, having 50% more effective cutting edges than regular solid carbide tooling. X-Feed combines roughing and semi-finishing into one operation by taking shallow depths-of-cut at extremely high feed rates, maximising Metal Removal Rates (MRR). X-Feed, which has a 3 x D neck and extended reach design, is perfectly suited for pocketing using 3D machining techniques such as ramping and helical interpolation. During face milling, the proprietary front-end geometry of X-Feed is entirely in contact with the workpiece, providing up to 55% engagement compared to the regular 5–10% provided by ball nose-type tooling.

- Proprietary 6-flute design for high productivity.
- One tool for roughing and semi-finishing operations.
- Covering hardened materials ranging from 37–67 HRC with two dedicated geometries.
- Custom solutions tailored for machining titanium and other high-temperature alloys available.



X-Feed™ Series

- Significantly reduces manufacturing time in machining hardened steels.
- Providing the benefits of indexable style high-feed milling starting from as small as 6mm.
- Increases your capability to perform 3D machining, helical ramping, circular interpolation, face milling, and pocketing.
- One tool for roughing and semi-finishing.

70N6 Series

- 6-flute.
- Extended neck for long-reach applications.
- Applicable for hardened steels from 40–52 HRC.

70N7 Series

- 6-flute.
- Extended neck for long-reach applications.
- Applicable for hardened steels from 50–67 HRC.

Operation Pocket Milling

Customer: Die and Mould Manufacturer

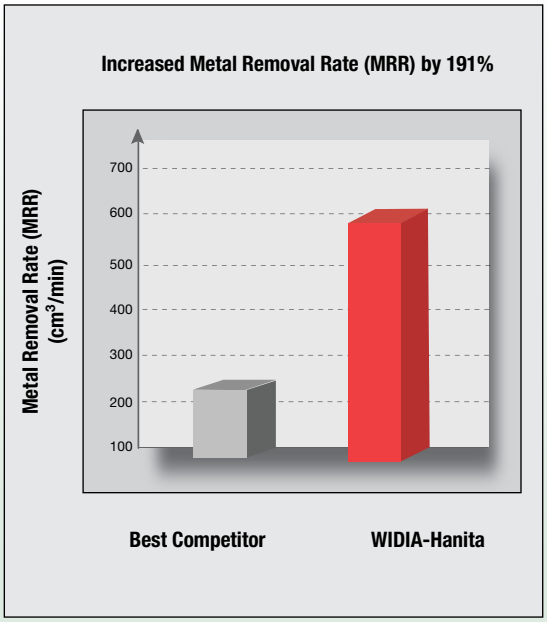
Material: AISI 4340 hardened steel (52 HRc)

Workpiece: Mould

Results:
- 3x better Metal Removal Rate (MRR) than competitive tool!
- Machined at more than 3x faster feed!

	COMPETITOR	WIDIA™-Hanita™
tool:	6-flute H/P for die & mould	70N612005MT
material:	medium-hardened steel (52 HRc)	medium-hardened steel (52 HRc)
surface speed:	120 m/min	160 m/min
feed per tooth:	0,34mm	0,34mm
depth of cut:	0,8mm	0,6mm
table feed:	4,331 mm/min	15,287 mm/min
metal removal rate:	22,8 cm^3	60,5 cm^3

Individual results may vary.



70NS

Victory™ X-Feed™

Productivity Improved in High-Feed Milling of Stainless Steel and Titanium Materials

NEW!

Designed for high-feed rates.

6 flutes and 3 x D diameter neck reach.

Designed for circular plunging and ramping, 3D machining, face milling, and pocketing applications.

Stainless steel and high-temp alloys.

Improved tool life due to reduced radial forces.

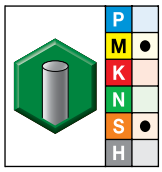
X FEED™

Larger radial engagement vs. standard ball nose end mills.

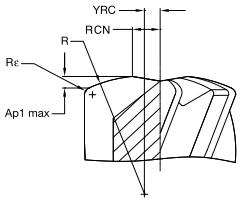
5–10%
Radial engagement

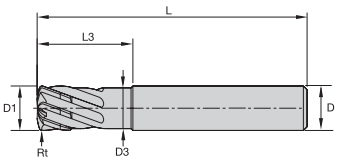
55%
Radial engagement

70NS Series • X-Feed



● first choice
○ alternate choice





order #	catalogue #	grade AlTiN-MT AlTiN D1	D	D3	L3	length L	Rε	Rt
6441882	70NS06002	6,0	6	5,50	17,75	63	0,38	0,67
6441883	70NS08003	8,0	8	7,50	23,75	76	0,50	0,89
6441884	70NS10004	10,0	10	9,00	29,50	89	0,63	1,12
6441885	70NS12005	12,0	12	11,00	35,50	100	0,75	1,34
6441886	70NS16006	16,0	16	15,00	47,50	110	1,00	1,79
6441887	70NS20007	20,0	20	19,00	59,50	125	1,25	2,23
6441888	70NS25008	25,0	25	23,50	74,25	150	1,56	2,90

NOTE: YRC = distance from centre line to the crown of the R radius.
RCN = distance from centre line to the start of the cutting edge. This dimension can also help determine the minimum circle size when helical ramping.
R = the head radius size.
Rε = the shoulder radius or radius at the corner of the cutter.

End Mill Tolerances

D1	tolerance e8	D	tolerance h6 + / -
≤ 3	-0,014/-0,028	≤ 3	0/0,006
> 3–6	-0,020/-0,038	> 3–6	0/0,008
> 6–10	-0,025/-0,047	> 6–10	0/0,009
> 10–18	-0,032/-0,059	> 10–18	0/0,011
> 18–30	-0,040/-0,073	> 18–30	0/0,013

Programming Data

70NS Metric																
Geometrical Parameters									Ramping Guide for Circular and Linear Interpolation							
									Circular Interpolation		Linear Interpolation					
									Allowed Range of Hole Diameter		Calculated Length (mm) per Ramp Angle					
diameter	Ap1 max	Rfm	Rt	Rc	Xfm	Yfm	YD	Number			Ramp Angle (degree)					
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	flutes	Smallest	Largest	1	2	3	4	5	
6	0,32	6	0,67	0,375	0,338	0,75	1,26	6	8,52	12	18,12	9,06	6,03	4,52	3,61	
8	0,42	8	0,89	0,500	0,450	1,00	1,68	6	11,36	16	24,16	12,08	8,05	6,03	4,82	
10	0,53	10	1,12	0,625	0,562	1,25	2,10	6	14,2	20	30,20	15,09	10,06	7,54	6,02	
12	0,63	12	1,34	0,750	0,674	1,50	2,52	6	17,04	24	36,24	18,11	12,07	9,05	7,23	
16	0,84	16	1,79	1,000	0,915	2,00	3,36	6	22,72	32	48,31	24,15	16,09	12,06	9,64	
20	1,05	20	2,23	1,250	1,124	2,50	4,20	6	28,4	40	60,39	30,19	20,11	15,08	12,05	
25	1,25	25	2,90	1,5625	1,405	3,1250	5,25	6	35,5	50	70,61	35,80	23,85	17,88	14,29	
Recommended Feed											30%	30%	30%	30%	10%	

▼ 70NS Series • X-Feed

Material Group		Profile Milling		AlTiN-MT			Recommended Feed Per Tooth (fz = mm/th) for 3D milling/profiling (A)						
		A		Cutting Speed — Vc m/min			D1 — Diameter						
		ap	ae	min		max	mm	6,0	8,0	10,0	12,0	16,0	20,0	25,0
M	1	0.5 x D	0.55 x D	90	–	115	fz	0,300	0,400	0,500	0,540	0,720	0,900	1,125
	2	0.5 x D	0.55 x D	60	–	80	fz	0,240	0,320	0,400	0,480	0,640	0,800	1,000
	3	0.5 x D	0.55 x D	60	–	70	fz	0,240	0,320	0,400	0,480	0,640	0,800	1,000
S	1	0.5 x D	0.55 x D	50	–	90	fz	0,270	0,360	0,450	0,500	0,650	0,800	1,000
	2	0.5 x D	0.55 x D	50	–	80	fz	0,240	0,320	0,400	0,480	0,600	0,700	0,900
	3	0.5 x D	0.55 x D	25	–	40	fz	0,180	0,240	0,300	0,350	0,430	0,500	0,600
	4	0.5 x D	0.55 x D	50	–	60	fz	0,210	0,280	0,350	0,420	0,560	0,700	0,875

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on diameters greater than 12mm.

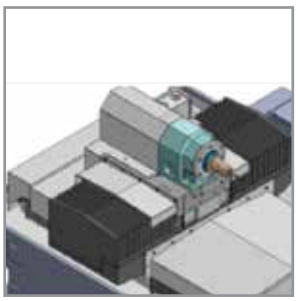
For Manufacturing Small Tools with Linear Motor Drive Technology

Ecogrind SX5 LiMo

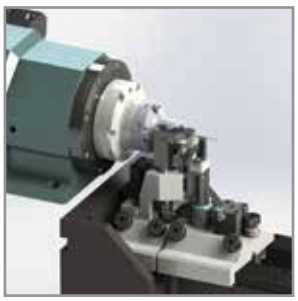
- AWC for 3 wheel packs (Max. 9 grinding wheels)
- Grinding motor power 7 kW (Continuous)
- Specially designed high axial force linear motors for all linear axes
- Work head (A Axis) with direct drive for higher indexing accuracies
- Grinding wheel head swivel (B Axis) with direct drive for higher indexing and interpolation accuracies
- Equipped with high resolution scales in all linear axes and high resolution rotary encoders on rotary axes, thus offering optimum precision
- Specially designed top clamp and steady rest for small tools grinding
- Auto tool loading system (Robot) — optional
- Optical vision inspection system — Optional
- Num CNC with NUMROTO Software

WIDMA introduces Ecogrind SX5 LiMo with specially designed high axial force linear motors for all linear axes. Dedicated to the manufacturing and regrinding of round small round tools (dia. 0.5 to 12mm) in one setup. This machine is empowered with user friendly NUM CNC and powerful menu driven NUMROTO plus software modules for grinding of simple to complex geometry tools.

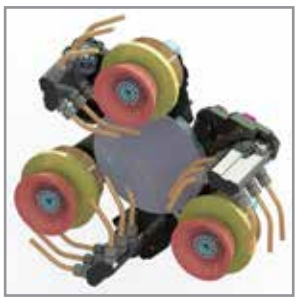
Tool Grinding Software



Feed Drive Assembly
with High Force Linear Motors



Steady Rest
with Top Clamp



3 station
Auto Wheel Changer

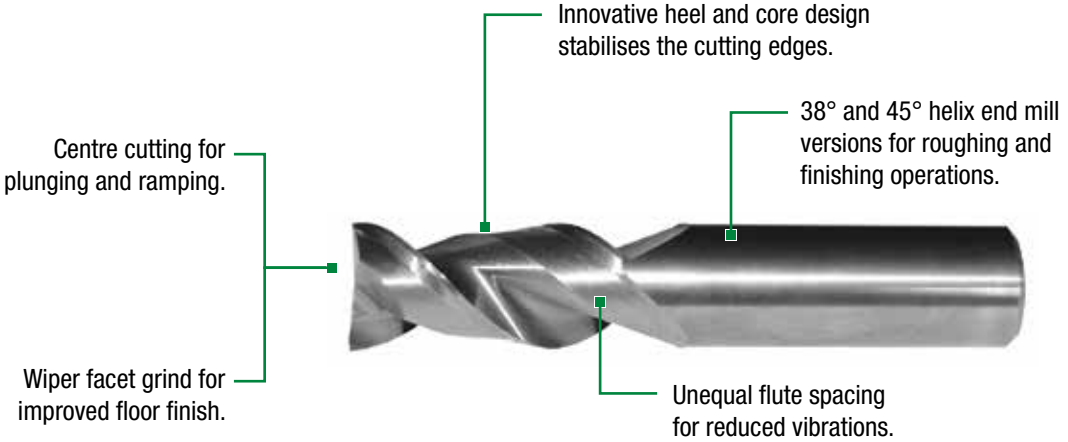
Auto Tool
Loading Robot

AluSurf™ Aluminium

High-Performance Solid Carbide End Mills • AluSurf

AluSurf provides extraordinary Metal Removal Rates (MRR) by combining roughing and finishing operations for any aluminium plunging, slotting, and profiling application. Its proprietary flute geometry is designed for rigidity and improved chip evacuation generating exceptional wall-to-floor perpendicularity, even in thin wall applications. To ensure a superior floor surface finish the AluSurf front geometry is equipped with a wiper facet grind.

- One tool for roughing and finishing operations.
- Slotting depths up to 1 x D and peripheral milling up to 1.5 x D axially at 0.5 x D radially.
- Unequal flute spacing for chatter-free performance, (3-flute series only).
- Multiple corner radii and extended neck configurations available as standard.



AluSurf™ Series

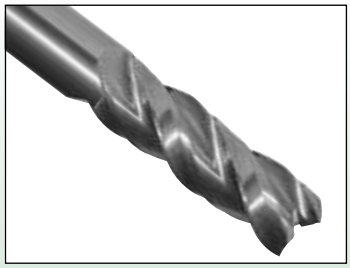
- Increase your output due to less tool changes and increased Metal Removal Rates (MRR).
- No specific tools for roughing and finishing necessary.
- Less passes due to 1 x D slotting capability.
- Perfect for MQL (Minimum Quantity Lubrication) methods.

5102 Series

- 2-flute, 45° helix.
- Radii and sharp corner configuration.

5103 Series

- 3-flute, 38° helix.
- Unequal flute spacing.
- Radii and sharp corner configuration.

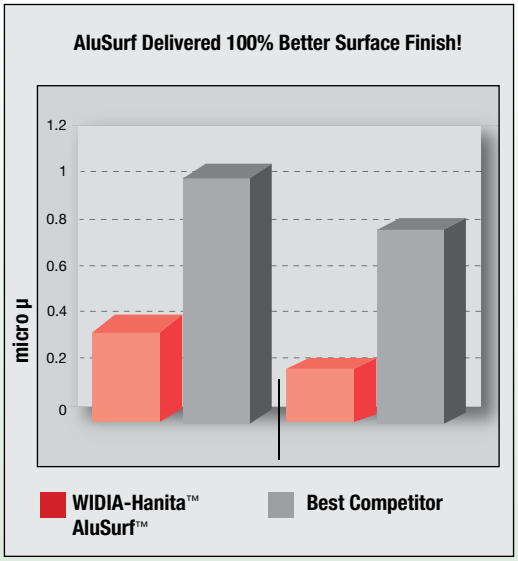


51N3 Series

- 3-flute, 38° helix.
- Unequal flute spacing.
- Extended neck for long-reach applications.
- Radii and sharp corner configuration.

Operation	Slotting
Customer:	Aluminium Block
Material:	6061 Aluminium
Workpiece:	AluSurf solid carbide end mill.
Results:	100% better surface finish on walls and floor.

	COMPETITOR	**WIDIA-Hanita™**
tool:	uncoated tools	uncoated tools
end mill:	16mm 3-flute	16mm 3-flute
material:	aluminium	aluminium
depth of cut (ap):	8mm	8mm
width of cut (ae):	8mm	8mm
speed (Vc):	610 m/min	610 m/min
RPM (N):	12,000 RPM	12,000 RPM
feed rate (Vf):	3,600 mm/min	3,600 mm/min
chip load per tooth (Fz):	0,1 mm/th	0,1 mm/th
metal removal rate:	230 cm^3/min	230 cm^3/min



4U50 & 4U80

Aerospace Roughing

4U50

Shallow pitch rougher.

4–6 flutes with variable spacing.

Short length of cut and 3 x D diameter neck length.

Stainless steel and high-temp alloys.

Centre cutting.

4U80

Shallow pitch rougher.

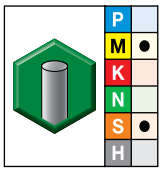
4–6 flutes with variable spacing.

Regular length of cut.

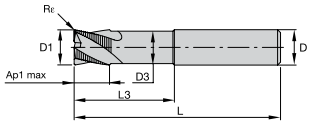
Stainless steel and high-temp alloys.

Centre cutting.

4U50 Series



● first choice
○ alternate choice



order #	catalogue #	grade AlTiN-MT AlTiN D1	D	D3	length of cut Ap1 max	L3	length L	Rε	ZU
6431403	4U50M060R2TC	6,0	6	5,64	6,00	18,00	57	0,30	4
6431404	4U50M080R3TC	8,0	8	7,52	8,00	24,00	63	0,30	4
6431405	4U50M100R4TE	10,0	10	9,40	10,00	30,00	72	0,50	4
6431406	4U50M120R5TE	12,0	12	11,28	12,00	36,00	83	0,50	4
6431407	4U50M160R6TE	16,0	16	15,04	16,00	48,00	92	0,50	6
6431408	4U50M200R7TG	20,0	20	18,80	20,00	60,00	104	1,00	6
6431409	4U50M250R8TG	25,0	25	23,50	25,00	75,00	121	1,00	6

End Mill Tolerances

D1	tolerance d11	D	tolerance h6 + / -
≤ 3	-0,020/-0,080	≤ 3	0/-0,006
> 3–6	-0,030/-0,105	> 3–6	0/-0,008
> 6–10	-0,040/-0,130	> 6–10	0/-0,009
> 10–18	-0,050/-0,160	> 10–18	0/-0,011
> 18–30	-0,065/-0,195	> 18–30	0/-0,013

4U50 Series

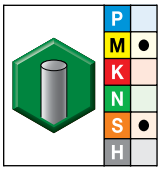
Material Group		A ap	A ae	B ap	Cutting Speed — Vc m/min min		max	mm	D1 — Diameter 6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0
		Side Milling (A) and Slotting (B)			AlTiN-MT				Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.								
M	1	0,8 x D	0,5 x D	0,75 x D	90	–	115	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	0,8 x D	0,4 x D	0,75 x D	60	–	80	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
	3	0,8 x D	0,4 x D	0,75 x D	60	–	70	fz	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071
S	1	0,8 x D	0,4 x D	0,75 x D	50	–	90	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	0,8 x D	0,25 x D	0,3 x D	25	–	40	fz	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061
	3	0,8 x D	0,4 x D	0,75 x D	60	–	80	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
	4	0,8 x D	0,3 x D	0,3 x D	50	–	60	fz	0,026	0,037	0,045	0,052	0,058	0,064	0,069	0,074	0,084

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on diameters greater than 12mm.

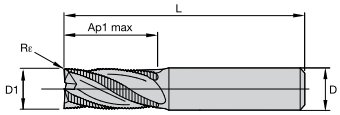
High-Performance Roughers

4U80 Series

4U80 Series



● first choice
○ alternate choice



order #	catalogue #	grade AlTiN-MT AlTiN D1	D	length of cut Ap1 max	length L	Rε	ZU
6431246	4U80M060R2TC	6,0	6	13,00	57	0,30	4
6431247	4U80M080R3TC	8,0	8	16,00	63	0,30	4
6431248	4U80M100R4TE	10,0	10	22,00	72	0,50	4
6431249	4U80M120R5TE	12,0	12	26,00	83	0,50	4
6431250	4U80M160R6TE	16,0	16	32,00	92	0,50	6
6431401	4U80M200R7TG	20,0	20	38,00	104	1,00	6
6431402	4U80M250R8TG	25,0	25	45,00	121	1,00	6

End Mill Tolerances

D1	tolerance d11	D	tolerance h6 + / -
≤ 3	-0,020/-0,080	≤ 3	0/-0,006
> 3–6	-0,030/-0,105	> 3–6	0/-0,008
> 6–10	-0,040/-0,130	> 6–10	0/-0,009
> 10–18	-0,050/-0,160	> 10–18	0/-0,011
> 18–30	-0,065/-0,195	> 18–30	0/-0,013

4U80 Series

Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	AlTiN-MT Cutting Speed — Vc m/min min		max	Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%. mm	D1 — Diameter 6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0
M	1	1 x D	0,5 x D	0,75 x D	90	–	115	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	1 x D	0,5 x D	0,75 x D	60	–	80	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
	3	1 x D	0,5 x D	0,75 x D	60	–	70	fz	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071
S	1	1 x D	0,3 x D	0,75 x D	50	–	90	fz	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	1 x D	0,3 x D	0,3 x D	25	–	40	fz	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061
	3	1 x D	0,4 x D	0,75 x D	60	–	80	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
	4	1 x D	0,4 x D	0,75 x D	50	–	60	fz	0,026	0,037	0,045	0,052	0,058	0,064	0,069	0,074	0,084

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centres, please adjust parameters accordingly on diameters greater than 12mm.

A **Powerful History** of **High Performance**

For more than 90 years, WIDIA™ brand products and services have defined excellence in innovation, technology, and customer service. From the world's first patent for carbide indexable inserts to the development of the world's first coated grades, WIDIA delivers extreme results, no matter what the challenge.

From turning, indexable milling, solid end milling, holemaking, tapping, and tooling systems — WIDIA offers a broad range of solutions. Match the most expansive portfolio of precision-engineered products and engineered solution services available today with a global, specialised network of Authorised Distributor partners, and you have the tools you need — and the power that only comes from WIDIA.

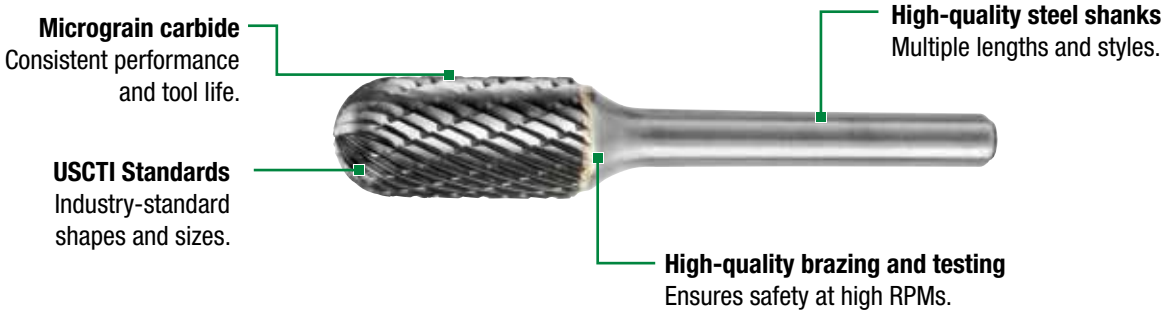
WIDIA™ GTD™ WIDIA™ HANITA™ WIDIA™

Carbide Burs

WIDIA™ Metal Removal Carbide Burs

WIDIA™ carbide burs are manufactured in compliance with USCTI standards and are the highest quality in the industry, delivering excellent performance and safety. Our unique manufacturing process ensures exceptional tool life with the reliability to operate safely at high speeds. WIDIA burs offer a comprehensive portfolio of sizes and shapes for all applications and workpiece materials.

- Complete selection of shapes and cut styles for all materials and applications.
- Solid shank and brazed-on steel styles.
- Highest quality materials and construction deliver exceptional tool life.
- Wide array of sizes and shank lengths.
- Available in multiple size and style kits.
- Use of industry-standard USCTI codes for easy identification.

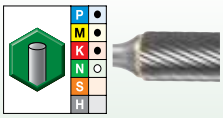


Standard Cut Styles

Standard Cut (Right-Hand Spiral)

The WIDIA™ standard (right-hand spiral) cut produces a smooth finish for general-purpose use on steel, cast iron, and other ferrous and non-ferrous materials.

Most WIDIA carbide burs are available in the right-hand spiral design.

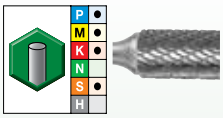


Master Cut (Double Cut)

The WIDIA exclusive **master cut,** with its chisel-type cutting edge, is a machine-ground tool built to exacting tolerances of concentricity, size, and shape. This accuracy, when combined with precision grinders, results in smooth-running, fast metal removal, and fine finishes. The right- and left-hand helical flutes combine to produce a chisel-type cutting tooth. This results in faster penetration and stock removal with minimal bounce or chatter.

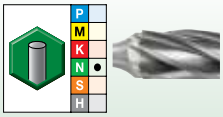
The master cut design also produces an easy-to-handle granular-type chip in most metals, as opposed to the conventional sliver-type chips.

Throughout its life, the master cut gives faster stock removal and less operator fatigue, and maintains a good finish on the widest possible variety of workpiece materials.



Aluminium Cut

The WIDIA **aluminium cut** burs are outstanding on soft or non-ferrous type materials. Use the aluminium cut design on aluminium, magnesium, brass, lead, and most plastics.

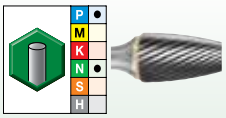


Special Cut Styles

Coarse Cut

Coarse cut burs are favored for applications in softer materials such as brass, lead, annealed low-carbon steels, and some aluminium alloys. The combination of fewer flutes with greater depths provides the chip clearance necessary for these materials.

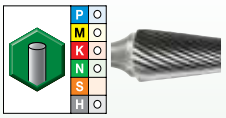
Available as specials.



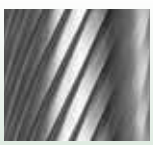
Fine Cut RHS

The **WIDIA fine cut right-hand spiral** is used in applications where stock removal is light and workpiece finish is critical. A greater number of flutes reduces chip load and provides excellent control in deburring small, intricate areas.

Available as specials.

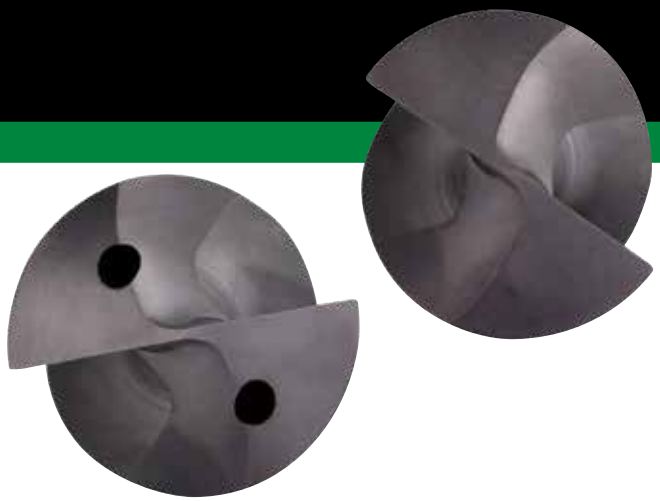


How to select a Bur

Applications	Material	Cut	
Efficient stock removal — deburring, finishing, and cleaning.	Ferrous metals Non-ferrous metals	Double Master Cut	
Heavy stock removal — deburring, milling, cleaning, and machining.	Non-ferrous metal: aluminium alloys Plastics	Aluminium Cut	
Medium stock removal — deburring, milling, cleaning, and finishing.	Non-ferrous metal: aluminium alloys Plastics Hard rubber	Coarse Cut Special Cut Style	
Medium stock removal — deburring, milling, cleaning, and finishing.	Non-Hardened steel >45 HRC Hardened steel >45 HRC: stainless steel High-temperature resistant metals: nickel, cobalt, titanium Non-ferrous light metals: brass, copper, and zinc Hardened >45 HRC: cast iron	Single Cut	
Light stock removal — fine deburring and fine finishing.	Hardened steel >45 HRC	Fine Cut Special Cut Style	

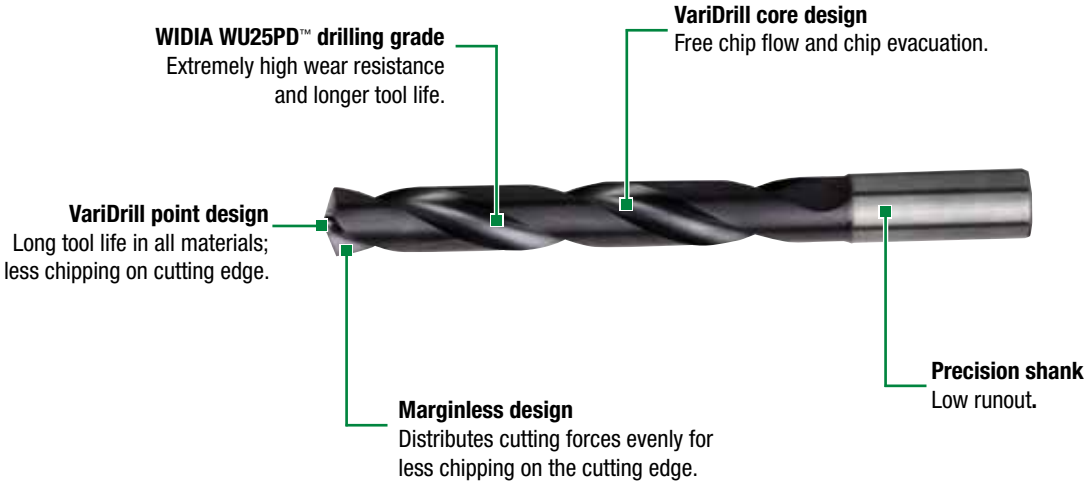
VariDrill™

Multiple-Material Drilling



The VariDrill advanced-point geometry design offers the ultimate solution for multipurpose drilling operations. It offers dependable tool life in all materials due to less chipping on the cutting edge.

- Reduced chipping on cutting edge means longer tool life.
- Geometry design offers strength and versatility.
- Delivers proper surface finish across multiple materials: steel, stainless steel, cast iron, aluminium, and high-temp alloys.



Innovative Technology

VariDrill™ is a technologically advanced holemaking solution. These high-performance solid carbide drills were designed in Germany to provide the transportation, aerospace, general engineering, and energy industries with a tool that performs on multiple materials.

Elegance, Strength, and Versatility

The engineers at WIDIA™ developed an innovative new design to deliver drilling performance. These solid carbide drills have a distinctive geometry and marginless design. The VariDrill point is versatile enough to work through steel, stainless steel, cast iron, aluminium, and a range of high-temp alloys.

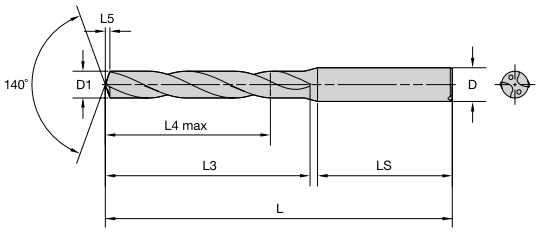
Optimum Hole Quality

The unique marginless design reduces chipping on the tool's edge and stabilises cutting forces. This unique tool geometry enables chips to roll smoothly and evacuate easily, resulting in noticeably less friction, heat, jamming, and scratching. By minimising these drilling issues, VariDrill delivers an optimum surface finish with every hole — no matter the material.

More Options and Longer Tool Life

Aside from its uniquely engineered design, VariDrill also offers a broad portfolio of drilling options. With more than 2,200 items, VariDrill offers more choices than any other drill for general engineering operations. And because most drills can be reconditioned, your tools will gain extended life.

VariDrill — Innovatively designed and technologically advanced.
Make VariDrill your go-to drill for hole after hole...after hole.



order number	catalogue number	grade	D1 diameter (mm)	D1 diameter (inch)	L4 max (mm)	L3 (mm)	L5 (mm)	L (mm)	LS (mm)	D (mm)
VDS201A • 3 x D • Non-Coolant										
4144195	VDS201A01000	WU25PD	1,000	0.0394	5	7	0,1	58	28	4
4144200	VDS201A01100	WU25PD	1,100	0.0433	5	7	0,2	58	28	4
4144523	VDS201A01200	WU25PD	1,200	0.0472	5	7	0,2	58	28	4
4144524	VDS201A01300	WU25PD	1,300	0.0512	5	7	0,2	58	28	4
4144527	VDS201A01400	WU25PD	1,400	0.0551	5	7	0,2	58	28	4
4144528	VDS201A01500	WU25PD	1,500	0.0591	6	9	0,2	58	28	4
4144529	VDS201A01600	WU25PD	1,600	0.0630	6	9	0,2	58	28	4
4144530	VDS201A01700	WU25PD	1,700	0.0669	6	9	0,3	58	28	4
4144531	VDS201A01800	WU25PD	1,800	0.0709	6	9	0,3	58	28	4
4144532	VDS201A01900	WU25PD	1,900	0.0748	6	9	0,3	58	28	4
4144533	VDS201A01984	WU25PD	1,984	0.0781	10	13	0,3	58	28	4
4144534	VDS201A02000	WU25PD	2,000	0.0787	10	13	0,3	58	28	4
4144535	VDS201A02100	WU25PD	2,100	0.0827	10	13	0,3	58	28	4
4144536	VDS201A02200	WU25PD	2,200	0.0866	10	13	0,3	58	28	4
4144537	VDS201A02300	WU25PD	2,300	0.0906	10	13	0,4	58	28	4
4144539	VDS201A02400	WU25PD	2,400	0.0945	12	17	0,4	58	28	4
4144542	VDS201A02500	WU25PD	2,500	0.0984	12	17	0,4	58	28	4
4144544	VDS201A02600	WU25PD	2,600	0.1024	12	17	0,4	58	28	4
4144546	VDS201A02700	WU25PD	2,700	0.1063	12	17	0,4	58	28	4
4144549	VDS201A02800	WU25PD	2,800	0.1102	12	17	0,5	58	28	4
4144552	VDS201A02900	WU25PD	2,900	0.1142	12	17	0,5	58	28	4
4143907	VDS201A03000	WU25PD	3,000	0.1181	14	20	0,5	62	36	6
4143909	VDS201A03100	WU25PD	3,100	0.1220	14	20	0,5	62	36	6
4143911	VDS201A03200	WU25PD	3,200	0.1260	14	20	0,5	62	36	6
4143913	VDS201A03300	WU25PD	3,300	0.1299	14	20	0,5	62	36	6
4143914	VDS201A03400	WU25PD	3,400	0.1339	14	20	0,6	62	36	6
4143916	VDS201A03500	WU25PD	3,500	0.1378	14	20	0,6	62	36	6
4143918	VDS201A03600	WU25PD	3,600	0.1417	14	20	0,6	62	36	6
4143920	VDS201A03700	WU25PD	3,700	0.1457	14	20	0,6	62	36	6
4143922	VDS201A03800	WU25PD	3,800	0.1496	17	24	0,6	66	36	6
4143923	VDS201A03900	WU25PD	3,900	0.1535	17	24	0,6	66	36	6
4143925	VDS201A04000	WU25PD	4,000	0.1575	17	24	0,7	66	36	6
4143926	VDS201A04039	WU25PD	4,039	0.1590	17	24	0,7	66	36	6
4143928	VDS201A04100	WU25PD	4,100	0.1614	17	24	0,7	66	36	6
4143929	VDS201A04200	WU25PD	4,200	0.1654	17	24	0,7	66	36	6
4143931	VDS201A04300	WU25PD	4,300	0.1693	17	24	0,7	66	36	6
4143933	VDS201A04400	WU25PD	4,400	0.1732	17	24	0,7	66	36	6
4143934	VDS201A04500	WU25PD	4,500	0.1772	17	24	0,7	66	36	6
4143935	VDS201A04600	WU25PD	4,600	0.1811	17	24	0,8	66	36	6
4143937	VDS201A04700	WU25PD	4,700	0.1850	17	24	0,8	66	36	6
4143938	VDS201A04763	WU25PD	4,763	0.1875	20	28	0,8	66	36	6
4143939	VDS201A04800	WU25PD	4,800	0.1890	20	28	0,8	66	36	6
4143941	VDS201A04900	WU25PD	4,900	0.1929	20	28	0,8	66	36	6
4143942	VDS201A05000	WU25PD	5,000	0.1969	20	28	0,8	66	36	6
4143943	VDS201A05100	WU25PD	5,100	0.2008	20	28	0,8	66	36	6
4143946	VDS201A05200	WU25PD	5,200	0.2047	20	28	0,9	66	36	6
4143947	VDS201A05300	WU25PD	5,300	0.2087	20	28	0,9	66	36	6
4143948	VDS201A05400	WU25PD	5,400	0.2126	20	28	0,9	66	36	6
4143950	VDS201A05500	WU25PD	5,500	0.2165	20	28	0,9	66	36	6
4143952	VDS201A05600	WU25PD	5,600	0.2205	20	28	0,9	66	36	6
4143954	VDS201A05700	WU25PD	5,700	0.2244	20	28	1,0	66	36	6
4143955	VDS201A05800	WU25PD	5,800	0.2283	20	28	1,0	66	36	6
4143956	VDS201A05900	WU25PD	5,900	0.2323	20	28	1,0	66	36	6
4143958	VDS201A06000	WU25PD	6,000	0.2362	20	28	1,0	66	36	6
4143959	VDS201A06100	WU25PD	6,100	0.2402	24	34	1,0	79	36	8
4143960	VDS201A06200	WU25PD	6,200	0.2441	24	34	1,0	79	36	8
4143961	VDS201A06300	WU25PD	6,300	0.2480	24	34	1,1	79	36	8
4143963	VDS201A06400	WU25PD	6,400	0.2520	24	34	1,1	79	36	8
4143964	VDS201A06500	WU25PD	6,500	0.2559	24	34	1,1	79	36	8

(continued)

(VariDrill — continued)

order number	catalogue number	grade	D1 diameter (mm)	D1 diameter (inch)	L4 max (mm)	L3 (mm)	L5 (mm)	L (mm)	LS (mm)	D (mm)
VDS201A • 3 x D • Non-Coolant *(continued)*										
4143966	**VDS201A06600**	**WU25PD**	6,600	0.2598	24	34	1,1	79	36	8
4143968	**VDS201A06700**	**WU25PD**	6,700	0.2638	24	34	1,1	79	36	8
4143970	**VDS201A06800**	**WU25PD**	6,800	0.2677	24	34	1,1	79	36	8
4143971	**VDS201A06900**	**WU25PD**	6,900	0.2717	24	34	1,2	79	36	8
4143972	**VDS201A07000**	**WU25PD**	7,000	0.2756	24	34	1,2	79	36	8
4143973	**VDS201A07100**	**WU25PD**	7,100	0.2795	29	41	1,2	79	36	8
4143975	**VDS201A07200**	**WU25PD**	7,200	0.2835	29	41	1,2	79	36	8
4143976	**VDS201A07300**	**WU25PD**	7,300	0.2874	29	41	1,2	79	36	8
4143977	**VDS201A07400**	**WU25PD**	7,400	0.2913	29	41	1,3	79	36	8
4143978	**VDS201A07500**	**WU25PD**	7,500	0.2953	29	41	1,3	79	36	8
4143980	**VDS201A07600**	**WU25PD**	7,600	0.2992	29	41	1,3	79	36	8
4143981	**VDS201A07700**	**WU25PD**	7,700	0.3031	29	41	1,3	79	36	8
4143982	**VDS201A07800**	**WU25PD**	7,800	0.3071	29	41	1,3	79	36	8
4143983	**VDS201A07900**	**WU25PD**	7,900	0.3110	29	41	1,3	79	36	8
4143985	**VDS201A08000**	**WU25PD**	8,000	0.3150	29	41	1,4	79	36	8
4143986	**VDS201A08100**	**WU25PD**	8,100	0.3189	35	47	1,4	89	40	10
4143987	**VDS201A08200**	**WU25PD**	8,200	0.3228	35	47	1,4	89	40	10
4143988	**VDS201A08300**	**WU25PD**	8,300	0.3268	35	47	1,4	89	40	10
4143990	**VDS201A08400**	**WU25PD**	8,400	0.3307	35	47	1,4	89	40	10
4143992	**VDS201A08500**	**WU25PD**	8,500	0.3346	35	47	1,4	89	40	10
4143993	**VDS201A08600**	**WU25PD**	8,600	0.3386	35	47	1,5	89	40	10
4143994	**VDS201A08700**	**WU25PD**	8,700	0.3425	35	47	1,5	89	40	10
4143996	**VDS201A08800**	**WU25PD**	8,800	0.3465	35	47	1,5	89	40	10
4143997	**VDS201A08900**	**WU25PD**	8,900	0.3504	35	47	1,5	89	40	10
4143998	**VDS201A09000**	**WU25PD**	9,000	0.3543	35	47	1,5	89	40	10
4143999	**VDS201A09100**	**WU25PD**	9,100	0.3583	35	47	1,5	89	40	10
4144001	**VDS201A09200**	**WU25PD**	9,200	0.3622	35	47	1,6	89	40	10
4144002	**VDS201A09300**	**WU25PD**	9,300	0.3661	35	47	1,6	89	40	10
4144004	**VDS201A09400**	**WU25PD**	9,400	0.3701	35	47	1,6	89	40	10
4144005	**VDS201A09500**	**WU25PD**	9,500	0.3740	35	47	1,6	89	40	10
4144007	**VDS201A09600**	**WU25PD**	9,600	0.3780	35	47	1,6	89	40	10
4144008	**VDS201A09700**	**WU25PD**	9,700	0.3819	35	47	1,7	89	40	10
4144009	**VDS201A09800**	**WU25PD**	9,800	0.3858	35	47	1,7	89	40	10
4144010	**VDS201A09900**	**WU25PD**	9,900	0.3898	35	47	1,7	89	40	10
4144172	**VDS201A10000**	**WU25PD**	10,000	0.3937	35	47	1,7	89	40	10
4144423	**VDS201A10100**	**WU25PD**	10,100	0.3976	40	55	1,7	102	45	12
4144424	**VDS201A10200**	**WU25PD**	10,200	0.4016	40	55	1,7	102	45	12
4144425	**VDS201A10300**	**WU25PD**	10,300	0.4055	40	55	1,8	102	45	12
4144427	**VDS201A10400**	**WU25PD**	10,400	0.4094	40	55	1,8	102	45	12
4144428	**VDS201A10500**	**WU25PD**	10,500	0.4134	40	55	1,8	102	45	12
4144429	**VDS201A10600**	**WU25PD**	10,600	0.4173	40	55	1,8	102	45	12
4144430	**VDS201A10700**	**WU25PD**	10,700	0.4213	40	55	1,8	102	45	12
4144432	**VDS201A10800**	**WU25PD**	10,800	0.4252	40	55	1,8	102	45	12
4144433	**VDS201A10900**	**WU25PD**	10,900	0.4291	40	55	1,9	102	45	12
4144434	**VDS201A11000**	**WU25PD**	11,000	0.4331	40	55	1,9	102	45	12
4144435	**VDS201A11100**	**WU25PD**	11,100	0.4370	40	55	1,9	102	45	12
4144437	**VDS201A11200**	**WU25PD**	11,200	0.4409	40	55	1,9	102	45	12
4144438	**VDS201A11300**	**WU25PD**	11,300	0.4449	40	55	1,9	102	45	12
4144440	**VDS201A11500**	**WU25PD**	11,500	0.4528	40	55	2,0	102	45	12
4144442	**VDS201A11600**	**WU25PD**	11,600	0.4567	40	55	2,0	102	45	12
4144443	**VDS201A11700**	**WU25PD**	11,700	0.4606	40	55	2,0	102	45	12
4144444	**VDS201A11800**	**WU25PD**	11,800	0.4646	40	55	2,0	102	45	12
4144445	**VDS201A11900**	**WU25PD**	11,900	0.4685	40	55	2,0	102	45	12
4144447	**VDS201A12000**	**WU25PD**	12,000	0.4724	40	55	2,1	102	45	12
4144448	**VDS201A12100**	**WU25PD**	12,100	0.4764	43	60	2,1	107	45	14
4144449	**VDS201A12200**	**WU25PD**	12,200	0.4803	43	60	2,1	107	45	14
4144450	**VDS201A12300**	**WU25PD**	12,300	0.4843	43	60	2,1	107	45	14
4144453	**VDS201A12500**	**WU25PD**	12,500	0.4921	43	60	2,1	107	45	14
4144454	**VDS201A12600**	**WU25PD**	12,600	0.4961	43	60	2,2	107	45	14
4144455	**VDS201A12700**	**WU25PD**	12,700	0.5000	43	60	2,2	107	45	14
4144456	**VDS201A12800**	**WU25PD**	12,800	0.5039	43	60	2,2	107	45	14
4144458	**VDS201A13000**	**WU25PD**	13,000	0.5118	43	60	2,2	107	45	14
4144460	**VDS201A13100**	**WU25PD**	13,100	0.5157	43	60	2,3	107	45	14
4144461	**VDS201A13200**	**WU25PD**	13,200	0.5197	43	60	2,3	107	45	14
4144464	**VDS201A13500**	**WU25PD**	13,500	0.5315	43	60	2,3	107	45	14
4144465	**VDS201A13600**	**WU25PD**	13,600	0.5354	43	60	2,3	107	45	14

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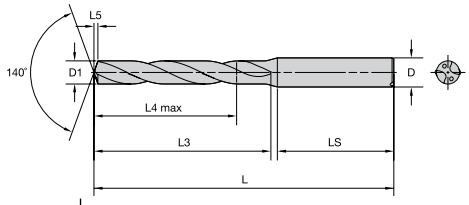
(VariDrill — continued)

order number	catalogue number	grade	D1 diameter (mm)	D1 diameter (inch)	L4 max (mm)	L3 (mm)	L5 (mm)	L (mm)	LS (mm)	D (mm)
VDS201A • 3 x D • Non-Coolant *(continued)*										
4144466	**VDS201A13700**	**WU25PD**	13,700	0.5394	43	60	2,4	107	45	14
4144467	**VDS201A13800**	**WU25PD**	13,800	0.5433	43	60	2,4	107	45	14
4144470	**VDS201A14000**	**WU25PD**	14,000	0.5512	43	60	2,4	107	45	14
4144471	**VDS201A14100**	**WU25PD**	14,100	0.5551	45	65	2,4	115	48	16
4144472	**VDS201A14200**	**WU25PD**	14,200	0.5591	45	65	2,5	115	48	16
4144474	**VDS201A14300**	**WU25PD**	14,300	0.5630	45	65	2,5	115	48	16
4144476	**VDS201A14500**	**WU25PD**	14,500	0.5709	45	65	2,5	115	48	16
4144480	**VDS201A14800**	**WU25PD**	14,800	0.5827	45	65	2,6	115	48	16
4144482	**VDS201A15000**	**WU25PD**	15,000	0.5906	45	65	2,6	115	48	16
4144484	**VDS201A15100**	**WU25PD**	15,100	0.5945	45	65	2,6	115	48	16
4144486	**VDS201A15300**	**WU25PD**	15,300	0.6024	45	65	2,6	115	48	16
4144489	**VDS201A15500**	**WU25PD**	15,500	0.6102	45	65	2,7	115	48	16
4144491	**VDS201A15700**	**WU25PD**	15,700	0.6181	45	65	2,7	115	48	16
4144492	**VDS201A15800**	**WU25PD**	15,800	0.6220	45	65	2,7	115	48	16
4144495	**VDS201A16000**	**WU25PD**	16,000	0.6299	45	65	2,8	115	48	16
4144496	**VDS201A16100**	**WU25PD**	16,100	0.6339	51	73	2,8	123	48	18
4144497	**VDS201A16200**	**WU25PD**	16,200	0.6378	51	73	2,8	123	48	18
4144499	**VDS201A16300**	**WU25PD**	16,300	0.6417	51	73	2,8	123	48	18
4144500	**VDS201A16400**	**WU25PD**	16,400	0.6457	51	73	2,8	123	48	18
4144501	**VDS201A16500**	**WU25PD**	16,500	0.6496	51	73	2,9	123	48	18
4144505	**VDS201A16700**	**WU25PD**	16,700	0.6575	51	73	2,9	123	48	18
4144508	**VDS201A17000**	**WU25PD**	17,000	0.6693	51	73	2,9	123	48	18
4144510	**VDS201A17200**	**WU25PD**	17,200	0.6772	51	73	3,0	123	48	18
4144514	**VDS201A17500**	**WU25PD**	17,500	0.6890	51	73	3,0	123	48	18
4144517	**VDS201A17800**	**WU25PD**	17,800	0.7008	51	73	3,1	123	48	18
4144590	**VDS201A18000**	**WU25PD**	18,000	0.7087	51	73	3,1	123	48	18
4144591	**VDS201A18100**	**WU25PD**	18,100	0.7126	55	79	3,1	131	50	20
4144592	**VDS201A18200**	**WU25PD**	18,200	0.7165	55	79	3,2	131	50	20
4144596	**VDS201A18500**	**WU25PD**	18,500	0.7283	55	79	3,2	131	50	20
4144597	**VDS201A18600**	**WU25PD**	18,600	0.7323	55	79	3,2	131	50	20
4144602	**VDS201A19000**	**WU25PD**	19,000	0.7480	55	79	3,3	131	50	20
4144604	**VDS201A19100**	**WU25PD**	19,100	0.7520	55	79	3,3	131	50	20
4144613	**VDS201A20000**	**WU25PD**	20,000	0.7874	55	79	3,5	131	50	20



order number	catalogue number	grade	D1 diameter (mm)	D1 diameter (inch)	L4 max (mm)	L3 (mm)	L5 (mm)	L (mm)	LS (mm)	D (mm)
VDS401A • 3 x D • Through Coolant										
4140270	**VDS401A01500**	**WU25PD**	1,500	0.0591	6	9	0,2	58	28	4
4140271	**VDS401A01600**	**WU25PD**	1,600	0.0630	6	9	0,2	58	28	4
4140272	**VDS401A01700**	**WU25PD**	1,700	0.0669	6	9	0,3	58	28	4
4140423	**VDS401A01800**	**WU25PD**	1,800	0.0709	6	9	0,3	58	28	4
4140424	**VDS401A01900**	**WU25PD**	1,900	0.0748	6	9	0,3	58	28	4
4140426	**VDS401A02000**	**WU25PD**	2,000	0.0787	10	13	0,3	58	28	4
4140427	**VDS401A02100**	**WU25PD**	2,100	0.0827	10	13	0,3	58	28	4
4140428	**VDS401A02200**	**WU25PD**	2,200	0.0866	10	13	0,3	58	28	4
4140429	**VDS401A02300**	**WU25PD**	2,300	0.0906	10	13	0,4	58	28	4
4140431	**VDS401A02400**	**WU25PD**	2,400	0.0945	12	17	0,4	58	28	4
4140434	**VDS401A02500**	**WU25PD**	2,500	0.0984	12	17	0,4	58	28	4
4140436	**VDS401A02600**	**WU25PD**	2,600	0.1024	12	17	0,4	58	28	4
4140438	**VDS401A02700**	**WU25PD**	2,700	0.1063	12	17	0,4	58	28	4
4140441	**VDS401A02800**	**WU25PD**	2,800	0.1102	12	17	0,5	58	28	4
4140444	**VDS401A02900**	**WU25PD**	2,900	0.1142	12	17	0,5	58	28	4
4140299	**VDS401A03000**	**WU25PD**	3,000	0.1181	14	20	0,5	62	36	6
4140300	**VDS401A03048**	**WU25PD**	3,048	0.1200	14	20	0,5	62	36	6
4140301	**VDS401A03100**	**WU25PD**	3,100	0.1220	14	20	0,5	62	36	6
4140303	**VDS401A03200**	**WU25PD**	3,200	0.1260	14	20	0,5	62	36	6

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(VariDrill — continued)

order number	catalogue number	grade	D1 diameter (mm)	D1 diameter (inch)	L4 max (mm)	L3 (mm)	L5 (mm)	L (mm)	LS (mm)	D (mm)
VDS401A • 3 x D • Through Coolant *(continued)*										
4140305	**VDS401A03300**	**WU25PD**	3,300	0.1299	14	20	0,5	62	36	6
4140306	**VDS401A03400**	**WU25PD**	3,400	0.1339	14	20	0,6	62	36	6
4140308	**VDS401A03500**	**WU25PD**	3,500	0.1378	14	20	0,6	62	36	6
4140310	**VDS401A03600**	**WU25PD**	3,600	0.1417	14	20	0,6	62	36	6
4140312	**VDS401A03700**	**WU25PD**	3,700	0.1457	14	20	0,6	62	36	6
4140314	**VDS401A03800**	**WU25PD**	3,800	0.1496	17	24	0,6	66	36	6
4140315	**VDS401A03900**	**WU25PD**	3,900	0.1535	17	24	0,6	66	36	6
4140317	**VDS401A04000**	**WU25PD**	4,000	0.1575	17	24	0,7	66	36	6
4140320	**VDS401A04100**	**WU25PD**	4,100	0.1614	17	24	0,7	66	36	6
4140321	**VDS401A04200**	**WU25PD**	4,200	0.1654	17	24	0,7	66	36	6
4140323	**VDS401A04300**	**WU25PD**	4,300	0.1693	17	24	0,7	66	36	6
4140325	**VDS401A04400**	**WU25PD**	4,400	0.1732	17	24	0,7	66	36	6
4140326	**VDS401A04500**	**WU25PD**	4,500	0.1772	17	24	0,7	66	36	6
4140328	**VDS401A04600**	**WU25PD**	4,600	0.1811	17	24	0,8	66	36	6
4140330	**VDS401A04700**	**WU25PD**	4,700	0.1850	17	24	0,8	66	36	6
4140332	**VDS401A04800**	**WU25PD**	4,800	0.1890	20	28	0,8	66	36	6
4140334	**VDS401A04900**	**WU25PD**	4,900	0.1929	20	28	0,8	66	36	6
4140335	**VDS401A05000**	**WU25PD**	5,000	0.1969	20	28	0,8	66	36	6
4140336	**VDS401A05100**	**WU25PD**	5,100	0.2008	20	28	0,8	66	36	6
4140339	**VDS401A05200**	**WU25PD**	5,200	0.2047	20	28	0,9	66	36	6
4140340	**VDS401A05300**	**WU25PD**	5,300	0.2087	20	28	0,9	66	36	6
4140341	**VDS401A05400**	**WU25PD**	5,400	0.2126	20	28	0,9	66	36	6
4140343	**VDS401A05500**	**WU25PD**	5,500	0.2165	20	28	0,9	66	36	6
4140345	**VDS401A05600**	**WU25PD**	5,600	0.2205	20	28	0,9	66	36	6
4140347	**VDS401A05700**	**WU25PD**	5,700	0.2244	20	28	1,0	66	36	6
4140348	**VDS401A05800**	**WU25PD**	5,800	0.2283	20	28	1,0	66	36	6
4140349	**VDS401A05900**	**WU25PD**	5,900	0.2323	20	28	1,0	66	36	6
4140351	**VDS401A06000**	**WU25PD**	6,000	0.2362	20	28	1,0	66	36	6
4140352	**VDS401A06100**	**WU25PD**	6,100	0.2402	24	34	1,0	79	36	8
4140353	**VDS401A06200**	**WU25PD**	6,200	0.2441	24	34	1,0	79	36	8
4140354	**VDS401A06300**	**WU25PD**	6,300	0.2480	24	34	1,1	79	36	8
4140356	**VDS401A06400**	**WU25PD**	6,400	0.2520	24	34	1,1	79	36	8
4140357	**VDS401A06500**	**WU25PD**	6,500	0.2559	24	34	1,1	79	36	8
4140359	**VDS401A06600**	**WU25PD**	6,600	0.2598	24	34	1,1	79	36	8
4140361	**VDS401A06700**	**WU25PD**	6,700	0.2638	24	34	1,1	79	36	8
4140363	**VDS401A06800**	**WU25PD**	6,800	0.2677	24	34	1,1	79	36	8
4140364	**VDS401A06900**	**WU25PD**	6,900	0.2717	24	34	1,2	79	36	8
4140365	**VDS401A07000**	**WU25PD**	7,000	0.2756	24	34	1,2	79	36	8
4140366	**VDS401A07100**	**WU25PD**	7,100	0.2795	29	41	1,2	79	36	8
4140368	**VDS401A07200**	**WU25PD**	7,200	0.2835	29	41	1,2	79	36	8
4140369	**VDS401A07300**	**WU25PD**	7,300	0.2874	29	41	1,2	79	36	8
4140370	**VDS401A07400**	**WU25PD**	7,400	0.2913	29	41	1,3	79	36	8
4140371	**VDS401A07500**	**WU25PD**	7,500	0.2953	29	41	1,3	79	36	8
4140373	**VDS401A07600**	**WU25PD**	7,600	0.2992	29	41	1,3	79	36	8
4140374	**VDS401A07700**	**WU25PD**	7,700	0.3031	29	41	1,3	79	36	8
4140375	**VDS401A07800**	**WU25PD**	7,800	0.3071	29	41	1,3	79	36	8
4140376	**VDS401A07900**	**WU25PD**	7,900	0.3110	29	41	1,3	79	36	8
4140378	**VDS401A08000**	**WU25PD**	8,000	0.3150	29	41	1,4	79	36	8
4140379	**VDS401A08100**	**WU25PD**	8,100	0.3189	35	47	1,4	89	40	10
4140380	**VDS401A08200**	**WU25PD**	8,200	0.3228	35	47	1,4	89	40	10
4140381	**VDS401A08300**	**WU25PD**	8,300	0.3268	35	47	1,4	89	40	10
4140383	**VDS401A08400**	**WU25PD**	8,400	0.3307	35	47	1,4	89	40	10
4140385	**VDS401A08500**	**WU25PD**	8,500	0.3346	35	47	1,4	89	40	10
4140386	**VDS401A08600**	**WU25PD**	8,600	0.3386	35	47	1,5	89	40	10
4140387	**VDS401A08700**	**WU25PD**	8,700	0.3425	35	47	1,5	89	40	10
4140389	**VDS401A08800**	**WU25PD**	8,800	0.3465	35	47	1,5	89	40	10
4140390	**VDS401A08900**	**WU25PD**	8,900	0.3504	35	47	1,5	89	40	10
4140391	**VDS401A09000**	**WU25PD**	9,000	0.3543	35	47	1,5	89	40	10
4140392	**VDS401A09100**	**WU25PD**	9,100	0.3583	35	47	1,5	89	40	10
4140394	**VDS401A09200**	**WU25PD**	9,200	0.3622	35	47	1,6	89	40	10
4140395	**VDS401A09300**	**WU25PD**	9,300	0.3661	35	47	1,6	89	40	10
4140397	**VDS401A09400**	**WU25PD**	9,400	0.3701	35	47	1,6	89	40	10
4140398	**VDS401A09500**	**WU25PD**	9,500	0.3740	35	47	1,6	89	40	10
4140400	**VDS401A09600**	**WU25PD**	9,600	0.3780	35	47	1,6	89	40	10
4140401	**VDS401A09700**	**WU25PD**	9,700	0.3819	35	47	1,7	89	40	10
4140402	**VDS401A09800**	**WU25PD**	9,800	0.3858	35	47	1,7	89	40	10

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(VariDrill — continued)

order number	catalogue number	grade	D1 diameter (mm)	D1 diameter (inch)	L4 max (mm)	L3 (mm)	L5 (mm)	L (mm)	LS (mm)	D (mm)
VDS401A • 3 x D • Through Coolant *(continued)*										
4140403	**VDS401A09900**	**WU25PD**	9,900	0.3898	35	47	1,7	89	40	10
4140001	**VDS401A10000**	**WU25PD**	10,000	0.3937	35	47	1,7	89	40	10
4140002	**VDS401A10100**	**WU25PD**	10,100	0.3976	40	55	1,7	102	45	12
4140163	**VDS401A10200**	**WU25PD**	10,200	0.4016	40	55	1,7	102	45	12
4140164	**VDS401A10300**	**WU25PD**	10,300	0.4055	40	55	1,8	102	45	12
4140166	**VDS401A10400**	**WU25PD**	10,400	0.4094	40	55	1,8	102	45	12
4140167	**VDS401A10500**	**WU25PD**	10,500	0.4134	40	55	1,8	102	45	12
4140168	**VDS401A10600**	**WU25PD**	10,600	0.4173	40	55	1,8	102	45	12
4140169	**VDS401A10700**	**WU25PD**	10,700	0.4213	40	55	1,8	102	45	12
4140171	**VDS401A10800**	**WU25PD**	10,800	0.4252	40	55	1,8	102	45	12
4140172	**VDS401A10900**	**WU25PD**	10,900	0.4291	40	55	1,9	102	45	12
4140173	**VDS401A11000**	**WU25PD**	11,000	0.4331	40	55	1,9	102	45	12
4140174	**VDS401A11100**	**WU25PD**	11,100	0.4370	40	55	1,9	102	45	12
4140176	**VDS401A11200**	**WU25PD**	11,200	0.4409	40	55	1,9	102	45	12
4140177	**VDS401A11300**	**WU25PD**	11,300	0.4449	40	55	1,9	102	45	12
4140178	**VDS401A11400**	**WU25PD**	11,400	0.4488	40	55	2,0	102	45	12
4140179	**VDS401A11500**	**WU25PD**	11,500	0.4528	40	55	2,0	102	45	12
4140181	**VDS401A11600**	**WU25PD**	11,600	0.4567	40	55	2,0	102	45	12
4140182	**VDS401A11700**	**WU25PD**	11,700	0.4606	40	55	2,0	102	45	12
4140183	**VDS401A11800**	**WU25PD**	11,800	0.4646	40	55	2,0	102	45	12
4140184	**VDS401A11900**	**WU25PD**	11,900	0.4685	40	55	2,0	102	45	12
4140186	**VDS401A12000**	**WU25PD**	12,000	0.4724	40	55	2,1	102	45	12
4140187	**VDS401A12100**	**WU25PD**	12,100	0.4764	43	60	2,1	107	45	14
4140188	**VDS401A12200**	**WU25PD**	12,200	0.4803	43	60	2,1	107	45	14
4140189	**VDS401A12300**	**WU25PD**	12,300	0.4843	43	60	2,1	107	45	14
4140191	**VDS401A12400**	**WU25PD**	12,400	0.4882	43	60	2,1	107	45	14
4140192	**VDS401A12500**	**WU25PD**	12,500	0.4921	43	60	2,1	107	45	14
4140194	**VDS401A12600**	**WU25PD**	12,600	0.4961	43	60	2,2	107	45	14
4140195	**VDS401A12700**	**WU25PD**	12,700	0.5000	43	60	2,2	107	45	14
4140196	**VDS401A12800**	**WU25PD**	12,800	0.5039	43	60	2,2	107	45	14
4140197	**VDS401A12900**	**WU25PD**	12,900	0.5079	43	60	2,2	107	45	14
4140198	**VDS401A13000**	**WU25PD**	13,000	0.5118	43	60	2,2	107	45	14
4140200	**VDS401A13100**	**WU25PD**	13,100	0.5157	43	60	2,3	107	45	14
4140201	**VDS401A13200**	**WU25PD**	13,200	0.5197	43	60	2,3	107	45	14
4140202	**VDS401A13300**	**WU25PD**	13,300	0.5236	43	60	2,3	107	45	14
4140203	**VDS401A13400**	**WU25PD**	13,400	0.5276	43	60	2,3	107	45	14
4140204	**VDS401A13500**	**WU25PD**	13,500	0.5315	43	60	2,3	107	45	14
4140205	**VDS401A13600**	**WU25PD**	13,600	0.5354	43	60	2,3	107	45	14
4140206	**VDS401A13700**	**WU25PD**	13,700	0.5394	43	60	2,4	107	45	14
4140207	**VDS401A13800**	**WU25PD**	13,800	0.5433	43	60	2,4	107	45	14
4140209	**VDS401A13900**	**WU25PD**	13,900	0.5472	43	60	2,4	107	45	14
4140210	**VDS401A14000**	**WU25PD**	14,000	0.5512	43	60	2,4	107	45	14
4140211	**VDS401A14100**	**WU25PD**	14,100	0.5551	45	65	2,4	115	48	16
4140212	**VDS401A14200**	**WU25PD**	14,200	0.5591	45	65	2,5	115	48	16
4140214	**VDS401A14300**	**WU25PD**	14,300	0.5630	45	65	2,5	115	48	16
4140215	**VDS401A14400**	**WU25PD**	14,400	0.5669	45	65	2,5	115	48	16
4140216	**VDS401A14500**	**WU25PD**	14,500	0.5709	45	65	2,5	115	48	16
4140217	**VDS401A14600**	**WU25PD**	14,600	0.5748	45	65	2,5	115	48	16
4140219	**VDS401A14700**	**WU25PD**	14,700	0.5787	45	65	2,5	115	48	16
4140220	**VDS401A14800**	**WU25PD**	14,800	0.5827	45	65	2,6	115	48	16
4140221	**VDS401A14900**	**WU25PD**	14,900	0.5866	45	65	2,6	115	48	16
4140222	**VDS401A15000**	**WU25PD**	15,000	0.5906	45	65	2,6	115	48	16
4140224	**VDS401A15100**	**WU25PD**	15,100	0.5945	45	65	2,6	115	48	16
4140225	**VDS401A15200**	**WU25PD**	15,200	0.5984	45	65	2,6	115	48	16
4140226	**VDS401A15300**	**WU25PD**	15,300	0.6024	45	65	2,6	115	48	16
4140227	**VDS401A15400**	**WU25PD**	15,400	0.6063	45	65	2,7	115	48	16
4140229	**VDS401A15500**	**WU25PD**	15,500	0.6102	45	65	2,7	115	48	16
4140230	**VDS401A15600**	**WU25PD**	15,600	0.6142	45	65	2,7	115	48	16
4140231	**VDS401A15700**	**WU25PD**	15,700	0.6181	45	65	2,7	115	48	16
4140232	**VDS401A15800**	**WU25PD**	15,800	0.6220	45	65	2,7	115	48	16
4140234	**VDS401A15900**	**WU25PD**	15,900	0.6260	45	65	2,8	115	48	16
4140235	**VDS401A16000**	**WU25PD**	16,000	0.6299	45	65	2,8	115	48	16
4140236	**VDS401A16100**	**WU25PD**	16,100	0.6339	51	73	2,8	123	48	18
4140237	**VDS401A16200**	**WU25PD**	16,200	0.6378	51	73	2,8	123	48	18
4140239	**VDS401A16300**	**WU25PD**	16,300	0.6417	51	73	2,8	123	48	18
4140241	**VDS401A16400**	**WU25PD**	16,400	0.6457	51	73	2,8	123	48	18

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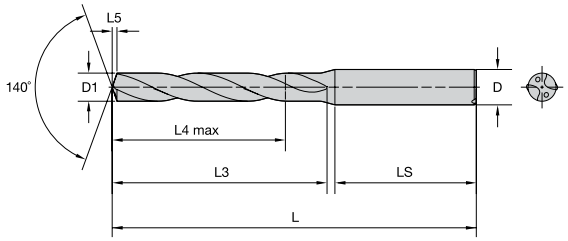
(VariDrill — continued)

order number	catalogue number	grade	D1 diameter (mm)	D1 diameter (inch)	L4 max (mm)	L3 (mm)	L5 (mm)	L (mm)	LS (mm)	D (mm)
VDS401A • 3 x D • Through Coolant *(continued)*										
4140242	**VDS401A16500**	**WU25PD**	16,500	0.6496	51	73	2,9	123	48	18
4140243	**VDS401A16600**	**WU25PD**	16,600	0.6535	51	73	2,9	123	48	18
4140245	**VDS401A16700**	**WU25PD**	16,700	0.6575	51	73	2,9	123	48	18
4140246	**VDS401A16800**	**WU25PD**	16,800	0.6614	51	73	2,9	123	48	18
4140247	**VDS401A16900**	**WU25PD**	16,900	0.6654	51	73	2,9	123	48	18
4140248	**VDS401A17000**	**WU25PD**	17,000	0.6693	51	73	2,9	123	48	18
4140249	**VDS401A17100**	**WU25PD**	17,100	0.6732	51	73	3,0	123	48	18
4140250	**VDS401A17200**	**WU25PD**	17,200	0.6772	51	73	3,0	123	48	18
4140251	**VDS401A17300**	**WU25PD**	17,300	0.6811	51	73	3,0	123	48	18
4140252	**VDS401A17400**	**WU25PD**	17,400	0.6850	51	73	3,0	123	48	18
4140254	**VDS401A17500**	**WU25PD**	17,500	0.6890	51	73	3,0	123	48	18
4140255	**VDS401A17600**	**WU25PD**	17,600	0.6929	51	73	3,1	123	48	18
4140256	**VDS401A17700**	**WU25PD**	17,700	0.6969	51	73	3,1	123	48	18
4140257	**VDS401A17800**	**WU25PD**	17,800	0.7008	51	73	3,1	123	48	18
4140449	**VDS401A18000**	**WU25PD**	18,000	0.7087	51	73	3,1	123	48	18
4140450	**VDS401A18100**	**WU25PD**	18,100	0.7126	55	79	3,1	131	50	20
4140451	**VDS401A18200**	**WU25PD**	18,200	0.7165	55	79	3,2	131	50	20
4140463	**VDS401A18300**	**WU25PD**	18,300	0.7205	55	79	3,2	131	50	20
4140464	**VDS401A18400**	**WU25PD**	18,400	0.7244	55	79	3,2	131	50	20
4140465	**VDS401A18500**	**WU25PD**	18,500	0.7283	55	79	3,2	131	50	20
4140466	**VDS401A18600**	**WU25PD**	18,600	0.7323	55	79	3,2	131	50	20
4140468	**VDS401A18700**	**WU25PD**	18,700	0.7362	55	79	3,2	131	50	20
4140469	**VDS401A18800**	**WU25PD**	18,800	0.7402	55	79	3,3	131	50	20
4140470	**VDS401A18900**	**WU25PD**	18,900	0.7441	55	79	3,3	131	50	20
4140471	**VDS401A19000**	**WU25PD**	19,000	0.7480	55	79	3,3	131	50	20
4140473	**VDS401A19100**	**WU25PD**	19,100	0.7520	55	79	3,3	131	50	20
4140474	**VDS401A19200**	**WU25PD**	19,200	0.7559	55	79	3,3	131	50	20
4140475	**VDS401A19300**	**WU25PD**	19,300	0.7598	55	79	3,4	131	50	20
4140476	**VDS401A19400**	**WU25PD**	19,400	0.7638	55	79	3,4	131	50	20
4140477	**VDS401A19500**	**WU25PD**	19,500	0.7677	55	79	3,4	131	50	20
4140478	**VDS401A19600**	**WU25PD**	19,600	0.7717	55	79	3,4	131	50	20
4140479	**VDS401A19700**	**WU25PD**	19,700	0.7756	55	79	3,4	131	50	20
4140480	**VDS401A19800**	**WU25PD**	19,800	0.7795	55	79	3,4	131	50	20
4140481	**VDS401A19900**	**WU25PD**	19,900	0.7835	55	79	3,5	131	50	20
4140482	**VDS401A20000**	**WU25PD**	20,000	0.7874	55	79	3,5	131	50	20



order number	catalogue number	grade	D1 diameter (mm)	D1 diameter (inch)	L4 max (mm)	L3 (mm)	L5 (mm)	L (mm)	LS (mm)	D (mm)
VDS202A • 5 x D • Non-Coolant										
4148000	**VDS202A01000**	**WU25PD**	1,000	0.0394	6	9	0,1	58	28	4
4148005	**VDS202A01100**	**WU25PD**	1,100	0.0433	6	9	0,2	58	28	4
4148008	**VDS202A01200**	**WU25PD**	1,200	0.0472	6	9	0,2	58	28	4
4148009	**VDS202A01300**	**WU25PD**	1,300	0.0512	6	9	0,2	58	28	4
4148012	**VDS202A01400**	**WU25PD**	1,400	0.0551	6	9	0,2	58	28	4
4148013	**VDS202A01500**	**WU25PD**	1,500	0.0591	9	12	0,2	58	40	4
4148014	**VDS202A01600**	**WU25PD**	1,600	0.0630	9	12	0,2	58	28	4
4148015	**VDS202A01700**	**WU25PD**	1,700	0.0669	9	12	0,3	58	28	4
4148016	**VDS202A01800**	**WU25PD**	1,800	0.0709	9	12	0,3	58	28	4
4148017	**VDS202A01900**	**WU25PD**	1,900	0.0748	9	12	0,3	58	28	4
4148019	**VDS202A02000**	**WU25PD**	2,000	0.0787	14	18	0,3	58	28	4
4148020	**VDS202A02100**	**WU25PD**	2,100	0.0827	14	18	0,3	58	28	4

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(VariDrill — continued)

order number	catalogue number	grade	D1 diameter (mm)	D1 diameter (inch)	L4 max (mm)	L3 (mm)	L5 (mm)	L (mm)	LS (mm)	D (mm)
VDS202A • 5 x D • Non-Coolant *(continued)*										
4148021	**VDS202A02200**	**WU25PD**	2,200	0.0866	14	18	0,3	58	28	4
4148022	**VDS202A02300**	**WU25PD**	2,300	0.0906	14	18	0,4	58	28	4
4148024	**VDS202A02400**	**WU25PD**	2,400	0.0945	17	22	0,4	58	28	4
4148027	**VDS202A02500**	**WU25PD**	2,500	0.0984	17	22	0,4	58	28	4
4148029	**VDS202A02600**	**WU25PD**	2,600	0.1024	17	22	0,4	58	28	4
4148031	**VDS202A02700**	**WU25PD**	2,700	0.1063	17	22	0,4	58	28	4
4148034	**VDS202A02800**	**WU25PD**	2,800	0.1102	17	22	0,5	58	28	4
4148037	**VDS202A02900**	**WU25PD**	2,900	0.1142	17	22	0,5	58	28	4
4148142	**VDS202A03000**	**WU25PD**	3,000	0.1181	23	28	0,5	66	36	6
4148144	**VDS202A03100**	**WU25PD**	3,100	0.1220	23	28	0,5	66	36	6
4148146	**VDS202A03200**	**WU25PD**	3,200	0.1260	23	28	0,5	66	36	6
4148148	**VDS202A03300**	**WU25PD**	3,300	0.1299	23	28	0,5	66	36	6
4148149	**VDS202A03400**	**WU25PD**	3,400	0.1339	23	28	0,6	66	36	6
4148151	**VDS202A03500**	**WU25PD**	3,500	0.1378	23	28	0,6	66	36	6
4148153	**VDS202A03600**	**WU25PD**	3,600	0.1417	23	28	0,6	66	36	6
4148155	**VDS202A03700**	**WU25PD**	3,700	0.1457	23	28	0,6	66	36	6
4148157	**VDS202A03800**	**WU25PD**	3,800	0.1496	29	36	0,6	74	36	6
4148158	**VDS202A03900**	**WU25PD**	3,900	0.1535	29	36	0,6	74	36	6
4148160	**VDS202A04000**	**WU25PD**	4,000	0.1575	29	36	0,7	74	36	6
4148163	**VDS202A04100**	**WU25PD**	4,100	0.1614	29	36	0,7	74	36	6
4148164	**VDS202A04200**	**WU25PD**	4,200	0.1654	29	36	0,7	74	36	6
4148166	**VDS202A04300**	**WU25PD**	4,300	0.1693	29	36	0,7	74	36	6
4148168	**VDS202A04400**	**WU25PD**	4,400	0.1732	29	36	0,7	74	36	6
4148169	**VDS202A04500**	**WU25PD**	4,500	0.1772	29	36	0,7	74	36	6
4148170	**VDS202A04600**	**WU25PD**	4,600	0.1811	29	36	0,8	74	36	6
4148172	**VDS202A04700**	**WU25PD**	4,700	0.1850	29	36	0,8	74	36	6
4148174	**VDS202A04800**	**WU25PD**	4,800	0.1890	35	44	0,8	82	36	6
4148176	**VDS202A04900**	**WU25PD**	4,900	0.1929	35	44	0,8	82	36	6
4148177	**VDS202A05000**	**WU25PD**	5,000	0.1969	35	44	0,8	82	36	6
4148178	**VDS202A05100**	**WU25PD**	5,100	0.2008	35	44	0,8	82	36	6
4148181	**VDS202A05200**	**WU25PD**	5,200	0.2047	35	44	0,9	82	36	6
4148182	**VDS202A05300**	**WU25PD**	5,300	0.2087	35	44	0,9	82	36	6
4148183	**VDS202A05400**	**WU25PD**	5,400	0.2126	35	44	0,9	82	36	6
4148185	**VDS202A05500**	**WU25PD**	5,500	0.2165	35	44	0,9	82	36	6
4148187	**VDS202A05600**	**WU25PD**	5,600	0.2205	35	44	0,9	82	36	6
4148189	**VDS202A05700**	**WU25PD**	5,700	0.2244	35	44	1,0	82	36	6
4148190	**VDS202A05800**	**WU25PD**	5,800	0.2283	35	44	1,0	82	36	6
4148191	**VDS202A05900**	**WU25PD**	5,900	0.2323	35	44	1,0	82	36	6
4148193	**VDS202A06000**	**WU25PD**	6,000	0.2362	35	44	1,0	82	36	6
4148194	**VDS202A06100**	**WU25PD**	6,100	0.2402	43	53	1,0	91	36	8
4148195	**VDS202A06200**	**WU25PD**	6,200	0.2441	43	53	1,0	91	36	8
4148196	**VDS202A06300**	**WU25PD**	6,300	0.2480	43	53	1,1	91	36	8
4148198	**VDS202A06400**	**WU25PD**	6,400	0.2520	43	53	1,1	91	36	8
4148199	**VDS202A06500**	**WU25PD**	6,500	0.2559	43	53	1,1	91	36	8
4148201	**VDS202A06600**	**WU25PD**	6,600	0.2598	43	53	1,1	91	36	8
4148203	**VDS202A06700**	**WU25PD**	6,700	0.2638	43	53	1,1	91	36	8
4148205	**VDS202A06800**	**WU25PD**	6,800	0.2677	43	53	1,1	91	36	8
4148206	**VDS202A06900**	**WU25PD**	6,900	0.2717	43	53	1,2	91	36	8
4148207	**VDS202A07000**	**WU25PD**	7,000	0.2756	43	53	1,2	91	36	8
4148208	**VDS202A07100**	**WU25PD**	7,100	0.2795	43	53	1,2	91	36	8
4148210	**VDS202A07200**	**WU25PD**	7,200	0.2835	43	53	1,2	91	36	8
4148211	**VDS202A07300**	**WU25PD**	7,300	0.2874	43	53	1,2	91	36	8
4148212	**VDS202A07400**	**WU25PD**	7,400	0.2913	43	53	1,3	91	36	8
4148213	**VDS202A07500**	**WU25PD**	7,500	0.2953	43	53	1,3	91	36	8
4148215	**VDS202A07600**	**WU25PD**	7,600	0.2992	43	53	1,3	91	36	8
4148216	**VDS202A07700**	**WU25PD**	7,700	0.3031	43	53	1,3	91	36	8
4148217	**VDS202A07800**	**WU25PD**	7,800	0.3071	43	53	1,3	91	36	8
4148218	**VDS202A07900**	**WU25PD**	7,900	0.3110	43	53	1,3	91	36	8
4148220	**VDS202A08000**	**WU25PD**	8,000	0.3150	43	53	1,4	91	36	8
4148221	**VDS202A08100**	**WU25PD**	8,100	0.3189	49	61	1,4	103	40	10
4148222	**VDS202A08200**	**WU25PD**	8,200	0.3228	49	61	1,4	103	40	10
4148223	**VDS202A08300**	**WU25PD**	8,300	0.3268	49	61	1,4	103	40	10
4148225	**VDS202A08400**	**WU25PD**	8,400	0.3307	49	61	1,4	103	40	10
4148227	**VDS202A08500**	**WU25PD**	8,500	0.3346	49	61	1,4	103	40	10
4148228	**VDS202A08600**	**WU25PD**	8,600	0.3386	49	61	1,5	103	40	10
4148229	**VDS202A08700**	**WU25PD**	8,700	0.3425	49	61	1,5	103	40	10

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(VariDrill — continued)

order number	catalogue number	grade	D1 diameter (mm)	D1 diameter (inch)	L4 max (mm)	L3 (mm)	L5 (mm)	L (mm)	LS (mm)	D (mm)
VDS202A • 5 x D • Non-Coolant *(continued)*										
4148231	**VDS202A08800**	**WU25PD**	8,800	0.3465	49	61	1,5	103	40	10
4148232	**VDS202A08900**	**WU25PD**	8,900	0.3504	49	61	1,5	103	40	10
4148233	**VDS202A09000**	**WU25PD**	9,000	0.3543	49	61	1,5	103	40	10
4148234	**VDS202A09100**	**WU25PD**	9,100	0.3583	49	61	1,6	103	40	10
4148236	**VDS202A09200**	**WU25PD**	9,200	0.3622	49	61	1,6	103	40	10
4148237	**VDS202A09300**	**WU25PD**	9,300	0.3661	49	61	1,6	103	40	10
4148239	**VDS202A09400**	**WU25PD**	9,400	0.3701	49	61	1,6	103	40	10
4148240	**VDS202A09500**	**WU25PD**	9,500	0.3740	49	61	1,6	103	40	10
4148243	**VDS202A09700**	**WU25PD**	9,700	0.3819	49	61	1,7	103	40	10
4148244	**VDS202A09800**	**WU25PD**	9,800	0.3858	49	61	1,7	103	40	10
4148245	**VDS202A09900**	**WU25PD**	9,900	0.3898	49	61	1,7	103	40	10
4148258	**VDS202A10000**	**WU25PD**	10,000	0.3937	49	61	1,7	103	40	10
4148259	**VDS202A10100**	**WU25PD**	10,100	0.3976	56	71	1,7	118	45	12
4148260	**VDS202A10200**	**WU25PD**	10,200	0.4016	56	71	1,7	118	45	12
4148261	**VDS202A10300**	**WU25PD**	10,300	0.4055	56	71	1,8	118	45	12
4148284	**VDS202A10500**	**WU25PD**	10,500	0.4134	56	71	1,8	118	45	12
4148285	**VDS202A10600**	**WU25PD**	10,600	0.4173	56	71	1,8	118	45	12
4148286	**VDS202A10700**	**WU25PD**	10,700	0.4213	56	71	1,8	118	45	12
4148288	**VDS202A10800**	**WU25PD**	10,800	0.4252	56	71	1,8	118	45	12
4148289	**VDS202A10900**	**WU25PD**	10,900	0.4291	56	71	1,9	118	45	12
4148290	**VDS202A11000**	**WU25PD**	11,000	0.4331	56	71	1,9	118	45	12
4148291	**VDS202A11100**	**WU25PD**	11,100	0.4370	56	71	1,9	118	45	12
4148293	**VDS202A11200**	**WU25PD**	11,200	0.4409	56	71	1,9	118	45	12
4148294	**VDS202A11300**	**WU25PD**	11,300	0.4449	56	71	1,9	118	45	12
4148296	**VDS202A11500**	**WU25PD**	11,500	0.4528	56	71	2,0	118	45	12
4148298	**VDS202A11600**	**WU25PD**	11,600	0.4567	56	71	2,0	118	45	12
4148299	**VDS202A11700**	**WU25PD**	11,700	0.4606	56	71	2,0	118	45	12
4148300	**VDS202A11800**	**WU25PD**	11,800	0.4646	56	71	2,0	118	45	12
4148301	**VDS202A11900**	**WU25PD**	11,900	0.4685	56	71	2,0	118	45	12
4148313	**VDS202A12000**	**WU25PD**	12,000	0.4724	56	71	2,1	118	45	12
4148314	**VDS202A12100**	**WU25PD**	12,100	0.4764	60	77	2,1	124	45	14
4148315	**VDS202A12200**	**WU25PD**	12,200	0.4803	60	77	2,1	124	45	14
4148319	**VDS202A12500**	**WU25PD**	12,500	0.4921	60	77	2,1	124	45	14
4148320	**VDS202A12600**	**WU25PD**	12,600	0.4961	60	77	2,2	124	45	14
4148321	**VDS202A12700**	**WU25PD**	12,700	0.5000	60	77	2,2	124	45	14
4148322	**VDS202A12800**	**WU25PD**	12,800	0.5039	60	77	2,2	124	45	14
4148343	**VDS202A12900**	**WU25PD**	12,900	0.5079	60	77	2,2	124	45	14
4148344	**VDS202A13000**	**WU25PD**	13,000	0.5118	60	77	2,2	124	45	14
4148346	**VDS202A13100**	**WU25PD**	13,100	0.5157	60	77	2,3	124	45	14
4148347	**VDS202A13200**	**WU25PD**	13,200	0.5197	60	77	2,3	124	45	14
4148350	**VDS202A13500**	**WU25PD**	13,500	0.5315	60	77	2,3	124	45	14
4148353	**VDS202A13800**	**WU25PD**	13,800	0.5433	60	77	2,4	124	45	14
4148356	**VDS202A14000**	**WU25PD**	14,000	0.5512	60	77	2,4	124	45	14
4148357	**VDS202A14100**	**WU25PD**	14,100	0.5551	63	83	2,4	133	48	16
4148358	**VDS202A14200**	**WU25PD**	14,200	0.5591	63	83	2,5	133	48	16
4148360	**VDS202A14300**	**WU25PD**	14,300	0.5630	63	83	2,5	133	48	16
4148362	**VDS202A14500**	**WU25PD**	14,500	0.5709	63	83	2,5	133	48	16
4148366	**VDS202A14800**	**WU25PD**	14,800	0.5827	63	83	2,6	133	48	16
4148367	**VDS202A14900**	**WU25PD**	14,900	0.5866	63	83	2,6	133	48	16
4148368	**VDS202A15000**	**WU25PD**	15,000	0.5906	63	83	2,6	133	48	16
4148370	**VDS202A15100**	**WU25PD**	15,100	0.5945	63	83	2,6	133	48	16
4148371	**VDS202A15200**	**WU25PD**	15,200	0.5984	63	83	2,6	133	48	16
4148375	**VDS202A15500**	**WU25PD**	15,500	0.6102	63	83	2,7	133	48	16
4148378	**VDS202A15800**	**WU25PD**	15,800	0.6220	63	83	2,7	133	48	16
4148381	**VDS202A16000**	**WU25PD**	16,000	0.6299	63	83	2,8	133	48	16
4148382	**VDS202A16100**	**WU25PD**	16,100	0.6339	71	93	2,8	143	48	18
4148387	**VDS202A16500**	**WU25PD**	16,500	0.6496	71	93	2,9	143	48	18
4148393	**VDS202A17000**	**WU25PD**	17,000	0.6693	71	93	2,9	143	48	18
4148394	**VDS202A17100**	**WU25PD**	17,100	0.6732	71	93	3,0	143	48	18
4148399	**VDS202A17500**	**WU25PD**	17,500	0.6890	71	93	3,0	143	48	18
4147921	**VDS202A18000**	**WU25PD**	18,000	0.7087	71	93	3,1	143	48	18
4148307	**VDS202A18500**	**WU25PD**	18,500	0.7283	77	101	3,2	153	50	20
4148329	**VDS202A19500**	**WU25PD**	19,500	0.7677	77	101	3,4	153	50	20
4148333	**VDS202A19900**	**WU25PD**	19,900	0.7835	77	101	3,5	153	50	20
4148334	**VDS202A20000**	**WU25PD**	20,000	0.7874	77	101	3,5	153	50	20

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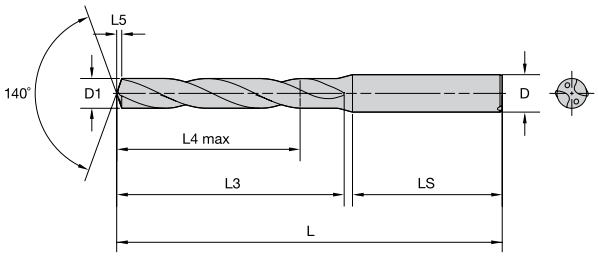

order number	catalogue number	grade	D1 diameter (mm)	D1 diameter (inch)	L4 max (mm)	L3 (mm)	L5 (mm)	L (mm)	LS (mm)	D (mm)
VDS402A • 5 x D • Through Coolant										
4142871	VDS402A01500	WU25PD	1,500	0.0591	9	12	0,2	58	40	4
4142884	VDS402A01600	WU25PD	1,600	0.0630	9	12	0,2	58	28	4
4142887	VDS402A01700	WU25PD	1,700	0.0669	9	12	0,3	58	28	4
4142890	VDS402A01800	WU25PD	1,800	0.0709	9	12	0,3	58	28	4
4142893	VDS402A01900	WU25PD	1,900	0.0748	9	12	0,3	58	28	4
4142899	VDS402A02000	WU25PD	2,000	0.0787	14	18	0,3	58	28	4
4142902	VDS402A02100	WU25PD	2,100	0.0827	14	18	0,3	58	28	4
4142905	VDS402A02200	WU25PD	2,200	0.0866	14	18	0,3	58	28	4
4142908	VDS402A02300	WU25PD	2,300	0.0906	14	18	0,4	58	28	4
4142924	VDS402A02400	WU25PD	2,400	0.0945	17	22	0,4	58	28	4
4142933	VDS402A02500	WU25PD	2,500	0.0984	17	22	0,4	58	28	4
4142939	VDS402A02600	WU25PD	2,600	0.1024	17	22	0,4	58	28	4
4142945	VDS402A02700	WU25PD	2,700	0.1063	17	22	0,4	58	28	4
4142964	VDS402A02800	WU25PD	2,800	0.1102	17	22	0,5	58	28	4
4142973	VDS402A02900	WU25PD	2,900	0.1142	17	22	0,5	58	28	4
4142844	VDS402A03000	WU25PD	3,000	0.1181	23	28	0,5	66	36	6
4142846	VDS402A03048	WU25PD	3,048	0.1200	23	28	0,5	66	36	6
4142847	VDS402A03100	WU25PD	3,100	0.1220	23	28	0,5	66	36	6
4142851	VDS402A03200	WU25PD	3,200	0.1260	23	28	0,5	66	36	6
4142865	VDS402A03300	WU25PD	3,300	0.1299	23	28	0,5	66	36	6
4142867	VDS402A03400	WU25PD	3,400	0.1339	23	28	0,6	66	36	6
4142872	VDS402A03500	WU25PD	3,500	0.1378	23	28	0,6	66	36	6
4142888	VDS402A03600	WU25PD	3,600	0.1417	23	28	0,6	66	36	6
4142894	VDS402A03700	WU25PD	3,700	0.1457	23	28	0,6	66	36	6
4142900	VDS402A03800	WU25PD	3,800	0.1496	29	36	0,6	74	36	6
4142903	VDS402A03900	WU25PD	3,900	0.1535	29	36	0,6	74	36	6
4142909	VDS402A04000	WU25PD	4,000	0.1575	29	36	0,7	74	36	6
4142928	VDS402A04100	WU25PD	4,100	0.1614	29	36	0,7	74	36	6
4142931	VDS402A04200	WU25PD	4,200	0.1654	29	36	0,7	74	36	6
4142937	VDS402A04300	WU25PD	4,300	0.1693	29	36	0,7	74	36	6
4142943	VDS402A04400	WU25PD	4,400	0.1732	29	36	0,7	74	36	6
4142946	VDS402A04500	WU25PD	4,500	0.1772	29	36	0,7	74	36	6
4142949	VDS402A04600	WU25PD	4,600	0.1811	29	36	0,8	74	36	6
4142952	VDS402A04623	WU25PD	4,623	0.1820	29	36	0,8	74	36	6
4142965	VDS402A04700	WU25PD	4,700	0.1850	29	36	0,8	74	36	6
4142971	VDS402A04800	WU25PD	4,800	0.1890	35	44	0,8	82	36	6
4142977	VDS402A04900	WU25PD	4,900	0.1929	35	44	0,8	82	36	6
4142979	VDS402A05000	WU25PD	5,000	0.1969	35	44	0,8	82	36	6
4142981	VDS402A05100	WU25PD	5,100	0.2008	35	44	0,8	82	36	6
4142997	VDS402A05200	WU25PD	5,200	0.2047	35	44	0,9	82	36	6
4142999	VDS402A05300	WU25PD	5,300	0.2087	35	44	0,9	82	36	6
4143000	VDS402A05400	WU25PD	5,400	0.2126	35	44	0,9	82	36	6
4143002	VDS402A05500	WU25PD	5,500	0.2165	35	44	0,9	82	36	6
4143003	VDS402A05558	WU25PD	5,558	0.2188	35	44	0,9	82	36	6
4143004	VDS402A05600	WU25PD	5,600	0.2205	35	44	0,9	82	36	6
4143006	VDS402A05700	WU25PD	5,700	0.2244	35	44	1,0	82	36	6
4143007	VDS402A05800	WU25PD	5,800	0.2283	35	44	1,0	82	36	6
4143008	VDS402A05900	WU25PD	5,900	0.2323	35	44	1,0	82	36	6
4143010	VDS402A06000	WU25PD	6,000	0.2362	35	44	1,0	82	36	6
4143011	VDS402A06100	WU25PD	6,100	0.2402	43	53	1,0	91	36	8
4143012	VDS402A06200	WU25PD	6,200	0.2441	43	53	1,0	91	36	8
4143023	VDS402A06300	WU25PD	6,300	0.2480	43	53	1,1	91	36	8
4143025	VDS402A06400	WU25PD	6,400	0.2520	43	53	1,1	91	36	8
4143026	VDS402A06500	WU25PD	6,500	0.2559	43	53	1,1	91	36	8
4143028	VDS402A06600	WU25PD	6,600	0.2598	43	53	1,1	91	36	8
4143030	VDS402A06700	WU25PD	6,700	0.2638	43	53	1,1	91	36	8
4143032	VDS402A06800	WU25PD	6,800	0.2677	43	53	1,1	91	36	8

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(VariDrill — continued)

order number	catalogue number	grade	D1 diameter (mm)	D1 diameter (inch)	L4 max (mm)	L3 (mm)	L5 (mm)	L (mm)	LS (mm)	D (mm)
VDS402A • 5 x D • Through Coolant *(continued)*										
4143043	**VDS402A06900**	**WU25PD**	6,900	0.2717	43	53	1,2	91	36	8
4143044	**VDS402A07000**	**WU25PD**	7,000	0.2756	43	53	1,2	91	36	8
4143045	**VDS402A07100**	**WU25PD**	7,100	0.2795	43	53	1,2	91	36	8
4143047	**VDS402A07200**	**WU25PD**	7,200	0.2835	43	53	1,2	91	36	8
4143048	**VDS402A07300**	**WU25PD**	7,300	0.2874	43	53	1,2	91	36	8
4143049	**VDS402A07400**	**WU25PD**	7,400	0.2913	43	53	1,3	91	36	8
4143050	**VDS402A07500**	**WU25PD**	7,500	0.2953	43	53	1,3	91	36	8
4143052	**VDS402A07600**	**WU25PD**	7,600	0.2992	43	53	1,3	91	36	8
4143063	**VDS402A07700**	**WU25PD**	7,700	0.3031	43	53	1,3	91	36	8
4143064	**VDS402A07800**	**WU25PD**	7,800	0.3071	43	53	1,3	91	36	8
4143065	**VDS402A07900**	**WU25PD**	7,900	0.3110	43	53	1,3	91	36	8
4143067	**VDS402A08000**	**WU25PD**	8,000	0.3150	43	53	1,4	91	36	8
4143068	**VDS402A08100**	**WU25PD**	8,100	0.3189	49	61	1,4	103	40	10
4143069	**VDS402A08200**	**WU25PD**	8,200	0.3228	49	61	1,4	103	40	10
4143070	**VDS402A08300**	**WU25PD**	8,300	0.3268	49	61	1,4	103	40	10
4143072	**VDS402A08400**	**WU25PD**	8,400	0.3307	49	61	1,4	103	40	10
4143084	**VDS402A08500**	**WU25PD**	8,500	0.3346	49	61	1,4	103	40	10
4143085	**VDS402A08600**	**WU25PD**	8,600	0.3386	49	61	1,5	103	40	10
4143086	**VDS402A08700**	**WU25PD**	8,700	0.3425	49	61	1,5	103	40	10
4143088	**VDS402A08800**	**WU25PD**	8,800	0.3465	49	61	1,5	103	40	10
4143089	**VDS402A08900**	**WU25PD**	8,900	0.3504	49	61	1,5	103	40	10
4143090	**VDS402A09000**	**WU25PD**	9,000	0.3543	49	61	1,5	103	40	10
4143091	**VDS402A09100**	**WU25PD**	9,100	0.3583	49	61	1,5	103	40	10
4143103	**VDS402A09200**	**WU25PD**	9,200	0.3622	49	61	1,6	103	40	10
4143104	**VDS402A09300**	**WU25PD**	9,300	0.3661	49	61	1,6	103	40	10
4143106	**VDS402A09400**	**WU25PD**	9,400	0.3701	49	61	1,6	103	40	10
4143107	**VDS402A09500**	**WU25PD**	9,500	0.3740	49	61	1,6	103	40	10
4143109	**VDS402A09600**	**WU25PD**	9,600	0.3780	49	61	1,6	103	40	10
4143110	**VDS402A09700**	**WU25PD**	9,700	0.3819	49	61	1,7	103	40	10
4143111	**VDS402A09800**	**WU25PD**	9,800	0.3858	49	61	1,7	103	40	10
4143112	**VDS402A09900**	**WU25PD**	9,900	0.3898	49	61	1,7	103	40	10
4142823	**VDS402A10000**	**WU25PD**	10,000	0.3937	49	61	1,7	103	40	10
4142825	**VDS402A10100**	**WU25PD**	10,100	0.3976	56	71	1,7	118	45	12
4142827	**VDS402A10200**	**WU25PD**	10,200	0.4016	56	71	1,7	118	45	12
4142829	**VDS402A10300**	**WU25PD**	10,300	0.4055	56	71	1,8	118	45	12
4142832	**VDS402A10400**	**WU25PD**	10,400	0.4094	56	71	1,8	118	45	12
4142834	**VDS402A10500**	**WU25PD**	10,500	0.4134	56	71	1,8	118	45	12
4142836	**VDS402A10600**	**WU25PD**	10,600	0.4173	56	71	1,8	118	45	12
4142838	**VDS402A10700**	**WU25PD**	10,700	0.4213	56	71	1,8	118	45	12
4142842	**VDS402A10800**	**WU25PD**	10,800	0.4252	56	71	1,8	118	45	12
4142855	**VDS402A10900**	**WU25PD**	10,900	0.4291	56	71	1,9	118	45	12
4142857	**VDS402A11000**	**WU25PD**	11,000	0.4331	56	71	1,9	118	45	12
4142858	**VDS402A11100**	**WU25PD**	11,100	0.4370	56	71	1,9	118	45	12
4142862	**VDS402A11200**	**WU25PD**	11,200	0.4409	56	71	1,9	118	45	12
4142873	**VDS402A11300**	**WU25PD**	11,300	0.4449	56	71	1,9	118	45	12
4142874	**VDS402A11400**	**WU25PD**	11,400	0.4488	56	71	2,0	118	45	12
4142875	**VDS402A11500**	**WU25PD**	11,500	0.4528	56	71	2,0	118	45	12
4142877	**VDS402A11600**	**WU25PD**	11,600	0.4567	56	71	2,0	118	45	12
4142878	**VDS402A11700**	**WU25PD**	11,700	0.4606	56	71	2,0	118	45	12
4142879	**VDS402A11800**	**WU25PD**	11,800	0.4646	56	71	2,0	118	45	12
4142880	**VDS402A11900**	**WU25PD**	11,900	0.4685	56	71	2,0	118	45	12
4142882	**VDS402A12000**	**WU25PD**	12,000	0.4724	56	71	2,1	118	45	12
4142913	**VDS402A12100**	**WU25PD**	12,100	0.4764	60	77	2,1	124	45	14
4142914	**VDS402A12200**	**WU25PD**	12,200	0.4803	60	77	2,1	124	45	14
4142915	**VDS402A12300**	**WU25PD**	12,300	0.4843	60	77	2,1	124	45	14
4142917	**VDS402A12400**	**WU25PD**	12,400	0.4882	60	77	2,1	124	45	14
4142918	**VDS402A12500**	**WU25PD**	12,500	0.4921	60	77	2,1	124	45	14
4142919	**VDS402A12600**	**WU25PD**	12,600	0.4961	60	77	2,2	124	45	14
4142920	**VDS402A12700**	**WU25PD**	12,700	0.5000	60	77	2,2	124	45	14
4142921	**VDS402A12800**	**WU25PD**	12,800	0.5039	60	77	2,2	124	45	14
4142922	**VDS402A12900**	**WU25PD**	12,900	0.5079	60	77	2,2	124	45	14
4142953	**VDS402A13000**	**WU25PD**	13,000	0.5118	60	77	2,2	124	45	14
4142955	**VDS402A13100**	**WU25PD**	13,100	0.5157	60	77	2,3	124	45	14
4142956	**VDS402A13200**	**WU25PD**	13,200	0.5197	60	77	2,3	124	45	14

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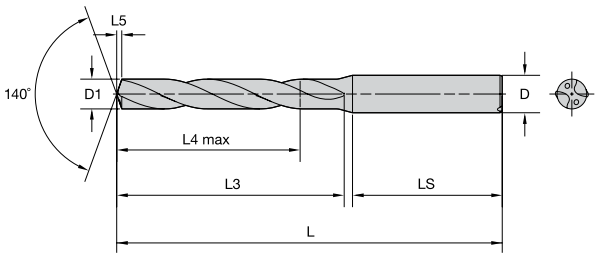
(VariDrill — continued)

order number	catalogue number	grade	D1 diameter (mm)	D1 diameter (inch)	L4 max (mm)	L3 (mm)	L5 (mm)	L (mm)	LS (mm)	D (mm)
VDS402A • 5 x D • Through Coolant *(continued)*										
4142957	**VDS402A13300**	**WU25PD**	13,300	0.5236	60	77	2,3	124	45	14
4142958	**VDS402A13400**	**WU25PD**	13,400	0.5276	60	77	2,3	124	45	14
4142959	**VDS402A13500**	**WU25PD**	13,500	0.5315	60	77	2,3	124	45	14
4142960	**VDS402A13600**	**WU25PD**	13,600	0.5354	60	77	2,3	124	45	14
4142961	**VDS402A13700**	**WU25PD**	13,700	0.5394	60	77	2,4	124	45	14
4142962	**VDS402A13800**	**WU25PD**	13,800	0.5433	60	77	2,4	124	45	14
4142984	**VDS402A13900**	**WU25PD**	13,900	0.5472	60	77	2,4	124	45	14
4142985	**VDS402A14000**	**WU25PD**	14,000	0.5512	60	77	2,4	124	45	14
4142986	**VDS402A14100**	**WU25PD**	14,100	0.5551	63	83	2,4	133	48	16
4142987	**VDS402A14200**	**WU25PD**	14,200	0.5591	63	83	2,5	133	48	16
4142989	**VDS402A14300**	**WU25PD**	14,300	0.5630	63	83	2,5	133	48	16
4142990	**VDS402A14400**	**WU25PD**	14,400	0.5669	63	83	2,5	133	48	16
4142991	**VDS402A14500**	**WU25PD**	14,500	0.5709	63	83	2,5	133	48	16
4142992	**VDS402A14600**	**WU25PD**	14,600	0.5748	63	83	2,5	133	48	16
4143014	**VDS402A14700**	**WU25PD**	14,700	0.5787	63	83	2,5	133	48	16
4143015	**VDS402A14800**	**WU25PD**	14,800	0.5827	63	83	2,6	133	48	16
4143016	**VDS402A14900**	**WU25PD**	14,900	0.5866	63	83	2,6	133	48	16
4143017	**VDS402A15000**	**WU25PD**	15,000	0.5906	63	83	2,6	133	48	16
4143019	**VDS402A15100**	**WU25PD**	15,100	0.5945	63	83	2,6	133	48	16
4143020	**VDS402A15200**	**WU25PD**	15,200	0.5984	63	83	2,6	133	48	16
4143021	**VDS402A15300**	**WU25PD**	15,300	0.6024	63	83	2,6	133	48	16
4143022	**VDS402A15400**	**WU25PD**	15,400	0.6063	63	83	2,7	133	48	16
4143034	**VDS402A15500**	**WU25PD**	15,500	0.6102	63	83	2,7	133	48	16
4143035	**VDS402A15600**	**WU25PD**	15,600	0.6142	63	83	2,7	133	48	16
4143036	**VDS402A15700**	**WU25PD**	15,700	0.6181	63	83	2,7	133	48	16
4143037	**VDS402A15800**	**WU25PD**	15,800	0.6220	63	83	2,7	133	48	16
4143039	**VDS402A15900**	**WU25PD**	15,900	0.6260	63	83	2,8	133	48	16
4143040	**VDS402A16000**	**WU25PD**	16,000	0.6299	63	83	2,8	133	48	16
4143041	**VDS402A16100**	**WU25PD**	16,100	0.6339	71	93	2,8	143	48	18
4143042	**VDS402A16200**	**WU25PD**	16,200	0.6378	71	93	2,8	143	48	18
4143054	**VDS402A16300**	**WU25PD**	16,300	0.6417	71	93	2,8	143	48	18
4143055	**VDS402A16400**	**WU25PD**	16,400	0.6457	71	93	2,8	143	48	18
4143056	**VDS402A16500**	**WU25PD**	16,500	0.6496	71	93	2,9	143	48	18
4143057	**VDS402A16600**	**WU25PD**	16,600	0.6535	71	93	2,9	143	48	18
4143059	**VDS402A16700**	**WU25PD**	16,700	0.6575	71	93	2,9	143	48	18
4143060	**VDS402A16800**	**WU25PD**	16,800	0.6614	71	93	2,9	143	48	18
4143061	**VDS402A16900**	**WU25PD**	16,900	0.6654	71	93	2,9	143	48	18
4143062	**VDS402A17000**	**WU25PD**	17,000	0.6693	71	93	2,9	143	48	18
4143073	**VDS402A17100**	**WU25PD**	17,100	0.6732	71	93	3,0	143	48	18
4143074	**VDS402A17200**	**WU25PD**	17,200	0.6772	71	93	3,0	143	48	18
4143075	**VDS402A17300**	**WU25PD**	17,300	0.6811	71	93	3,0	143	48	18
4143076	**VDS402A17400**	**WU25PD**	17,400	0.6850	71	93	3,0	143	48	18
4143078	**VDS402A17500**	**WU25PD**	17,500	0.6890	71	93	3,0	143	48	18
4143079	**VDS402A17600**	**WU25PD**	17,600	0.6929	71	93	3,1	143	48	18
4143080	**VDS402A17700**	**WU25PD**	17,700	0.6969	71	93	3,1	143	48	18
4143081	**VDS402A17800**	**WU25PD**	17,800	0.7008	71	93	3,1	143	48	18
4143093	**VDS402A17900**	**WU25PD**	17,900	0.7047	71	93	3,1	143	48	18
4142803	**VDS402A18000**	**WU25PD**	18,000	0.7087	71	93	3,1	143	48	18
4142804	**VDS402A18100**	**WU25PD**	18,100	0.7126	77	101	3,1	153	50	20
4142805	**VDS402A18200**	**WU25PD**	18,200	0.7165	77	101	3,2	153	50	20
4142807	**VDS402A18300**	**WU25PD**	18,300	0.7205	77	101	3,2	153	50	20
4142808	**VDS402A18400**	**WU25PD**	18,400	0.7244	77	101	3,2	153	50	20
4142809	**VDS402A18500**	**WU25PD**	18,500	0.7283	77	101	3,2	153	50	20
4142810	**VDS402A18600**	**WU25PD**	18,600	0.7323	77	101	3,2	153	50	20
4142812	**VDS402A18700**	**WU25PD**	18,700	0.7362	77	101	3,3	153	50	20
4142824	**VDS402A18800**	**WU25PD**	18,800	0.7402	77	101	3,3	153	50	20
4142826	**VDS402A18900**	**WU25PD**	18,900	0.7441	77	101	3,3	153	50	20
4142828	**VDS402A19000**	**WU25PD**	19,000	0.7480	77	101	3,3	153	50	20
4142833	**VDS402A19100**	**WU25PD**	19,100	0.7520	77	101	3,3	153	50	20
4142835	**VDS402A19200**	**WU25PD**	19,200	0.7559	77	101	3,3	153	50	20
4142837	**VDS402A19300**	**WU25PD**	19,300	0.7598	77	101	3,4	153	50	20
4142839	**VDS402A19400**	**WU25PD**	19,400	0.7638	77	101	3,4	153	50	20
4142841	**VDS402A19500**	**WU25PD**	19,500	0.7677	77	101	3,4	153	50	20
4142853	**VDS402A19600**	**WU25PD**	19,600	0.7717	77	101	3,4	153	50	20
4142854	**VDS402A19700**	**WU25PD**	19,700	0.7756	77	101	3,4	153	50	20
4142856	**VDS402A19800**	**WU25PD**	19,800	0.7795	77	101	3,4	153	50	20
4142859	**VDS402A19900**	**WU25PD**	19,900	0.7835	77	101	3,5	153	50	20
4142860	**VDS402A20000**	**WU25PD**	20,000	0.7874	77	101	3,5	153	50	20



order number	catalogue number	grade	D1 diameter (mm)	D1 diameter (inch)	L4 max (mm)	L3 (mm)	L5 (mm)	L (mm)	LS (mm)	D (mm)
VDS403A • 8 x D • Through Coolant										
4143700	VDS403A01500	WU25PD	1,500	0.0591	15	18	0,2	58	28	4
4143701	VDS403A01600	WU25PD	1,600	0.0630	15	18	0,2	58	28	4
4143702	VDS403A01700	WU25PD	1,700	0.0669	15	18	0,3	58	28	4
4143723	VDS403A01800	WU25PD	1,800	0.0709	15	18	0,3	58	28	4
4143724	VDS403A01900	WU25PD	1,900	0.0748	15	18	0,3	58	28	4
4143726	VDS403A02000	WU25PD	2,000	0.0787	22	26	0,3	66	28	4
4143727	VDS403A02100	WU25PD	2,100	0.0827	22	26	0,3	66	28	4
4143728	VDS403A02200	WU25PD	2,200	0.0866	22	26	0,3	66	28	4
4143729	VDS403A02300	WU25PD	2,300	0.0906	22	26	0,4	66	28	4
4143731	VDS403A02400	WU25PD	2,400	0.0945	25	30	0,4	66	28	4
4143734	VDS403A02500	WU25PD	2,500	0.0984	25	30	0,4	66	28	4
4143736	VDS403A02600	WU25PD	2,600	0.1024	25	30	0,4	66	28	4
4143738	VDS403A02700	WU25PD	2,700	0.1063	25	30	0,4	66	28	4
4143741	VDS403A02800	WU25PD	2,800	0.1102	25	30	0,5	66	28	4
4143744	VDS403A02900	WU25PD	2,900	0.1142	25	30	0,5	66	28	4
4143746	VDS403A03000	WU25PD	3,000	0.1181	33	40	0,5	78	36	6
4143748	VDS403A03100	WU25PD	3,100	0.1220	33	40	0,5	78	36	6
4143750	VDS403A03200	WU25PD	3,200	0.1260	33	40	0,5	78	36	6
4143752	VDS403A03300	WU25PD	3,300	0.1299	33	40	0,5	78	36	6
4143753	VDS403A03400	WU25PD	3,400	0.1339	33	40	0,6	78	36	6
4143755	VDS403A03500	WU25PD	3,500	0.1378	33	49	0,6	78	36	6
4143757	VDS403A03600	WU25PD	3,600	0.1417	33	40	0,6	78	36	6
4143759	VDS403A03700	WU25PD	3,700	0.1457	33	40	0,6	78	36	6
4143761	VDS403A03800	WU25PD	3,800	0.1496	41	49	0,6	87	36	6
4143762	VDS403A03900	WU25PD	3,900	0.1535	41	40	0,6	87	36	6
4143764	VDS403A04000	WU25PD	4,000	0.1575	41	40	0,7	87	36	6
4143767	VDS403A04100	WU25PD	4,100	0.1614	41	49	0,7	87	36	6
4143768	VDS403A04200	WU25PD	4,200	0.1654	41	49	0,7	87	36	6
4143770	VDS403A04300	WU25PD	4,300	0.1693	41	49	0,7	87	36	6
4143772	VDS403A04400	WU25PD	4,400	0.1732	41	49	0,7	87	36	6
4143773	VDS403A04500	WU25PD	4,500	0.1772	41	49	0,7	87	36	6
4143774	VDS403A04600	WU25PD	4,600	0.1811	41	49	0,8	87	36	6
4143776	VDS403A04700	WU25PD	4,700	0.1850	41	49	0,8	87	36	6
4143778	VDS403A04800	WU25PD	4,800	0.1890	48	56	0,8	94	36	6
4143780	VDS403A04900	WU25PD	4,900	0.1929	48	56	0,8	94	36	6
4143781	VDS403A05000	WU25PD	5,000	0.1969	48	56	0,8	94	36	6
4143782	VDS403A05100	WU25PD	5,100	0.2008	48	56	0,8	94	36	6
4143785	VDS403A05200	WU25PD	5,200	0.2047	48	56	0,9	94	36	6
4143786	VDS403A05300	WU25PD	5,300	0.2087	48	56	0,9	94	36	6
4143787	VDS403A05400	WU25PD	5,400	0.2126	48	56	0,9	94	36	6
4143789	VDS403A05500	WU25PD	5,500	0.2165	48	56	0,9	94	36	6
4143791	VDS403A05600	WU25PD	5,600	0.2205	48	56	0,9	94	36	6
4143793	VDS403A05700	WU25PD	5,700	0.2244	48	56	1,0	94	36	6
4143794	VDS403A05800	WU25PD	5,800	0.2283	48	67	1,0	94	36	6
4143795	VDS403A05900	WU25PD	5,900	0.2323	48	56	1,0	94	36	6
4143797	VDS403A06000	WU25PD	6,000	0.2362	48	67	1,0	94	36	6
4143798	VDS403A06100	WU25PD	6,100	0.2402	57	67	1,0	105	36	8
4143799	VDS403A06200	WU25PD	6,200	0.2441	57	67	1,0	105	36	8
4143800	VDS403A06300	WU25PD	6,300	0.2480	57	67	1,1	105	36	8
4143802	VDS403A06400	WU25PD	6,400	0.2520	57	67	1,1	105	36	8
4143803	VDS403A06500	WU25PD	6,500	0.2559	57	67	1,1	105	36	8
4143805	VDS403A06600	WU25PD	6,600	0.2598	57	67	1,1	105	36	8
4143807	VDS403A06700	WU25PD	6,700	0.2638	57	67	1,1	105	36	8
4143809	VDS403A06800	WU25PD	6,800	0.2677	57	67	1,1	105	36	8

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(VariDrill — continued)

order number	catalogue number	grade	D1 diameter (mm)	D1 diameter (inch)	L4 max (mm)	L3 (mm)	L5 (mm)	L (mm)	LS (mm)	D (mm)
VDS403A • 8 x D • Through Coolant *(continued)*										
4143810	**VDS403A06900**	**WU25PD**	6,900	0.2717	57	67	1,2	105	36	8
4143811	**VDS403A07000**	**WU25PD**	7,000	0.2756	57	72	1,2	105	36	8
4143812	**VDS403A07100**	**WU25PD**	7,100	0.2795	61	72	1,2	110	36	8
4143814	**VDS403A07200**	**WU25PD**	7,200	0.2835	61	72	1,2	110	36	8
4143815	**VDS403A07300**	**WU25PD**	7,300	0.2874	61	72	1,2	110	36	8
4143816	**VDS403A07400**	**WU25PD**	7,400	0.2913	61	72	1,3	110	36	8
4143817	**VDS403A07500**	**WU25PD**	7,500	0.2953	61	72	1,3	110	36	8
4143819	**VDS403A07600**	**WU25PD**	7,600	0.2992	61	72	1,3	110	36	8
4143820	**VDS403A07700**	**WU25PD**	7,700	0.3031	61	72	1,3	110	36	8
4143821	**VDS403A07800**	**WU25PD**	7,800	0.3071	61	80	1,3	110	36	8
4143822	**VDS403A07900**	**WU25PD**	7,900	0.3110	61	72	1,3	110	36	8
4143824	**VDS403A08000**	**WU25PD**	8,000	0.3150	61	80	1,4	110	36	8
4143825	**VDS403A08100**	**WU25PD**	8,100	0.3189	68	80	1,4	122	40	10
4143826	**VDS403A08200**	**WU25PD**	8,200	0.3228	68	80	1,4	122	40	10
4143827	**VDS403A08300**	**WU25PD**	8,300	0.3268	68	80	1,4	122	40	10
4143829	**VDS403A08400**	**WU25PD**	8,400	0.3307	68	80	1,4	122	40	10
4143831	**VDS403A08500**	**WU25PD**	8,500	0.3346	68	80	1,4	122	40	10
4143832	**VDS403A08600**	**WU25PD**	8,600	0.3386	68	80	1,5	122	40	10
4143833	**VDS403A08700**	**WU25PD**	8,700	0.3425	68	72	1,5	122	40	10
4143835	**VDS403A08800**	**WU25PD**	8,800	0.3465	68	72	1,5	122	40	10
4143836	**VDS403A08900**	**WU25PD**	8,900	0.3504	68	80	1,5	122	40	10
4143837	**VDS403A09000**	**WU25PD**	9,000	0.3543	68	72	1,5	122	40	10
4143838	**VDS403A09100**	**WU25PD**	9,100	0.3583	68	80	1,6	122	40	10
4143840	**VDS403A09200**	**WU25PD**	9,200	0.3622	68	80	1,6	122	40	10
4143841	**VDS403A09300**	**WU25PD**	9,300	0.3661	68	80	1,6	122	40	10
4143843	**VDS403A09400**	**WU25PD**	9,400	0.3701	68	80	1,6	122	40	10
4143844	**VDS403A09500**	**WU25PD**	9,500	0.3740	68	80	1,6	122	40	10
4143846	**VDS403A09600**	**WU25PD**	9,600	0.3780	68	80	1,6	122	40	10
4143847	**VDS403A09700**	**WU25PD**	9,700	0.3819	68	80	1,7	122	40	10
4143848	**VDS403A09800**	**WU25PD**	9,800	0.3858	68	80	1,7	122	40	10
4143849	**VDS403A09900**	**WU25PD**	9,900	0.3898	68	80	1,7	122	40	10
4143421	**VDS403A10000**	**WU25PD**	10,000	0.3937	68	80	1,7	122	40	10
4143422	**VDS403A10100**	**WU25PD**	10,100	0.3976	79	94	1,7	141	45	12
4143473	**VDS403A10200**	**WU25PD**	10,200	0.4016	79	94	1,7	141	45	12
4143474	**VDS403A10300**	**WU25PD**	10,300	0.4055	79	94	1,8	141	45	12
4143476	**VDS403A10400**	**WU25PD**	10,400	0.4094	79	94	1,8	141	45	12
4143477	**VDS403A10500**	**WU25PD**	10,500	0.4134	79	94	1,8	141	45	12
4143478	**VDS403A10600**	**WU25PD**	10,600	0.4173	79	94	1,8	141	45	12
4143479	**VDS403A10700**	**WU25PD**	10,700	0.4213	79	94	1,8	141	45	12
4143481	**VDS403A10800**	**WU25PD**	10,800	0.4252	79	94	1,9	141	45	12
4143482	**VDS403A10900**	**WU25PD**	10,900	0.4291	79	94	1,9	141	45	12
4143483	**VDS403A11000**	**WU25PD**	11,000	0.4331	79	94	1,9	141	45	12
4143484	**VDS403A11100**	**WU25PD**	11,100	0.4370	79	94	1,9	141	45	12
4143486	**VDS403A11200**	**WU25PD**	11,200	0.4409	79	94	1,9	141	45	12
4143487	**VDS403A11300**	**WU25PD**	11,300	0.4449	79	94	1,9	141	45	12
4143488	**VDS403A11400**	**WU25PD**	11,400	0.4488	79	94	2,0	141	45	12
4143489	**VDS403A11500**	**WU25PD**	11,500	0.4528	79	94	2,0	141	45	12
4143491	**VDS403A11600**	**WU25PD**	11,600	0.4567	79	94	2,0	141	45	12
4143492	**VDS403A11700**	**WU25PD**	11,700	0.4606	79	94	2,0	141	45	12
4143493	**VDS403A11800**	**WU25PD**	11,800	0.4646	79	94	2,0	141	45	12
4143494	**VDS403A11900**	**WU25PD**	11,900	0.4685	79	94	2,0	141	45	12
4143496	**VDS403A12000**	**WU25PD**	12,000	0.4724	79	94	2,1	141	45	12
4143497	**VDS403A12100**	**WU25PD**	12,100	0.4764	91	108	2,1	155	45	14
4143498	**VDS403A12200**	**WU25PD**	12,200	0.4803	91	108	2,1	155	45	14
4143499	**VDS403A12300**	**WU25PD**	12,300	0.4843	91	108	2,1	155	45	14
4143501	**VDS403A12400**	**WU25PD**	12,400	0.4882	91	108	2,1	155	45	14
4143502	**VDS403A12500**	**WU25PD**	12,500	0.4921	91	108	2,1	155	45	14
4143503	**VDS403A12600**	**WU25PD**	12,600	0.4961	91	108	2,2	155	45	14
4143504	**VDS403A12700**	**WU25PD**	12,700	0.5000	91	108	2,2	155	45	14
4143505	**VDS403A12800**	**WU25PD**	12,800	0.5039	91	108	2,2	155	45	14
4143506	**VDS403A12900**	**WU25PD**	12,900	0.5079	91	108	2,2	155	45	14
4143507	**VDS403A13000**	**WU25PD**	13,000	0.5118	91	108	2,2	155	45	14
4143509	**VDS403A13100**	**WU25PD**	13,100	0.5157	91	108	2,3	155	45	14
4143510	**VDS403A13200**	**WU25PD**	13,200	0.5197	91	108	2,3	155	45	14

(continued)

(VariDrill — continued)

order number	catalogue number	grade	D1 diameter (mm)	D1 diameter (inch)	L4 max (mm)	L3 (mm)	L5 (mm)	L (mm)	LS (mm)	D (mm)
VDS403A • 8 x D • Through Coolant *(continued)*										
4143511	**VDS403A13300**	**WU25PD**	13,300	0.5236	91	108	2,3	155	45	14
4143512	**VDS403A13400**	**WU25PD**	13,400	0.5276	91	108	2,3	155	45	14
4143513	**VDS403A13500**	**WU25PD**	13,500	0.5315	91	108	2,3	155	45	14
4143514	**VDS403A13600**	**WU25PD**	13,600	0.5354	91	108	2,3	155	45	14
4143515	**VDS403A13700**	**WU25PD**	13,700	0.5394	91	108	2,4	155	45	14
4143516	**VDS403A13800**	**WU25PD**	13,800	0.5433	91	108	2,4	155	45	14
4143518	**VDS403A13900**	**WU25PD**	13,900	0.5472	91	108	2,4	155	45	14
4143519	**VDS403A14000**	**WU25PD**	14,000	0.5512	91	108	2,4	155	45	14
4143520	**VDS403A14100**	**WU25PD**	14,100	0.5551	101	121	2,4	171	48	16
4143521	**VDS403A14200**	**WU25PD**	14,200	0.5591	101	121	2,5	171	48	16
4143523	**VDS403A14300**	**WU25PD**	14,300	0.5630	101	121	2,5	171	48	16
4143524	**VDS403A14400**	**WU25PD**	14,400	0.5669	101	121	2,5	171	48	16
4143525	**VDS403A14500**	**WU25PD**	14,500	0.5709	101	121	2,5	171	48	16
4143526	**VDS403A14600**	**WU25PD**	14,600	0.5748	101	121	2,5	171	48	16
4143528	**VDS403A14700**	**WU25PD**	14,700	0.5787	101	121	2,5	171	48	16
4143529	**VDS403A14800**	**WU25PD**	14,800	0.5827	101	121	2,6	171	48	16
4143530	**VDS403A14900**	**WU25PD**	14,900	0.5866	101	121	2,6	171	48	16
4143531	**VDS403A15000**	**WU25PD**	15,000	0.5906	101	121	2,6	171	48	16
4143533	**VDS403A15100**	**WU25PD**	15,100	0.5945	101	121	2,6	171	48	16
4143534	**VDS403A15200**	**WU25PD**	15,200	0.5984	101	121	2,6	171	48	16
4143535	**VDS403A15300**	**WU25PD**	15,300	0.6024	101	121	2,6	171	48	16
4143536	**VDS403A15400**	**WU25PD**	15,400	0.6063	101	121	2,7	171	48	16
4143538	**VDS403A15500**	**WU25PD**	15,500	0.6102	101	121	2,7	171	48	16
4143539	**VDS403A15600**	**WU25PD**	15,600	0.6142	101	121	2,7	171	48	16
4143540	**VDS403A15700**	**WU25PD**	15,700	0.6181	101	121	2,7	171	48	16
4143541	**VDS403A15800**	**WU25PD**	15,800	0.6220	101	121	2,7	171	48	16
4143543	**VDS403A15900**	**WU25PD**	15,900	0.6260	101	121	2,8	171	48	16
4143544	**VDS403A16000**	**WU25PD**	16,000	0.6299	101	121	2,8	171	48	16
4143546	**VDS403A16200**	**WU25PD**	16,200	0.6378	113	135	2,8	185	48	18
4143550	**VDS403A16500**	**WU25PD**	16,500	0.6496	113	135	2,9	185	48	18
4143553	**VDS403A16700**	**WU25PD**	16,700	0.6575	113	135	2,9	185	48	18
4143554	**VDS403A16800**	**WU25PD**	16,800	0.6614	113	135	2,9	185	48	18
4143556	**VDS403A17000**	**WU25PD**	17,000	0.6693	113	135	2,9	185	48	18
4143562	**VDS403A17500**	**WU25PD**	17,500	0.6890	113	135	3,0	185	48	18
4143563	**VDS403A17600**	**WU25PD**	17,600	0.6929	113	135	3,1	185	48	18
4143565	**VDS403A17800**	**WU25PD**	17,800	0.7008	113	135	3,1	185	48	18
4144209	**VDS403A18000**	**WU25PD**	18,000	0.7087	113	135	3,1	185	48	18
4144211	**VDS403A18100**	**WU25PD**	18,100	0.7126	124	148	3,1	200	50	20
4144212	**VDS403A18200**	**WU25PD**	18,200	0.7165	124	148	3,2	200	50	20
4144250	**VDS403A18500**	**WU25PD**	18,500	0.7283	124	148	3,2	200	50	20
4144258	**VDS403A18800**	**WU25PD**	18,800	0.7402	124	148	3,3	200	50	20
4144262	**VDS403A19000**	**WU25PD**	19,000	0.7480	124	148	3,3	200	50	20
4144285	**VDS403A19500**	**WU25PD**	19,500	0.7677	124	148	3,4	200	50	20
4144291	**VDS403A19800**	**WU25PD**	19,800	0.7795	124	148	3,4	200	50	20
4144305	**VDS403A20000**	**WU25PD**	20,000	0.7874	124	148	3,5	200	50	20

TOP DRILL S™

Stainless Steel Drilling Redefined

Cutting speed increased by up to 20% in drilling on austenitic and duplex stainless steels.

series	Coolant	Length Ratio	Diameter Range
TDS451	Through Coolant	3 x D	3,0–20,0mm (.1181–.7874")
TDS452		5 x D	
TDS453		8 x D	

Productivity

Excellent chip flow due to flute design and finish.

New coating enables higher cutting speeds.

Higher feed rates on stainless steels and duplex.

Performance

Available for custom solutions, as well as step-drilling.

Real 8 x D drill lengths.

Cylindrical shank h6 for perfect runout.

Double-margin design for critical operations.

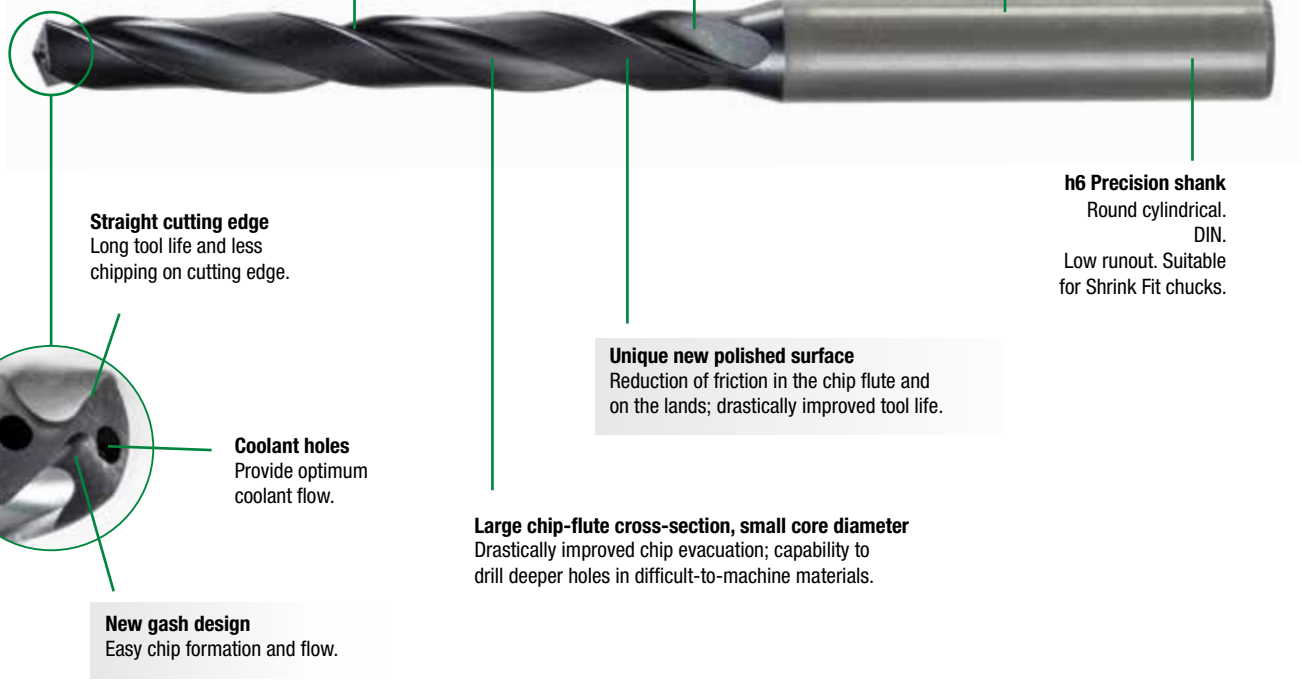
TOP DRILL S™

TDS45x for Stainless Steel

- Excellent centring ability.
- Increased wear resistance in heat-generating applications with tough materials.
- The average tool life improves dramatically 10–30%.
- The new technology improves chip evacuation, especially in deep holes and difficult cutting conditions.
- New gash design specifically for stainless steel, as well as difficult-to-machine materials:
  — Smooth chip transaction from cutting edge to flutes.
  — Less cutting forces and temperatures generated. New WM15PD coating with high-aluminium content and polished flutes.
- Two margin lands.
- Real 8 x D ratio
  — Increased length of cut.
- Complete portfolio from 3–20mm in 3 x D, 5 x D, and 8 x D ratios.

WM15PD Grade
A multilayer, AlTiN-based coating with high hot hardness enables high-speed drilling and MQL applications.

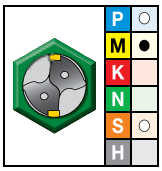
Patented TDS Point
Excellent centring. Highest feed and speeds. Force reduction.

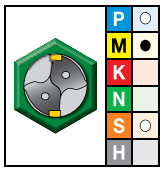


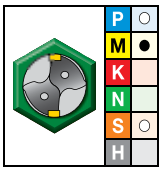
TOP DRILL S™

TOP DRILL S™ with Through Coolant • Stainless Steel

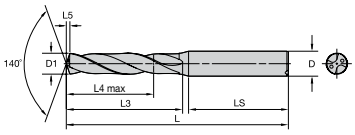
■ TDS451A • 3 x D/TDS452A • 5 x D/TDS453A • 8 x D







● first choice
○ alternate choice

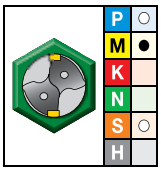


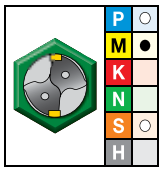
For information on L, L3, and L4 max, see the Dimension Table on page 230.

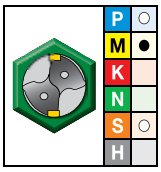
3 x D grade WM15PD AlTiN	5 x D grade WM15PD AlTiN	8 x D grade WM15PD AlTiN	D1 diameter				
order #	order #	order #	mm	in	L5	LS	D
6327647	6327948	6328197	3,000	.1181	0,5	36	6
6327648	6327950	6328200	3,048	.1200	0,5	36	6
6327649	6327952	6328202	3,100	.1220	0,5	36	6
6327650	6327954	6328204	3,175	.1250	0,5	36	6
6327711	6327956	6328206	3,200	.1260	0,5	36	6
6327712	6327958	6328208	3,264	.1285	0,5	36	6
6327713	6327960	6328209	3,300	.1299	0,5	36	6
6327714	6327962	6328211	3,400	.1339	0,6	36	6
6327715	6327964	6328213	3,455	.1360	0,6	36	6
6327716	6327966	6328216	3,500	.1378	0,6	36	6
6327717	6327968	6328218	3,571	.1406	0,6	36	6
6327718	6327970	6328219	3,600	.1417	0,6	36	6
6327719	6327972	6328221	3,658	.1440	0,6	36	6
6327720	6327974	6328223	3,700	.1457	0,6	36	6
6327721	6327976	6328225	3,734	.1470	0,6	36	6
6327722	6327978	6328227	3,800	.1496	0,6	36	6
6327723	6327980	6328229	3,900	.1535	0,6	36	6
6327724	6327982	6328231	3,970	.1563	0,7	36	6
6327725	6327984	6328233	4,000	.1575	0,7	36	6
6327726	6327986	6328235	4,039	.1590	0,7	36	6
6327727	6327988	6328237	4,090	.1610	0,7	36	6
6327728	6327990	6328239	4,100	.1614	0,7	36	6
6327729	6327992	6328241	4,200	.1654	0,7	36	6
6327730	6327994	6328242	4,217	.1660	0,7	36	6
6327741	6327996	6328243	4,300	.1693	0,7	36	6
6327742	6327998	6328244	4,366	.1719	0,7	36	6
6327743	6327999	6328245	4,400	.1732	0,7	36	6
6327744	6328000	6328246	4,500	.1772	0,7	36	6
6327745	6328001	6328247	4,600	.1811	0,8	36	6
6327746	6328002	6328248	4,623	.1820	0,8	36	6
6327747	6328003	6328249	4,700	.1850	0,8	36	6
6327748	6328004	6328250	4,763	.1875	0,8	36	6
6327749	6328005	6328261	4,800	.1890	0,8	36	6
6327750	6328006	6328262	4,852	.1910	0,8	36	6
6327751	6328007	6328263	4,900	.1929	0,8	36	6
6327752	6328008	6328264	5,000	.1969	0,8	36	6
6327753	6328009	6328265	5,100	.2008	0,9	36	6
6327754	6328010	6328266	5,106	.2010	0,9	36	6
6327755	6328011	6328267	5,159	.2031	0,9	36	6
6327756	6328012	6328268	5,200	.2047	0,9	36	6
6327757	6328013	6328269	5,300	.2087	0,9	36	6
6327758	6328014	6328270	5,400	.2126	0,9	36	6
6327759	6328015	6328271	5,410	.2130	0,9	36	6
6327760	6328016	6328272	5,500	.2165	0,9	36	6

(continued)

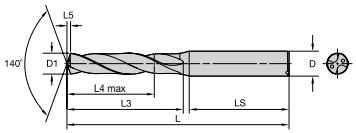
(TDS451A • 3 x D/TDS452A • 5 x D/TDS453A • 8 x D — continued)







● first choice
○ alternate choice

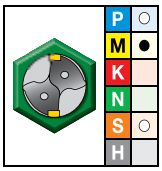


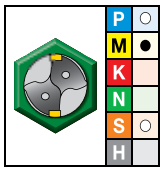
For information on L, L3, and L4 max, see the Dimension Table on page 230.

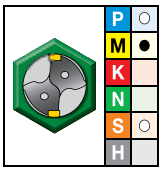
3 x D grade WM15PD AlTiN	5 x D grade WM15PD AlTiN	8 x D grade WM15PD AlTiN	D1 diameter				
order #	order #	order #	mm	in	L5	LS	D
6327761	6328017	6328273	5,558	.2188	0,9	36	6
6327762	6328018	6328274	5,600	.2205	0,9	36	6
6327763	6328019	6328275	5,616	.2211	0,9	36	6
6327764	6328020	6328276	5,700	.2244	1,0	36	6
6327765	6328021	6328277	5,800	.2283	1,0	36	6
6327766	6328022	6328278	5,900	.2323	1,0	36	6
6327767	6328023	6328279	5,954	.2344	1,0	36	6
6327768	6328024	6328280	6,000	.2362	1,0	36	6
6327769	6328025	6328291	6,100	.2402	1,0	36	8
6327770	6328026	6328292	6,200	.2441	1,0	36	8
6327771	6328027	6328293	6,300	.2480	1,1	36	8
6327772	6328028	6328294	6,350	.2500	1,1	36	8
6327773	6328029	6328295	6,400	.2520	1,1	36	8
6327774	6328030	6328296	6,500	.2559	1,1	36	8
6327775	6328031	6328297	6,528	.2570	1,1	36	8
6327776	6328032	6328298	6,600	.2598	1,1	36	8
6327777	6328033	6328299	6,630	.2610	1,1	36	8
6327778	6328034	6328300	6,700	.2638	1,1	36	8
6327779	6328035	6328301	6,746	.2656	1,1	36	8
6327780	6328036	6328302	6,800	.2677	1,1	36	8
6327781	6328037	6328303	6,900	.2717	1,2	36	8
6327782	6328038	6328304	7,000	.2756	1,2	36	8
6327783	6328039	6328305	7,100	.2795	1,2	36	8
6327784	6328040	6328306	7,145	.2813	1,2	36	8
6327785	6328041	6328307	7,200	.2835	1,2	36	8
6327786	6328042	6328308	7,300	.2874	1,2	36	8
6327787	6328043	6328309	7,400	.2913	1,3	36	8
6327788	6328044	6328310	7,500	.2953	1,3	36	8
6327789	6328045	6328311	7,541	.2969	1,3	36	8
6327790	6328046	6328312	7,600	.2992	1,3	36	8
6327791	6328047	6328313	7,700	.3031	1,3	36	8
6327792	6328048	6328314	7,800	.3071	1,3	36	8
6327793	6328049	6328315	7,900	.3110	1,3	36	8
6327794	6328050	6328316	7,938	.3125	1,3	36	8
6327795	6328051	6328317	8,000	.3150	1,4	36	8
6327796	6328052	6328318	8,100	.3189	1,4	40	10
6327797	6328053	6328319	8,200	.3228	1,4	40	10
6327798	6328054	6328320	8,300	.3268	1,4	40	10
6327799	6328055	6328321	8,334	.3281	1,4	40	10
6327800	6328056	6328322	8,400	.3307	1,4	40	10
6327801	6328057	6328323	8,433	.3320	1,4	40	10
6327802	6328058	6328324	8,500	.3346	1,4	40	10
6327803	6328059	6328325	8,600	.3386	1,5	40	10
6327804	6328060	6328326	8,700	.3425	1,5	40	10

(continued)

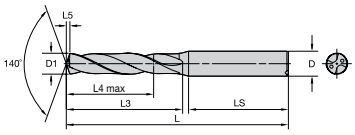
(TDS451A • 3 x D/TDS452A • 5 x D/TDS453A • 8 x D — continued)







● first choice
○ alternate choice

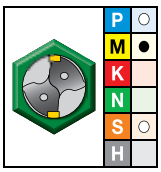


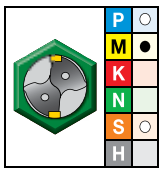
For information on L, L3, and L4 max, see the Dimension Table on page 230.

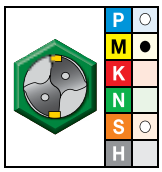
3 x D grade WM15PD AlTiN	5 x D grade WM15PD AlTiN	8 x D grade WM15PD AlTiN	D1 diameter				
order #	order #	order #	mm	in	L5	LS	D
6327805	6328061	6328327	8,733	.3438	1,5	40	10
6327806	6328062	6328328	8,800	.3465	1,5	40	10
6327807	6328063	6328329	8,900	.3504	1,5	40	10
6327808	6328064	6328330	9,000	.3543	1,5	40	10
6327809	6328065	6328331	9,100	.3583	1,6	40	10
6327810	6328066	6328332	9,129	.3594	1,6	40	10
6327811	6328067	6328333	9,200	.3622	1,6	40	10
6327812	6328068	6328335	9,300	.3661	1,6	40	10
6327813	6328069	6328336	9,347	.3680	1,6	40	10
6327814	6328070	6328337	9,400	.3701	1,6	40	10
6327815	6328071	6328338	9,500	.3740	1,6	40	10
6327816	6328072	6328339	9,525	.3750	1,6	40	10
6327817	6328073	6328340	9,600	.3780	1,6	40	10
6327818	6328074	6328341	9,700	.3819	1,7	40	10
6327819	6328075	6328342	9,800	.3858	1,7	40	10
6327820	6328076	6328343	9,900	.3898	1,7	40	10
6327821	6328077	6328344	9,921	.3906	1,7	40	10
6327822	6328078	6328345	10,000	.3937	1,7	40	10
6327823	6328079	6328346	10,100	.3976	1,7	45	12
6327824	6328080	6328347	10,200	.4016	1,7	45	12
6327825	6328081	6328348	10,300	.4055	1,8	45	12
6327826	6328082	6328349	10,320	.4063	1,8	45	12
6327827	6328083	6328350	10,400	.4094	1,8	45	12
6327828	6328084	6328351	10,500	.4134	1,8	45	12
6327829	6328085	6324404	10,600	.4173	1,8	45	12
6327830	6328086	6324405	10,700	.4213	1,8	45	12
6327841	6328087	6324406	10,716	.4219	1,8	45	12
6327842	6328088	6324407	10,800	.4252	1,9	45	12
6327843	6328089	6324408	10,900	.4291	1,9	45	12
6327844	6328090	6324409	11,000	.4331	1,9	45	12
6327845	6328091	6324410	11,100	.4370	1,9	45	12
6327846	6328092	6324491	11,113	.4375	1,9	45	12
6327847	6328093	6324492	11,200	.4409	1,9	45	12
6327848	6328094	6324493	11,300	.4449	1,9	45	12
6327849	6328095	6324494	11,400	.4488	2,0	45	12
6327850	6328096	6324495	11,500	.4528	2,0	45	12
6327851	6328097	6324496	11,509	.4531	2,0	45	12
6327852	6328098	6324497	11,600	.4567	2,0	45	12
6327853	6328099	6324498	11,700	.4606	2,0	45	12
6327854	6328100	6324499	11,800	.4646	2,0	45	12
6327855	6328111	6324500	11,900	.4685	2,0	45	12
6327856	6328112	6324501	11,908	.4688	2,0	45	12
6327857	6328113	6324502	12,000	.4724	2,1	45	12
6327858	6328114	6324503	12,100	.4764	2,1	45	14

(continued)

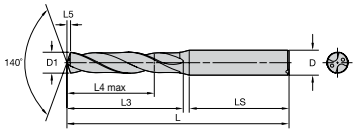
(TDS451A • 3 x D/TDS452A • 5 x D/TDS453A • 8 x D — continued)







● first choice
○ alternate choice



For information on L, L3, and L4 max, see the Dimension Table on page 230.

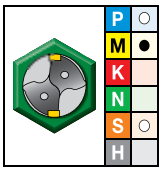
3 x D grade WM15PD AlTiN order #	5 x D grade WM15PD AlTiN order #	8 x D grade WM15PD AlTiN order #	D1 diameter mm	D1 diameter in	L5	LS	D
6327859	6328115	6324504	12,200	.4803	2,1	45	14
6327860	6328116	6324505	12,300	.4843	2,1	45	14
6327861	6328117	6345124	12,304	.4844	2,1	45	14
6327862	6328118	6345125	12,400	.4882	2,1	45	14
6327863	6328119	6345126	12,500	.4921	2,2	45	14
6327864	6328120	6345127	12,600	.4961	2,2	45	14
6327865	6328121	6345128	12,700	.5000	2,2	45	14
6327866	6328122	6345129	12,800	.5039	2,2	45	14
6327867	6328123	6345130	12,900	.5079	2,2	45	14
6327868	6328124	6345271	13,000	.5118	2,2	45	14
6327869	6328125	6345272	13,096	.5156	2,3	45	14
6327870	6328126	6345274	13,100	.5157	2,3	45	14
6327881	6328127	6345275	13,200	.5197	2,3	45	14
6327882	6328128	6345276	13,300	.5236	2,3	45	14
6327883	6328129	6345277	13,400	.5276	2,3	45	14
6327884	6328130	6345278	13,500	.5315	2,3	45	14
6327885	6328141	6345279	13,600	.5354	2,3	45	14
6327886	6328142	6345280	13,700	.5394	2,4	45	14
6327887	6328143	6345291	13,800	.5433	2,4	45	14
6327888	6328144	6345292	13,891	.5469	2,4	45	14
6327889	6328145	6345293	13,900	.5472	2,4	45	14
6327890	6328146	6345294	14,000	.5512	2,4	45	14
6327891	6328147	6345295	14,100	.5551	2,4	48	16
6327892	6328148	6345296	14,200	.5591	2,5	48	16
6327893	6328149	6345297	14,288	.5625	2,5	48	16
6327894	6328150	6345298	14,300	.5630	2,5	48	16
6327895	6328151	6345299	14,400	.5669	2,5	48	16
6327896	6328152	6345300	14,500	.5709	2,5	48	16
6327897	6328153	6345311	14,600	.5748	2,5	48	16
6327898	6328154	6345312	14,684	.5781	2,5	48	16
6327899	6328155	6345313	14,700	.5787	2,5	48	16
6327900	6328156	6345314	14,800	.5827	2,6	48	16
6327901	6328157	6345315	14,900	.5866	2,6	48	16
6327902	6328158	6345316	15,000	.5906	2,6	48	16
6327903	6328159	6345317	15,083	.5938	2,6	48	16
6327904	6328160	6345318	15,100	.5945	2,6	48	16
6327905	6328161	6345319	15,200	.5984	2,6	48	16
6327906	6328162	6345320	15,300	.6024	2,6	48	16
6327907	6328163	6345321	15,400	.6063	2,7	48	16
6327908	6328164	6345322	15,479	.6094	2,7	48	16
6327909	6328165	6345323	15,500	.6102	2,7	48	16
6327910	6328166	6345324	15,600	.6142	2,7	48	16
6327911	6328167	6345325	15,700	.6181	2,7	48	16
6327912	6328168	6345326	15,800	.6220	2,7	48	16

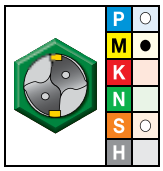
(continued)

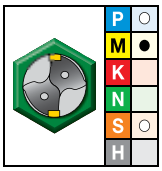
TOP DRILL S™

TOP DRILL S™ with Through Coolant • Stainless Steel

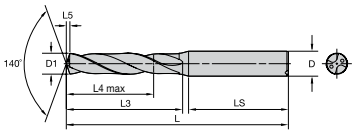
(TDS451A • 3 x D/TDS452A • 5 x D/TDS453A • 8 x D — continued)







● first choice
○ alternate choice

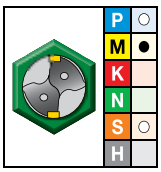


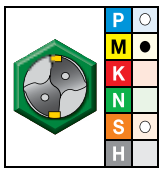
For information on L, L3, and L4 max, see the Dimension Table on page 230.

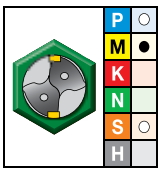
3 x D grade WM15PD AlTiN order #	5 x D grade WM15PD AlTiN order #	8 x D grade WM15PD AlTiN order #	D1 diameter mm	D1 diameter in	L5	LS	D
6327913	6328169	6345327	15,875	.6250	2,8	48	16
6327914	6328170	6345328	15,900	.6260	2,8	48	16
6327915	6328171	6345329	16,000	.6299	2,8	48	16
6327916	6328172	6345330	16,100	.6339	2,8	48	18
6327917	6328173	6345331	16,200	.6378	2,8	48	18
6327918	6328174	6345332	16,271	.6406	2,8	48	18
6327919	6328175	6345333	16,300	.6417	2,8	48	18
6327920	6328176	6345334	16,400	.6457	2,8	48	18
6327921	6328177	6345335	16,500	.6496	2,9	48	18
6327922	6328178	6345336	16,600	.6535	2,9	48	18
6327923	6328179	6345337	16,670	.6563	2,9	48	18
6327924	6328180	6345338	16,700	.6575	2,9	48	18
6327925	6328181	6345339	16,800	.6614	2,9	48	18
6327926	6328182	6345340	16,900	.6654	2,9	48	18
6327927	6328183	6345341	17,000	.6693	3,0	48	18
6327928	6328184	6345342	17,100	.6732	3,0	48	18
6327929	6328185	6345343	17,200	.6772	3,0	48	18
6327930	6328186	6345345	17,300	.6811	3,0	48	18
6327941	6328187	6345346	17,400	.6850	3,0	48	18
6327942	6328188	6345347	17,463	.6875	3,0	48	18
6327943	6328189	6345348	17,500	.6890	3,0	48	18
6327944	6328190	6345349	17,600	.6929	3,1	48	18
6327945	6328191	6345350	17,700	.6969	3,1	48	18
6327946	6328192	6345351	17,800	.7008	3,1	48	18
6327947	6328193	6345352	17,859	.7031	3,1	48	18
6327949	6328194	6345353	17,900	.7047	3,1	48	18
6327951	6328195	6345354	18,000	.7087	3,1	48	18
6327953	6328196	6345355	18,100	.7126	3,1	50	20
6327955	6328198	6345356	18,200	.7165	3,2	50	20
6327957	6328199	6345357	18,258	.7188	3,2	50	20
6327959	6328201	6345358	18,300	.7205	3,2	50	20
6327961	6328203	6345359	18,400	.7244	3,2	50	20
6327963	6328205	6345360	18,500	.7283	3,2	50	20
6327965	6328207	6345361	18,600	.7323	3,2	50	20
6327967	6328210	6345362	18,654	.7344	3,2	50	20
6327969	6328212	6345363	18,700	.7362	3,3	50	20
6327971	6328214	6345364	18,800	.7402	3,3	50	20
6327973	6328215	6345365	18,900	.7441	3,3	50	20
6327975	6328217	6345366	19,000	.7480	3,3	50	20
6327977	6328220	6345367	19,050	.7500	3,3	50	20
6327979	6328222	6345368	19,100	.7520	3,3	50	20
6327981	6328224	6345369	19,200	.7559	3,3	50	20
6327983	6328226	6345370	19,300	.7598	3,4	50	20
6327985	6328228	6345371	19,400	.7638	3,4	50	20

(continued)

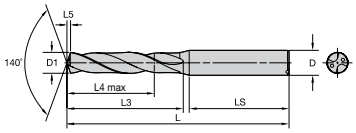
(TDS451A • 3 x D/TDS452A • 5 x D/TDS453A • 8 x D — continued)







● first choice
○ alternate choice



For information on L, L3, and L4 max, see the Dimension Table on page 230.

3 x D grade WM15PD AlTiN order #	5 x D grade WM15PD AlTiN order #	8 x D grade WM15PD AlTiN order #	D1 diameter mm	D1 diameter in	L5	LS	D
6327987	**6328230**	**6345372**	19,500	.7677	3,4	50	20
6327989	**6328232**	**6345373**	19,600	.7717	3,4	50	20
6327991	**6328234**	**6345374**	19,700	.7756	3,4	50	20
6327993	**6328236**	**6345375**	19,800	.7795	3,4	50	20
6327995	**6328238**	**6345376**	19,900	.7835	3,5	50	20
6327997	**6328240**	**6345377**	20,000	.7874	3,5	50	20

TOP DRILL S™

TOP DRILL S™ with Through Coolant • Stainless Steel

Dimensions for TDS451A • 3 x D/TDS452A • 5 x D/TDS453A • 8 x D • Metric

mm Ø				SHORT* ~3 x D			LONG* ~5 x D			EXTRA LONG** ~8 x D		
D1 min	D1 max	D	LS	L	L3	L4 max	L	L3	L4 max	L	L3	L4 max
3,000	3,734	6	36	62	20	14	66	28	23	78	40	33
3,800	4,700	6	36	66	24	17	74	36	29	87	49	41
4,763	6,000	6	36	66	28	20	82	44	35	94	56	48
6,100	7,000	8	36	79	34	24	91	53	43	105	67	57
7,100	8,000	8	36	79	41	29	91	53	43	113	74	64
8,100	10,000	10	40	89	47	35	103	61	49	135	92	80
10,100	12,000	12	45	102	55	40	118	71	56	158	110	96
12,100	14,000	14	45	107	60	43	124	77	60	176	128	112
14,100	16,000	16	48	115	65	45	133	83	63	197	146	128
16,100	18,000	18	48	123	73	51	143	93	71	214	163	144
18,100	20,000	20	50	131	79	55	153	101	77	234	181	160

* D1 < 20mm to DIN 6537K

* D1 > 20mm to factory standard

** to factory standard

TDS451/TDS452/TDS453 Series • WM15PD • Through Coolant • Metric

Material Group		Cutting Speed – vc Range – m/min			Recommended Feed Rate (f) by Diameter								
		min	–	max	Tool Diameter (mm)	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	80	–	160	mm/r	0,05–0,11	0,08–0,14	0,09–0,19	0,11–0,22	0,13–0,26	0,15–0,30	0,19–0,36	0,24–0,46
	1	70	–	140	mm/r	0,05–0,13	0,08–0,19	0,11–0,24	0,14–0,30	0,16–0,35	0,18–0,39	0,20–0,46	0,23–0,51
	2	90	–	140	mm/r	0,05–0,13	0,08–0,17	0,11–0,20	0,14–0,24	0,16–0,28	0,18–0,32	0,20–0,37	0,23–0,41
	3	60	–	100	mm/r	0,08–0,13	0,12–0,19	0,14–0,24	0,17–0,30	0,20–0,35	0,22–0,39	0,26–0,46	0,29–0,51
	4	50	–	100	mm/r	0,08–0,12	0,11–0,18	0,12–0,23	0,15–0,28	0,17–0,33	0,19–0,37	0,22–0,43	0,25–0,48
	5	50	–	80	mm/r	0,03–0,11	0,04–0,11	0,05–0,11	0,05–0,14	0,08–0,18	0,11–0,21	0,14–0,24	0,16–0,26
	6	40	–	70	mm/r	0,05–0,11	0,08–0,14	0,11–0,17	0,13–0,21	0,15–0,24	0,17–0,27	0,19–0,33	0,22–0,36
M	1	50	–	90	mm/r	0,05–0,13	0,06–0,14	0,08–0,16	0,10–0,18	0,12–0,20	0,13–0,21	0,16–0,24	0,18–0,26
	2	50	–	80	mm/r	0,05–0,13	0,06–0,14	0,08–0,16	0,10–0,18	0,12–0,20	0,13–0,21	0,16–0,24	0,18–0,26
	3	50	–	70	mm/r	0,05–0,13	0,06–0,14	0,08–0,16	0,10–0,18	0,12–0,20	0,13–0,21	0,16–0,24	0,18–0,26
S	1	20	–	30	mm/r	0,03–0,06	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,13	0,10–0,14	0,12–0,16	0,14–0,18
	2	10	–	30	mm/r	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
	3	10	–	40	mm/r	0,02–0,04	0,02–0,05	0,04–0,07	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,13	0,10–0,15
	4	10	–	40	mm/r	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16

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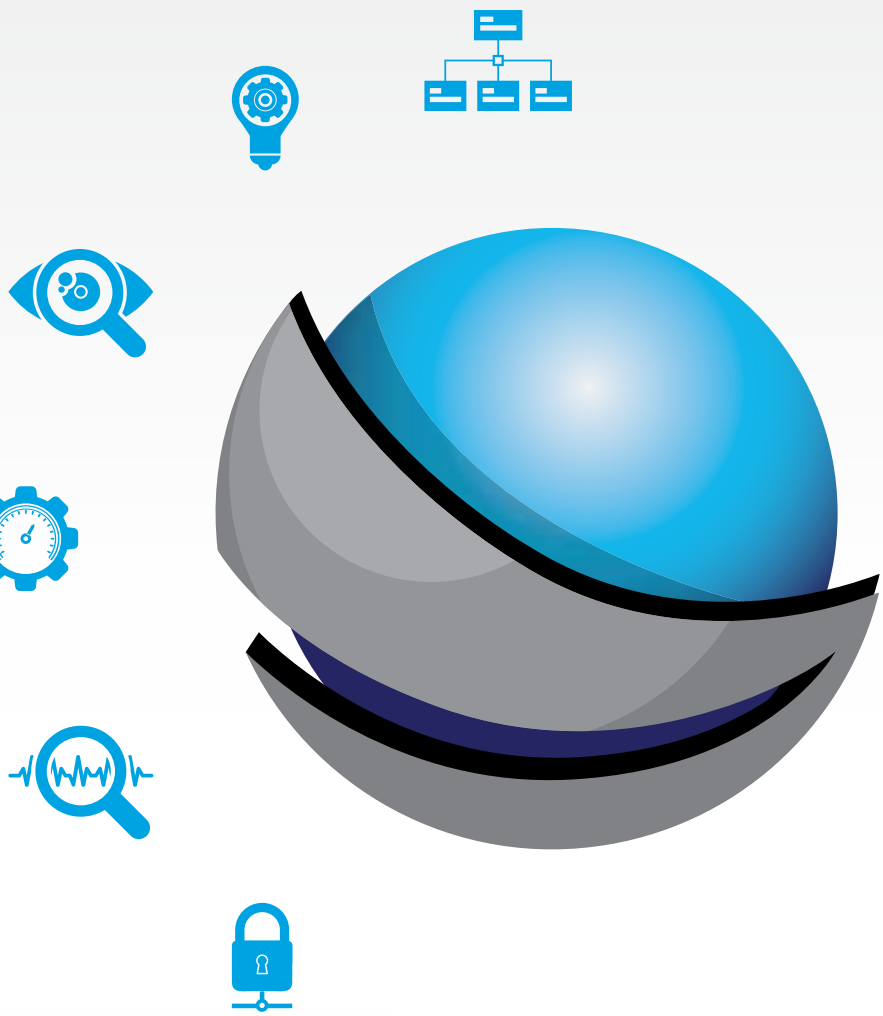

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TOP DRILL S™ 12 x D

Deep-Hole Drilling without Piloting

The versatile TOP DRILL S+ provides reliable performance across a broad scope of applications, including alloyed and unalloyed steel, cast iron, and some stainless steels and high-temperature alloys. TDS+ is now available in 12 x D, adding to its already wide range of options from 3–8 x D.

TDS+ 12 x D is capable of drilling an array of materials. The 4-margin land configuration offers stability, minimises chipping and jamming, and promotes chip evacuation. Because TDS+ 12 x D does not require a pilot drill, it increases efficiency by reducing the number of steps required for basic applications.

- 12 x D fits the gap between 8 x D and 15 x D.
- One drill that covers all materials.
- Can be used without a pilot.

Improved Productivity

- Excellent centring capability — the new TDS+ 12 x D point is engineered to provide excellent centring capability.
- No pilot drill required — save time and money by reducing the number of steps required for your 12 x D application.

Increased Tool Life

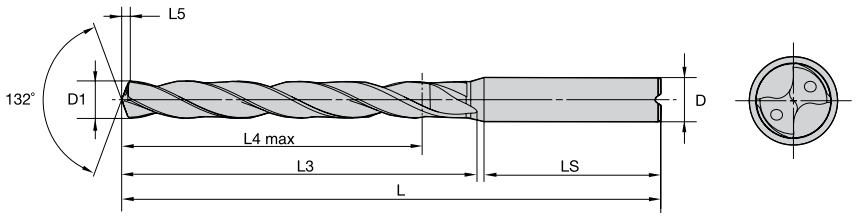
- Minimised runout — cylindrical body design provides guidance, and precision h6 shank is standard for better runout and less breakage.
- New WU20PD™ grade — designed specifically for long tool life.
- Factory regrind service — available through your WIDIA™ reconditioning service.

WIDIA Advantage

- Lower cost-per-hole due to high MRR and long tool life.
- Consistent performance from internally controlled supply chain:
  Powder > Rod > Grinding > Coating
- Part of the complete WIDIA holemaking solution.
- Get more predictable results from local regrind services using OEM standards to recondition, ensuring value throughout the entire life of the drill.
- Broad range of standard lengths, diameters, and coolant options in one line. Includes extensive intermediate metric, inch, fraction, and wire size, including tap drill sizes.

TOP DRILL S™ 12 x D

TOP DRILL S+™ 12 x D



order number	catalogue number	grade	D1 diameter (mm)	D1 diameter (inch)	D (mm)	L3 (mm)	L4 max (mm)	L5 (mm)	LS (mm)	L (mm)
TDS504A • 12 x D • Through Coolant										
4173459	**TDS504A03000**	**WU20PD**	3,000	0.1181	6	52,0	44	0,6	36	93
4173462	**TDS504A03500**	**WU20PD**	3,500	0.1378	6	53,0	44	0,7	36	93
4173464	**TDS504A04000**	**WU20PD**	4,000	0.1575	6	66,0	56	0,8	36	107
4173465	**TDS504A04500**	**WU20PD**	4,500	0.1772	6	67,0	56	0,9	36	107
4173466	**TDS504A04600**	**WU20PD**	4,600	0.1811	6	68,0	57	1,0	36	107
4173468	**TDS504A04800**	**WU20PD**	4,800	0.1890	6	82,0	69	1,0	36	125
4173469	**TDS504A05000**	**WU20PD**	5,000	0.1969	6	83,0	70	1,1	36	125
4173470	**TDS504A05100**	**WU20PD**	5,100	0.2008	6	83,0	70	1,1	36	125
4173471	**TDS504A05200**	**WU20PD**	5,200	0.2047	6	83,0	70	1,1	36	125
4173472	**TDS504A05300**	**WU20PD**	5,300	0.2087	6	84,0	71	1,1	36	125
4173474	**TDS504A05500**	**WU20PD**	5,500	0.2165	6	84,0	71	1,2	36	125
4173476	**TDS504A05600**	**WU20PD**	5,600	0.2205	6	85,0	72	1,2	36	125
4173477	**TDS504A05700**	**WU20PD**	5,700	0.2244	6	85,0	72	1,2	36	125
4173478	**TDS504A05800**	**WU20PD**	5,800	0.2283	6	85,0	71	1,2	36	125
4173479	**TDS504A06000**	**WU20PD**	6,000	0.2362	6	86,0	72	1,3	36	125
4173480	**TDS504A06200**	**WU20PD**	6,200	0.2441	8	97,0	82	1,3	36	139
4173482	**TDS504A06500**	**WU20PD**	6,500	0.2559	8	98,0	83	1,4	36	139
4173484	**TDS504A06600**	**WU20PD**	6,600	0.2598	8	99,0	84	1,4	36	139
4173486	**TDS504A06800**	**WU20PD**	6,800	0.2677	8	99,0	83	1,4	36	139
4173488	**TDS504A07000**	**WU20PD**	7,000	0.2756	8	100,0	84	1,5	36	139
4173490	**TDS504A07500**	**WU20PD**	7,500	0.2953	8	112,0	95	1,6	36	153
4173492	**TDS504A07700**	**WU20PD**	7,700	0.3031	8	113,0	96	1,6	36	153
4173493	**TDS504A07800**	**WU20PD**	7,800	0.3071	8	113,0	95	1,7	36	153
4173495	**TDS504A08000**	**WU20PD**	8,000	0.3150	8	114,0	96	1,7	36	153
4173496	**TDS504A08100**	**WU20PD**	8,100	0.3189	10	136,0	116	1,7	40	185
4173499	**TDS504A08500**	**WU20PD**	8,500	0.3346	10	137,0	117	1,8	40	185
4173500	**TDS504A08700**	**WU20PD**	8,700	0.3425	10	138,0	118	1,9	40	185
4173502	**TDS504A09000**	**WU20PD**	9,000	0.3543	10	139,0	118	1,9	40	185
4173503	**TDS504A09100**	**WU20PD**	9,100	0.3583	10	139,0	118	1,9	40	185
4173505	**TDS504A09500**	**WU20PD**	9,500	0.3740	10	140,0	119	2,0	40	185
4173508	**TDS504A10000**	**WU20PD**	10,000	0.3937	10	142,0	120	2,1	40	185
4173509	**TDS504A10200**	**WU20PD**	10,200	0.4016	12	164,0	140	2,2	45	218
4173510	**TDS504A10300**	**WU20PD**	10,300	0.4055	12	165,0	141	2,2	45	218
4173512	**TDS504A10500**	**WU20PD**	10,500	0.4134	12	165,0	141	2,2	45	218
4173514	**TDS504A10800**	**WU20PD**	10,800	0.4252	12	166,0	141	2,3	45	218
4173515	**TDS504A11000**	**WU20PD**	11,000	0.4331	12	167,0	142	2,4	45	218
4173517	**TDS504A11500**	**WU20PD**	11,500	0.4528	12	168,0	143	2,5	45	218
4173518	**TDS504A11800**	**WU20PD**	11,800	0.4646	12	169,0	143	2,5	45	218
4173519	**TDS504A12000**	**WU20PD**	12,000	0.4724	12	170,0	144	2,6	45	218
4173520	**TDS504A12100**	**WU20PD**	12,100	0.4764	14	192,0	164	2,6	45	246
4148906	**TDS504A12500**	**WU20PD**	12,500	0.4921	14	193,0	165	2,7	45	246
4173522	**TDS504A12700**	**WU20PD**	12,700	0.5000	14	194,0	166	2,7	45	246
4173523	**TDS504A13000**	**WU20PD**	13,000	0.5118	14	195,0	166	2,8	45	246
4173524	**TDS504A13100**	**WU20PD**	13,100	0.5157	14	195,0	166	2,8	45	246
4173525	**TDS504A13500**	**WU20PD**	13,500	0.5315	14	196,0	167	2,9	45	246
4173526	**TDS504A14000**	**WU20PD**	14,000	0.5512	14	198,0	168	3,0	45	246
4173527	**TDS504A14100**	**WU20PD**	14,100	0.5551	16	220,0	188	3,0	48	277
4173529	**TDS504A14500**	**WU20PD**	14,500	0.5709	16	221,0	189	3,1	48	277
4173531	**TDS504A15000**	**WU20PD**	15,000	0.5906	16	223,0	190	3,2	48	277
4173532	**TDS504A15500**	**WU20PD**	15,500	0.6102	16	224,0	191	3,3	48	277
4173534	**TDS504A16000**	**WU20PD**	16,000	0.6299	16	226,0	192	3,4	48	277
4173535	**TDS504A16500**	**WU20PD**	16,500	0.6496	18	249,0	213	3,6	48	305
4173536	**TDS504A17000**	**WU20PD**	17,000	0.6693	18	250,0	214	3,7	48	305
4173538	**TDS504A17500**	**WU20PD**	17,500	0.6890	18	252,0	215	3,8	48	305
4173539	**TDS504A18000**	**WU20PD**	18,000	0.7087	18	253,0	216	3,9	48	305
4173540	**TDS504A18500**	**WU20PD**	18,500	0.7283	20	277,0	237	4,0	50	334
4173541	**TDS504A19000**	**WU20PD**	19,000	0.7480	20	278,0	238	4,1	50	334
4173543	**TDS504A19500**	**WU20PD**	19,500	0.7677	20	280,0	239	4,2	50	334
4173544	**TDS504A20000**	**WU20PD**	20,000	0.7874	20	281,0	240	4,3	50	334

Tap into the power of the original.

WIDIA™ VariTap™

A heritage of hard work, innovation, and excellence. That's what makes an original.

Built on a 140-year legacy of providing the industry with the highest quality performance in taps, dies, and gages. Our history propels us to keep delivering the most advanced solutions.

The WIDIA VariTap is the next application of our commitment to innovation.

- Extensive range of sizes, fits, styles, and coatings, equipped with optimised geometry, offering the largest portfolio solution of multipurpose taps available.
- Capable of working with a wide variety of materials.
- Long and consistent tool life leading to lower inventory costs.
- Unique spiral-point geometry provides low tapping torque, while pushing chips ahead of the tap in through holes.
- Superior thread finish.

To learn more about the unmatched benefits of WIDIA VariTap, call 800.979.4342, contact your local Authorised Distributor, or visit **widia.com/varitap.**

WIDIA™ GTD™

WIDIA™

VariTap can be found on pages 280–286.

TOP DRILL S™ Deep-Hole Drills

Superior Deep-Hole Drilling for Steel and Cast Iron

Solid carbide deep-hole drills outperform gun drills and HSS deep-hole drills in deep-hole applications up to 30 x D by increasing metal removal rates by 3–4 times. Increased MRR equals bottom-line savings to customers in throughput, machine time, and personnel hours.

The TDD1*Z* Series in the WU20PD™ grade offers secure and consistent performance, excellent hole quality, and reduced cycle times. The standard lines are available from 3 to 13mm and lengths of 15, 20, 25, and 30 x D. It eliminates the traditional HSS or gun drilling without pecking, at up to 100% increased penetration rates.

132° TDS Point Geometry

- Low thrust.
- Excellent centring capabilities.
- Easy to regrind.

30° Helix with Optimised Flute Profile

- Reduces risk of chip jamming and catastrophic failure.

Four-Margin Lands

- Improves hole straightness.
- Improves hole alignment when drilling through cross holes and inclined exits.

Highly Polished Surfaces

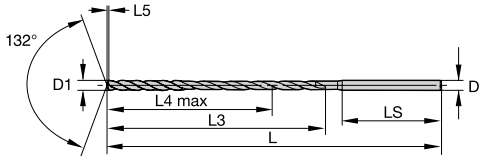
- Reduction of friction in the chip flute and on the lands, resulting in superior chip evacuation.
- Shorter drilling time through omission of reversing cycles.

WU20PD™ Grade

- Advanced TiAlN multilayer PVD coating for steel and cast iron.
- Ultra fine-grain carbide ensures process reliability at high feed rates.

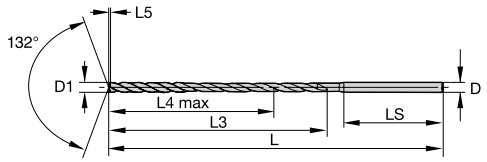
Customisation

- Intermediate sizes, even up to 16mm diameter, available as semi-standards.
- Length variations, including longer versions up to 550mm, available as custom solutions.
- For drilling non-ferrous and uncoated materials, sharp versions are recommended and available as custom solutions.
- Excellent surface finish and concentricity.



order number	catalogue number	grade	D1 diameter (mm)	D1 diameter (inch)	D (mm)	L3 (mm)	L4 max (mm)	L5 (mm)	LS (mm)	L (mm)
Deep-Hole Drills • 2 Flute • WU20PD™ • 15 x D • Z Shank										
3899626	**TDD105Z03000**	**WU20PD**	3,000	0.1181	3	52	45	0,6	30	86
3899628	**TDD105Z03500**	**WU20PD**	3,500	0.1378	4	68	59	0,7	32	105
3899632	**TDD105Z04000**	**WU20PD**	4,000	0.1575	4	70	60	0,8	32	105
3899685	**TDD105Z04500**	**WU20PD**	4,500	0.1772	5	85	74	0,9	34	124
3899688	**TDD105Z05000**	**WU20PD**	5,000	0.1969	5	87	75	1,0	34	124
3899691	**TDD105Z05500**	**WU20PD**	5,500	0.2165	6	102	89	1,1	36	143
3899694	**TDD105Z06000**	**WU20PD**	6,000	0.2362	6	104	90	1,2	36	143
3899697	**TDD105Z06500**	**WU20PD**	6,500	0.2559	7	119	104	1,4	38	162
3899700	**TDD105Z06800**	**WU20PD**	6,800	0.2677	7	120	104	1,4	38	162
3899702	**TDD105Z07000**	**WU20PD**	7,000	0.2756	7	121	105	1,5	38	162
3900633	**TDD105Z07500**	**WU20PD**	7,500	0.2953	8	136	119	1,6	40	181
3900636	**TDD105Z08000**	**WU20PD**	8,000	0.3150	8	138	120	1,7	40	181
3900639	**TDD105Z08500**	**WU20PD**	8,500	0.3346	9	153	134	1,8	42	200
3900641	**TDD105Z09000**	**WU20PD**	9,000	0.3543	9	155	135	1,9	42	200
3900643	**TDD105Z09500**	**WU20PD**	9,500	0.3740	10	170	149	2,0	44	219
3900647	**TDD105Z10000**	**WU20PD**	10,000	0.3937	10	172	150	2,1	44	219
3900650	**TDD105Z10500**	**WU20PD**	10,500	0.4134	11	187	164	2,2	46	238
3900652	**TDD105Z11000**	**WU20PD**	11,000	0.4331	11	189	165	2,3	46	238
3900654	**TDD105Z11500**	**WU20PD**	11,500	0.4528	12	204	179	2,4	48	257
3900656	**TDD105Z12000**	**WU20PD**	12,000	0.4724	12	206	180	2,5	48	257
3900660	**TDD105Z13000**	**WU20PD**	13,000	0.5118	13	223	195	2,8	50	276

order number	catalogue number	grade	D1 diameter (mm)	D1 diameter (inch)	D (mm)	L3 (mm)	L4 max (mm)	L5 (mm)	LS (mm)	L (mm)
Deep-Hole Drills • 2 Flute • WU20PD • 20 x D • Z Shank										
3899782	**TDD106Z03000**	**WU20PD**	3,000	0.1181	3	67	60	0,6	30	101
3899804	**TDD106Z03500**	**WU20PD**	3,500	0.1378	4	86	77	0,7	32	125
3899808	**TDD106Z04000**	**WU20PD**	4,000	0.1575	4	90	80	0,8	32	125
3899811	**TDD106Z04500**	**WU20PD**	4,500	0.1772	5	108	97	0,9	34	149
3899814	**TDD106Z05000**	**WU20PD**	5,000	0.1969	5	112	100	1,0	34	149
3899818	**TDD106Z05500**	**WU20PD**	5,500	0.2165	6	130	117	1,1	36	173
3899821	**TDD106Z06000**	**WU20PD**	6,000	0.2362	6	134	120	1,2	36	173
3899824	**TDD106Z06500**	**WU20PD**	6,500	0.2559	7	152	137	1,4	38	197
3899827	**TDD106Z06800**	**WU20PD**	6,800	0.2677	7	154	138	1,4	38	197
3899829	**TDD106Z07000**	**WU20PD**	7,000	0.2756	7	156	140	1,5	38	197
3899764	**TDD106Z07500**	**WU20PD**	7,500	0.2953	8	174	157	1,6	40	221
3899767	**TDD106Z08000**	**WU20PD**	8,000	0.3150	8	178	160	1,7	40	221
3899770	**TDD106Z08500**	**WU20PD**	8,500	0.3346	9	196	177	1,8	42	245
3899772	**TDD106Z09000**	**WU20PD**	9,000	0.3543	9	200	180	1,9	42	245
3899784	**TDD106Z09500**	**WU20PD**	9,500	0.3740	10	218	197	2,0	44	269
3899788	**TDD106Z10000**	**WU20PD**	10,000	0.3937	10	222	200	2,1	44	269
3899791	**TDD106Z10500**	**WU20PD**	10,500	0.4134	11	240	217	2,2	46	293
3899793	**TDD106Z11000**	**WU20PD**	11,000	0.4331	11	244	220	2,3	46	293
3899795	**TDD106Z11500**	**WU20PD**	11,500	0.4528	12	262	237	2,4	48	317
3899797	**TDD106Z12000**	**WU20PD**	12,000	0.4724	12	266	240	2,5	48	317
3899799	**TDD106Z12500**	**WU20PD**	12,500	0.4921	13	284	257	2,7	50	341
3899801	**TDD106Z13000**	**WU20PD**	13,000	0.5118	13	288	260	2,8	50	341



order number	catalogue number	grade	D1 diameter (mm)	D1 diameter (inch)	D (mm)	L3 (mm)	L4 max (mm)	L5 (mm)	LS (mm)	L (mm)
Deep-Hole Drills • 2 Flute • WU20PD™ • 25 x D • Z Shank										
3899708	**TDD107Z03000**	**WU20PD**	3,000	0.1181	3	82	75	0,6	30	116
3899710	**TDD107Z03500**	**WU20PD**	3,500	0.1378	4	103	94	0,7	32	145
3899734	**TDD107Z04000**	**WU20PD**	4,000	0.1575	4	110	100	0,8	32	145
3899737	**TDD107Z04500**	**WU20PD**	4,500	0.1772	5	130	119	0,9	34	174
3899740	**TDD107Z05000**	**WU20PD**	5,000	0.1969	5	137	125	1,0	34	174
3899743	**TDD107Z05500**	**WU20PD**	5,500	0.2165	6	157	144	1,1	36	203
3899746	**TDD107Z06000**	**WU20PD**	6,000	0.2362	6	164	150	1,2	36	203
3899749	**TDD107Z06500**	**WU20PD**	6,500	0.2559	7	184	169	1,4	38	232
3899754	**TDD107Z07000**	**WU20PD**	7,000	0.2756	7	191	175	1,5	38	232
3899569	**TDD107Z08000**	**WU20PD**	8,000	0.3150	8	218	200	1,7	40	261
3899572	**TDD107Z08500**	**WU20PD**	8,500	0.3346	9	238	219	1,8	42	290
3899604	**TDD107Z09000**	**WU20PD**	9,000	0.3543	9	245	225	1,9	42	290
3899606	**TDD107Z09500**	**WU20PD**	9,500	0.3740	10	265	244	2,0	44	319
3899610	**TDD107Z10000**	**WU20PD**	10,000	0.3937	10	272	250	2,1	44	319
3899611	**TDD107Z10300**	**WU20PD**	10,300	0.4055	11	290	267	2,2	46	348
3899613	**TDD107Z10500**	**WU20PD**	10,500	0.4134	11	292	269	2,2	46	348
3899615	**TDD107Z11000**	**WU20PD**	11,000	0.4331	11	299	275	2,3	46	348
3899617	**TDD107Z11500**	**WU20PD**	11,500	0.4528	12	319	294	2,4	48	377
3899619	**TDD107Z12000**	**WU20PD**	12,000	0.4724	12	326	300	2,5	48	377
3899621	**TDD107Z12500**	**WU20PD**	12,500	0.4921	13	346	319	2,7	50	406
3899623	**TDD107Z13000**	**WU20PD**	13,000	0.5118	13	353	325	2,8	50	406

order number	catalogue number	grade	D1 diameter (mm)	D1 diameter (inch)	D (mm)	L3 (mm)	L4 max (mm)	L5 (mm)	LS (mm)	L (mm)
Deep-Hole Drills • 2 Flute • WU20PD • 30 x D • Z Shank										
3899539	**TDD108Z03000**	**WU20PD**	3,000	0.1181	3	97	90	0,6	30	131
3899541	**TDD108Z03500**	**WU20PD**	3,500	0.1378	4	121	112	0,7	32	165
3899575	**TDD108Z04000**	**WU20PD**	4,000	0.1575	4	130	120	0,8	32	165
3899578	**TDD108Z04500**	**WU20PD**	4,500	0.1772	5	153	142	0,9	34	199
3899581	**TDD108Z05000**	**WU20PD**	5,000	0.1969	5	162	150	1,0	34	199
3899584	**TDD108Z05500**	**WU20PD**	5,500	0.2165	6	185	172	1,1	36	233
3899587	**TDD108Z06000**	**WU20PD**	6,000	0.2362	6	194	180	1,2	36	233
3899590	**TDD108Z06500**	**WU20PD**	6,500	0.2559	7	217	202	1,4	38	267
3899593	**TDD108Z06800**	**WU20PD**	6,800	0.2677	7	222	206	1,4	38	267
3899595	**TDD108Z07000**	**WU20PD**	7,000	0.2756	7	226	210	1,5	38	267
3899601	**TDD108Z07500**	**WU20PD**	7,500	0.2953	8	249	232	1,6	40	301
3899654	**TDD108Z08000**	**WU20PD**	8,000	0.3150	8	258	240	1,7	40	301
3899657	**TDD108Z08500**	**WU20PD**	8,500	0.3346	9	281	262	1,8	42	335
3899659	**TDD108Z09000**	**WU20PD**	9,000	0.3543	9	290	270	1,9	42	335
3899661	**TDD108Z09500**	**WU20PD**	9,500	0.3740	10	313	292	2,0	44	369
3899665	**TDD108Z10000**	**WU20PD**	10,000	0.3937	10	322	300	2,1	44	369
3899668	**TDD108Z10500**	**WU20PD**	10,500	0.4134	11	345	322	2,2	46	403
3899670	**TDD108Z11000**	**WU20PD**	11,000	0.4331	11	354	330	2,3	46	403
3899672	**TDD108Z11500**	**WU20PD**	11,500	0.4528	12	377	352	2,4	48	437
3899674	**TDD108Z12000**	**WU20PD**	12,000	0.4724	12	386	360	2,5	48	437
3899676	**TDD108Z12500**	**WU20PD**	12,500	0.4921	13	409	382	2,7	50	471
3899678	**TDD108Z13000**	**WU20PD**	13,000	0.5118	13	418	390	2,8	50	471

TOP DRILL M1™

Modular Drill System

With performance levels and metal removal rates comparable to that of solid carbide drills, WIDIA™ TOP DRILL M1 offers all the quality and performance you need in one versatile, economical package. The unique front clamping system enables inserts to be changed quickly, even inside the machine tool, saving setup time and manufacturing costs.

The TDM1 platform offers UP(M) drill-point design in WU25PD™ grade — a wide application range geometry, specially developed for cost-efficient drilling of steel, cast iron, and stainless steel. It covers diameter ranges from 8–25,99mm within the standard offering in L/D ratios of 3, 5, and 8 x D.

With its high level of performance, wide application range, and proven point geometry, TDM1 combines all of the economic benefits of a modular drilling system with the machining performance and hole quality to tackle even your most challenging operations.

UP Point Design — Versatility and Productivity

- One insert style for all your work in steel, cast iron, and even stainless steels.
- Low cutting forces and excellent centring capabilities.
- Universal point style for consistent performance and excellent hole quality.

Easy Insert Change

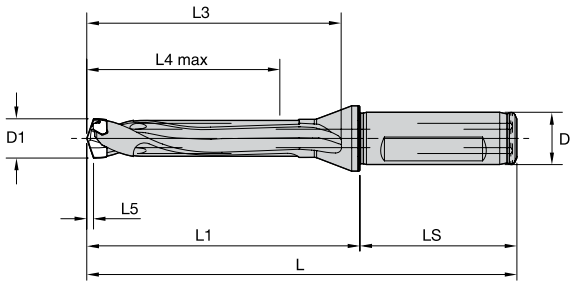
- No screws or clamps required.
- Insert blades can be changed with a simple wrench that comes with each holder.

Disposable

- No reconditioning costs.
- Consistent performance from tip to tip.
- Eliminates number of tools waiting for reconditioning, thus avoiding hidden costs.

Customisation

- All intermediate diameters are quickly available as semi-standards.
- Multiple step drills available as customised solutions.
- New TopSTEP range of inserts offer extended chamfering and counterboring to your one-shot drilling solution.

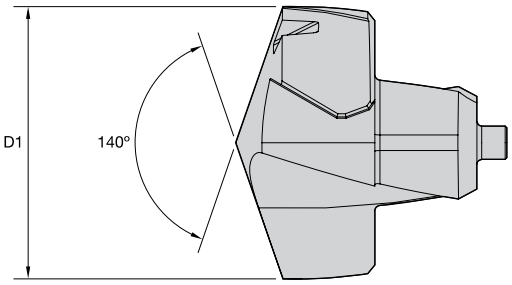


order number	catalogue number	D1 (mm)	D1 max (mm)	D (mm)	L (mm)	L1 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	LS (mm)	insert blade seat size
TOP DRILL M1 • 3 x D • Flanged • Metric											
3850904	**TDM080R3SCF12M**	**7,94**	8,49	12	86	41	35	26	1,5	45	W10
3850906	**TDM085R3SCF12M**	**8,50**	8,99	12	88	43	37	27	1,6	45	W11
3850908	**TDM090R3SCF12M**	**9,00**	9,49	12	90	45	39	29	1,7	45	W12
3850910	**TDM095R3SCF12M**	**9,50**	9,99	12	92	47	41	30	1,8	45	W13
3850912	**TDM100R3SCF16M**	**10,00**	10,49	16	97	49	43	32	1,9	48	W14
3850924	**TDM105R3SCF16M**	**10,50**	10,99	16	99	51	45	33	2,0	48	W15
3850926	**TDM110R3SCF16M**	**11,00**	11,49	16	101	53	47	35	2,1	48	W16
3850928	**TDM115R3SCF16M**	**11,50**	11,99	16	103	55	49	36	2,2	48	W17
3850930	**TDM120R3SCF16M**	**12,00**	12,49	16	106	58	52	38	2,3	48	W18
3850932	**TDM125R3SCF16M**	**12,50**	12,99	16	108	60	54	39	2,4	48	W19
3850934	**TDM130R3SCF16M**	**13,00**	13,49	16	110	62	56	41	2,5	48	W20
3850936	**TDM135R3SCF16M**	**13,50**	13,99	16	112	64	58	42	2,6	48	W21
3850938	**TDM140R3SCF16M**	**14,00**	14,49	16	114	66	60	44	2,7	48	W22
3850940	**TDM145R3SCF16M**	**14,50**	14,99	16	116	68	62	45	2,8	48	W23
3850942	**TDM150R3SCF20M**	**15,00**	15,99	20	122	72	66	48	2,8	50	W24
3850944	**TDM160R3SCF20M**	**16,00**	16,99	20	126	76	70	51	3,0	50	W25
3850946	**TDM170R3SCF20M**	**17,00**	17,99	20	131	81	75	54	3,2	50	W26
3850948	**TDM180R3SCF25M**	**18,00**	18,99	25	141	85	79	57	3,4	56	W27
3850950	**TDM190R3SCF25M**	**19,00**	19,99	25	144	89	83	60	3,6	56	W28
3850952	**TDM200R3SCF25M**	**20,00**	20,99	25	149	93	87	63	3,8	56	W29
3992070	**TDM210R3SCF25M**	**21,00**	21,99	25	153	97	91	66	3,7	56	W30
3992071	**TDM220R3SCF25M**	**22,00**	22,99	25	158	102	96	69	3,9	56	W31
3992072	**TDM230R3SCF25M**	**23,00**	23,99	25	162	106	100	72	4,1	56	W32
3992483	**TDM240R3SCF25M**	**24,00**	24,99	25	166	110	104	75	4,2	56	W33
3992484	**TDM250R3SCF25M**	**25,00**	25,99	25	170	114	108	78	4,4	56	W34
TOP DRILL M1 • 5 x D • Flanged • Metric											
3850905	**TDM080R5SCF12M**	**7,94**	8,49	12	104	59	53	43	1,5	45	W10
3850907	**TDM085R5SCF12M**	**8,50**	8,99	12	107	62	56	45	1,6	45	W11
3850909	**TDM090R5SCF12M**	**9,00**	9,49	12	110	65	59	48	1,7	45	W12
3850911	**TDM095R5SCF12M**	**9,50**	9,99	12	114	69	63	50	1,8	45	W13
3850923	**TDM100R5SCF16M**	**10,00**	10,49	16	120	72	66	53	1,9	48	W14
3850925	**TDM105R5SCF16M**	**10,50**	10,99	16	123	75	69	55	2,0	48	W15
3850927	**TDM110R5SCF16M**	**11,00**	11,49	16	126	78	72	58	2,1	48	W16
3850929	**TDM115R5SCF16M**	**11,50**	11,99	16	129	81	75	60	2,2	48	W17
3850931	**TDM120R5SCF16M**	**12,00**	12,49	16	132	84	78	63	2,3	48	W18
3850933	**TDM125R5SCF16M**	**12,50**	12,99	16	135	87	81	65	2,4	48	W19
3850935	**TDM130R5SCF16M**	**13,00**	13,49	16	138	90	84	68	2,5	48	W20
3850937	**TDM135R5SCF16M**	**13,50**	13,99	16	142	94	88	70	2,6	48	W21
3850939	**TDM140R5SCF16M**	**14,00**	14,49	16	145	97	91	73	2,7	48	W22
3850941	**TDM145R5SCF16M**	**14,50**	14,99	16	148	100	94	75	2,8	48	W23
3850943	**TDM150R5SCF20M**	**15,00**	15,99	20	156	106	100	80	2,8	50	W24
3850945	**TDM160R5SCF20M**	**16,00**	16,99	20	162	112	106	85	3,0	50	W25
3850947	**TDM170R5SCF20M**	**17,00**	17,99	20	169	119	113	90	3,2	50	W26
3850949	**TDM180R5SCF25M**	**18,00**	18,99	25	181	125	119	95	3,4	56	W27
3850951	**TDM190R5SCF25M**	**19,00**	19,99	25	187	131	125	100	3,6	56	W28
3850953	**TDM200R5SCF25M**	**20,00**	20,99	25	193	137	131	105	3,8	56	W29
3992485	**TDM210R5SCF25M**	**21,00**	21,99	25	200	144	138	110	3,7	56	W30
3992486	**TDM220R5SCF25M**	**22,00**	22,99	25	206	150	144	115	3,9	56	W31
3992487	**TDM230R5SCF25M**	**23,00**	23,99	25	212	156	150	120	4,1	56	W32
3992488	**TDM240R5SCF25M**	**24,00**	24,99	25	218	162	156	125	4,2	56	W33
3992489	**TDM250R5SCF25M**	**25,00**	25,99	25	225	169	163	130	4,4	56	W34

(continued)

(TOP DRILL M1 — continued)

order number	catalogue number	D1 (mm)	D1 max (mm)	D (mm)	L (mm)	L1 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	LS (mm)	insert blade seat size
TOP DRILL M1 • 8 x D • Flanged • Metric											
3992141	**TDM080R8SCF12M**	**7,94**	8,49	12	129	84	79	68	1,4	45	W10
3992142	**TDM085R8SCF12M**	**8,50**	8,99	12	134	89	83	72	1,5	45	W11
3992213	**TDM090R8SCF12M**	**9,00**	9,49	12	138	93	88	76	1,6	45	W12
3992214	**TDM095R8SCF12M**	**9,50**	9,99	12	144	99	93	80	1,7	45	W13
3992215	**TDM100R8SCF16M**	**10,00**	10,49	16	151	103	98	84	1,8	48	W14
3992216	**TDM105R8SCF16M**	**10,50**	10,99	16	156	108	102	88	1,9	48	W15
3992217	**TDM110R8SCF16M**	**11,00**	11,49	16	160	112	107	92	2,0	48	W16
3992218	**TDM115R8SCF16M**	**11,50**	11,99	16	165	117	111	96	2,1	48	W17
3992219	**TDM120R8SCF16M**	**12,00**	12,49	16	169	121	116	100	2,1	48	W18
3992220	**TDM125R8SCF16M**	**12,50**	12,99	16	174	126	120	104	2,2	48	W19
3992221	**TDM130R8SCF16M**	**13,00**	13,49	16	178	130	125	108	2,3	48	W20
3992222	**TDM135R8SCF16M**	**13,50**	13,99	16	184	136	130	112	2,4	48	W21
3992223	**TDM140R8SCF16M**	**14,00**	14,49	16	188	140	135	116	2,5	48	W22
3992224	**TDM145R8SCF16M**	**14,50**	14,99	16	193	145	139	120	2,6	48	W23
3992225	**TDM150R8SCF20M**	**15,00**	15,99	20	204	154	148	128	2,7	50	W24
3992226	**TDM160R8SCF20M**	**16,00**	16,99	20	213	163	157	136	2,8	50	W25
3992227	**TDM170R8SCF20M**	**17,00**	17,99	20	223	173	167	144	3,0	50	W26
3992228	**TDM180R8SCF25M**	**18,00**	18,99	25	238	182	176	152	3,2	56	W27
3992229	**TDM190R8SCF25M**	**19,00**	19,99	25	247	191	185	160	3,4	56	W28
3992230	**TDM200R8SCF25M**	**20,00**	20,99	25	256	200	194	168	3,6	56	W29
3992231	**TDM210R8SCF25M**	**21,00**	21,99	25	266	210	204	176	3,7	56	W30
3992232	**TDM220R8SCF25M**	**22,00**	22,99	25	275	219	213	184	3,9	56	W31
3992233	**TDM230R8SCF25M**	**23,00**	23,99	25	284	228	222	192	4,1	56	W32
3992234	**TDM240R8SCF25M**	**24,00**	24,99	25	293	237	231	200	4,2	56	W33
3992235	**TDM250R8SCF25M**	**25,00**	25,99	25	303	247	241	208	4,4	56	W34



order number	catalogue number	grade	D1 diameter (mm)	seat size/ series
TOP DRILL M1 • UP(M)				
3848984	**TDM0800UPM**	**WU25PD**	8,00	W10
3848988	**TDM0850UPM**	**WU25PD**	8,50	W11
3849043	**TDM0900UPM**	**WU25PD**	9,00	W12
3849048	**TDM0950UPM**	**WU25PD**	9,50	W13
3849049	**TDM0960UPM**	**WU25PD**	9,60	W13
3849051	**TDM1000UPM**	**WU25PD**	10,00	W14
3849052	**TDM1010UPM**	**WU25PD**	10,10	W14
3849053	**TDM1020UPM**	**WU25PD**	10,20	W14
3849054	**TDM1030UPM**	**WU25PD**	10,30	W14
3849055	**TDM1040UPM**	**WU25PD**	10,40	W14
3849056	**TDM1050UPM**	**WU25PD**	10,50	W15
3849057	**TDM1060UPM**	**WU25PD**	10,60	W15
3849059	**TDM1080UPM**	**WU25PD**	10,80	W15
3849061	**TDM1100UPM**	**WU25PD**	11,00	W16
3849063	**TDM1120UPM**	**WU25PD**	11,20	W16
3849064	**TDM1130UPM**	**WU25PD**	11,30	W16
3849065	**TDM1140UPM**	**WU25PD**	11,40	W16
3849066	**TDM1150UPM**	**WU25PD**	11,50	W17
3849068	**TDM1170UPM**	**WU25PD**	11,70	W17
3849071	**TDM1200UPM**	**WU25PD**	12,00	W18
3849072	**TDM1210UPM**	**WU25PD**	12,10	W18
3849073	**TDM1220UPM**	**WU25PD**	12,20	W18
3850986	**TDM1230UPM**	**WU25PD**	12,30	W18
3849075	**TDM1250UPM**	**WU25PD**	12,50	W19
3849076	**TDM1260UPM**	**WU25PD**	12,60	W19
3850988	**TDM1270UPM**	**WU25PD**	12,70	W19
3849077	**TDM1280UPM**	**WU25PD**	12,80	W19
3849078	**TDM1300UPM**	**WU25PD**	13,00	W20
3850990	**TDM1310UPM**	**WU25PD**	13,10	W20
3849080	**TDM1330UPM**	**WU25PD**	13,30	W20
3849082	**TDM1350UPM**	**WU25PD**	13,50	W21
3849085	**TDM1380UPM**	**WU25PD**	13,80	W21
3849086	**TDM1400UPM**	**WU25PD**	14,00	W22
3849087	**TDM1410UPM**	**WU25PD**	14,10	W22
3849088	**TDM1420UPM**	**WU25PD**	14,20	W22
3849089	**TDM1430UPM**	**WU25PD**	14,30	W22
3849090	**TDM1440UPM**	**WU25PD**	14,40	W22
3849091	**TDM1450UPM**	**WU25PD**	14,50	W23
3849092	**TDM1460UPM**	**WU25PD**	14,60	W23
3849094	**TDM1480UPM**	**WU25PD**	14,80	W23
3849096	**TDM1500UPM**	**WU25PD**	15,00	W24
3849097	**TDM1510UPM**	**WU25PD**	15,10	W24
3849099	**TDM1530UPM**	**WU25PD**	15,30	W24
3849100	**TDM1540UPM**	**WU25PD**	15,40	W24
3849101	**TDM1550UPM**	**WU25PD**	15,50	W24
3849103	**TDM1570UPM**	**WU25PD**	15,70	W24
3849104	**TDM1580UPM**	**WU25PD**	15,80	W24
3849105	**TDM1600UPM**	**WU25PD**	16,00	W25
3849110	**TDM1650UPM**	**WU25PD**	16,50	W25
3849111	**TDM1660UPM**	**WU25PD**	16,60	W25
3849112	**TDM1670UPM**	**WU25PD**	16,70	W25
3849119	**TDM1700UPM**	**WU25PD**	17,00	W26

(continued)

(TOP DRILL M1 — continued)

order number	catalogue number	grade	D1 diameter (mm)	seat size/ series
TOP DRILL M1 • UP(M) *(continued)*				
3849121	**TDM1720UPM**	**WU25PD**	17,20	W26
3849193	**TDM1740UPM**	**WU25PD**	17,40	W26
3849194	**TDM1750UPM**	**WU25PD**	17,50	W26
3849196	**TDM1770UPM**	**WU25PD**	17,70	W26
3849199	**TDM1800UPM**	**WU25PD**	18,00	W27
3849204	**TDM1850UPM**	**WU25PD**	18,50	W27
3849208	**TDM1890UPM**	**WU25PD**	18,90	W27
3849209	**TDM1900UPM**	**WU25PD**	19,00	W28
3849211	**TDM1920UPM**	**WU25PD**	19,20	W28
3849214	**TDM1950UPM**	**WU25PD**	19,50	W28
3849217	**TDM1980UPM**	**WU25PD**	19,80	W28
3849219	**TDM2000UPM**	**WU25PD**	20,00	W29
3849220	**TDM2010UPM**	**WU25PD**	20,10	W29
3849221	**TDM2020UPM**	**WU25PD**	20,20	W29
3851017	**TDM2024UPM**	**WU25PD**	20,24	W29
3849222	**TDM2030UPM**	**WU25PD**	20,30	W29
3849223	**TDM2040UPM**	**WU25PD**	20,40	W29
3849224	**TDM2050UPM**	**WU25PD**	20,50	W29
3849226	**TDM2070UPM**	**WU25PD**	20,70	W29
3849227	**TDM2080UPM**	**WU25PD**	20,80	W29
3849228	**TDM2090UPM**	**WU25PD**	20,90	W29
3849229	**TDM2099UPM**	**WU25PD**	20,99	W29
4003225	**TDM2100UPM**	**WU25PD**	21,00	W30
4003203	**TDM2144UPM**	**WU25PD**	21,44	W30
3969291	**TDM2150UPM**	**WU25PD**	21,50	W30
4003226	**TDM2200UPM**	**WU25PD**	22,00	W31
4003204	**TDM2223UPM**	**WU25PD**	22,23	W31
4003205	**TDM2245UPM**	**WU25PD**	22,45	W31
4003227	**TDM2250UPM**	**WU25PD**	22,50	W31
4003228	**TDM2300UPM**	**WU25PD**	23,00	W32
4003229	**TDM2350UPM**	**WU25PD**	23,50	W32
4003206	**TDM2381UPM**	**WU25PD**	23,81	W32
4003230	**TDM2400UPM**	**WU25PD**	24,00	W33
4003231	**TDM2450UPM**	**WU25PD**	24,50	W33
4003207	**TDM2461UPM**	**WU25PD**	24,61	W33
4003232	**TDM2500UPM**	**WU25PD**	25,00	W34
4003208	**TDM2540UPM**	**WU25PD**	25,40	W34
4002444	**TDM2550UPM**	**WU25PD**	25,50	W34
4003209	**TDM2568UPM**	**WU25PD**	25,68	W34
4003210	**TDM2581UPM**	**WU25PD**	25,81	W34
3992013	**TDM2599UPM**	**WU25PD**	25,99	W34

TDMX

Top Drill™ Modular X

Stability and reliability combined into one modular drill system

WIDIA™ TOP DRILL™ Modular X (TDMX) is the ultimate choice for high-demanding drilling applications when stability and reliability are required.

Platform

Standard cutter bodies in 3 x D, 5 x D, and 8 x D lengths.

Insert diameter range from 16mm up to 40mm.

One geometry and grade to cover steel and cast iron applications.

Easy to Apply

Front clamping design. No need to disassemble the body from the holder to change insert.

Easy insert nomenclature logic to identify the targeted material group.

Increased Stability and Performance

Highly engineered pocket seat design to ensure maximum stability, even in challenging applications like cross hole, inclined entry/exit, and interrupted cuts.

Suitable for high feed rates.

Flanged shank for higher rigidity.

Polished flutes for improved chip evacuation.

Brand new WP40PD grade for longer tool life in steel and cast iron applications.

TDMX — TOP DRILL™ Modular X

Extra-Stable Modular Drill up to 40mm Diameter

- Augmented insert stability thanks to the highly engineered pocket seat design.
- Front clamping for an easy insert change, without disassembling the holder from the machine spindle.
- Diameter range from 16mm up to 40mm.
- L/D ratio of 3 x D, 5 x D, and 8 x D.

One geometry to cover two material groups in modular drilling.

PK

P K

First choice for Steel
and Cast Iron drilling.

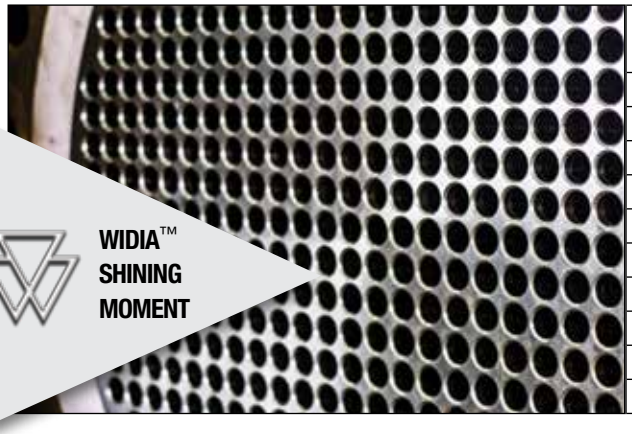
TDMX — TOP DRILL™ Modular X

Extra-Stable Modular Drill up to 40mm Diameter

TDMX — Tube Sheet Drilling

P Steel

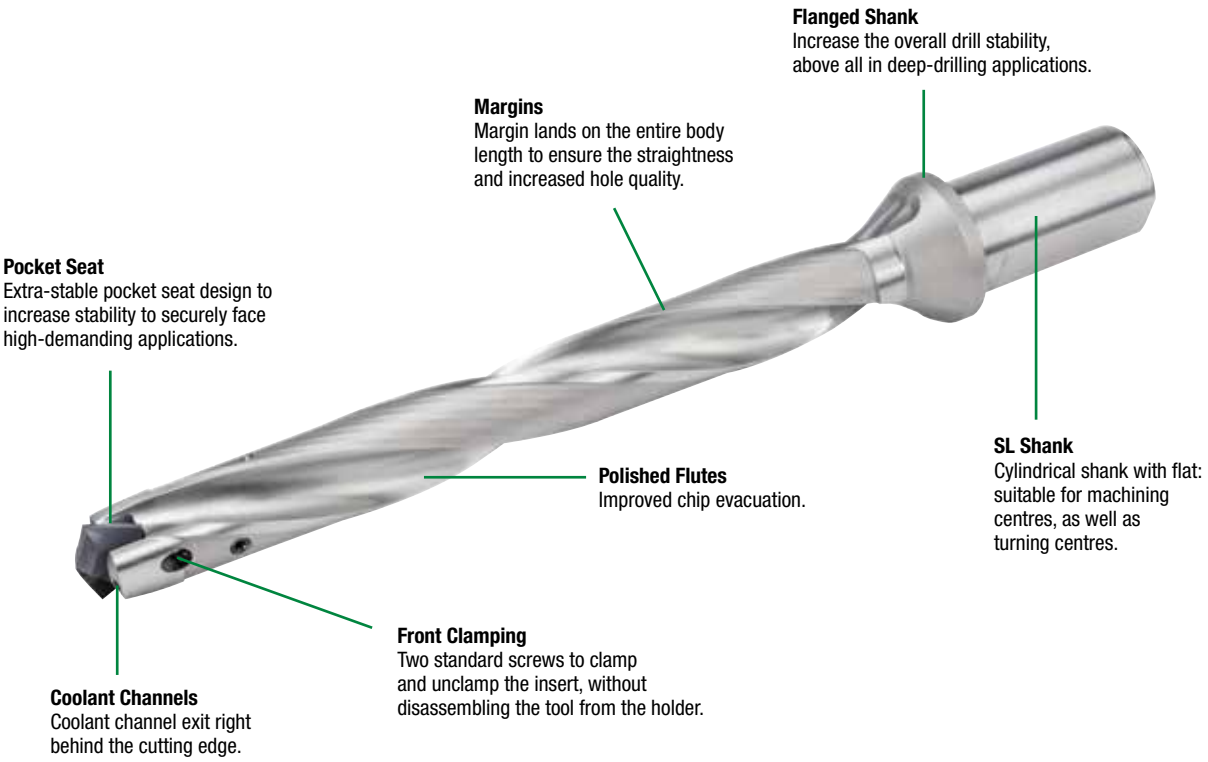
Material: Fe510/1.0553/A441
Condition: rough surface



WIDIA™ SHINING MOMENT

Specifications	Competitor	WIDIA
Diameter (mm)	25,6	25,6
Grade	–	WP40PD
Geometry	–	PK
Vc (m/min)	100	100
n (rev/min)	1,247	1,247
f (mm/rev)	0,33	0,35
Vf (mm/min)	400	437
LOC (mm)	50	50
Coolant	Internal Emulsion	Internal Emulsion
Tool Life (m)	30	48

▼ TDMX Body — Technical Details



▼ TDMX Pocket Seat — Technical Details

Double-Seating Angle
Ensure the maximum stability under severe cutting conditions.

Gash
Gash is included in the carbide tip geometry to protect the steel body from the chips.

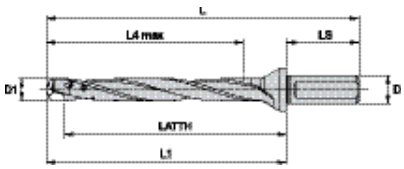
Coolant Channels

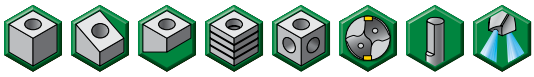
Clamping Screw
Front clamping for an easy-to-change insert.

Ejection Pin
Necessary to remove the insert due to the extreme tight pocket seat tolerance.

TDMX — TOP DRILL™ Modular X

Modular Drill System • TDMX





▼ TOP DRILL™ Modular X • 3 x D/ 5 x D/ 8 x D • Side Lock Shank • Metric

3 x D		5 x D		8 x D			D1		clamping	
order #	catalogue #	order #	catalogue #	order #	catalogue #	SSC	min	max	screw	wrench
6572091	TDMX160R3SL20M	6572125	TDMX160R5SL20M	6572155	TDMX160R8SL20M	A	16,000	16,999	193.537	12148086600
6572092	TDMX170R3SL20M	6572126	TDMX170R5SL20M	6572156	TDMX170R8SL20M	B	17,000	17,999	193.537	12148086600
6572093	TDMX180R3SL25M	6572127	TDMX180R5SL25M	6572157	TDMX180R8SL25M	C	18,000	18,999	193.537	12148086600
6572094	TDMX190R3SL25M	6572128	TDMX190R5SL25M	6572158	TDMX190R8SL25M	D	19,000	19,999	193.537	12148086600
6572096	TDMX200R3SL25M	6572129	TDMX200R5SL25M	6572159	TDMX200R8SL25M	E	20,000	20,999	193.523	170.0240
6572097	TDMX210R3SL25M	6572130	TDMX210R5SL25M	6572160	TDMX210R8SL25M	F	21,000	21,999	193.523	170.0240
6572098	TDMX220R3SL25M	6572141	TDMX220R5SL25M	6572171	TDMX220R8SL25M	G	22,000	22,999	193.523	170.0240
6572099	TDMX230R3SL25M	6572142	TDMX230R5SL25M	6572172	TDMX230R8SL25M	H	23,000	23,999	193.523	170.0240
6572100	TDMX240R3SL32M	6572143	TDMX240R5SL32M	6572173	TDMX240R8SL32M	I	24,000	24,999	193.524	12148082400
6572101	TDMX250R3SL32M	6572144	TDMX250R5SL32M	6572174	TDMX250R8SL32M	J	25,000	25,999	193.524	12148082400
6572102	TDMX260R3SL32M	6572145	TDMX260R5SL32M	6572175	TDMX260R8SL32M	K	26,000	26,999	193.524	12148082400
6572104	TDMX270R3SL32M	6572146	TDMX270R5SL32M	6572176	TDMX270R8SL32M	L	27,000	27,999	193.524	12148082400
6572105	TDMX280R3SL32M	6572147	TDMX280R5SL32M	6572177	TDMX280R8SL32M	M	28,000	28,999	193.525	TT15
6572106	TDMX290R3SL32M	6572148	TDMX290R5SL32M	6572178	TDMX290R8SL32M	N	29,000	29,999	193.525	TT15
6572107	TDMX300R3SL32M	6572149	TDMX300R5SL32M	6572179	TDMX300R8SL32M	O	30,000	30,999	193.525	TT15
6572108	TDMX310R3SL32M	6572150	TDMX310R5SL32M	6572180	TDMX310R8SL32M	P	31,000	31,999	193.525	TT15
6572109	TDMX320R3SL40M	6572151	TDMX320R5SL40M	6572181	TDMX320R8SL40M	Q	32,000	33,999	193.525	TT15
6572110	TDMX340R3SL40M	6572152	TDMX340R5SL40M	6572182	TDMX340R8SL40M	R	34,000	35,999	193.525	TT15
6572121	TDMX360R3SL40M	6572153	TDMX360R5SL40M	6572183	TDMX360R8SL40M	S	36,000	37,999	193.585	TT15
6572122	TDMX380R3SL40M	6572154	TDMX380R5SL40M	6572184	TDMX380R8SL40M	T	38,000	40,000	193.585	TT15

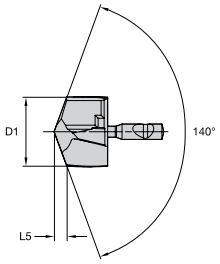
NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.

▼ Dimensions

	mm Ø				SHORT ~3 x D				LONG ~5 x D				EXTRA LONG ~8 x D			
SSC	D1 min	D1 max	LS	D	LATTH	L	L1	L4 max	LATTH	L	L1	L4 max	LATTH	L	L1	L4 max
A	16,000	16,999	50	20	68,8	131	81	51	102,8	165	115	85	153,8	216	166	136
B	17,000	17,999	50	20	73,8	136	86	54	109,8	172	122	90	163,8	226	176	144
C	18,000	18,999	56	25	76,7	146	90	57	114,7	184	128	95	171,7	241	185	152
D	19,000	19,999	56	25	81,7	151	95	60	121,7	191	135	100	181,7	251	195	160
E	20,000	20,999	56	25	84,6	155	99	63	126,6	197	141	105	189,6	260	204	168
F	21,000	21,999	56	25	89,6	160	104	66	133,6	204	148	110	199,6	270	214	176
G	22,000	22,999	56	25	92,5	164	108	69	138,5	210	154	115	207,5	279	223	184
H	23,000	23,999	56	25	97,5	169	113	72	145,5	217	161	120	217,5	289	233	192
I	24,000	24,999	60	32	100,4	177	117	75	150,4	227	167	125	225,4	302	242	200
J	25,000	25,999	60	32	105,4	182	122	78	157,4	234	174	130	235,4	312	252	208
K	26,000	26,999	60	32	108,3	186	126	81	162,3	240	180	135	243,3	321	261	216
L	27,000	27,999	60	32	113,3	191	131	84	169,3	247	187	140	253,3	331	271	224
M	28,000	28,999	60	32	116,2	195	135	87	174,2	253	193	145	261,2	340	280	232
N	29,000	29,999	60	32	121,2	200	140	90	181,2	260	200	150	271,2	350	290	240
O	30,000	30,999	60	32	124,1	204	144	93	186,1	266	206	155	279,1	359	299	248
P	31,000	31,999	60	32	129,1	209	149	96	193,1	273	213	160	289,1	369	309	256
Q	32,000	33,999	70	40	136,0	228	158	102	204,0	296	226	170	306,0	398	328	272
R	34,000	35,999	70	40	145,0	237	167	108	217,0	309	239	180	325,0	417	347	288
S	36,000	37,999	70	40	151,8	246	176	114	227,8	322	252	190	341,8	436	366	304
T	38,000	40,000	70	40	160,8	255	185	120	240,8	335	265	200	360,8	455	385	320

▼ TOP DRILL™ Modular X • PK(M)

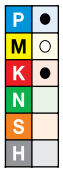
● first choice
○ alternate choice



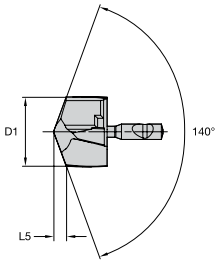
grade WP40PD TiAlN				
order #	catalogue #	D1	L5	SSC
6568446	TDMX16000PKM	16,00	3,21	A
6568447	TDMX16200PKM	16,20	3,25	A
6568448	TDMX16281PKM	16,28	3,26	A
6568449	TDMX16500PKM	16,50	3,30	A
6568450	TDMX16667PKM	16,67	3,33	A
6568461	TDMX17000PKM	17,00	3,39	B
6568462	TDMX17064PKM	17,06	3,41	B
6568464	TDMX17463PKM	17,46	3,48	B
6568465	TDMX17500PKM	17,50	3,49	B
6568467	TDMX17600PKM	17,60	3,50	B
6568471	TDMX17800PKM	17,80	3,54	B
6568472	TDMX17859PKM	17,86	3,55	B
6568473	TDMX18000PKM	18,00	3,58	C
6568474	TDMX18255PKM	18,26	3,64	C
6568475	TDMX18500PKM	18,50	3,68	C
6568476	TDMX18651PKM	18,65	3,71	C
6568477	TDMX18800PKM	18,80	3,74	C
6568478	TDMX19000PKM	19,00	3,78	D
6568479	TDMX19050PKM	19,05	3,78	D
6568480	TDMX19200PKM	19,20	3,81	D
6568481	TDMX19270PKM	19,27	3,82	D
6568482	TDMX19450PKM	19,45	3,86	D
6568483	TDMX19500PKM	19,50	3,87	D
6568484	TDMX19700PKM	19,70	3,90	D
6568485	TDMX19840PKM	19,84	3,93	D
6568813	TDMX20000PKM	20,00	3,97	E
6568814	TDMX20100PKM	20,10	3,99	E
6568815	TDMX20200PKM	20,20	4,01	E
6568816	TDMX20239PKM	20,24	4,02	E
6568817	TDMX20300PKM	20,30	4,03	E
6568818	TDMX20400PKM	20,40	4,05	E
6568819	TDMX20500PKM	20,50	4,06	E
6568820	TDMX20600PKM	20,60	4,08	E
6568841	TDMX20650PKM	20,65	4,09	E
6568842	TDMX20700PKM	20,70	4,10	E
6568843	TDMX20800PKM	20,80	4,12	E
6568844	TDMX20900PKM	20,90	4,14	E
6568845	TDMX21000PKM	21,00	4,16	F
6568846	TDMX21430PKM	21,43	4,23	F
6568847	TDMX21500PKM	21,50	4,25	F
6568848	TDMX22000PKM	22,00	4,35	G
6568849	TDMX22225PKM	22,23	4,39	G
6568850	TDMX22450PKM	22,45	4,44	G
6568851	TDMX22500PKM	22,50	4,44	G
6568852	TDMX23000PKM	23,00	4,54	H
6568853	TDMX23500PKM	23,50	4,63	H
6568854	TDMX23813PKM	23,81	4,68	H
6568856	TDMX24000PKM	24,00	4,73	I
6568857	TDMX24500PKM	24,50	4,82	I
6568858	TDMX24605PKM	24,61	4,84	I
6568859	TDMX25000PKM	25,00	4,91	J
6568860	TDMX25400PKM	25,40	4,99	J
6568861	TDMX25500PKM	25,50	5,01	J
6568862	TDMX25670PKM	25,67	5,04	J
6568863	TDMX25700PKM	25,70	5,04	J
6568864	TDMX25760PKM	25,76	5,05	J

(continued)

(TOP DRILL Modular X • PK(M) — continued)



● first choice
○ alternate choice



		grade WP40PD TiAlN		
order #	catalogue #	D1	L5	SSC
6568865	TDMX25796PKM	25,80	5,06	J
6568866	TDMX26000PKM	26,00	5,11	K
6568867	TDMX26192PKM	26,19	5,15	K
6568868	TDMX26400PKM	26,40	5,18	K
6568869	TDMX26500PKM	26,50	5,20	K
6568870	TDMX26589PKM	26,59	5,22	K
6568871	TDMX27000PKM	27,00	5,29	L
6568872	TDMX27500PKM	27,50	5,38	L
6568873	TDMX27780PKM	27,78	5,43	L
6568874	TDMX28000PKM	28,00	5,49	M
6568875	TDMX28176PKM	28,18	5,52	M
6568876	TDMX28500PKM	28,50	5,58	M
6568877	TDMX28575PKM	28,58	5,59	M
6568878	TDMX29000PKM	29,00	5,67	N
6568879	TDMX29367PKM	29,37	5,74	N
6568880	TDMX29500PKM	29,50	5,76	N
6568891	TDMX29764PKM	29,76	5,81	N
6568892	TDMX30000PKM	30,00	5,87	O
6568893	TDMX30163PKM	30,16	5,90	O
6568896	TDMX30500PKM	30,50	5,96	O
6568897	TDMX30955PKM	30,96	6,04	O
6568898	TDMX31000PKM	31,00	6,05	P
6568899	TDMX31500PKM	31,50	6,14	P
6568900	TDMX31750PKM	31,75	6,18	P
6568901	TDMX32000PKM	32,00	6,25	Q
6568902	TDMX32500PKM	32,50	6,34	Q
6568903	TDMX33000PKM	33,00	6,43	Q
6568904	TDMX33338PKM	33,34	6,49	Q
6568905	TDMX34000PKM	34,00	6,61	R
6568906	TDMX34130PKM	34,13	6,64	R
6568907	TDMX34925PKM	34,93	6,78	R
6568908	TDMX35000PKM	35,00	6,79	R
6568909	TDMX35500PKM	35,50	6,89	R
6568910	TDMX36000PKM	36,00	7,00	S
6568911	TDMX36500PKM	36,50	7,09	S
6568912	TDMX37000PKM	37,00	7,18	S
6568913	TDMX37500PKM	37,50	7,27	S
6568914	TDMX38000PKM	38,00	7,36	T
6568915	TDMX38100PKM	38,10	7,38	T
6568916	TDMX38500PKM	38,50	7,46	T
6568917	TDMX39000PKM	39,00	7,55	T
6568918	TDMX39289PKM	39,29	7,60	T
6568919	TDMX39500PKM	39,50	7,64	T
6568920	TDMX40000PKM	40,00	7,73	T

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.

Metric tolerance	
D1	tolerance k8
8–10	0,000/+0,022
>10–17	0,000/+0,027
>17–18	0,000/+0,027
>18–21	0,000/+0,033

▼ TOP DRILL Modular X • PK(M) • WP40PD • Speed and Feed Chart • Metric

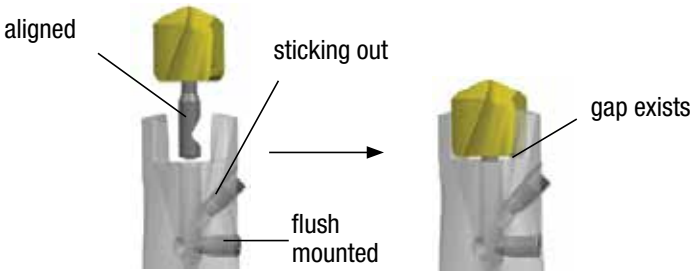
Material Group		Cutting Speed — Vc Range — m/min			Recommended Feed Rate (f) by Diameter					
		min	Starting Value	max	Tool Diameter (mm)	16,0	20,0	25,0	32,0	40,0
P	1	90	**125**	170	mm/r	0,19–0,45	0,25–0,48	0,25–0,52	0,28–0,57	0,29–0,60
	2	105	**140**	180	mm/r	0,23–0,46	0,28–0,50	0,30–0,52	0,33–0,57	0,35–0,60
	3	50	**75**	100	mm/r	0,23–0,46	0,28–0,50	0,30–0,52	0,33–0,57	0,35–0,60
	4	50	**75**	100	mm/r	0,19–0,45	0,22–0,48	0,25–0,50	0,28–0,55	0,29–0,58
	5	50	**65**	80	mm/r	0,16–0,32	0,18–0,36	0,22–0,42	0,24–0,46	0,25–0,48
	6	50	**65**	80	mm/r	0,16–0,32	0,18–0,36	0,22–0,42	0,24–0,46	0,25–0,48
M	1	40	**80**	110	mm/r	0,11–0,26	0,13–0,28	0,13–0,32	0,14–0,35	0,15–0,37
	2	35	**55**	75	mm/r	0,11–0,26	0,13–0,28	0,13–0,32	0,14–0,35	0,15–0,37
	3	20	**35**	50	mm/r	0,11–0,26	0,13–0,28	0,13–0,32	0,14–0,35	0,15–0,37
K	1	60	**95**	170	mm/r	0,25–0,48	0,28–0,52	0,32–0,56	0,35–0,62	0,37–0,65
	2	60	**75**	90	mm/r	0,25–0,48	0,28–0,52	0,32–0,56	0,35–0,62	0,37–0,65
	3	40	**65**	90	mm/r	0,21–0,44	0,23–0,48	0,25–0,50	0,28–0,55	0,29–0,58

NOTE: Through coolant recommended for greater than 3 x D applications.
Material group M is recommended for secondary applications.

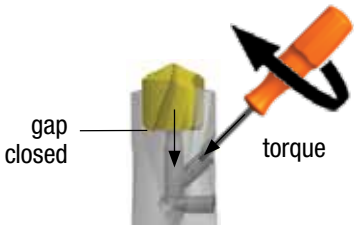
Assembling and Disassembling Instructions

▼ Assembly

1 Insert positioning



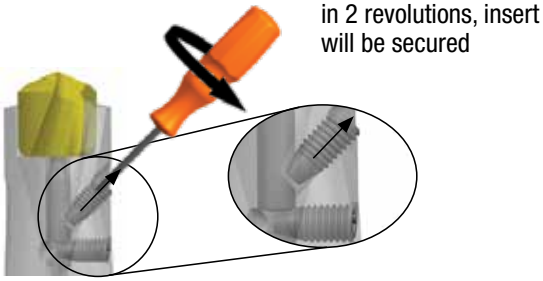
2 Insert clamping



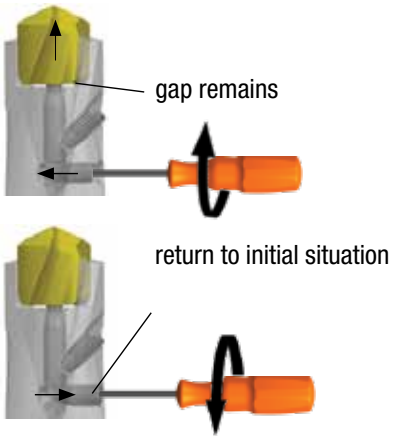
Drill diameter	Torque
ø 16–19,999mm	1,5 Nm
ø 20–23,999mm	2,1 Nm
ø 24–27,999mm	3,0 Nm
ø 28–40,000mm	4,5 Nm

▼ Disassembly

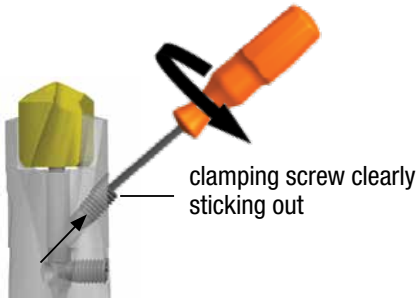
1 Clamping screw loosening



2 Insert pushing out



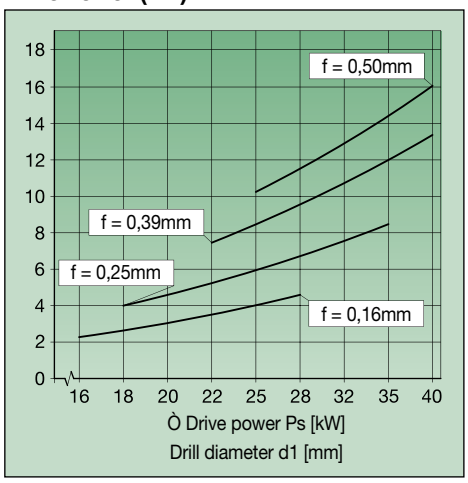
3 Further clamping screw loosening



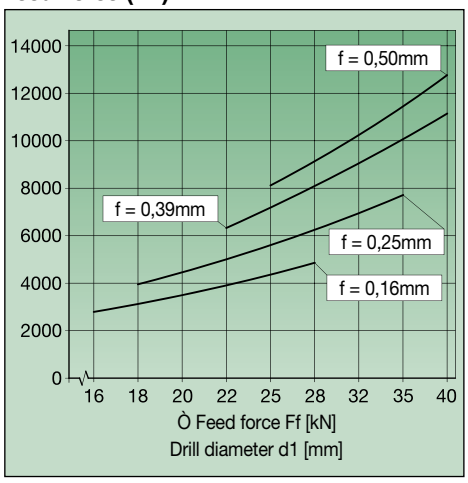
4 Insert removal

TDMX Application Notes • Power and Coolant Requirements

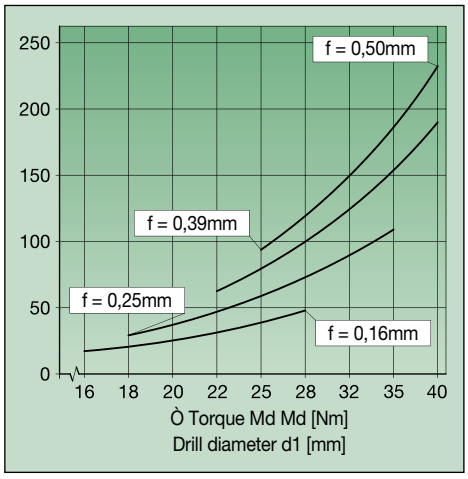
Drive Power (kW)



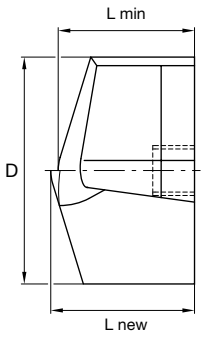
Feed Force (kN)



Torque (Nm)



NOTE: The diagrams above are used to determine the drive power, feed force, and torque. They are based on cutting force measurement in tempered steels in Cgr. 6. Tensile strength: Rm = 600 N/mm². The base cutting speed used is: vc = 80 m/min.



The following coolant pressure is recommended:

relative drilling depth	coolant pressure
1–3 x D	8 bars
5 x D	12 bars
7 x D	20 bars
10 x D	30 bars

SSC	diameter range D (mm)	L min. (mm)	L new (mm)
A	16–16.999	11.2	12.5
B	17–17.999	11.2	12.5
C	18–18.999	12.2	13.6
D	19–19.999	12.2	13.6
E	20–20.999	13.2	14.7
F	21–21.999	13.2	14.7
G	22–22.999	14.2	15.8
H	23–23.999	14.2	15.8
I	24–24.999	15.2	16.9
J	25–25.999	15.2	16.9
K	26–26.999	16.2	18
L	27–27.999	16.2	18
M	28–28.999	17.2	19.1
N	29–29.999	17.2	19.1
O	30–30.999	18.2	20.2
P	31–31.999	18.2	20.2
Q	32–33.999	20.1	22.3
R	34–35.999	20.1	22.3
S	36–37.999	22.1	24.5
T	38–40	22.1	24.5

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.

Top Cut 4™

The next generation of Indexable Drilling

WIDIA™ Top Cut 4™ (TC4) portfolio is a broad offering for customers looking for a versatile indexable drilling platform.

One Comprehensive Platform

Standard diameter range covering 12–68mm in 2 x D, 3 x D, 4 x D, and 5 x D.

Four real cutting edges on each insert for entire platform.

Eight insert sizes to cover complete diameter range.

Easy to Apply

No risk of mixing up inner and outer insert due to clear visual differences.

Easy-to-change inserts, laser marked with geometries and grades.

Easy-to-use nomenclature guide enabling the tool body and the related insert selection to avoid order failures.

Highly Versatile

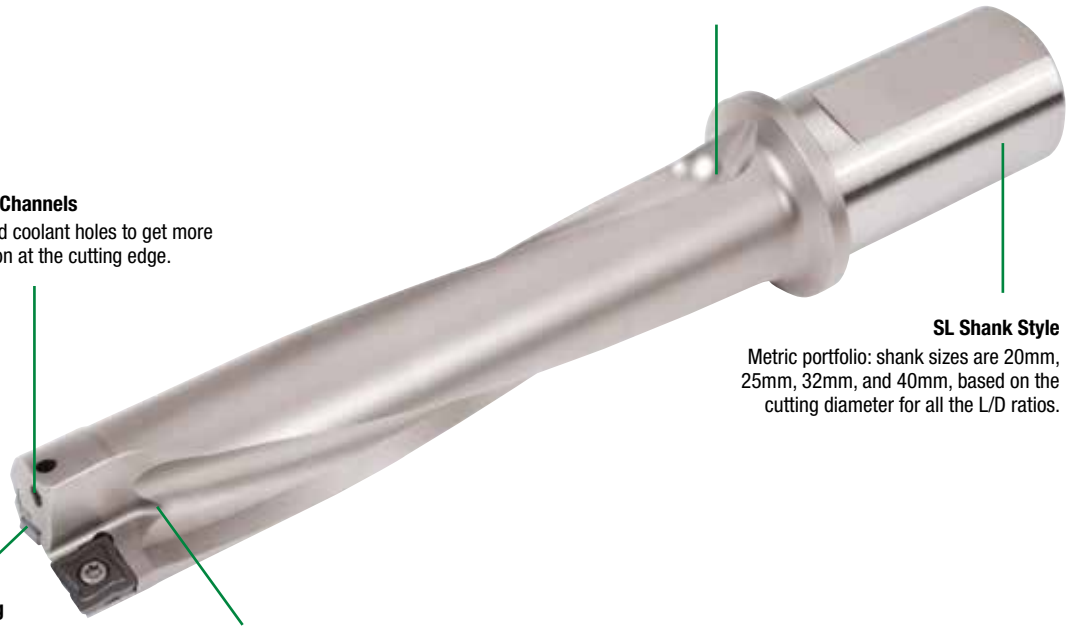
Breadth of application capabilities include through and cross holes, inclined entry and exit opportunity, 45º corner, half cylindrical, concave, or chain drilling.

Various geometries and grades available.

Top Cut 4™

New Generation Indexable Drilling System

- 2x four true cutting edges.
- Cutting edge profile of central and periphery insert work together, leading to high stabilisation of the drill, preventing drifting of the tool even on irregular surfaces.
- X-offset design to adjust diameter size on turning machines and optimise tolerances on machining centres.
- Apply where speed and economy are prime considerations.
- Four grades to achieve higher tool life at accelerated speeds:
  — WU25CH grade for highest metal removal rate in general applications.
  — WU40PH grade for high toughness demands.
  — WPK10CH grade for high-speed applications.
  — WN10PH grade specific for aluminium and other non-ferrous materials.



Chip Flute Exit
Steeper chip flute exit to reduce the overall length and increase rigidity.

Coolant Channels
Enhanced coolant holes to get more lubrication at the cutting edge.

SL Shank Style
Metric portfolio: shank sizes are 20mm, 25mm, 32mm, and 40mm, based on the cutting diameter for all the L/D ratios.

Insert Positioning
Optimised insert positioning to achieve the maximum drill stability, hole tolerance and surface quality, above all in deep-drilling applications.

Gash
Improved gash design on both insert pocket seats for a better chip evacuation.

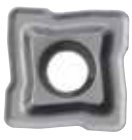
Top Cut 4 Inserts Expansion — Long Chip Materials — Non-Ferrous Materials.

-V34

P K

First choice for machining Steel, Cast Iron, and short chipping materials. Suitable for severe cutting conditions.

-V36



P M K

First choice for Stainless Steel. Suitable for deep drilling and where low power consumption is required.

NEW!

-V36 WN10PH

N

First choice for Non-Ferrous materials.

NEW!

-V38

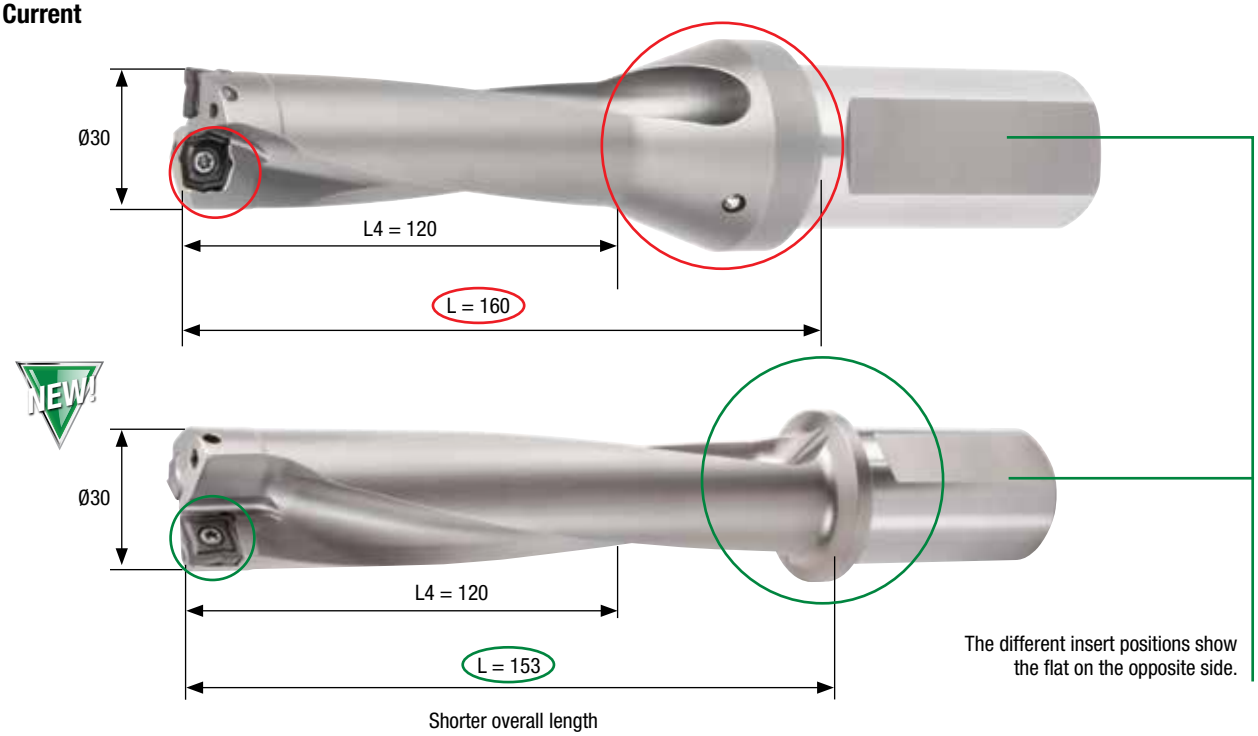
P M S

Ideal for long chipping materials.

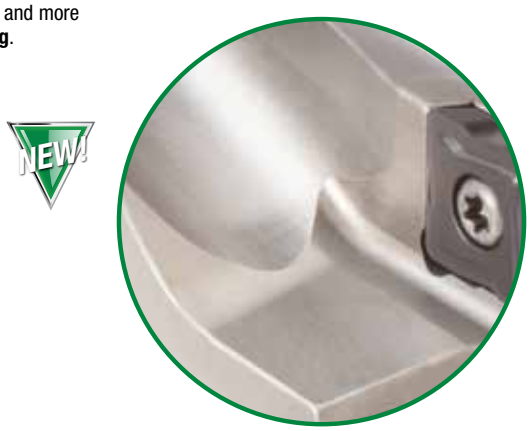
Top Cut 4™ Bodies Upgrade

Diameter 30mm, 4 x D example

Current



Gash
Optimised gash for improved chip flow and more precise **insert pocket seat positioning**.



-V36 WN10PH for Non-Ferrous Materials

Productivity

- Perfect combination of edge preparation and grade for aluminium machining.
- TiB_2 based coating specific for non-ferrous materials.
- Optimal chip control and no built-up edge, even in very soft aluminium.

Performance

- High cutting speed capability thanks to the state-of-the-art TiB_2 coating.
- The WN10PH grade geometry is available on the inboard insert, as well as on the outboard insert.
- Better general hole quality (surface and dimension) thanks to edge preparation and coating combination when compared to a standard universal insert.
- Longer and predictable tool life leads to avoiding the generation of built-up edge.

Technical Details

- PSTS Inserts.
- Positive and sharp cutting edge.
- First choice for aluminium and others non-ferrous materials.
- Periphery insert with wiper land.

Top Cut 4 Inserts Expansion — Non-Ferrous Materials.

-V36 WN10PH

N

First choice for Non-Ferrous materials.

Hole Quality — Surface Finish

Diameter: 30mm 4 x D hole
Material: GAlSi 7 Mg

-V36 WN10PH

Standard multipurpose grade and geometry

Top Cut 4™

Geometry and Grade Expansion for Augmented Versatility

-V38 Chipbreaker

Productivity

- Eliminates the formation of bird-nesting on the tool in long chip materials drilling.
- Improves the chip formation dramatically to guarantee a smooth chip flow.
- No machine stops due to bad chip evacuation on low carbon steels, stainless steels, and titanium — high process reliability.

Performance

- Larger feed rate window compared to the -V36 geometry when applied to low carbon steels and stainless steel.
- -V38 geometry is available on the inboard insert, as well as on the outboard insert.
- Better general hole quality (surface and dimension) thanks to the improved chip flow:
  — No drifting of the tool body causing deviation in the hole size.
  — No contact of the chips with the hole surface causing bad finishing.

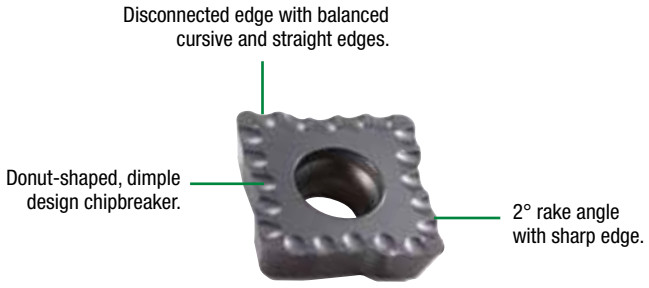
Technical Details

- PSTS inserts.
- Special edge geometry for more effective chipbreaking action.
- First choice for low carbon steel, stainless steel, and super alloys.
- Periphery insert with wiper land.

-V38 Chipbreaker Application Areas

The new -V38 geometry is the first choice when:

- The drilling application with Top Cut 4™ platform bodies and inserts is applied to:
  — Low carbon steel (typically P0 and P1).
  — Stainless steels, such as AISI304, AISI316, and similar materials.
  — Titanium alloys, like Grade 2 and Grade 5.
- Bird-nesting on the tool body is an issue.
- Vibrations are generated due to a bad chip flow. Chip can't evacuate from the hole and generates big noise during machining.
- Bad surface quality caused by the chip in contact with the hole.
- Bigger hole size. Bad chip flow can generate tool drifting.
- Lower power consumption and less torque are needed.

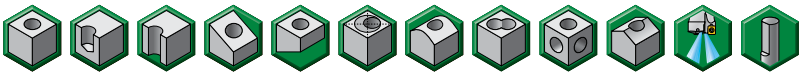


Top Cut 4 Inserts Expansion — Long Chip Materials.

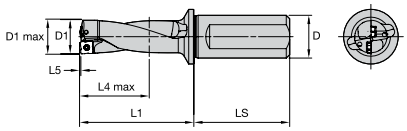
-V38

P M S

Ideal for long chip materials.



▼ Top Cut 4 Drill • Metric • 2 x D • SLR Shanks



For information on LS, see the table on page 263.

order number	catalogue number	D1	D1 max	D	L1	L4 max	L5	SSC	periphery insert	centre insert
5537778	TCF120R2SLR20MA	12,00	12,50	20	43,4	24,4	0,43	A	TCF040204AP	TCF040203AC
5537779	TCF125R2SLR20MA	12,50	13,00	20	44,5	25,5	0,45	A	TCF040204AP	TCF040203AC
5537860	TCF127R2SLR20MA	12,70	13,20	20	45,9	25,9	0,46	A	TCF040204AP	TCF040203AC
5537861	TCF130R2SLR20MA	13,00	13,50	20	46,5	26,5	0,47	A	TCF040204AP	TCF040203AC
5537862	TCF135R2SLR20MA	13,50	14,00	20	48,5	27,5	0,48	A	TCF040204AP	TCF040203AC
5577828	TCF140R2SLR25MB	14,00	14,50	25	48,5	28,5	0,49	B	TCF050204BP	TCF060203BC
5577829	TCF145R2SLR25MB	14,50	15,00	25	49,5	29,5	0,52	B	TCF050204BP	TCF060203BC
5577920	TCF150R2SLR25MB	15,00	15,50	25	51,5	30,5	0,55	B	TCF050204BP	TCF060203BC
5577921	TCF155R2SLR25MB	15,50	16,00	25	53,6	31,6	0,56	B	TCF050204BP	TCF060203BC
5577922	TCF160R2SLR25MB	16,00	16,50	25	54,6	32,6	0,58	B	TCF050204BP	TCF060203BC
5577923	TCF165R2SLR25MB	16,50	17,00	25	56,6	33,6	0,60	B	TCF050204BP	TCF060203BC
5577924	TCF170R2SLR25MB	17,00	17,50	25	57,6	34,6	0,61	B	TCF050204BP	TCF060203BC
5577925	TCF175R2SLR25MB	17,50	18,00	25	59,6	35,6	0,63	B	TCF050204BP	TCF060203BC
5577926	TCF180R2SLR25MB	18,00	18,50	25	60,6	36,6	0,64	B	TCF050204BP	TCF060203BC
5577927	TCF185R2SLR25MB	18,50	19,00	25	62,7	37,7	0,65	B	TCF050204BP	TCF060203BC
5578820	TCF190R2SLR25MC	19,00	19,50	25	63,7	38,7	0,68	C	TCF070306CP	TCF070304CC
5578821	TCF195R2SLR25MC	19,50	20,00	25	65,7	39,7	0,71	C	TCF070306CP	TCF070304CC
5578822	TCF200R2SLR25MC	20,00	20,50	25	66,7	40,7	0,72	C	TCF070306CP	TCF070304CC
5578823	TCF205R2SLR25MC	20,50	21,00	25	68,7	41,7	0,74	C	TCF070306CP	TCF070304CC
5578824	TCF210R2SLR25MC	21,00	21,50	25	70,8	42,8	0,75	C	TCF070306CP	TCF070304CC
5578825	TCF220R2SLR25MC	22,00	22,50	25	73,8	44,8	0,78	C	TCF070306CP	TCF070304CC
5578826	TCF225R2SLR25MC	22,50	23,00	25	74,8	45,8	0,79	C	TCF070306CP	TCF070304CC
5578827	TCF230R2SLR25MC	23,00	23,50	25	76,8	46,8	0,80	C	TCF070306CP	TCF070304CC
5537167	TCF240R2SLR25MD	24,00	25,00	25	76,9	48,9	0,87	D	TCF080308DP	TCF090305DC
5537168	TCF250R2SLR32MD	25,00	26,00	32	80,9	50,9	0,91	D	TCF080308DP	TCF090305DC
5537169	TCF260R2SLR32MD	26,00	27,00	32	83,9	52,9	0,94	D	TCF080308DP	TCF090305DC
5537820	TCF265R2SLR32MD	26,50	27,50	32	86,0	54,0	0,95	D	TCF080308DP	TCF090305DC
5537821	TCF270R2SLR32MD	27,00	28,00	32	87,0	55,0	0,97	D	TCF080308DP	TCF090305DC
5537822	TCF280R2SLR32MD	28,00	29,00	32	90,0	57,0	0,99	D	TCF080308DP	TCF090305DC
5537823	TCF290R2SLR32MD	29,00	30,00	32	93,0	59,0	1,02	D	TCF080308DP	TCF090305DC
5537937	TCF300R2SLR32ME	30,00	31,00	32	93,1	61,1	1,09	E	TCF100408EP	TCF120405EC
5537938	TCF310R2SLR32ME	31,00	32,00	32	96,1	63,1	1,12	E	TCF100408EP	TCF120405EC
5537939	TCF320R2SLR32ME	32,00	33,00	32	99,2	65,2	1,15	E	TCF100408EP	TCF120405EC
5537940	TCF330R2SLR40ME	33,00	34,00	40	103,2	67,2	1,18	E	TCF100408EP	TCF120405EC
5537941	TCF340R2SLR40ME	34,00	35,00	40	106,2	69,2	1,21	E	TCF100408EP	TCF120405EC
5537942	TCF350R2SLR40ME	35,00	36,00	40	109,2	71,2	1,24	E	TCF100408EP	TCF120405EC
5537943	TCF360R2SLR40ME	36,00	37,00	40	112,3	73,3	1,27	E	TCF100408EP	TCF120405EC
5578539	TCF370R2SLR40MF	37,00	38,00	40	115,3	75,3	1,35	F	TCF120412FP	TCF150406FC
5578600	TCF375R2SLR40MF	37,50	38,50	40	116,4	76,4	1,36	F	TCF120412FP	TCF150406FC
5578601	TCF380R2SLR40MF	38,00	39,00	40	118,4	77,4	1,38	F	TCF120412FP	TCF150406FC
5578602	TCF390R2SLR40MF	39,00	40,00	40	121,4	79,4	1,41	F	TCF120412FP	TCF150406FC
5578603	TCF400R2SLR40MF	40,00	41,00	40	123,4	81,4	1,45	F	TCF120412FP	TCF150406FC
5578604	TCF410R2SLR40MF	41,00	42,00	40	126,5	83,5	1,48	F	TCF120412FP	TCF150406FC
5578605	TCF420R2SLR40MF	42,00	43,00	40	129,5	85,5	1,51	F	TCF120412FP	TCF150406FC
5578606	TCF430R2SLR40MF	43,00	44,00	40	132,5	87,5	1,53	F	TCF120412FP	TCF150406FC
5578607	TCF440R2SLR40MF	44,00	45,00	40	135,6	89,6	1,56	F	TCF120412FP	TCF150406FC
5578608	TCF450R2SLR40MF	45,00	46,00	40	138,6	91,6	1,59	F	TCF120412FP	TCF150406FC
5578694	TCF460R2SLR40MG	46,00	47,00	40	136,7	93,7	1,67	G	TCF150512GP	TCF180508GC
5578695	TCF470R2SLR40MG	47,00	48,00	40	139,7	95,7	1,70	G	TCF150512GP	TCF180508GC
5578696	TCF480R2SLR40MG	48,00	49,00	40	142,7	97,7	1,73	G	TCF150512GP	TCF180508GC
5578697	TCF490R2SLR40MG	49,00	50,00	40	145,8	99,8	1,76	G	TCF150512GP	TCF180508GC
5578698	TCF500R2SLR40MG	50,00	51,00	40	147,8	101,8	1,79	G	TCF150512GP	TCF180508GC

(continued)

(Top Cut 4 Drill • Metric • 2 x D • SLR Shanks — continued)

order number	catalogue number	D1	D1 max	D	L1	L4 max	L5	SSC	periphery insert	centre insert
5578699	**TCF505R2SLR40MG**	50,50	51,50	40	149,8	102,8	1,80	G	**TCF150512GP**	**TCF180508GC**
5578710	**TCF510R2SLR40MG**	51,00	52,00	40	150,8	103,8	1,81	G	**TCF150512GP**	**TCF180508GC**
5578711	**TCF520R2SLR40MG**	52,00	53,00	40	153,8	105,8	1,84	G	**TCF150512GP**	**TCF180508GC**
5578712	**TCF530R2SLR40MG**	53,00	54,00	40	156,9	107,9	1,87	G	**TCF150512GP**	**TCF180508GC**
5578713	**TCF540R2SLR40MG**	54,00	55,00	40	159,9	109,9	1,89	G	**TCF150512GP**	**TCF180508GC**
5578714	**TCF550R2SLR40MG**	55,00	56,00	40	161,9	111,9	1,92	G	**TCF150512GP**	**TCF180508GC**
5578715	**TCF560R2SLR40MG**	56,00	57,00	40	164,9	113,9	1,94	G	**TCF150512GP**	**TCF180508GC**
5538613	**TCF570R2SLR40MH**	57,00	58,00	40	162,1	116,1	2,06	H	**TCF180614HP**	**TCF210608HC**
5538614	**TCF580R2SLR40MH**	58,00	59,00	40	165,1	118,1	2,09	H	**TCF180614HP**	**TCF210608HC**
5538615	**TCF590R2SLR40MH**	59,00	60,00	40	168,1	120,1	2,12	H	**TCF180614HP**	**TCF210608HC**
5538616	**TCF600R2SLR40MH**	60,00	61,00	40	170,1	122,1	2,15	H	**TCF180614HP**	**TCF210608HC**
5538617	**TCF610R2SLR40MH**	61,00	62,00	40	173,2	124,2	2,18	H	**TCF180614HP**	**TCF210608HC**
5538618	**TCF620R2SLR40MH**	62,00	63,00	40	176,2	126,2	2,20	H	**TCF180614HP**	**TCF210608HC**
5538619	**TCF630R2SLR40MH**	63,00	64,00	40	179,2	128,2	2,23	H	**TCF180614HP**	**TCF210608HC**
5538630	**TCF640R2SLR40MH**	64,00	65,00	40	181,3	130,3	2,26	H	**TCF180614HP**	**TCF210608HC**
5538631	**TCF650R2SLR40MH**	65,00	66,00	40	184,3	132,3	2,28	H	**TCF180614HP**	**TCF210608HC**
5538632	**TCF660R2SLR40MH**	66,00	67,00	40	187,3	134,3	2,31	H	**TCF180614HP**	**TCF210608HC**
5538633	**TCF670R2SLR40MH**	67,00	68,00	40	189,3	136,3	2,33	H	**TCF180614HP**	**TCF210608HC**
5538634	**TCF680R2SLR40MH**	68,00	69,00	40	192,4	138,4	2,36	H	**TCF180614HP**	**TCF210608HC**

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.

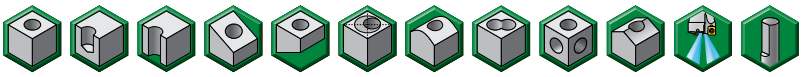
▼ Spare Parts

SSC	periphery insert	centre insert	 insert screw order number	Torx size	 Torx driver order number	tightening torque Nm
A	TCF040204AP	TCF040203AC	**2025073**	T5	**2029221**	0,40
B	TCF050204BP	TCF060203BC	**1175225**	T6	**1138455**	0,53
C	TCF070306CP	TCF070304CC	**1021337**	T7	**2029266**	0,90
D	TCF080308DP	TCF090305DC	**1134385**	T8	**2029598**	1,10
E	TCF100408EP	TCF120405EC	**2018194**	T9	**1138430**	2,00
F	TCF120412FP	TCF150406FC	**1756815**	T15	**1138455**	4,00
G	TCF150512GP	TCF180508GC	**1099645**	T20	**1138455**	6,30
H	TCF180614HP	TCF210608HC	**1823871**	T25	**1022519**	8,80
H	TCF180614HP	TCF210608HC	**1823871**	T25	**1138455**	8,80

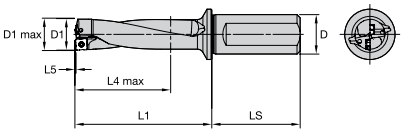
NOTE: Drilling in stacked plates possible in certain applications. Ask for technical support.
Drill shipped with insert screws and Torx wrench.
See pages 270–273 for inserts.
SSC = Pocket Seat Reference.
SLR = Side Lock.
D1 max is an achievable diameter using x-offset.

D	LS
20,00	50
25,00	56
32,00	60
40,00	70

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.



▼ Top Cut 4 Drill • Metric • 3 x D • SLR Shanks



For information on LS, see the table on page 265.

order number	catalogue number	D1	D1 max	D	L1	L4 max	L5	SSC	periphery insert	centre insert
5537863	TCF120R3SLR20MA	12,00	12,50	20	55,4	36,4	0,43	A	TCF040204AP	TCF040203AC
5537864	TCF125R3SLR20MA	12,50	13,00	20	57,0	38,0	0,45	A	TCF040204AP	TCF040203AC
5537866	TCF127R3SLR20MA	12,70	13,20	20	58,6	38,6	0,46	A	TCF040204AP	TCF040203AC
5537867	TCF130R3SLR20MA	13,00	13,50	20	59,5	39,5	0,47	A	TCF040204AP	TCF040203AC
5537868	TCF135R3SLR20MA	13,50	14,00	20	61,0	41,0	0,48	A	TCF040204AP	TCF040203AC
5577928	TCF140R3SLR25MB	14,00	14,50	25	62,5	42,5	0,49	B	TCF050204BP	TCF060203BC
5577929	TCF145R3SLR25MB	14,50	15,00	25	64,0	44,0	0,52	B	TCF050204BP	TCF060203BC
5577930	TCF150R3SLR25MB	15,00	15,50	25	66,5	45,5	0,55	B	TCF050204BP	TCF060203BC
5577931	TCF155R3SLR25MB	15,50	16,00	25	69,1	47,1	0,56	B	TCF050204BP	TCF060203BC
5577932	TCF160R3SLR25MB	16,00	16,50	25	70,6	48,6	0,58	B	TCF050204BP	TCF060203BC
5577933	TCF165R3SLR25MB	16,50	17,00	25	73,1	50,1	0,60	B	TCF050204BP	TCF060203BC
5577934	TCF170R3SLR25MB	17,00	17,50	25	74,6	51,6	0,61	B	TCF050204BP	TCF060203BC
5577935	TCF175R3SLR25MB	17,50	18,00	25	77,1	53,1	0,63	B	TCF050204BP	TCF060203BC
5577936	TCF180R3SLR25MB	18,00	18,50	25	78,6	54,6	0,64	B	TCF050204BP	TCF060203BC
5577937	TCF185R3SLR25MB	18,50	19,00	25	81,2	56,2	0,65	B	TCF050204BP	TCF060203BC
5578828	TCF190R3SLR25MC	19,00	19,50	25	82,7	57,7	0,68	C	TCF070306CP	TCF070304CC
5578829	TCF195R3SLR25MC	19,50	20,00	25	85,2	59,2	0,71	C	TCF070306CP	TCF070304CC
5578830	TCF200R3SLR25MC	20,00	20,50	25	86,7	60,7	0,72	C	TCF070306CP	TCF070304CC
5578831	TCF205R3SLR25MC	20,50	21,00	25	89,2	62,2	0,74	C	TCF070306CP	TCF070304CC
5578832	TCF210R3SLR25MC	21,00	21,50	25	91,8	63,8	0,75	C	TCF070306CP	TCF070304CC
5578833	TCF220R3SLR25MC	22,00	22,50	25	95,8	66,8	0,78	C	TCF070306CP	TCF070304CC
5578834	TCF225R3SLR25MC	22,50	23,00	25	97,3	68,3	0,79	C	TCF070306CP	TCF070304CC
5578835	TCF230R3SLR25MC	23,00	23,50	25	99,8	69,8	0,80	C	TCF070306CP	TCF070304CC
5537824	TCF240R3SLR25MD	24,00	25,00	25	100,9	72,9	0,87	D	TCF080308DP	TCF090305DC
5537825	TCF250R3SLR32MD	25,00	26,00	32	105,9	75,9	0,91	D	TCF080308DP	TCF090305DC
5537826	TCF260R3SLR32MD	26,00	27,00	32	109,9	78,9	0,94	D	TCF080308DP	TCF090305DC
5537827	TCF265R3SLR32MD	26,50	27,50	32	112,5	80,5	0,95	D	TCF080308DP	TCF090305DC
5537828	TCF270R3SLR32MD	27,00	28,00	32	114,0	82,0	0,97	D	TCF080308DP	TCF090305DC
5537829	TCF280R3SLR32MD	28,00	29,00	32	118,0	85,0	0,99	D	TCF080308DP	TCF090305DC
5537830	TCF290R3SLR32MD	29,00	30,00	32	122,0	88,0	1,02	D	TCF080308DP	TCF090305DC
5537944	TCF300R3SLR32ME	30,00	31,00	32	123,1	91,1	1,09	E	TCF100408EP	TCF120405EC
5537945	TCF310R3SLR32ME	31,00	32,00	32	127,1	94,1	1,12	E	TCF100408EP	TCF120405EC
5537946	TCF320R3SLR32ME	32,00	33,00	32	131,2	97,2	1,15	E	TCF100408EP	TCF120405EC
5537947	TCF330R3SLR40ME	33,00	34,00	40	136,2	100,2	1,18	E	TCF100408EP	TCF120405EC
5537948	TCF340R3SLR40ME	34,00	35,00	40	140,2	103,2	1,21	E	TCF100408EP	TCF120405EC
5537949	TCF350R3SLR40ME	35,00	36,00	40	144,2	106,2	1,24	E	TCF100408EP	TCF120405EC
5537950	TCF360R3SLR40ME	36,00	37,00	40	148,3	109,3	1,27	E	TCF100408EP	TCF120405EC
5578609	TCF370R3SLR40MF	37,00	38,00	40	152,3	112,3	1,35	F	TCF120412FP	TCF150406FC
5578610	TCF375R3SLR40MF	37,50	38,50	40	153,9	113,9	1,36	F	TCF120412FP	TCF150406FC
5578611	TCF380R3SLR40MF	38,00	39,00	40	156,4	115,4	1,38	F	TCF120412FP	TCF150406FC
5578612	TCF390R3SLR40MF	39,00	40,00	40	160,4	118,4	1,41	F	TCF120412FP	TCF150406FC
5578613	TCF400R3SLR40MF	40,00	41,00	40	163,4	121,4	1,45	F	TCF120412FP	TCF150406FC
5578614	TCF410R3SLR40MF	41,00	42,00	40	167,5	124,5	1,48	F	TCF120412FP	TCF150406FC
5578615	TCF420R3SLR40MF	42,00	43,00	40	171,5	127,5	1,51	F	TCF120412FP	TCF150406FC
5578616	TCF430R3SLR40MF	43,00	44,00	40	175,5	130,5	1,53	F	TCF120412FP	TCF150406FC
5578617	TCF440R3SLR40MF	44,00	45,00	40	179,6	133,6	1,56	F	TCF120412FP	TCF150406FC
5578618	TCF450R3SLR40MF	45,00	46,00	40	183,6	136,6	1,59	F	TCF120412FP	TCF150406FC
5578716	TCF460R3SLR40MG	46,00	47,00	40	182,7	139,7	1,67	G	TCF150512GP	TCF180508GC
5578717	TCF470R3SLR40MG	47,00	48,00	40	186,7	142,7	1,70	G	TCF150512GP	TCF180508GC
5578718	TCF480R3SLR40MG	48,00	49,00	40	190,7	145,7	1,73	G	TCF150512GP	TCF180508GC
5578719	TCF490R3SLR40MG	49,00	50,00	40	194,8	148,8	1,76	G	TCF150512GP	TCF180508GC
5578720	TCF500R3SLR40MG	50,00	51,00	40	197,8	151,8	1,79	G	TCF150512GP	TCF180508GC

(continued)

(Top Cut 4 Drill • Metric • 3 x D • SLR Shanks — continued)

order number	catalogue number	D1	D1 max	D	L1	L4 max	L5	SSC	periphery insert	centre insert
5578721	**TCF505R3SLR40MG**	50,50	51,50	40	200,3	153,3	1,80	G	**TCF150512GP**	**TCF180508GC**
5578722	**TCF510R3SLR40MG**	51,00	52,00	40	201,8	154,8	1,81	G	**TCF150512GP**	**TCF180508GC**
5578723	**TCF520R3SLR40MG**	52,00	53,00	40	205,8	157,8	1,84	G	**TCF150512GP**	**TCF180508GC**
5578724	**TCF530R3SLR40MG**	53,00	54,00	40	209,9	160,9	1,87	G	**TCF150512GP**	**TCF180508GC**
5578726	**TCF540R3SLR40MG**	54,00	55,00	40	213,9	163,9	1,89	G	**TCF150512GP**	**TCF180508GC**
5578727	**TCF550R3SLR40MG**	55,00	56,00	40	216,9	166,9	1,92	G	**TCF150512GP**	**TCF180508GC**
5578728	**TCF560R3SLR40MG**	56,00	57,00	40	220,9	169,9	1,94	G	**TCF150512GP**	**TCF180508GC**
5538635	**TCF570R3SLR40MH**	57,00	58,00	40	219,1	173,1	2,06	H	**TCF180614HP**	**TCF210608HC**
5538636	**TCF580R3SLR40MH**	58,00	59,00	40	223,1	176,1	2,09	H	**TCF180614HP**	**TCF210608HC**
5538637	**TCF590R3SLR40MH**	59,00	60,00	40	227,1	179,1	2,12	H	**TCF180614HP**	**TCF210608HC**
5538638	**TCF600R3SLR40MH**	60,00	61,00	40	230,1	182,1	2,15	H	**TCF180614HP**	**TCF210608HC**
5538639	**TCF610R3SLR40MH**	61,00	62,00	40	234,2	185,2	2,18	H	**TCF180614HP**	**TCF210608HC**
5538640	**TCF620R3SLR40MH**	62,00	63,00	40	238,2	188,2	2,20	H	**TCF180614HP**	**TCF210608HC**
5538641	**TCF630R3SLR40MH**	63,00	64,00	40	242,2	191,2	2,23	H	**TCF180614HP**	**TCF210608HC**
5538642	**TCF640R3SLR40MH**	64,00	65,00	40	245,3	194,3	2,26	H	**TCF180614HP**	**TCF210608HC**
5538643	**TCF650R3SLR40MH**	65,00	66,00	40	249,3	197,3	2,28	H	**TCF180614HP**	**TCF210608HC**
5538644	**TCF660R3SLR40MH**	66,00	67,00	40	253,3	200,3	2,31	H	**TCF180614HP**	**TCF210608HC**
5538645	**TCF670R3SLR40MH**	67,00	68,00	40	256,3	203,3	2,33	H	**TCF180614HP**	**TCF210608HC**
5538646	**TCF680R3SLR40MH**	68,00	69,00	40	260,4	206,4	2,36	H	**TCF180614HP**	**TCF210608HC**

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.

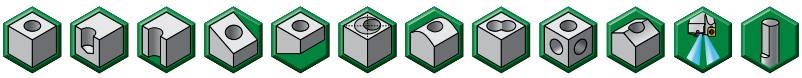
▼ Spare Parts

SSC	periphery insert	centre insert	 insert screw order number	Torx size	 Torx driver order number	tightening torque Nm
A	TCF040204AP	TCF040203AC	**2025073**	T5	**2029221**	0,40
B	TCF050204BP	TCF060203BC	**1175225**	T6	**1138455**	0,53
C	TCF070306CP	TCF070304CC	**1021337**	T7	**2029266**	0,90
D	TCF080308DP	TCF090305DC	**1134385**	T8	**2029598**	1,10
E	TCF100408EP	TCF120405EC	**2018194**	T9	**1138430**	2,00
F	TCF120412FP	TCF150406FC	**1756815**	T15	**1138455**	4,00
F	TCF120412FP	TCF150406FC	**1756815**	T15	**2029596**	4,00
G	TCF150512GP	TCF180508GC	**1099645**	T20	**1138455**	6,30
H	TCF180614HP	TCF210608HC	**1823871**	T25	**1022519**	8,80
H	TCF180614HP	TCF210608HC	**1823871**	T25	**1138455**	8,80

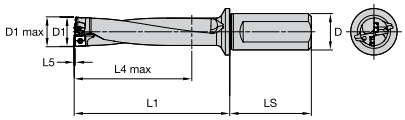
NOTE: Drilling in stacked plates possible in certain applications. Ask for technical support.
Drill shipped with insert screws and Torx wrench.
See pages 270–273 for inserts.
SSC = Pocket Seat Reference.
SLR = Side Lock.
D1 max is an achievable diameter using x-offset.

D	LS
20,00	50
25,00	56
32,00	60
40,00	70

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.



▼ Top Cut 4 Drill • Metric • 4 x D • SLR Shanks



For information on LS, see the table on page 267.

order number	catalogue number	D1	D1 max	D	L1	L4 max	L5	SSC	periphery insert	centre insert
5537869	TCF120R4SLR20MA	12,00	12,50	20	67,4	48,4	0,43	A	TCF040204AP	TCF040203AC
5537870	TCF125R4SLR20MA	12,50	13,00	20	69,5	50,5	0,45	A	TCF040204AP	TCF040203AC
5537871	TCF127R4SLR20MA	12,70	13,20	20	71,3	51,3	0,46	A	TCF040204AP	TCF040203AC
5537872	TCF130R4SLR20MA	13,00	13,50	20	72,5	52,5	0,47	A	TCF040204AP	TCF040203AC
5537873	TCF135R4SLR20MA	13,50	14,00	20	75,5	54,5	0,48	A	TCF040204AP	TCF040203AC
5577938	TCF140R4SLR25MB	14,00	14,50	25	76,5	56,5	0,49	B	TCF050204BP	TCF060203BC
5577939	TCF145R4SLR25MB	14,50	15,00	25	78,5	58,5	0,52	B	TCF050204BP	TCF060203BC
5577940	TCF150R4SLR25MB	15,00	15,50	25	81,5	60,5	0,55	B	TCF050204BP	TCF060203BC
5577941	TCF155R4SLR25MB	15,50	16,00	25	84,6	62,6	0,56	B	TCF050204BP	TCF060203BC
5577942	TCF160R4SLR25MB	16,00	16,50	25	86,6	64,6	0,58	B	TCF050204BP	TCF060203BC
5577943	TCF165R4SLR25MB	16,50	17,00	25	89,6	66,6	0,60	B	TCF050204BP	TCF060203BC
5577944	TCF170R4SLR25MB	17,00	17,50	25	91,6	68,6	0,61	B	TCF050204BP	TCF060203BC
5577945	TCF175R4SLR25MB	17,50	18,00	25	94,6	70,6	0,63	B	TCF050204BP	TCF060203BC
5577946	TCF180R4SLR25MB	18,00	18,50	25	96,6	72,6	0,64	B	TCF050204BP	TCF060203BC
5577947	TCF185R4SLR25MB	18,50	19,00	25	99,7	74,7	0,65	B	TCF050204BP	TCF060203BC
5578836	TCF190R4SLR25MC	19,00	19,50	25	101,7	76,7	0,68	C	TCF070306CP	TCF070304CC
5578837	TCF195R4SLR25MC	19,50	20,00	25	104,7	78,7	0,71	C	TCF070306CP	TCF070304CC
5578838	TCF200R4SLR25MC	20,00	20,50	25	106,7	80,7	0,72	C	TCF070306CP	TCF070304CC
5578839	TCF205R4SLR25MC	20,50	21,00	25	109,7	82,7	0,74	C	TCF070306CP	TCF070304CC
5578840	TCF210R4SLR25MC	21,00	21,50	25	112,8	84,8	0,75	C	TCF070306CP	TCF070304CC
5578841	TCF220R4SLR25MC	22,00	22,50	25	117,8	88,8	0,78	C	TCF070306CP	TCF070304CC
5578842	TCF225R4SLR25MC	22,50	23,00	25	119,8	90,8	0,79	C	TCF070306CP	TCF070304CC
5578843	TCF230R4SLR25MC	23,00	23,50	25	122,8	92,8	0,80	C	TCF070306CP	TCF070304CC
5537831	TCF240R4SLR25MD	24,00	25,00	25	124,9	96,9	0,87	D	TCF080308DP	TCF090305DC
5537832	TCF250R4SLR32MD	25,00	26,00	32	130,9	100,9	0,91	D	TCF080308DP	TCF090305DC
5537833	TCF260R4SLR32MD	26,00	27,00	32	135,9	104,9	0,94	D	TCF080308DP	TCF090305DC
5537834	TCF265R4SLR32MD	26,50	27,50	32	139,0	107,0	0,95	D	TCF080308DP	TCF090305DC
5537835	TCF270R4SLR32MD	27,00	28,00	32	141,0	109,0	0,97	D	TCF080308DP	TCF090305DC
5537836	TCF280R4SLR32MD	28,00	29,00	32	146,0	113,0	0,99	D	TCF080308DP	TCF090305DC
5537837	TCF290R4SLR32MD	29,00	30,00	32	151,0	117,0	1,02	D	TCF080308DP	TCF090305DC
5537951	TCF300R4SLR32ME	30,00	31,00	32	153,1	121,1	1,09	E	TCF100408EP	TCF120405EC
5537952	TCF310R4SLR32ME	31,00	32,00	32	158,1	125,1	1,12	E	TCF100408EP	TCF120405EC
5537953	TCF320R4SLR32ME	32,00	33,00	32	163,2	129,2	1,15	E	TCF100408EP	TCF120405EC
5537954	TCF330R4SLR40ME	33,00	34,00	40	165,2	133,2	1,18	E	TCF100408EP	TCF120405EC
5537955	TCF340R4SLR40ME	34,00	35,00	40	174,2	137,2	1,21	E	TCF100408EP	TCF120405EC
5537956	TCF350R4SLR40ME	35,00	36,00	40	179,2	141,2	1,24	E	TCF100408EP	TCF120405EC
5537957	TCF360R4SLR40ME	36,00	37,00	40	184,3	145,3	1,27	E	TCF100408EP	TCF120405EC
5578619	TCF370R4SLR40MF	37,00	38,00	40	189,3	149,3	1,35	F	TCF120412FP	TCF150406FC
5578620	TCF375R4SLR40MF	37,50	38,50	40	191,4	151,4	1,36	F	TCF120412FP	TCF150406FC
5578621	TCF380R4SLR40MF	38,00	39,00	40	194,4	153,4	1,38	F	TCF120412FP	TCF150406FC
5578622	TCF390R4SLR40MF	39,00	40,00	40	199,4	157,4	1,41	F	TCF120412FP	TCF150406FC
5578623	TCF400R4SLR40MF	40,00	41,00	40	203,4	161,4	1,45	F	TCF120412FP	TCF150406FC
5578624	TCF410R4SLR40MF	41,00	42,00	40	208,5	165,5	1,48	F	TCF120412FP	TCF150406FC
5578625	TCF420R4SLR40MF	42,00	43,00	40	213,5	169,5	1,51	F	TCF120412FP	TCF150406FC
5578626	TCF430R4SLR40MF	43,00	44,00	40	218,5	173,5	1,53	F	TCF120412FP	TCF150406FC
5578627	TCF440R4SLR40MF	44,00	45,00	40	223,6	177,6	1,56	F	TCF120412FP	TCF150406FC
5578628	TCF450R4SLR40MF	45,00	46,00	40	228,6	181,6	1,59	F	TCF120412FP	TCF150406FC
5578729	TCF460R4SLR40MG	46,00	47,00	40	228,7	185,7	1,67	G	TCF150512GP	TCF180508GC
5578730	TCF470R4SLR40MG	47,00	48,00	40	233,7	189,7	1,70	G	TCF150512GP	TCF180508GC
5578731	TCF480R4SLR40MG	48,00	49,00	40	238,7	193,7	1,73	G	TCF150512GP	TCF180508GC
5578732	TCF490R4SLR40MG	49,00	50,00	40	243,8	197,8	1,76	G	TCF150512GP	TCF180508GC
5578733	TCF500R4SLR40MG	50,00	51,00	40	247,8	201,8	1,79	G	TCF150512GP	TCF180508GC

(continued)

(Top Cut 4 Drill • Metric • 4 x D • SLR Shanks — continued)

order number	catalogue number	D1	D1 max	D	L1	L4 max	L5	SSC	periphery insert	centre insert
5578734	**TCF505R4SLR40MG**	50,50	51,50	40	250,8	203,8	1,80	G	**TCF150512GP**	**TCF180508GC**
5578735	**TCF510R4SLR40MG**	51,00	52,00	40	252,8	205,8	1,81	G	**TCF150512GP**	**TCF180508GC**
5578736	**TCF520R4SLR40MG**	52,00	53,00	40	257,8	209,8	1,84	G	**TCF150512GP**	**TCF180508GC**
5578737	**TCF530R4SLR40MG**	53,00	54,00	40	262,9	213,9	1,87	G	**TCF150512GP**	**TCF180508GC**
5578738	**TCF540R4SLR40MG**	54,00	55,00	40	267,9	217,9	1,89	G	**TCF150512GP**	**TCF180508GC**
5578739	**TCF550R4SLR40MG**	55,00	56,00	40	271,9	221,9	1,92	G	**TCF150512GP**	**TCF180508GC**
5578750	**TCF560R4SLR40MG**	56,00	57,00	40	276,9	225,9	1,94	G	**TCF150512GP**	**TCF180508GC**
5538647	**TCF570R4SLR40MH**	57,00	58,00	40	276,1	230,1	2,06	H	**TCF180614HP**	**TCF210608HC**
5538648	**TCF580R4SLR40MH**	58,00	59,00	40	281,1	234,1	2,09	H	**TCF180614HP**	**TCF210608HC**
5538649	**TCF590R4SLR40MH**	59,00	60,00	40	286,1	238,1	2,12	H	**TCF180614HP**	**TCF210608HC**
5538650	**TCF600R4SLR40MH**	60,00	61,00	40	290,1	242,1	2,15	H	**TCF180614HP**	**TCF210608HC**
5538651	**TCF610R4SLR40MH**	61,00	62,00	40	295,2	246,2	2,18	H	**TCF180614HP**	**TCF210608HC**
5538652	**TCF620R4SLR40MH**	62,00	63,00	40	300,2	250,2	2,20	H	**TCF180614HP**	**TCF210608HC**
5538653	**TCF630R4SLR40MH**	63,00	64,00	40	305,2	254,2	2,23	H	**TCF180614HP**	**TCF210608HC**
5538654	**TCF640R4SLR40MH**	64,00	65,00	40	309,3	258,3	2,26	H	**TCF180614HP**	**TCF210608HC**
5538655	**TCF650R4SLR40MH**	65,00	66,00	40	314,3	262,3	2,28	H	**TCF180614HP**	**TCF210608HC**
5538656	**TCF660R4SLR40MH**	66,00	67,00	40	319,3	266,3	2,31	H	**TCF180614HP**	**TCF210608HC**
5538657	**TCF670R4SLR40MH**	67,00	68,00	40	323,3	270,3	2,33	H	**TCF180614HP**	**TCF210608HC**
5538658	**TCF680R4SLR40MH**	68,00	69,00	40	328,4	274,4	2,36	H	**TCF180614HP**	**TCF210608HC**

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.

▼ Spare Parts

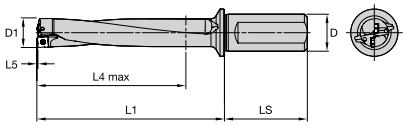
SSC	periphery insert	centre insert	 insert screw order number	Torx size	 Torx driver order number	tightening torque Nm
A	TCF040204AP	TCF040203AC	**2025073**	T5	**2029221**	0,40
B	TCF050204BP	TCF060203BC	**1175225**	T6	**1138455**	0,53
C	TCF070306CP	TCF070304CC	**1021337**	T7	**2029266**	0,90
D	TCF080308DP	TCF090305DC	**1134385**	T8	**2029598**	1,10
E	TCF100408EP	TCF120405EC	**2018194**	T9	**1138430**	2,00
F	TCF120412FP	TCF150406FC	**1756815**	T15	**1138455**	4,00
F	TCF120412FP	TCF150406FC	**1756815**	T15	**2029596**	4,00
G	TCF150512GP	TCF180508GC	**1099645**	T20	**1138455**	6,30
H	TCF180614HP	TCF210608HC	**1823871**	T25	**1022519**	8,80
H	TCF180614HP	TCF210608HC	**1823871**	T25	**1138455**	8,80

NOTE: Drilling in stacked plates possible in certain applications. Ask for technical support.
Drill shipped with insert screws and Torx wrench.
See pages 270–273 for inserts.
SSC = Pocket Seat Reference.
SLR = Side Lock.
D1 max is an achievable diameter using x-offset.

D	LS
20,00	50
25,00	56
32,00	60
40,00	70

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

▼ Top Cut 4 Drill • Metric • 5 x D • SLR Shanks



For information on LS, see the table on page 269.

order number	catalogue number	D1	D	L1	L4 max	L5	SSC	periphery insert	centre insert
5537874	TCF120R5SLR20MA	12,00	20	79,4	60,4	0,43	A	TCF040204AP	TCF040203AC
5537875	TCF125R5SLR20MA	12,50	20	82,0	63,0	0,45	A	TCF040204AP	TCF040203AC
5537876	TCF127R5SLR20MA	12,70	20	84,0	64,0	0,46	A	TCF040204AP	TCF040203AC
5537877	TCF130R5SLR20MA	13,00	20	85,5	65,5	0,47	A	TCF040204AP	TCF040203AC
5537878	TCF135R5SLR20MA	13,50	20	89,0	68,0	0,48	A	TCF040204AP	TCF040203AC
5577948	TCF140R5SLR25MB	14,00	25	90,5	70,5	0,49	B	TCF050204BP	TCF060203BC
5577949	TCF145R5SLR25MB	14,50	25	93,0	73,0	0,52	B	TCF050204BP	TCF060203BC
5577950	TCF150R5SLR25MB	15,00	25	96,5	75,5	0,55	B	TCF050204BP	TCF060203BC
5577951	TCF155R5SLR25MB	15,50	25	100,1	78,1	0,56	B	TCF050204BP	TCF060203BC
5577952	TCF160R5SLR25MB	16,00	25	102,6	80,6	0,58	B	TCF050204BP	TCF060203BC
5577953	TCF165R5SLR25MB	16,50	25	106,1	83,1	0,60	B	TCF050204BP	TCF060203BC
5577954	TCF170R5SLR25MB	17,00	25	108,6	85,6	0,61	B	TCF050204BP	TCF060203BC
5577955	TCF175R5SLR25MB	17,50	25	112,1	88,1	0,63	B	TCF050204BP	TCF060203BC
5577956	TCF180R5SLR25MB	18,00	25	114,6	90,6	0,64	B	TCF050204BP	TCF060203BC
5577957	TCF185R5SLR25MB	18,50	25	118,2	93,2	0,65	B	TCF050204BP	TCF060203BC
5578844	TCF190R5SLR25MC	19,00	25	120,7	95,7	0,68	C	TCF070306CP	TCF070304CC
5578845	TCF195R5SLR25MC	19,50	25	124,2	98,2	0,71	C	TCF070306CP	TCF070304CC
5578846	TCF200R5SLR25MC	20,00	25	126,7	100,7	0,72	C	TCF070306CP	TCF070304CC
5578847	TCF205R5SLR25MC	20,50	25	130,2	103,2	0,74	C	TCF070306CP	TCF070304CC
5578848	TCF210R5SLR25MC	21,00	25	133,8	105,8	0,75	C	TCF070306CP	TCF070304CC
5578849	TCF220R5SLR25MC	22,00	25	139,8	110,8	0,78	C	TCF070306CP	TCF070304CC
5578850	TCF225R5SLR25MC	22,50	25	142,3	113,3	0,79	C	TCF070306CP	TCF070304CC
5578851	TCF230R5SLR25MC	23,00	25	145,8	115,8	0,80	C	TCF070306CP	TCF070304CC
5537838	TCF240R5SLR25MD	24,00	25	148,9	120,9	0,87	D	TCF080308DP	TCF090305DC
5537839	TCF250R5SLR32MD	25,00	32	155,9	125,9	0,91	D	TCF080308DP	TCF090305DC
5537840	TCF260R5SLR32MD	26,00	32	161,9	130,9	0,94	D	TCF080308DP	TCF090305DC
5537841	TCF265R5SLR32MD	26,50	32	165,5	133,5	0,95	D	TCF080308DP	TCF090305DC
5537842	TCF270R5SLR32MD	27,00	32	168,0	136,0	0,97	D	TCF080308DP	TCF090305DC
5537843	TCF280R5SLR32MD	28,00	32	174,0	141,0	0,99	D	TCF080308DP	TCF090305DC
5537844	TCF290R5SLR32MD	29,00	32	180,0	146,0	1,02	D	TCF080308DP	TCF090305DC
5537958	TCF300R5SLR32ME	30,00	32	183,1	151,1	1,09	E	TCF100408EP	TCF120405EC
5537959	TCF310R5SLR32ME	31,00	32	189,1	156,1	1,12	E	TCF100408EP	TCF120405EC
5537960	TCF320R5SLR32ME	32,00	32	195,2	161,2	1,15	E	TCF100408EP	TCF120405EC
5537961	TCF330R5SLR40ME	33,00	40	202,2	166,2	1,18	E	TCF100408EP	TCF120405EC
5537962	TCF340R5SLR40ME	34,00	40	208,2	171,2	1,21	E	TCF100408EP	TCF120405EC
5537963	TCF350R5SLR40ME	35,00	40	214,2	176,2	1,24	E	TCF100408EP	TCF120405EC
5537964	TCF360R5SLR40ME	36,00	40	220,3	181,3	1,27	E	TCF100408EP	TCF120405EC
5578629	TCF370R5SLR40MF	37,00	40	226,3	186,3	1,35	F	TCF120412FP	TCF150406FC
5578640	TCF375R5SLR40MF	37,50	40	228,9	188,9	1,36	F	TCF120412FP	TCF150406FC
5578641	TCF380R5SLR40MF	38,00	40	232,4	191,4	1,38	F	TCF120412FP	TCF150406FC
5578642	TCF390R5SLR40MF	39,00	40	238,4	196,4	1,41	F	TCF120412FP	TCF150406FC
5578643	TCF400R5SLR40MF	40,00	40	243,4	201,4	1,45	F	TCF120412FP	TCF150406FC
5578644	TCF410R5SLR40MF	41,00	40	249,5	206,5	1,48	F	TCF120412FP	TCF150406FC
5578645	TCF420R5SLR40MF	42,00	40	255,5	211,5	1,51	F	TCF120412FP	TCF150406FC
5578646	TCF430R5SLR40MF	43,00	40	261,5	216,5	1,53	F	TCF120412FP	TCF150406FC
5578647	TCF440R5SLR40MF	44,00	40	267,6	221,6	1,56	F	TCF120412FP	TCF150406FC
5578648	TCF450R5SLR40MF	45,00	40	273,6	226,6	1,59	F	TCF120412FP	TCF150406FC
5578751	TCF460R5SLR40MG	46,00	40	274,7	231,7	1,67	G	TCF150512GP	TCF180508GC
5578752	TCF470R5SLR40MG	47,00	40	280,7	236,7	1,70	G	TCF150512GP	TCF180508GC
5578753	TCF480R5SLR40MG	48,00	40	286,7	241,7	1,73	G	TCF150512GP	TCF180508GC
5578754	TCF490R5SLR40MG	49,00	40	292,8	246,8	1,76	G	TCF150512GP	TCF180508GC
5578755	TCF500R5SLR40MG	50,00	40	297,8	251,8	1,79	G	TCF150512GP	TCF180508GC

(continued)

(Top Cut 4 Drill • Metric • 5 x D • SLR Shank — continued)

order number	catalogue number	D1	D	L1	L4 max	L5	SSC	periphery insert	centre insert
5578756	**TCF505R5SLR40MG**	50,50	40	301,3	254,3	1,80	G	**TCF150512GP**	**TCF180508GC**
5578757	**TCF510R5SLR40MG**	51,00	40	303,8	256,8	1,81	G	**TCF150512GP**	**TCF180508GC**
5578758	**TCF520R5SLR40MG**	52,00	40	309,8	261,8	1,84	G	**TCF150512GP**	**TCF180508GC**
5578759	**TCF530R5SLR40MG**	53,00	40	315,9	266,9	1,87	G	**TCF150512GP**	**TCF180508GC**
5578760	**TCF540R5SLR40MG**	54,00	40	321,9	271,9	1,89	G	**TCF150512GP**	**TCF180508GC**
5578761	**TCF550R5SLR40MG**	55,00	40	326,9	276,9	1,92	G	**TCF150512GP**	**TCF180508GC**
5578762	**TCF560R5SLR40MG**	56,00	40	332,9	281,9	1,94	G	**TCF150512GP**	**TCF180508GC**
5538659	**TCF570R5SLR40MH**	57,00	40	333,1	287,1	2,06	H	**TCF180614HP**	**TCF210608HC**
5538680	**TCF580R5SLR40MH**	58,00	40	339,1	292,1	2,09	H	**TCF180614HP**	**TCF210608HC**
5538681	**TCF590R5SLR40MH**	59,00	40	345,1	297,1	2,12	H	**TCF180614HP**	**TCF210608HC**
5538682	**TCF600R5SLR40MH**	60,00	40	350,1	302,1	2,15	H	**TCF180614HP**	**TCF210608HC**
5538683	**TCF610R5SLR40MH**	61,00	40	356,2	307,2	2,18	H	**TCF180614HP**	**TCF210608HC**
5538684	**TCF620R5SLR40MH**	62,00	40	362,2	312,2	2,20	H	**TCF180614HP**	**TCF210608HC**
5538685	**TCF630R5SLR40MH**	63,00	40	368,2	317,2	2,23	H	**TCF180614HP**	**TCF210608HC**
5538686	**TCF640R5SLR40MH**	64,00	40	373,3	322,3	2,26	H	**TCF180614HP**	**TCF210608HC**
5538687	**TCF650R5SLR40MH**	65,00	40	379,3	327,3	2,28	H	**TCF180614HP**	**TCF210608HC**
5538688	**TCF660R5SLR40MH**	66,00	40	385,3	332,3	2,31	H	**TCF180614HP**	**TCF210608HC**
5538689	**TCF670R5SLR40MH**	67,00	40	390,3	337,3	2,33	H	**TCF180614HP**	**TCF210608HC**
5538700	**TCF680R5SLR40MH**	68,00	40	396,4	342,4	2,36	H	**TCF180614HP**	**TCF210608HC**

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the inserts.

▼ Spare Parts

SSC	periphery insert	centre insert	 insert screw order number	Torx size	 Torx driver order number	tightening torque Nm
A	TCF040204AP	TCF040203AC	**2025073**	T5	**2029221**	0,40
B	TCF050204BP	TCF060203BC	**1175225**	T6	**1138455**	0,53
C	TCF070306CP	TCF070304CC	**1021337**	T7	**2029266**	0,90
D	TCF080308DP	TCF090305DC	**1134385**	T8	**2029598**	1,10
E	TCF100408EP	TCF120405EC	**2018194**	T9	**1138430**	2,00
F	TCF120412FP	TCF150406FC	**1756815**	T15	**1138455**	4,00
F	TCF120412FP	TCF150406FC	**1756815**	T15	**2029596**	4,00
G	TCF150512GP	TCF180508GC	**1099645**	T20	**1138455**	6,30
H	TCF180614HP	TCF210608HC	**1823871**	T25	**1022519**	8,80
H	TCF180614HP	TCF210608HC	**1823871**	T25	**1138455**	8,80

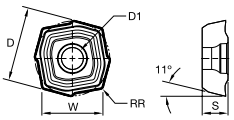
NOTE: Drilling in stacked plates possible in certain applications. Ask for technical support.
Drill shipped with insert screws and Torx wrench.
See pages 270–273 for inserts.
SSC = Pocket Seat Reference.
SLR = Side Lock.

D	LS
20,00	50
25,00	56
32,00	60
40,00	70

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Top Cut 4™

Top Cut 4 Drill • Centre Inserts • Aluminium V36



● first choice
○ alternate choice

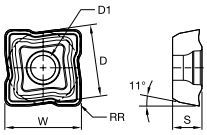
P	●	●	●	
M			●	●
K	●	●	●	
N				●
S				
H				

NEW!

▼ Top Cut 4 Drill • Centre Inserts • Aluminium V36

catalogue number	D	D1	W	S	RR	SSC	WPK10CH	WU25CH	WU40PH	WN10PH
TCF040203ACV36	4,47	2,10	3,65	2,00	0,300	A	'	'	'	6407887
TCF060203BCV36	6,00	2,40	4,90	2,40	0,300	B	'	'	'	6372041
TCF070304CCV36	7,59	2,60	6,20	2,80	0,400	C	'	'	'	6372042
TCF090305DCV36	9,55	2,80	7,80	3,00	0,500	D	'	'	'	6372045
TCF120405ECV36	12,00	3,40	9,80	3,60	0,500	E	'	'	'	6372047
TCF150406FCV36	14,94	4,80	12,20	4,20	0,600	F	'	'	'	6346757
TCF180508GCV36	17,88	6,00	14,60	5,40	0,800	G	'	'	'	6407890
TCF210608HCV36	21,68	7,50	17,70	6,50	0,800	H	'	'	'	6372049

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.



● first choice
○ alternate choice

P	●	●	●	
M			●	●
K	●	●	●	
N				●
S				
H				

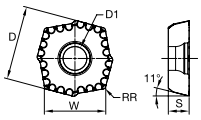
▼ Top Cut 4 Drill • Periphery Inserts • Aluminium V36

catalogue number	D	D1	W	S	RR	SSC	WPK10CH	WU25CH	WU40PH	WN10PH
TCF040204APV36	4,14	2,10	4,40	2,00	0,400	A	'	'	'	6407888
TCF050204BPV36	5,07	2,40	5,40	2,40	0,400	B	'	'	'	6371850
TCF070306CPV36	6,67	2,60	7,10	2,80	0,600	C	'	'	'	6372043
TCF080308DPV36	8,08	2,80	8,60	3,00	0,800	D	'	'	'	6372044
TCF100408EPV36	9,96	3,40	10,60	3,60	0,800	E	'	'	'	6372046
TCF120412FPV36	12,59	4,80	13,40	4,20	1,200	F	'	'	'	6348893
TCF150512GPV36	15,13	6,00	16,10	5,40	1,200	G	'	'	'	6407889
TCF180614HPV36	18,04	7,50	19,20	6,50	1,400	H	'	'	'	6372048

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.

Top Cut 4™

Top Cut 4 Drill • Centre Inserts • Long Chip Materials V38



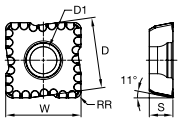
● first choice
○ alternate choice

P	●	●	●
M		●	●
K	●	●	●
N			
S			
H			

▼ Top Cut 4 Drill • Centre Inserts • Long Chip Materials V38

catalogue number	D	D1	W	S	RR	SSC	WPK10CH	WU25CH	WU40PH
TCF040203ACV38	4,47	2,10	3,65	2,00	0,300	A	●	●	6429458
TCF060203BCV38	6,00	2,40	4,90	2,40	0,300	B	●	●	6429459
TCF070304CCV38	7,59	2,60	6,20	2,80	0,400	C	●	●	6429460
TCF090305DCV38	9,55	2,80	7,80	3,00	0,500	D	●	●	6429461
TCF120405ECV38	12,00	3,40	9,80	3,60	0,500	E	●	●	6429462
TCF150406FCV38	14,94	4,80	12,20	4,20	0,600	F	●	●	6429463
TCF180508GCV38	17,88	6,00	14,60	5,40	0,800	G	●	●	6324383
TCF210608HCV38	21,68	7,50	17,70	6,50	0,800	H	●	●	6429464

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.
Refer to the WIDIA™ 2017 Master Catalogue (A-15-04580EN_me) or the NOVO™ application for the complete geometry offering.



● first choice
○ alternate choice

P		●	●	●
M			●	●
K		●	●	●
N				
S				
H				

▼ Top Cut 4 Drill • Periphery Inserts • Long Chip Materials V38

catalogue number	D	D1	W	S	RR	SSC	WPK10CH	WU25CH	WU40PH
TCF040204APV38	4,14	2,10	4,40	2,00	0,400	A	▪	6429424	6429425
TCF050204BPV38	5,07	2,40	5,40	2,40	0,400	B	▪	6429426	6429427
TCF070306CPV38	6,67	2,60	7,10	2,80	0,600	C	▪	6429466	6429428
TCF080308DPV38	8,08	2,80	8,60	3,00	0,800	D	▪	6429429	6429430
TCF100408EPV38	9,96	3,40	10,60	3,60	0,800	E	▪	6429451	6429452
TCF120412FPV38	12,59	4,80	13,40	4,20	1,200	F	▪	6429453	6429454
TCF150512GPV38	15,13	6,00	16,10	5,40	1,200	G	▪	6429455	6324381
TCF180614HPV38	18,04	7,50	19,20	6,50	1,400	H	▪	6429456	6429457

NOTE: SSC = Pocket Seat Reference. To correspond with the SSC on the toolholder.
Refer to the WIDIA™ 2017 Master Catalogue (A-15-04580EN_me) or the NOVO™ application for the complete geometry offering.

Top Cut 4™

New Generation Indexable Drilling System

▼ Top Cut 4 • Insert Selection Guide

Material Group	Geometry	Stable Cutting Conditions		Unstable Cutting Conditions		Interrupted Cutting Conditions	
		periphery insert	centre insert	periphery insert	centre insert	periphery insert	centre insert
P1 NEW!	V38	WU25CH	WU40PH	**WU40PH**	**WU40PH**	WU40PH	WU40PH
P2–P4	V34	WPK10CH	WU40PH	**WU25CH**	**WU40PH**	WU40PH	WU40PH
P5–P6	V36	WU25CH	WU40PH	**WU40PH**	**WU40PH**	WU40PH	WU40PH
M1–M3	V36	WU25CH	WU40PH	**WU40PH**	**WU40PH**	WU40PH	WU40PH
K1–K3	V34	WPK10CH	WU40PH	**WU40PH**	**WU40PH**	WU40PH	WU40PH
N1–N4 NEW!	V36	WN10PH	WN10PH	**WN10PH**	**WN10PH**	WN10PH	WN10PH
S1–S4	V38	WU40PH	WU40PH	**WU40PH**	**WU40PH**	WU40PH	WU40PH

▼ Top Cut 4 • Cutting Data • Metric

Material Group	Geometry	Grade		Cutting Speed – Vc m/min			Metric: Recommended Feed Rate per Revolution				
		centre	periphery	min	Start	max	Tool Diameter	12,00–13,99 Insert Size A	14,00–18,99 Insert Size B	19,00–23,99 Insert Size C	24,00–29,99 Insert Size D
P0	-V38	WU40PH	WU25CH	120	**180**	260	mm/rev	0,06–0,08	0,08–0,11	0,10–0,13	0,11–0,14
P1	-V38	WU40PH	WU25CH	120	**180**	260	mm/rev	0,06–0,10	0,08–0,13	0,10–0,15	0,11–0,16
P2	-V34	WU40PH	WU25CH	120	**190**	280	mm/rev	0,06–0,10	0,08–0,15	0,10–0,16	0,11–0,17
P3	-V34	WU40PH	WPK10CH	120	**200**	310	mm/rev	0,08–0,15	0,10–0,16	0,11–0,18	0,12–0,20
P4	-V34	WU40PH	WPK10CH	120	**190**	310	mm/rev	0,08–0,15	0,10–0,16	0,11–0,18	0,12–0,20
P5	-V36	WU40PH	WU25CH	120	**180**	250	mm/rev	0,06–0,10	0,08–0,14	0,10–0,15	0,11–0,16
P6	-V36	WU40PH	WU25CH	120	**160**	210	mm/rev	0,06–0,10	0,08–0,14	0,10–0,15	0,11–0,16
M1	-V38	WU40PH	WU40PH	120	**160**	240	mm/rev	0,06–0,11	0,07–0,11	0,08–0,12	0,10–0,14
M2	-V38	WU40PH	WU40PH	110	**140**	210	mm/rev	0,06–0,10	0,07–0,11	0,08–0,12	0,10–0,14
M3	-V36	WU40PH	WU40PH	100	**120**	200	mm/rev	0,06–0,10	0,07–0,11	0,08–0,12	0,10–0,14
K1	-V34	WU25CH	WPK10CH	120	**200**	280	mm/rev	0,08–0,14	0,08–0,16	0,10–0,18	0,12–0,24
K2	-V34	WU40PH	WPK10CH	100	**180**	260	mm/rev	0,08–0,14	0,08–0,16	0,10–0,18	0,12–0,24
K3	-V34	WU40PH	WPK10CH	100	**170**	240	mm/rev	0,08–0,14	0,08–0,16	0,10–0,18	0,12–0,24
N1	-V36	WN10PH	WN10PH	250	**350**	500	mm/rev	0,06–0,10	0,08–0,14	0,10–0,15	0,11–0,16
N2	-V36	WN10PH	WN10PH	150	**300**	450	mm/rev	0,06–0,10	0,08–0,14	0,10–0,15	0,11–0,16
N3	-V36	WN10PH	WN10PH	80	**120**	150	mm/rev	0,06–0,10	0,07–0,11	0,08–0,12	0,10–0,14
S3	-V38	WU40PH	WU40PH	20	**30**	45	mm/rev	0,08–0,12	0,08–0,13	0,10–0,15	0,12–0,19
S4	-V38	WU40PH	WU40PH	35	**40**	65	mm/rev	0,08–0,12	0,08–0,13	0,10 –0,15	0,12–0,19

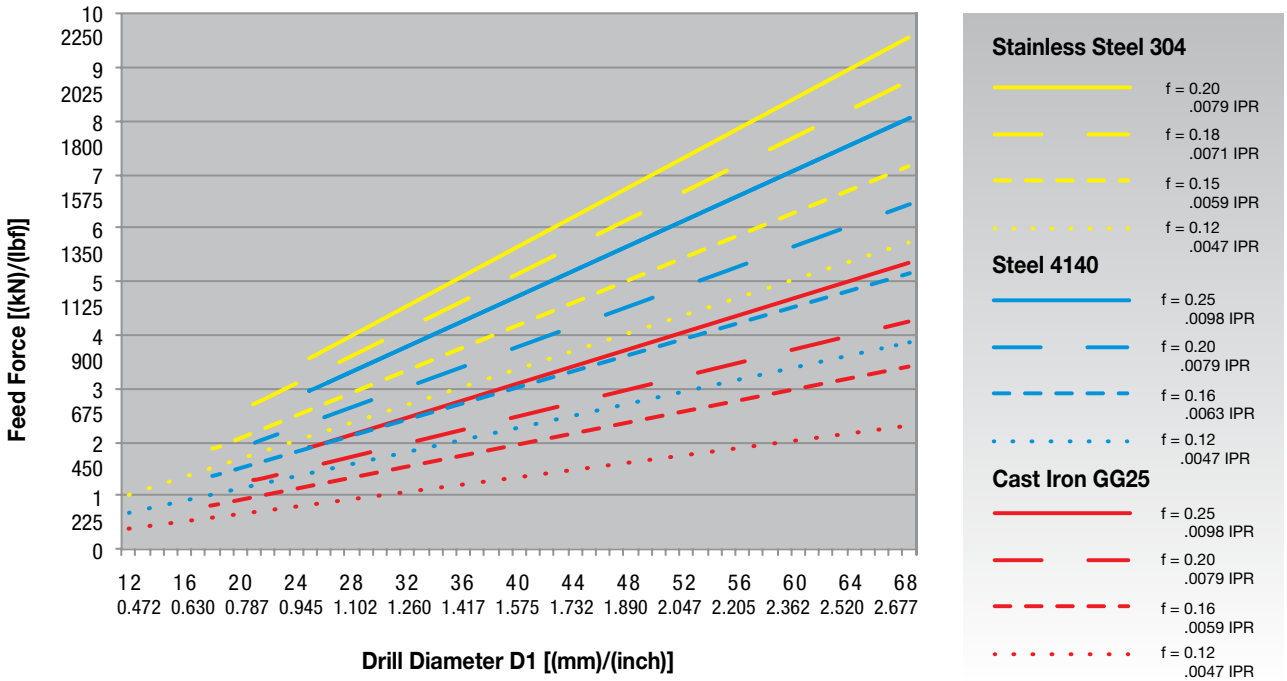
Material Group	Geometry	Grade		Cutting Speed – Vc m/min			Tool Diameter	30,00–36,99 Insert Size E	37,00–45,99 Insert Size F	46,00–56,99 Insert Size G	57,00–68,00 Insert Size H
		centre	periphery	min	Start	max					
P0	-V38	WU40PH	WU25CH	120	**180**	260	mm/rev	0,13–0,16	0,15–0,18	0,16–0,23	0,17–0,24
P1	-V38	WU40PH	WU25CH	120	**180**	260	mm/rev	0,13–0,17	0,15–0,19	0,16–0,24	0,17–0,25
P2	-V34	WU40PH	WU25CH	120	**190**	280	mm/rev	0,13–0,20	0,15–0,21	0,16–0,28	0,17–0,30
P3	-V34	WU40PH	WPK10CH	120	**200**	310	mm/rev	0,16–0,24	0,16–0,24	0,18–0,30	0,19–0,32
P4	-V34	WU40PH	WPK10CH	120	**190**	310	mm/rev	0,14–0,22	0,16–0,24	0,18–0,30	0,19–0,32
P5	-V36	WU40PH	WU25CH	120	**180**	250	mm/rev	0,13–0,18	0,15–0,20	0,16–0,28	0,17–0,30
P6	-V36	WU40PH	WU25CH	120	**160**	210	mm/rev	0,13–0,18	0,15–0,20	0,16–0,28	0,17–0,29
M1	-V38	WU40PH	WU40PH	120	**160**	240	mm/rev	0,12–0,17	0,14–0,21	0,16–0,23	0,16–0,24
M2	–V38	WU40PH	WU40PH	110	**140**	210	mm/rev	0,12–0,17	0,14–0,21	0,16–0,23	0,16–0,24
M3	-V36	WU40PH	WU40PH	100	**120**	200	mm/rev	0,12–0,17	0,14–0,21	0,16–0,23	0,16–0,24
K1	-V34	WU25CH	WPK10CH	120	**200**	280	mm/rev	0,14–0,26	0,16–0,30	0,18–0,32	0,20–0,36
K2	-V34	WU40PH	WPK10CH	100	**180**	260	mm/rev	0,14–0,26	0,16–0,30	0,18–0,32	0,20–0,36
K3	-V34	WU40PH	WPK10CH	100	**170**	240	mm/rev	0,14–0,26	0,16–0,30	0,18–0,32	0,20–0,36
N1	-V36	WN10PH	WN10PH	250	**350**	500	mm/rev	0,13–0,18	0,15–0,20	0,16–0,28	0,17–0,30
N2	-V36	WN10PH	WN10PH	150	**300**	450	mm/rev	0,13–0,18	0,15–0,20	0,16–0,28	0,17–0,30
N3	-V36	WN10PH	WN10PH	80	**120**	150	mm/rev	0,12–0,17	0,14–0,21	0,16–0,23	0,16–0,24
S3	-V38	WU40PH	WU40PH	20	**30**	45	mm/rev	0,14–0,21	0,16–0,24	0,18–0,26	0,20–0,30
S4	-V38	WU40PH	WU40PH	35	**40**	65	mm/rev	0,14–0,21	0,16–0,24	0,18–0,26	0,20–0,30

NOTE: All speed conditions are for stable conditions. For unstable conditions, it is suggested to reduce starting speeds by 10%. For interrupted cuts, reduce by 20%.
For 4 x D, it is highly recommended to start with feed and speed values reduced by 10% less than above data.
For 5 x D, diameter range 12–23,99mm (insert sizes A to C), it is highly recommended to start with feed and speed values reduced by 20% less than above data.
For 5 x D, diameter range 25–68mm (inserts sizes D to H), it is highly recommended to start with feed and speed values reduced by 15% less than above data.
For 4 x D and 5 x D, it is recommended to reduce feed rate during entry and exit by 30–50%.

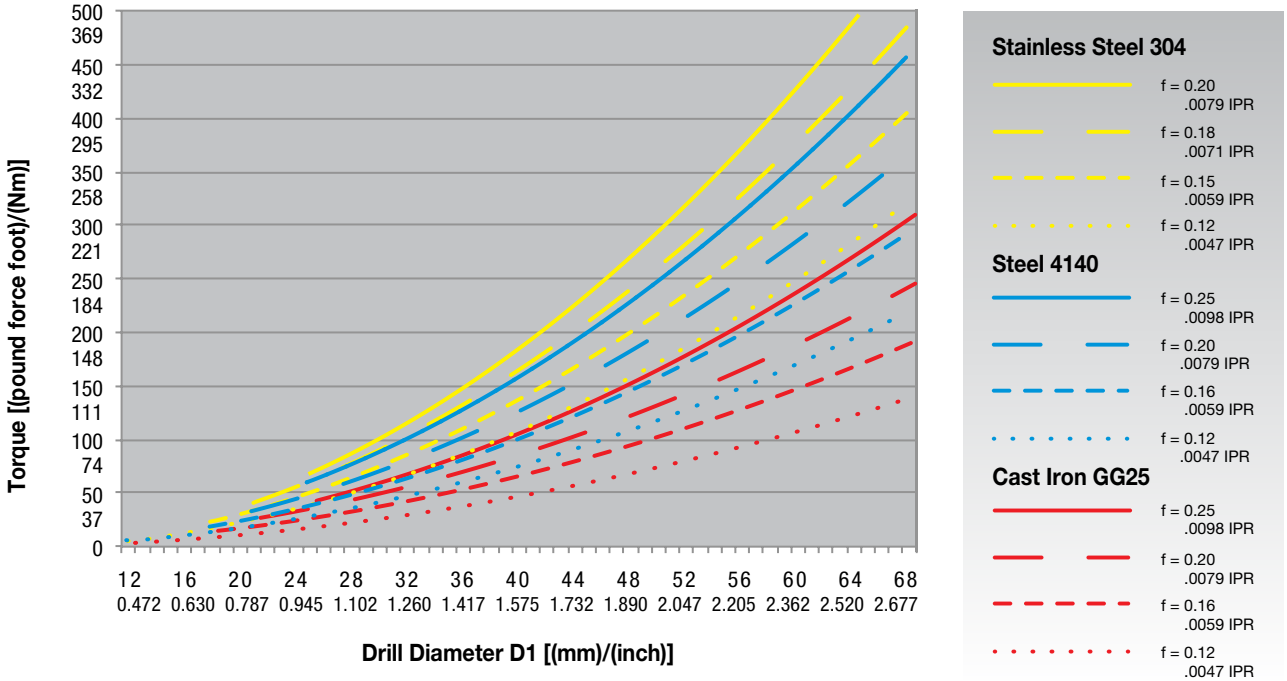
▼ Top Cut 4™ • Drill Depth • X-Offset Capabilities • Hole Tolerance

Insert size	Diameter range mm	2 x D/3 x D			4 x D			5 x D		
		X-offset value max. in mm	D1 max value mm	Hole tolerance mm	X-offset value max. in mm	D1 max value mm	Hole tolerance mm	X-offset value max. in mm	D1 max value mm	Hole tolerance mm
A	12,00–13,99	0,5	D1 + 1mm	+/- 0,20	0,5	D1 + 1mm	+/- 0,35	—	—	+/- 0,35
B	14,00–18,99	0,5	D1 + 1mm	+/- 0,20	0,5	D1 + 1mm	+/- 0,35	—	—	+/- 0,35
C	19,00–23,99	0,5	D1 + 1mm	+/- 0,20	0,5	D1 + 1mm	+/- 0,35	—	—	+/- 0,35
D	24,00–29,99	0,8	D1 + 1,6mm	+/- 0,20	0,8	D1 + 1mm	+/- 0,35	—	—	+/- 0,35
E	30,00–36,99	0,8	D1 + 1,6mm	+/- 0,20	0,8	D1 + 1mm	+/- 0,35	—	—	+/- 0,35
F	37,00–45,99	0,8	D1 + 1,6mm	+/- 0,25	0,8	D1 + 1mm	+/- 0,38	—	—	+/- 0,38
G	46,00–56,99	1	D1 + 2mm	+/- 0,25	0,8	D1 + 1mm	+/- 0,38	—	—	+/- 0,38
H	57,00–68,00	1	D1 + 2mm	+/- 0,28	0,8	D1 + 1mm	+/- 0,42	—	—	+/- 0,42

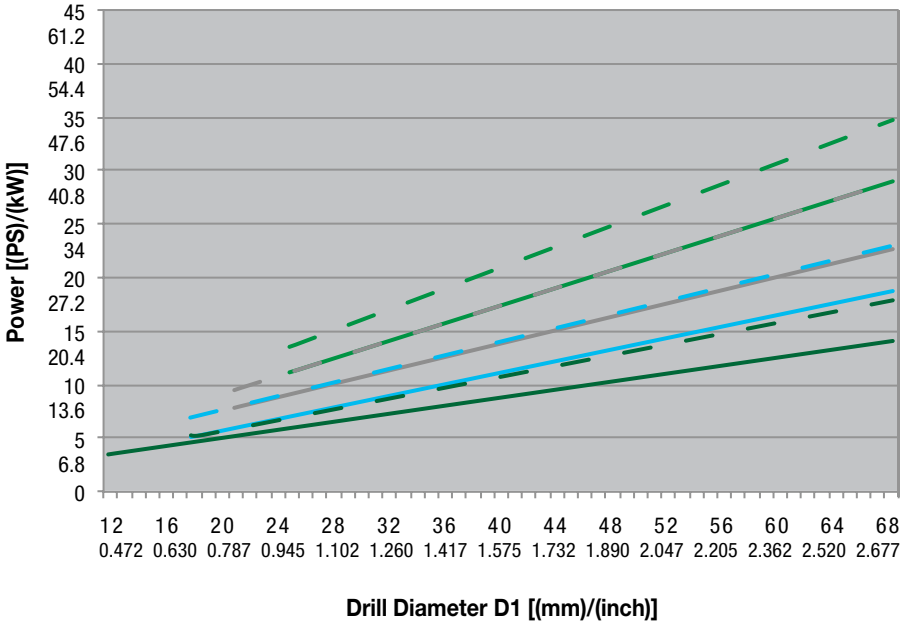
Feed Force Requirement



Torque Requirement



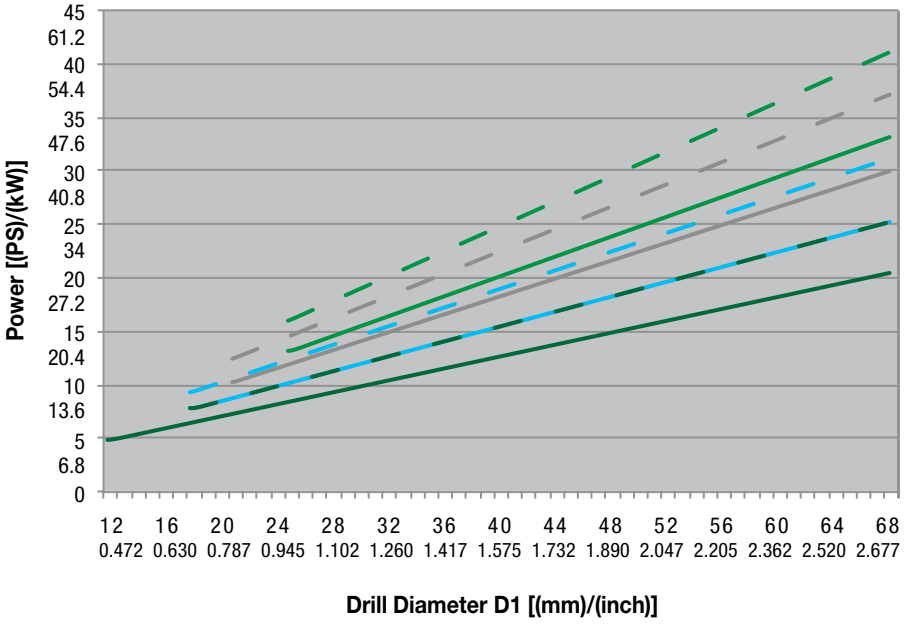
Power Requirement — Steel



Steel 4140

- f = 0.25 (160 m/min) f = .0098 IPR (525 SFM)
- f = 0.25 (200 m/min) f = .0098 IPR (656 SFM)
- f = 0.16 (160 m/min) f = .0063 IPR (525 SFM)
- f = 0.16 (200 m/min) f = .0063 IPR (656 SFM)
- f = 0.12 (160 m/min) f = .0047 IPR (525 SFM)
- f = 0.12 (200 m/min) f = .0047 IPR (656 SFM)
- f = 0.20 (160 m/min) f = .0079 IPR (525 SFM)
- f = 0.20 (200 m/min) f = .0079 IPR (656 SFM)

Power Requirement — Stainless Steel

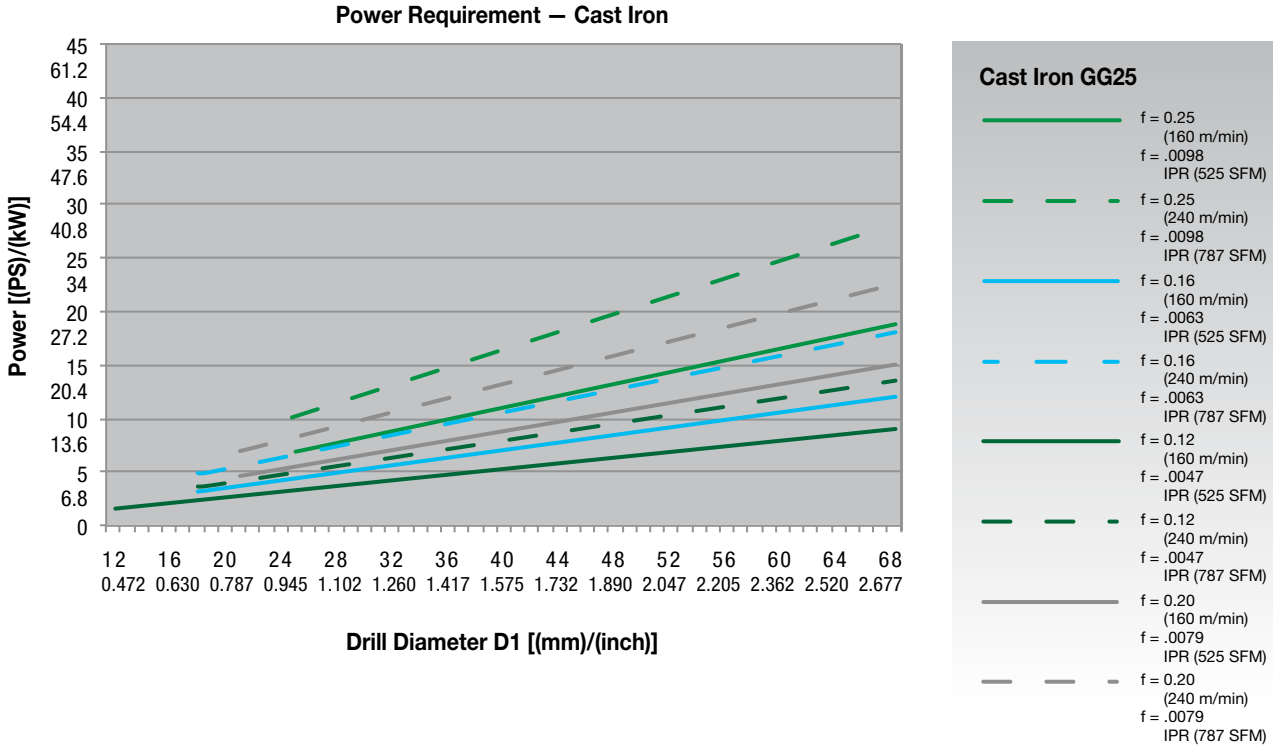


Stainless Steel 304

- f = 0.20 (160 m/min) f = .0079 IPR (525 SFM)
- f = 0.20 (200 m/min) f = .0079 IPR (656 SFM)
- f = 0.15 (160 m/min) f = .0059 IPR (525 SFM)
- f = 0.15 (200 m/min) f = .0059 IPR (656 SFM)
- f = 0.12 (160 m/min) f = .0047 IPR (525 SFM)
- f = 0.12 (200 m/min) f = .0047 IPR (656 SFM)
- f = 0.18 (160 m/min) f = .0071 IPR (525 SFM)
- f = 0.18 (200 m/min) f = .0071 IPR (656 SFM)

(continued)

(continued)


Power Requirement — Cast Iron
Power [(PS)/(kW)]
45
61.2
40
54.4
35
47.6
30
40.8
25
34
20
27.2
15
20.4
10
13.6
5
6.8
0
12 16 20 24 28 32 36 40 44 48 52 56 60 64 68
0.472 0.630 0.787 0.945 1.102 1.260 1.417 1.575 1.732 1.890 2.047 2.205 2.362 2.520 2.677
Drill Diameter D1 [(mm)/(inch)]
Cast Iron GG25
f = 0.25 (160 m/min) f = .0098 IPR (525 SFM)
f = 0.25 (240 m/min) f = .0098 IPR (787 SFM)
f = 0.16 (160 m/min) f = .0063 IPR (525 SFM)
f = 0.16 (240 m/min) f = .0063 IPR (787 SFM)
f = 0.12 (160 m/min) f = .0047 IPR (525 SFM)
f = 0.12 (240 m/min) f = .0047 IPR (787 SFM)
f = 0.20 (160 m/min) f = .0079 IPR (525 SFM)
f = 0.20 (240 m/min) f = .0079 IPR (787 SFM)

Designed to Make Your Workplace More Productive

WIDIA™ X-Feed™

WIDIA-branded X-Feed tooling was created as an application-specific portfolio to remove as much material as possible in the shortest amount of time, using a shallow depth of cut to achieve higher MRR and boost productivity.

FEED → HIGH-FEED MILLING → BOOST PRODUCTIVITY

Victory™ X-Feed For Machining Stainless Steel and Titanium

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Designed for circular plunging and ramping, 3D machining, face milling, and pocketing applications.

Victory X-Feed To Speed Up High-Feed Machining

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VXF is a high-feed productivity booster designed to establish new industry standards with market-leading milling grades like WS40PM.

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WIDIA™

VariTap™

High-Performance Solution for Multipurpose Tapping

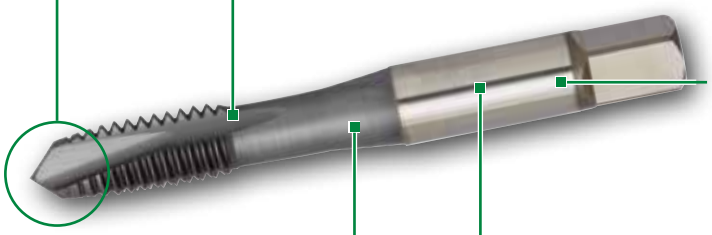
VariTap is the high-performance multipurpose tapping solution from WIDIA™. VariTap has an optimised geometry capable of working in a wide variety of ductile materials — including carbon and alloy steels, stainless steels, ductile iron, and cast aluminium. VariTap reduces inventory costs without losing the benefit of high-quality threads and consistent tool life.

With a wide range of inch and metric standard sizes, pitch diameter limits, classes of fit, chamfer styles, and coatings, VariTap offers the most expansive portfolio of multipurpose taps available on the market. VariTap now includes ISO pipe taps for through and blind hole applications.

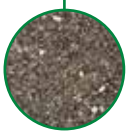
Multipurpose Taps for Steel, Stainless Steel, Cast Aluminium, and Ductile Iron

Unique spiral-point design
Cutting edge angles and positive rake face straight-flutes are optimised for tapping multiple materials.

Multiple tap dimension options
ANSI, DIN, JIS, and DIN/ANSI.



Precision ground shanks
Low runout.



High-vanadium HSS-E
Improved wear characteristics and longer tool life.

PVD coatings and surface treatments
For use with various workpiece materials:

WP42EG	WU41EG	WP49EG	WU40EG
TiCN	TiN	Oxide	Bright

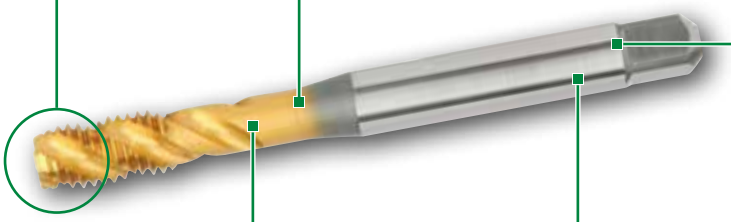
Multipurpose Taps for Steel, Stainless Steel, Cast Aluminium, and Ductile Iron

Advanced spiral-flute design

Smooth ejection of chips to reduce and eliminate bird-nesting.

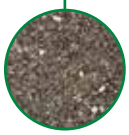
Multiple tap dimension options

ANSI, DIN, JIS, and DIN/ANSI.



Precision ground shanks

Low runout.



High-vanadium HSS-E

Improved wear resistance and longer life.

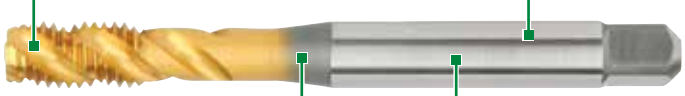
PVD coatings and surface treatments

For use with various workpiece materials:

WP42EG	WU41EG	WP49EG	WU40EG
TiCN	TiN	Oxide	Bright

Multipurpose HSS-E Spiral-Flute Taps
For Use in Tension/Compression Tap Holders

Advanced spiral-flute design
Smooth ejection of chips to reduce and eliminate bird-nesting.

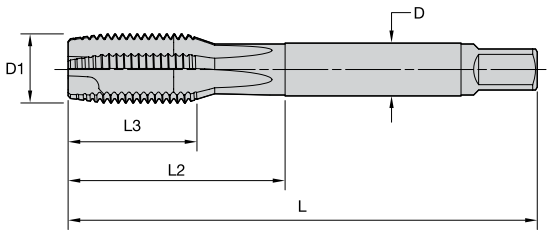


High vanadium HSS-E
Improved wear characteristics and longer tool life.

Precision ground shanks
Low runout.

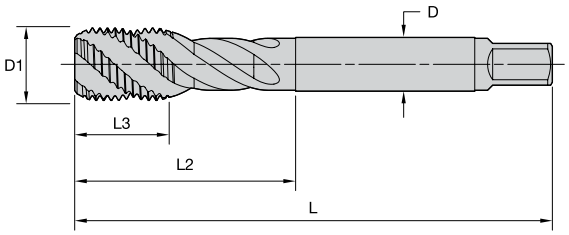
PVD coatings and surface treatment
For use in various workpiece materials:

WU41EG	WP49EG
TiN	Oxide



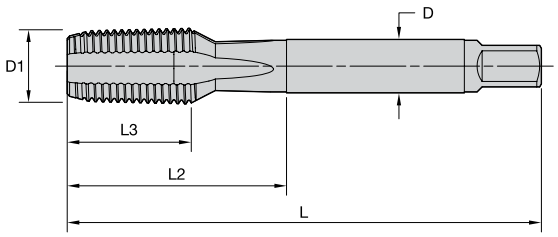
order number	catalogue number	grade	D1 TPI	L (mm)	L2 (mm)	L3 (mm)	D (mm)	number of flutes	type of thread
VTSPO • (G) Whitworth Pipe Thread • DIN EN ISO 228 • Form B • Tension/Compression Holders • Through Holes									
6058784	**VTSPO8605**	**WP49EG**	1/8 - 28	90	35	15	7	3	G
6058785	**VTSPO8605**	**WU41EG**	1/8 - 28	90	35	15	7	3	G
6058786	**VTSPO8606**	**WP49EG**	1/4 - 19	100	44	22	11	3	G
6058787	**VTSPO8606**	**WU41EG**	1/4 - 19	100	44	22	11	3	G
6058788	**VTSPO8607**	**WP49EG**	3/8 - 19	100	47	22	12	4	G
6058790	**VTSPO8607**	**WU41EG**	3/8 - 19	100	47	22	12	4	G
6058791	**VTSPO8608**	**WP49EG**	1/2 - 14	125	55	25	16	4	G
6058792	**VTSPO8608**	**WU41EG**	1/2 - 14	125	55	25	16	4	G
6058793	**VTSPO8609**	**WP49EG**	5/8 - 14	125	61	25	18	4	G
6058794	**VTSPO8609**	**WU41EG**	5/8 - 14	125	61	25	18	4	G
6058796	**VTSPO8610**	**WP49EG**	3/4 - 14	140	60	25	20	4	G
6058797	**VTSPO8610**	**WU41EG**	3/4 - 14	140	60	25	20	4	G
6058798	**VTSPO8611**	**WP49EG**	7/8 - 14	150	68	28	22	4	G
6058799	**VTSPO8611**	**WU41EG**	7/8 - 14	150	68	28	22	4	G
6058800	**VTSPO8612**	**WP49EG**	1 - 11	160	68	30	25	5	G
6058811	**VTSPO8612**	**WU41EG**	1 - 11	160	68	30	25	5	G

NOTE: Suitable for tension/compression holders.



order number	catalogue number	grade	D1 TPI	L (mm)	L2 (mm)	L3 (mm)	D (mm)	number of flutes	type of thread
VTSFT • (G) Whitworth Pipe Thread • DIN EN ISO 228 • Form C • Blind Holes									
6058814	**VTSFT8605**	**WP49EG**	1/8 - 28	90	35	15	7	3	G
6058815	**VTSFT8605**	**WU41EG**	1/8 - 28	90	35	15	7	3	G
6058816	**VTSFT8606**	**WP49EG**	1/4 - 19	100	44	15	11	3	G
6058817	**VTSFT8606**	**WU41EG**	1/4 - 19	100	44	15	11	3	G
6058818	**VTSFT8607**	**WP49EG**	3/8 - 19	100	47	15	12	4	G
6058819	**VTSFT8607**	**WU41EG**	3/8 - 19	100	47	15	12	4	G
6058820	**VTSFT8608**	**WP49EG**	1/2 - 14	125	55	18	16	4	G
6058871	**VTSFT8608**	**WU41EG**	1/2 - 14	125	55	18	16	4	G
6058874	**VTSFT8610**	**WP49EG**	3/4 - 14	140	65	20	20	4	G
6058875	**VTSFT8610**	**WU41EG**	3/4 - 14	140	65	20	20	4	G
6058879	**VTSFT8612**	**WU41EG**	1 - 11	160	74	24	25	5	G

NOTE: Suitable for tension/compression holders.



order number	catalogue number	grade	D1 TPI	L (mm)	L2 (mm)	L3 (mm)	D (mm)	number of flutes	type of thread
VTSTR • NPT and NPTF • Standard Projection • Form C									
6058953	**VTSTR8301**	**WU40EG**	1/16 - 27	90	35	13	6	3	NPT
6058960	**VTSTR8801**	**WU40EG**	1/16 - 27	90	35	13	6	3	NPTF
6058954	**VTSTR8302**	**WU40EG**	1/8 - 27	90	36	13	7	4	NPT
6059011	**VTSTR8802**	**WU40EG**	1/8 - 27	90	36	13	7	4	NPTF
6058955	**VTSTR8303**	**WU40EG**	1/4 - 18	100	39	20	11	4	NPT
6059012	**VTSTR8803**	**WU40EG**	1/4 - 18	100	39	20	11	4	NPTF
6058956	**VTSTR8304**	**WU40EG**	3/8 - 18	110	39	20	12	4	NPT
6059013	**VTSTR8804**	**WU40EG**	3/8 - 18	110	39	20	12	4	NPTF
6058957	**VTSTR8305**	**WU40EG**	1/2 - 14	125	56	26	16	4	NPT
6059014	**VTSTR8805**	**WU40EG**	1/2 - 14	125	56	26	16	4	NPTF
6058958	**VTSTR8306**	**WU40EG**	3/4 - 14	140	55	26	20	4	NPT
6059015	**VTSTR8806**	**WU40EG**	3/4 - 14	140	55	26	20	4	NPTF
6058959	**VTSTR8307**	**WU40EG**	1 - 11.5	160	71	32	25	5	NPT
6059016	**VTSTR8807**	**WU40EG**	1 - 11.5	160	71	32	25	5	NPTF

NOTE: Suitable for tension/compression holders.

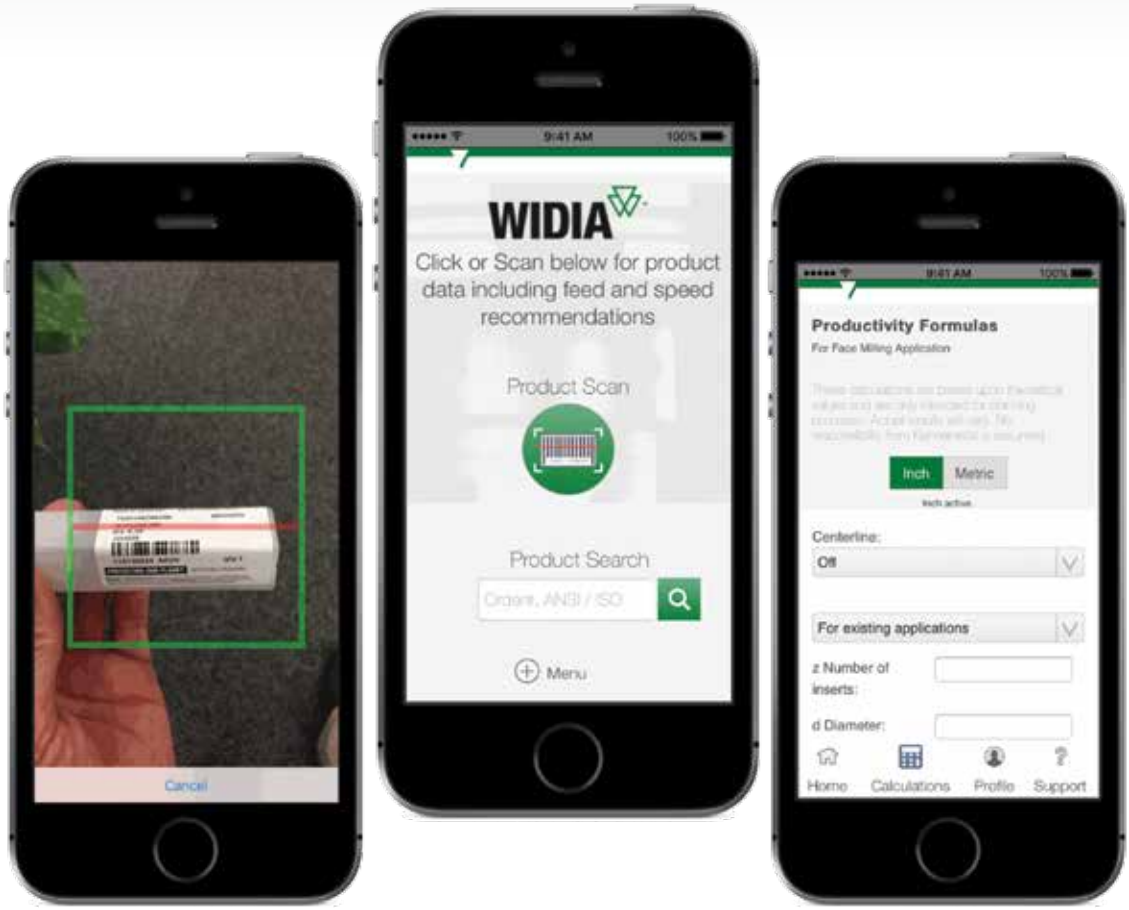
DIN

P Steel
M Stainless Steel
K Cast Iron
N Non-Ferrous
S High-Temp Alloys
H Hardened Materials

material group	description	content	tensile strength RM (MPa)*	hardness (HB)	hardness (HRC)	material number
P0	Low-Carbon Steels, Long Chipping	C <0,25%	<530	<125	–	–
P1	Low-Carbon Steels, Short Chipping, Free Machining	C <0,25%	<530	<125	–	C15, Ck22, ST37-2, S235JR, 9SMnPb28, GS38
P2	Medium- and High-Carbon Steels	C >0,25%	>530	<220	<25	ST52, S355JR, C35, GS60, Cf53
P3	Alloy Steels and Tool Steels	C >0,25%	600–850	<330	<35	16MnCr5, Ck45, 21CrMoV5-7, 38SMn28
P4	Alloy Steels and Tool Steels	C >0,25%	850–1400	340–450	35–48	100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12
P5	Ferritic, Martensitic, and PH Stainless Steels	–	600–900	<330	<35	100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12
P6	High-Strength Ferritic, Martensitic, and PH Stainless Steels	–	900–1350	350–450	35–48	X102CrMo17, G-X120Cr29
M1	Austenitic Stainless Steel	–	<600	130–200	–	X5CrNi 18 10, X2CrNiMo 17 13 2, G-X25CrNiSi18 9, X15CrNiSi 20 12
M2	High-Strength Austenitic Stainless and Cast Stainless Steels	–	600–800	150–230	<25	X2CrNiMo 13 4, X5NiCr 32 21, X5CrNiNb 18 10, G-X15CrNi 25-20
M3	Duplex Stainless Steel	–	<800	135–275	<30	X8CrNiMo27 5, X2CrNiMoN22 5 3, X20CrNiSi25 4, G-X40CrNiSi27 4
K1	Grey Cast Iron	–	125–500	120–290	<32	GG15, GG25, GG30, GG40, GTW40
K2	Low- and Medium-Strength Ductile Irons (Nodular Irons) and Compacted Graphite Irons (CGI)	–	<600	130–260	<28	GGG40, GTS35
K3	High-Strength Ductile Irons and Austempered Ductile Iron (ADI)	–	>600	180–350	<43	GGG60, GTW55, GTS65
N1	Wrought Aluminium	–	–	–	–	AlMg1, Al99.5, AlCuMg1, AlCuBiPb, AlMgSi1, ALMgSiPb
N2	Low-Silicon Aluminium Alloys and Magnesium Alloys	Si <12,2%	–	–	–	GAlSiCu4, GDAlSi10Mg
N3	High-Silicon Aluminium Alloys and Magnesium Alloys	Si >12,2%	–	–	–	G-ALSi12, G-AlSi17Cu4, G-AlSi21CuNiMg
N4	Copper-, Brass-, Zinc-Based on Machinability Index Range of 70–100	–	–	–	–	CuZn40, Ms60, G-CuSn5ZnPb, CuZn37, CuSi3Mn
N5	Nylon, Plastics, Rubbers, Phenolics, Resins, Fibreglass	–	–	–	–	Lexan®, Hostalen™, Polystyrol, Makralon
N6	Carbon, Graphite Composites, CFRP	–	–	–	–	CFK, GFK
N7	Metal Matrix Composites (MMC)	–	–	–	–	–
S1	Iron-Based, Heat-Resistant Alloys	–	500–1200	160–260	25–48	X1NiCrMoCu32 28 7, X12NiCrSi36 16, X5NiCrAlTi31 20, X40CoCrNi20 20
S2	Cobalt-Based, Heat-Resistant Alloys	–	1000–1450	250–450	25–48	Haynes® 188, Stellite® 6,21,31
S3	Nickel-Based, Heat-Resistant Alloys	–	600–1700	160–450	<48	INCONEL® 690, INCONEL 625, Hastelloy®, Nimonic® 75
S4	Titanium and Titanium Alloys	–	900–1600	300–400	33–48	Ti1, TiAl5Sn2, TiAl6V4, TiAl4Mo4Sn2
H1	Hardened Materials	–	–	–	44–48	GX260NiCr42, GX330NiCr42, GX300CrNiSi952, GX300CrMo153, Hardox® 400
H2	Hardened Materials	–	–	–	48–55	–
H3	Hardened Materials	–	–	–	56–60	–
H4	Hardened Materials	–	–	–	>60	–

Machining Central App from WIDIA™

The fastest, easiest way to get feeds and speeds.



SCAN

With the new WIDIA app, product data is just a quick scan away. Now, when you're on the floor and need to quickly access the speeds and feeds of your favorite WIDIA tool, the WIDIA app gives you reliable information in just a few seconds.

SEARCH

Don't have a barcode? The new WIDIA app includes another simple search technique — just type the tool's corresponding order number or the ANSI or ISO catalogue number into the search bar. You'll get the same reliable data as if you'd scanned the tool's barcode. It's simple and quick — no interruption in production!

CALCULATE

Have a specific machining need that our recommended speeds and feeds don't quite address? Try out our three NOVO™ based calculators. Both end milling and face milling calculators are available. Simply fill in the blank fields, and our calculators will quickly provide the data you need.

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WIDIA™ brand cutting tools are available exclusively through a specialised network of Authorised Distributor partners whom you can count on to deliver much more than products. Our distributors know us, and more importantly, they know you. They know better than anyone in the industry how to put the global power of WIDIA to work for you — in your industry, in your region, and for your business.

WIDIA distributor partners provide technical expertise that you can count on. They will show you how to:

- Significantly reduce cycle time.
- Improve machine tool utilisation.
- Achieve measurable productivity improvements.
- Take advantage of proven supply chain solutions.
- Access local inventory and best-in-class technical support.
- Request onsite demonstrations of the latest tooling technology.

And with thousands of turning, milling, holemaking, tapping, and tooling systems products available from WIDIA, you'll find everything you need from one single source.

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IMPORTANT SAFETY INSTRUCTIONS: READ BEFORE USING THE TOOLS IN THIS CATALOGUE

METALCUTTING SAFETY

Projectile and Fragmentation Hazards

Modern metalcutting operations involve high spindle and cutter speeds and high temperatures and cutting forces. Hot metal chips may fly off the workpiece during metalcutting. Although cutting tools are designed and manufactured to withstand high cutting forces and temperatures, they can sometimes fragment, particularly if they are subjected to over-stress, severe impact, or other abuse.

To avoid injury:

- Always wear appropriate personal protective equipment, including safety goggles, when operating metalcutting machines or working nearby.
- Always make sure all machine guards are in place.

Breathing and Skin Contact Hazards

Grinding carbide or other advanced cutting tool materials produces dust or mist containing metallic particles. Breathing this dust or mist — especially over an extended period — can cause temporary or permanent lung disease or make existing medical conditions worse. Contact with this dust or mist can irritate eyes, skin, and mucous membranes and may make existing skin conditions worse.

To avoid injury:

- Always wear breathing protection and safety goggles when grinding.
- Provide ventilation control and collect and properly dispose of dust, mist, or sludge from grinding.
- Avoid skin contact with dust or mist.

For more information, read the applicable Material Safety Data Sheet provided by WIDIA and consult General Industry Safety and Health Regulations, Part 1910, Title 29 of the Code of Federal Regulations.

These safety instructions are general guidelines. Many variables affect machining operations. It is impossible to cover every specific situation. The technical information included in this catalogue and recommendations on machining practices may not apply to your particular operation.

For more information, consult the WIDIA Metalcutting Safety booklet, available free from WIDIA at +1 724 539 5747 or fax +1 724 539 5439. For specific product safety and environmental questions, contact our Corporate Environmental Health and Safety Office at +1 724 539 5066 or fax +1 724 539 5372.

WIDIA™

2020 Focus Products

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Hoa Lac Hi-Tech Park I Ha Bang Commune
Thach That District I Hanoi, Vietnam

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