

INDEXABLE MILLING
SOLID END MILLING
HOLEMAKING
TAPPING
TOOLING SYSTEMS



2017 Advances Catalog
INCH

WIDIA ™



For more than 90 years, WIDIA™ brand products and services have defined excellence in innovation, technology, and customer service.

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

WIDIA ™

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1926

Tungsten carbide production begins

1937

WIDIA™ wins the Grand Prix at the world exposition in Paris

1962

First patent granted for coated carbide inserts

1967

WIDIA (India) begins producing carbide and tools

1968

Launch of first global coated grade

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, holmaking, 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, specialized network of Authorized Distributor partners, and you have the tools you need — and the power that only comes from WIDIA.

WIDIA 

1982

Launch of first PVD TiN coated taps (VTD)

1987

Launch of the Widaflex™ tooling system for turning, holemaking, and milling

2000

QS 9000 TES and VDA 6.4 certification for the WIDIA™ operations in Germany

2009

The WIDIA, Hanita, Greenfield Tap & Die, Circle, ClappDiCo, Manchester, Metal Removal, Metcut, and Rübigen brands combine to create the WIDIA Products Group

2011

Launch KM™ and ERICKSON™ Portfolio

2013

Launch of new VariTap™ series

2016

WIDIA celebrates 90 years

CELEBRATING

90
YEARS

1926 - 2016



WIDIA™ Metalworking Services

WIDIA™ provides an array of products and support services from onsite tool management and engineering personnel, to inventory control systems, to tool manufacturing, reconditioning, and recycling to support tools and their processes throughout their entire lifecycle. Our metalworking services are designed to save your business time, money, and inventory, and protect your cutting tool investment for the long term.

Let WIDIA help you extend the life of your tools and maintain their performance in delivering productivity. Contact your local authorized WIDIA distributor or visit widia.com/services to learn more.



NOVO™

NOVO™ possesses powerful digital tools that link together process planning, inventory availability and purchase, cost-per-part management, and productivity improvements.

See page A17 and D35 to learn more.



Customer Application Support

WIDIA™ Customer Application Engineers assist customers and engineering groups throughout the world with expert tool selection and application recommendations for the entire range of WIDIA tooling.

See pages D81 and F34 to learn more.



Carbide Recycling

The WIDIA™ Carbide Recycling Program can turn accumulated scrap carbide tooling in your shop into cash.

See page B13 to learn more.



Tool Reconditioning

WIDIA Reconditioning Services optimize the value of metalcutting tools throughout their entire lifecycle by giving like-new performance — with rapid turnaround time — so tools are always on hand and perform just like new.

See page D11 to learn more.



ToolBOSS™ Vending Solution

ToolBOSS vending solutions help to reduce costs and improve efficiencies to give you a competitive edge.

See page B39 to learn more.

KNOWLEDGE CENTER

Knowledge Center

The Knowledge Center offers several ways to get trained. In-person classes include lecture, lab, and machining demonstrations.



WIDIA and the Machine Tool Industry (MTI)

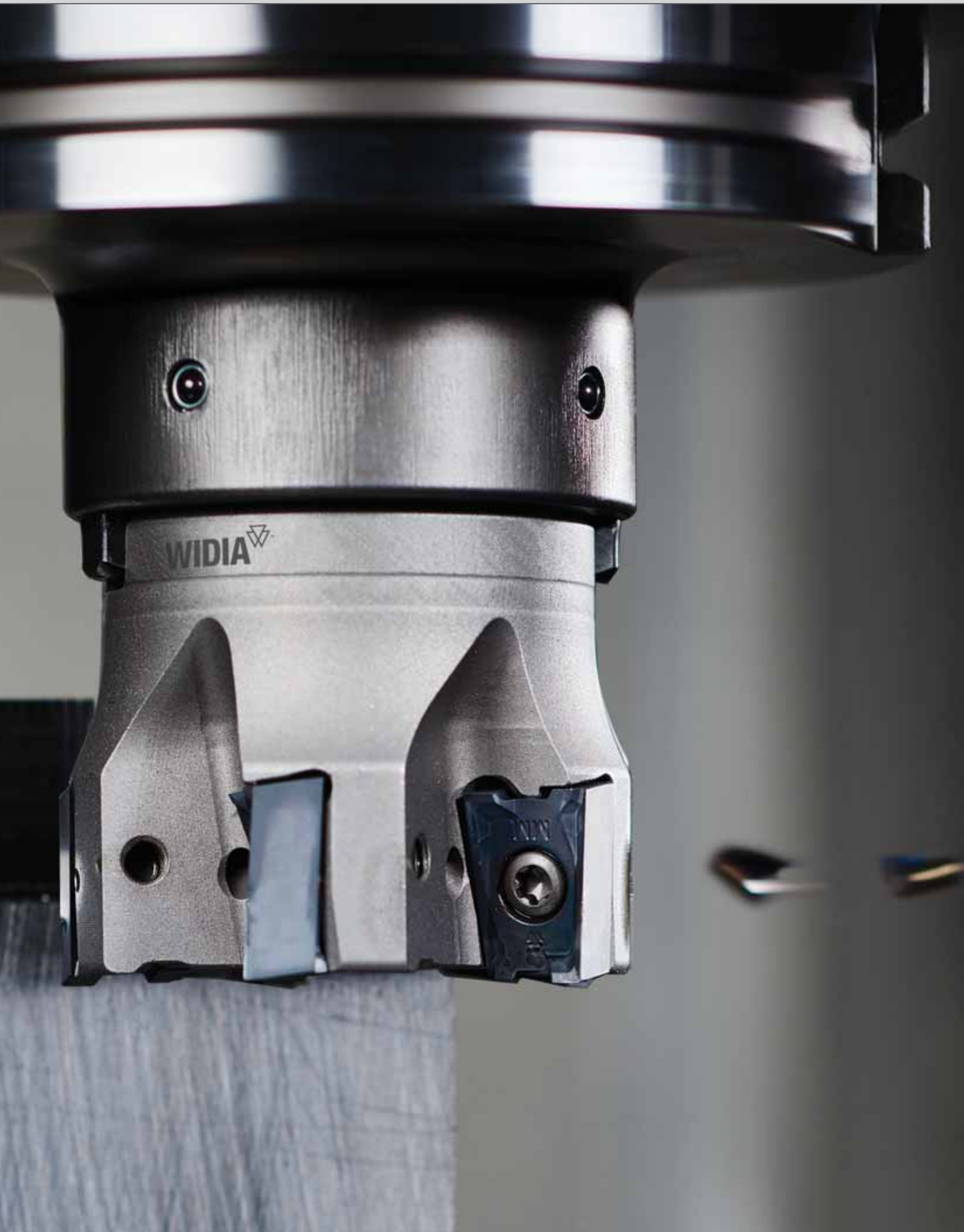
We have Machine Tool Industry (MTI) specialists in more than 60 countries around the world, so there's always someone near you: W-MTI.Solutions@WIDIA.com.



Toolholder Service and Repair

When your WIDIA™ advanced tooling products need to be serviced, the WIDIA Service and Repair Department has the highly trained staff to provide expert assistance.

For information on any of these services,
go to widia.com/services.



Indexable Milling

WS40PM • New Titanium Milling GradeA2-A16
VSM490-15 Line ExpansionA15-A16, A18-A27
M200 Line ExpansionA28-A59



New Victory™ WS40PM

WS40PM

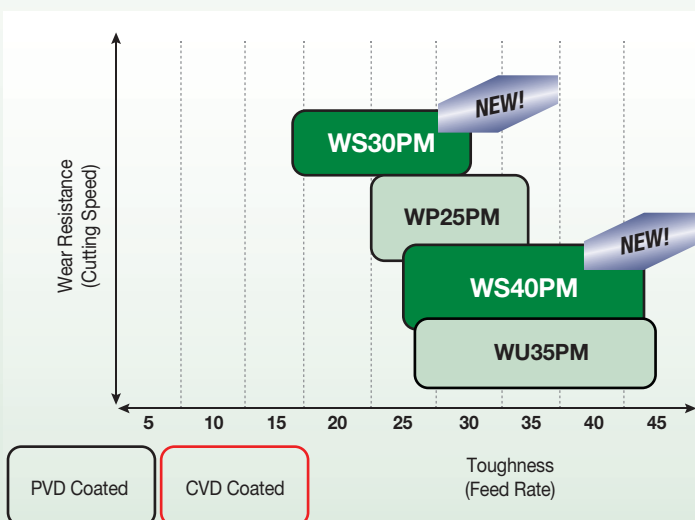


New substrate plus proven PVD coating technology increases performance in rough milling titanium and stainless steels. Excellent toughness and better wear resistance leads to higher efficiency in these demanding applications.

- Proven PVD coating for titanium and stainless to minimize microchipping and provide improved wear resistance.
- New advanced alloyed substrate achieves excellent cutting edge strength and avoids catastrophic insert breakage in severe cutting conditions.
- Resists thermal cracking:
 - Extremely important in machining titanium as coolant is used.
 - A common failure mode that leads to chipping.

Grade Positioning

- WS40PM completes the WIDIA™ indexable milling grade portfolio for titanium and stainless steel machining.
- WIDIA can now offer a grade as tough as WU35PM, with more wear resistance.



New WS40PM

- Expanded wear resistance range.
- Overlaps toughness range of WU35PM.
- New advanced substrate.

Application Recommendations

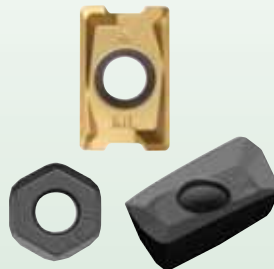
- The go-to grade for rough milling titanium and stainless steel.
- Up to 20% greater tool life at the same cutting conditions.
- Engineered to resist thermal cracking — a huge benefit in titanium milling (wet application).
 - The ideal speed range for the best tool life in titanium is 150–175 SFM (46–53 m/min).

Recommended Speeds

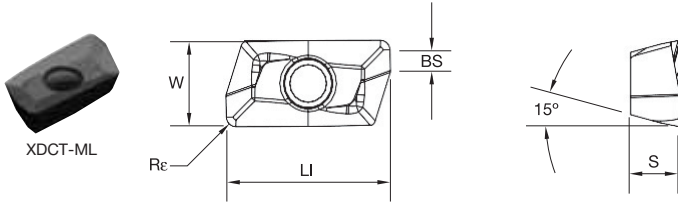
			WS40PM	Speed Vc (SFM)		
Material Group	ISO	Material	Description	max	(starting)	min
P5	P	Stainless Steel	Ferritic, Martensitic, and PH SS	440	325	230
P6			High-Strength Ferritic Austenitic and PH SS	375	260	165
M1	M	Stainless Steel	Austenitic SS	850	605	375
M2			High-Strength Austenitic S and Cast SS	755	560	345
M3			Duplex SS	625	440	280
S1	S	High-Temp Alloys	Iron Based	200	145	90
S2			Cobalt Based	180	130	85
S3			Nickel Based	210	150	95
S4			Titanium Based	295	215	135

WS40PM is available in these leading indexable milling platforms

- Face Milling: M1200, M1200 Mini, M640, M690
- Shoulder Milling: VSM11™, VSM17™
- Copy Milling: VSM490™



Indexable Milling



- -ML is a light- to medium-machining geometry and is the first choice for stainless steel and titanium materials.

- first choice
- alternate choice

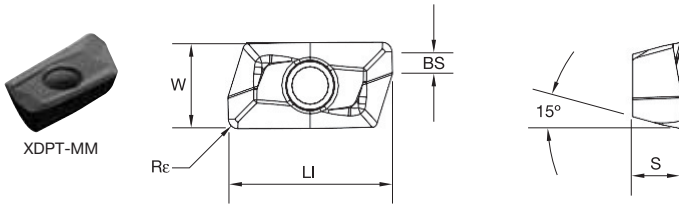


P	●	○	○	○	○	○	○	○	○
M	●	○	○	○	○	○	○	○	○
K	●	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○

■ XDCT-ML

catalog number	cutting edges	LI	BS	S	W	Re	hm	WDN10U	WK15CM	WN25PM	WP25PM	WP35CM	WP40PM	WS30PM	WS40PM	WU35PM
XDCT1101ERML	2	.529	.082	.157	.272	.016	.002	●	○	○	○	○	○	○	○	○
XDCT1102ERML	2	.529	.067	.157	.272	.031	.002	○	○	○	○	○	○	○	○	○

NEW!



- -MM is a medium- to heavy-machining geometry and is the first choice for general purpose and universal applications.

- first choice
- alternate choice



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

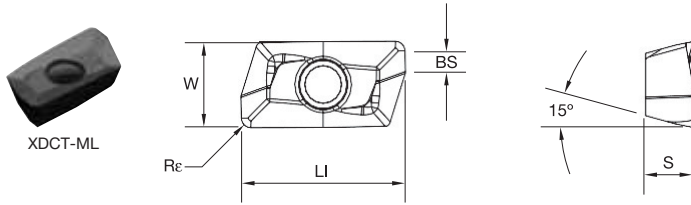
Indexable Milling

■ XDPT-MM

catalog number	cutting edges	LI	BS	S	W	Rε	hm	WDN10U	WK15CM	WN25PM	WP25PM	WP35CM	WP40PM	WS30PM	WS40PM	WU35PM
XDPT1101SRMM	2	.529	.081	.157	.272	.016	.003	●	●	○	○	○	○	○	○	○
XDPT1102SRMM	2	.529	.066	.157	.272	.031	.003	●	●	○	○	○	○	○	○	○
XDPT1103SRMM	2	.529	.051	.157	.272	.047	.003	●	●	○	○	○	○	○	○	○
XDPT1104SRMM	2	.532	.034	.163	.274	.062	.003	●	●	○	○	○	○	○	○	○
XDPT1105SRMM	2	.532	.018	.163	.274	.078	.003	●	●	○	○	○	○	○	○	○
XDPT1106SRMM	2	.526	—	.158	.273	.094	.003	●	●	○	○	○	○	○	○	○
XDPT1108SRMM	2	.508	—	.157	.271	.122	.003	●	●	○	○	○	○	○	○	○

NEW!

Indexable Milling



- -ML is a light- to medium-machining geometry and is the first choice for stainless steel and titanium materials.

- first choice
- alternate choice

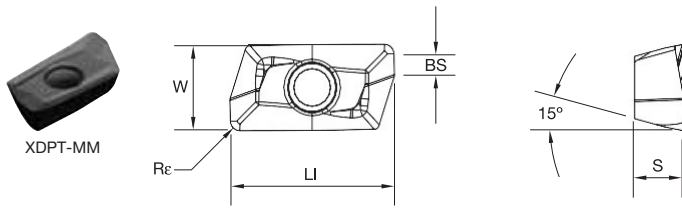


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K	●	○	○	○	○	○	○
N	●	○	○	○	○	○	○
S	●	○	○	○	○	○	○
H	●	○	○	○	○	○	○

■ XDCT-ML

catalog number	cutting edges	LI	BS	S	W	Rε	hm	WK15CM	WN25PM	WP25PM	WP35CM	WP40PM	WS40PM	WU35PM
XDCT1701ERML	2	.754	.103	.193	.378	.016	.002	●	●	○	○	○	○	○
XDCT1702ERML	2	.754	.088	.193	.378	.031	.002	●	●	○	○	○	○	○
XDCT1703ERML	2	.754	.072	.193	.378	.047	.002	●	●	○	○	○	○	○
XDCT1704ERML	2	.755	.056	.193	.378	.063	.002	●	●	○	○	○	○	○
XDCT1705ERML	2	.755	.040	.193	.378	.079	.002	●	●	○	○	○	○	○
XDCT1706ERML	2	.755	.025	.193	.378	.094	.002	●	●	○	○	○	○	○
XDCT1708ERML	2	.742	—	.192	.378	.125	.002	●	●	○	○	○	○	○
XDCT1710ERML	2	.722	—	.192	.377	.157	.002	●	●	○	○	○	○	○
XDCT1715ERML	2	.670	—	.189	.376	.235	.002	●	●	○	○	○	○	○

NEW!



- -MM is a medium- to heavy-machining geometry and is the first choice for general purpose and universal applications.

■ XDPT-MM

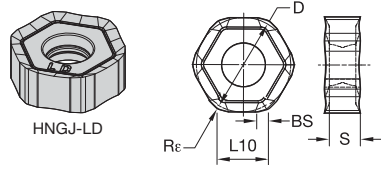
catalog number	cutting edges	LI	BS	S	W	Rε	hm	WK15CM	WN25PM	WP25PM	WP35CM	WP40PM	WS40PM	WU35PM
XDPT1701SRMM	2	.754	.099	.193	.378	.016	.004							
XDPT1702SRMM	2	.754	.085	.193	.378	.031	.004	5987948		5987949	5987947	5987946	6180212	5987950
XDPT1703SRMM	2	.754	.070	.193	.378	.047	.004	5988138		5988151	5988140	5988139	6180213	5988152
XDPT1704SRMM	2	.755	.054	.193	.378	.063	.004	5988153		5988155	5988156	5988154	6180214	
XDPT1705SRMM	2	.755	.039	.193	.378	.079	.004			5988158	5988160	5988159		
XDPT1706SRMM	2	.755	.024	.193	.378	.094	.004			5988203		5988202		
XDPT1708SRMM	2	.742	—	.192	.378	.125	.004			5988206	5988204	5988205		
XDPT1710SRMM	2	.722	—	.192	.377	.157	.004			5988970		5988969		

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

- first choice
- alternate choice

NEW!

Indexable Milling



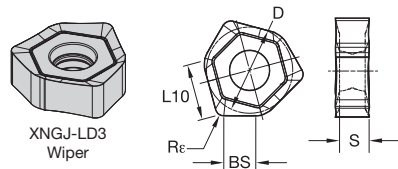
HNGJ-LD

catalog number	cutting edges	D	L10	S	BS	Rε	hm	TN6510	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WP35CM	WP40PM	WS30PM	WS40PM
HNGJ0704ANENLD	12	.500	.268	.176	.064	.047	.003	3954419	3954420	3954421	3954422	-	-	5895291	5895292	5550905	5528975	6180295
HNGJ070432ANENLD	12	.500	.269	.176	-	.126	.003	3954428	-	3954429	3954430	-	-	-	-	-	-	6180300

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

● first choice
○ alternate choice

NEW!



XNGJ-LD3 Wiper

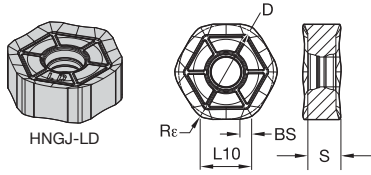
catalog number	cutting edges	D	L10	S	BS	Rε	hm	TN6510	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WP35CM	WP40PM	WS30PM	WS40PM
XNGJ0704ANENLD3W	3	.500	.267	.176	.267	.051	.003	3954424	3954425	3954426	3954427	-	5427373	5895298	-	5895299	-	6180296

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

● first choice
○ alternate choice

NEW!

NOTE: Inserts have 3 right-hand and 3 left-hand cutting edges.



HNGJ-LD

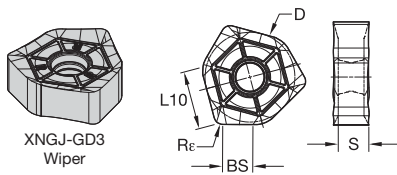
● first choice
○ alternate choice

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

■ HNGJ-LD

catalog number	cutting edges	D	L10	S	BS	Rε	hm	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WP35CM	WP40PM	WS30PM	WS40PM
HNGJ535ANENLD	12	.625	.338	.219	.071	.047	.002	3093559	3330950	3030084	3030017	-	5895346	5895347	5895348	5528973	6180276

NEW!



XNGJ-GD3
Wiper

● first choice
○ alternate choice

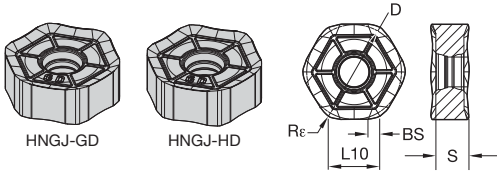
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M		○	●	○	●	●	●	○
K	●	○	○	○	○	○	○	○
N								
S		●	○	○	○	○	○	○
H							○	

■ XNGJ-GD3 Wiper

catalog number	cutting edges	D	L10	S	BS	Rε	hm	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WP35CM	WP40PM	WS30PM	WS40PM
XNGJ535ANSNGD3W	3	.625	.377	.217	.230	.063	.004	3524707	3523620	3066479	-	5622622	5895381	-	5895382	-	6180277

NEW!

NOTE: Inserts have 3 right-hand and 3 left-hand cutting edges.



● first choice
○ alternate choice

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



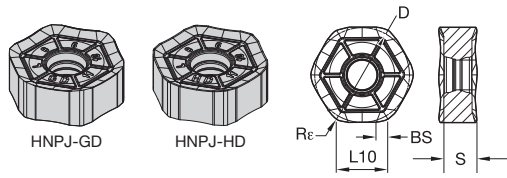
■ HNGJ-GD

catalog number	cutting edges	D	L10	S	BS	Rε	hm	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WP35CM	WP40PM	WS30PM	WS40PM
HNGJ535ANSNGD	12	.625	.338	.219	.071	.047	.004	3119541	3614650	3037596	3093721	5427370	5400965	5695349	5895350	5528974	6180280

■ HNGJ-HD

catalog number	cutting edges	D	L10	S	BS	Rε	hm	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WP35CM	WP40PM	WS30PM	WS40PM
HNGJ535ANSNHD	12	.625	.338	.215	.065	.047	.007	3564083	3563901	3563902	-	-	5895371	5895372	5895373	-	6180291
HNGJ53511ANSNHD	12	.625	.334	.214	-	.171	.008	3564084	3564085	-	-	-	-	-	-	-	6180292

NEW!



● first choice
○ alternate choice

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

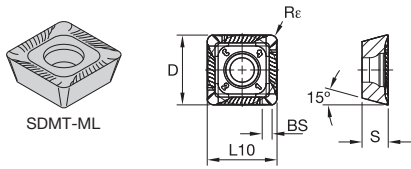
■ HNPJ-GD

catalog number	cutting edges	D	L10	S	BS	Rε	hm	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WP35CM	WP40PM	WS30PM	WS40PM
HNPJ535ANSNGD	12	.625	.338	.219	.071	.047	.004	3761185	-	3761187	3761188	5427372	5895374	5895375	5550908	-	6180278

NEW!

■ HNPJ-HD

catalog number	cutting edges	D	L10	S	BS	Rε	hm	TN6520	TN6525	TN6540	TN7535	WK15CM	WP25PM	WP35CM	WP40PM	WS30PM	WS40PM
HNPJ535ANSNHD	12	.625	.338	.215	.065	.047	.007	3670864	-	3670842	-	5427371	5895376	5895377	5550909	-	6180279
HNPJ53511ANSNHD	12	.625	.334	.214	-	.171	.005	3670866	-	3670865	-	-	5895378	5895379	5895380	-	6180294



SDMT-ML

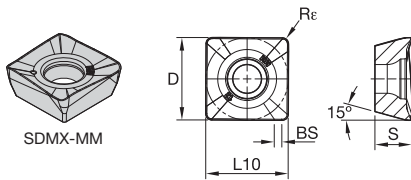
● first choice
○ alternate choice

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

■ SDMT-ML

catalog number	cutting edges	D	L10	S	BS	Rε	hm	TN2510	TN6520	TN6525	TN6540	TN7525	TN7535	WK15CM	WS30PM	WS40PM
SDMT1204PDRML	4	.500	.500	.188	.043	.047	.003	3094667			3020185	2030439	2030437	5427423		6180319

NEW!



SDMX-MM

● first choice
○ alternate choice

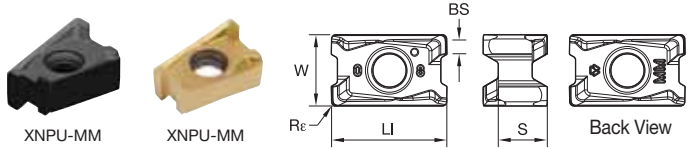
P	○	○	○	○	○	○	○	○	○
M	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○

■ SDMX-MM

catalog number	cutting edges	D	L10	S	BS	Rε	hm	TN2510	TN6520	TN6525	TN6540	TN7525	TN7535	WK15CM	WS30PM	WS40PM
SDMX120408RMM	4	.500	.500	.188	.076	.031	.004			3950588	3950589	3950590	3950591		5519572	6180317
SDMX120412RMM	4	.500	.500	.188	.061	.048	.004			3950596	3950597	3950599	3950600		5519572	6180318
SDMX120416RMM	4	.500	.500	.188	.059	.063	.004	4145063	4145064	4145065						
SDMX120424RMM	4	.500	.500	.188	.024	.095	.004			4145072			4145093			
SDMX120432RMM	4	.500	.500	.188	—	.126	.004			4145094			4145095			

NEW!

Indexable Milling



- -MM is the universal geometry for VSM490-15. First choice when machining steel, as well as stainless steel and high-temp alloys in heavy applications.

- first choice
- alternate choice

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

■ XNPU-MM • Utility Roughing

catalog number	cutting edges	LI	W	S	BS	Re	hm	WK15CM	WK15PM	WN25PM	WP25PM	WP35CM	WP40PM	WS40PM	WU35PM
XNPU1502SRMM	4	.634	.394	.271	.076	.032	.004	5873420	5873419	5873415	5873418	5873416	6180320	5873417	
XNPU1503SRMM	4	.634	.394	.271	.059	.047	.004	5890763	5890762	5890728	5890761	5890729	6180321	5890730	
XNPU1504SRMM	4	.634	.394	.271	.045	.063	.004	5883522	5883521	5883447	5883450	5883448	6180322	5883449	
XNPU1505SRMM	4	.634	.394	.271	.027	.079	.004	6030375		6030372	6030374	6030373			

NEW!

NOVO KNOWS SEARCH

Searching for a tool by using the outdated method of a catalog has been replaced with the Advise and Select functions from NOVO™ — saving you time and money.

ADVISE

Uses a rules-based approach to provide cutting tool recommendations:

- Define Machining Feature (face milling, slotting, blind hole, etc.)
- Apply Constraint Requirements (geometric, material, tolerance, etc.)
- Set Machining Sequence (single or multi-step operations, rough then finish, etc.)
- Receive Ranked Results

SELECT

A method of selecting cutting tools from a tree structure via a hierarchy or parametric search:

- If you know which product you are looking for, a quick search can be performed by just the catalog number or product description.
- Smart filters significantly reduce the amount of potential tooling solutions.
- After the tool is selected, NOVO also provides cutting and adaptive item options that fit with your solution.

NOVO can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximizes every shift. widia.com/novo

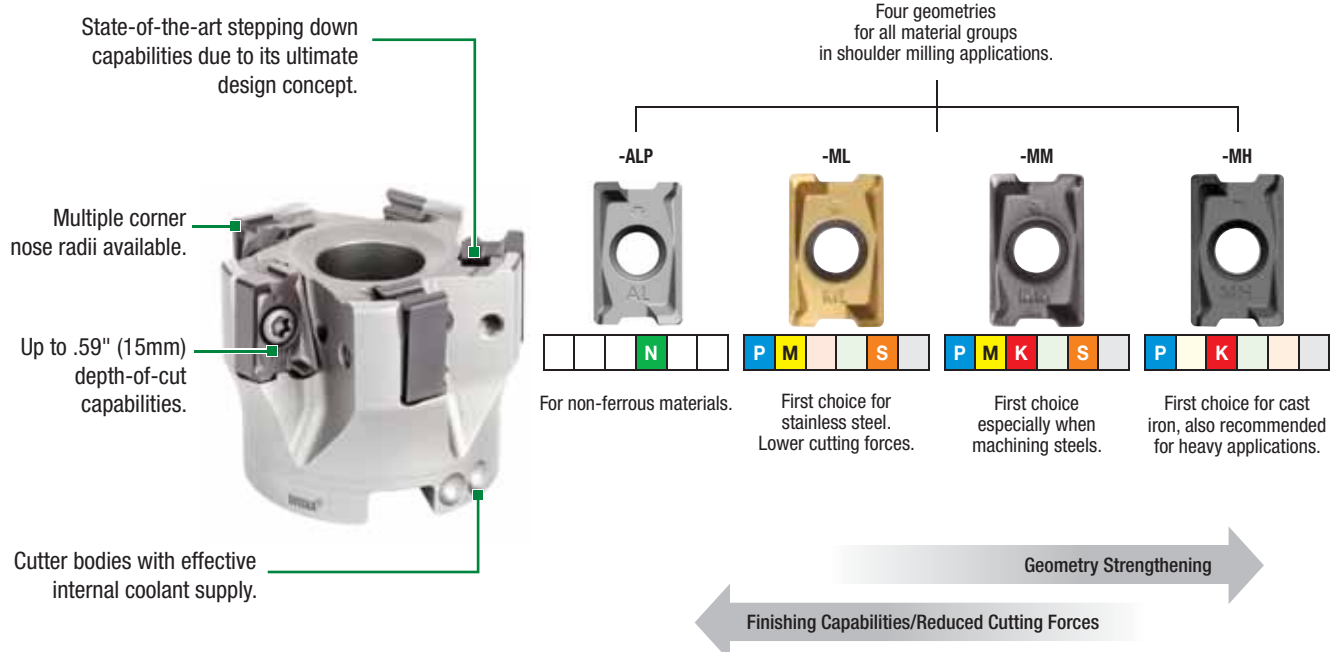
Double-Sided Shoulder Mill •
VSM490™ -15

VSM490-15



WIDIA™ Victory™ Shoulder Milling Series (VSM series) is specially engineered to achieve excellent surface quality as well as higher material removal rates in shoulder milling applications. The VSM490 series, with its unique design, enables the tool to be applied in multiple passes (stepping down) with outstanding results. VSM490-15 is applicable in a wide range of workpiece materials: steel, cast iron, stainless steel, and titanium, from roughing to finishing applications.

- Double-sided strong insert with 4 cutting edges.
- High positive geometry for lower cutting forces.
- Superior wall and surface finish capabilities.



0° Shoulder Mills

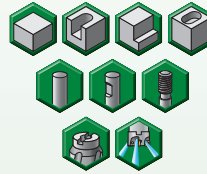


VSM490™-15

Max depth of cut: .590"

Lead angle: 0°
Indexes per insert: 4
Diameter: 1–6"

**Pages: A15–A16,
A20–A27**



VSM490-15 • Unbeatable Performance in Shoulder Milling

- “Stepless” solution.
- No mismatch when machining walls in different steps.

Innovative cutting geometry provides superior wall and surface finish.



Integrated wiper facet for excellent floor finishing.

Competitor Tool • Wall Quality



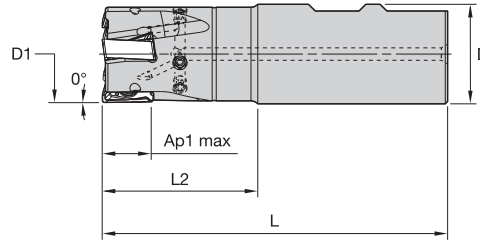
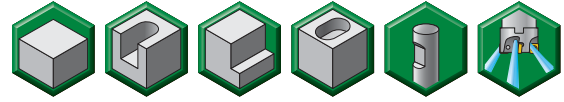
Traditional tools are designed to achieve a 0° wall, but exhibit poor performance when machining walls in multiple passes.

VSM490-15 • Wall Quality



VSM490-15 minimizes the marks left. By increasing wall quality and avoiding a second tool, productivity increases significantly.

- Superior wall and surface finish capabilities.
- “Stepless” solution. True 0° to run precise applications in multiple axial passes.
- Strong concept to run up to .590" (15mm) depth of cut.
- Effective internal coolant feature, reaching the cutting edge precisely.



■ Weldon Shanks

order number	catalog number	D1	D	L	L2	Ap1 max	Z	lbs	max RPM
5873069	VSM490D100Z02W075XN15	1.000	.750	3.780	1.750	.591	2	.92	26300
5710590	VSM490D100Z02W100XN15	1.000	1.000	4.030	1.750	.591	2	.73	26300
5710591	VSM490D125Z03W100XN15	1.250	1.000	4.530	2.250	.591	3	.90	22100
5873070	VSM490D150Z03W125XN15	1.500	1.250	4.530	2.250	.591	3	1.41	19500
5710592	VSM490D150Z04W125XN15	1.500	1.250	4.530	2.250	.591	4	1.42	19500

NOTE: Weldon type not recommended for finishing operations.

■ Spare Parts



insert screw

MS-2071



in. lbs.

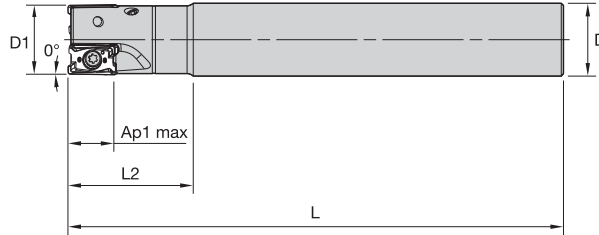
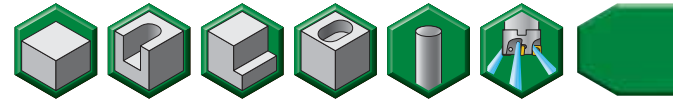
31



Torx Plus driver

DT15IP

- Superior wall and surface finish capabilities.
- “Stepless” solution. True 0° to run precise applications in multiple axial passes.
- Strong concept to run up to .590" (15mm) depth of cut.
- Effective internal coolant feature, reaching the cutting edge precisely.



Indexable Milling

■ Cylindrical End Mills

order number	catalog number	D1	D	L	L2	Ap1 max	Z	lbs	max RPM
5873101	VSM490D100Z02C100XN15L800	1.000	1.000	8.000	1.750	.591	2	1.60	26300
5873102	VSM490D125Z03C125XN15L800	1.250	1.250	8.000	2.250	.591	3	2.50	22100
5873103	VSM490D150Z04C125XN15L800	1.500	1.250	8.000	2.250	.591	4	2.61	19500

■ Spare Parts



insert screw

MS-2071



in. lbs.

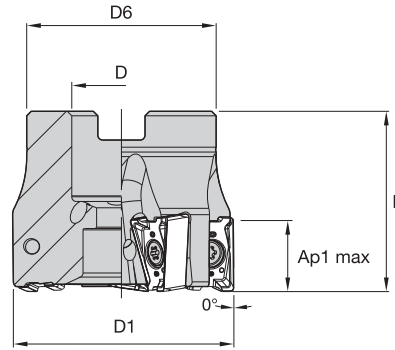
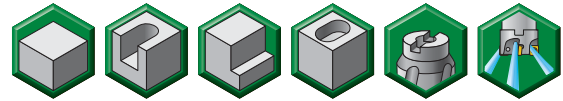
31



Torx Plus driver

DT15IP

- Superior wall and surface finish capabilities.
- “Stepless” solution. True 0° to run precise applications in multiple axial passes.
- Strong concept to run up to .590" (15mm) depth of cut.
- Effective internal coolant feature, reaching the cutting edge precisely.



■ Shell Mills

order number	catalog number	D1	D	D6	L	Ap1 max	Z	lbs	max RPM
5710593	VSM490D150Z05S050XN15	1.500	.500	1.420	1.575	.591	5	.43	19500
5710594	VSM490D200Z05S075XN15	2.000	.750	1.750	1.575	.591	5	.78	16100
5710595	VSM490D200Z06S075XN15	2.000	.750	1.750	1.575	.591	6	.77	16100
5873104	VSM490D250Z05S075XN15	2.500	.750	1.750	1.575	.591	5	1.11	14100
5710596	VSM490D250Z06S075XN15	2.500	.750	1.750	1.575	.591	6	1.06	14100
5710597	VSM490D250Z07S100XN15	2.500	1.000	2.190	1.750	.591	7	1.31	14100
5710598	VSM490D300Z07S100XN15	3.000	1.000	2.190	1.750	.591	7	1.83	12700
5873105	VSM490D300Z09S100XN15	3.000	1.000	2.190	1.750	.591	9	1.85	12700
5873106	VSM490D400Z08S150XN15	4.000	1.500	3.380	2.000	.591	8	3.31	10800
5710599	VSM490D400Z11S150XN15	4.000	1.500	3.380	2.000	.591	11	3.26	10800
5873107	VSM490D500Z09S150XN15	5.000	1.500	3.907	2.380	.591	9	7.67	9600
5873108	VSM490D500Z12S150XN15	5.000	1.500	3.907	2.380	.591	12	6.83	9600
5873109	VSM490D600Z10S200XN15	6.000	2.000	4.880	2.380	.591	10	10.42	8600

■ Spare Parts

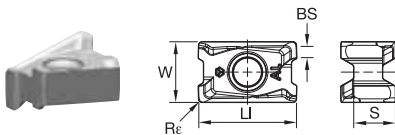


D1	insert screw	in. lbs.	Torx Plus driver	socket-head cap screw	socket-head cap screw with coolant groove	coolant lock screw	coolant lock screw assembly
1.5	MS-2071	31	DT15IP	S424	—	—	—
2.0	MS-2071	31	DT15IP	S445	S445CG	—	—
2.5	MS-2071	31	DT15IP	S445	S445CG	—	—
2.5	MS-2071	31	DT15IP	S458	S458CG	—	—
3.0	MS-2071	31	DT15IP	S458	S458CG	—	—
4.0	MS-2071	31	DT15IP	—	—	420.201	S2165C
5.0	MS-2071	31	DT15IP	—	—	420.201	S2165C
6.0	MS-2071	31	DT15IP	—	—	420.241	S2192C

NOTE: Socket-head cap screw with coolant groove and coolant lock screw assembly must be ordered separately.

■ Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	XNGU-ML	WP40PM	XNPU-ML	WP40PM	XNPU-MM	WP40PM
P3-P4	XNGU-ML	WP25PM	XNPU-MM	WP35CM	XNPU-MM	WP40PM
P5-P6	XNGU-MM	WP25PM	XNPU-MM	WP35CM	XNPU-MM	WP40PM
M1-M2	XNGU-ML	WU35PM	XNGU-ML	WU35PM	XNPU-MM	WU35PM
M3	XNGU-ML	WU35PM	XNGU-ML	WU35PM	XNPU-MM	WU35PM
K1-K2	XNPU-MM	WK15CM	XNGU-MH	WK15CM	XNGU-MH	WP35CM
K3	XNPU-MM	WK15PM	XNGU-MH	WK15PM	XNGU-MH	WP25PM
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	WU35PM	XNPU-MM	WU35PM
S3	XNGU-ML	WP25PM	XNGU-ML	WU35PM	XNPU-MM	WU35PM
S4	XNGU-ML	WU35PM	XNGU-ML	WU35PM	XNPU-MM	WU35PM
H1	-	-	-	-	-	-



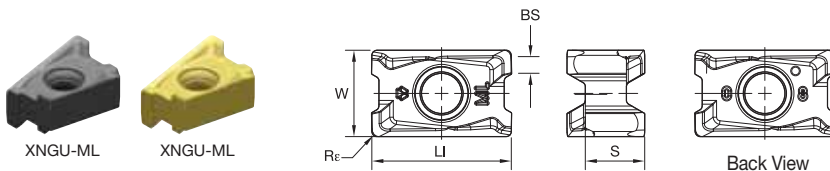
- first choice
- alternate choice

- ALP is the first choice for milling aluminum and other non-ferrous alloys.

■ XNGU-ALP • For aluminum and other non-ferrous alloys

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

catalog number	cutting edges	LI	W	S	BS	Re	hm	WK15CM	WK15PM	WN25PM	WP25PM	WP35CM	WP40PM	WS40PM	WU35PM
NEW! XNGU1501ERALP	4	.638	.394	.271	.088	.016	.001			6082644					
NEW! XNGU1502ERALP	4	.638	.394	.271	.072	.032	.001		6082645						



- first choice
- alternate choice

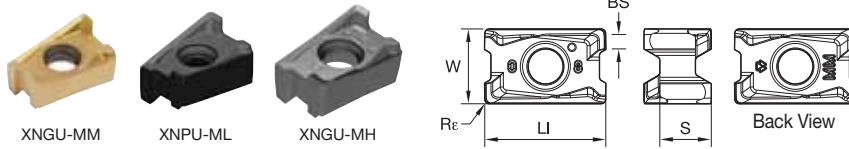
- ML geometry is the first choice for machining stainless steel. With reduced cutting forces, this is recommended for improved wall finishing capabilities in steels.

■ XNGU-ML • Precision Finishing

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

catalog number	cutting edges	LI	W	S	BS	Re	hm	WK15CM	WK15PM	WN25PM	WP25PM	WP35CM	WP40PM	WS40PM	WU35PM
XNGU1501ERML	4	.638	.394	.271	.088	.016	.003				5890821				
XNGU1502ERML	4	.638	.394	.271	.072	.032	.003				5873481	5890822	6180324	5873482	5890823

Indexable Milling



- ML geometry is the first choice for machining stainless steel. With reduced cutting forces, this is recommended for improved wall finishing capabilities in steels.
- MM is the universal geometry for VSM490-15. First choice when machining steel, as well as stainless steel and high-temp alloys in heavy applications.
- MH geometry is the first choice for cast iron machining in the medium and heavy applications.

● first choice
○ alternate choice

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

XNGU-MM • Precision Finishing

catalog number	cutting edges	LI	W	S	BS	Re	hm	WK15CM	WK15PM	WN25PM	WP25PM	WP35CM	WP40PM	WS40PM	WU35PM
XNGU1501SRMM	4	.638	.394	.271	.088	.016	.004	●	●	○	○	○	○	○	○
XNGU1502SRMM	4	.638	.394	.271	.076	.032	.004	●	●	○	○	○	○	○	○

XNPU-ML • Utility Roughing

catalog number	cutting edges	LI	W	S	BS	Re	hm	WK15CM	WK15PM	WN25PM	WP25PM	WP35CM	WP40PM	WS40PM	WU35PM
XNPU1502ERML	4	.634	.394	.271	.073	.032	.003	●	●	○	○	○	○	○	○

XNPU-MM • Utility Roughing

catalog number	cutting edges	LI	W	S	BS	Re	hm	WK15CM	WK15PM	WN25PM	WP25PM	WP35CM	WP40PM	WS40PM	WU35PM
XNPU1502SRMM	4	.634	.394	.271	.076	.032	.004	●	●	○	○	○	○	○	○
XNPU1503SRMM	4	.634	.394	.271	.059	.047	.004	●	●	○	○	○	○	○	○
XNPU1504SRMM	4	.634	.394	.271	.045	.063	.004	●	●	○	○	○	○	○	○
XNPU1505SRMM	4	.634	.394	.271	.027	.079	.004	●	●	○	○	○	○	○	○

XNGU-MH • Utility Roughing

catalog number	cutting edges	LI	W	S	BS	Re	hm	WK15CM	WK15PM	WN25PM	WP25PM	WP35CM	WP40PM	WS40PM	WU35PM
NEW! XNGU1502SRMH	4	.638	.394	.271	.069	.031	.004	●	●	○	○	○	○	○	○
NEW! XNGU1504SRMH	4	.638	.394	.271	.040	.063	.004	●	●	○	○	○	○	○	○

Recommended Starting Speeds [SFM]

Material Group		WK15CM	WK15PM	WN25PM	WP25PM	WP35CM	WP40PM	WS40PM	WU35PM
P	1	- - -	- - -	- - -	1080 935 885	1490 1295 1215	970 855 805	- - -	855 755 705
	2	- - -	- - -	- - -	900 785 655	920 835 755	820 705 590	- - -	720 625 525
	3	- - -	- - -	- - -	835 705 575	835 755 670	755 640 525	- - -	655 560 460
	4	- - -	- - -	- - -	740 605 490	625 575 525	670 560 445	- - -	590 490 395
	5	- - -	- - -	- - -	605 560 490	855 755 690	560 510 445	440 325 230	490 445 395
	6	- - -	- - -	- - -	540 410 330	525 445 360	490 375 295	375 605 165	425 330 260
M	1	- - -	- - -	- - -	670 590 540	670 605 510	640 560 510	850 605 375	560 490 445
	2	- - -	- - -	- - -	605 525 425	605 525 460	575 490 410	755 560 345	510 425 360
	3	- - -	- - -	- - -	460 395 310	475 425 375	425 375 295	625 440 280	375 330 260
K	1	1380 1265 1115	885 805 705	- - -	755 670 605	970 870 785	- - -	- - -	- - -
	2	1100 970 900	690 625 575	- - -	590 525 490	770 690 625	- - -	- - -	- - -
	3	920 820 755	575 525 475	- - -	490 445 395	640 575 525	- - -	- - -	- - -
N	1	- - -	- - -	3525 3100 2870	- - -	- - -	- - -	- - -	- - -
	2	- - -	- - -	3100 2870 2495	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	3100 2870 2495	- - -	- - -	- - -	- - -	- - -
S	1	- - -	- - -	- - -	130 115 80	- - -	130 115 100	200 145 90	115 100 80
	2	- - -	- - -	- - -	130 115 80	- - -	130 115 100	180 130 85	115 100 80
	3	- - -	- - -	- - -	165 130 80	- - -	165 130 100	210 150 95	150 115 80
	4	- - -	- - -	- - -	230 165 115	215 165 110	215 165 115	295 215 135	195 150 100
H	1	- - -	- - -	- - -	395 295 230	- - -	- - -	- - -	- - -

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

Indexable Milling

Recommended Starting Feeds
Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining
-----------------	-----------------	-----------------

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	10%			20%			30%			40%			50-100%			
XNGU-ALP	.005	.007	.009	.003	.005	.007	.003	.004	.005	.002	.003	.004	.002	.003	.004	XNGU-ALP
XNGU-ML	.007	.013	.018	.005	.009	.013	.004	.007	.010	.003	.006	.008	.003	.006	.008	XNGU-ML
XNPU-MM	.009	.015	.024	.006	.011	.018	.005	.008	.013	.004	.007	.011	.004	.007	.011	XNPU-MM
XNGU-MH	.009	.019	.028	.007	.013	.020	.005	.010	.015	.004	.009	.013	.004	.008	.012	XNGU-MH

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

Order a VSM490™ Kit and experience the next level of shoulder milling!

VSM490-15 Starter Kits

Order one of our starter kits and test the performance of our new VSM490-15 platform. The kits are set up to serve the majority of shoulder milling applications and workpiece materials, delivered with a cutter body as well as 20 inserts from a premium WIDIA™ grade. Detailed order information can be found in the table below.



■ VSM490-15 Starter Kits • Inch

order number	catalog number	cutter diameter/ flutes	cutter body type	material group	application range	content				
						cutter	qty	inserts	grade	qty
5964869	VSM490KIT-WD100Z02WP40PM	1.00z2	WELDON	P	▽▽	VSM-490D100Z02W100XN15	1	XNPU15T608SRMM	WP40PM	20
5964870	VSM490KIT-WD125Z03WP40PM	1.25z3	WELDON	P	▽▽	VSM-490D125Z03W100XN15	1	XNPU15T608SRMM	WP40PM	20
5965011	VSM490KIT-WD150Z04WP40PM	1.50z4	WELDON	P	▽▽	VSM-490D150Z04W125XN15	1	XNPU15T608SRMM	WP40PM	20
5965012	VSM490KITS-D150Z05WP40PM	1.50z5	SHELL MILL	P	▽▽	VSM-490D150Z05S050XN15	1	XNPU15T608SRMM	WP40PM	20
5965013	VSM490KITS-D200Z05WP40PM	2.00z5	SHELL MILL	P	▽▽	VSM-490D200Z05S075XN15	1	XNPU15T608SRMM	WP40PM	20
5965014	VSM490KITS-D200Z06WP40PM	2.00z6	SHELL MILL	P	▽▽	VSM-490D200Z06S075XN15	1	XNPU15T608SRMM	WP40PM	20
5965015	VSM490KITS-D250Z06WP40PM	2.50z6	SHELL MILL	P	▽▽	VSM-490D250Z06S075XN15	1	XNPU15T608SRMM	WP40PM	20
5965016	VSM490KITS-D300Z07WP40PM	3.00z7	SHELL MILL	P	▽▽	VSM-490D300Z07S100XN15	1	XNPU15T608SRMM	WP40PM	20
5965017	VSM490KITS-D400Z08WP40PM	4.00z8	SHELL MILL	P	▽▽	VSM-490D400Z08S150XN15	1	XNPU15T608SRMM	WP40PM	20

(continued)

(VSM490-15 Starter Kits • Inch — continued)

order number	catalog number	cutter diameter/ flutes	cutter body type	material group	application range	content				
						cutter	qty	inserts	grade	qty
5965018	VSM490KITC-D100Z02WU35PM	1.00z2	CYLINDRICAL	M+S	▽▽▽	VSM490D100Z02C100X-N15L800	1	XNGU15T608ERML	WU35PM	20
5965019	VSM490KITC-D125Z03WU35PM	1.25z3	CYLINDRICAL	M+S	▽▽▽	VSM490D125Z03C125X-N15L800	1	XNGU15T608ERML	WU35PM	20
5965031	VSM490KITS-D150Z05WU35PM	1.50z5	SHELL MILL	M+S	▽▽▽	VSM-490D150Z05S050XN15	1	XNGU15T608ERML	WU35PM	20
5965032	VSM490KITS-D200Z05WU35PM	2.00z5	SHELL MILL	M+S	▽▽▽	VSM-490D200Z05S075XN15	1	XNGU15T608ERML	WU35PM	20
5965033	VSM490KITS-D200Z06WU35PM	2.00z6	SHELL MILL	M+S	▽▽▽	VSM-490D200Z06S075XN15	1	XNGU15T608ERML	WU35PM	20
5965034	VSM490KITS-D250Z06WU35PM	2.50z6	SHELL MILL	M+S	▽▽▽	VSM-490D250Z06S075XN15	1	XNGU15T608ERML	WU35PM	20
5965035	VSM490KITS-D300Z07WU35PM	3.00z7	SHELL MILL	M+S	▽▽▽	VSM-490D300Z07S100XN15	1	XNGU15T608ERML	WU35PM	20
5965036	VSM490KIT-WD100Z02WK15PM	1.00z2	WELDON	K	▽	VSM-490D100Z02W100XN15	1	XNPU15T608SRMM	WK15PM	20
5965037	VSM490KIT-WD125Z03WK15PM	1.25z3	WELDON	K	▽	VSM-490D125Z03W100XN15	1	XNPU15T608SRMM	WK15PM	20
5965038	VSM490KITS-D150Z05WK15PM	1.50z5	SHELL MILL	K	▽	VSM-490D150Z05S050XN15	1	XNPU15T608SRMM	WK15PM	20
5965039	VSM490KITS-D200Z06WK15PM	2.00z6	SHELL MILL	K	▽	VSM-490D200Z06S075XN15	1	XNPU15T608SRMM	WK15PM	20
5965040	VSM490KITS-D250Z07WK15PM	2.50z7	SHELL MILL	K	▽	VSM-490D250Z07S100XN15	1	XNPU15T608SRMM	WK15PM	20
5965041	VSM490KITS-D300Z09WK15PM	3.00z9	SHELL MILL	K	▽	VSM-490D300Z09S100XN15	1	XNPU15T608SRMM	WK15PM	20
5965042	VSM490KITS-D400Z11WK15PM	4.00z11	SHELL MILL	K	▽	VSM-490D400Z11S150XN15	1	XNPU15T608SRMM	WK15PM	20

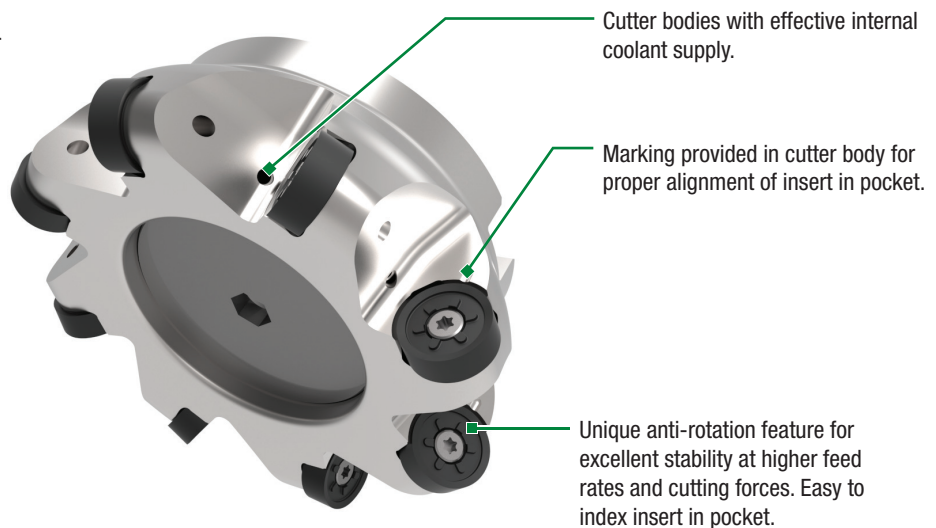
▽ Heavy/Roughing
 ▽▽ Medium
 ▽▽▽ Light Machining/Finishing

M200 Large IC Expansion

Larger new double-sided round inserts to cover tough applications in multiple types of milling operations and workpiece materials. The round inserts allow us to apply the tool in face milling operations with bad skin and/or variable depth-of-cuts; a perfect fit for forgings. This concept is also suitable for high-feed face milling operations where shallow depth-of-cuts are used. Everything has the most efficient cost-per-edge due to the 12 cutting edges per insert.

- Double-sided insert with 12 cutting edges.
- Extremely soft cutting effect for lower cutting forces.
- Effective anti-rotation feature.

Two new IC's and two topography styles under the new WIDIA™ Victory™ milling grades to cover any type of component and application.



■ **Insert Offering**

Double-sided insert with up to 12 cutting edges for a more productive cutting process.

- Shell mills and Weldon® cutters.
- 2 insert IC's: 3/4" and 1".
- 3/4" IC: Diameters of 2–6".
- 1" IC: Diameters of 3–8".



M200™ IC 3/4"
12 cutting edges



M200 IC 1"
12 cutting edges

-ML



Light geometry.
Sharper cutting edges.



Lower cutting forces.
First choice for stainless steel
and titanium machining.

-MM



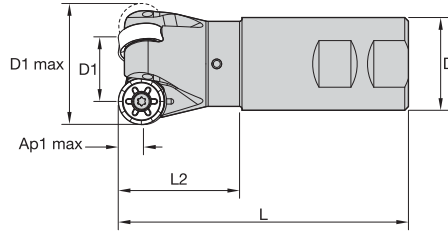
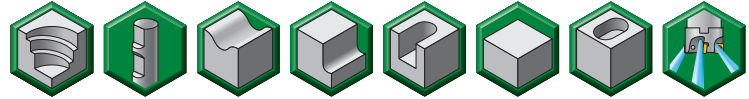
Universal geometry
for majority of material
groups and applications.



Strongest cutting edge.
First choice for general
purpose machining.

Indexable Milling

- Double-sided, 12 cutting edges.
- Anti-rotation feature for better stability and higher feed rates.
- Excellent for heavy roughing and semi-finishing of all materials.
- Suitable for high-feed face milling operations.



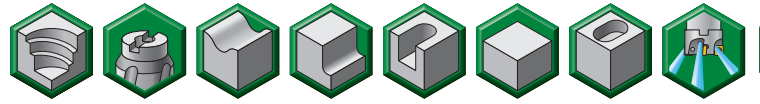
■ Weldon Shanks

order number	catalog number	D1 max	D1	D	L	Ap1 max	Z	max ramp angle	max RPM	coolant supply	lbs
6009950	M200D200Z03W150RN64	2.000	1.250	1.500	4.690	.370	3	1.30	19000	Yes	2.00

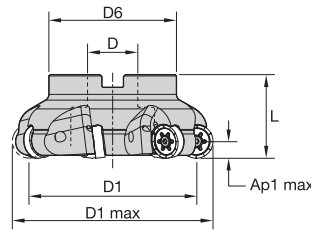
■ Spare Parts

			
D1 max	insert screw	in. lbs.	Torx wrench
2.000	MS1160	40	TT20

- Double-sided, 12 cutting edges.
- Anti-rotation feature for better stability and higher feed rates.
- Excellent for heavy roughing and semi-finishing of all materials.
- Suitable for high-feed face milling operations.



Indexable Milling



■ **Shell Mills**

order number	catalog number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	coolant supply	lbs
6009961	M200D250Z04S075RN64	2.500	1.750	.750	1.750	2.000	.370	4	1.20	16000	Yes	1.12
6009962	M200D300Z05S100RN64	3.000	2.250	1.000	2.188	2.000	.370	5	.90	14000	Yes	1.71
6009963	M200D400Z05S125RN64	4.000	3.250	1.250	2.875	2.000	.370	5	.70	11600	Yes	3.42
6009964	M200D400Z06S125RN64	4.000	3.250	1.250	2.875	2.000	.370	6	.70	11600	Yes	3.41
6009965	M200D500Z06S150RN64	5.000	4.250	1.500	3.812	2.000	.370	6	.60	10000	Yes	4.69
6009966	M200D500Z08S150RN64	5.000	4.250	1.500	3.812	2.000	.370	8	.60	10000	Yes	4.68
6009967	M200D600Z08S150RN64	6.000	5.250	1.500	3.812	2.500	.370	8	.50	9000	Yes	8.64

■ **Spare Parts**



D1 max	insert screw	in. lbs.	Torx wrench	socket-head cap screw	low head cap screw with coolant groove	coolant lock screw assembly
2.500	MS1160	40	TT20	S445	—	—
3.000	MS1160	40	TT20	S458	—	—
4.000	MS1160	40	TT20	S467	S2172CG	—
5.000	MS1160	40	TT20	—	—	S2165C
6.000	MS1160	40	TT20	—	—	S2163C

NOTE: Low head cap screw with coolant groove and coolant lock screw assembly need to be ordered separately.

■ Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	.E..ML	WP25PM	.S..MM	WP40PM	.S..MM	WP40PM
P3-P4	.E..ML	WP25PM	.S..MM	WP40PM	.S..MM	WP40PM
P5-P6	.E..ML	WP25PM	.S..MM	WP35CM	.S..MM	WP35CM
M1-M2	.E..ML	WP25PM	.S..MM	WU35PM	.S..MM	WU35PM
M3	.E..ML	WP25PM	.S..MM	WU35PM	.S..MM	WU35PM
K1-K2	-	-	.S..MM	WK15CM	-	-
K3	-	-	.S..MM	WK15CM	-	-
N1-N2	-	-	-	-	-	-
N3	-	-	-	-	-	-
S1-S2	.E..ML	WP25PM	.S..MM	WU35PM	.S..MM	WU35PM
S3	.E..ML	WP25PM	.S..MM	WU35PM	.S..MM	WU35PM
S4	.E..ML	WP25PM	.S..MM	WU35PM	.S..MM	WU35PM
H1	-	-	.S..MM	WP25PM	-	-

3/4" • Inserts • RNGJ64...

- ML geometry is the first choice for stainless steel and high-temp alloys.



- first choice
- alternate choice

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

■ RNGJ-ML

catalog number	cutting edges	D	S	hm	WK15CM	WP25PM	WU35PM	WP35CM	WP40PM
RNGJ64EML	12	.750	.250	.001	●	●	○	○	○

- MM geometry is for general purpose, especially for steel.



■ RNGJ-MM

catalog number	cutting edges	D	S	hm	WK15CM	WP25PM	WU35PM	WP35CM	WP40PM
RNGJ64SMM	12	.750	.250	.004	○	○	○	○	○

■ Recommended Starting Speeds [SFM]

Material Group		WK15CM			WP25PM			WU35PM			WP35CM			WP40PM		
P	1	-	-	-	1295	1120	1060	1025	905	845	1790	1555	1460	1165	1025	965
	2	-	-	-	1080	940	785	865	750	630	1105	1000	905	985	845	710
	3	-	-	-	1000	845	690	785	670	550	1000	905	805	905	770	630
	4	-	-	-	890	725	590	710	590	475	750	690	630	805	670	535
	5	-	-	-	725	670	590	590	535	475	1025	905	830	670	610	535
	6	-	-	-	650	490	395	510	395	310	630	535	430	590	450	355
M	1	-	-	-	805	710	650	670	590	535	805	725	610	770	670	610
	2	-	-	-	725	630	510	610	510	430	725	630	550	690	590	490
	3	-	-	-	550	475	370	450	395	310	570	510	450	510	450	355
K	1	1655	1520	1340	905	805	725	-	-	-	1165	1045	940	-	-	-
	2	1320	1165	1080	710	630	590	-	-	-	925	830	750	-	-	-
	3	1105	985	905	590	535	475	-	-	-	770	690	630	-	-	-
N	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S	1	-	-	-	155	140	95	140	120	95	-	-	-	155	140	120
	2	-	-	-	155	140	95	140	120	95	-	-	-	155	140	120
	3	-	-	-	200	155	95	180	140	95	-	-	-	200	155	120
	4	-	-	-	275	200	140	235	180	120	260	200	130	260	200	140
H	1	-	-	-	475	355	275	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Indexable Milling

Recommended Starting Feeds

■ Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining
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At .370 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	10%			20%			30%			40%			50-100%			
.E..ML	.003	.009	.016	.003	.007	.012	.002	.006	.010	.002	.006	.010	.002	.005	.009	.E..ML
.S..MM	.007	.015	.027	.005	.011	.020	.005	.010	.017	.004	.009	.016	.004	.009	.016	.S..MM

At .188 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	10%			20%			30%			40%			50-100%			
.E..ML	.004	.011	.020	.003	.008	.015	.003	.007	.013	.003	.007	.012	.003	.007	.012	.E..ML
.S..MM	.009	.019	.034	.006	.014	.025	.006	.012	.021	.005	.011	.020	.005	.011	.020	.S..MM

At .094 Axial Depth of Cut (ap)

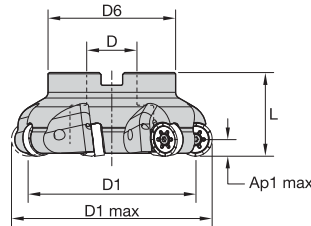
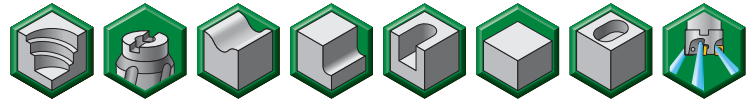
Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	10%			20%			30%			40%			50-100%			
.E..ML	.006	.015	.027	.004	.011	.020	.004	.010	.017	.004	.009	.016	.003	.009	.016	.E..ML
.S..MM	.012	.025	.046	.009	.018	.033	.007	.016	.029	.007	.015	.027	.007	.015	.026	.S..MM

At .047 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	10%			20%			30%			40%			50-100%			
.E..ML	.008	.021	.037	.006	.016	.027	.005	.014	.023	.005	.013	.022	.005	.012	.021	.E..ML
.S..MM	.016	.035	.065	.012	.025	.046	.010	.022	.040	.010	.020	.037	.009	.020	.036	.S..MM

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

- Double-sided, 12 cutting edges.
- Anti-rotation feature for better stability and higher feed rates.
- Excellent for heavy roughing and semi-finishing of all materials.
- Suitable for high-feed face milling operations.



■ Shell Mills

order number	catalog number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	coolant supply	lbs
6009968	M200D300Z03S100RN85	3.000	2.000	1.000	2.188	2.000	.500	3	1.20	12800	Yes	1.57
6009969	M200D400Z05S125RN85	4.000	3.000	1.250	2.875	2.000	.500	5	.90	9500	Yes	2.91
6009970	M200D500Z06S150RN85	5.000	4.000	1.500	3.812	2.000	.500	6	.80	8200	Yes	4.07
6009971	M200D600Z07S150RN85	6.000	5.000	1.500	3.812	2.500	.500	7	.60	7300	Yes	7.84
6009973	M200D800Z08S250RN85	8.000	7.000	2.500	5.118	2.500	.500	8	.50	6000	No	11.68

■ Spare Parts

D1 max	insert screw	in. lbs.	Torx wrench	socket-head cap screw	low head cap screw with coolant groove	coolant lock screw assembly
3.000	MS1162	45	TT25	S458	—	—
4.000	MS1162	45	TT25	S467	S2172CG	—
5.000	MS1162	45	TT25	—	—	S2165C
6.000	MS1162	45	TT25	—	—	S2163C
8.000	MS1162	45	TT25	—	—	—

NOTE: Low head cap screw with coolant groove and coolant lock screw assembly need to be ordered separately.

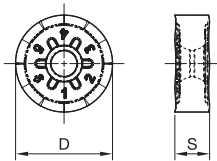
Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	.E..ML	WP25PM	.S..MM	WP40PM	.S..MM	WP40PM
P3-P4	.E..ML	WP25PM	.S..MM	WP40PM	.S..MM	WP40PM
P5-P6	.E..ML	WP25PM	.S..MM	WP35CM	.S..MM	WP35CM
M1-M2	.E..ML	WP25PM	.S..MM	WU35PM	.S..MM	WU35PM
M3	.E..ML	WP25PM	.S..MM	WU35PM	.S..MM	WU35PM
K1-K2	-	-	.S..MM	WK15CM	-	-
K3	-	-	.S..MM	WK15CM	-	-
N1-N2	-	-	-	-	-	-
N3	-	-	-	-	-	-
S1-S2	.E..ML	WP25PM	.S..MM	WU35PM	.S..MM	WU35PM
S3	.E..ML	WP25PM	.S..MM	WU35PM	.S..MM	WU35PM
S4	.E..ML	WP25PM	.S..MM	WU35PM	.S..MM	WU35PM
H1	-	-	.S..MM	WP25PM	-	-

Indexable Milling

1" • Inserts • RNGJ85...

- ML geometry is the first choice for stainless steel and high-temp alloys.



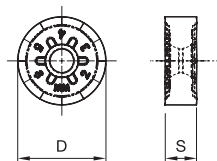
- first choice
- alternate choice

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

RNGJ-ML

catalog number	cutting edges	D	S	hm	WK15CM	WP25PM	WU35PM	WP35CM	WP40PM
RNGJ85EML	12	1.000	.313	.001	●	●	○	○	○

- MM geometry is for general purpose, especially for steel.



RNGJ-MM

catalog number	cutting edges	D	S	hm	WK15CM	WP25PM	WU35PM	WP35CM	WP40PM
RNGJ85SMM	12	1.000	.313	.004	○	○	○	○	○

■ Recommended Starting Speeds [SFM]

Indexable Milling

Material Group		WK15CM			WP25PM			WU35PM			WP35CM			WP40PM		
P	1	-	-	-	1295	1120	1060	1025	905	845	1790	1555	1460	1165	1025	965
	2	-	-	-	1080	940	785	865	750	630	1105	1000	905	985	845	710
	3	-	-	-	1000	845	690	785	670	550	1000	905	805	905	770	630
	4	-	-	-	890	725	590	710	590	475	750	690	630	805	670	535
	5	-	-	-	725	670	590	590	535	475	1025	905	830	670	610	535
	6	-	-	-	650	490	395	510	395	310	630	535	430	590	450	355
M	1	-	-	-	805	710	650	670	590	535	805	725	610	770	670	610
	2	-	-	-	725	630	510	610	510	430	725	630	550	690	590	490
	3	-	-	-	550	475	370	450	395	310	570	510	450	510	450	355
K	1	1655	1520	1340	905	805	725	-	-	-	1165	1045	940	-	-	-
	2	1320	1165	1080	710	630	590	-	-	-	925	830	750	-	-	-
	3	1105	985	905	590	535	475	-	-	-	770	690	630	-	-	-
N	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S	1	-	-	-	155	140	95	140	120	95	-	-	-	155	140	120
	2	-	-	-	155	140	95	140	120	95	-	-	-	155	140	120
	3	-	-	-	200	155	95	180	140	95	-	-	-	200	155	120
	4	-	-	-	275	200	140	235	180	120	260	200	130	260	200	140
H	1	-	-	-	475	355	275	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

■ Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining
-----------------	-----------------	-----------------

At .500 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	10%			20%			30%			40%			50-100%			
.E..ML	.003	.009	.018	.003	.007	.013	.002	.006	.011	.002	.005	.011	.002	.005	.011	.E..ML
.S..MM	.007	.014	.029	.005	.011	.021	.004	.009	.019	.004	.009	.017	.004	.009	.017	.S..MM

At .250 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	10%			20%			30%			40%			50-100%			
.E..ML	.004	.010	.021	.003	.008	.015	.003	.007	.013	.002	.006	.012	.002	.006	.012	.E..ML
.S..MM	.008	.017	.034	.006	.012	.025	.005	.011	.022	.005	.010	.020	.005	.010	.020	.S..MM

At .125 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	10%			20%			30%			40%			50-100%			
.E..ML	.005	.013	.027	.004	.010	.020	.003	.009	.017	.003	.008	.016	.003	.008	.016	.E..ML
.S..MM	.010	.022	.045	.008	.016	.033	.007	.014	.028	.006	.013	.026	.006	.013	.026	.S..MM

At .063 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	10%			20%			30%			40%			50-100%			
.E..ML	.007	.018	.038	.005	.014	.027	.005	.012	.024	.004	.011	.022	.004	.011	.022	.E..ML
.S..MM	.014	.030	.063	.010	.022	.045	.009	.019	.039	.008	.018	.036	.008	.018	.035	.S..MM

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

Indexable Milling

Double-Sided Round Insert •

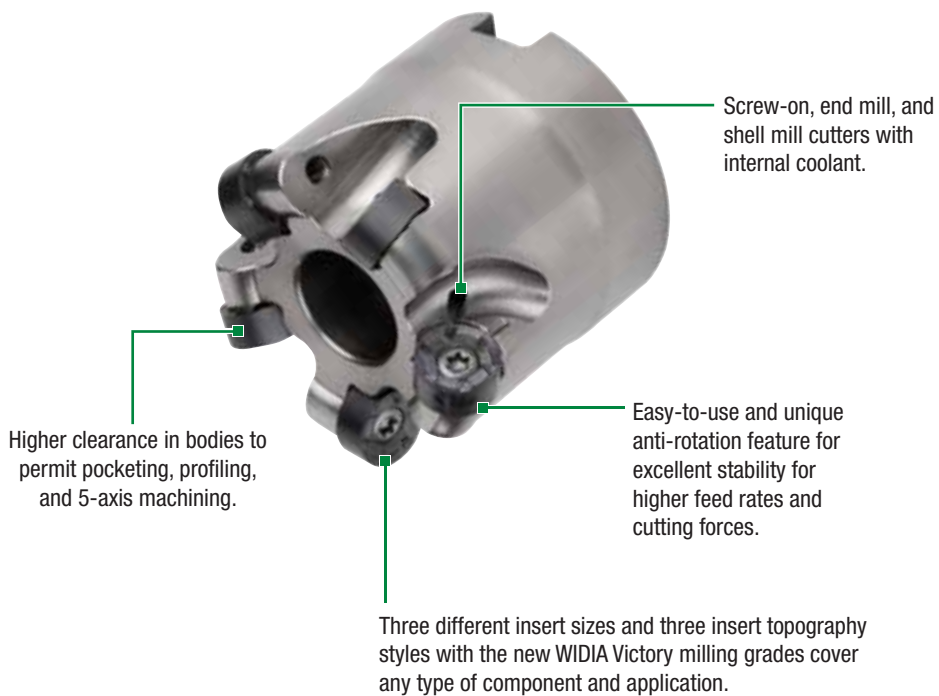
M200™ Series

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.

M200



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



Higher clearance in bodies to permit pocketing, profiling, and 5-axis machining.

Easy-to-use and unique anti-rotation feature for excellent stability for higher feed rates and cutting forces.

Screw-on, end mill, and shell mill cutters with internal coolant.

Three different insert sizes and three insert topography styles with the new WIDIA Victory milling grades cover any type of component and application.

Copy Mills

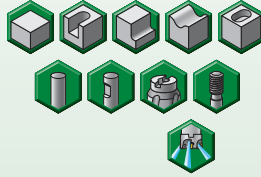
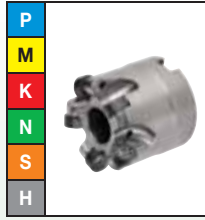


M200™

Max depth of cut: .200"

Indexes per insert up to: 12
Diameter: 1–4"

Pages: A30–A37,
A40–A59



■ **Insert Offering**



M200 IC 10
10mm IC insert
8 cutting edges



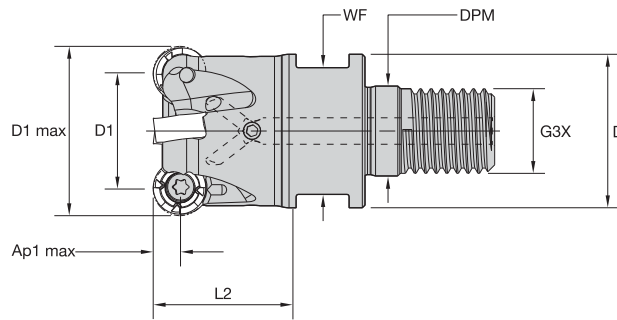
M200 IC 12
12mm IC insert
12 cutting edges



M200 IC 16
16mm IC insert
12 cutting edges

Indexable Milling

- Double-sided, eight cutting edges.
- Anti-rotation feature for better stability and higher feed rates.
- Pocketing and profiling capabilities.



■ Screw-On End Mills

order number	catalog number	D1 max	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	max ramp angle	max RPM	coolant supply	lbs
5283432	M200D100Z03M12RN10	1.000	.606	.827	.490	M12	1.250	.667	.200	3	.60	54200	Yes	.17
5283433	M200D125Z03M16RN10	1.250	.856	1.142	.670	M16	1.500	.943	.200	3	.49	48500	Yes	.38
5283434	M200D125Z04M16RN10	1.250	.856	1.142	.670	M16	1.500	.943	.200	4	.49	48500	Yes	.38
5283435	M200D150Z05M16RN10	1.500	1.106	1.142	.670	M16	1.500	.943	.200	5	.37	44300	Yes	.45

■ Spare Parts



insert screw
191.848

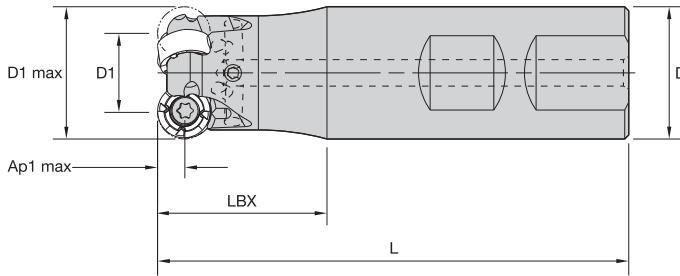
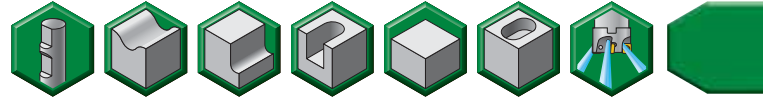


in. lbs.
18



Torx driver
170.025

- Double-sided, eight cutting edges.
- Anti-rotation feature for better stability and higher feed rates.
- Pocketing and profiling capabilities.



Indexable Milling

■ **Weldon Shanks**

order number	catalog number	D1 max	D1	D	L	LBX	Ap1 max	Z	max ramp angle	max RPM	coolant supply	lbs
5283436	M200D100Z03W100RN10	1.000	.606	1.000	4.280	2.000	.200	3	.60	54200	Yes	.75
5283437	M200D125Z03W125RN10	1.250	.856	1.250	4.280	2.000	.200	3	.49	48500	Yes	1.20

■ **Spare Parts**



insert screw

191.848



in. lbs.

18

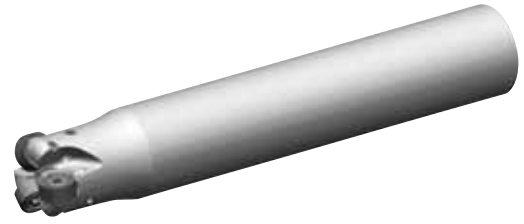
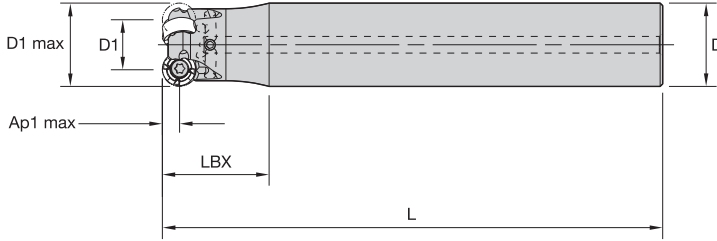
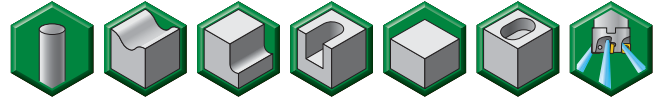


Torx driver

170.025

Indexable Milling

- Double-sided, eight cutting edges.
- Anti-rotation feature for better stability and higher feed rates.
- Pocketing and profiling capabilities.



■ Cylindrical End Mills

order number	catalog number	D1 max	D1	D	L	LBX	Ap1 max	Z	max ramp angle	max RPM	coolant supply	lbs
5283438	M200D100Z03C100RN10L600	1.000	.606	1.000	6.000	1.500	.200	3	.60	54200	Yes	1.15
5283439	M200D100Z03C100RN10L800	1.000	.606	1.000	8.000	1.500	.200	3	.60	54200	Yes	1.58
5283480	M200D125Z03C125RN10L900	1.250	.856	1.250	9.000	1.500	.200	3	.49	48500	Yes	2.85

■ Spare Parts



insert screw

191.848



in. lbs.

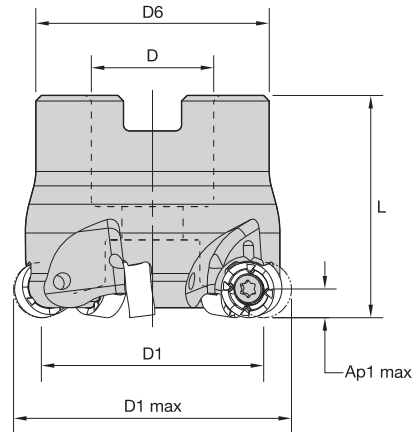
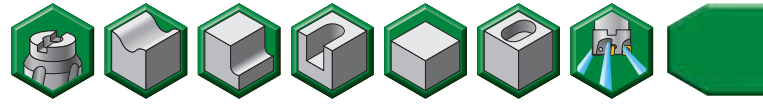
18



Torx driver

170.025

- Double-sided, eight cutting edges.
- Anti-rotation feature for better stability and higher feed rates.
- Pocketing and profiling capabilities.



Indexable Milling

■ **Shell Mills**

order number	catalog number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	coolant supply	lbs
5283481	M200D150Z03S050RN10	1.500	1.106	.500	1.300	1.570	.200	3	.41	44300	Yes	.46
5283482	M200D150Z05S050RN10	1.500	1.106	.500	1.300	1.570	.200	5	.37	44300	Yes	.43
5283483	M200D200Z04S075RN10	2.000	1.606	.750	1.654	2.000	.200	4	.31	38300	Yes	1.04
5283484	M200D200Z06S075RN10	2.000	1.606	.750	1.654	2.000	.200	6	.32	38300	Yes	1.02

■ **Spare Parts**

D1 max	insert screw	in. lbs.	wrench	socket-head cap screw	socket-head cap screw with coolant groove
1.500	191.848	18	170.025	S422	S422CG
2.000	191.848	18	170.025	S445	S445CG

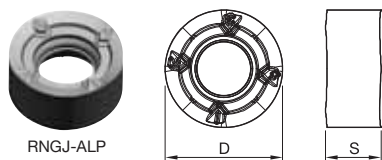
NOTE: Socket-head cap screw and socket-head cap screw with coolant groove must be ordered separately.

Indexable Milling

■ Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	ML	WP25PM	MM	WP40PM	MM	WP40PM
P3-P4	ML	WP25PM	MM	WP25PM	MH	WP40PM
P5-P6	ML	WP35CM	MM	WP35CM	MH	WP35CM
M1-M2	ML	WP25PM	ML	WU35PM	MM	WU35PM
M3	ML	WP25PM	MM	WU35PM	MM	WU35PM
K1-K2	MH	WK15CM	MH	WK15CM	MH	WP20CM
K3	MH	WK15CM	MH	WK15CM	MH	WP25PM
N1-N2	ALP	WN25PM	ALP	WN25PM	ALP	WN25PM
N3	ALP	WN25PM	ALP	WN25PM	ALP	WN25PM
S1-S2	ML	WS30PM	MM	WS30PM	MM	WU35PM
S3	ML	WS30PM	MM	WU35PM	MM	WU35PM
S4	ML	WS30PM	MM	WU35PM	MM	WU35PM
H1	MH	WP25PM	MH	WP20CM	-	-

IC10 • Inserts • RN.J10...



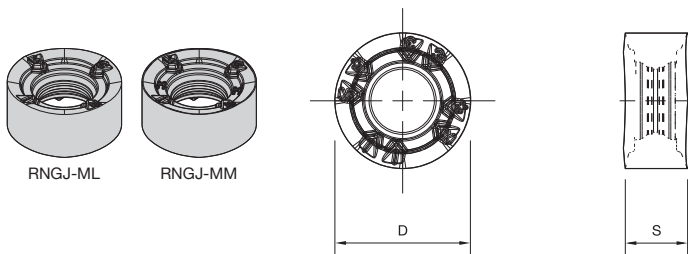
• -ALP is the first choice for milling aluminum and other non-ferrous alloys.

● first choice
○ alternate choice

	P	M	K	N	S	H	WK15CM	WN25PM	WP20CM	WP25PM	WP35CM	WP40PM	WS30PM	WU35PM
P	●													
M		○												
K			○											
N				●										
S					○									
H						○								

■ RINGJ-ALP • For aluminum and other non-ferrous alloys

catalog number	number of indexes	D	S	hm	WK15CM	WN25PM	WP20CM	WP25PM	WP35CM	WP40PM	WS30PM	WU35PM
NEW! RINGJ10T3M0FALP	8	.394	.188	.001	I	6065590	I	I	I	I	I	I



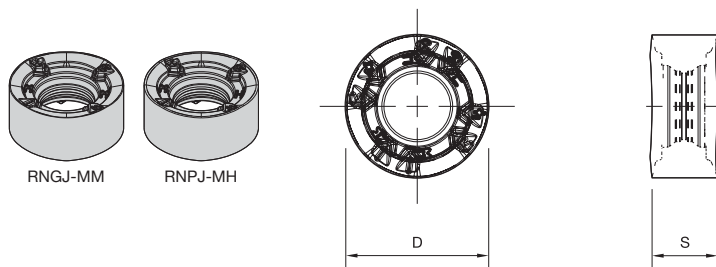
- -ML geometry is the first choice for stainless steel and high-temp alloys.
- -MM geometry is for general purpose, especially for steel.

■ RINGJ-ML

catalog number	number of indexes	D	S	hm	WK15CM	WN25PM	WP20CM	WP25PM	WP35CM	WP40PM	WS30PM	WU35PM
RNGJ10T3M0EML	8	.394	.188	.002				5274456	5274455		5520352	5274457

■ RINGJ-MM

catalog number	number of indexes	D	S	hm	WK15CM	WN25PM	WP20CM	WP25PM	WP35CM	WP40PM	WS30PM	WU35PM
RNGJ10T3M0SMM	8	.394	.188	.003				5274511			5520353	5274512



- -MM geometry is for general purpose, especially for steel.
- -MH geometry is the first choice for heavy applications, cast iron, and high-strength steel.

■ RNPJ-MM

catalog number	number of indexes	D	S	hm	WK15CM	WN25PM	WP20CM	WP25PM	WP35CM	WP40PM	WS30PM	WU35PM
RNPJ10T3M0SMM	8	.394	.188	.003			5276198	5276197	5276196	5542327		

■ RNPJ-MH

catalog number	number of indexes	D	S	hm	WK15CM	WN25PM	WP20CM	WP25PM	WP35CM	WP40PM	WS30PM	WU35PM
RNPJ10T3M0SMH	8	.394	.187	.007	5276243		5276241	5276240	5276199	5542328		5476633

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

● first choice
○ alternate choice

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

● first choice
○ alternate choice

■ Recommended Starting Speeds [SFM]

Indexable Milling

Material Group		WK15CM			WN25PM			WP20CM			WP25PM		
P	1	-	-	-	-	-	-	2165	1910	1770	1295	1120	1060
	2	-	-	-	-	-	-	1340	1220	1080	1080	940	785
	3	-	-	-	-	-	-	1220	1080	1000	1000	845	690
	4	-	-	-	-	-	-	905	845	750	890	725	590
	5	-	-	-	-	-	-	1080	985	905	725	670	590
	6	-	-	-	-	-	-	750	670	570	650	490	395
M	1	-	-	-	-	-	-	890	785	690	805	710	650
	2	-	-	-	-	-	-	805	690	630	725	630	510
	3	-	-	-	-	-	-	630	570	490	550	475	370
K	1	1655	1520	1340	-	-	-	1415	1280	1165	905	805	725
	2	1320	1165	1080	-	-	-	1120	1000	925	710	630	590
	3	1105	985	905	-	-	-	940	845	785	590	535	475
N	1	-	-	-	4230	3720	3445	-	-	-	-	-	-
	2	-	-	-	3720	3445	2995	-	-	-	-	-	-
	3	-	-	-	3720	3445	2995	-	-	-	-	-	-
S	1	-	-	-	-	-	-	-	-	-	155	140	95
	2	-	-	-	-	-	-	-	-	-	155	140	95
	3	-	-	-	-	-	-	-	-	-	200	155	95
	4	-	-	-	-	-	-	-	-	-	275	200	140
H	1	-	-	-	-	-	-	550	450	370	475	355	275
	2	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-

Material Group		WP35CM			WP40PM			WS30PM			WU35PM		
P	1	1790	1555	1460	1165	1025	965	1460	1260	1180	1025	905	845
	2	1105	1000	905	985	845	710	1200	1060	865	865	750	630
	3	1000	905	805	905	770	630	1120	940	770	785	670	550
	4	750	690	630	805	670	535	985	805	650	710	590	475
	5	1025	905	830	670	610	535	805	750	650	590	535	475
	6	630	535	430	590	450	355	725	550	430	510	395	310
M	1	805	725	610	770	670	610	890	785	725	670	590	535
	2	725	630	550	690	590	490	805	710	570	610	510	430
	3	570	510	450	510	450	355	610	535	415	450	395	310
K	1	1165	1045	940	-	-	-	-	-	-	-	-	-
	2	925	830	750	-	-	-	-	-	-	-	-	-
	3	770	690	630	-	-	-	-	-	-	-	-	-
N	1	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-
S	1	-	-	-	155	140	120	180	155	120	140	120	95
	2	-	-	-	155	140	120	180	155	120	140	120	95
	3	-	-	-	200	155	120	215	180	120	180	140	95
	4	260	200	130	260	200	140	335	235	155	235	180	120
H	1	-	-	-	-	-	-	535	395	295	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-

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

■ Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining
-----------------	-----------------	-----------------

At .197 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
ALP	.005	.007	.009	.003	.005	.007	.003	.004	.005	.002	.003	.004	.002	.003	.004	ALP
ML	.005	.017	.031	.004	.013	.023	.003	.009	.017	.002	.008	.015	.002	.008	.014	ML
MM	.011	.020	.036	.008	.014	.026	.006	.011	.019	.005	.009	.017	.005	.009	.015	MM
MH	.018	.023	.038	.013	.016	.027	.010	.012	.020	.009	.011	.018	.008	.010	.016	MH

At .098 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
ALP	.005	.007	.009	.003	.005	.007	.003	.004	.005	.002	.003	.004	.002	.003	.004	ALP
ML	.006	.020	.036	.004	.014	.026	.003	.011	.020	.003	.009	.017	.003	.009	.016	ML
MM	.013	.023	.041	.009	.016	.030	.007	.012	.022	.006	.011	.019	.005	.010	.018	MM
MH	.021	.026	.044	.015	.019	.031	.011	.014	.023	.010	.012	.020	.009	.011	.019	MH

At .049 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
ALP	.005	.007	.009	.003	.005	.007	.003	.004	.005	.002	.003	.004	.002	.003	.004	ALP
ML	.008	.026	.048	.006	.019	.034	.004	.014	.026	.004	.012	.022	.003	.011	.020	ML
MM	.017	.030	.054	.012	.022	.039	.009	.016	.029	.008	.014	.025	.007	.013	.023	MM
MH	.028	.035	.058	.020	.025	.041	.015	.019	.031	.013	.016	.027	.012	.015	.024	MH

At .025 Axial Depth of Cut (ap)

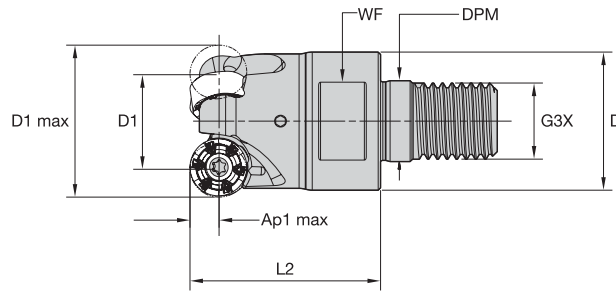
Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
ALP	.005	.007	.009	.003	.005	.007	.003	.004	.005	.002	.003	.004	.002	.003	.004	ALP
ML	.011	.036	.066	.008	.026	.047	.006	.019	.035	.005	.017	.030	.005	.015	.028	ML
MM	.023	.041	.075	.016	.029	.053	.012	.022	.040	.011	.019	.035	.010	.018	.032	MM
MH	.038	.048	.079	.027	.034	.056	.020	.025	.042	.018	.022	.036	.016	.020	.033	MH

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

Indexable Milling

Indexable Milling

- Double-sided, 12 cutting edges.
- Anti-rotation feature for better stability and higher feed rates.
- Pocketing and profiling capabilities.



■ Screw-On End Mills

order number	catalog number	D1 max	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	max ramp angle	max RPM	coolant supply	lbs
5068352	M200D125Z03M16RN12	1.250	.778	1.142	.670	M16	1.500	.943	.117	3	.49	39160	Yes	.37

■ Spare Parts



insert screw

193.492



in. lbs.

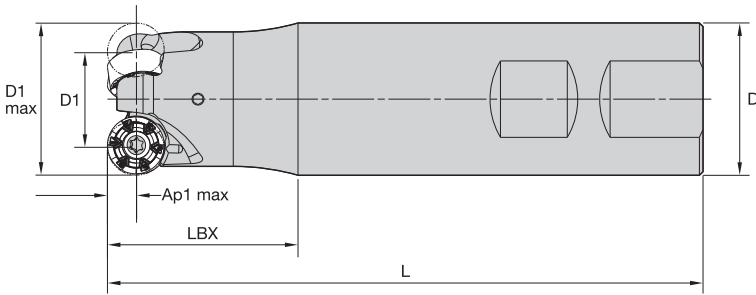
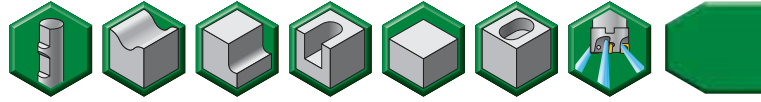
35



Torx driver

170.025

- Double-sided, 12 cutting edges.
- Anti-rotation feature for better stability and higher feed rates.
- Pocketing and profiling capabilities.



Indexable Milling

■ **Weldon Shanks**

order number	catalog number	D1 max	D1	D	L	LBX	Ap1 max	Z	max ramp angle	max RPM	coolant supply	lbs
5068372	M200D125Z02W125RN12	1.250	.778	1.250	3.530	1.250	.117	2	.88	39160	Yes	.98

■ **Spare Parts**



insert screw

193.492



in. lbs.

35

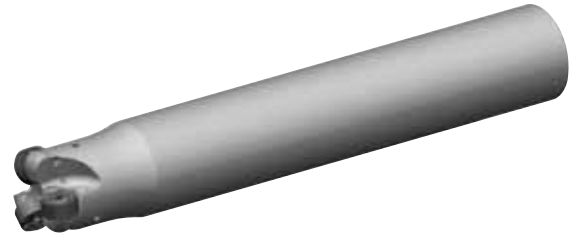
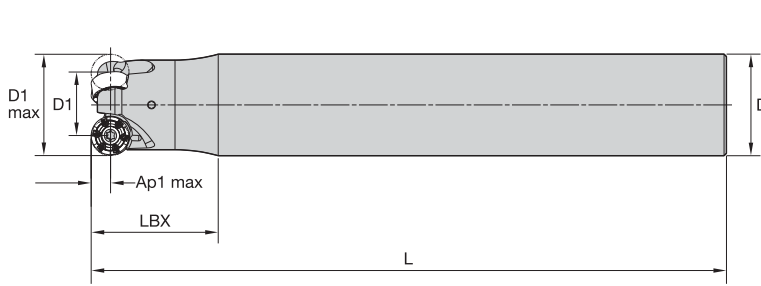


Torx driver

170.025

Indexable Milling

- Double-sided, 12 cutting edges.
- Anti-rotation feature for better stability and higher feed rates.
- Pocketing and profiling capabilities.



■ Cylindrical End Mills

order number	catalog number	D1 max	D1	D	L	LBX	Ap1 max	Z	max ramp angle	max RPM	coolant supply	lbs
5068374	M200D125Z02C125RN12L900	1.250	.778	1.250	9.000	1.250	.117	2	.88	39160	Yes	2.85
5068400	M200D150Z03C150RN12L900	1.500	1.028	1.500	9.250	1.499	.117	3	.41	35890	Yes	4.21

■ Spare Parts



insert screw

193.492



in. lbs.

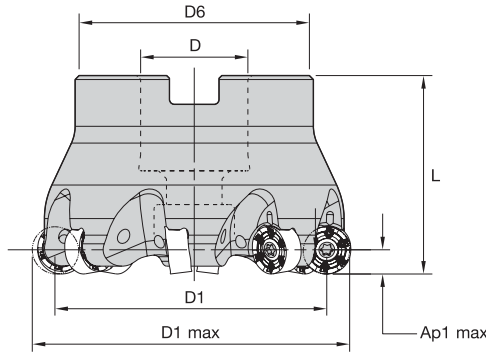
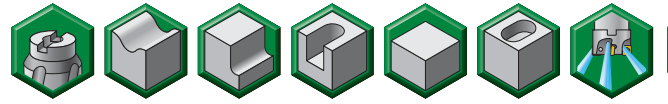
35



Torx driver

170.025

- Double-sided, 12 cutting edges.
- Anti-rotation feature for better stability and higher feed rates.
- Pocketing and profiling capabilities.



Indexable Milling

■ **Shell Mills**

order number	catalog number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	coolant supply	lbs
5068401	M200D150Z04S050RN12	1.500	1.028	.500	1.300	1.570	.117	4	.54	35890	Yes	.41
5068402	M200D200Z04S075RN12	2.000	1.528	.750	1.750	2.000	.117	4	.42	31080	Yes	1.02
5068403	M200D200Z05S075RN12	2.000	1.528	.750	1.750	2.000	.117	5	.40	31080	Yes	1.03
5068404	M200D250Z07S075RN12	2.500	2.028	.750	1.750	2.000	.117	7	.30	27800	Yes	1.53
5068405	M200D300Z08S100RN12	3.000	2.528	1.000	2.189	2.000	.117	8	.24	25370	Yes	2.08
5068406	M200D400Z09S150RN12	4.000	3.528	1.500	3.380	2.000	.117	9	.16	21970	Yes	3.29

■ **Spare Parts**

D1 max	insert screw	in. lbs.	wrench	socket-head cap screw	socket-head cap screw with coolant groove	coolant lock screw	coolant lock screw assembly
1.500	193.492	35	170.025	S422	S422CG	—	—
2.000	193.492	35	170.025	S445	S445CG	—	—
2.500	193.492	35	170.025	S445	S445CG	—	—
3.000	193.492	35	170.025	S445	S445CG	—	—
4.000	193.492	35	170.025	—	—	12146110500	S-2165-C

NOTE: Socket-head cap screw with coolant groove and coolant lock screw assembly must be ordered separately.

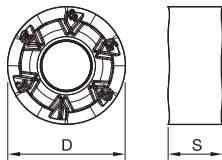
■ Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	ML	WP25PM	MM	WP40PM	MM	WP40PM
P3-P4	ML	WP25PM	MM	WP25PM	MH	WP40PM
P5-P6	ML	WP35CM	MM	WP35CM	MH	WP35CM
M1-M2	ML	WP25PM	ML	WU35PM	MM	WU35PM
M3	ML	WP25PM	MM	WU35PM	MM	WU35PM
K1-K2	MH	WK15CM	MH	WK15CM	MH	WP20CM
K3	MH	WK15PM	MH	WK15PM	MH	WP25PM
N1-N2	ALP	WN25PM	ALP	WN25PM	ALP	WN25PM
N3	ALP	WN25PM	ALP	WN25PM	ALP	WN25PM
S1-S2	ML	WS30PM	MM	WS30PM	MM	WU35PM
S3	ML	WS30PM	MM	WU35PM	MM	WU35PM
S4	ML	WS30PM	MM	WU35PM	MM	WU35PM
H1	MH	WP25PM	MH	WP20CM	-	-

IC12 • Inserts • RN.J12..



RNGJ-ALP



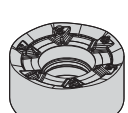
- -ALP is the first choice for milling aluminum and other non-ferrous alloys.

- first choice
- alternate choice

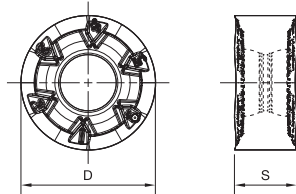
P	●																			
M	●																			
K	●	●																		
N	●		●																	
S	●																			
H	●																			

■ RNGJ-ALP • For aluminum and other non-ferrous alloys

catalog number	cutting edges	D	S	hm	WK15CM	WK15PM	WN25PM	WP20CM	WP25PM	WP35CM	WP40PM	WS30PM	WU35PM
NEW! RNGJ1204M0FALP	12	.472	.187	.001	●	●	○	○	○	○	○	○	○



RNGJ-ML



- -ML geometry is the first choice for stainless steel and high-temp alloys.

- first choice
- alternate choice

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

■ RNGJ-ML

catalog number	cutting edges	D	S	hm	WK15CM	WK15PM	WN25PM	WP20CM	WP25PM	WP35CM	WP40PM	WS30PM	WU35PM
RNGJ1204M0EML	12	.472	.187	.001	●	●	○	○	○	○	○	○	○

■ Recommended Starting Speeds [SFM]

Indexable Milling

Material Group		WK15CM			WK15PM			WN25PM			WP20CM			WP25PM		
P	1	-	-	-	-	-	-	-	-	-	2165	1910	1770	1295	1120	1060
	2	-	-	-	-	-	-	-	-	-	1340	1220	1080	1080	940	785
	3	-	-	-	-	-	-	-	-	-	1220	1080	1000	1000	845	690
	4	-	-	-	-	-	-	-	-	-	905	845	750	890	725	590
	5	-	-	-	-	-	-	-	-	-	1080	985	905	725	670	590
	6	-	-	-	-	-	-	-	-	-	750	670	570	650	490	395
M	1	-	-	-	-	-	-	-	-	-	890	785	690	805	710	650
	2	-	-	-	-	-	-	-	-	-	805	690	630	725	630	510
	3	-	-	-	-	-	-	-	-	-	630	570	490	550	475	370
K	1	1655	1520	1340	1060	965	845	-	-	-	1415	1280	1165	905	805	725
	2	1320	1165	1080	830	750	690	-	-	-	1120	1000	925	710	630	590
	3	1105	985	905	690	630	570	-	-	-	940	845	785	590	535	475
N	1	-	-	-	-	-	-	4230	3720	3445	-	-	-	-	-	-
	2	-	-	-	-	-	-	3720	3445	2995	-	-	-	-	-	-
	3	-	-	-	-	-	-	3720	3445	2995	-	-	-	-	-	-
S	1	-	-	-	-	-	-	-	-	-	-	-	-	155	140	95
	2	-	-	-	-	-	-	-	-	-	-	-	-	155	140	95
	3	-	-	-	-	-	-	-	-	-	-	-	-	200	155	95
	4	-	-	-	-	-	-	-	-	-	-	-	-	275	200	140
H	1	-	-	-	-	-	-	-	-	-	550	450	370	475	355	275
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Group		WP35CM			WP40PM			WS30PM			WU35PM		
P	1	1790	1555	1460	1165	1025	965	1460	1260	1180	1025	905	845
	2	1105	1000	905	985	845	710	1200	1060	865	865	750	630
	3	1000	905	805	905	770	630	1120	940	770	785	670	550
	4	750	690	630	805	670	535	985	805	650	710	590	475
	5	1025	905	830	670	610	535	805	750	650	590	535	475
	6	630	535	430	590	450	355	725	550	430	510	395	310
M	1	805	725	610	770	670	610	890	785	725	670	590	535
	2	725	630	550	690	590	490	805	710	570	610	510	430
	3	570	510	450	510	450	355	610	535	415	450	395	310
K	1	1165	1045	940	-	-	-	-	-	-	-	-	-
	2	925	830	750	-	-	-	-	-	-	-	-	-
	3	770	690	630	-	-	-	-	-	-	-	-	-
N	1	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-
S	1	-	-	-	155	140	120	180	155	120	140	120	95
	2	-	-	-	155	140	120	180	155	120	140	120	95
	3	-	-	-	200	155	120	215	180	120	180	140	95
	4	260	200	130	260	200	140	335	235	155	235	180	120
H	1	-	-	-	-	-	-	535	395	295	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-

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

■ Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining
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At .236 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
ALP	.005	.007	.009	.003	.005	.007	.003	.004	.005	.002	.003	.004	.002	.003	.004	ALP
ML	.005	.007	.013	.004	.005	.009	.003	.004	.007	.002	.003	.006	.002	.003	.006	ML
MM	.011	.020	.032	.008	.014	.023	.006	.011	.017	.005	.009	.015	.005	.009	.014	MM
MH	.018	.027	.040	.013	.020	.029	.010	.015	.022	.009	.013	.019	.008	.012	.017	MH

At .118 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
ALP	.005	.007	.009	.003	.005	.007	.003	.004	.005	.002	.003	.004	.002	.003	.004	ALP
ML	.006	.008	.015	.004	.006	.011	.003	.004	.008	.003	.004	.007	.002	.004	.006	ML
MM	.013	.023	.038	.009	.016	.027	.007	.012	.020	.006	.011	.018	.005	.010	.016	MM
MH	.021	.032	.047	.015	.023	.033	.011	.017	.025	.010	.015	.022	.009	.014	.020	MH

At .059 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
ALP	.005	.007	.009	.003	.005	.007	.003	.004	.005	.002	.003	.004	.002	.003	.004	ALP
ML	.007	.011	.020	.005	.008	.014	.004	.006	.011	.003	.005	.009	.003	.005	.008	ML
MM	.017	.030	.050	.012	.022	.035	.009	.016	.026	.008	.014	.023	.007	.013	.021	MM
MH	.028	.042	.062	.020	.030	.044	.015	.022	.033	.013	.019	.028	.012	.018	.026	MH

At .030 Axial Depth of Cut (ap)

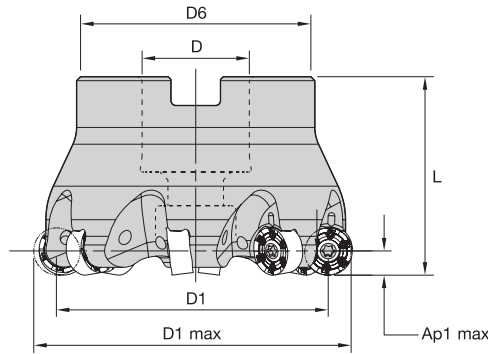
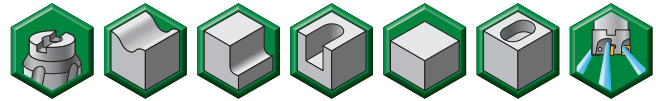
Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
ALP	.005	.007	.009	.003	.005	.007	.003	.004	.005	.002	.003	.004	.002	.003	.004	ALP
ML	.010	.015	.027	.007	.011	.019	.005	.008	.014	.005	.007	.013	.004	.006	.012	ML
MM	.023	.041	.068	.016	.029	.049	.012	.022	.036	.011	.019	.031	.010	.018	.029	MM
MH	.038	.058	.085	.027	.041	.060	.020	.031	.045	.018	.027	.039	.016	.024	.036	MH

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

Indexable Milling

Indexable Milling

- Double-sided, 12 cutting edges.
- Anti-rotation feature for better stability and higher feed rates.
- Pocketing and profiling capabilities.



■ Shell Mills

order number	catalog number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	coolant supply	lbs
5283521	M200D200Z04S075RN16	2.000	1.370	.750	1.752	2.000	.156	4	.52	26400	Yes	.91
5283522	M200D250Z05S100RN16	2.500	1.870	1.000	2.189	2.000	.156	5	.39	22600	Yes	1.51
5283523	M200D300Z05S100RN16	3.000	2.370	1.000	2.189	2.000	.156	5	.35	20100	Yes	2.01
5283524	M200D300Z07S100RN16	3.000	2.370	1.000	2.189	2.000	.156	7	.33	20100	Yes	1.91
5283525	M200D400Z06S150RN16	4.000	3.370	1.500	3.812	2.000	.156	6	.17	16800	Yes	3.31
5283526	M200D400Z08S150RN16	4.000	3.370	1.500	3.812	2.000	.156	8	.17	16800	Yes	3.34

■ Spare Parts

D1 max	insert screw	in. lbs.	wrench	socket-head cap screw	socket-head cap screw with coolant groove	coolant lock screw	coolant lock screw assembly
2.000	192.932	35	170.026	S445	S445CG	—	—
2.500	MS2260	35	170.026	S459	S459CG	—	—
3.000	MS2260	35	170.026	S459	S459CG	—	—
3.000	192.932	35	170.026	S459	S459CG	—	—
4.000	MS2260	35	170.026	—	—	12146110500	S2165C

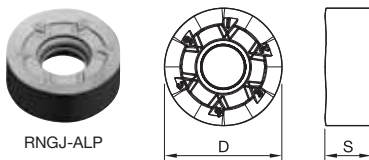
NOTE: Socket-head cap screw with coolant groove and coolant lock screw assembly must be ordered separately.

Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	ML	WP25PM	MM	WP40PM	MM	WP40PM
P3-P4	ML	WP25PM	MM	WP25PM	MH	WP40PM
P5-P6	ML	WP35CM	MM	WP35CM	MH	WP35CM
M1-M2	ML	WP25PM	ML	WU35PM	MM	WU35PM
M3	ML	WP25PM	MM	WU35PM	MM	WU35PM
K1-K2	MH	WK15CM	MH	WK15CM	MH	WP20CM
K3	MH	WK15CM	MH	WP20CM	MH	WP35CM
N1-N2	ALP	WN25PM	ALP	WN25PM	ALP	WN25PM
N3	ALP	WN25PM	ALP	WN25PM	ALP	WN25PM
S1-S2	ML	WS30PM	ML	WS30PM	ML	WU35PM
S3	ML	WS30PM	ML	WU35PM	ML	WU35PM
S4	ML	WS30PM	ML	WU35PM	ML	WU35PM
H1	MH	WP25PM	MH	WP20CM	-	-

Indexable Milling

IC16 • Inserts • RN.J16...



RNGJ-ALP

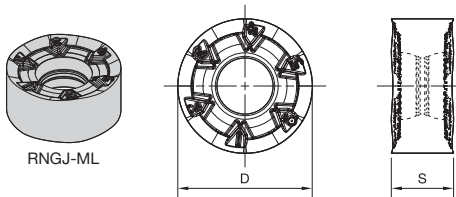
- ALP is the first choice for milling aluminum and other non-ferrous alloys.

RNGJ-ALP • For aluminum and other non-ferrous alloys

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

- first choice
- alternate choice

catalog number	cutting edges	D	S	hm	WK15CM	WN25PM	WP20CM	WP25PM	WP35CM	WP40PM	WS30PM	WU35PM
NEW! RNGJ1605M0FALP	12	.630	.250	.001		6065662						



RNGJ-ML

- ML geometry is the first choice for stainless steel and high-temp alloys.

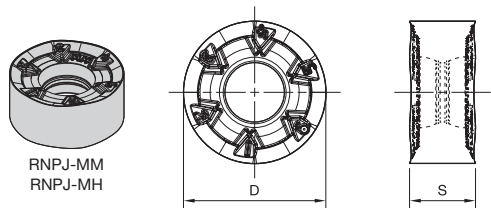
RNGJ-ML

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

- first choice
- alternate choice

catalog number	cutting edges	D	S	hm	WK15CM	WN25PM	WP20CM	WP25PM	WP35CM	WP40PM	WS30PM	WU35PM
RNGJ1605M0EML	12	.630	.250	.002				5274561	5274560		5520354	5274562

Indexable Milling



- -MM geometry is for general purpose, especially for steel.
- -MH geometry is the first choice for heavy applications, cast iron, and high-strength steels.

- first choice
- alternate choice

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

■ RNPJ-MM

catalog number	cutting edges	D	S	hm	WK15CM	WN25PM	WP20CM	WP25PM	WP35CM	WP40PM	WS30PM	WU35PM
RNPJ1605M0SMM	12	.630	.250	.003	○	○	●	●	●	○	○	○

■ RNPJ-MH

catalog number	cutting edges	D	S	hm	WK15CM	WN25PM	WP20CM	WP25PM	WP35CM	WP40PM	WS30PM	WU35PM
RNPJ1605M0SMH	12	.630	.250	.009	●	○	○	○	○	○	○	○

Recommended Starting Speeds

■ Recommended Starting Speeds [SFM]

Material Group		WK15CM			WN25PM			WP20CM			WP25PM		
P	1	-	-	-	-	-	-	2165	1910	1770	1295	1120	1060
	2	-	-	-	-	-	-	1340	1220	1080	1080	940	785
	3	-	-	-	-	-	-	1220	1080	1000	1000	845	690
	4	-	-	-	-	-	-	905	845	750	890	725	590
	5	-	-	-	-	-	-	1080	985	905	725	670	590
	6	-	-	-	-	-	-	750	670	570	650	490	395
M	1	-	-	-	-	-	-	890	785	690	805	710	650
	2	-	-	-	-	-	-	805	690	630	725	630	510
	3	-	-	-	-	-	-	630	570	490	550	475	370
K	1	1655	1520	1340	-	-	-	1415	1280	1165	905	805	725
	2	1320	1165	1080	-	-	-	1120	1000	925	710	630	590
	3	1105	985	905	-	-	-	940	845	785	590	535	475
N	1	-	-	-	4230	3720	3445	-	-	-	-	-	-
	2	-	-	-	3720	3445	2995	-	-	-	-	-	-
	3	-	-	-	3720	3445	2995	-	-	-	-	-	-
S	1	-	-	-	-	-	-	-	-	-	155	140	95
	2	-	-	-	-	-	-	-	-	-	155	140	95
	3	-	-	-	-	-	-	-	-	-	200	155	95
	4	-	-	-	-	-	-	-	-	-	275	200	140
H	1	-	-	-	-	-	-	550	450	370	475	355	275
	2	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-

(continued)

(Recommended Starting Speeds [SFM] — continued)

Material Group		WP35CM			WP40PM			WS30PM			WU35PM		
P	1	1790	1555	1460	1165	1025	965	1460	1260	1180	1025	905	845
	2	1105	1000	905	985	845	710	1200	1060	865	865	750	630
	3	1000	905	805	905	770	630	1120	940	770	785	670	550
	4	750	690	630	805	670	535	985	805	650	710	590	475
	5	1025	905	830	670	610	535	805	750	650	590	535	475
	6	630	535	430	590	450	355	725	550	430	510	395	310
M	1	805	725	610	770	670	610	890	785	725	670	590	535
	2	725	630	550	690	590	490	805	710	570	610	510	430
	3	570	510	450	510	450	355	610	535	415	450	395	310
K	1	1165	1045	940	-	-	-	-	-	-	-	-	-
	2	925	830	750	-	-	-	-	-	-	-	-	-
	3	770	690	630	-	-	-	-	-	-	-	-	-
N	1	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-
S	1	-	-	-	155	140	120	180	155	120	140	120	95
	2	-	-	-	155	140	120	180	155	120	140	120	95
	3	-	-	-	200	155	120	215	180	120	180	140	95
	4	260	200	130	260	200	140	335	235	155	235	180	120
H	1	-	-	-	-	-	-	535	395	295	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-

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

Indexable Milling

Recommended Starting Feeds

■ Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining
-----------------	-----------------	-----------------

At .315 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
ALP	.005	.007	.009	.003	.005	.007	.003	.004	.005	.002	.003	.004	.002	.003	.004	ALP
ML	.005	.015	.019	.004	.011	.014	.003	.008	.010	.002	.007	.009	.002	.006	.008	ML
MM	.011	.027	.032	.008	.020	.023	.006	.015	.017	.005	.013	.015	.005	.012	.014	MM
MH	.021	.027	.046	.015	.020	.033	.011	.015	.025	.010	.013	.021	.009	.012	.020	MH

At .157 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
ALP	.005	.007	.009	.003	.005	.007	.003	.004	.005	.002	.003	.004	.002	.003	.004	ALP
ML	.006	.017	.022	.004	.012	.016	.003	.009	.012	.003	.008	.010	.002	.007	.010	ML
MM	.013	.032	.037	.009	.023	.026	.007	.017	.020	.006	.015	.017	.006	.014	.016	MM
MH	.024	.032	.053	.018	.023	.038	.013	.017	.029	.011	.015	.025	.010	.014	.023	MH

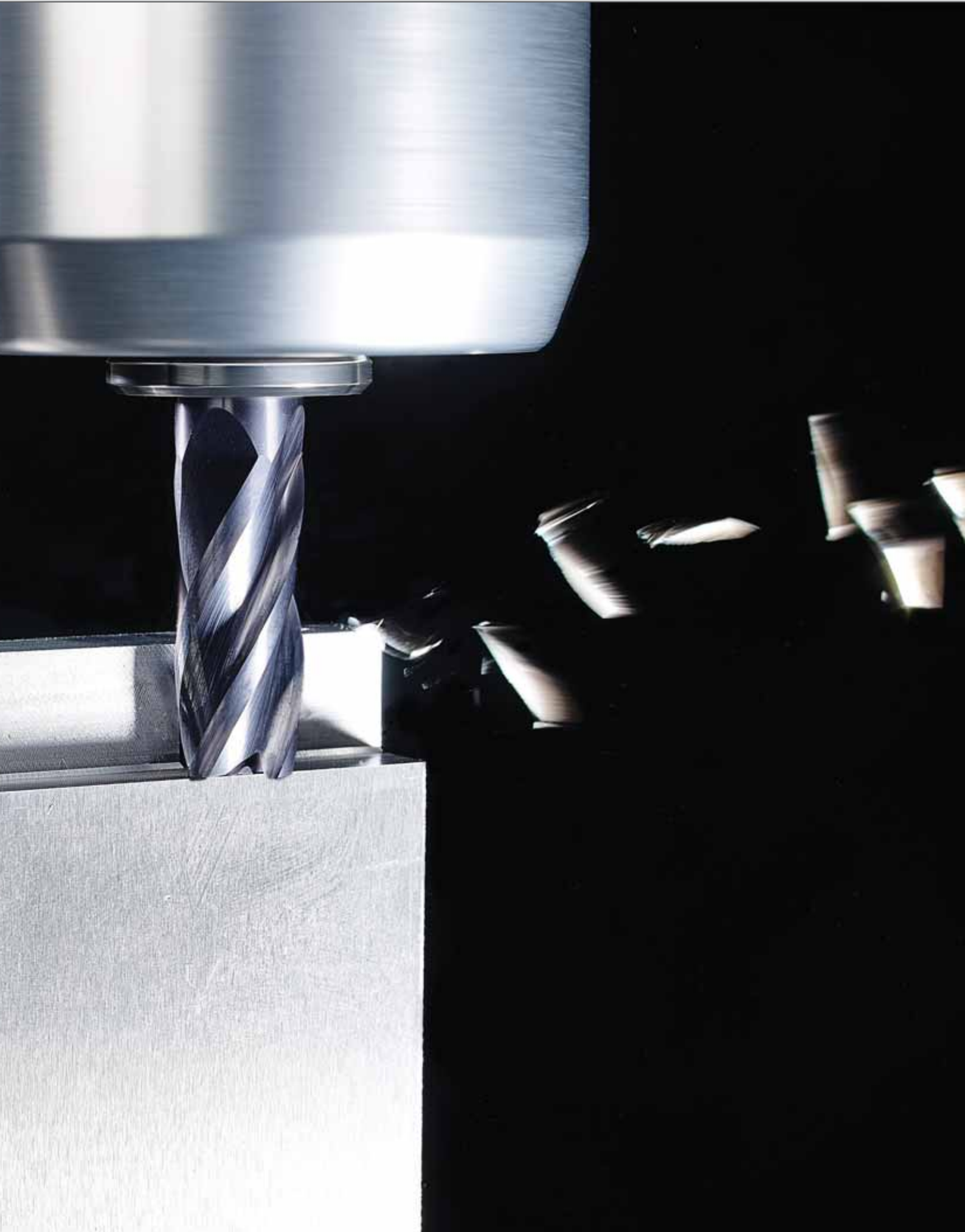
At .079 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
ALP	.005	.007	.009	.003	.005	.007	.003	.004	.005	.002	.003	.004	.002	.003	.004	ALP
ML	.007	.022	.029	.005	.016	.021	.004	.012	.016	.003	.010	.014	.003	.010	.012	ML
MM	.017	.042	.048	.012	.030	.035	.009	.022	.026	.008	.019	.022	.007	.018	.021	MM
MH	.032	.042	.071	.023	.030	.050	.017	.022	.037	.015	.019	.033	.014	.018	.030	MH

At .039 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
ALP	.005	.007	.009	.003	.005	.007	.003	.004	.005	.002	.003	.004	.002	.003	.004	ALP
ML	.010	.030	.040	.007	.022	.029	.005	.016	.021	.005	.014	.019	.004	.013	.017	ML
MM	.023	.058	.067	.017	.041	.047	.012	.031	.035	.011	.027	.031	.010	.024	.028	MM
MH	.044	.058	.098	.031	.041	.069	.023	.031	.051	.020	.027	.044	.019	.024	.041	MH

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



Solid End Milling

VariMill II ER Series	B2-B12
VariMill GP • 3-Flute End Mills	B14-B19
Duo-Lock Modular Milling	B20-B38
VariMill Modular End Mills.....	B20-B33
Adapters.....	B34-B37
Assembly Information	B38



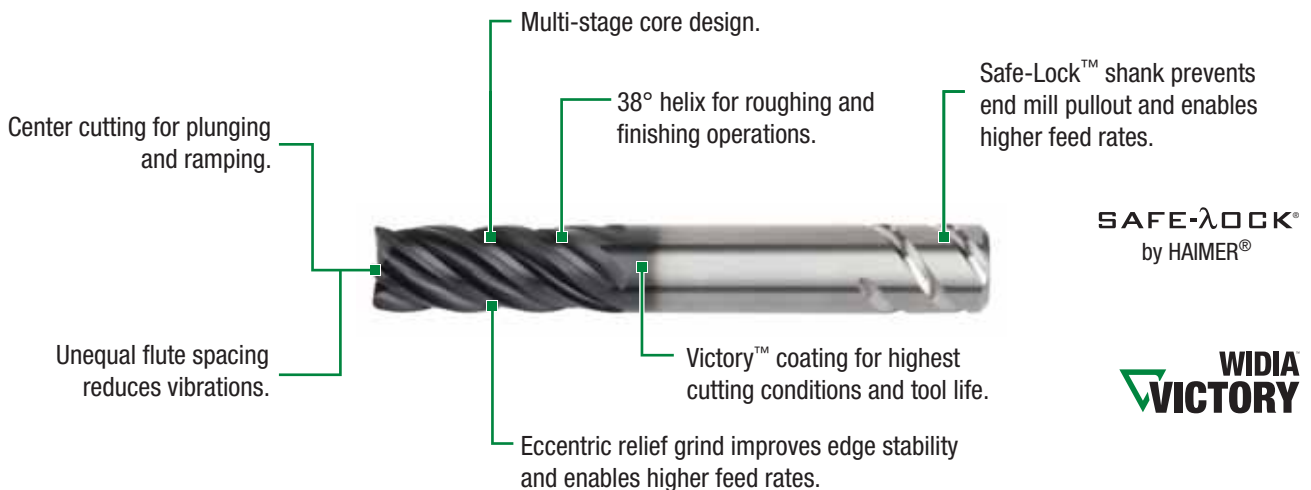
High-Performance Solid Carbide End Mills •
VariMill II™ ER

VariMill II ER



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.

- 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.



VariMill II™ ER Series

- Unique geometry providing increased tool life and higher metal removal rates in difficult-to-machine workpiece materials.
- Increased output due to fewer tool changes and higher metal removal rates.
- Roughing and finishing with one tool, lowering tool costs.
- 1 x D slotting capability requires less passes, increasing productivity.

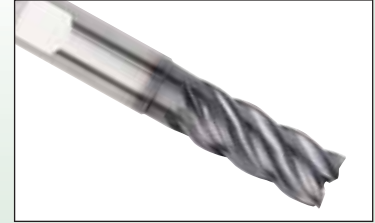
5V0E Series

- Eccentric relief for edge stability and strength.
- Extensive radii corner offering.



5VNE Series

- Eccentric relief for edge stability and strength.
- Extensive radii corner offering.
- Neck design for depths requiring additional passes.



Application Example

Side milling of INCONEL® 718 component.

Workpiece material: INCONEL 718

Tool: D = 5/8"

Cutting data: ap = 1.08"

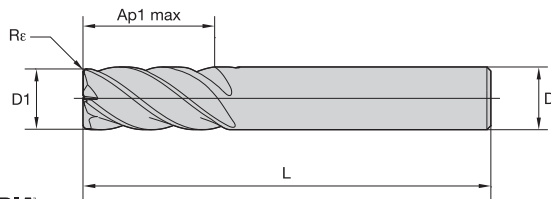
ae = .05"

vc = 65 SFM

fz = .0019 in/z

Result: Increased tool life from 2 workpieces to 5.

- Unequal flute spacing.
- Center cutting.
- Optimized geometry for titanium and stainless steel.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Standard items listed. Additional styles and coatings made to order.

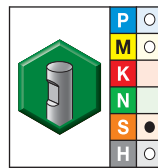
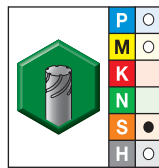
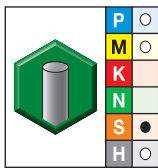


End Mill Tolerances

D1	tolerance	D	tolerance h6 + / -
All	+.000/-.002	≤ 1/8"	0/.00024
		> 1/8-1/4"	0/.00031
		> 1/4-3/8"	0/.00035
		> 3/8-23/32"	0/.00043
		> 23/32-1 3/16"	0/.00051



■ Series 5V0E • VariMill II ER • Victory Grades

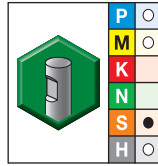
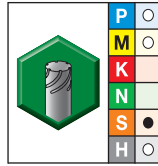
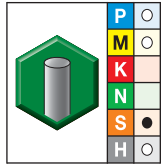
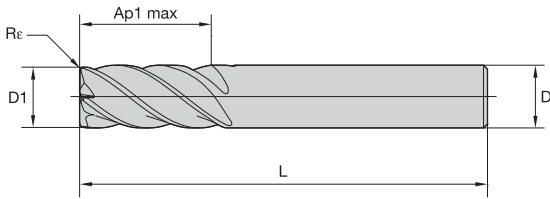


- first choice
- alternate choice

grade WS15PE AITiN		grade WS15PE AITiN		grade WS15PE AITiN		D1	D	length of cut Ap1 max	length L	Rε
order #	catalog #	order #	catalog #	order #	catalog #					
6146484	5V4E05000AT	-	-	-	-	3/16	3/16	5/16	2	.015
6146485	5V4E05000BT	-	-	-	-	3/16	3/16	5/16	2	.030
6146483	5V4E05000ST	-	-	-	-	3/16	3/16	5/16	2	-
6146487	5V0E05000AT	-	-	-	-	3/16	3/16	9/16	2	.015
6146488	5V0E05000BT	-	-	-	-	3/16	3/16	9/16	2	.030
6146486	5V0E05000ST	-	-	-	-	3/16	3/16	9/16	2	-
6146490	5V1E05000AT	-	-	-	-	3/16	3/16	3/4	2 1/2	.015
6146521	5V1E05000BT	-	-	-	-	3/16	3/16	3/4	2 1/2	.030
6146489	5V1E05000ST	-	-	-	-	3/16	3/16	3/4	2 1/2	-
6146523	5V4E07002AT	-	-	-	-	1/4	1/4	3/8	2	.015
6146524	5V4E07002BT	-	-	-	-	1/4	1/4	3/8	2	.030
6146525	5V4E07002CT	-	-	-	-	1/4	1/4	3/8	2	.060
6146522	5V4E07002ST	-	-	-	-	1/4	1/4	3/8	2	-
6146528	5V0E07002AT	-	-	-	-	1/4	1/4	3/4	2 1/2	.015
6146529	5V0E07002BT	-	-	-	-	1/4	1/4	3/4	2 1/2	.030
6146530	5V0E07002CT	-	-	-	-	1/4	1/4	3/4	2 1/2	.060
6146526	5V0E07002ST	-	-	-	-	1/4	1/4	3/4	2 1/2	-
6146532	5V1E07002AT	-	-	-	-	1/4	1/4	1 1/8	3	.015
6146533	5V1E07002BT	-	-	-	-	1/4	1/4	1 1/8	3	.030
6146534	5V1E07002CT	-	-	-	-	1/4	1/4	1 1/8	3	.060

(continued)

(Series 5V0E • VariMill II ER • Victory Grades — continued)

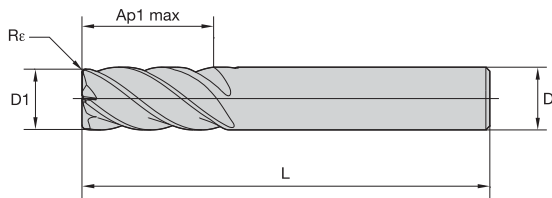


● first choice
○ alternate choice

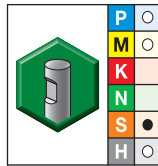
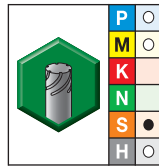
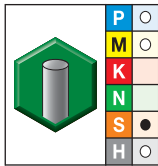
grade WS15PE AITiN		grade WS15PE AITiN		grade WS15PE AITiN		D1	D	length of cut Ap1 max	length L	Re
order #	catalog #	order #	catalog #	order #	catalog #					
6146531	5V1E07002ST	-	-	-	-	1/4	1/4	1 1/8	3	-
6146536	5V0E08003AT	-	-	-	-	5/16	5/16	13/16	2 1/2	.015
6146537	5V0E08003BT	-	-	-	-	5/16	5/16	13/16	2 1/2	.030
6146538	5V0E08003CT	-	-	-	-	5/16	5/16	13/16	2 1/2	.060
6146535	5V0E08003ST	-	-	-	-	5/16	5/16	13/16	2 1/2	-
6146540	5V4E10004AT	-	-	-	-	3/8	3/8	1/2	2	.015
6146541	5V4E10004BT	-	-	-	-	3/8	3/8	1/2	2	.030
6146542	5V4E10004CT	-	-	-	-	3/8	3/8	1/2	2	.060
6146543	5V4E10004ET	-	-	-	-	3/8	3/8	1/2	2	.120
6146539	5V4E10004ST	-	-	-	-	3/8	3/8	1/2	2	-
5594857	5V0E10004AT	-	-	-	-	3/8	3/8	7/8	2 1/2	.015
5594858	5V0E10004BT	-	-	-	-	3/8	3/8	7/8	2 1/2	.030
5594859	5V0E10004ST	-	-	-	-	3/8	3/8	7/8	2 1/2	-
6146545	5V0E10014AT	-	-	-	-	3/8	3/8	1	2 1/2	.015
6146546	5V0E10014BT	-	-	-	-	3/8	3/8	1	2 1/2	.030
6146547	5V0E10014CT	-	-	-	-	3/8	3/8	1	2 1/2	.060
6146548	5V0E10014ET	-	-	-	-	3/8	3/8	1	2 1/2	.120
6146544	5V0E10014ST	-	-	-	-	3/8	3/8	1	2 1/2	-
6146550	5V1E10004AT	-	-	-	-	3/8	3/8	1	3	.015
6146551	5V1E10004BT	-	-	-	-	3/8	3/8	1	3	.030
6146549	5V1E10004ST	-	-	-	-	3/8	3/8	1	3	-
-	6146552	5V4E13015AV	-	-	-	1/2	1/2	5/8	2 1/2	.015
-	6146554	5V4E13015CV	-	-	-	1/2	1/2	5/8	2 1/2	.060
-	6146555	5V4E13015DV	-	-	-	1/2	1/2	5/8	2 1/2	.090
-	6146556	5V4E13015EV	-	-	-	1/2	1/2	5/8	2 1/2	.120
-	6146553	5V4E13015BV	-	-	-	1/2	1/2	5/8	2 1/2	-
-	6146557	5V4E13015SV	-	-	-	1/2	1/2	5/8	2 1/2	-
6146558	5V0E13005BT	-	-	-	-	1/2	1/2	1	3	.030
6146559	5V0E13005CT	-	-	-	-	1/2	1/2	1	3	.060
6146560	5V0E13005ET	-	-	-	-	1/2	1/2	1	3	.120
6146561	5V0E13005ST	-	-	-	-	1/2	1/2	1	3	-
6146562	5V0E13015AT	5594860	5V0E13015AV	5594861	5V0E13015AW	1/2	1/2	1 1/4	3	.015
6146563	5V0E13015BT	5594862	5V0E13015BV	5594863	5V0E13015BW	1/2	1/2	1 1/4	3	.030
6146564	5V0E13015CT	5594864	5V0E13015CV	5594865	5V0E13015CW	1/2	1/2	1 1/4	3	.060
6146565	5V0E13015DT	5594866	5V0E13015DV	5594867	5V0E13015DW	1/2	1/2	1 1/4	3	.090
6146566	5V0E13015ET	5594868	5V0E13015EV	5594869	5V0E13015EW	1/2	1/2	1 1/4	3	.120

(continued)

(Series 5V0E • VariMill II ER • Victory Grades – continued)



Solid End Milling

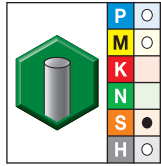
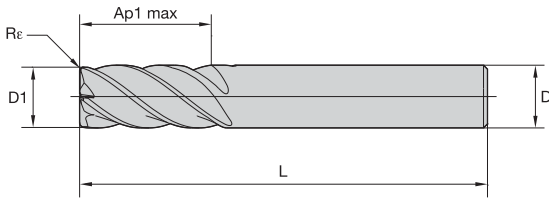


● first choice
○ alternate choice

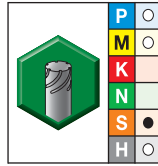
grade WS15PE AITiN		grade WS15PE AITiN		grade WS15PE AITiN		D1	D	length of cut Ap1 max	length L	Re
order #	catalog #	order #	catalog #	order #	catalog #					
6146567	5V0E13015ST	5594870	5V0E13015SV	5594871	5V0E13015SW	1/2	1/2	1 1/4	3	—
6146568	5V1E13015BT	—	—	—	—	1/2	1/2	1 5/8	4	.030
6146569	5V1E13015CT	—	—	—	—	1/2	1/2	1 5/8	4	.060
6146570	5V1E13015ET	—	—	—	—	1/2	1/2	1 5/8	4	.120
6146571	5V1E13015ST	—	—	—	—	1/2	1/2	1 5/8	4	—
—	—	6146572	5V4E16006BV	—	—	5/8	5/8	3/4	3	.030
—	—	6146573	5V4E16006CV	—	—	5/8	5/8	3/4	3	.060
—	—	6146574	5V4E16006EV	—	—	5/8	5/8	3/4	3	.120
—	—	6146575	5V4E16006SV	—	—	5/8	5/8	3/4	3	—
6146576	5V0E16006BT	5594872	5V0E16006BV	5594873	5V0E16006BW	5/8	5/8	1 1/4	3 1/2	.030
6146577	5V0E16006CT	5594874	5V0E16006CV	5594875	5V0E16006CW	5/8	5/8	1 1/4	3 1/2	.060
6146578	5V0E16006ET	—	—	—	—	5/8	5/8	1 1/4	3 1/2	.120
6146579	5V0E16006ST	5594876	5V0E16006SV	5594877	5V0E16006SW	5/8	5/8	1 1/4	3 1/2	—
—	—	6146580	5V1E16006BV	—	—	5/8	5/8	1 5/8	3 1/2	.030
—	—	6146581	5V1E16006CV	6146582	5V1E16006CW	5/8	5/8	1 5/8	3 1/2	.060
—	—	6146583	5V1E16006DV	—	—	5/8	5/8	1 5/8	3 1/2	.090
—	—	6146584	5V1E16006EV	—	—	5/8	5/8	1 5/8	3 1/2	.120
—	—	6146585	5V1E16006SV	—	—	5/8	5/8	1 5/8	3 1/2	—
6146591	5V0E19007BT	5594878	5V0E19007BV	5594879	5V0E19007BW	3/4	3/4	1 1/2	4	.030
6146592	5V0E19007CT	5594880	5V0E19007CV	5594881	5V0E19007CW	3/4	3/4	1 1/2	4	.060
—	—	5594882	5V0E19007DV	5594883	5V0E19007DW	3/4	3/4	1 1/2	4	.090
6146593	5V0E19007ET	5594884	5V0E19007EV	5594885	5V0E19007EW	3/4	3/4	1 1/2	4	.120
—	—	—	—	6146590	5V0E19007FW	3/4	3/4	1 1/2	4	.250
6146594	5V0E19007ST	5594886	5V0E19007SV	5594887	5V0E19007SW	3/4	3/4	1 1/2	4	—
—	—	6146595	5V0E19017BV	—	—	3/4	3/4	1 5/8	4	.030
—	—	6146596	5V0E19017CV	—	—	3/4	3/4	1 5/8	4	.060
—	—	6146597	5V0E19017EV	—	—	3/4	3/4	1 5/8	4	.120
—	—	6146598	5V0E19017SV	—	—	3/4	3/4	1 5/8	4	—
—	—	6146599	5V1E19007CV	—	—	3/4	3/4	2 1/4	5	.060
—	—	6146600	5V1E19007EV	—	—	3/4	3/4	2 1/4	5	.120
—	—	6146601	5V1E19007SV	—	—	3/4	3/4	2 1/4	5	—
—	—	6146602	5V4E25008AV	—	—	1	1	1 1/4	4	.015
—	—	6146603	5V4E25008BV	—	—	1	1	1 1/4	4	.030
—	—	6146604	5V4E25008CV	—	—	1	1	1 1/4	4	.060
—	—	6146605	5V4E25008DV	—	—	1	1	1 1/4	4	.090
—	—	6146606	5V4E25008EV	—	—	1	1	1 1/4	4	.120

(continued)

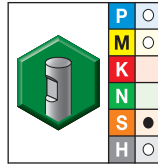
(Series 5V0E • VariMill II ER • Victory Grades – continued)



grade WS15PE
AITiN



grade WS15PE
AITiN



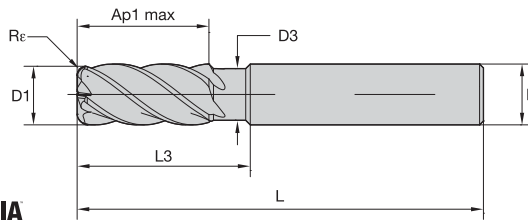
grade WS15PE
AITiN

● first choice
○ alternate choice

order #	catalog #	order #	catalog #	order #	catalog #	D1	D	length of cut Ap1 max	length L	Re
-	6146607	5V4E25008FV	-	-	-	1	1	1 1/4	4	.250
-	6146608	5V4E25008SV	-	-	-	1	1	1 1/4	4	-
-	5594888	5V0E25008BV	5594889	5V0E25008BW	-	1	1	1 3/4	4 1/2	.030
-	5594890	5V0E25008CV	5594891	5V0E25008CW	-	1	1	1 3/4	4 1/2	.060
-	5594892	5V0E25008EV	5594893	5V0E25008EW	-	1	1	1 3/4	4 1/2	.120
-	5594894	5V0E25008FV	5594895	5V0E25008FW	-	1	1	1 3/4	4 1/2	.250
-	5594896	5V0E25008SV	5594897	5V0E25008SW	-	1	1	1 3/4	4 1/2	-
-	-	-	6146609	5V1E25008AW	-	1	1	3 1/4	6	.015
-	-	-	6146610	5V1E25008BW	-	1	1	3 1/4	6	.030
-	-	-	6146611	5V1E25008CW	-	1	1	3 1/4	6	.060
-	-	-	6146612	5V1E25008DW	-	1	1	3 1/4	6	.090
-	-	-	6146613	5V1E25008EW	-	1	1	3 1/4	6	.120
-	-	-	6146614	5V1E25008FW	-	1	1	3 1/4	6	.250
-	-	-	6146615	5V1E25008SW	-	1	1	3 1/4	6	-
-	-	-	6146618	5V0E32009CW	-	1 1/4	1 1/4	3 1/4	6	.060
-	-	-	6146620	5V1E32009CW	-	1 1/4	1 1/4	3 1/4	6	.060
-	-	-	6146616	5V4E32009CW	-	1 1/4	1 1/4	3 1/4	6	.060
-	-	-	6146619	5V0E32009SW	-	1 1/4	1 1/4	3 1/4	6	-
-	-	-	6146621	5V1E32009SW	-	1 1/4	1 1/4	3 1/4	6	-
-	-	-	6146617	5V4E32009SW	-	1 1/4	1 1/4	3 1/4	6	-

NOTE: For application data, please see page B11.

- Unequal flute spacing.
- Center cutting.
- Optimized geometry for titanium and stainless steel.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Standard items listed. Additional styles and coatings made to order.

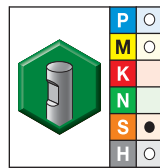
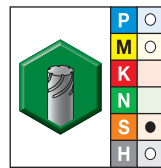
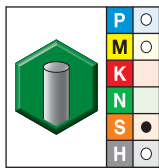


End Mill Tolerances

D1	tolerance	D	tolerance h6 + / -
All	+0.000/-0.002	≤ 1/8"	0/0.00024
		> 1/8-1/4"	0/0.00031
		> 1/4-3/8"	0/0.00035
		> 3/8-23/32"	0/0.00043
		> 23/32-1 3/16"	0/0.00051



■ Series 5VNE • VariMill II ER • With Neck • Victory Grades

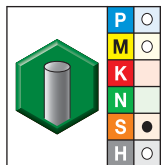
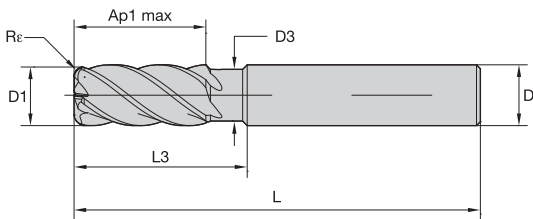


- first choice
- alternate choice

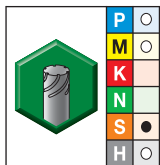
grade WS15PE AITiN		grade WS15PE AITiN		grade WS15PE AITiN		D1	D	D3	length of cut Ap1 max	L3	length L	Re
order #	catalog #	order #	catalog #	order #	catalog #							
6168921	5VNE07002AT	—	—	—	—	1/4	1/4	.24	3/8	1.125	2 1/2	.015
6168922	5VNE07002BT	—	—	—	—	1/4	1/4	.24	3/8	1.125	2 1/2	.030
6168923	5VNE07002CT	—	—	—	—	1/4	1/4	.24	3/8	1.125	2 1/2	.060
6168660	5VNE07002ST	—	—	—	—	1/4	1/4	.24	3/8	1.125	2 1/2	—
6168925	5VNE07012AT	—	—	—	—	1/4	1/4	.24	5/8	1.750	4	.015
6168926	5VNE07012BT	—	—	—	—	1/4	1/4	.24	5/8	1.750	4	.030
6168927	5VNE07012CT	—	—	—	—	1/4	1/4	.24	5/8	1.750	4	.060
6168924	5VNE07012ST	—	—	—	—	1/4	1/4	.24	5/8	1.750	4	—
6168929	5VNE10004AT	—	—	—	—	3/8	3/8	.35	1/2	1.375	3	.015
6168930	5VNE10004BT	—	—	—	—	3/8	3/8	.35	1/2	1.375	3	.030
6168941	5VNE10004CT	—	—	—	—	3/8	3/8	.35	1/2	1.375	3	.060
6168928	5VNE10004ST	—	—	—	—	3/8	3/8	.35	1/2	1.375	3	—
5594898	5VNE10014AT	—	—	—	—	3/8	3/8	.35	7/8	1.875	4	.015
6168943	5VNE10014BT	—	—	—	—	3/8	3/8	.35	7/8	1.875	4	.030
6168944	5VNE10014CT	—	—	—	—	3/8	3/8	.35	7/8	1.875	4	.060
6168942	5VNE10014ST	—	—	—	—	3/8	3/8	.35	7/8	1.875	4	—
6168946	5VNE10024AT	—	—	—	—	3/8	3/8	.35	7/8	2.375	4	.015
6168947	5VNE10024BT	—	—	—	—	3/8	3/8	.35	7/8	2.375	4	.030
6168948	5VNE10024CT	—	—	—	—	3/8	3/8	.35	7/8	2.375	4	.060
6168945	5VNE10024ST	—	—	—	—	3/8	3/8	.35	7/8	2.375	4	—

(continued)

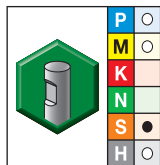
(Series 5VNE • VariMill II ER • With Neck • Victory Grades — continued)



grade WS15PE
AITiN



grade WS15PE
AITiN



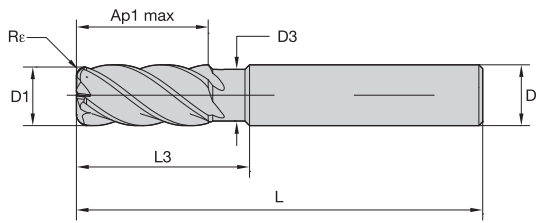
grade WS15PE
AITiN

● first choice
○ alternate choice

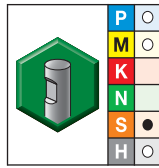
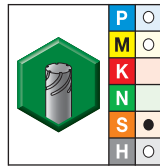
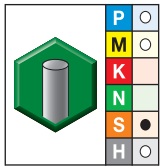
order #	catalog #	order #	catalog #	order #	catalog #	D1	D	D3	length of cut Ap1 max	L3	length L	Re
6168954	5VNE13005AT	—	—	—	—	1/2	1/2	.47	1 1/4	2.250	4	.015
—	—	5594899	5VNE13005BV	5594900	5VNE13005BW	1/2	1/2	.47	1 1/4	2.250	4	.030
6168955	5VNE13005CT	—	—	—	—	1/2	1/2	.47	1 1/4	2.250	4	.060
6168956	5VNE13005DT	—	—	—	—	1/2	1/2	.47	1 1/4	2.250	4	.090
6168957	5VNE13005ET	—	—	—	—	1/2	1/2	.47	1 1/4	2.250	4	.120
—	—	6168959	5VNE13015AV	—	—	1/2	1/2	.47	5/8	.875	5	.015
—	—	6168960	5VNE13015BV	—	—	1/2	1/2	.47	5/8	.875	5	.030
—	—	6168961	5VNE13015CV	—	—	1/2	1/2	.47	5/8	.875	5	.060
—	—	6168962	5VNE13015EV	—	—	1/2	1/2	.47	5/8	.875	5	.120
—	—	6168958	5VNE13015SV	—	—	1/2	1/2	.47	5/8	.875	5	—
—	—	6168963	5VNE13025SV	—	—	1/2	1/2	.47	5/8	.875	6	—
6168950	5VNE130Z5AT	—	—	—	—	1/2	1/2	.47	5/8	1.375	3	.015
6168951	5VNE130Z5BT	—	—	—	—	1/2	1/2	.47	5/8	1.375	3	.030
6168952	5VNE130Z5CT	—	—	—	—	1/2	1/2	.47	5/8	1.375	3	.060
6168949	5VNE130Z5ST	—	—	—	—	1/2	1/2	.47	5/8	1.375	3	—
6168953	5VNE13005ST	—	—	—	—	1/2	1/2	.47	5/8	2.250	4	—
—	—	6168965	5VNE16016AV	—	—	5/8	5/8	.59	1 1/4	2.250	5	.015
—	—	5594901	5VNE16006BV	5594902	5VNE16006BW	5/8	5/8	.59	1 1/4	2.250	4	.030
—	—	6168966	5VNE16016BV	—	—	5/8	5/8	.59	1 1/4	2.250	5	.030
—	—	6168967	5VNE16016CV	—	—	5/8	5/8	.59	1 1/4	2.250	5	.060
—	—	6168968	5VNE16016EV	—	—	5/8	5/8	.59	1 1/4	2.250	5	.120
—	—	6168964	5VNE16016SV	—	—	5/8	5/8	.59	1 1/4	2.250	5	—
—	—	6168970	5VNE16026AV	—	—	5/8	5/8	.59	3/4	1.000	6	.015
—	—	6168971	5VNE16026BV	—	—	5/8	5/8	.59	3/4	1.000	6	.030
—	—	6168972	5VNE16026CV	—	—	5/8	5/8	.59	3/4	1.000	6	.060
—	—	6168973	5VNE16026DV	—	—	5/8	5/8	.59	3/4	1.000	6	.090
—	—	6168974	5VNE16026EV	—	—	5/8	5/8	.59	3/4	1.000	6	.120
—	—	6168969	5VNE16026SV	—	—	5/8	5/8	.59	3/4	1.000	6	—
6168976	5VNE19007AT	—	—	—	—	3/4	3/4	.71	1	2.250	4	.015
6168977	5VNE19007BT	—	—	—	—	3/4	3/4	.71	1	2.250	4	.030
6168978	5VNE19007CT	—	—	—	—	3/4	3/4	.71	1	2.250	4	.060
6168979	5VNE19007ET	—	—	—	—	3/4	3/4	.71	1	2.250	4	.120
6168975	5VNE19007ST	—	—	—	—	3/4	3/4	.71	1	2.250	4	—
—	—	6168981	5VNE19027AV	—	—	3/4	3/4	.71	1 1/2	3.250	6	.015
—	—	5594903	5VNE19017BV	5594904	5VNE19017BW	3/4	3/4	.71	1 1/2	3.250	5.5	.030
—	—	6168982	5VNE19027BV	—	—	3/4	3/4	.71	1 1/2	3.250	6	.030

(continued)

(Series 5VNE • VariMill II ER • With Neck • Victory Grades — continued)



Solid End Milling



● first choice
 ○ alternate choice

grade WS15PE AITiN		grade WS15PE AITiN		grade WS15PE AITiN		D1	D	D3	length of cut Ap1 max	L3	length L	Re
order #	catalog #	order #	catalog #	order #	catalog #							
—	—	6168983	5VNE19027CV	—	—	3/4	3/4	.71	1 1/2	3.250	6	.060
—	—	6168984	5VNE19027DV	—	—	3/4	3/4	.71	1 1/2	3.250	6	.090
—	—	6168985	5VNE19027EV	—	—	3/4	3/4	.71	1 1/2	3.250	6	.120
—	—	6168980	5VNE19027SV	—	—	3/4	3/4	.71	1 1/2	3.250	6	—
—	—	6168986	5VNE19037SV	—	—	3/4	3/4	.71	1 1/2	4.250	7	—
—	—	6169008	5VNE25048SV	—	—	1	1	.94	1 1/4	1.750	8	—
6168988	5VNE25008AT	—	—	—	—	1	1	.94	1 1/4	2.250	4	.015
6168989	5VNE25008BT	—	—	—	—	1	1	.94	1 1/4	2.250	4	.030
6168990	5VNE25008CT	—	—	—	—	1	1	.94	1 1/4	2.250	4	.060
6169001	5VNE25008DT	—	—	—	—	1	1	.94	1 1/4	2.250	4	.090
6169002	5VNE25008ET	—	—	—	—	1	1	.94	1 1/4	2.250	4	.120
6168987	5VNE25008ST	—	—	—	—	1	1	.94	1 1/4	2.250	4	—
—	—	6169004	5VNE25028AV	—	—	1	1	.94	1 1/4	3.250	6	.015
—	—	6169005	5VNE25028BV	—	—	1	1	.94	1 1/4	3.250	6	.030
—	—	6169006	5VNE25028CV	—	—	1	1	.94	1 1/4	3.250	6	.060
—	—	6169007	5VNE25028EV	—	—	1	1	.94	1 1/4	3.250	6	.120
—	—	6169003	5VNE25028SV	—	—	1	1	.94	1 1/4	3.250	6	—
—	—	5594905	5VNE25018BV	5594906	5VNE25018BW	1	1	.94	1 3/4	3.250	5.5	.030
—	—	6169009	5VNE32019SV	—	—	1 1/4	1 1/4	1.18	1 1/2	2.250	8	—

NOTE: For application data, please see page B12.

■ Series 5V0E • VariMill II ER • Victory Grades



Material Group																	
	Side Milling (A) and Slotting (B)			WS15PE			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.										
	A		B	Cutting Speed – vc SFM			D1 – Diameter										
	ap	ae	ap	min		max	frac.	3/16	1/4	3/8	1/2	5/8	3/4	1	1 1/4		
						dec.	.1875	.2500	.3750	.5000	.6250	.7500	1.0000	1.2500			
P	5	1.5 x D	0.5 x D	1 x D	200	–	330	IPT	.0009	.0012	.0018	.0023	.0027	.0031	.0036	.0039	
	6	1.5 x D	0.5 x D	0.75 x D	160	–	250	IPT	.0008	.0010	.0015	.0019	.0022	.0025	.0028	.0029	
M	1	1.5 x D	0.5 x D	1 x D	300	–	380	IPT	.0011	.0014	.0023	.0029	.0034	.0039	.0045	.0048	
	2	1.5 x D	0.5 x D	1 x D	200	–	260	IPT	.0009	.0012	.0018	.0023	.0027	.0031	.0036	.0039	
	3	1.5 x D	0.5 x D	1 x D	200	–	230	IPT	.0008	.0010	.0015	.0019	.0022	.0025	.0028	.0029	
S	1	1.5 x D	0.3 x D	0.3 x D	160	–	300	IPT	.0011	.0014	.0023	.0029	.0034	.0039	.0045	.0048	
	2	1.5 x D	0.3 x D	0.3 x D	80	–	130	IPT	.0006	.0008	.0012	.0015	.0018	.0021	.0024	.0026	
	3	1.5 x D	0.3 x D	0.3 x D	200	–	260	IPT	.0009	.0012	.0018	.0023	.0027	.0031	.0036	.0039	
	4	1.5 x D	0.5 x D	1 x D	160	–	200	IPT	.0008	.0011	.0017	.0021	.0025	.0028	.0033	.0036	
H	1	1.5 x D	0.5 x D	0.75 x D	260	–	460	IPT	.0010	.0013	.0020	.0026	.0030	.0034	.0039	.0040	
	2	1.5 x D	0.2 x D	0.5 x D	230	–	390	IPT	.0008	.0010	.0015	.0019	.0022	.0025	.0028	.0029	

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 centers, please adjust parameters accordingly on >1/2" diameter.

Solid End Milling

■ Series 5VNE • VariMill II ER • With Neck • Victory Grades



Solid End Milling

Material Group							Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.									
		Side Milling (A) and Slotting (B)		WS15PE			D1 – Diameter									
		A		B	Cutting Speed – vc SFM			frac.	1/4	3/8	1/2	5/8	3/4	1	1 1/4	
		ap	ae	ap	min		max	dec.	.2500	.3750	.5000	.6250	.7500	1.0000	1.2500	
P	5	1.5 x D	0.5 x D	1 x D	200	-	330	IPT	.0012	.0018	.0023	.0027	.0031	.0036	.0039	
	6	1.5 x D	0.5 x D	0.75 x D	160	-	250	IPT	.0010	.0015	.0019	.0022	.0025	.0028	.0029	
M	1	1.5 x D	0.5 x D	1 x D	300	-	380	IPT	.0015	.0023	.0029	.0034	.0039	.0045	.0048	
	2	1.5 x D	0.5 x D	1 x D	200	-	260	IPT	.0012	.0018	.0023	.0027	.0031	.0036	.0039	
	3	1.5 x D	0.5 x D	1 x D	200	-	230	IPT	.0010	.0015	.0019	.0022	.0025	.0028	.0029	
S	1	1.5 x D	0.3 x D	0.3 x D	160	-	300	IPT	.0015	.0023	.0029	.0034	.0039	.0045	.0048	
	2	1.5 x D	0.3 x D	0.3 x D	80	-	130	IPT	.0008	.0012	.0015	.0018	.0021	.0024	.0026	
	3	1.5 x D	0.3 x D	0.3 x D	200	-	260	IPT	.0012	.0018	.0023	.0027	.0031	.0036	.0039	
	4	1.5 x D	0.5 x D	1 x D	160	-	200	IPT	.0011	.0017	.0021	.0025	.0028	.0033	.0036	
H	1	1.5 x D	0.5 x D	0.75 x D	260	-	460	IPT	.0014	.0020	.0026	.0030	.0034	.0039	.0040	
	2	1.5 x D	0.2 x D	0.5 x D	230	-	390	IPT	.0010	.0015	.0019	.0022	.0025	.0028	.0029	

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 centers, please adjust parameters accordingly on >1/2" diameter.

Good for You, Better for the Environment!

The WIDIA™ Carbide Recycling Program can turn accumulated scrap carbide tooling in your shop into cash.

Carbide Recycling

We pay cash for used carbide tooling, including coated or non-coated carbide inserts, drills, end mills, reamers, and taps, regardless of brand.

It's good for the environment and a responsible way to dispose of scrap carbide.

Our carbide recycling program features:

- Easy-to-use web portal that shows what your scrap carbide is worth before sending it to us.
- Online forms that make it easy to ship scrap carbide to WIDIA.
- Green Box™ containers for safe, convenient shipping of scrap carbide to WIDIA.
- Cash payment for used carbide tooling.



For more information, contact your local WIDIA Authorized Distributor or visit widia.com/services.

WIDIA 

General Purpose 3-Flute End Mills •
VariMill™ GP

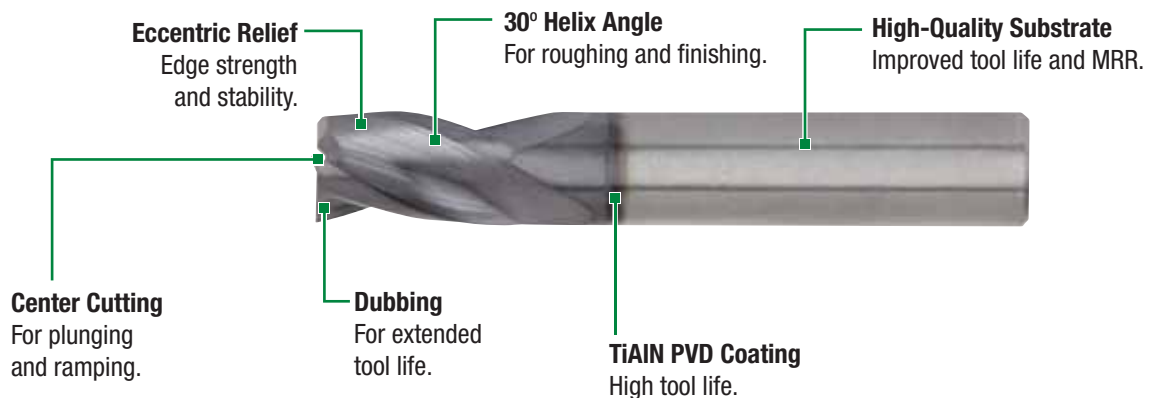


VariMill GP

VariMill GP 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 and lengths in sharp edge are available from stock.

VariMill GP • 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.



VariMill™ GP

- Increased manufacturing flexibility and reduced tool cost.
- Fewer tool changes and high Metal Removal Rates (MRR).
- Eccentric relief for improved edge stability and high tool life.
- Easy and cost-efficient regrinding due to eccentric relief.

Series I3S..S

- Center cutting.
- Short length-of-cut and overall length for ramping applications.
- Steel, stainless, and cast iron.
- Sharp edge with dubbing for extended tool life.



Series I3S..R

- Center cutting.
- Regular length-of-cut and overall length for ramping and slotting applications.
- Steel, stainless, and cast iron.
- Sharp edge with dubbing for extended tool life.

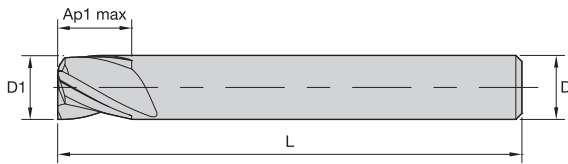
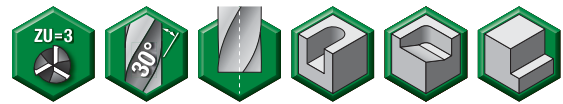


Series I3S..L/I3S..X

- Center cutting.
- Long and extra long length-of-cut and overall length for side milling applications.
- Steel, stainless, and cast iron.
- Sharp edge with dubbing for extended tool life.



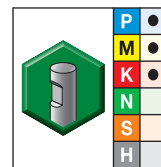
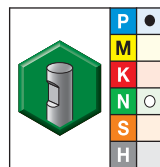
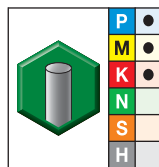
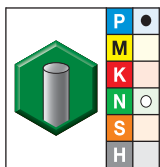
- Center cutting.



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

■ Series I3S • VariMill GP

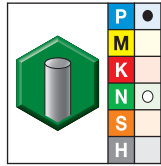
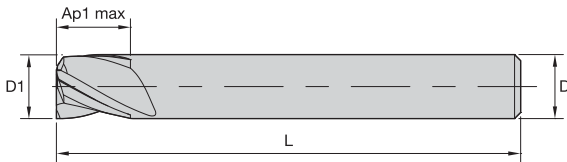


- first choice
- alternate choice

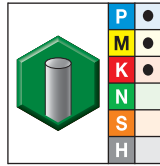
grade UNCOATED		grade TiAlN TiAlN		grade UNCOATED		grade TiAlN TiAlN		D1	D	length of cut Ap1 max	length L
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #				
6144206	I3S0031T007R	6144077	I3S0031T007R	—	—	—	—	1/32	1/8	5/64	1 1/2
6144208	I3S0062T019R	6144079	I3S0062T019R	—	—	—	—	1/16	1/8	3/16	1 1/2
6144209	I3S0078T011R	6144080	I3S0078T011R	—	—	—	—	5/64	1/8	7/64	1 1/2
6144210	I3S0094T037R	6144141	I3S0094T037R	—	—	—	—	3/32	1/8	3/8	1 1/2
6144231	I3S0109T037R	6144142	I3S0109T037R	—	—	—	—	7/64	1/8	3/8	1 1/2
6144232	I3S0125T025R	6144143	I3S0125T025R	—	—	—	—	1/8	1/8	1/4	1 1/2
6144233	I3S0125T050L	6144144	I3S0125T050L	—	—	—	—	1/8	1/8	1/2	2 1/2
6144234	I3S0125T062X	6144145	I3S0125T062X	—	—	—	—	1/8	1/8	5/8	3
6144236	I3S0156T056R	6144147	I3S0156T056R	—	—	—	—	5/32	3/16	9/16	2
6144237	I3S0188T031S	6144148	I3S0188T031S	—	—	—	—	3/16	3/16	5/16	2
6144238	I3S0188T056R	6144149	I3S0188T056R	—	—	—	—	3/16	3/16	9/16	2
6144239	I3S0188T062L	6144150	I3S0188T062L	—	—	—	—	3/16	3/16	5/8	3
6144240	I3S0188T100X	6144151	I3S0188T100X	—	—	—	—	3/16	3/16	1	4
6144242	I3S0219T062R	6144153	I3S0219T062R	—	—	—	—	7/32	1/4	5/8	2 1/2
6144243	I3S0219T075L	6144154	I3S0219T075L	—	—	—	—	7/32	1/4	3/4	2 1/2
6144244	I3S0250T050S	6144155	I3S0250T050S	—	—	—	—	1/4	1/4	1/2	2
6144245	I3S0250T075R	6144156	I3S0250T075R	—	—	—	—	1/4	1/4	3/4	2 1/2
6144246	I3S0250T100L	6144157	I3S0250T100L	—	—	—	—	1/4	1/4	1	3
6144247	I3S0250T150X	6144158	I3S0250T150X	—	—	—	—	1/4	1/4	1 1/2	4
6144249	I3S0281T075R	6144159	I3S0281T075R	—	—	—	—	9/32	5/16	3/4	2 1/2

(continued)

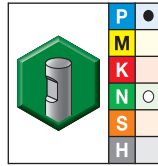
(Series I3S • VariMill GP – continued)



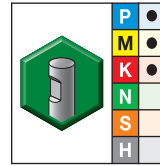
grade UNCOATED



grade TiAlN
TiAlN



grade UNCOATED



grade TiAlN
TiAlN

● first choice
○ alternate choice

grade UNCOATED		grade TiAlN TiAlN		grade UNCOATED		grade TiAlN TiAlN		D1	D	length of cut Ap1 max	length L
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #				
6144250	I3S0281T081L	6144161	I3S0281T081L	—	—	—	—	9/32	5/16	13/16	2 1/2
6144262	I3S0312T050R	6144163	I3S0312T050R	—	—	—	—	5/16	5/16	1/2	2
6144264	I3S0312T081L	6144165	I3S0312T081L	—	—	—	—	5/16	5/16	13/16	2 1/2
6144272	I3S0375T050S	6144183	I3S0375T050S	—	—	—	—	3/8	3/8	1/2	2
6144275	I3S0375T088R	6144185	I3S0375T088R	—	—	—	—	3/8	3/8	7/8	2 1/2
6144277	I3S0375T100L	6144187	I3S0375T100L	—	—	—	—	3/8	3/8	1	2 1/2
6144279	I3S0375T112X	6144189	I3S0375T112X	—	—	—	—	3/8	3/8	1 1/8	3
6144281	I3S0437T062R	6144192	I3S0437T062R	—	—	—	—	7/16	7/16	5/8	2 1/2
6144282	I3S0437T088L	6144193	I3S0437T088L	—	—	—	—	7/16	7/16	7/8	2 1/2
6144283	I3S0437T100X	6144194	I3S0437T100X	—	—	—	—	7/16	7/16	1	2 1/2
6144284	I3S0500T100R	6144195	I3S0500T100R	—	—	—	—	1/2	1/2	1	3
6144285	I3S0500T200L	6144196	I3S0500T200L	6144261	I3S0500W200L	6144162	I3S0500W200L	1/2	1/2	2	4
6144287	I3S0563T112R	6144198	I3S0563T112R	6144265	I3S0563W112R	6144166	I3S0563W112R	9/16	5/8	1 1/8	3 1/2
6144288	I3S0625T075R	6144199	I3S0625T075R	6144267	I3S0625W075R	6144168	I3S0625W075R	5/8	5/8	3/4	3
6144289	I3S0625T125L	6144200	I3S0625T125L	6144269	I3S0625W125L	6144170	I3S0625W125L	5/8	5/8	1 1/4	3 1/2
6144290	I3S0750T100R	6144201	I3S0750T100R	6144271	I3S0750W100R	6144182	I3S0750W100R	3/4	3/4	1	3
6144291	I3S0750T150L	6144202	I3S0750T150L	6144273	I3S0750W150L	6144184	I3S0750W150L	3/4	3/4	1 1/2	4
6144292	I3S0750T225X	6144203	I3S0750T225X	6144274	I3S0750W225X	6144186	I3S0750W225X	3/4	3/4	2 1/4	5
6144293	I3S1000T150R	6144204	I3S1000T150R	—	—	—	—	1	1	1 1/2	4
6144294	I3S1000T225X	6144205	I3S1000T225X	6144278	I3S1000W225X	6144190	I3S1000W225X	1	1	2 1/4	5

NOTE: For application data, please see pages B18–B19.

■ Series I3S..S I3S..R • VariMill GP TiAlN

Solid End Milling

Material Group		Side Milling (A) and Slotting (B)			TiAlN			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.										
		A		B	Cutting Speed – vc SFM			frac.	D1 – Diameter									
		ap	ae	ap	min		max		dec.	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
P	0	2.0 x D	0.1 x D	0.5 x D	490	–	660	IPT	.0009	.0013	.0018	.0023	.0027	.0034	.0039	.0044	.0049	
	1	2.0 x D	0.1 x D	0.5 x D	490	–	660	IPT	.0009	.0013	.0018	.0023	.0027	.0034	.0039	.0044	.0049	
	2	2.0 x D	0.1 x D	0.5 x D	460	–	620	IPT	.0009	.0013	.0018	.0023	.0027	.0034	.0039	.0044	.0049	
	3	2.0 x D	0.1 x D	0.5 x D	390	–	520	IPT	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045	
	4	2.0 x D	0.1 x D	0.5 x D	300	–	490	IPT	.0007	.0010	.0014	.0017	.0020	.0026	.0030	.0034	.0039	
M	1	2.0 x D	0.1 x D	0.5 x D	300	–	380	IPT	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045	
	2	2.0 x D	0.1 x D	0.5 x D	200	–	260	IPT	.0006	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036	
K	1	2.0 x D	0.1 x D	0.5 x D	390	–	490	IPT	.0009	.0013	.0018	.0023	.0027	.0034	.0039	.0044	.0049	
	2	2.0 x D	0.1 x D	0.5 x D	360	–	460	IPT	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045	

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 centers, please adjust parameters accordingly on diameters >1/2".

■ Series I3S..S I3S..R • VariMill GP Uncoated

Material Group		Side Milling (A) and Slotting (B)			uncoated			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.										
		A		B	Cutting Speed – vc SFM			frac.	D1 – Diameter									
		ap	ae	ap	min		max		dec.	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
P	0	2.0 x D	0.1 x D	0.5 x D	490	–	660	IPT	.0009	.0013	.0018	.0023	.0027	.0034	.0039	.0044	.0049	
	1	2.0 x D	0.1 x D	0.5 x D	490	–	660	IPT	.0009	.0013	.0018	.0023	.0027	.0034	.0039	.0044	.0049	
	2	2.0 x D	0.1 x D	0.5 x D	460	–	620	IPT	.0009	.0013	.0018	.0023	.0027	.0034	.0039	.0044	.0049	
N	1	Ap1 max	0.1 x D	0.5 x D	650	–	2600	IPT	.0013	.0019	.0025	.0031	.0038	.0050	.0063	.0075	.0100	
	2	Ap1 max	0.1 x D	0.5 x D	650	–	2000	IPT	.0010	.0015	.0020	.0025	.0030	.0040	.0050	.0060	.0080	
	5	Ap1 max	0.1 x D	0.5 x D	650	–	2000	IPT	.0011	.0017	.0023	.0028	.0034	.0045	.0056	.0068	.0090	

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 centers, please adjust parameters accordingly on diameters >1/2".

■ Series I3S..L I3S..X • VariMill GP TiAlN

Material Group	Side Milling (A)		TiAlN		Recommended feed per tooth (IPT = inch/th) for side milling (A).											
	A		Cutting Speed – vc SFM			frac. dec.	D1 – Diameter									
	ap	ae	min		max		1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1	
							.1250	.1875	.2500	.3125	.3750	.5000	.6250	.7500	1.0000	
P	0	2.0 x D	0.1 x D	490	–	660	IPT	.0009	.0013	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	1	2.0 x D	0.1 x D	490	–	660	IPT	.0009	.0013	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	2	2.0 x D	0.1 x D	460	–	620	IPT	.0009	.0013	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	3	2.0 x D	0.1 x D	390	–	520	IPT	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	4	2.0 x D	0.1 x D	300	–	490	IPT	.0007	.0010	.0014	.0017	.0020	.0026	.0030	.0034	.0039
M	1	2.0 x D	0.1 x D	300	–	380	IPT	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	2.0 x D	0.1 x D	200	–	260	IPT	.0006	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036
K	1	2.0 x D	0.1 x D	390	–	490	IPT	.0009	.0013	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	2	2.0 x D	0.1 x D	360	–	460	IPT	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045

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 centers, please adjust parameters accordingly on diameters >1/2".

■ Series I3S..L I3S..X • VariMill GP Uncoated

Material Group	Side Milling (A)		uncoated		Recommended feed per tooth (IPT = inch/th) for side milling (A).											
	A		Cutting Speed – vc SFM			frac. dec.	D1 – Diameter									
	ap	ae	min		max		1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1	
							.1250	.1875	.2500	.3125	.3750	.5000	.6250	.7500	1.0000	
P	0	2.0 x D	0.1 x D	490	–	660	IPT	.0009	.0013	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	1	2.0 x D	0.1 x D	490	–	660	IPT	.0009	.0013	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	2	2.0 x D	0.1 x D	460	–	620	IPT	.0009	.0013	.0018	.0023	.0027	.0034	.0039	.0044	.0049
N	1	Ap1 max	0.1 x D	650	–	2600	IPT	.0013	.0019	.0025	.0031	.0038	.0050	.0063	.0075	.0100
	2	Ap1 max	0.1 x D	650	–	2000	IPT	.0010	.0015	.0020	.0025	.0030	.0040	.0050	.0060	.0080
	5	Ap1 max	0.1 x D	650	–	2000	IPT	.0011	.0017	.0023	.0028	.0034	.0045	.0056	.0068	.0090

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 centers, please adjust parameters accordingly on diameters >1/2".

High-Performance Modular Solid Carbide End Mills •
Duo-Lock™

DUO-LOCK®



Duo-Lock™ combines highest runout accuracy and length repeatability with maximum coupling stability. This allows the Duo-Lock™ system to fully utilize the full potential of WIDIA™ VariMill™ cutting geometries and WIDIA Victory™ grades. The flexible modular system, Duo-Lock™, targets applications like solid carbide end mills. A wide range of diameters between 5/8–1-1/4 inch and multiple corner configurations, such as sharp chamfer and radii, are available from stock.

- 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.
- Extensive straight and conical shank, as well as integral adapter offering including CV, PSC, BT, and HSK.

High-performance geometries provide highest Metal Removal Rates (MMR).

Intelligent thread that ensures stress levels remain below critical values.

Unequal flute spacing reduces vibrations and improves surface finish.

Third contact surface delivers high stiffness and highest accuracy below .0002" runout.

DUO-LOCK®
by HAIMER®

VariMill™ Duo-Lock™ Series

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

4XC5 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.



4XCT VariMill Series

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



5VCC 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.



5VCE VariMill II ER Series

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



4XC0 VariMill Series

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

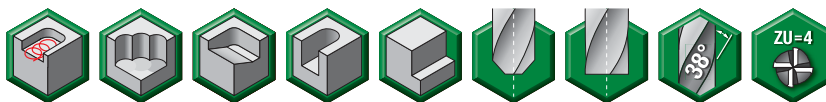


7VCE VariMill III™ ER Series

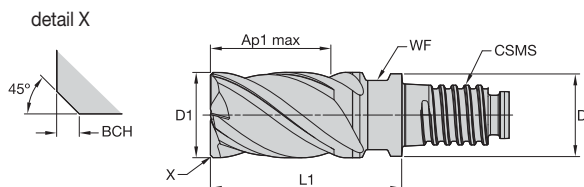
- 7 flute.
- Titanium geometry design.
- Eccentric relief for edge stability and strength.
- Extensive radii corner offering.



- Asymmetrical flute spacing minimizes chatter and harmonics for smoother machining.
- Center cutting.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Standard items listed. Additional styles and coatings made-to-order.



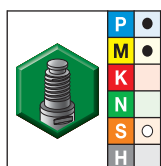
Solid End Milling



End Mill Tolerances

D1	tolerance e8
13/32–23/32"	-0,00126"/-0,00232"
23/32–1-3/16"	-0,00157"/-0,00287"
1-3/16"	-0,00197"/-0,00350"

4XC5 • 4 Flute • Inch



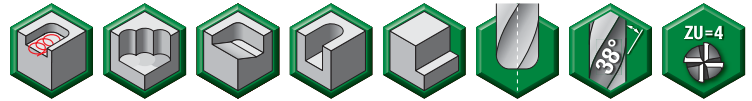
grade WP15PE
AlTiN

- first choice
- alternate choice

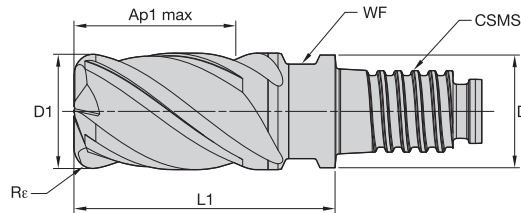
order #	catalog #	D1	D	length of cut Ap1 max	L1	CSMS system size	WF	BCH
6071557	4XC516NDL16	5/8	.605	15/16	1	DL16	0.51	0.02
6071551	4XC516SDL16	5/8	.605	15/16	1	DL16	0.51	—
6071558	4XC519NDL20	3/4	.730	1 1/8	2	DL20	0.63	0.02
6071552	4XC519SDL20	3/4	.730	1 1/8	2	DL20	0.63	—
6071559	4XC525NDL25	1	.961	1 1/2	2	DL25	0.83	0.02
6071553	4XC525SDL25	1	.961	1 1/2	2	DL25	0.83	—
6071560	4XC532NDL32	1 1/4	1.211	1 7/8	3	DL32	1.10	0.02
6071554	4XC532SDL32	1 1/4	1.211	1 7/8	3	DL32	1.10	—

NOTE: For application data, please see page B24.

- Asymmetrical flute spacing minimizes chatter and harmonics for smoother machining.
- Center cutting.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Standard items listed. Additional styles and coatings made-to-order.



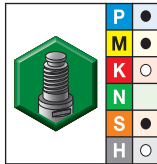
Solid End Milling



End Mill Tolerances

D1	tolerance e8
13/32–23/32"	-0,00126"/-0,00232"
23/32–1-3/16"	-0,00157"/-0,00287"
1-3/16"	-0,00197"/-0,00350"

■ 4XCT • 4 Flute • Inch



- first choice
- alternate choice

grade WS15PE
AITiN

order #	catalog #	D1	D	length of cut Ap1 max	L1	CSMS system size	WF	Re
6071570	4XCT16ADL16	5/8	.605	15/16	1	DL16	0.51	.015
6071571	4XCT16BDL16	5/8	.605	15/16	1	DL16	0.51	.030
6071572	4XCT16CDL16	5/8	.605	15/16	1	DL16	0.51	.060
6071573	4XCT16DDL16	5/8	.605	15/16	1	DL16	0.51	.090
6071574	4XCT16EDL16	5/8	.605	15/16	1	DL16	0.51	.120
6071575	4XCT19BDL20	3/4	.730	1 1/8	2	DL20	0.63	.030
6071576	4XCT19CDL20	3/4	.730	1 1/8	2	DL20	0.63	.060
6071577	4XCT19DDL20	3/4	.730	1 1/8	2	DL20	0.63	.090
6071578	4XCT19EDL20	3/4	.730	1 1/8	2	DL20	0.63	.120
6071579	4XCT25BDL25	1	.961	1 1/2	2	DL25	0.83	.030
6071580	4XCT25CDL25	1	.961	1 1/2	2	DL25	0.83	.060
6071591	4XCT25DDL25	1	.961	1 1/2	2	DL25	0.83	.090
6071592	4XCT25EDL25	1	.961	1 1/2	2	DL25	0.83	.120
6071593	4XCT25FDL25	1	.961	1 1/2	2	DL25	0.83	.250
6071594	4XCT32DDL32	1 1/4	1.211	1 7/8	3	DL32	1.10	.090
6071595	4XCT32FDL32	1 1/4	1.211	1 7/8	3	DL32	1.10	.250

NOTE: For application data, please see page B25.

■ VariMill • 4XC5 • Asymmetrical Flute Spacing

Solid End Milling

Material Group		Side Milling (A) and Slotting (B)			adapter reach									Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.					
					short			medium			long			D1 – Diameter					
		A		B		WP15PE			WP15PE			WP15PE			frac.	5/8	3/4	1	1 1/4
		ap	ae	ap	Cutting Speed – vc SFM			Cutting Speed – vc SFM			Cutting Speed – vc SFM								
		ap	ae	ap	min		max	min		max	min		max	dec.	.6250	.7500	1.0000	1.2500	
P	0	1.5 x D	0.5 x D	1 x D	490	–	660	441	–	594	441	–	594	IPT	.0039	.0044	.0049	.0049	
	1	1.5 x D	0.5 x D	1 x D	490	–	660	441	–	594	441	–	594	IPT	.0039	.0044	.0049	.0049	
	2	1.5 x D	0.5 x D	1 x D	460	–	620	414	–	558	414	–	558	IPT	.0039	.0044	.0049	.0049	
	3	1.5 x D	0.5 x D	1 x D	390	–	520	351	–	468	351	–	468	IPT	.0034	.0039	.0045	.0048	
	4	1.5 x D	0.5 x D	0.75 x D	300	–	490	270	–	441	270	–	441	IPT	.0030	.0034	.0039	.0040	
	5	1.5 x D	0.5 x D	1 x D	200	–	330	170	–	281	160	–	264	IPT	.0027	.0031	.0036	.0039	
M	6	1.5 x D	0.5 x D	0.75 x D	160	–	250	136	–	213	128	–	200	IPT	.0022	.0025	.0028	.0029	
	1	1.5 x D	0.5 x D	1 x D	300	–	380	240	–	304	210	–	266	IPT	.0034	.0039	.0045	.0048	
	2	1.5 x D	0.5 x D	1 x D	200	–	260	160	–	208	140	–	182	IPT	.0027	.0031	.0036	.0039	
S	3	1.5 x D	0.5 x D	1 x D	200	–	230	160	–	184	140	–	161	IPT	.0022	.0025	.0028	.0029	
	1	1.5 x D	0.3 x D	0.3 x D	160	–	300	128	–	240	96	–	180	IPT	.0034	.0039	.0045	.0048	
	2	1.5 x D	0.3 x D	0.3 x D	80	–	130	64	–	104	48	–	78	IPT	.0018	.0021	.0024	.0026	
	3	1.5 x D	0.5 x D	1 x D	200	–	260	160	–	208	120	–	156	IPT	.0027	.0031	.0036	.0039	
	4	1.5 x D	0.5 x D	1 x D	160	–	200	128	–	160	96	–	120	IPT	.0025	.0028	.0033	.0036	

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 centers, please adjust parameters accordingly on diameters >1/2".
 For side milling with ap larger than 1 x D, reduce fz by 20%!

VariMill • 4XCT • Asymmetrical Flute Spacing

Material Group														Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.				
		Side Milling (A) and Slotting (B)			short			medium			long			D1 – Diameter				
		A		B	adapter reach													
		ap		ae	WS15PE			WS15PE			WS15PE			frac.	5/8	3/4	1	1 1/4
		ap		ae	ap	Cutting Speed – vc SFM		Cutting Speed – vc SFM		Cutting Speed – vc SFM		dec.	.6250	.7500	1.0000	1.2500		
P	0	1.5 x D	0.5 x D	1 x D	490	–	660	441	–	594	441	–	594	IPT	.0039	.0044	.0049	.0049
	1	1.5 x D	0.5 x D	1 x D	490	–	660	441	–	594	441	–	594	IPT	.0039	.0044	.0049	.0049
	2	1.5 x D	0.5 x D	1 x D	460	–	620	414	–	558	414	–	558	IPT	.0039	.0044	.0049	.0049
	3	1.5 x D	0.5 x D	1 x D	390	–	520	351	–	468	351	–	468	IPT	.0034	.0039	.0045	.0048
	4	1.5 x D	0.5 x D	0.75 x D	300	–	490	270	–	441	270	–	441	IPT	.0030	.0034	.0039	.0040
	5	1.5 x D	0.5 x D	1 x D	200	–	330	170	–	281	160	–	264	IPT	.0027	.0031	.0036	.0039
M	6	1.5 x D	0.5 x D	0.75 x D	160	–	250	136	–	213	128	–	200	IPT	.0022	.0025	.0028	.0029
	1	1.5 x D	0.5 x D	1 x D	300	–	380	240	–	304	210	–	266	IPT	.0034	.0039	.0045	.0048
	2	1.5 x D	0.5 x D	1 x D	200	–	260	160	–	208	140	–	182	IPT	.0027	.0031	.0036	.0039
K	3	1.5 x D	0.5 x D	1 x D	200	–	230	160	–	184	140	–	161	IPT	.0022	.0025	.0028	.0029
	1	1.5 x D	0.5 x D	1 x D	390	–	490	351	–	441	351	–	441	IPT	.0039	.0044	.0049	.0049
	2	1.5 x D	0.5 x D	1 x D	360	–	460	324	–	414	324	–	414	IPT	.0034	.0039	.0045	.0048
S	3	1.5 x D	0.5 x D	1 x D	360	–	430	324	–	387	324	–	387	IPT	.0027	.0031	.0036	.0039
	1	1.5 x D	0.3 x D	0.3 x D	160	–	300	128	–	240	96	–	180	IPT	.0034	.0039	.0045	.0048
	2	1.5 x D	0.3 x D	0.3 x D	80	–	130	64	–	104	48	–	78	IPT	.0018	.0021	.0024	.0026
	3	1.5 x D	0.5 x D	1 x D	200	–	260	160	–	208	120	–	156	IPT	.0027	.0031	.0036	.0039
H	4	1.5 x D	0.5 x D	1 x D	160	–	200	128	–	160	96	–	120	IPT	.0025	.0028	.0033	.0036
	1	1.5 x D	0.5 x D	0.75 x D	260	–	460	208	–	368	156	–	276	IPT	.0030	.0034	.0039	.0040
	2	1.5 x D	0.2 x D	0.5 x D	230	–	390	184	–	312	138	–	234	IPT	.0022	.0025	.0028	.0029

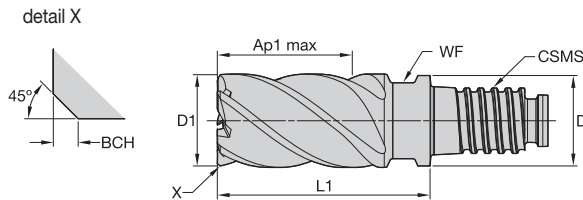
NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters >1/2".
 For side milling with ap larger than 1 x D, reduce fz by 20%!

Solid End Milling

- Unequal flute spacing minimizes chatter and harmonics for smoother machining.
- Center cutting.
- Ramping up to 3°.
- Five-flute geometry able to slot up to 1 x D.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Standard items listed. Additional styles and coatings made-to-order.



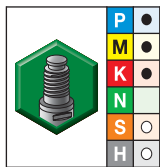
Solid End Milling



End Mill Tolerances

D1	tolerance e8
13/32–23/32"	-0,00126"/-0,00232"
23/32–1-3/16"	-0,00157"/-0,00287"
1-3/16"	-0,00197"/-0,00350"

■ 5VCC • 5 Flute • Inch



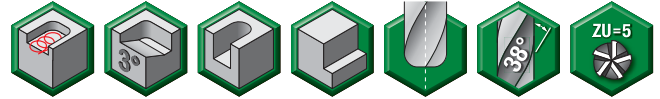
grade WP15PE
AlTiN

- first choice
- alternate choice

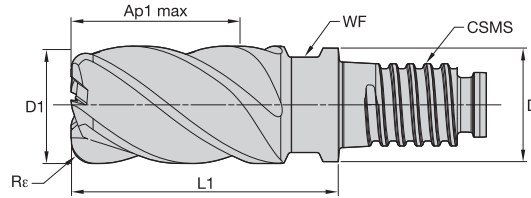
order #	catalog #	D1	D	length of cut Ap1 max	L1	CSMS system size	WF	BCH
6071667	5VCC16NDL16	5/8	.605	15/16	1	DL16	0.51	0.02
6071661	5VCC16SDL16	5/8	.605	15/16	1	DL16	0.51	—
6071668	5VCC19NDL20	3/4	.730	1 1/8	2	DL20	0.63	0.02
6071662	5VCC19SDL20	3/4	.730	1 1/8	2	DL20	0.63	—
6071669	5VCC25NDL25	1	.961	1 1/2	2	DL25	0.83	0.02
6071663	5VCC25SDL25	1	.961	1 1/2	2	DL25	0.83	—
6071670	5VCC32NDL32	1 1/4	1.211	1 7/8	3	DL32	1.10	0.02
6071664	5VCC32SDL32	1 1/4	1.211	1 7/8	3	DL32	1.10	—

NOTE: For application data, please see page B28.

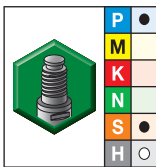
- Unequal flute spacing minimizes chatter and harmonics for smoother machining.
- Center cutting.
- Ramping up to 3°.
- Five-flute geometry able to slot up to 1 x D.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Standard items listed. Additional styles and coatings made-to-order.



Solid End Milling


End Mill Tolerances

D1	tolerance e8
13/32–23/32"	-0,00126"/-0,00232"
23/32–1-3/16"	-0,00157"/-0,00287"
1-3/16"	-0,00197"/-0,00350"

5VCE • 5 Flute • Inch

 grade WS15PE
AITiN

- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	L1	CSMS system size	WF	Re
6071680	5VCE16ADL16	5/8	.605	15/16	1	DL16	0.51	.015
6071681	5VCE16BDL16	5/8	.605	15/16	1	DL16	0.51	.030
6071682	5VCE16CDL16	5/8	.605	15/16	1	DL16	0.51	.060
6071683	5VCE16DDL16	5/8	.605	15/16	1	DL16	0.51	.090
6071684	5VCE16EDL16	5/8	.605	15/16	1	DL16	0.51	.120
6071685	5VCE19BDL20	3/4	.730	1 1/8	2	DL20	0.63	.030
6071686	5VCE19CDL20	3/4	.730	1 1/8	2	DL20	0.63	.060
6071687	5VCE19DDL20	3/4	.730	1 1/8	2	DL20	0.63	.090
6071688	5VCE19EDL20	3/4	.730	1 1/8	2	DL20	0.63	.120
6071689	5VCE25BDL25	1	.961	1 1/2	2	DL25	0.83	.030
6071690	5VCE25CDL25	1	.961	1 1/2	2	DL25	0.83	.060
6071691	5VCE25DDL25	1	.961	1 1/2	2	DL25	0.83	.090
6071692	5VCE25EDL25	1	.961	1 1/2	2	DL25	0.83	.120
6071693	5VCE25FDL25	1	.961	1 1/2	2	DL25	0.83	.250
6071694	5VCE32DDL32	1 1/4	1.211	1 7/8	3	DL32	1.10	.090
6071695	5VCE32FDL32	1 1/4	1.211	1 7/8	3	DL32	1.10	.250

NOTE: For application data, please see page B29.

■ VariMill II™ • 5VCC • Unequal Flute Spacing

Solid End Milling

		Side Milling (A) and Slotting (B)			short		medium			long			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.					
Material Group	A		B	adapter reach									D1 – Diameter					
				WP15PE			WP15PE			WP15PE			frac.	5/8	3/4	1	1 1/4	
	ap	ae	ap	Cutting Speed – vc SFM		max	Cutting Speed – vc SFM		max	Cutting Speed – vc SFM		max	dec.	.6250	.7500	1.0000	1.2500	
P	0	1.5 x D	0.5 x D	1 x D	490	–	660	441	–	594	441	–	594	IPT	.0039	.0044	.0049	.0049
	1	1.5 x D	0.5 x D	1 x D	490	–	660	441	–	594	441	–	594	IPT	.0039	.0044	.0049	.0049
	2	1.5 x D	0.5 x D	1 x D	460	–	620	414	–	558	414	–	558	IPT	.0039	.0044	.0049	.0049
	3	1.5 x D	0.5 x D	1 x D	390	–	520	351	–	468	351	–	468	IPT	.0034	.0039	.0045	.0048
	4	1.5 x D	0.5 x D	0.75 x D	300	–	490	270	–	441	270	–	441	IPT	.0030	.0034	.0039	.0040
	5	1.5 x D	0.5 x D	1 x D	200	–	330	170	–	281	160	–	264	IPT	.0027	.0031	.0036	.0039
M	1	1.5 x D	0.5 x D	1 x D	300	–	380	240	–	304	210	–	266	IPT	.0034	.0039	.0045	.0048
	2	1.5 x D	0.5 x D	1 x D	200	–	260	160	–	208	140	–	182	IPT	.0027	.0031	.0036	.0039
	3	1.5 x D	0.5 x D	1 x D	200	–	230	160	–	184	140	–	161	IPT	.0022	.0025	.0028	.0029
K	1	1.5 x D	0.5 x D	1 x D	390	–	490	351	–	441	351	–	441	IPT	.0039	.0044	.0049	.0049
	2	1.5 x D	0.5 x D	1 x D	360	–	460	324	–	414	324	–	414	IPT	.0034	.0039	.0045	.0048
	3	1.5 x D	0.5 x D	1 x D	360	–	430	324	–	387	324	–	387	IPT	.0027	.0031	.0036	.0039
S	1	1.5 x D	0.3 x D	0.3 x D	160	–	300	128	–	240	96	–	180	IPT	.0034	.0039	.0045	.0048
	2	1.5 x D	0.3 x D	0.3 x D	80	–	130	64	–	104	48	–	78	IPT	.0018	.0021	.0024	.0026
	3	1.5 x D	0.5 x D	1 x D	200	–	260	160	–	208	120	–	156	IPT	.0027	.0031	.0036	.0039
	4	1.5 x D	0.5 x D	1 x D	160	–	200	128	–	160	96	–	120	IPT	.0025	.0028	.0033	.0036
H	1	1.5 x D	0.5 x D	0.75 x D	260	–	460	208	–	368	156	–	276	IPT	.0030	.0034	.0039	.0040
	2	1.5 x D	0.2 x D	0.5 x D	230	–	390	184	–	312	138	–	234	IPT	.0022	.0025	.0028	.0029

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 centers, please adjust parameters accordingly on diameters >1/2".
 For side milling with ap larger than 1 x D, reduce fz by 20%!

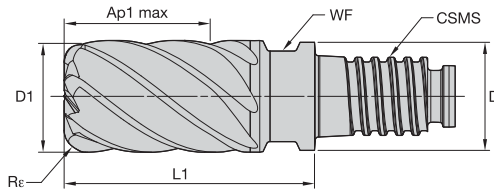
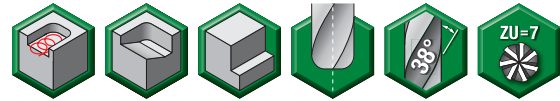
■ VariMill II™ • 5VCE • Unequal Flute Spacing

Material Group																Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.			
		Side Milling (A) and Slotting (B)		short			medium			long			D1 – Diameter						
		A		B		adapter reach									frac.	5/8 3/4 1 1 1/4			
						WS15PE			WS15PE			WS15PE							
						Cutting Speed – vc SFM			Cutting Speed – vc SFM			Cutting Speed – vc SFM							
		ap	ae	ap	min		max	min		max	min		max	dec.	.6250	.7500	1.0000	1.2500	
P	5	1.5 x D	0.5 x D	1 x D	200	–	330	170	–	281	160	–	264	IPT	.0027	.0031	.0036	.0039	
	6	1.5 x D	0.5 x D	0.75 x D	160	–	250	136	–	213	128	–	200	IPT	.0022	.0025	.0028	.0029	
S	1	1.5 x D	0.3 x D	0.3 x D	160	–	300	128	–	240	96	–	180	IPT	.0034	.0039	.0045	.0048	
	2	1.5 x D	0.3 x D	0.3 x D	80	–	130	64	–	104	48	–	78	IPT	.0018	.0021	.0024	.0026	
	3	1.5 x D	0.5 x D	1 x D	200	–	260	160	–	208	120	–	156	IPT	.0027	.0031	.0036	.0039	
	4	1.5 x D	0.5 x D	1 x D	160	–	200	128	–	160	96	–	120	IPT	.0025	.0028	.0033	.0036	
H	1	1.5 x D	0.5 x D	0.75 x D	260	–	460	208	–	368	156	–	276	IPT	.0030	.0034	.0039	.0040	
	2	1.5 x D	0.2 x D	0.5 x D	230	–	390	184	–	312	138	–	234	IPT	.0022	.0025	.0028	.0029	

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 centers, please adjust parameters accordingly on diameters >1/2".
 For side milling with ap larger than 1 x D, reduce fz by 20%!

Solid End Milling

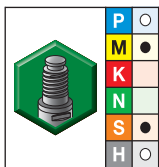
- Unequal flute spacing minimizes chatter and harmonics for smoother machining.
- Center cutting.
- Optimized geometry for titanium machining.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Standard items listed. Additional styles and coatings made-to-order.



End Mill Tolerances

D1	tolerance e8
13/32-23/32"	-0,00126"/-0,00232"
23/32-1-3/16"	-0,00157"/-0,00287"
1-3/16"	-0,00197"/-0,00350"

■ 7VCE • 7 Flute with Eccentric Relief Grind • Inch



- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	L1	CSMS system size	WF	Re
6071730	7VCE16ADL16	5/8	.605	15/16	1	DL16	0.51	.015
6071741	7VCE16BDL16	5/8	.605	15/16	1	DL16	0.51	.030
6071742	7VCE16CDL16	5/8	.605	15/16	1	DL16	0.51	.060
6071743	7VCE16DDL16	5/8	.605	15/16	1	DL16	0.51	.090
6071744	7VCE16EDL16	5/8	.605	15/16	1	DL16	0.51	.120
6071745	7VCE19BDL20	3/4	.730	1 1/8	2	DL20	0.63	.030
6071746	7VCE19CDL20	3/4	.730	1 1/8	2	DL20	0.63	.060
6071747	7VCE19DDL20	3/4	.730	1 1/8	2	DL20	0.63	.090
6071748	7VCE19EDL20	3/4	.730	1 1/8	2	DL20	0.63	.120
6071749	7VCE25BDL25	1	.961	1 1/2	2	DL25	0.83	.030
6071750	7VCE25CDL25	1	.961	1 1/2	2	DL25	0.83	.060
6071751	7VCE25DDL25	1	.961	1 1/2	2	DL25	0.83	.090
6071752	7VCE25EDL25	1	.961	1 1/2	2	DL25	0.83	.120
6071753	7VCE25FDL25	1	.961	1 1/2	2	DL25	0.83	.250
6071754	7VCE32DDL32	1 1/4	1.211	1 7/8	3	DL32	1.10	.090
6071755	7VCE32FDL32	1 1/4	1.211	1 7/8	3	DL32	1.10	.250

NOTE: For application data, please see page B31.

■ VariMill III™ • 7VCE • Unequal Flute Spacing • Roughing

Material Group													Recommended feed per tooth (IPT = inch/th) for side milling (A).					
				Side Milling (A)			short			medium							long	
		A		adapter reach											D1 – Diameter			
				WS15PE			WS15PE			WS15PE			frac.	5/8				
				Cutting Speed – vc SFM			Cutting Speed – vc SFM			Cutting Speed – vc SFM			dec.	.6250	.7500	1.0000	1.2500	
		ap	ae	min		max	min		max	min		max						
P	5	Ap max	0.3 x D	300	–	490	270	–	441	270	–	441	IPT	.0030	.0034	.0039	.0040	
	6	Ap max	0.3 x D	200	–	330	170	–	281	160	–	264	IPT	.0027	.0031	.0036	.0039	
M	1	Ap max	0.3 x D	300	–	380	240	–	304	210	–	266	IPT	.0034	.0039	.0045	.0048	
	2	Ap max	0.3 x D	200	–	260	160	–	208	140	–	182	IPT	.0027	.0031	.0036	.0039	
	3	Ap max	0.3 x D	200	–	230	160	–	184	140	–	161	IPT	.0022	.0025	.0028	.0029	
S	1	Ap max	0.3 x D	160	–	300	128	–	240	96	–	180	IPT	.0034	.0039	.0045	.0048	
	2	Ap max	0.3 x D	80	–	130	64	–	104	48	–	78	IPT	.0018	.0021	.0024	.0026	
	3	Ap max	0.3 x D	200	–	260	160	–	208	120	–	156	IPT	.0027	.0031	.0036	.0039	
	4	Ap max	0.3 x D	160	–	200	128	–	160	96	–	120	IPT	.0025	.0028	.0033	.0036	
H	1	Ap max	0.3 x D	260	–	460	208	–	368	156	–	276	IPT	.0030	.0034	.0039	.0040	
	2	Ap max	0.3 x D	230	–	390	184	–	312	138	–	234	IPT	.0022	.0025	.0028	.0029	

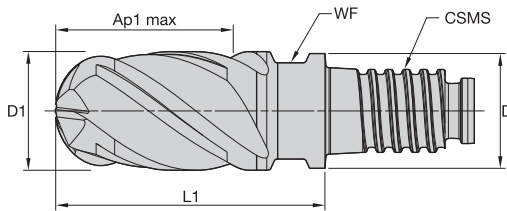
NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters >1/2".
 For side milling with ap larger than 1 x D, reduce fz by 20%!

■ VariMill III • 7VCE • Unequal Flute Spacing • Finishing

Material Group													Recommended feed per tooth (IPT = inch/th) for side milling (A).					
				Side Milling (A)			short			medium							long	
		A		adapter reach											D1 – Diameter			
				WS15PE			WS15PE			WS15PE			frac.	5/8				
				Cutting Speed – vc SFM			Cutting Speed – vc SFM			Cutting Speed – vc SFM			dec.	.6250	.7500	1.0000	1.2500	
		ap	ae	min		max	min		max	min		max						
P	5	Ap max	0.06 x D	590	–	980	531	–	882	531	–	882	IPT	.0036	.0040	.0046	.0048	
	6	Ap max	0.06 x D	390	–	660	332	–	561	312	–	528	IPT	.0033	.0037	.0043	.0047	
M	1	Ap max	0.06 x D	590	–	750	472	–	600	413	–	525	IPT	.0041	.0046	.0054	.0058	
	2	Ap max	0.06 x D	390	–	520	312	–	416	273	–	364	IPT	.0033	.0037	.0043	.0047	
	3	Ap max	0.06 x D	390	–	460	312	–	368	273	–	322	IPT	.0027	.0030	.0034	.0035	
S	1	Ap max	0.06 x D	330	–	590	264	–	472	198	–	354	IPT	.0041	.0046	.0054	.0058	
	2	Ap max	0.06 x D	160	–	260	128	–	208	96	–	156	IPT	.0022	.0025	.0029	.0032	
	3	Ap max	0.06 x D	390	–	520	312	–	416	234	–	312	IPT	.0033	.0037	.0043	.0047	
	4	Ap max	0.06 x D	330	–	390	264	–	312	198	–	234	IPT	.0030	.0034	.0040	.0043	
H	1	Ap max	0.06 x D	520	–	920	416	–	736	312	–	552	IPT	.0036	.0040	.0046	.0048	
	2	Ap max	0.06 x D	460	–	790	368	–	632	276	–	474	IPT	.0027	.0030	.0034	.0035	

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 centers, please adjust parameters accordingly on diameters >1/2".
 For side milling with ap larger than 1 x D, reduce fz by 20%!

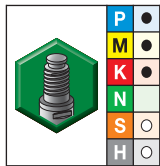
- Asymmetrical flute spacing minimizes chatter and harmonics for smoother machining.
- Center cutting.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Standard items listed. Additional styles and coatings made-to-order.



End Mill Tolerances

D1	tolerance e8
13/32–23/32"	-0,00126"/-0,00232"
23/32–1-3/16"	-0,00157"/-0,00287"
1-3/16"	-0,00197"/-0,00350"

■ 4XC0 • 4-Flute Ball Nose • Inch



grade WP15PE
AlTiN

- first choice
- alternate choice

order #	catalog #	D1	D	length of cut Ap1 max	L1	CSMS system size	WF
6071631	4XC0160DL16	5/8	.605	15/16	1	DL16	0.51
6071632	4XC0190DL20	3/4	.730	1 1/8	2	DL20	0.63
6071633	4XC0250DL25	1	.961	1 1/2	2	DL25	0.83

NOTE: For application data, please see page B33.

Solid End Milling

■ VariMill Ball Nose • 4XC0 • Asymmetrical Flute Spacing

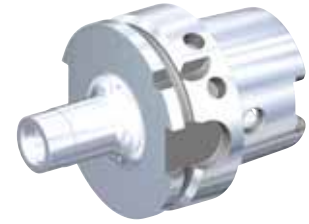
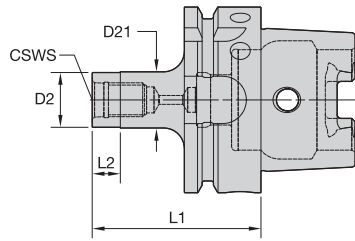
Material Group														Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.			
		Side Milling (A) and Slotting (B)			short		medium			long							
		A		B		adapter reach									D1 – Diameter		
						WP15PE			WP15PE			WP15PE					
						Cutting Speed – vc SFM			Cutting Speed – vc SFM			Cutting Speed – vc SFM			frac.	5/8	3/4
		ap	ae	ap	min		max	min		max	min		max	dec.	.6250	.7500	1.0000
P	0	1.25 x D	0.5 x D	1 x D	490	–	660	441	–	594	441	–	594	IPT	.0039	.0044	.0049
	1	1.25 x D	0.5 x D	1 x D	490	–	660	441	–	594	441	–	594	IPT	.0039	.0044	.0049
	2	1.25 x D	0.5 x D	1 x D	460	–	620	414	–	558	414	–	558	IPT	.0039	.0044	.0049
	3	1.25 x D	0.5 x D	1 x D	390	–	520	351	–	468	351	–	468	IPT	.0034	.0039	.0045
	4	1.25 x D	0.5 x D	0.75 x D	300	–	490	270	–	441	270	–	441	IPT	.0030	.0034	.0039
	5	1.25 x D	0.5 x D	1 x D	200	–	330	170	–	281	160	–	264	IPT	.0027	.0031	.0036
M	6	1.25 x D	0.5 x D	0.75 x D	160	–	250	136	–	213	128	–	200	IPT	.0022	.0025	.0028
	1	1.25 x D	0.5 x D	1 x D	300	–	380	240	–	304	210	–	266	IPT	.0034	.0039	.0045
	2	1.25 x D	0.5 x D	1 x D	200	–	260	160	–	208	140	–	182	IPT	.0027	.0031	.0036
K	3	1.25 x D	0.5 x D	1 x D	200	–	230	160	–	184	140	–	161	IPT	.0022	.0025	.0028
	1	1.25 x D	0.5 x D	1 x D	390	–	490	351	–	441	351	–	441	IPT	.0039	.0044	.0049
	2	1.25 x D	0.5 x D	1 x D	360	–	460	324	–	414	324	–	414	IPT	.0034	.0039	.0045
S	3	1.25 x D	0.5 x D	1 x D	360	–	430	324	–	387	324	–	387	IPT	.0027	.0031	.0036
	1	1 x D	0.3 x D	0.3 x D	160	–	300	128	–	240	96	–	180	IPT	.0034	.0039	.0045
	2	1 x D	0.3 x D	0.3 x D	80	–	130	64	–	104	48	–	78	IPT	.0018	.0021	.0024
	3	1.25 x D	0.5 x D	1 x D	200	–	260	160	–	208	120	–	156	IPT	.0027	.0031	.0036
H	4	1.25 x D	0.5 x D	1 x D	160	–	200	128	–	160	96	–	120	IPT	.0025	.0028	.0033
	1	1.25 x D	0.5 x D	0.75 x D	260	–	460	208	–	368	156	–	276	IPT	.0030	.0034	.0039
	2	1.25 x D	0.2 x D	0.5 x D	230	–	390	184	–	312	138	–	234	IPT	.0022	.0025	.0028

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 centers, please adjust parameters accordingly on diameters >1/2".
 For side milling with ap larger than 1 x D, reduce fz by 20%!

Solid End Milling



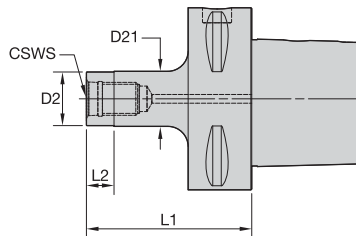
Solid End Milling



■ DL HSK Form A Inch

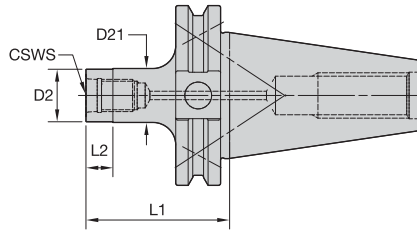
order number	catalog number	CSWS system size	D2	D21	L1	L2	ft. lbs.
6136897	HSK63ADL16225	DL16	.61	.63	2.25	.31	44.20
6136898	HSK63ADL20225	DL20	.73	.75	2.25	.38	59.00
6136899	HSK63ADL25250	DL25	.96	1.00	2.50	.50	73.80
6136900	HSK63ADL32288	DL32	1.21	1.25	2.88	.63	98.90

PSC63 Duo-Lock™ Integrated



■ DL PSC63 Inch

order number	catalog number	CSWS system size	D2	D21	L1	L2	ft. lbs.
6136933	PSC63DL16225	DL16	.61	.63	2.25	.31	44.20
6136934	PSC63DL20225	DL20	.73	.75	2.25	.38	59.00
6136935	PSC63DL25238	DL25	.96	1.00	2.38	.50	73.80
6136936	PSC63DL32275	DL32	1.21	1.25	2.75	.63	98.90

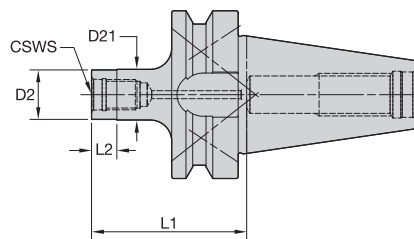


Solid End Milling

■ DL CV40 Inch

order number	catalog number	CSWS system size	D2	D21	L1	L2	lbs
6136939	CV40BDL16200	DL16	.61	.63	2.00	.31	1.92
6136940	CV40BDL20200	DL20	.73	.75	2.00	.38	1.98
6136941	CV40BDL25225	DL25	.96	1.00	2.25	.50	2.05
6136942	CV40BDL32250	DL32	1.21	1.25	2.50	.63	2.15

BT40 Duo-Lock™ Integrated



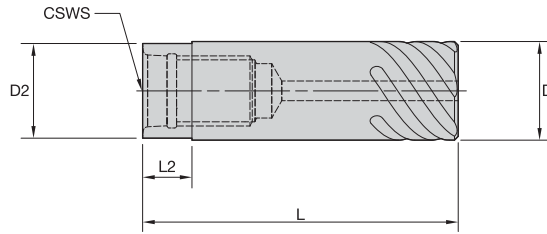
■ DL BT40 Inch

order number	catalog number	CSWS system size	D2	D21	L1	L2	lbs
6136945	BT40BDL16225	DL16	.61	.63	2.25	.31	2.24
6136946	BT40BDL20225	DL20	.73	.75	2.25	.38	2.29
6136947	BT40BDL25238	DL25	.96	1.00	2.38	.50	2.34
6136948	BT40BDL32275	DL32	1.21	1.25	2.75	.63	2.47

	Form B		40	(2x) MS2221S	2,5mm
			50	(2x) MS1296S	3mm

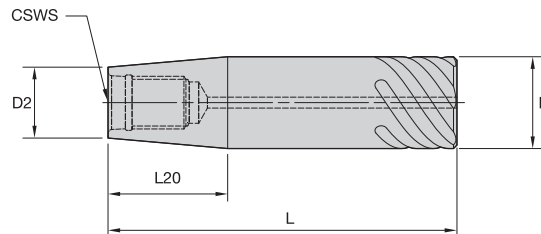


Solid End Milling



■ DL SS SL Cylindrical Inch

order number	catalog number	CSWS system size	D	D2	L	L2	lbs
6136874	SS062SLDL160250	DL16	.63	.61	2.50	.31	0.18
6136880	SS075SLDL200275	DL20	.75	.73	2.75	.38	0.30
6136884	SS100SLDL250300	DL25	1.00	.96	3.00	.50	0.51
6136888	SS125SLDL320350	DL32	1.25	1.21	3.50	.63	0.92



■ DL SS SL Conical Inch

order number	catalog number	CSWS system size	D	D2	L	L20	lbs
6136876	SS075SLDL160325	DL16	.75	.61	3.25	.83	0.25
6136878	SS100SLDL160450	DL16	1.00	.61	4.50	2.26	0.78
6136882	SS100SLDL200375	DL20	1.00	.73	3.75	1.54	0.68
6136886	SS125SLDL250425	DL25	1.25	.96	4.25	1.65	1.20
6136890	SS150SLDL320550	DL32	1.50	1.21	5.50	1.65	2.30
6136892	SS200SLDL320750	DL32	2.00	1.21	7.50	4.51	4.97



Solid End Milling

■ Torque Wrench

order number	catalog number	Description
6135412	TWDLTMSET	TORQUE WRENCH SET
6135413	TWDLTM	BASIC DUO LOCK WRENCH
6135414	TWTMINSERTDL10	TORQUE WRENCH INSERT DL10
6135415	TWTMINSERTDL12	TORQUE WRENCH INSERT DL12
6135416	TWTMINSERTDL16	TORQUE WRENCH INSERT DL16
6135417	TWTMINSERTDL20	TORQUE WRENCH INSERT DL20
6135418	TWTMINSERTDL25	TORQUE WRENCH INSERT DL25
6135419	TWTMINSERTDL32	TORQUE WRENCH INSERT DL32
6135420	TWTMINSERTDL10W	TORQUE WRENCH INSERT DL10 WEAR
6135421	TWTMINSERTDL12W	TORQUE WRENCH INSERT DL12 WEAR
6135422	TWTMEXT	TORQUE WRENCH EXTENSION HANDLE
6135423	TWTMBC	TORQUE WRENCH BOLT SET

Assembly

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™ adapter in a mounting block with a clamping chuck sufficient to enable torque transmission.



- 3 Screw the Duo-Lock™ cutting tip into adapter by hand.
Attention: Use of protective gloves is mandatory!



- 4 A gap of approx. 0.06–0.12" 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	Torque ft. lbs.
DL 16	60	44
DL 20	80	59
DL 25	100	74
DL 32	130	96

ToolBOSS™

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ToolBOSS vending solutions help to reduce costs and improve efficiencies to give you a competitive edge.

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Holemaking

Top Ream Systems • TRF and TRM	C2-C15
TRF and TRM Overview	C2-C3
TRF – Top Ream Feed	C4-C7
TRM – Top Ream Modular	C8-C15



TRF and TRM



Common reamers of this category have single tips, brazed onto a steel body. The new WIDIA™ TRF and TRM reamers have a solid carbide disc brazed onto the steel body instead. This allows for more regrinds than a regular tipped reamer, which brings down the cost-per-hole significantly. Additionally, the new coating WU05PR™ holds the surface finish more than twice as long as conventional coatings applied on reamers, depending on the workpiece material.

Disc Style Versus Regular Tipped Reamers

- Stronger brazing joint than conventional tipped reamers.
- Practically no influence of temperature on runout.
- More rigidity and less vibrations due to full carbide front-end.
- Minimum of four regrinds possible versus regularly tipped reamers with an average of three regrinds, depending on wear situation.
- No damage of flutes, compared to the steel portion of regularly tipped reamers when chips constantly rub across.

New Coating WU05PR™

The new disc style design combined with the new reaming coating WU05PR allows for significant cost-per-hole improvements.



- WU05PR was specifically developed for reaming applications and shows superior results versus usual market grades applied on reamers.
- Holds surface finish more than 3x as long in steel compared to regular TiAlN thin coatings.
- Holds surface finish more than 2x as long in cast iron compared to regular TiAlN thin coatings.

TRF

In comparison to solid carbide reamers or single-tipped reamers, TRF is the economic alternative without any disadvantages in regards to productivity or hole quality.

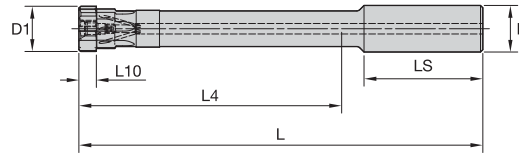
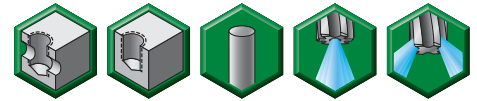
- Solid carbide disc at front instead of single-tipped carbide blanks.
- Unique coating, specially developed for reaming applications.
- High-speed and high-performance ready.
- Superior surface finish due to lapped ground leads.
- Improved hole straightness and roundness due to unequal flute spacing (less vibrations) and runout <3 microns.
- Helical and straight flutes for chip control in through and blind holes.
- Adjustment screw with straight-fluted RMR reamers to change internal coolant supply from axial to radial.

Customization

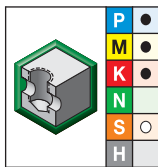
- All diameters between .5512–1.6732" (14–42,5mm).
- Variation of leads and cylindrical margin for application-specific optimization.



- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.
- Adjustment screw to change internal coolant supply from axial to radial.



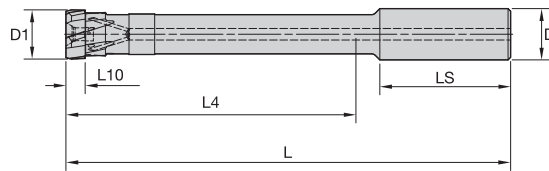
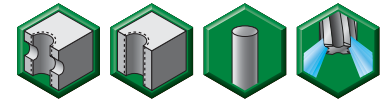
■ TRF • Disc Style Reamer • Straight Fluted for Blind Holes and Through Holes with Internal Coolant



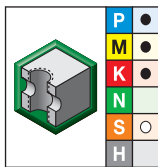
● first choice
○ alternate choice

grade WU05PR AICrN		D1		L4						
order #	catalog #	mm	in	D	L	mm	in	L10	LS	Z
6055331	TRF14000H7SF	14,00	.551	16,00	147,4	92,4	3.638	7,5	49,0	6
6055332	TRF15000H7SF	15,00	.591	16,00	147,4	92,4	3.638	7,5	49,0	6
6055333	TRF16000H7SF	16,00	.630	20,00	159,4	102,4	4.031	7,5	51,0	6
6055334	TRF17000H7SF	17,00	.669	20,00	159,4	102,4	4.031	7,5	51,0	6
6055335	TRF18000H7SF	18,00	.709	20,00	173,4	116,4	4.583	7,5	51,0	6
6055336	TRF19000H7SF	19,00	.748	20,00	173,4	116,4	4.583	7,5	51,0	6
6055337	TRF20000H7SF	20,00	.787	20,00	173,4	116,4	4.583	7,5	51,0	6
6135130	TRF21000H7SF	21,00	.827	20,00	202,4	145,4	5.724	7,5	51,0	6
6135191	TRF22000H7SF	22,00	.866	20,00	202,4	145,4	5.724	7,5	51,0	6
6135192	TRF23000H7SF	23,00	.906	20,00	212,4	155,4	6.118	7,5	51,0	6
6135193	TRF24000H7SF	24,00	.945	20,00	212,4	155,4	6.118	7,5	51,0	6
6135194	TRF25000H7SF	25,00	.984	25,00	232,4	169,4	6.669	7,5	57,0	8
6135195	TRF26000H7SF	26,00	1.024	25,00	232,4	169,4	6.669	7,5	57,0	8
6135196	TRF27000H7SF	27,00	1.063	25,00	232,4	169,4	6.669	7,5	57,0	8
6135197	TRF28000H7SF	28,00	1.102	25,00	242,4	179,4	7.063	7,5	57,0	8
6135198	TRF29000H7SF	29,00	1.142	25,00	242,4	179,4	7.063	7,5	57,0	8
6135199	TRF30000H7SF	30,00	1.181	25,00	272,4	209,4	8.244	7,5	57,0	8
6135200	TRF31000H7SF	31,00	1.221	25,00	272,4	209,4	8.244	7,5	57,0	8
6135201	TRF32000H7SF	32,00	1.260	25,00	272,4	209,4	8.244	7,5	57,0	8
6135202	TRF33000H7SF	33,00	1.299	32,00	272,4	205,4	8.087	7,5	61,0	8
6135203	TRF34000H7SF	34,00	1.339	32,00	272,4	205,4	8.087	7,5	61,0	8
6135204	TRF35000H7SF	35,00	1.378	32,00	272,4	205,4	8.087	7,5	61,0	8
6135205	TRF36000H7SF	36,00	1.417	32,00	272,4	205,4	8.087	7,5	61,0	8
6135206	TRF37000H7SF	37,00	1.457	32,00	272,4	205,4	8.087	7,5	61,0	8
6135207	TRF38000H7SF	38,00	1.496	32,00	272,4	205,4	8.087	7,5	61,0	8
6135208	TRF39000H7SF	39,00	1.535	32,00	272,4	205,4	8.087	7,5	61,0	8
6135209	TRF40000H7SF	40,00	1.575	32,00	272,4	205,4	8.087	7,5	61,0	8
6135210	TRF41000H7SF	41,00	1.614	32,00	272,4	205,4	8.087	7,5	61,0	8
6135211	TRF42000H7SF	42,00	1.654	32,00	272,4	205,4	8.087	7,5	61,0	8

- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.



■ TRF • Disc Style Reamer • Helical Fluted for Through Holes with Internal Coolant



- first choice
- alternate choice

grade WU05PR AlCrN		D1		L4		L10	LS	Z		
order #	catalog #	mm	in	D	L				mm	in
6055338	TRF14000H7HF	14,00	.551	16,00	147,4	92,4	3.638	7,5	49,0	6
6055339	TRF15000H7HF	15,00	.591	16,00	147,4	92,4	3.638	7,5	49,0	6
6055340	TRF16000H7HF	16,00	.630	20,00	159,4	102,4	4.031	7,5	51,0	6
6055341	TRF17000H7HF	17,00	.669	20,00	159,4	102,4	4.031	7,5	51,0	6
6055342	TRF18000H7HF	18,00	.709	20,00	173,4	116,4	4.583	7,5	51,0	6
6055343	TRF19000H7HF	19,00	.748	20,00	173,4	116,4	4.583	7,5	51,0	6
6055344	TRF20000H7HF	20,00	.787	20,00	173,4	116,4	4.583	7,5	51,0	6
6135212	TRF21000H7HF	21,00	.827	20,00	202,4	145,4	5.724	7,5	51,0	6
6135213	TRF22000H7HF	22,00	.866	20,00	202,4	145,4	5.724	7,5	51,0	6
6135214	TRF23000H7HF	23,00	.906	20,00	212,4	155,4	6.118	7,5	51,0	6
6135215	TRF24000H7HF	24,00	.945	20,00	212,4	155,4	6.118	7,5	51,0	6
6135216	TRF25000H7HF	25,00	.984	25,00	232,4	169,4	6.669	7,5	51,0	8
6135217	TRF26000H7HF	26,00	1.024	25,00	232,4	169,4	6.669	7,5	51,0	8
6135218	TRF27000H7HF	27,00	1.063	25,00	232,4	169,4	6.669	7,5	57,0	8
6135219	TRF28000H7HF	28,00	1.102	25,00	242,4	179,4	7.063	7,5	57,0	8
6135220	TRF29000H7HF	29,00	1.142	25,00	242,4	179,4	7.063	7,5	57,0	8
6135221	TRF30000H7HF	30,00	1.181	25,00	272,4	209,4	8.244	7,5	57,0	8
6135222	TRF31000H7HF	31,00	1.221	25,00	272,4	209,4	8.244	7,5	57,0	8
6135223	TRF32000H7HF	32,00	1.260	25,00	272,4	209,4	8.244	7,5	57,0	8
6135224	TRF33000H7HF	33,00	1.299	32,00	272,4	205,4	8.087	7,5	61,0	8
6135225	TRF34000H7HF	34,00	1.339	32,00	272,4	205,4	8.087	7,5	61,0	8
6135226	TRF35000H7HF	35,00	1.378	32,00	272,4	205,4	8.087	7,5	61,0	8
6135227	TRF36000H7HF	36,00	1.417	32,00	272,4	205,4	8.087	7,5	61,0	8
6135228	TRF37000H7HF	37,00	1.457	32,00	272,4	205,4	8.087	7,5	61,0	8
6135229	TRF38000H7HF	38,00	1.496	32,00	272,4	205,4	8.087	7,5	61,0	8
6135230	TRF39000H7HF	39,00	1.535	32,00	272,4	205,4	8.087	7,5	61,0	8
6135231	TRF40000H7HF	40,00	1.575	32,00	272,4	205,4	8.087	7,5	61,0	8
6135232	TRF41000H7HF	41,00	1.614	32,00	272,4	205,4	8.087	7,5	61,0	8
6135233	TRF42000H7HF	42,00	1.654	32,00	272,4	205,4	8.087	7,5	61,0	8

■ TRF • Inch

Material Group		WU05PR™			Inch						
		Cutting Speed – vc			Recommended Feed Rate per Tooth						
		Range – SFM			Tool Diameter (inch)	.551–.787		.787–1.260		1.260–1.654	
		min	Starting Value	max		Feed/Tooth	min	max	min	max	min
P	1	295	394	509	inch/z	.004	.009	.004	.010	.004	.011
	2	295	394	509	inch/z	.004	.009	.004	.010	.004	.011
	3	246	328	427	inch/z	.004	.009	.004	.010	.004	.011
	4	164	262	344	inch/z	.004	.009	.004	.010	.004	.011
	5	98	131	197	inch/z	.004	.009	.004	.010	.004	.011
	6	98	131	197	inch/z	.003	.008	.003	.009	.003	.009
M	1	49	66	131	inch/z	.003	.007	.003	.008	.003	.009
	2	49	66	98	inch/z	.003	.007	.003	.008	.003	.009
	3	49	66	98	inch/z	.003	.007	.003	.008	.003	.009
K	1	262	361	427	inch/z	.004	.009	.004	.010	.004	.011
	2	213	295	361	inch/z	.004	.009	.004	.010	.004	.011
	3	164	230	295	inch/z	.004	.008	.004	.010	.004	.011
S	1	49	66	98	inch/z	.004	.007	.004	.008	.004	.009
	2	49	66	98	inch/z	.004	.007	.004	.008	.004	.009
	3	66	98	131	inch/z	.004	.008	.004	.008	.004	.009
	4	66	98	131	inch/z	.004	.008	.004	.008	.004	.009

Holmaking

■ TRF • Metric

Material Group		WU05PR			Metric						
		Cutting Speed – vc			Recommended Feed Rate per Tooth						
		Range – m/min			Tool Diameter (mm)	14,00–19,99		20,00–32,00		32,00–42,00	
		min	Starting Value	max		Feed/Tooth	min	max	min	max	min
P	1	90	120	155	mm/z	0,10	0,22	0,10	0,25	0,10	0,28
	2	90	120	155	mm/z	0,10	0,22	0,10	0,25	0,10	0,28
	3	75	100	130	mm/z	0,10	0,22	0,10	0,25	0,10	0,28
	4	50	80	105	mm/z	0,10	0,22	0,10	0,25	0,10	0,28
	5	30	40	60	mm/z	0,10	0,22	0,10	0,25	0,10	0,28
	6	30	40	60	mm/z	0,08	0,20	0,08	0,22	0,08	0,22
M	1	15	20	40	mm/z	0,08	0,18	0,08	0,20	0,08	0,22
	2	15	20	30	mm/z	0,08	0,18	0,08	0,20	0,08	0,22
	3	15	20	30	mm/z	0,08	0,18	0,08	0,20	0,08	0,22
K	1	80	110	130	mm/z	0,10	0,22	0,10	0,25	0,10	0,28
	2	65	90	110	mm/z	0,10	0,22	0,10	0,25	0,10	0,28
	3	50	70	90	mm/z	0,10	0,20	0,10	0,25	0,10	0,28
S	1	15	20	30	mm/z	0,10	0,18	0,10	0,20	0,10	0,22
	2	15	20	30	mm/z	0,10	0,18	0,10	0,20	0,10	0,22
	3	20	30	40	mm/z	0,10	0,20	0,10	0,20	0,10	0,22
	4	20	30	40	mm/z	0,10	0,20	0,10	0,20	0,10	0,22

WIDIA™ TRM •

Top Ream Modular (Available as Semi-Standards)



WIDIA TRM

Primary Application

- Achieve solid carbide metal removal rates.
- Five sizes of standard straight shank bodies available to couple reaming heads from .787–1.653" (20–42mm).
- The TRM heads are stocked as semi-finished goods.
- Any diameter from .787–1.653" (20–42mm) is possible.

Features and Benefits

- High-speed and high-performance ready.
- Unique proprietary coupling system enables same runout accuracy as monoblock systems (<3 microns).
- Comfortable radial clamping for quick exchanging even in narrow situations in the machine.
- No fixture for clamping or dismounting necessary.

Customization

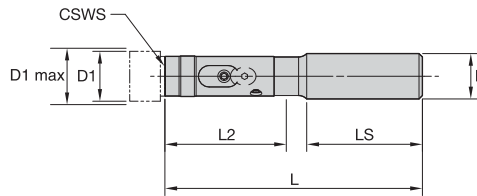
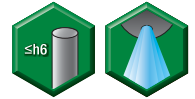
- Heads fully customizable as simple specials with different lead geometries, grades, coatings, and edge hones.
- Semi-finished heads on stock for shorter lead times.

Ordering Process

- Please contact your local Authorized Distributor for a quote.



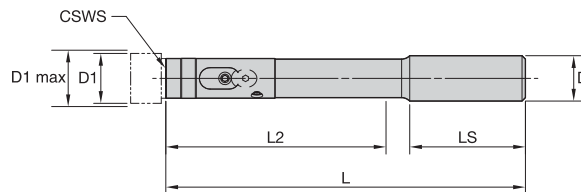
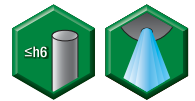
- Tool body shipped with retention knob, clamp set, and wrench.
- Order reamer head separately.



■ Straight Shank • Radial Clamping • 3 x D

order number	catalog number	CSWS system size	D1		D1 max		D	L	L2	LS	retention knob
			mm	in	mm	in					
6055345	SS20WST175RR3M	KST175	20,00	.787	22,499	.886	20,00	113,50	51,50	51,00	KST175200RK
6055347	SS20WST200RR3M	KST200	22,50	.886	27,499	1.083	20,00	130,50	65,50	51,00	KST175200RK
6055349	SS25WST250RR3M	KST250	27,50	1.083	32,499	1.279	25,00	152,50	80,50	56,00	KST250250RK
6055351	SS32WST300RR3M	KST300	32,50	1.280	37,499	1.476	32,00	174,00	94,00	61,00	KST300350RK
6055353	SS32WST350RR3M	KST350	37,50	1.476	42,000	1.654	32,00	190,00	108,00	61,00	KST300350RK

- Tool body shipped with retention knob, clamp set, and wrench.
- Order reamer head separately.

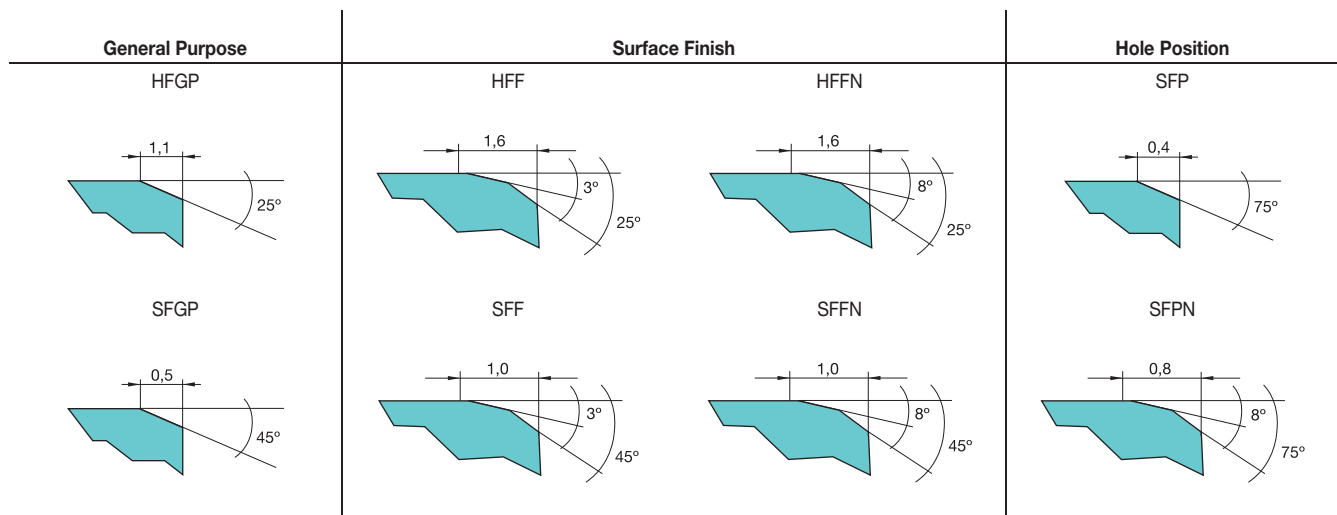


■ Straight Shank • Radial Clamping • 5 x D

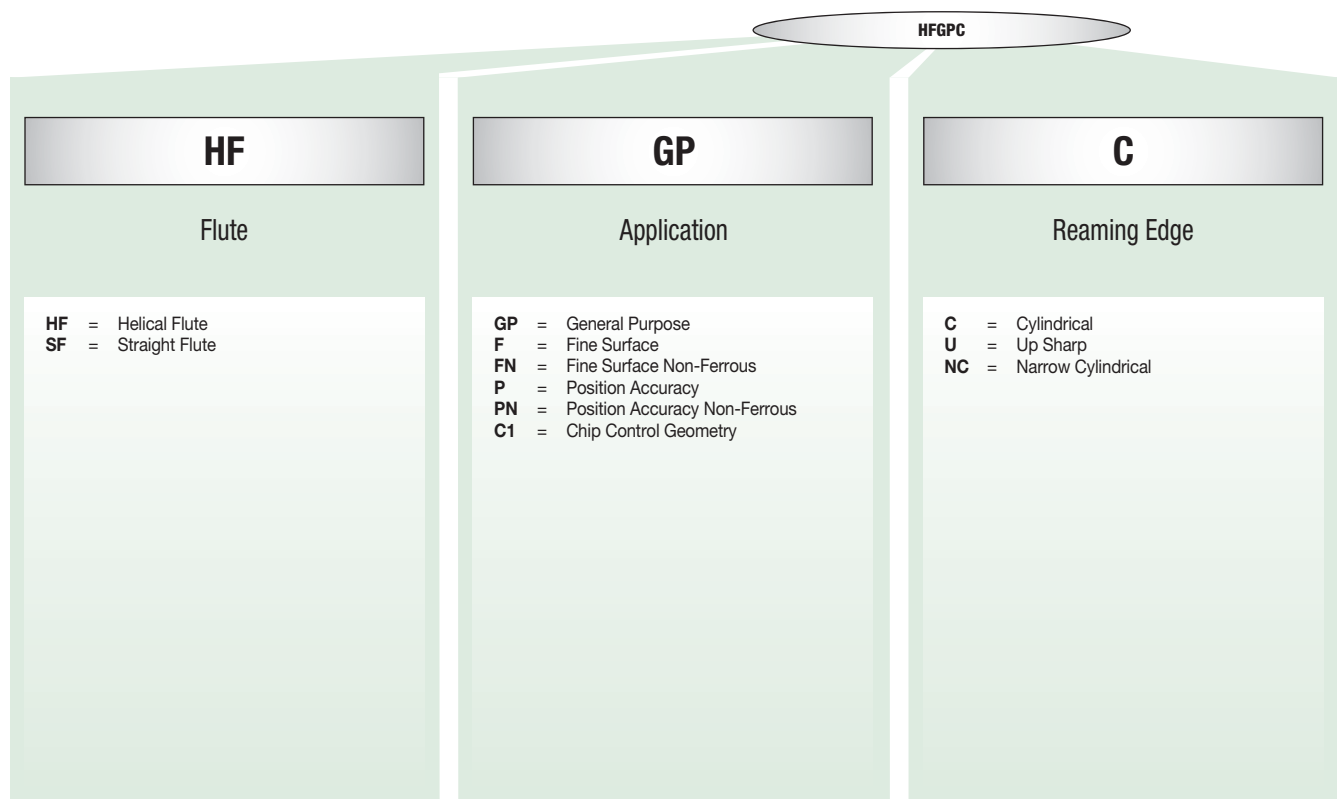
order number	catalog number	CSWS system size	D1		D1 max		D	L	L2	LS	retention knob
			mm	in	mm	in					
6055346	SS20WST175RR5M	KST175	20,00	.787	22,499	.886	20,00	158,50	96,50	51,00	KST175200RK
6055348	SS20WST200RR5M	KST200	22,50	.886	27,499	1.083	20,00	185,50	120,50	51,00	KST175200RK
6055350	SS25WST250RR5M	KST250	27,50	1.083	32,499	1.279	25,00	217,50	145,50	56,00	KST250250RK
6055352	SS32WST300RR5M	KST300	32,50	1.280	37,499	1.476	32,00	249,00	169,00	61,00	KST300350RK
6055354	SS32WST350RR5M	KST350	37,50	1.476	42,000	1.654	32,00	274,00	192,00	61,00	KST300350RK

Lead Design Overview

Holemaking



Lead Nomenclature



■ **General Purpose**

Material Group	Hole Type	Surface Requirement	Recommended Geometry	Design
P	through	IT 7, Ra <1.6	HFGP	C
	blind		SFGP	
M	through	IT 7, Ra <1.0	HFGP	C, NC
	blind		SFGP	
K	through	IT 7, Ra <1.6	HFGP	C
	blind		SFGP	
S	through	IT 7, Ra <0.6	HFGP	U, NC
	blind		SFGP	



■ **Extra Surface Finish**

Material Group	Hole Type	Surface Requirement	Recommended Geometry	Design
P	through	IT 7, Ra <0.8	HFFN	C
	blind		SFFN	
K	through	IT 7, Ra <0.8	HFFN	C
	blind		SFFN	

■ **Additional Hole Position Accuracy**

Material Group	Hole Type	Surface Requirement	Recommended Geometry	Design
P	through	IT 7, Ra <1.6	SFP	C
	blind			
M	through	IT 7, Ra <1.0	SFP	C, NC
	blind			
K	through	IT 7, Ra <1.6	SFP	C
	blind			
S	through	IT 7, Ra <0.6	SFP	U, NC
	blind			

■ **Extra Chip Control**

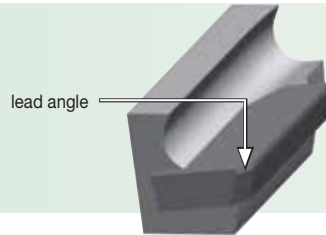
Material Group	Hole Type	Surface Requirement	Recommended Geometry	Design
P	blind	Ra 0.4–1.6	SFC1	C, U

Customization Capabilities

Diameter

- .5512" (14mm) up to 1.6732" (42,5mm) in diameter.
- Depending on the application, up to tolerance IT6.
- Diameter steps.

Leads

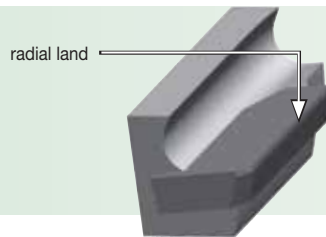


- 25–90° leads for smoother cutting or better positioning.
- Double leads for better surface quality.
- Radius leads for optimal CI machining.

Grades

- Different coatings possible: TiAlN, AlCrN, TiN, TiCN, TiB₂.
- Cermet grades for steel cutting.

Radial Land



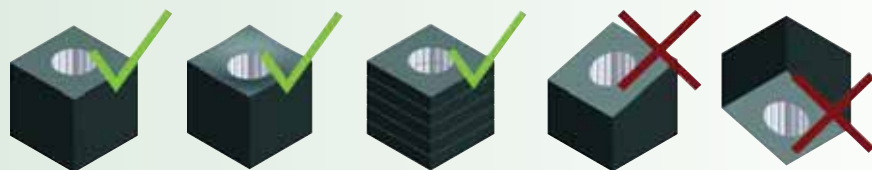
- Cylindrical for better guiding and form.
- Upsharp (no land) for best surface finishes and less passive forces.
- Narrow land to reduce forces.

Application Hints

Pre-Drill

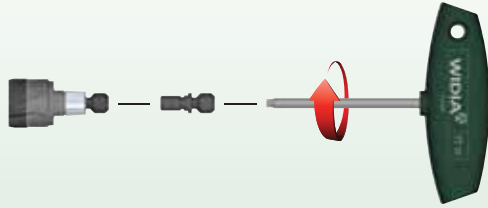
- Leave stock for reamer, depending on diameter.
- .0079" (0,2mm) up to .0156" (0,4mm) in diameter.
- If possible, a chamfer will ease the reaming operation.

Entries/Exits



Assembly

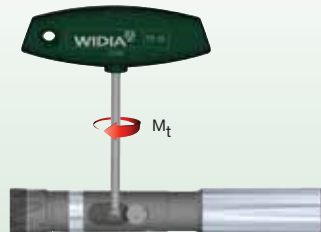
1 Assembling the Reamer Head



2 Place the Reamer Head in the Reamer Body



3 Clamp the Reamer Head in the Reamer Body



KST	Ø Range (mm)		M _t (Nm)	Torx size
175	20	22,499	4	TT-15
200	22,5	27,499	4	TT-15
250	27,5	32,499	5	TT-25
300	32,5	37,499	9	TT-30
350	37,5	42	9	TT-30

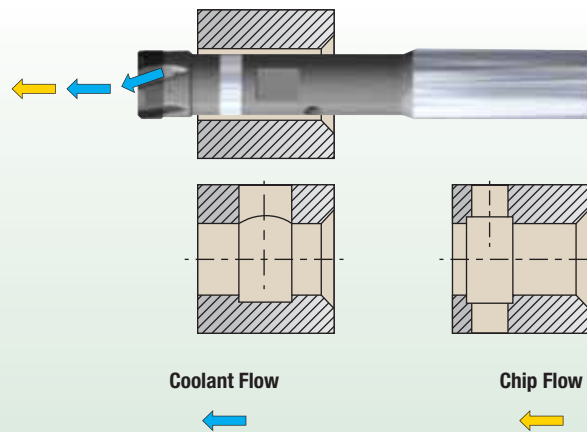
Disassembly

- 3 2 1

Through Hole



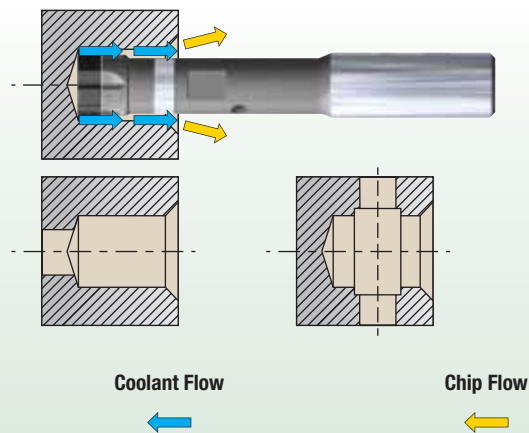
Helical fluted reamer pushes chips forward, supported by coolant.



Blind Hole



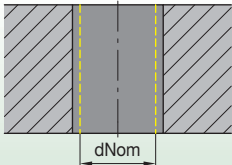
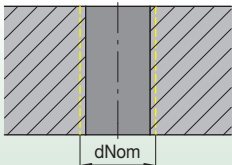
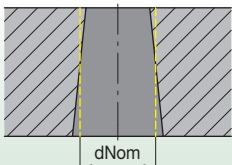
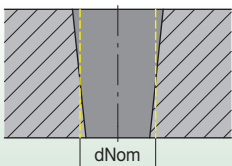
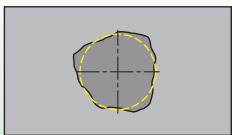
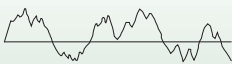
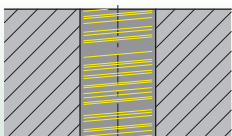
Straight fluted reamer and coolant force chips backwards.



■ Reaming Allowances for Multi-Blade Reaming

mm	reaming allowances in diameter		
	min	mm middle	max
1,40–4,80	0,08	0,12	0,20
4,81–9,59	0,10	0,15	0,25
9,60–15,00	0,15	0,20	0,30
15,00–20,00	0,15	0,25	0,35
20,00–50,00	0,20	0,30	0,40

■ Troubleshooting

Problem	Cause	Possible Remedy
<p>Hole diameter too large.</p> 	<ul style="list-style-type: none"> • Reaming tool running out-of-center. • Concentricity of pilot hole and ream machining unsatisfactory. • Built-up edge. • Unsuitable cooling lubricant. • Reaming tool diameter too large. 	<ul style="list-style-type: none"> • Use equalizing adapter. • Re-align, use floating head. • Change cooling lubricant. • Change cutting speed. • Measure reamers and send for repairs.
<p>Hole diameter too small.</p> 	<ul style="list-style-type: none"> • Reamer worn. • Unsuitable cooling lubricant. • Reaming allowance too small. 	<ul style="list-style-type: none"> • Replace and refit tool. • Change cooling lubricant. • Increase reaming allowance.
<p>Conical hole profile wider towards drill runout.</p> 	<ul style="list-style-type: none"> • Concentricity of pilot hole and reaming unsatisfactory. • Positioning accuracy of pilot hole to reaming. 	<ul style="list-style-type: none"> • Re-align, use equalizing adapter. • Correct positioning accuracy.
<p>Conical hole profile wider at drill entry point.</p> 	<ul style="list-style-type: none"> • Concentricity of pilot hole and reaming unsatisfactory. • Reaming tool skim cutting with ledger. 	<ul style="list-style-type: none"> • Re-align, use floating head. • Securely clamp reaming tool axially.
<p>Hole out-of-center and/or showing chatter marks.</p> 	<ul style="list-style-type: none"> • Reaming tool running out-of-center. • Slanted cutting surface/asymmetrical cutting. • Workpiece twisted. 	<ul style="list-style-type: none"> • Use equalizing adapter. • Spot face as drilling preparation. • Take the direction of impact into account when clamping the workpiece.
<p>Surface quality does not meet specification.</p> 	<ul style="list-style-type: none"> • Tool cutters worn. • Reaming tool running out-of-center. • Incorrect technology data (cutting parameters). • Inadequate chip evacuation. 	<ul style="list-style-type: none"> • Use equalizing adapter. • Re-align, use floating head. • Change cooling lubricant. • Change cutting speed. • Measure reamers and send for repairs.
<p>Feed grooves</p> 	<ul style="list-style-type: none"> • Built-up edge. 	<ul style="list-style-type: none"> • Change cooling lubricant. • Change cutting speed.



Tapping

VariTap Multipurpose Taps	D2–D80
Introduction	D2–D10
Spiral-Point HSS-E Taps.....	D12–D34
Spiral-Flute HSS-E Taps	D36–D73
Spiral-Flute HSS-E Pipe Taps.....	D74
Straight-Flute HSS-E Pipe Taps	D75, D78
Spiral-Point HSS-E ISO Pipe Taps	D76
Spiral-Flute HSS-E ISO Pipe Taps.....	D77
High-Performance Taps Application Data	D79–D80
Lightning Service.....	D82–D83



High-Performance Solution for Multipurpose Tapping •
VariTap™ Line Expansion

VariTap

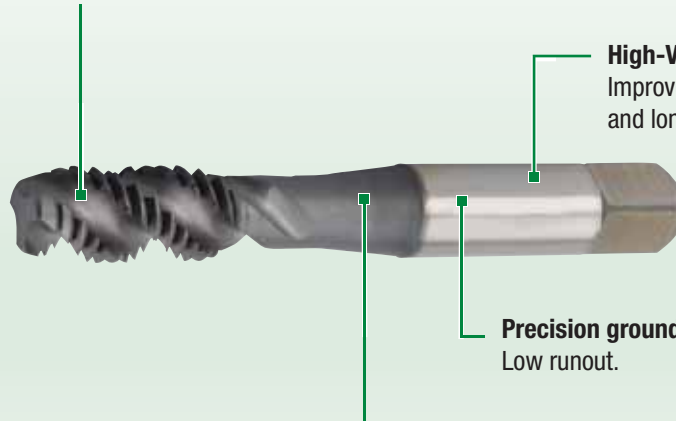


VariTap is the high-performance multipurpose tapping solution from WIDIA™. VariTap has an optimized geometry capable of working in a wide variety of ductile materials — including carbon and alloy steels, stainless steels, ductile iron, and cast aluminum. VariTap reduces inventory costs without losing 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 HSS-E Spiral-Flute Taps For Use in Tension/Compression Tap Holders

Advanced spiral-flute design
Smooth ejection of chips to reduce
or eliminate bird-nesting.






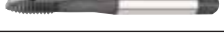
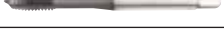
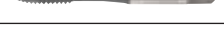

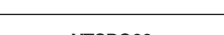





High-Vanadium HSS-E
Improved wear characteristics
and longer tool life.

Precision ground shanks
Low runout.

PVD Coating and surface treatment
For use in various workpiece materials:









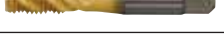
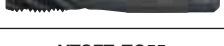
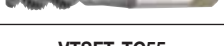

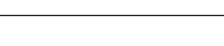
WP42EG TiCN	WP49EG Oxide
-----------------------	------------------------

- ★ Good
- ★★ Better
- ★★★ Best

series	hole		thread		coolant		size range	grade/ coating	material			chamfer		helix angle	dimension
	through	blind	cutting	forming	flood	through			carbide	HSS-E-PM	HSS-E	HSS	type		
VariTap™ High-Performance Multipurpose Spiral-Point Taps															
 VTSP050	X		X		X		#2-2"	WP42EG, WU41EG, WP49EG, WU40EG		X		plug	B	0°	ANSI 302A
 VTSP053	X		X		X		#5-#12	WP42EG, WU41EG, WP49EG, WU40EG		X		plug	B	0°	ANSI 302A
 VTSP090	X		X		X		#4-3/4"	WP42EG, WP49EG		X		plug	B	0°	DIN/ANSI
 VTSP097	X		X			X	1/4-1"	WP42EG		X		plug	B	0°	DIN/ANSI
 VTSP060	X		X		X		#4-1"	WU41EG, WP49EG		X		plug	B	0°	DIN 371, 376
 VTSP055	X		X		X		M3-M30	WP42EG, WU41EG, WP49EG, WU40EG		X		plug	B	0°	ANSI 302A
 VTSP056	X		X		X		M3-M5	WP42EG, WU41EG, WP49EG, WU40EG		X		plug	B	0°	ANSI 302A
 VTSP095	X		X		X		M3-M20	WP42EG, WP49EG		X		plug	B	0°	DIN/ANSI
 VTSP099	X		X			X	M6-M20	WP42EG		X		plug	B	0°	DIN/ANSI
 VTSP065	X		X		X		M2-M36	WP42EG, WU41EG, WP49EG, WU40EG		X		plug	B	0°	DIN 371, 374, 376
 VTSP075	X		X		X		M3-M20	WU41EG, WU40EG		X		plug	B	0°	JIS
 VTSP054	X		X		X		#4-5/8"	WP49EG		X		plug	B	0°	Extend 6"
 VTSP054	X		X		X		#4-1/4"	WP49EG		X		plug	B	0°	Extend 4"
















	P				M	K		N			S				H		page(s)	recommended cutting parameters
	1, 2, 3, 4, 6, 7	5, 9, 10, 11	12, 13.1	13.2	14.1, 14.2, 14.3, 14.4	15, 16	17, 18, 19, 20	21	22, 23, 24, 25	26, 27, 28	31, 32	33, 34, 35	36	37	38.1, 38.2, 40.1, 40.2, 41.1	39.1, 41.2		
	Steel <35 HRC	Steel >36-48 HRC	PH and Ferritic Stainless Steel <35 HRC	PH and Ferritic Stainless Steel >35 HRC	Stainless Steel	Gray Cast Iron	Ductile Cast Iron	Wrought Aluminum	Cast Aluminum	Copper, Copper Alloys	Iron Based	Cobalt Based	Nickel Based	Titanium Alloys	Hardened Steels 49-55 HRC	Hardened Steels 56-68 HRC		
VariTap™ High-Performance Multipurpose Spiral-Point Taps (continued)																		
	**	*	*		**	*	**	*	**	**	*						D13	D79-D80
	**	*	*		**	*	**	*	**	**	*						D17	D79-D80
	**	*	*		**	*	**	*	**	**	*						D19	D79-D80
	**	*	*		**	*	**	*	**	**	*						D20	D79-D80
	**	*	*		**	*	**	*	**	**	*						D21, D23	D79-D80
	**	*	*		**	*	**	*	**	**	*						D24	D79-D80
	**	*	*		**	*	**	*	**	**	*						D26	D79-D80
	**	*	*		**	*	**	*	**	**	*						D27	D79-D80
	**	*	*		**	*	**	*	**	**	*						D28	D79-D80
	**	*	*		**	*	**	*	**	**	*						D29	D79-D80
	**	*	*		**	*	**	*	**	**	*						D32	D79-D80
	**	*	*		**	*	**	*	**	**	*						D33	D79-D80
	**	*	*		**	*	**	*	**	**	*						D34	D79-D80

- ★ Good
- ★★ Better
- ★★★ Best

series	hole		thread		coolant		size range	grade/ coating	material				chamfer		helix angle	dimension
	through	blind	cutting	forming	flood	through			carbide	HSS-E-PM	HSS-E	HSS	type	form		
VariTap™ High-Performance Multipurpose Spiral-Flute Taps																
VTSFT50 		X	X			X	#2-2"	WP42EG, WU41EG, WP49EG, WU40EG			X		semi-bottom	C	45°	ANSI 302A
VTSFT51 		X	X			X	#4-3/4"	WP49EG			X		bottoming	E	45°	ANSI 302A
VTSFT-TC50 		X	X			X	#2-1 3/4"	WP42EG, WP49EG			X		semi-bottom	C	45°	ANSI 302A
VTSFT-TC51 		X	X			X	#4-3/4"	WP49EG			X		bottoming	E	45°	ANSI 302A
VTSFT90 		X	X			X	#4-3/4"	WP42EG, WP49EG			X		semi-bottom	C	45°	DIN/ANSI
VTSFT97 		X	X			X	1/4-1"	WP42EG			X		semi-bottom	C	45°	DIN/ANSI
VTSFT60 		X	X			X	#4-1"	WU41EG, WP49EG			X		semi-bottom	C	45°	DIN 371, 376
VTSFT-TC60 		X	X			X	#6-2"	WU41EG, WP49EG			X		semi-bottom	C	45°	DIN 371, 374, 376
VTSFT55 		X	X			X	M3-M30	WP42EG, WU41EG, WP49EG, WU40EG			X		semi-bottom	C	45°	ANSI 302A
VTSFT55 		X	X			X	M3-M18	WP49EG			X		bottoming	E	45°	ANSI 302A
VTSFT-TC55 		X	X			X	M3-M30	WP42EG, WP49EG			X		semi-bottom	C	45°	ANSI 302A
VTSFT-TC55 		X	X			X	M3-M18	WP49EG			X		bottoming	E	45°	ANSI 302A
VTSFT95 		X	X			X	M3-M20	WP42EG, WP49EG			X		semi-bottom	C	45°	DIN/ANSI

	P				M	K		N			S				H		page(s)	recommended cutting parameters
	1, 2, 3, 4, 6, 7	5, 9, 10, 11	12, 13.1	13.2	14.1, 14.2, 14.3, 14.4	15, 16	17, 18, 19, 20	21	22, 23, 24, 25	26, 27, 28	31, 32	33, 34, 35	36	37	38.1, 38.2, 40.1, 40.2, 41.1	39.1, 41.2		
	Steel <35 HRC	Steel >36-48 HRC	PH and Ferritic Stainless Steel <35 HRC	PH and Ferritic Stainless Steel >35 HRC	Stainless Steel	Gray Cast Iron	Ductile Cast Iron	Wrought Aluminum	Cast Aluminum	Copper, Copper Alloys	Iron Based	Cobalt Based	Nickel Based	Titanium Alloys	Hardened Steels 49-55 HRC	Hardened Steels 56-68 HRC		
VariTap™ High-Performance Multipurpose Spiral-Flute Taps (continued)																		
	**	*	*		**	*	**	*	**	**	*						D37	D79-D80
	**	*	*		**	*	**	*	**	**	*						D41	D79-D80
	**	*	*		**	*	**	*	**	**	*						D43	D79-D80
	**	*	*		**	*	**	*	**	**	*						D47	D79-D80
	**	*	*		**	*	**	*	**	**	*						D49	D79-D80
	**	*	*		**	*	**	*	**	**	*						D50	D79-D80
	**	*	*		**	*	**	*	**	**	*						D51	D79-D80
	**	*	*		**	*	**	*	**	**	*						D53	D79-D80
	**	*	*		**	*	**	*	**	**	*						D56	D79-D80
	**	*	*		**	*	**	*	**	**	*						D58	D79-D80
	**	*	*		**	*	**	*	**	**	*						D59	D79-D80
	**	*	*		**	*	**	*	**	**	*						D61	D79-D80
	**	*	*		**	*	**	*	**	**	*						D62	D79-D80

- ★ Good
- ★★ Better
- ★★★ Best

series	hole		thread		coolant		size range	grade/ coating	material				chamfer		helix angle	dimension
	through	blind	cutting	forming	flood	through			carbide	HSS-E-PM	HSS-E	HSS	type	form		
VariTap™ High-Performance Multipurpose Spiral-Flute Taps (continued)																
 VTSFT99		X	X			X	M3-M20	WP42EG			X		semi-bottom	C	45°	DIN/ANSI
 VTSFT65		X	X			X	M2-M36	WP42EG, WU41EG, WP49EG, WU40EG			X		semi-bottom	C	45°	DIN 371, 374, 376
 VTSFT65		X	X			X	M3-M20	WP42EG, WP49EG			X		bottoming	E	45°	DIN 371, 374, 376
 VTSFT-TC65		X	X			X	M2-M52	WU41EG, WP49EG			X		semi-bottom	C	45°	DIN 371, 374, 376
 VTSFT-TC67		X	X			X	M3-M20	WU41EG, WP49EG			X		bottoming	E	45°	DIN 371, 376
 VTSFT75		X	X			X	M3-M20	WU41EG, WU40EG			X		semi-bottom	C	45°	JIS
 VTSFT-TC54		X	X			X	#4-5/8"	WP49EG			X		semi-bottom	C	45°	Extend 6"
 VTSFT-TC54		X	X			X	#4-1/4"	WP49EG			X		semi-bottom	C	45°	Extend 4"
 VTSFT-TC54		X	X			X	#4-7/16"	WP49EG			X		bottoming	E	45°	Extend 6"
VariTap™ High-Performance Multipurpose Pipe Taps																
 VTSFT80	X	X	X			X	1/16-1"	WU41EG, WP49EG, WU40EG			X		standard	—	15°	ANSI
 VTSTR80	X	X	X			X	1/8-3/4"	WU40EG			X		standard	—	0°	ANSI
 VTSP086	X		X			X	1/8-1"	WP49EG, WU41EG			X		plug	B	0°	DIN 5156
 VTSFT86		X	X			X	1/8-1"	WP49EG, WU41EG			X		semi-bottom	C	42°	DIN 5156
 VTSTR83	X	X	X			X	1/16-1"	WU40EG			X		semi-bottom	C	0°	DIN 5156
 VTSTR88	X	X	X			X	1/16-1"	WU40EG			X		semi-bottom	C	0°	DIN 5156

	P				M	K		N			S				H		page(s)	recommended cutting parameters
	1, 2, 3, 4, 6, 7	5, 9, 10, 11	12, 13.1	13.2	14.1, 14.2, 14.3, 14.4	15, 16	17, 18, 19, 20	21	22, 23, 24, 25	26, 27, 28	31, 32	33, 34, 35	36	37	38.1, 38.2, 40.1, 40.2, 41.1	39.1, 41.2		
	Steel <35 HRC	Steel >36-48 HRC	PH and Ferritic Stainless Steel <35 HRC	PH and Ferritic Stainless Steel >35 HRC	Stainless Steel	Gray Cast Iron	Ductile Cast Iron	Wrought Aluminum	Cast Aluminum	Copper, Copper Alloys	Iron Based	Cobalt Based	Nickel Based	Titanium Alloys	Hardened Steels 49-55 HRC	Hardened Steels 56-68 HRC		
VariTap™ High-Performance Multipurpose Spiral-Flute Taps (continued)																		
	★★	★	★		★★	★	★★	★	★★	★★	★						D63	D79-D80
	★★	★	★		★★	★	★★	★	★★	★★	★						D64	D79-D80
	★★	★	★		★★	★	★★	★	★★	★★	★						D66	D79-D80
	★★	★	★		★★	★	★★	★	★★	★★	★						D67	D79-D80
	★★	★	★		★★	★	★★	★	★★	★★	★						D69	D79-D80
	★★	★	★		★★	★	★★	★	★★	★★	★						D70	D79-D80
	★★	★	★		★★	★	★★	★	★★	★★	★						D71	D79-D80
	★★	★	★		★★	★	★★	★	★★	★★	★						D72	D79-D80
	★★	★	★		★★	★	★★	★	★★	★★	★						D73	D79-D80
VariTap™ High-Performance Multipurpose Pipe Taps (continued)																		
	★★	★	★		★★	★	★★	★	★★	★★	★						D74	D79-D80
	★★					★											D75	D79-D80
	★★	★	★		★★	★	★★	★	★★	★★	★						D76	D79-D80
	★★	★	★		★★	★	★★	★	★★	★★	★						D77	D79-D80
	★★	★	★		★★	★	★★	★	★★	★★	★						D78	D79-D80
	★★	★	★		★★	★	★★	★	★★	★★	★						D78	D79-D80

Reconditioning Services

Anyone can regrind our tools — but only we can recondition them

WIDIA™ Reconditioning Services optimize the value of metalcutting tools throughout their entire lifecycle by giving like-new performance — with rapid turnaround time — so tools are always on hand and perform just like new.

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Global Reconditioning Network



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Multipurpose Taps for Steel, Stainless Steel, Cast Aluminum, and Ductile Iron

Unique spiral-point design
Cutting edge angles and positive rake face straight-flutes are optimized for tapping multiple materials.

Multiple tap dimension options
ANSI, DIN, JIS, and DIN/ANSI.

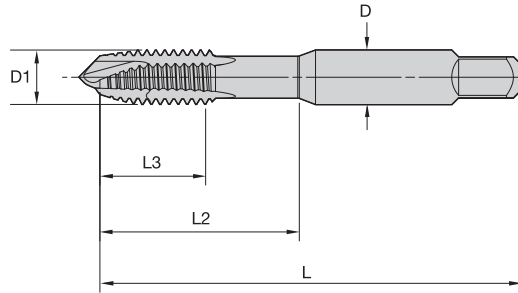
Precision ground shanks
Low runout.

High-vanadium HSS-E
Improved wear characteristics and longer tool life.

PVD coatings and surface treatments
For use with various workpiece materials:

WP42EG TiCN	WU41EG TiN	WP49EG Oxide	WU40EG Bright
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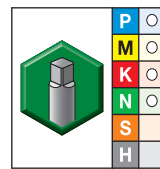
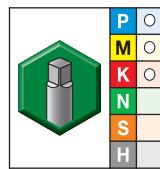
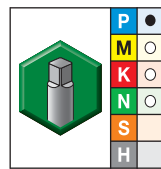
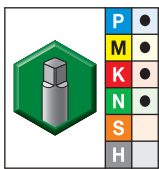
- WP42EG TiCN
- WU41EG TiN
- WP49EG oxide
- WU40EG bright



Shank Tolerance	
D inch	tolerance
.141-.635	+0, -.0015
>.635-1.51	+0, -.0020
>1.51-2.01	+0, -.0030

Tapping

■ VT-SPO • Form B Plug Chamfer • Machine Screw and Fractional • ANSI



- first choice
- alternate choice

grade WP42EG TiCN		grade WU41EG TiN		grade WP49EG Oxide		grade WU40EG Bright		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #	D1 TPI	L	L3	L2	D		
5357242	VTSP05001	-	-	5357241	VTSP05001	5357243	VTSP05001	2 - 56	1.75	.39	.50	.141	2	H2
-	-	-	-	5357244	VTSP05002	-	-	2 - 56	1.75	.39	.50	.141	2	H3
-	-	-	-	5357245	VTSP05003	-	-	2 - 56	1.75	.39	.50	.141	2	H4
5357247	VTSP05004	-	-	5357246	VTSP05004	5357248	VTSP05004	3 - 48	1.82	.45	.57	.141	2	H2
5357260	VTSP05005	5357261	VTSP05005	5357249	VTSP05005	5357262	VTSP05005	4 - 40	1.88	.51	.69	.141	2	H2
5357264	VTSP05006	-	-	5357263	VTSP05006	5357265	VTSP05006	4 - 40	1.88	.51	.69	.141	2	H3
5357267	VTSP05007	-	-	5357266	VTSP05007	5357268	VTSP05007	4 - 40	1.88	.51	.69	.141	2	H4
5357272	VTSP05008	-	-	5357271	VTSP05008	5357273	VTSP05008	4 - 40	1.88	.51	.69	.141	2	H5
-	-	-	-	5357274	VTSP05009	-	-	4 - 40	1.88	.51	.69	.141	2	H6
5357276	VTSP05010	-	-	5357275	VTSP05010	5357277	VTSP05010	4 - 48	1.88	.51	.69	.141	2	H2
-	-	-	-	5357278	VTSP05011	-	-	4 - 48	1.88	.51	.69	.141	2	H4
5357280	VTSP05012	-	-	5357279	VTSP05012	5357281	VTSP05012	5 - 40	1.94	.58	.75	.141	2	H2
5357283	VTSP05013	-	-	5357282	VTSP05013	5357284	VTSP05013	6 - 32	1.99	.38	.71	.141	2	H2
5357286	VTSP05014	5357287	VTSP05014	5357285	VTSP05014	5357288	VTSP05014	6 - 32	1.99	.38	.71	.141	2	H3
5357290	VTSP05015	-	-	5357289	VTSP05015	5357291	VTSP05015	6 - 32	1.99	.38	.71	.141	2	H4
5357293	VTSP05016	-	-	5357292	VTSP05016	5357294	VTSP05016	6 - 32	1.99	.38	.71	.141	2	H5
5357296	VTSP05017	-	-	5357295	VTSP05017	5357297	VTSP05017	6 - 32	1.99	.38	.71	.141	2	H6
5357299	VTSP05018	-	-	5357298	VTSP05018	5357300	VTSP05018	6 - 32	1.99	.38	.71	.141	2	H7
5365704	VTSP05019	-	-	5365703	VTSP05019	5365705	VTSP05019	6 - 32	1.99	.38	.71	.141	2	H11
5365707	VTSP05020	-	-	5365706	VTSP05020	5365708	VTSP05020	6 - 40	1.99	.38	.71	.141	2	H2
-	-	-	-	5365709	VTSP05021	-	-	6 - 40	1.99	.38	.71	.141	2	H3
5365741	VTSP05022	-	-	5365740	VTSP05022	5365742	VTSP05022	8 - 32	2.12	.38	.76	.168	2	H2
5365744	VTSP05023	5365745	VTSP05023	5365743	VTSP05023	5365746	VTSP05023	8 - 32	2.12	.38	.76	.168	2	H3
5365748	VTSP05024	-	-	5365747	VTSP05024	5365749	VTSP05024	8 - 32	2.12	.38	.76	.168	2	H4

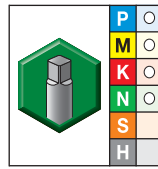
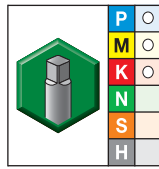
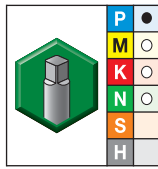
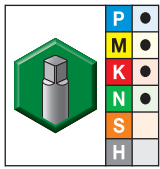
(continued)

Multipurpose Taps

VariTap™ Spiral-Point HSS-E Taps • Through Holes



(VT-SPO • Form B Plug Chamfer • Machine Screw and Fractional • ANSI — continued)



● first choice
○ alternate choice

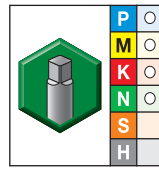
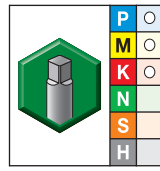
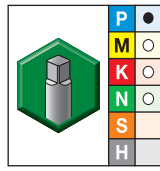
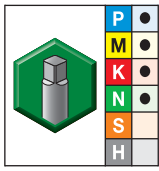
Tapping

grade WP42EG TiCN		grade WU41EG TiN		grade WP49EG Oxide		grade WU40EG Bright		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #	D1 TPI	L	L3	L2	D		
5365751	VTSP05025	-	-	5365750	VTSP05025	5365752	VTSP05025	8 - 32	2.12	.38	.76	.168	2	H5
5365754	VTSP05026	-	-	5365753	VTSP05026	5365755	VTSP05026	8 - 32	2.12	.38	.76	.168	2	H6
5365758	VTSP05027	-	-	5365757	VTSP05027	5365760	VTSP05027	8 - 32	2.12	.38	.76	.168	2	H7
5365765	VTSP05028	-	-	5365762	VTSP05028	5365767	VTSP05028	8 - 32	2.12	.38	.76	.168	2	H11
5365771	VTSP05029	-	-	5365769	VTSP05029	5365773	VTSP05029	8 - 36	2.11	.38	.76	.168	2	H2
5365776	VTSP05030	5365778	VTSP05030	5365774	VTSP05030	5365780	VTSP05030	10 - 24	2.37	.50	.91	.194	2	H3
-	-	-	-	5365782	VTSP05031	-	-	10 - 24	2.37	.50	.91	.194	2	H4
5365786	VTSP05032	-	-	5365784	VTSP05032	5365788	VTSP05032	10 - 24	2.37	.50	.91	.194	2	H5
-	-	-	-	5365790	VTSP05033	-	-	10 - 24	2.37	.50	.91	.194	2	H6
-	-	-	-	5365792	VTSP05034	-	-	10 - 24	2.37	.50	.91	.194	2	H7
5365796	VTSP05035	-	-	5365794	VTSP05035	5365798	VTSP05035	10 - 24	2.37	.50	.91	.194	2	H11
5365759	VTSP05036	-	-	5365756	VTSP05036	5365761	VTSP05036	10 - 32	2.36	.50	.91	.194	2	H2
5365764	VTSP05037	5365766	VTSP05037	5365763	VTSP05037	5365768	VTSP05037	10 - 32	2.36	.50	.91	.194	2	H3
5365772	VTSP05038	-	-	5365770	VTSP05038	5365775	VTSP05038	10 - 32	2.36	.50	.91	.194	2	H4
5365779	VTSP05039	-	-	5365777	VTSP05039	5365781	VTSP05039	10 - 32	2.36	.50	.91	.194	2	H5
5365785	VTSP05040	-	-	5365783	VTSP05040	5365787	VTSP05040	10 - 32	2.36	.50	.91	.194	2	H6
5365791	VTSP05041	-	-	5365789	VTSP05041	5365793	VTSP05041	10 - 32	2.36	.50	.91	.194	2	H7
5365797	VTSP05042	-	-	5365795	VTSP05042	5365799	VTSP05042	10 - 32	2.36	.50	.91	.194	2	H11
5365801	VTSP05043	-	-	5365800	VTSP05043	5365802	VTSP05043	12 - 24	2.37	.50	.96	.220	2	H3
5365804	VTSP05044	-	-	5365803	VTSP05044	5365805	VTSP05044	12 - 28	2.37	.50	.96	.220	2	H3
5365807	VTSP05045	5365808	VTSP05045	5365806	VTSP05045	5365809	VTSP05045	1/4 - 20	2.50	.63	1.00	.255	3	H3
5365821	VTSP05046	-	-	5365820	VTSP05046	5365822	VTSP05046	1/4 - 20	2.50	.63	1.00	.255	3	H5
5365825	VTSP05047	-	-	5365823	VTSP05047	5365824	VTSP05047	1/4 - 20	2.50	.63	1.00	.255	3	H7
5365827	VTSP05048	-	-	5365826	VTSP05048	5365828	VTSP05048	1/4 - 20	2.50	.63	1.00	.255	3	H11
5365840	VTSP05049	5365841	VTSP05049	5365829	VTSP05049	5365842	VTSP05049	1/4 - 28	2.50	.63	1.00	.255	3	H3
5365844	VTSP05050	-	-	5365843	VTSP05050	5365845	VTSP05050	1/4 - 28	2.50	.63	1.00	.255	3	H4
5365849	VTSP05051	-	-	5365848	VTSP05051	5365920	VTSP05051	1/4 - 28	2.50	.63	1.01	.255	3	H5
5365922	VTSP05052	-	-	5365921	VTSP05052	5365923	VTSP05052	1/4 - 28	2.50	.63	1.01	.255	3	H6
5365925	VTSP05053	-	-	5365924	VTSP05053	5365927	VTSP05053	1/4 - 28	2.50	.63	1.01	.255	3	H7
5365929	VTSP05054	-	-	5365928	VTSP05054	5365930	VTSP05054	1/4 - 28	2.50	.63	1.01	.255	3	H11
5365932	VTSP05055	5365933	VTSP05055	5365931	VTSP05055	5365934	VTSP05055	5/16 - 18	2.72	.69	1.14	.318	3	H3
5365936	VTSP05056	-	-	5365935	VTSP05056	5365937	VTSP05056	5/16 - 18	2.72	.69	1.14	.318	3	H5
5365939	VTSP05057	-	-	5365938	VTSP05057	5365940	VTSP05057	5/16 - 18	2.72	.69	1.14	.318	3	H7
5365942	VTSP05058	-	-	5365941	VTSP05058	5365943	VTSP05058	5/16 - 18	2.72	.69	1.14	.318	3	H11
5365946	VTSP05059	5365947	VTSP05059	5365945	VTSP05059	5365948	VTSP05059	5/16 - 24	2.72	.69	1.14	.318	3	H3
5365960	VTSP05060	-	-	5365949	VTSP05060	5365961	VTSP05060	5/16 - 24	2.72	.69	1.14	.318	3	H4
5365963	VTSP05061	-	-	5365962	VTSP05061	5365964	VTSP05061	5/16 - 24	2.72	.69	1.14	.318	3	H5
5365966	VTSP05062	-	-	5365965	VTSP05062	5365967	VTSP05062	5/16 - 24	2.72	.69	1.14	.318	3	H6
5365969	VTSP05063	-	-	5365968	VTSP05063	5365970	VTSP05063	5/16 - 24	2.72	.69	1.14	.318	3	H7
5365972	VTSP05064	-	-	5365971	VTSP05064	5365973	VTSP05064	5/16 - 24	2.72	.69	1.14	.318	3	H11

(continued)



(VT-SPO • Form B Plug Chamfer • Machine Screw and Fractional • ANSI — continued)



● first choice
○ alternate choice

grade WP42EG TiCN		grade WU41EG TiN		grade WP49EG Oxide		grade WU40EG Bright		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #	D1 TPI	L	L3	L2	D		
5365975	VTSP05065	5365976	VTSP05065	5365974	VTSP05065	5365977	VTSP05065	3/8 - 16	2.94	.75	1.27	.381	3	H3
5366898	VTSP05066	-	-	5366897	VTSP05066	5366899	VTSP05066	3/8 - 16	2.94	.75	1.27	.381	3	H5
5366941	VTSP05067	-	-	5366940	VTSP05067	5366942	VTSP05067	3/8 - 16	2.94	.75	1.27	.381	3	H7
5366944	VTSP05068	-	-	5366943	VTSP05068	5366945	VTSP05068	3/8 - 16	2.94	.75	1.27	.381	3	H11
5366947	VTSP05069	5366948	VTSP05069	5366946	VTSP05069	5366949	VTSP05069	3/8 - 24	2.94	.75	1.27	.381	3	H3
5366951	VTSP05070	-	-	5366950	VTSP05070	5366952	VTSP05070	3/8 - 24	2.94	.75	1.27	.381	3	H4
5366954	VTSP05071	-	-	5366953	VTSP05071	5366955	VTSP05071	3/8 - 24	2.94	.75	1.27	.381	3	H5
5366957	VTSP05072	-	-	5366956	VTSP05072	5366958	VTSP05072	3/8 - 24	2.94	.75	1.27	.381	3	H6
5366960	VTSP05073	-	-	5366959	VTSP05073	5366961	VTSP05073	3/8 - 24	2.94	.75	1.27	.381	3	H7
5366963	VTSP05074	-	-	5366962	VTSP05074	5366964	VTSP05074	3/8 - 24	2.94	.75	1.27	.381	3	H11
5366966	VTSP05075	5366967	VTSP05075	5366965	VTSP05075	5366968	VTSP05075	7/16 - 14	3.16	.88	1.49	.323	3	H3
5366970	VTSP05076	-	-	5366969	VTSP05076	5366971	VTSP05076	7/16 - 14	3.16	.88	1.49	.323	3	H5
5366973	VTSP05077	-	-	5366972	VTSP05077	5366974	VTSP05077	7/16 - 14	3.16	.88	1.49	.323	3	H7
5366976	VTSP05078	-	-	5366975	VTSP05078	5366977	VTSP05078	7/16 - 14	3.16	.88	1.49	.323	3	H11
5366979	VTSP05079	5366980	VTSP05079	5366978	VTSP05079	5366981	VTSP05079	7/16 - 20	3.16	.88	1.49	.323	3	H3
5366983	VTSP05080	-	-	5366982	VTSP05080	5366984	VTSP05080	7/16 - 20	3.16	.88	1.49	.323	3	H5
-	-	-	-	5366036	VTSP05081	-	-	7/16 - 20	3.16	.88	1.49	.323	3	H6
5366038	VTSP05082	-	-	5366037	VTSP05082	5366039	VTSP05082	7/16 - 20	3.16	.88	1.49	.323	3	H7
5366071	VTSP05083	-	-	5366070	VTSP05083	5366073	VTSP05083	7/16 - 20	3.16	.88	1.49	.323	3	H11
5366075	VTSP05084	5366076	VTSP05084	5366074	VTSP05084	5366077	VTSP05084	1/2 - 13	3.38	.94	1.74	.367	3	H3
5366079	VTSP05085	-	-	5366078	VTSP05085	5366080	VTSP05085	1/2 - 13	3.38	.94	1.74	.367	3	H5
5366083	VTSP05086	-	-	5366081	VTSP05086	5366084	VTSP05086	1/2 - 13	3.38	.94	1.74	.367	3	H7
5366086	VTSP05087	-	-	5366085	VTSP05087	5366087	VTSP05087	1/2 - 13	3.38	.94	1.74	.367	3	H11
5366089	VTSP05088	5366110	VTSP05088	5366088	VTSP05088	5366111	VTSP05088	1/2 - 20	3.38	.94	1.74	.367	3	H3
5366113	VTSP05089	-	-	5366112	VTSP05089	5366114	VTSP05089	1/2 - 20	3.38	.94	1.74	.367	3	H5
-	-	-	-	5366115	VTSP05090	-	-	1/2 - 20	3.38	.94	1.74	.367	3	H6
5366117	VTSP05091	-	-	5366116	VTSP05091	5366118	VTSP05091	1/2 - 20	3.38	.94	1.74	.367	3	H7
5366130	VTSP05092	-	-	5366119	VTSP05092	5366131	VTSP05092	1/2 - 20	3.38	.94	1.74	.367	3	H11
5366133	VTSP05093	5366134	VTSP05093	5366132	VTSP05093	5366135	VTSP05093	9/16 - 12	3.59	1.00	1.74	.429	3	H3
5366137	VTSP05094	5366138	VTSP05094	5366136	VTSP05094	5366139	VTSP05094	9/16 - 18	3.59	1.00	1.74	.429	3	H3
5366141	VTSP05095	5366142	VTSP05095	5366140	VTSP05095	5366143	VTSP05095	5/8 - 11	3.81	1.09	1.89	.480	3	H3
5366145	VTSP05096	-	-	5366144	VTSP05096	5366146	VTSP05096	5/8 - 11	3.81	1.09	1.89	.480	3	H5
-	-	-	-	5367003	VTSP05097	-	-	5/8 - 11	3.81	1.09	1.89	.480	3	H7
5367005	VTSP05098	-	-	5367004	VTSP05098	5367006	VTSP05098	5/8 - 18	3.81	1.09	1.89	.480	3	H3
5367008	VTSP05099	-	-	5367007	VTSP05099	5367009	VTSP05099	5/8 - 18	3.81	1.09	1.89	.480	3	H5
-	-	-	-	5367030	VTSP05100	-	-	5/8 - 18	3.81	1.09	1.89	.480	3	H6
5367032	VTSP05101	-	-	5367031	VTSP05101	5367033	VTSP05101	5/8 - 18	3.81	1.09	1.89	.480	3	H7
5367035	VTSP05102	5367036	VTSP05102	5367034	VTSP05102	5367037	VTSP05102	3/4 - 10	4.25	1.22	2.08	.590	3	H3
5367039	VTSP05103	-	-	5367038	VTSP05103	5367060	VTSP05103	3/4 - 10	4.25	1.22	2.08	.590	3	H5
5367062	VTSP05104	5367063	VTSP05104	5367061	VTSP05104	5367064	VTSP05104	3/4 - 16	4.25	1.22	2.08	.590	3	H3

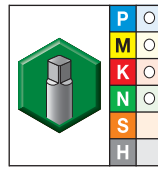
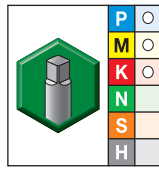
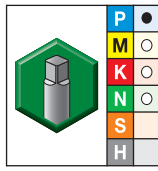
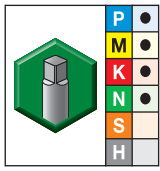
(continued)



Multipurpose Taps

VariTap™ Spiral-Point HSS-E Taps • Through Holes

(VT-SPO • Form B Plug Chamfer • Machine Screw and Fractional • ANSI — continued)



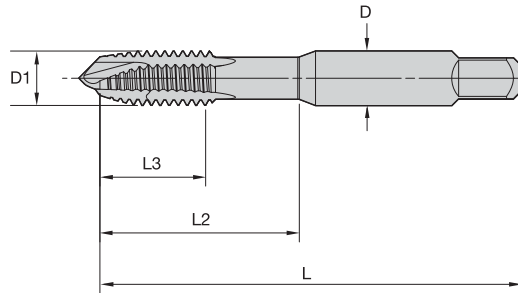
● first choice
○ alternate choice

grade WP42EG TiCN		grade WU41EG TiN		grade WP49EG Oxide		grade WU40EG Bright		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #	D1 TPI	L	L3	L2	D		
5367066	VTSP05105	-		5367065	VTSP05105	5367067	VTSP05105	3/4 - 16	4.25	1.22	2.08	.590	3	H5
5367069	VTSP05106	5367070	VTSP05106	5367068	VTSP05106	5367071	VTSP05106	7/8 - 9	4.69	1.34	2.30	.697	3	H4
5367073	VTSP05107	-		5367072	VTSP05107	5367074	VTSP05107	7/8 - 9	4.69	1.34	2.30	.697	3	H5
5367076	VTSP05108	-		5367075	VTSP05108	5367078	VTSP05108	7/8 - 14	4.69	1.34	2.30	.697	3	H4
5366406	VTSP05109	5366407	VTSP05109	5366404	VTSP05109	5366408	VTSP05109	1 - 8	5.13	1.50	2.58	.800	3	H5
5366440	VTSP05110	-		5366409	VTSP05110	5366441	VTSP05110	1 - 12	5.13	1.50	2.58	.800	3	H4
-	-	-		5366442	VTSP05111	-		1 1/8 - 7	5.44	1.71	2.56	.896	4	H6
-	-	-		5366443	VTSP05112	-		1 1/8 - 8	5.44	1.71	2.56	.896	4	H6
-	-	-		5366444	VTSP05113	-		1 1/8 - 12	5.44	1.71	2.56	.896	4	H5
-	-	-		5366445	VTSP05114	-		1 1/4 - 7	5.75	1.71	2.56	1.021	4	H6
-	-	-		5366446	VTSP05115	-		1 1/4 - 8	5.75	1.71	2.56	1.020	4	H6
-	-	-		5366447	VTSP05116	-		1 1/4 - 12	5.75	1.71	2.56	1.021	4	H5
-	-	-		5366448	VTSP05117	-		1 3/8 - 6	6.07	2.00	3.00	1.108	4	H6
-	-	-		5366449	VTSP05118	-		1 3/8 - 8	6.07	2.00	3.00	1.108	4	H6
-	-	-		5366450	VTSP05119	-		1 3/8 - 12	6.07	2.00	3.00	1.108	4	H5
-	-	-		5366451	VTSP05120	-		1 1/2 - 6	6.38	2.00	3.00	1.233	4	H6
-	-	-		5366452	VTSP05121	-		1 1/2 - 8	6.38	2.00	3.00	1.233	4	H6
-	-	-		5366453	VTSP05122	-		1 1/2 - 12	6.38	2.00	3.00	1.233	4	H5
-	-	-		5366454	VTSP05123	-		2 - 4 1/2	7.63	2.67	3.56	1.643	4	H7

NOTE: VariTap™ for 3B class of fit is suitable for UNJ aerospace internal threading applications.

Tapping

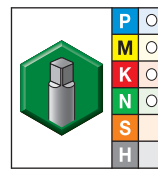
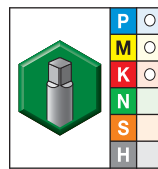
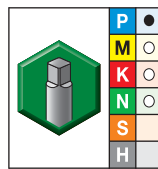
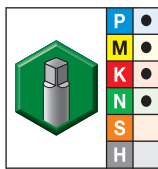
- WP42EG TiCN
- WU41EG TiN
- WP49EG oxide
- WU40EG bright



Shank Tolerance	
D inch	tolerance
0.141-0.635	+0, -.0015
>0.635-1.51	+0, -.0020
>1.51-2.01	+0, -.0030

Tapping

■ VT-SPO • Form B Plug Chamfer • Machine Screw • 3 Flute • ANSI



- first choice
- alternate choice

grade WP42EG TiCN		grade WU41EG TiN		grade WP49EG Oxide		grade WU40EG Bright		inch dimensions				number of flutes	pitch diameter limit	
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #	D1 TPI	L	L3	L2			D
5631491	VTSP05365	-	-	5631490	VTSP05365	5631492	VTSP05365	5 - 40	1.94	.58	.75	.141	3	H2
5631494	VTSP05366	-	-	5631493	VTSP05366	5631495	VTSP05366	6 - 32	1.99	.38	.71	.141	3	H2
5631497	VTSP05367	5631498	VTSP05367	5631496	VTSP05367	5631499	VTSP05367	6 - 32	1.99	.38	.71	.141	3	H3
5631501	VTSP05368	-	-	5631500	VTSP05368	5631502	VTSP05368	6 - 32	1.99	.38	.71	.141	3	H4
5631504	VTSP05369	-	-	5631503	VTSP05369	5631505	VTSP05369	6 - 32	1.99	.38	.71	.141	3	H5
5631507	VTSP05364	-	-	5631506	VTSP05364	5631508	VTSP05364	6 - 32	1.99	.38	.71	.141	3	H6
5631510	VTSP05370	-	-	5631509	VTSP05370	5631511	VTSP05370	6 - 32	1.99	.38	.71	.141	3	H7
5631513	VTSP05371	-	-	5631512	VTSP05371	5631514	VTSP05371	6 - 32	1.99	.38	.71	.141	3	H11
5631516	VTSP05372	-	-	5631515	VTSP05372	5631517	VTSP05372	6 - 40	1.99	.38	.71	.141	3	H2
-	-	-	-	5631518	VTSP05373	-	-	6 - 40	1.99	.38	.71	.141	3	H3
5631520	VTSP05374	-	-	5631519	VTSP05374	5631521	VTSP05374	8 - 32	2.12	.38	.76	.168	3	H2
5631523	VTSP05375	5631524	VTSP05375	5631522	VTSP05375	5631525	VTSP05375	8 - 32	2.12	.38	.76	.168	3	H3
5631527	VTSP05376	-	-	5631526	VTSP05376	5631528	VTSP05376	8 - 32	2.12	.38	.76	.168	3	H4
5631530	VTSP05377	-	-	5631529	VTSP05377	5631531	VTSP05377	8 - 32	2.12	.38	.76	.168	3	H5
5631534	VTSP05378	-	-	5631532	VTSP05378	5631536	VTSP05378	8 - 32	2.12	.38	.76	.168	3	H6
5631540	VTSP05379	-	-	5631538	VTSP05379	5631542	VTSP05379	8 - 32	2.12	.38	.76	.168	3	H7
5631546	VTSP05380	-	-	5631544	VTSP05380	5631548	VTSP05380	8 - 32	2.12	.38	.76	.168	3	H11
5631552	VTSP05381	-	-	5631550	VTSP05381	5631554	VTSP05381	8 - 36	2.12	.38	.76	.168	3	H2
5631558	VTSP05382	5631560	VTSP05382	5631556	VTSP05382	5631562	VTSP05382	10 - 24	2.37	.50	.91	.194	3	H3
-	-	-	-	5631563	VTSP05383	-	-	10 - 24	2.37	.50	.91	.194	3	H4
5631568	VTSP05384	-	-	5631566	VTSP05384	5631570	VTSP05384	10 - 24	2.37	.50	.91	.194	3	H5
-	-	-	-	5631572	VTSP05385	-	-	10 - 24	2.37	.50	.91	.194	3	H6
-	-	-	-	5631574	VTSP05386	-	-	10 - 24	2.37	.50	.91	.194	3	H7
5631577	VTSP05387	-	-	5631575	VTSP05387	5631590	VTSP05387	10 - 24	2.37	.50	.91	.194	3	H11

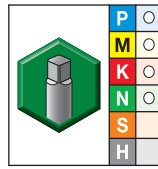
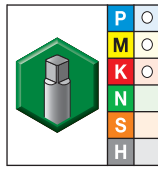
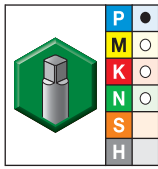
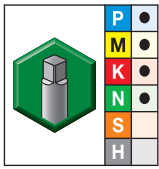
(continued)

Multipurpose Taps

VariTap™ Spiral-Point HSS-E Taps • Through Holes



(VT-SPO • Form B Plug Chamfer • Machine Screw • 3 Flute • ANSI — continued)

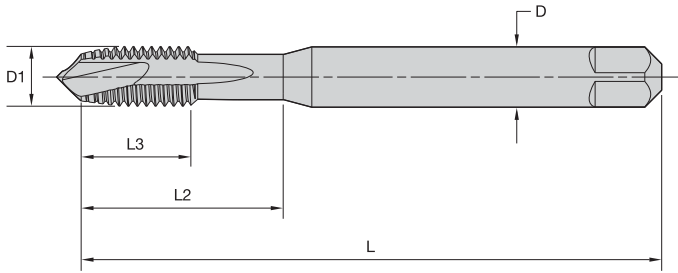


● first choice
○ alternate choice

Tapping

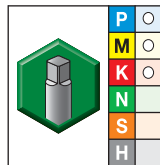
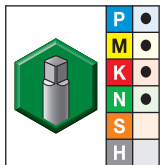
grade WP42EG TiCN		grade WU41EG TiN		grade WP49EG Oxide		grade WU40EG Bright		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #	D1 TPI	L	L3	L2	D		
5631594	VTSP05388	—	—	5631592	VTSP05388	5631596	VTSP05388	10 - 32	2.36	.50	.91	.194	3	H2
5631600	VTSP05389	5631602	VTSP05389	5631598	VTSP05389	5631604	VTSP05389	10 - 32	2.36	.50	.91	.194	3	H3
5631608	VTSP05390	—	—	5631606	VTSP05390	5631610	VTSP05390	10 - 32	2.36	.50	.91	.194	3	H4
5631614	VTSP05391	—	—	5631612	VTSP05391	5631616	VTSP05391	10 - 32	2.36	.50	.91	.194	3	H5
5631620	VTSP05392	—	—	5631618	VTSP05392	5631622	VTSP05392	10 - 32	2.36	.50	.91	.194	3	H6
5631628	VTSP05393	—	—	5631624	VTSP05393	5631626	VTSP05393	10 - 32	2.36	.50	.91	.194	3	H7
5631632	VTSP05394	—	—	5631630	VTSP05394	5631633	VTSP05394	10 - 32	2.36	.50	.91	.194	3	H11
5631635	VTSP05395	—	—	5631634	VTSP05395	5631636	VTSP05395	12 - 24	2.37	.50	.96	.220	3	H3
5631638	VTSP05396	—	—	5631637	VTSP05396	5631639	VTSP05396	12 - 28	2.37	.50	.96	.220	3	H3

- WP42EG TiCN
- WP49EG oxide



Shank Tolerance	
D inch	tolerance
.141-.635	+0, -.0015
>.635-1.51	+0, -.0020
>1.51-2.01	+0, -.0030

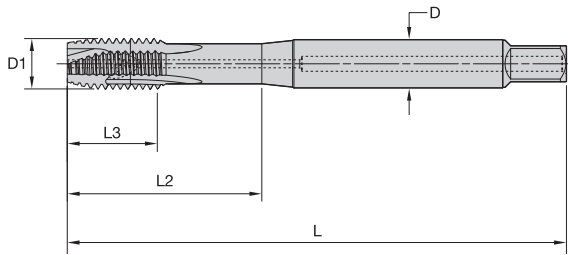
■ VT-SPO • Form B Plug Chamfer • Machine Screw and Fractional • DIN Length ANSI Shank



- first choice
- alternate choice

grade WP42EG TiCN		grade WP49EG Oxide		inch dimensions					number of flutes	dimension standard	class of fit
order #	catalog #	order #	catalog #	D1 TPI	L	L3	L2	D			
5366572	VTSP09004	5366571	VTSP09004	4 - 40	2.20	.31	.71	.141	2	DIN-ANSI	2B
5366574	VTSP09005	5366573	VTSP09005	6 - 32	2.20	.35	.79	.141	2	DIN-ANSI	2B
5366576	VTSP09006	5366575	VTSP09006	8 - 32	2.48	.43	.83	.168	2	DIN-ANSI	2B
5366578	VTSP09007	5366577	VTSP09007	10 - 24	2.76	.47	.98	.194	2	DIN-ANSI	2B
5366580	VTSP09008	5366579	VTSP09008	10 - 32	2.75	.47	.98	.194	2	DIN-ANSI	2B
5366582	VTSP09009	5366581	VTSP09009	1/4 - 20	3.15	.59	1.18	.255	3	DIN-ANSI	2B
5366584	VTSP09010	5366583	VTSP09010	1/4 - 28	3.14	.58	1.17	.255	3	DIN-ANSI	2B
5366586	VTSP09011	5366585	VTSP09011	5/16 - 18	3.54	.59	1.38	.318	3	DIN-ANSI	2B
5366588	VTSP09012	5366587	VTSP09012	5/16 - 24	3.54	.59	1.38	.318	3	DIN-ANSI	2B
5366590	VTSP09013	5366589	VTSP09013	3/8 - 16	3.94	.75	1.54	.381	3	DIN-ANSI	2B
5366592	VTSP09014	5366591	VTSP09014	3/8 - 24	3.94	.75	1.54	.381	3	DIN-ANSI	2B
5366594	VTSP09015	5366593	VTSP09015	7/16 - 14	3.94	.71	1.61	.323	3	DIN-ANSI	2B
5366596	VTSP09016	5366595	VTSP09016	7/16 - 20	3.94	.71	1.61	.323	3	DIN-ANSI	2B
5366598	VTSP09017	5366597	VTSP09017	1/2 - 13	4.33	.91	1.85	.367	3	DIN-ANSI	2B
5366600	VTSP09018	5366599	VTSP09018	1/2 - 20	4.33	.91	1.85	.367	3	DIN-ANSI	2B
5366602	VTSP09019	5366601	VTSP09019	5/8 - 11	4.33	.94	2.01	.480	3	DIN-ANSI	2B
5366604	VTSP09020	5366603	VTSP09020	5/8 - 18	4.33	.94	2.01	.480	3	DIN-ANSI	2B
5366606	VTSP09021	5366605	VTSP09021	3/4 - 10	4.92	1.18	2.52	.590	3	DIN-ANSI	2B
5366608	VTSP09022	5366607	VTSP09022	3/4 - 16	4.92	1.18	2.52	.590	3	DIN-ANSI	2B

• WP42EG TiCN

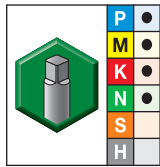


Shank Tolerance

D inch	tolerance
.141-.635	+0, -.0015
>.635-1.51	+0, -.0020
>1.51-2.01	+0, -.0030

Tapping

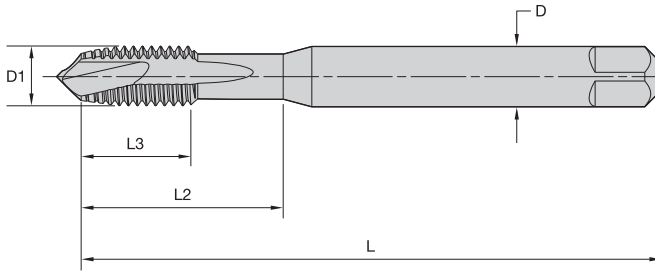
■ VT-SPO • Form B Plug Chamfer • Through Coolant • Fractional • DIN Length ANSI Shank



- first choice
- alternate choice

grade WP42EG TiCN		inch dimensions					number of flutes	dimension standard	class of fit
order #	catalog #	D1 TPI	L	L3	L2	D			
5368492	VTSP09705	1/4 - 20	3.15	.59	1.18	.255	3	DIN-ANSI	2B
5368493	VTSP09706	1/4 - 28	3.15	.59	1.18	.255	3	DIN-ANSI	2B
5368494	VTSP09707	5/16 - 18	3.54	.59	1.38	.318	3	DIN-ANSI	2B
5368495	VTSP09708	5/16 - 24	3.54	.59	1.38	.318	3	DIN-ANSI	2B
5368496	VTSP09709	3/8 - 16	3.94	.75	1.54	.381	3	DIN-ANSI	2B
5368497	VTSP09710	3/8 - 24	3.94	.75	1.54	.381	3	DIN-ANSI	2B
5368499	VTSP09711	7/16 - 14	3.94	.71	1.61	.323	3	DIN-ANSI	2B
5368500	VTSP09712	7/16 - 20	3.94	.71	1.61	.323	3	DIN-ANSI	2B
5368501	VTSP09713	1/2 - 13	4.33	.91	1.85	.367	3	DIN-ANSI	2B
5368502	VTSP09714	1/2 - 20	4.33	.91	1.85	.367	3	DIN-ANSI	2B
5368503	VTSP09715	9/16 - 18	4.33	.98	2.09	.429	3	DIN-ANSI	2B
5368504	VTSP09716	5/8 - 11	4.33	.94	2.01	.480	3	DIN-ANSI	2B
5368505	VTSP09717	5/8 - 18	4.33	.94	2.01	.480	3	DIN-ANSI	2B
5368506	VTSP09718	3/4 - 10	4.92	1.18	2.52	.590	3	DIN-ANSI	2B
5368508	VTSP09719	3/4 - 16	4.92	1.18	2.52	.590	3	DIN-ANSI	2B
5368509	VTSP09720	7/8 - 9	5.51	1.34	2.80	.697	3	DIN-ANSI	2B
5368510	VTSP09721	7/8 - 14	5.51	1.34	2.80	.697	3	DIN-ANSI	2B
5368511	VTSP09722	1 - 8	6.30	1.50	3.19	.800	3	DIN-ANSI	2B

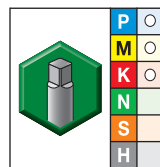
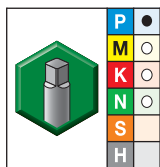
- WU41EG TiN
- WP49EG oxide



Shank Tolerance	
D mm	tolerance h9
1-3	+0, -0,025
>3-6	+0, -0,030
>6-10	+0, -0,036
>10-18	+0, -0,043
>18-30	+0, -0,052

Tapping

■ VT-SPO • Form B Plug Chamfer • Machine Screw and Fractional • DIN 371 and 376



- first choice
- alternate choice

grade WU41EG TiN		grade WP49EG Oxide		metric dimensions					number of flutes	dimension standard	class of fit
order #	catalog #	order #	catalog #	D1 size	L	L3	L2	D			
5472633	VTSP06005	5387704	VTSP06005	4 - 40	56	8	18	3,5	2	DIN 371	2B
5472635	VTSP06007	5387707	VTSP06007	5 - 40	56	9	20	4,0	2	DIN 371	2B
5472636	VTSP06008	5387708	VTSP06008	6 - 32	56	9	20	4,0	2	DIN 371	2B
5472638	VTSP06010	5387760	VTSP06010	6 - 40	56	9	20	4,0	2	DIN 371	2B
5472639	VTSP06011	5387761	VTSP06011	8 - 32	63	11	21	4,5	2	DIN 371	2B
5472641	VTSP06013	5387763	VTSP06013	10 - 24	70	12	25	6,0	2	DIN 371	2B
5472644	VTSP06014	5387764	VTSP06014	10 - 32	70	12	25	6,0	2	DIN 371	2B
5472646	VTSP06016	5387766	VTSP06016	1/4 - 20	80	15	30	7,0	3	DIN 371	2B
5472647	VTSP06017	5387767	VTSP06017	1/4 - 28	80	15	30	7,0	3	DIN 371	2B
5472649	VTSP06019	5387769	VTSP06019	5/16 - 18	90	15	35	8,0	3	DIN 371	2B
5472650	VTSP06020	5387770	VTSP06020	5/16 - 24	90	15	35	8,0	3	DIN 371	2B
5472652	VTSP06022	5387772	VTSP06022	3/8 - 16	100	19	39	10,0	3	DIN 371	2B
5472653	VTSP06023	5387773	VTSP06023	3/8 - 24	100	19	39	10,0	3	DIN 371	2B
5472655	VTSP06025	5387776	VTSP06025	7/16 - 14	100	18	41	8,0	3	DIN 376	2B
5472656	VTSP06026	5387777	VTSP06026	7/16 - 20	100	18	41	8,0	3	DIN 376	2B
5472658	VTSP06028	5387779	VTSP06028	1/2 - 13	110	23	47	9,0	3	DIN 376	2B
5472659	VTSP06029	5387780	VTSP06029	1/2 - 20	110	23	47	9,0	3	DIN 376	2B
5472661	VTSP06031	5387782	VTSP06031	9/16 - 12	110	25	53	11,0	3	DIN 376	2B
5472662	VTSP06032	5387783	VTSP06032	9/16 - 18	110	25	53	11,0	3	DIN 376	2B
5472663	VTSP06033	5387784	VTSP06033	5/8 - 11	110	24	51	12,0	3	DIN 376	2B

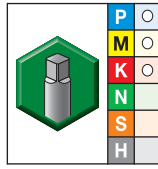
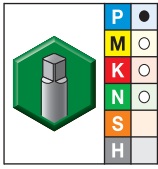
(continued)

Multipurpose Taps

VariTap™ Spiral-Point HSS-E Taps • Through Holes



(VT-SPO • Form B Plug Chamfer • Machine Screw and Fractional • DIN 371 and 376 — continued)



● first choice
○ alternate choice

grade WU41EG
TiN

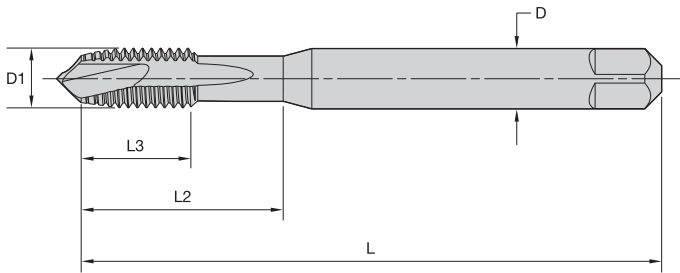
grade WP49EG
Oxide

metric dimensions

order #	catalog #	order #	catalog #	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
5472664	VTSP06034	5387785	VTSP06034	5/8 - 18	110	24	51	12,0	3	DIN 376	2B
5472665	VTSP06035	5387786	VTSP06035	3/4 - 10	140	30	64	16,0	3	DIN 376	2B
5472666	VTSP06036	5387787	VTSP06036	3/4 - 16	140	30	64	16,0	3	DIN 376	2B
5472667	VTSP06037	5387788	VTSP06037	7/8 - 9	140	34	71	18,0	3	DIN 376	2B
5472668	VTSP06038	5387789	VTSP06038	7/8 - 14	140	34	71	18,0	3	DIN 376	2B
5472669	VTSP06039	5387790	VTSP06039	1 - 8	160	38	81	18,0	3	DIN 376	2B
5472670	VTSP06040	5387791	VTSP06040	1 - 12	160	38	81	18,0	3	DIN 376	2B

Tapping

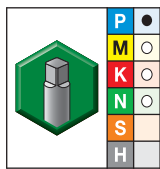
- WU41EG TiN
- WP49EG oxide



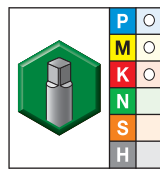
Shank Tolerance	
D mm	tolerance h9
1-3	+0, -0,025
>3-6	+0, -0,030
>6-10	+0, -0,036
>10-18	+0, -0,043
>18-30	+0, -0,052

Tapping

■ VT-SPO • Form B Plug Chamfer • UNJC/UNJF • Inch DIN 371 and 376



grade WU41EG
TiN

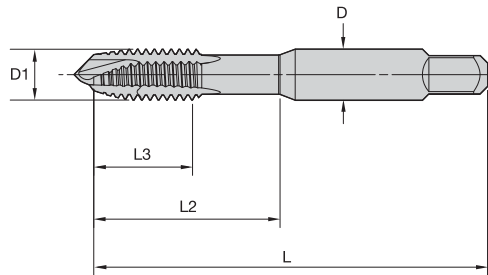


grade WP49EG
Oxide

- first choice
- alternate choice

grade WU41EG TiN		grade WP49EG Oxide		metric dimensions					number of flutes	dimension standard	class of fit
order #	catalog #	order #	catalog #	D1 size	L	L3	L2	D			
5472634	VTSP06006	5387705	VTSP06006	4 - 40	56	8	18	3,5	2	DIN 371	3B
5472637	VTSP06009	5387709	VTSP06009	6 - 32	56	9	20	4,0	2	DIN 371	3B
5472640	VTSP06012	5387762	VTSP06012	8 - 32	63	11	21	4,5	2	DIN 371	3B
5472645	VTSP06015	5387765	VTSP06015	10 - 32	70	12	25	6,0	2	DIN 371	3B
5472648	VTSP06018	5387768	VTSP06018	1/4 - 28	80	15	30	7,0	3	DIN 371	3B
5472651	VTSP06021	5387771	VTSP06021	5/16 - 24	90	15	35	8,0	3	DIN 371	3B
5472654	VTSP06024	5387774	VTSP06024	3/8 - 24	100	19	39	10,0	3	DIN 371	3B
5472657	VTSP06027	5387778	VTSP06027	7/16 - 20	100	18	41	8,0	3	DIN 376	3B
5472660	VTSP06030	5387781	VTSP06030	1/2 - 20	110	23	47	9,0	3	DIN 376	3B

- WP42EG TiCN
- WU41EG TiN
- WP49EG oxide
- WU40EG bright

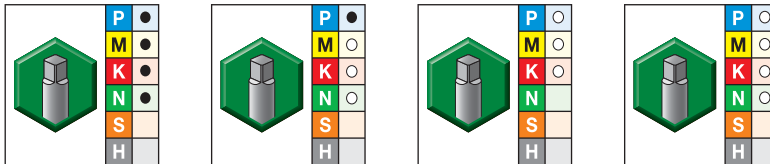


Shank Tolerance

D inch	tolerance
0.141–0.635	+0, -.0015
>0.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030

Tapping

■ VT-SPO • Form B Plug Chamfer • Metric • ANSI

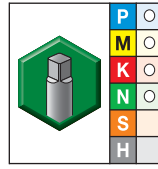
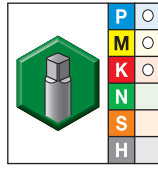
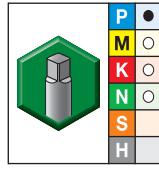
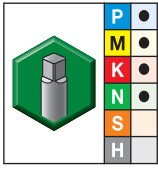


- first choice
- alternate choice

grade WP42EG TiCN		grade WU41EG TiN		grade WP49EG Oxide		grade WU40EG Bright		inch dimensions				number of flutes	pitch diameter limit	
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #	D1 size	L	L3	L2			D
5362670	VTSP05505	5362671	VTSP05505	5362589	VTSP05505	5362672	VTSP05505	M3 X 0,5	1.94	.58	.75	.141	2	D3
5362674	VTSP05506	-	-	5362673	VTSP05506	-	-	M3 X 0,5	1.94	.58	.75	.141	2	D11
5362677	VTSP05507	-	-	5362676	VTSP05507	5362678	VTSP05507	M3,5 X 0,6	1.99	.38	.71	.141	2	D4
5362690	VTSP05508	-	-	5362679	VTSP05508	-	-	M3,5 X 0,6	1.99	.38	.71	.141	2	D11
5362692	VTSP05509	5362693	VTSP05509	5362691	VTSP05509	5362694	VTSP05509	M4 X 0,7	2.12	.38	.76	.168	2	D4
5362696	VTSP05510	-	-	5362695	VTSP05510	-	-	M4 X 0,7	2.12	.38	.76	.168	2	D11
5362698	VTSP05511	5362699	VTSP05511	5362697	VTSP05511	5362700	VTSP05511	M5 X 0,8	2.37	.50	.91	.194	2	D4
5362702	VTSP05512	-	-	5362701	VTSP05512	-	-	M5 X 0,8	2.37	.50	.91	.194	2	D11
5362704	VTSP05513	5362705	VTSP05513	5362703	VTSP05513	5362706	VTSP05513	M6 X 1	2.50	.63	1.00	.255	3	D5
5362708	VTSP05514	-	-	5362707	VTSP05514	-	-	M6 X 1	2.50	.63	1.00	.255	3	D11
5362710	VTSP05515	-	-	5362709	VTSP05515	5362711	VTSP05515	M7 X 1	2.72	.69	1.15	.318	3	D5
5362713	VTSP05516	-	-	5362712	VTSP05516	-	-	M7 X 1	2.72	.69	1.15	.318	3	D11
5362715	VTSP05517	-	-	5362714	VTSP05517	5362716	VTSP05517	M8 X 1	2.71	.69	1.12	.318	3	D5
5362718	VTSP05518	-	-	5362717	VTSP05518	-	-	M8 X 1	2.71	.69	1.12	.318	3	D11
5362722	VTSP05519	5362723	VTSP05519	5362720	VTSP05519	5362724	VTSP05519	M8 X 1,25	2.71	.69	1.13	.318	3	D5
5362728	VTSP05520	-	-	5362727	VTSP05520	-	-	M8 X 1,25	2.71	.69	1.13	.318	3	D11
5362730	VTSP05521	-	-	5362729	VTSP05521	5362731	VTSP05521	M10 X 1	2.91	.75	1.24	.381	3	D5
5362733	VTSP05522	-	-	5362732	VTSP05522	-	-	M10 X 1	2.91	.75	1.24	.381	3	D11
5367305	VTSP05523	-	-	5367304	VTSP05523	5367306	VTSP05523	M10 X 1,25	2.92	.74	1.25	.381	3	D5
5367308	VTSP05524	-	-	5367307	VTSP05524	-	-	M10 X 1,25	2.92	.74	1.25	.381	3	D11
5367340	VTSP05525	5367341	VTSP05525	5367309	VTSP05525	5367342	VTSP05525	M10 X 1,5	2.92	.75	1.26	.381	3	D6
5367344	VTSP05526	-	-	5367343	VTSP05526	-	-	M10 X 1,5	2.92	.75	1.26	.381	3	D11
5367346	VTSP05527	-	-	5367345	VTSP05527	5367347	VTSP05527	M12 X 1,25	3.38	.94	1.74	.367	3	D6
5367349	VTSP05528	-	-	5367348	VTSP05528	-	-	M12 X 1,25	3.38	.94	1.74	.367	3	D11

(continued)

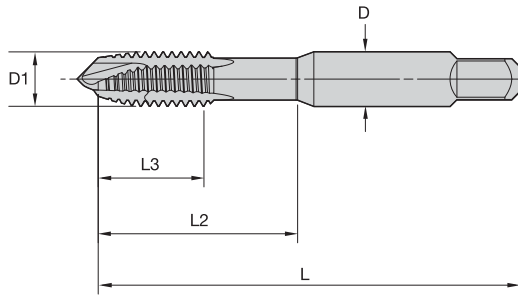
(VT-SPO • Form B Plug Chamfer • Metric • ANSI — continued)



● first choice
○ alternate choice

grade WP42EG TiCN		grade WU41EG TiN		grade WP49EG Oxide		grade WU40EG Bright		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #	D1 size	L	L3	L2	D		
5367351	VTSP05529	-	-	5367350	VTSP05529	5367352	VTSP05529	M12 X 1,5	3.38	.94	1.74	.367	3	D6
5367354	VTSP05530	-	-	5367353	VTSP05530	-	-	M12 X 1,5	3.38	.94	1.74	.367	3	D11
5367356	VTSP05531	5367357	VTSP05531	5367355	VTSP05531	5367358	VTSP05531	M12 X 1,75	3.38	.94	1.74	.367	3	D6
5367360	VTSP05532	-	-	5367359	VTSP05532	-	-	M12 X 1,75	3.38	.94	1.74	.367	3	D11
5367362	VTSP05533	-	-	5367361	VTSP05533	5367363	VTSP05533	M14 X 1,5	3.59	1.00	1.74	.429	3	D6
5367365	VTSP05534	-	-	5367364	VTSP05534	5367366	VTSP05534	M14 X 2	3.59	1.00	1.74	.429	3	D7
5366476	VTSP05535	5366477	VTSP05535	5366475	VTSP05535	5366478	VTSP05535	M16 X 1,5	3.81	1.09	1.89	.480	3	D6
5366480	VTSP05536	5366481	VTSP05536	5366479	VTSP05536	5366482	VTSP05536	M16 X 2	3.81	1.09	1.89	.480	3	D7
5366485	VTSP05537	-	-	5366483	VTSP05537	5366486	VTSP05537	M18 X 1,5	4.03	1.09	1.89	.542	3	D6
5366488	VTSP05538	-	-	5366487	VTSP05538	5366489	VTSP05538	M18 X 2,5	4.03	1.22	1.89	.542	3	D7
5366491	VTSP05539	-	-	5366490	VTSP05539	-	-	M20 X 1,5	4.47	1.22	2.08	.652	3	D6
5366493	VTSP05540	-	-	5366492	VTSP05540	-	-	M20 X 2,5	4.47	1.22	2.08	.652	3	D7
-	-	-	-	5366494	VTSP05541	-	-	M22 X 1,5	4.69	1.22	2.30	.697	3	D6
-	-	-	-	5366495	VTSP05542	-	-	M22 X 2,5	4.69	1.22	2.30	.697	3	D7
-	-	-	-	5366496	VTSP05543	-	-	M24 X 2	4.91	1.22	2.30	.760	3	D7
-	-	-	-	5366497	VTSP05544	-	-	M24 X 3	4.91	1.22	2.30	.760	3	D8
-	-	-	-	5366498	VTSP05545	-	-	M27 X 1,5	5.13	1.22	2.50	.896	4	D7
-	-	-	-	5366499	VTSP05546	-	-	M27 X 3	5.13	1.22	2.50	.896	4	0
-	-	-	-	5366510	VTSP05547	-	-	M30 X 1,5	5.44	1.22	2.56	1.021	4	D6
-	-	-	-	5366511	VTSP05548	-	-	M30 X 3,5	5.44	1.22	2.56	1.021	4	D9



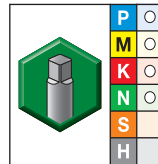
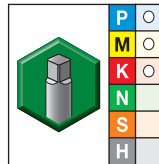
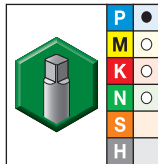
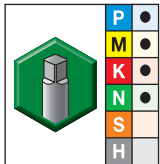


Shank Tolerance

D inch	tolerance
0.141–0.635	+0, -.0015
>0.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030

Tapping

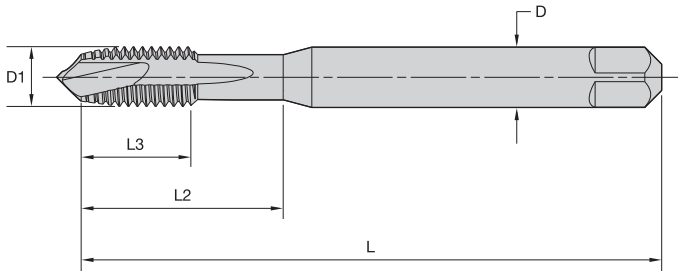
■ VT-SPO • Form B Plug Chamfer • Metric • 3 Flute • ANSI



● first choice
○ alternate choice

grade WP42EG TiCN		grade WU41EG TiN		grade WP49EG Oxide		grade WU40EG Bright		inch dimensions				number of flutes	pitch diameter limit	
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #	D1 size	L	L3	L2			D
5631641	VTSP05613	5631642	VTSP05613	5631640	VTSP05613	5631643	VTSP05613	M3 X 0,5	1.94	.58	.75	.141	3	D3
5631645	VTSP05614	-	-	5631644	VTSP05614	-	-	M3 X 0,5	1.94	.58	.75	.141	3	D11
5631647	VTSP05615	-	-	5631646	VTSP05615	5631648	VTSP05615	M3,5 X 0,6	1.99	.38	.71	.141	3	D4
5631650	VTSP05616	-	-	5631649	VTSP05616	-	-	M3,5 X 0,6	1.99	.38	.71	.141	3	D11
5631652	VTSP05617	5631653	VTSP05617	5631651	VTSP05617	5631654	VTSP05617	M4 X 0,7	2.12	.38	.76	.168	3	D4
5631656	VTSP05618	-	-	5631655	VTSP05618	-	-	M4 X 0,7	2.12	.38	.76	.168	3	D11
5631659	VTSP05619	5631670	VTSP05619	5631658	VTSP05619	5631671	VTSP05619	M5 X 0,8	2.37	.50	.91	.194	3	D4
5631673	VTSP05620	-	-	5631672	VTSP05620	-	-	M5 X 0,8	2.37	.50	.91	.194	3	D11

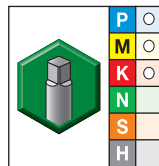
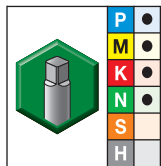
- WP42EG TiCN
- WP49EG oxide



Shank Tolerance	
D inch	tolerance
.141-.635	+0, -.0015
>.635-1.51	+0, -.0020
>1.51-2.01	+0, -.0030

Tapping

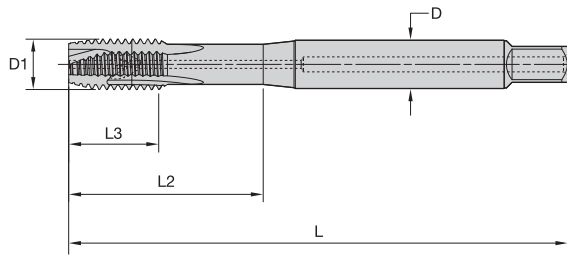
■ VT-SPO • Form B Plug Chamfer • Metric • DIN Length ANSI Shank



- first choice
- alternate choice

grade WP42EG TiCN		grade WP49EG Oxide		inch dimensions				number of flutes	dimension standard	class of fit	
order #	catalog #	order #	catalog #	D1 size	L	L3	L2				D
5368172	VTSP09506	5368171	VTSP09506	M3 X 0,5	2.20	.31	.71	.141	2	DIN-ANSI	6H
5368174	VTSP09507	5368173	VTSP09507	M4 X 0,7	2.48	.43	.83	.168	2	DIN-ANSI	6H
5368176	VTSP09508	5368175	VTSP09508	M5 X 0,8	2.75	.47	.97	.194	2	DIN-ANSI	6H
5368178	VTSP09509	5368177	VTSP09509	M6 X 1	3.15	.47	1.18	.255	3	DIN-ANSI	6H
5368180	VTSP09510	5368179	VTSP09510	M8 X 1,25	3.54	.59	1.37	.318	3	DIN-ANSI	6H
5368182	VTSP09511	5368181	VTSP09511	M10 X 1,25	3.93	.71	1.53	.381	3	DIN-ANSI	6H
5368184	VTSP09512	5368183	VTSP09512	M10 X 1,5	3.94	.71	1.53	.381	3	DIN-ANSI	6H
5368186	VTSP09513	5368185	VTSP09513	M12 X 1,25	4.33	.83	1.73	.367	3	DIN-ANSI	6H
5368188	VTSP09514	5368187	VTSP09514	M12 X 1,5	4.33	.83	1.73	.367	3	DIN-ANSI	6H
5368190	VTSP09515	5368189	VTSP09515	M12 X 1,75	4.33	.83	1.73	.367	3	DIN-ANSI	6H
5368192	VTSP09516	5368191	VTSP09516	M14 X 1,5	4.33	.94	2.05	.429	3	DIN-ANSI	6H
5368195	VTSP09517	5368193	VTSP09517	M14 X 2	4.33	.94	2.05	.429	3	DIN-ANSI	6H
5368197	VTSP09518	5368196	VTSP09518	M16 X 1,5	4.33	.94	2.01	.480	3	DIN-ANSI	6H
5368199	VTSP09519	5368198	VTSP09519	M16 X 2	4.33	.94	2.01	.480	3	DIN-ANSI	6H
5368201	VTSP09520	5368200	VTSP09520	M18 X 1,5	4.92	1.18	2.28	.542	3	DIN-ANSI	6H
5368203	VTSP09521	5368202	VTSP09521	M18 X 2,5	4.92	1.18	2.28	.542	3	DIN-ANSI	6H
5368205	VTSP09522	5368204	VTSP09522	M20 X 1,5	5.51	1.18	2.52	.652	3	DIN-ANSI	6H
5368207	VTSP09523	5368206	VTSP09523	M20 X 2,5	5.51	1.18	2.52	.652	3	DIN-ANSI	6H

• WP42EG TiCN

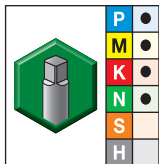


Shank Tolerance

D inch	tolerance
.141-.635	+0, -.0015
>.635-1.51	+0, -.0020
>1.51-2.01	+0, -.0030

Tapping

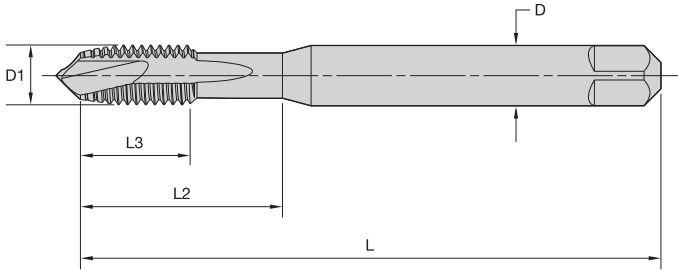
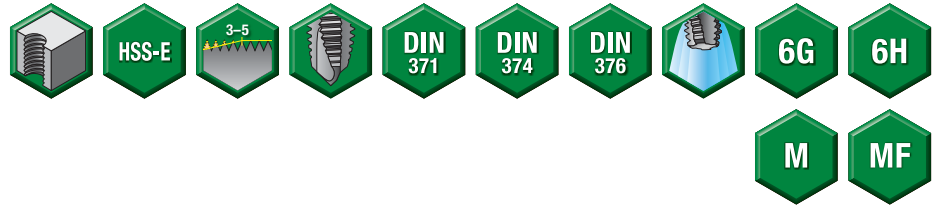
■ VT-SPO • Form B Plug Chamfer • Through Coolant • Metric • DIN Length ANSI Shank



● first choice
○ alternate choice

grade WP42EG TiCN		inch dimensions					number of flutes	dimension standard	class of fit
order #	catalog #	D1 size	L	L3	L2	D			
5368457	VTSP09905	M6 X 1	3.15	.47	1.18	.255	3	DIN-ANSI	6H
5368458	VTSP09906	M8 X 1,25	3.54	.59	1.38	.318	3	DIN-ANSI	6H
5368459	VTSP09907	M10 X 1,25	3.94	.71	1.54	.381	3	DIN-ANSI	6H
5368480	VTSP09908	M10 X 1,5	3.94	.71	1.54	.381	3	DIN-ANSI	6H
5368481	VTSP09909	M12 X 1,25	4.33	.83	1.73	.367	3	DIN-ANSI	6H
5368482	VTSP09910	M12 X 1,5	4.33	.83	1.73	.367	3	DIN-ANSI	6H
5368483	VTSP09911	M12 X 1,75	4.33	.83	1.73	.367	3	DIN-ANSI	6H
5368484	VTSP09912	M14 X 1,5	4.33	.94	2.05	.429	3	DIN-ANSI	6H
5368485	VTSP09913	M14 X 2	4.33	.94	2.05	.429	3	DIN-ANSI	6H
5368486	VTSP09914	M16 X 1,5	4.33	.94	2.01	.480	3	DIN-ANSI	6H
5368487	VTSP09915	M16 X 2	4.33	.94	2.01	.480	3	DIN-ANSI	6H
5368488	VTSP09916	M18 X 1,5	4.92	1.18	2.28	.542	3	DIN-ANSI	6H
5368489	VTSP09917	M18 X 2,5	4.92	1.18	2.28	.542	3	DIN-ANSI	6H
5368490	VTSP09918	M20 X 1,5	5.51	1.18	2.52	.652	3	DIN-ANSI	6H
5368491	VTSP09919	M20 X 2,5	5.51	1.18	2.52	.652	3	DIN-ANSI	6H

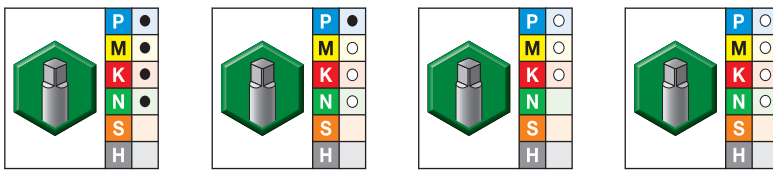
- WP42EG TiCN
- WU41EG TiN
- WP49EG oxide
- WU40EG bright



Shank Tolerance	
D mm	tolerance h9
1-3	+0, -0,025
>3-6	+0, -0,030
>6-10	+0, -0,036
>10-18	+0, -0,043
>18-30	+0, -0,052

Tapping

■ VT-SPO • Form B Plug Chamfer • Metric DIN 371, 374, and 376



- first choice
- alternate choice

grade WP42EG TiCN		grade WU41EG TiN		grade WP49EG Oxide		grade WU40EG Bright		metric dimensions				number of flutes	dimension standard	class of fit	
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #	D1 size	L	L3	L2				D
5366647	VTSP06505	5366646	VTSP06505	5366648	VTSP06505	5366649	VTSP06505	M2 X 0,4	45	7	13	2,8	2	DIN 371	6H
-	-	-	-	5366660	VTSP06506	-	-	M2 X 0,4	45	7	13	2,8	2	DIN 371	6G
-	-	-	-	5366661	VTSP06507	-	-	M2,2 X 0,45	45	7	13	2,8	2	DIN 371	6H
-	-	5366662	VTSP06508	5366663	VTSP06508	5366664	VTSP06508	M2,5 X 0,45	50	7	15	2,8	2	DIN 371	6H
-	-	-	-	5366665	VTSP06509	-	-	M2,5 X 0,45	50	7	15	2,8	2	DIN 371	6G
-	-	-	-	5368602	VTSP06545	5368603	VTSP06545	M3 X 0,35	56	8	-	2,2	2	DIN 374	6H
-	-	5368514	VTSP06525	5368515	VTSP06525	5368516	VTSP06525	M3 X 0,5	56	8	-	2,2	2	DIN 376	6H
-	-	-	-	5366670	VTSP06511	-	-	M3 X 0,5	56	8	18	3,5	2	DIN 371	6G
5366667	VTSP06510	5366666	VTSP06510	5366668	VTSP06510	5366669	VTSP06510	M3 X 0,5	56	8	18	3,5	2	DIN 371	6H
-	-	5366671	VTSP06512	5366673	VTSP06512	5366674	VTSP06512	M3,5 X 0,6	56	9	20	4,0	2	DIN 371	6H
-	-	-	-	5368604	VTSP06546	5368605	VTSP06546	M4 X 0,5	63	10	21	2,8	2	DIN 374	6H
-	-	5368517	VTSP06526	5368518	VTSP06526	5368519	VTSP06526	M4 X 0,7	63	10	21	2,8	2	DIN 376	6H
-	-	-	-	5366679	VTSP06514	-	-	M4 X 0,7	63	11	21	4,5	2	DIN 371	6G
5366676	VTSP06513	5366675	VTSP06513	5366677	VTSP06513	5366678	VTSP06513	M4 X 0,7	63	11	21	4,5	2	DIN 371	6H
-	-	-	-	5368606	VTSP06547	5368607	VTSP06547	M5 X 0,5	70	12	25	3,5	2	DIN 374	6H
-	-	5368540	VTSP06527	5368541	VTSP06527	5368542	VTSP06527	M5 X 0,8	70	12	25	3,5	2	DIN 376	6H
-	-	-	-	5366685	VTSP06516	-	-	M5 X 0,8	70	12	25	6,0	2	DIN 371	6G
5366681	VTSP06515	5366680	VTSP06515	5366682	VTSP06515	5366684	VTSP06515	M5 X 0,8	70	12	25	6,0	2	DIN 371	6H
-	-	-	-	5368608	VTSP06548	5368609	VTSP06548	M6 X 0,5	80	12	30	4,5	3	DIN 374	6H
-	-	-	-	5368610	VTSP06549	5368611	VTSP06549	M6 X 0,75	80	12	30	4,5	3	DIN 374	6H
-	-	5368543	VTSP06528	5368544	VTSP06528	5368545	VTSP06528	M6 X 1	80	12	30	4,5	3	DIN 376	6H
5366687	VTSP06517	5366686	VTSP06517	5366688	VTSP06517	5366689	VTSP06517	M6 X 1	80	12	30	6,0	3	DIN 371	6H
-	-	-	-	5366690	VTSP06518	-	-	M6 X 1	80	12	30	6,0	3	DIN 371	6G
-	-	-	-	5368612	VTSP06550	5368613	VTSP06550	M7 X 0,75	80	12	30	5,5	3	DIN 374	6H

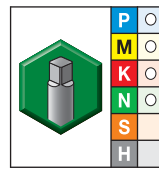
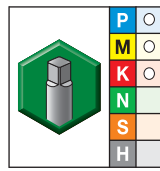
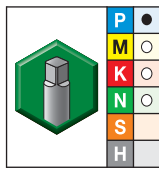
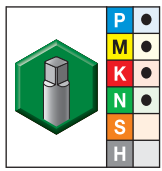
(continued)

Multipurpose Taps

VariTap™ Spiral-Point HSS-E Taps • Through Holes



(VT-SPO • Form B Plug Chamfer • Metric DIN 371, 374, and 376 – continued)



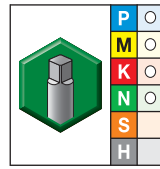
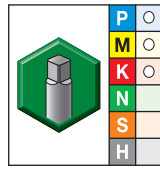
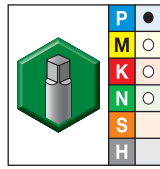
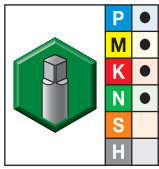
● first choice
○ alternate choice

Tapping

grade WP42EG TiCN		grade WU41EG TiN		grade WP49EG Oxide		grade WU40EG Bright		metric dimensions					number of flutes	dimension standard	class of fit
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #	D1 size	L	L3	L2	D			
5366693	VTSP06519	5366692	VTSP06519	5366695	VTSP06519	5366696	VTSP06519	M7 X 1	80	12	30	7,0	3	DIN 371	6H
-	-	-	-	5366697	VTSP06520	-	-	M7 X 1	80	12	30	7,0	3	DIN 371	6G
-	-	-	-	5368614	VTSP06551	5368615	VTSP06551	M8 X 0,75	80	12	30	6,0	3	DIN 374	6H
-	-	-	-	5368616	VTSP06552	5368617	VTSP06552	M8 X 1	90	15	35	6,0	3	DIN 374	6H
-	-	5368546	VTSP06529	5368547	VTSP06529	5368548	VTSP06529	M8 X 1,25	90	15	35	6,0	3	DIN 376	6H
5366700	VTSP06521	5366698	VTSP06521	5366701	VTSP06521	5366703	VTSP06521	M8 X 1,25	90	15	35	8,0	3	DIN 371	6H
-	-	-	-	5366704	VTSP06522	-	-	M8 X 1,25	90	15	35	8,0	3	DIN 371	6G
-	-	-	-	5368618	VTSP06553	5368619	VTSP06553	M10 X 0,75	90	15	35	7,0	3	DIN 374	6H
-	-	-	-	5368620	VTSP06554	5368621	VTSP06554	M10 X 1	90	15	35	7,0	3	DIN 374	6H
-	-	-	-	5368622	VTSP06555	5368623	VTSP06555	M10 X 1,25	100	18	39	7,0	3	DIN 374	6H
-	-	-	-	5366709	VTSP06524	-	-	M10 X 1,5	100	18	39	10,0	3	DIN 371	6G
5366706	VTSP06523	5366705	VTSP06523	5366707	VTSP06523	5366708	VTSP06523	M10 X 1,5	100	18	39	10,0	3	DIN 371	6H
-	-	5368549	VTSP06530	5368550	VTSP06530	5368551	VTSP06530	M10 X 1,5	100	18	39	7,0	3	DIN 376	6H
-	-	-	-	5368624	VTSP06556	5368625	VTSP06556	M11 X 1	90	15	36	8,0	3	DIN 374	6H
-	-	-	-	5368626	VTSP06557	5368627	VTSP06557	M12 X 1	100	21	39	9,0	3	DIN 374	6H
-	-	-	-	5368628	VTSP06558	5368629	VTSP06558	M12 X 1,25	100	21	39	9,0	3	DIN 374	6H
-	-	-	-	5368630	VTSP06559	5368631	VTSP06559	M12 X 1,5	100	21	39	9,0	3	DIN 374	6H
-	-	-	-	5368556	VTSP06532	-	-	M12 X 1,75	110	21	44	9,0	3	DIN 376	6G
5368553	VTSP06531	5368552	VTSP06531	5368554	VTSP06531	5368555	VTSP06531	M12 X 1,75	110	21	44	9,0	3	DIN 376	6H
-	-	-	-	5368632	VTSP06560	5368633	VTSP06560	M14 X 1	100	21	47	11,0	3	DIN 374	6H
-	-	-	-	5368634	VTSP06561	5368635	VTSP06561	M14 X 1,25	100	21	47	11,0	3	DIN 374	6H
-	-	-	-	5368636	VTSP06562	5368637	VTSP06562	M14 X 1,5	100	21	47	11,0	3	DIN 374	6H
5368558	VTSP06533	5368557	VTSP06533	5368559	VTSP06533	5368560	VTSP06533	M14 X 2	110	24	52	11,0	3	DIN 376	6H
-	-	-	-	5368561	VTSP06534	-	-	M14 X 2	110	24	52	11,0	3	DIN 376	6G
-	-	-	-	5368638	VTSP06563	5368639	VTSP06563	M16 X 1	100	21	46	12,0	3	DIN 374	6H
-	-	-	-	5368640	VTSP06564	5368641	VTSP06564	M16 X 1,5	100	21	46	12,0	3	DIN 374	6H
5368563	VTSP06535	5368562	VTSP06535	5368565	VTSP06535	5368566	VTSP06535	M16 X 2	110	24	51	12,0	3	DIN 376	6H
-	-	-	-	5368567	VTSP06536	-	-	M16 X 2	110	24	51	12,0	3	DIN 376	6G
-	-	-	-	5368642	VTSP06565	5368643	VTSP06565	M18 X 1	110	21	50	14,0	3	DIN 374	6H
-	-	-	-	5368683	VTSP06566	5368684	VTSP06566	M18 X 1,5	110	21	50	14,0	3	DIN 374	6H
-	-	-	-	5368685	VTSP06567	5368686	VTSP06567	M18 X 2	125	30	58	14,0	3	DIN 374	6H
5368569	VTSP06537	5368568	VTSP06537	5368570	VTSP06537	5368571	VTSP06537	M18 X 2,5	125	30	58	14,0	3	DIN 376	6H
-	-	-	-	5368687	VTSP06568	5368688	VTSP06568	M20 X 1	125	24	56	16,0	3	DIN 374	6H
-	-	-	-	5368689	VTSP06569	5368690	VTSP06569	M20 X 1,5	125	24	56	16,0	3	DIN 374	6H
-	-	-	-	5368691	VTSP06570	5368692	VTSP06570	M20 X 2	140	30	64	16,0	3	DIN 374	6H
5368573	VTSP06538	5368572	VTSP06538	5368574	VTSP06538	5368575	VTSP06538	M20 X 2,5	140	30	64	16,0	3	DIN 376	6H
-	-	-	-	5368693	VTSP06571	5368694	VTSP06571	M22 X 1,5	125	24	62	18,0	3	DIN 374	6H
-	-	-	-	-	-	5368695	VTSP06572	M22 X 2	140	30	70	18,0	3	DIN 374	6H
5368577	VTSP06539	5368576	VTSP06539	5368578	VTSP06539	5368579	VTSP06539	M22 X 2,5	140	30	70	18,0	3	DIN 376	6H
-	-	-	-	5368696	VTSP06573	5368697	VTSP06573	M24 X 1,5	140	28	67	18,0	3	DIN 374	6H

(continued)

(VT-SPO • Form B Plug Chamfer • Metric DIN 371, 374, and 376 – continued)



● first choice
○ alternate choice

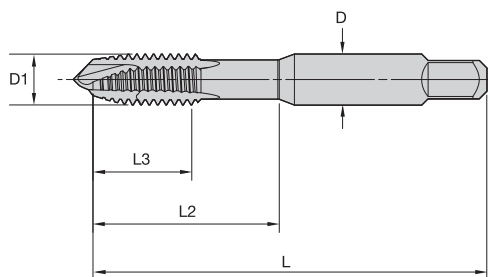
grade WP42EG TiCN		grade WU41EG TiN		grade WP49EG Oxide		grade WU40EG Bright		metric dimensions					number of flutes	dimension standard	class of fit
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #	D1 size	L	L3	L2	D			
-	-	-	-	-	-	5368698	VTSP06574	M24 X 2	140	30	67	18,0	3	DIN 374	6H
5368581	VTSP06540	5368580	VTSP06540	5368582	VTSP06540	5368583	VTSP06540	M24 X 3	160	36	77	18,0	3	DIN 376	6H
-	-	5368584	VTSP06541	5368585	VTSP06541	5368586	VTSP06541	M27 X 3	160	36	82	20,0	4	DIN 376	6H
-	-	-	-	-	-	5368699	VTSP06575	M30 X 2	150	28	80	22,0	4	DIN 374	6H
-	-	5368587	VTSP06542	5368588	VTSP06542	5368589	VTSP06542	M30 X 3,5	180	42	91	22,0	4	DIN 376	6H
-	-	-	-	5368600	VTSP06543	-	-	M33 X 3,5	180	42	100	25,0	4	DIN 376	6H
-	-	-	-	5368601	VTSP06544	-	-	M36 X 4	200	48	110	28,0	4	DIN 376	6H



Multipurpose Taps

VariTap™ Spiral-Point HSS-E Taps • Through Holes

- WU40EG bright
- WU41EG TiN

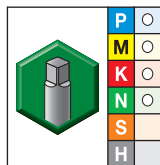
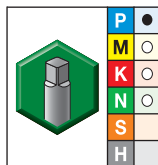


Shank Tolerance

D mm	tolerance h9
1-3	+0, -0,025
>3-6	+0, -0,030
>6-10	+0, -0,036
>10-18	+0, -0,043
>18-30	+0, -0,052

Tapping

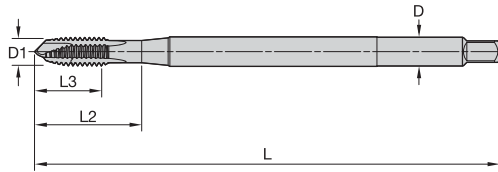
■ VT-SPO • Form B Plug Chamfer • Metric • JIS



- first choice
- alternate choice

grade WU41EG TiN		grade WU40EG Bright		metric dimensions					number of flutes	dimension standard	tap class
order #	catalog #	order #	catalog #	D1 size	L	L3	L2	D			
5387861	VTSP07505	5387859	VTSP07505	M3 X 0,5	46	11	19	4,0	2	JIS	ISO 2
5387865	VTSP07506	5387863	VTSP07506	M4 X 0,7	52	13	21	5,0	2	JIS	ISO 2
5387869	VTSP07507	5387867	VTSP07507	M5 X 0,8	60	16	24	5,5	2	JIS	ISO 2
5387873	VTSP07508	5387871	VTSP07508	M6 X 1	62	19	29	6,0	3	JIS	ISO 2
5387877	VTSP07509	5387875	VTSP07509	M8 X 1,25	70	22	37	6,2	3	JIS	ISO 2
5387881	VTSP07510	5387879	VTSP07510	M10 X 1,5	75	24	41	7,0	3	JIS	ISO 2
-		5387883	VTSP07511	M12 X 1,25	82	29	48	8,5	3	JIS	ISO 2
-		5387887	VTSP07513	M12 X 1,5	82	29	48	8,5	3	JIS	ISO 2
-		5387885	VTSP07512	M12 X 1,75	82	29	48	8,5	3	JIS	ISO 2
-		5387891	VTSP07515	M14 X 1,5	88	30	48	10,5	3	JIS	ISO 2
-		5387889	VTSP07514	M14 X 2	88	30	48	10,5	3	JIS	ISO 2
-		5387895	VTSP07517	M16 X 1,5	95	32	52	12,5	3	JIS	ISO 2
-		5387893	VTSP07516	M16 X 2	95	32	52	12,5	3	JIS	ISO 2
-		5387898	VTSP07518	M18 X 2,5	100	37	55	14,0	3	JIS	ISO 2
-		5387900	VTSP07519	M20 X 2,5	105	37	60	15,0	3	JIS	ISO 2

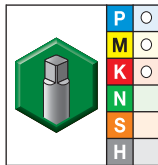
• WP49EG oxide



Shank Tolerance	
D inch	tolerance
.141-.635	+0, -.0015
>.635-1.51	+0, -.0020
>1.51-2.01	+0, -.0030



■ VT-SPO • Form B Plug Chamfer • Machine Screw and Fractional • 6" Length • ANSI



- first choice
- alternate choice

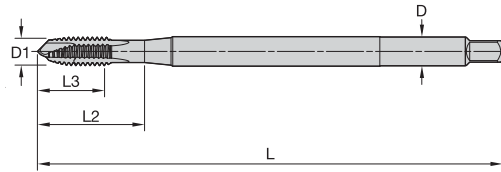
grade WP49EG Oxide		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	D1 TPI	L	L3	L2	D		
5608551	VTSP05403	4 - 40	6.00	.56	.87	.141	2	H2
5608552	VTSP05404	6 - 32	6.00	.38	.71	.168	2	H3
5608553	VTSP05405	8 - 32	6.00	.38	.76	.168	2	H3
5608554	VTSP05406	10 - 24	6.00	.50	.91	.194	2	H3
5608555	VTSP05407	10 - 32	6.00	.50	.91	.194	2	H3
5608556	VTSP05408	1/4 - 20	6.00	.63	1.01	.255	3	H3
5608557	VTSP05409	1/4 - 28	6.00	.63	1.01	.255	3	H3
5608558	VTSP05410	5/16 - 18	6.00	.69	1.13	.318	3	H3
5608559	VTSP05411	5/16 - 24	6.00	.69	1.13	.318	3	H3
5608570	VTSP05412	3/8 - 16	6.00	.75	1.27	.381	3	H3
5608571	VTSP05413	3/8 - 24	6.00	.75	1.27	.381	3	H3
5608572	VTSP05414	7/16 - 14	6.00	.88	1.49	.323	3	H3
5608573	VTSP05415	7/16 - 20	6.00	.88	1.49	.323	3	H3
5608575	VTSP05416	1/2 - 13	6.00	.94	1.74	.367	3	H3
5608576	VTSP05417	1/2 - 20	6.00	.94	1.74	.367	3	H3
5608577	VTSP05418	5/8 - 11	6.00	1.09	1.89	.480	3	H3

Multipurpose Taps

VariTap™ Spiral-Point HSS-E Extension Taps • Through Holes • 4" Length



- WP49EG oxide

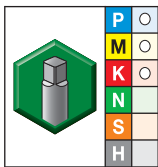


Shank Tolerance

D inch	tolerance
.141-.635	+0, -.0015
>.635-1.51	+0, -.0020
>1.51-2.01	+0, -.0030

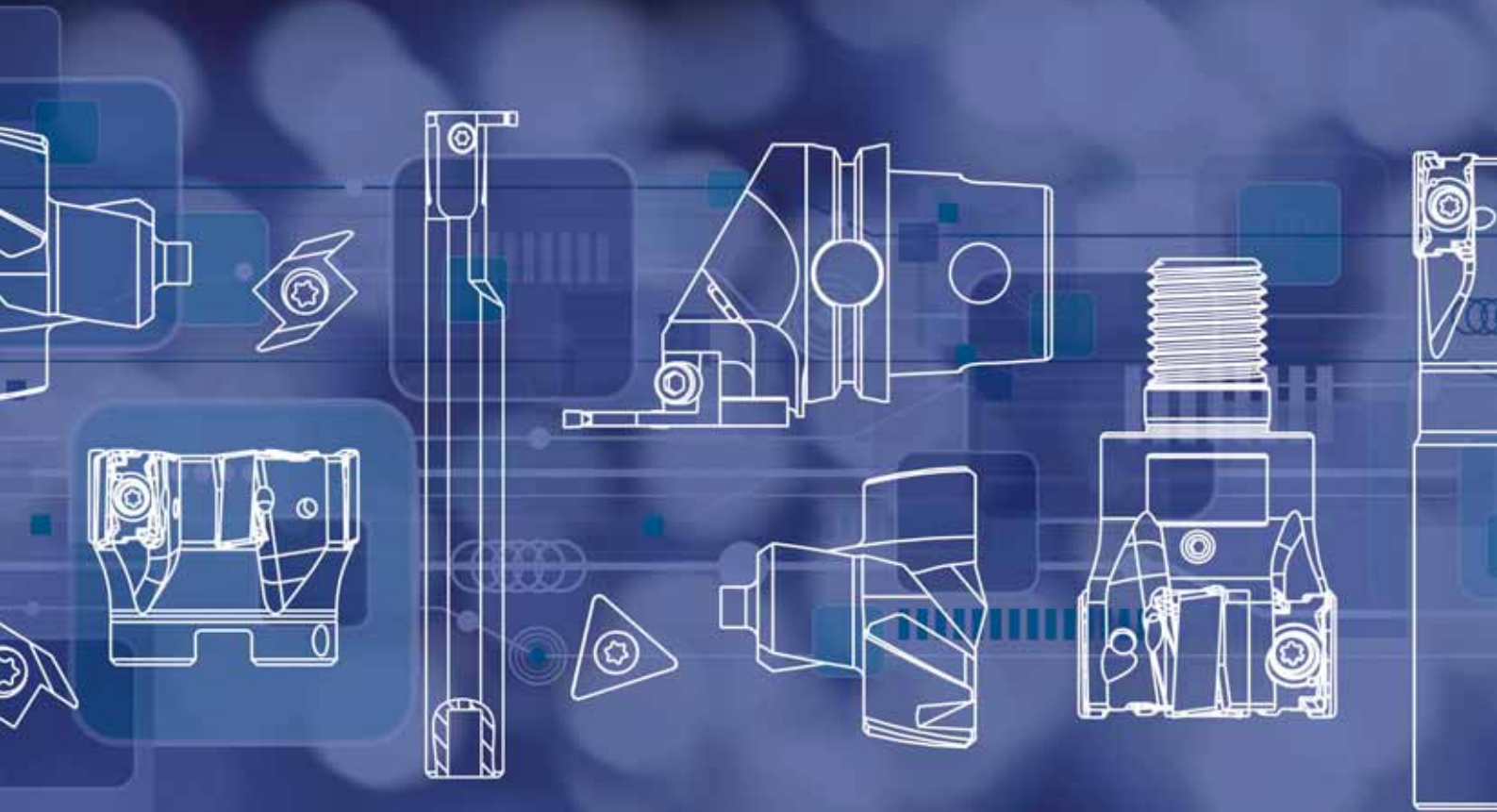
Tapping

■ VT-SPO • Form B Plug Chamfer • Machine Screw and Fractional • 4" Length • ANSI



- first choice
- alternate choice

grade WP49EG Oxide		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	D1 TPI	L	L3	L2	D		
5608578	VTSP05419	4 - 40	4.00	.56	.87	.141	2	H2
5608579	VTSP05420	6 - 32	4.00	.38	.71	.141	2	H3
5608580	VTSP05421	8 - 32	4.00	.38	.76	.168	2	H3
5608582	VTSP05422	10 - 24	4.00	.50	.91	.194	2	H3
5608584	VTSP05423	10 - 32	4.00	.50	.91	.194	2	H3
5608585	VTSP05424	1/4 - 20	4.00	.63	1.01	.255	3	H3



NOVO KNOWS ART TO PART TO PROFIT

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NOVO can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximizes every shift. widia.com/novo

01

THE DIGITAL SOURCE FOR DELIVERING SMART MACHINING SOLUTIONS

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Multipurpose Taps for Steel, Stainless Steel, Cast Aluminum, 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.

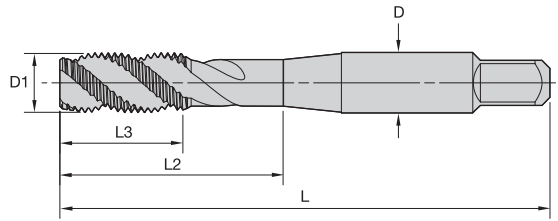
Precision ground shanks
Low runout.

High-vanadium HSS-E
Improved wear resistance and longer life.

PVD coatings and surface treatments
For use with various workpiece materials:

WP42EG TiCN	WU41EG TiN	WP49EG Oxide	WU40EG Bright
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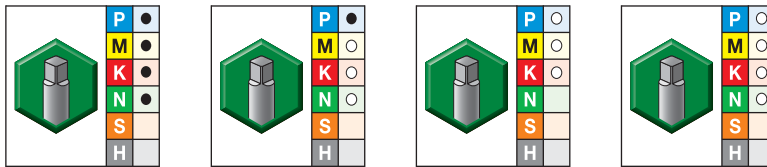
- WP42EG TiCN
- WU41EG TiN
- WP49EG oxide
- WU40EG bright



Shank Tolerance	
D inch	tolerance
.141-.635	+0, -.0015
>.635-1.51	+0, -.0020
>1.51-2.01	+0, -.0030

Tapping

■ **VT-SFT • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • ANSI • Rigid and Synchronous Holders**



- first choice
- alternate choice

grade WP42EG TiCN		grade WU41EG TiN		grade WP49EG Oxide		grade WU40EG Bright		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #	D1 TPI	L	L3	L2	D		
5356669	VTSFT5001	-	-	5356668	VTSFT5001	5356730	VTSFT5001	2 - 56	1.76	.40	.50	.141	2	H2
5356732	VTSFT5002	-	-	5356731	VTSFT5002	5356733	VTSFT5002	3 - 48	1.82	.46	.57	.141	2	H2
5356736	VTSFT5003	5356735	VTSFT5003	5356734	VTSFT5003	5356737	VTSFT5003	4 - 40	1.88	.52	.70	.141	2	H2
5356739	VTSFT5004	-	-	5356738	VTSFT5004	5356740	VTSFT5004	4 - 40	1.88	.52	.70	.141	2	H3
5356742	VTSFT5005	-	-	5356741	VTSFT5005	5356743	VTSFT5005	4 - 40	1.88	.52	.70	.141	2	H4
5356745	VTSFT5006	-	-	5356744	VTSFT5006	5356746	VTSFT5006	4 - 40	1.88	.52	.70	.141	2	H5
-	-	-	-	5356747	VTSFT5007	-	-	4 - 40	1.88	.52	.70	.141	2	H6
5356749	VTSFT5008	-	-	5356748	VTSFT5008	5356750	VTSFT5008	4 - 48	1.88	.53	.70	.141	2	H2
5356753	VTSFT5009	5356752	VTSFT5009	5356751	VTSFT5009	5356754	VTSFT5009	5 - 40	1.95	.59	.76	.141	2	H2
5356756	VTSFT5010	-	-	5356755	VTSFT5010	5356757	VTSFT5010	6 - 32	2.00	.39	.72	.141	2	H2
5356760	VTSFT5011	5356759	VTSFT5011	5356758	VTSFT5011	5356761	VTSFT5011	6 - 32	2.00	.39	.72	.141	2	H3
-	-	-	-	5356762	VTSFT5012	-	-	6 - 32	2.00	.39	.72	.141	2	H4
5356764	VTSFT5013	-	-	5356763	VTSFT5013	5356765	VTSFT5013	6 - 32	2.00	.39	.72	.141	2	H5
5356767	VTSFT5014	-	-	5356766	VTSFT5014	5356768	VTSFT5014	6 - 32	2.00	.39	.72	.141	2	H7
5356770	VTSFT5015	-	-	5356769	VTSFT5015	5356771	VTSFT5015	6 - 32	2.00	.39	.72	.141	2	H11
5356773	VTSFT5016	-	-	5356772	VTSFT5016	5356774	VTSFT5016	6 - 40	2.00	.39	.72	.141	2	H2
-	-	-	-	5356775	VTSFT5017	-	-	6 - 40	2.00	.39	.72	.141	2	H3
5357304	VTSFT5018	-	-	5357303	VTSFT5018	5357305	VTSFT5018	8 - 32	2.13	.38	.77	.168	3	H2
5357308	VTSFT5019	5357307	VTSFT5019	5357306	VTSFT5019	5357309	VTSFT5019	8 - 32	2.13	.38	.77	.168	3	H3
-	-	-	-	5357370	VTSFT5020	-	-	8 - 32	2.13	.38	.77	.168	3	H4
5357372	VTSFT5021	-	-	5357371	VTSFT5021	5357373	VTSFT5021	8 - 32	2.13	.38	.77	.168	3	H5
-	-	-	-	5357374	VTSFT5022	-	-	8 - 32	2.13	.38	.77	.168	3	H6
5357376	VTSFT5023	-	-	5357375	VTSFT5023	5357377	VTSFT5023	8 - 32	2.13	.38	.77	.168	3	H7
5357379	VTSFT5024	-	-	5357378	VTSFT5024	5357380	VTSFT5024	8 - 32	2.13	.38	.77	.168	3	H11

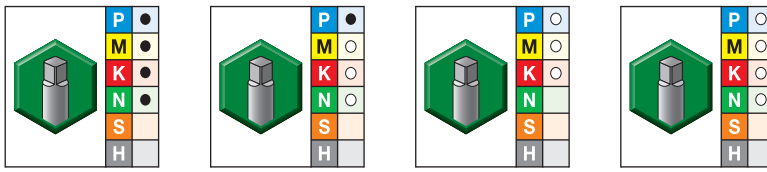
(continued)

Multipurpose Taps

VariTap™ Spiral-Flute HSS-E Taps • Blind Holes



(VT-SFT • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • ANSI • Rigid and Synchronous Holders — continued)



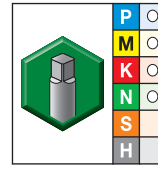
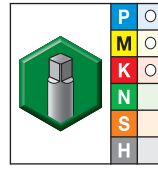
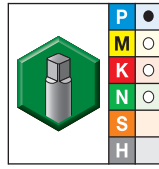
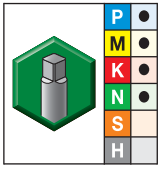
● first choice
○ alternate choice

Tapping

grade WP42EG TiCN		grade WU41EG TiN		grade WP49EG Oxide		grade WU40EG Bright		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #	D1 TPI	L	L3	L2	D		
-	-	-	-	5357381	VTSFT5025	-	-	8 - 36	2.13	.38	.77	.168	3	H3
-	-	-	-	5357382	VTSFT5026	-	-	10 - 24	2.38	.50	.92	.194	3	H2
5357385	VTSFT5027	5357384	VTSFT5027	5357383	VTSFT5027	5357386	VTSFT5027	10 - 24	2.38	.50	.92	.194	3	H3
-	-	-	-	5357387	VTSFT5028	-	-	10 - 24	2.38	.50	.92	.194	3	H4
5357389	VTSFT5029	-	-	5357388	VTSFT5029	5357390	VTSFT5029	10 - 24	2.38	.50	.92	.194	3	H5
-	-	-	-	5357391	VTSFT5030	-	-	10 - 24	2.38	.50	.92	.194	3	H7
5357393	VTSFT5031	-	-	5357392	VTSFT5031	5357394	VTSFT5031	10 - 24	2.38	.50	.92	.194	3	H11
5357396	VTSFT5032	-	-	5357395	VTSFT5032	5357397	VTSFT5032	10 - 32	2.38	.50	.92	.194	3	H2
5357400	VTSFT5033	5357399	VTSFT5033	5357398	VTSFT5033	5357401	VTSFT5033	10 - 32	2.38	.50	.92	.194	3	H3
-	-	-	-	5357402	VTSFT5034	-	-	10 - 32	2.38	.50	.92	.194	3	H4
5357404	VTSFT5035	-	-	5357403	VTSFT5035	5357405	VTSFT5035	10 - 32	2.37	.50	.91	.194	3	H5
-	-	-	-	5357406	VTSFT5036	-	-	10 - 32	2.38	.50	.92	.194	3	H6
5357408	VTSFT5037	-	-	5357407	VTSFT5037	5357409	VTSFT5037	10 - 32	2.38	.50	.92	.194	3	H7
5357431	VTSFT5038	-	-	5357430	VTSFT5038	5357432	VTSFT5038	10 - 32	2.38	.50	.92	.194	3	H11
5364106	VTSFT5039	-	-	5364105	VTSFT5039	5364107	VTSFT5039	12 - 24	2.43	.50	.96	.220	3	H3
5364109	VTSFT5040	-	-	5364108	VTSFT5040	5364450	VTSFT5040	12 - 28	2.43	.50	.96	.220	3	H3
5364453	VTSFT5041	5364452	VTSFT5041	5364451	VTSFT5041	5364454	VTSFT5041	1/4 - 20	2.50	.63	1.00	.255	3	H3
5364456	VTSFT5042	-	-	5364455	VTSFT5042	5364457	VTSFT5042	1/4 - 20	2.50	.63	1.00	.255	3	H5
5364459	VTSFT5043	-	-	5364458	VTSFT5043	5364480	VTSFT5043	1/4 - 20	2.50	.63	1.00	.255	3	H7
5364482	VTSFT5044	-	-	5364481	VTSFT5044	5364483	VTSFT5044	1/4 - 20	2.50	.63	1.00	.255	3	H11
5364486	VTSFT5045	5364485	VTSFT5045	5364484	VTSFT5045	5364487	VTSFT5045	1/4 - 28	2.49	.62	1.00	.255	3	H3
5364489	VTSFT5046	-	-	5364488	VTSFT5046	5364490	VTSFT5046	1/4 - 28	2.49	.62	1.00	.255	3	H4
5364492	VTSFT5047	-	-	5364491	VTSFT5047	5364493	VTSFT5047	1/4 - 28	2.49	.62	1.00	.255	3	H5
-	-	-	-	5364494	VTSFT5048	-	-	1/4 - 28	2.49	.62	1.00	.255	3	H6
5364496	VTSFT5049	-	-	5364495	VTSFT5049	5364498	VTSFT5049	1/4 - 28	2.49	.62	1.00	.255	3	H7
5364500	VTSFT5050	-	-	5364499	VTSFT5050	5364501	VTSFT5050	1/4 - 28	2.49	.62	1.00	.255	3	H11
5364504	VTSFT5051	5364503	VTSFT5051	5364502	VTSFT5051	5364505	VTSFT5051	5/16 - 18	2.72	.69	1.13	.318	3	H3
5364507	VTSFT5052	-	-	5364506	VTSFT5052	5364508	VTSFT5052	5/16 - 18	2.72	.69	1.13	.318	3	H5
5364510	VTSFT5053	-	-	5364509	VTSFT5053	5364511	VTSFT5053	5/16 - 18	2.72	.69	1.13	.318	3	H7
5364513	VTSFT5054	-	-	5364512	VTSFT5054	5364514	VTSFT5054	5/16 - 18	2.72	.69	1.13	.318	3	H11
5364517	VTSFT5055	5364516	VTSFT5055	5364515	VTSFT5055	5364518	VTSFT5055	5/16 - 24	2.71	.68	1.13	.318	3	H3
5364530	VTSFT5056	-	-	5364519	VTSFT5056	5364531	VTSFT5056	5/16 - 24	2.71	.68	1.13	.318	3	H4
5364533	VTSFT5057	-	-	5364532	VTSFT5057	5364534	VTSFT5057	5/16 - 24	2.71	.68	1.13	.318	3	H5
5364536	VTSFT5058	-	-	5364535	VTSFT5058	5364537	VTSFT5058	5/16 - 24	2.71	.68	1.12	.318	3	H6
5364539	VTSFT5059	-	-	5364538	VTSFT5059	5364540	VTSFT5059	5/16 - 24	2.71	.68	1.12	.318	3	H7
5364542	VTSFT5060	-	-	5364541	VTSFT5060	5364543	VTSFT5060	5/16 - 24	2.71	.68	1.12	.318	3	H11
5364546	VTSFT5061	5364545	VTSFT5061	5364544	VTSFT5061	5364548	VTSFT5061	3/8 - 16	2.94	.75	1.27	.381	3	H3
5364550	VTSFT5062	-	-	5364549	VTSFT5062	5364551	VTSFT5062	3/8 - 16	2.94	.75	1.27	.381	3	H5
5364554	VTSFT5063	-	-	5364553	VTSFT5063	5364555	VTSFT5063	3/8 - 16	2.94	.75	1.27	.381	3	H7
5364557	VTSFT5064	-	-	5364556	VTSFT5064	5364558	VTSFT5064	3/8 - 16	2.93	.75	1.27	.381	3	H11

(continued)

(VT-SFT • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • ANSI • Rigid and Synchronous Holders — continued)



● first choice
○ alternate choice

grade WP42EG TiCN		grade WU41EG TiN		grade WP49EG Oxide		grade WU40EG Bright		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #	D1 TPI	L	L3	L2	D		
5364561	VTSFT5065	5364560	VTSFT5065	5364559	VTSFT5065	5364562	VTSFT5065	3/8 - 24	2.92	.74	1.25	.381	3	H3
5364564	VTSFT5066	-	-	5364563	VTSFT5066	5364565	VTSFT5066	3/8 - 24	2.92	.74	1.25	.381	3	H4
5364567	VTSFT5067	-	-	5364566	VTSFT5067	5364568	VTSFT5067	3/8 - 24	2.92	.74	1.25	.381	3	H5
-	-	-	-	5364569	VTSFT5068	-	-	3/8 - 24	2.92	.74	1.25	.381	3	H6
5364571	VTSFT5069	-	-	5364570	VTSFT5069	5364572	VTSFT5069	3/8 - 24	2.92	.74	1.25	.381	3	H7
5364574	VTSFT5070	-	-	5364573	VTSFT5070	5364575	VTSFT5070	3/8 - 24	2.92	.74	1.25	.381	3	H11
5364579	VTSFT5071	5364578	VTSFT5071	5364577	VTSFT5071	5364600	VTSFT5071	7/16 - 14	3.16	.88	1.42	.323	3	H3
5364602	VTSFT5072	-	-	5364601	VTSFT5072	5364603	VTSFT5072	7/16 - 14	3.16	.88	1.42	.323	3	H5
5364605	VTSFT5073	-	-	5364604	VTSFT5073	5364606	VTSFT5073	7/16 - 14	3.16	.88	1.42	.323	3	H7
5364608	VTSFT5074	-	-	5364607	VTSFT5074	5364609	VTSFT5074	7/16 - 14	3.16	.88	1.42	.323	3	H11
5364612	VTSFT5075	5364611	VTSFT5075	5364610	VTSFT5075	5364613	VTSFT5075	7/16 - 20	3.16	.88	1.42	.323	3	H3
5364615	VTSFT5076	-	-	5364614	VTSFT5076	5364616	VTSFT5076	7/16 - 20	3.16	.88	1.42	.323	3	H5
-	-	-	-	5364617	VTSFT5077	-	-	7/16 - 20	3.16	.88	1.42	.323	3	H6
5364619	VTSFT5078	-	-	5364618	VTSFT5078	5364620	VTSFT5078	7/16 - 20	3.16	.88	1.42	.323	3	H7
5364622	VTSFT5079	-	-	5364621	VTSFT5079	5364623	VTSFT5079	7/16 - 20	3.16	.88	1.42	.323	3	H11
5364626	VTSFT5080	5364625	VTSFT5080	5364624	VTSFT5080	5364627	VTSFT5080	1/2 - 13	3.38	.94	1.65	.367	3	H3
5364629	VTSFT5081	-	-	5364628	VTSFT5081	5364630	VTSFT5081	1/2 - 13	3.38	.94	1.65	.367	3	H5
5364632	VTSFT5082	-	-	5364631	VTSFT5082	5364633	VTSFT5082	1/2 - 13	3.38	.94	1.65	.367	3	H7
5364635	VTSFT5083	-	-	5364634	VTSFT5083	5364636	VTSFT5083	1/2 - 13	3.38	.94	1.65	.367	3	H11
5364639	VTSFT5084	5364638	VTSFT5084	5364637	VTSFT5084	5364640	VTSFT5084	1/2 - 20	3.38	.94	1.65	.367	3	H3
5364642	VTSFT5085	-	-	5364641	VTSFT5085	5364643	VTSFT5085	1/2 - 20	3.38	.94	1.65	.367	3	H5
-	-	-	-	5364644	VTSFT5086	-	-	1/2 - 20	3.38	.94	1.65	.367	3	H6
5364646	VTSFT5087	-	-	5364645	VTSFT5087	5364647	VTSFT5087	1/2 - 20	3.38	.94	1.74	.367	3	H7
5364649	VTSFT5088	-	-	5364648	VTSFT5088	5364670	VTSFT5088	1/2 - 20	3.38	.94	1.74	.367	3	H11
5364673	VTSFT5089	5364672	VTSFT5089	5364671	VTSFT5089	5364674	VTSFT5089	9/16 - 12	3.59	1.00	1.74	.429	3	H3
-	-	-	-	5364675	VTSFT5090	5364676	VTSFT5090	9/16 - 12	3.59	1.00	1.74	.429	3	H5
5364679	VTSFT5091	5364678	VTSFT5091	5364677	VTSFT5091	5364680	VTSFT5091	9/16 - 18	3.59	1.00	1.74	.429	3	H3
-	-	-	-	5364681	VTSFT5092	5364682	VTSFT5092	9/16 - 18	3.59	1.00	1.74	.429	3	H5
5364685	VTSFT5093	5364684	VTSFT5093	5364683	VTSFT5093	5364686	VTSFT5093	5/8 - 11	3.81	2.00	1.89	.480	3	H3
5364688	VTSFT5094	-	-	5364687	VTSFT5094	5364689	VTSFT5094	5/8 - 11	3.81	1.09	1.89	.480	3	H5
-	-	-	-	5364690	VTSFT5095	-	-	5/8 - 11	3.81	1.09	1.89	.480	3	H7
5364693	VTSFT5096	5364692	VTSFT5096	5364691	VTSFT5096	5364694	VTSFT5096	5/8 - 18	3.81	1.09	1.89	.480	3	H3
-	-	-	-	5364695	VTSFT5097	5364696	VTSFT5097	5/8 - 18	3.81	1.09	1.89	.480	3	H5
-	-	-	-	5364697	VTSFT5098	-	-	5/8 - 18	3.81	1.09	1.89	.480	3	H6
-	-	-	-	5364698	VTSFT5099	-	-	5/8 - 18	3.81	1.09	1.89	.480	3	H7
5364701	VTSFT5100	5364700	VTSFT5100	5364699	VTSFT5100	5364702	VTSFT5100	3/4 - 10	4.25	1.22	2.08	.590	4	H3
5364704	VTSFT5101	-	-	5364703	VTSFT5101	5364705	VTSFT5101	3/4 - 10	4.25	1.22	2.08	.590	4	H5
5364708	VTSFT5102	5364707	VTSFT5102	5364706	VTSFT5102	5364709	VTSFT5102	3/4 - 16	4.25	1.22	2.08	.590	4	H3
5364711	VTSFT5103	-	-	5364710	VTSFT5103	5364712	VTSFT5103	3/4 - 16	4.25	1.22	2.08	.590	4	H5
-	-	-	-	5364713	VTSFT5104	-	-	3/4 - 16	4.25	1.22	2.08	.590	4	H7

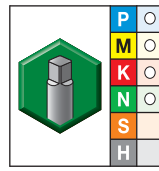
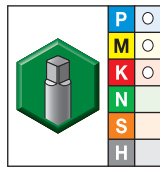
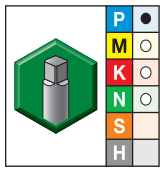
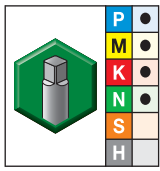
(continued)

Multipurpose Taps

VariTap™ Spiral-Flute HSS-E Taps • Blind Holes



(VT-SFT • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • ANSI • Rigid and Synchronous Holders — continued)



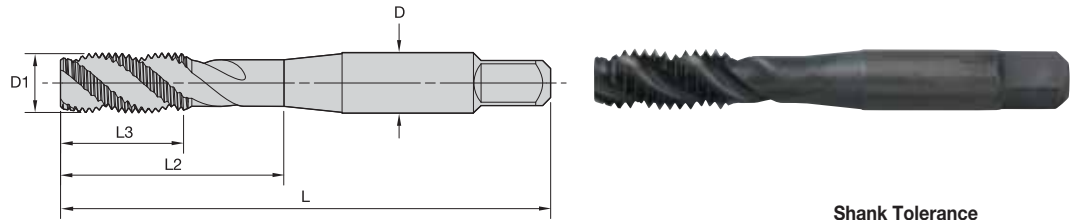
● first choice
○ alternate choice

grade WP42EG TiCN		grade WU41EG TiN		grade WP49EG Oxide		grade WU40EG Bright		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #	D1 TPI	L	L3	L2	D		
5364716	VTSFT5105	5364715	VTSFT5105	5364714	VTSFT5105	5364717	VTSFT5105	7/8 - 9	4.69	1.34	2.30	.697	4	H4
5364719	VTSFT5106	-	-	5364718	VTSFT5106	5364720	VTSFT5106	7/8 - 9	4.69	1.34	2.30	.697	4	H5
5364723	VTSFT5107	5364722	VTSFT5107	5364721	VTSFT5107	5364724	VTSFT5107	7/8 - 14	4.69	1.34	2.30	.697	4	H4
5364727	VTSFT5108	5364725	VTSFT5108	5364726	VTSFT5108	5364728	VTSFT5108	1 - 8	5.13	1.50	2.58	.800	4	H5
5364740	VTSFT5109	-	-	5364729	VTSFT5109	5364741	VTSFT5109	1 - 12	5.13	1.50	2.58	.800	4	H4
-	-	-	-	5364742	VTSFT5110	-	-	1 1/8 - 7	5.44	1.71	2.56	.896	4	H6
-	-	-	-	5364744	VTSFT5111	-	-	1 1/8 - 8	5.44	1.71	2.56	.896	4	H6
-	-	-	-	5364743	VTSFT5112	-	-	1 1/8 - 12	5.44	1.71	2.56	.896	4	H5
-	-	-	-	5364746	VTSFT5113	5364745	VTSFT5113	1 1/4 - 7	5.75	1.71	2.56	1.021	4	H6
-	-	-	-	5364747	VTSFT5114	-	-	1 1/4 - 12	5.75	1.71	2.56	1.021	4	H5
-	-	-	-	5364748	VTSFT5115	-	-	1 1/4 - 8	5.75	1.71	2.56	1.021	4	H6
-	-	-	-	5364749	VTSFT5116	-	-	1 3/8 - 6	6.06	2.00	3.00	1.108	5	H6
-	-	-	-	5364750	VTSFT5117	-	-	1 3/8 - 12	6.06	2.00	3.00	1.108	5	H5
-	-	-	-	5364751	VTSFT5118	-	-	1 3/8 - 8	6.06	2.00	3.00	1.108	5	H6
-	-	-	-	5364752	VTSFT5119	-	-	1 1/2 - 6	6.38	2.00	3.00	1.233	5	H6
-	-	-	-	5364754	VTSFT5120	-	-	1 1/2 - 8	6.38	2.00	3.00	1.233	5	H6
-	-	-	-	5364753	VTSFT5121	-	-	1 1/2 - 12	6.38	2.00	3.00	1.233	5	H5
-	-	-	-	5364755	VTSFT5122	-	-	1 3/4 - 5	7.00	2.40	3.19	1.429	5	H7
-	-	-	-	-	-	5364756	VTSFT5123	2 - 4 1/2	7.63	2.67	3.56	1.643	5	H7

NOTE: Suggested for use in rigid and synchronous holders.

Tapping

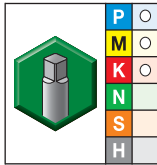
• WP49EG oxide



Shank Tolerance	
D inch	tolerance
.141-.635	+0, -.0015
>.635-1.51	+0, -.0020
>1.51-2.01	+0, -.0030

Tapping

■ VT-SFT • Form E Bottoming Chamfer • Machine Screw and Fractional • ANSI • Rigid and Synchronous Holders



● first choice
○ alternate choice

grade WP49EG Oxide		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	D1 TPI	L	L3	L2	D		
5390145	VTSFT5130	4 - 40	1.88	.51	.69	.141	2	H2
5390146	VTSFT5131	4 - 40	1.88	.51	.69	.141	2	H3
5390147	VTSFT5132	4 - 40	1.88	.51	.69	.141	2	H5
5390148	VTSFT5133	5 - 40	1.94	.58	.75	.141	2	H2
5390149	VTSFT5134	6 - 32	1.99	.38	.71	.141	2	H2
5390220	VTSFT5135	6 - 32	1.99	.38	.71	.141	2	H3
5390221	VTSFT5136	6 - 32	1.99	.38	.71	.141	2	H5
5390222	VTSFT5137	6 - 40	1.99	.37	.71	.141	2	H2
5390223	VTSFT5138	6 - 40	1.99	.37	.71	.141	2	H3
5390224	VTSFT5139	8 - 32	2.12	.38	.76	.168	3	H2
5390225	VTSFT5140	8 - 32	2.12	.38	.76	.168	3	H3
5390226	VTSFT5141	8 - 32	2.12	.38	.76	.168	3	H5
5390227	VTSFT5142	10 - 24	2.37	.50	.91	.194	3	H3
5390228	VTSFT5143	10 - 24	2.37	.50	.91	.194	3	H5
5390229	VTSFT5144	10 - 32	2.36	.49	.91	.194	3	H3
5390230	VTSFT5145	10 - 32	2.36	.49	.91	.194	3	H5
5390231	VTSFT5146	1/4 - 20	2.50	.63	1.00	.255	3	H3
5390232	VTSFT5147	1/4 - 20	2.50	.63	1.00	.255	3	H5
5390233	VTSFT5148	1/4 - 28	2.49	.62	1.00	.255	3	H3
5390234	VTSFT5149	1/4 - 28	2.49	.62	1.00	.255	3	H5
5390235	VTSFT5150	5/16 - 18	2.72	.69	1.13	.318	3	H3
5390236	VTSFT5151	5/16 - 18	2.72	.69	1.13	.318	3	H5
5390237	VTSFT5152	5/16 - 24	2.71	.68	1.13	.318	3	H3
5390238	VTSFT5153	5/16 - 24	2.71	.68	1.12	.318	3	H5

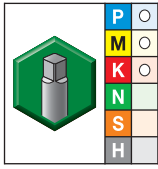
(continued)

Multipurpose Taps

VariTap™ Spiral-Flute HSS-E Taps • Blind Holes



(VT-SFT • Form E Bottoming Chamfer • Machine Screw and Fractional • ANSI • Rigid and Synchronous Holders — continued)



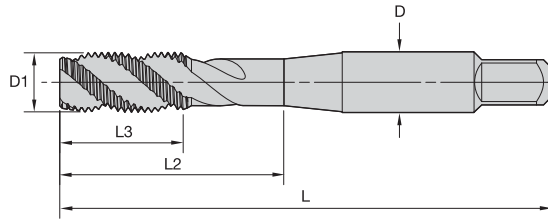
● first choice
○ alternate choice

Tapping

grade WP49EG Oxide		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	D1 TPI	L	L3	L2	D		
5390239	VTSFT5154	3/8 - 16	2.94	.75	1.27	.381	3	H3
5390240	VTSFT5155	3/8 - 16	2.94	.75	1.27	.381	3	H5
5390241	VTSFT5156	3/8 - 24	2.92	.74	1.25	.381	3	H3
5390242	VTSFT5157	3/8 - 24	2.92	.74	1.25	.381	3	H4
5390243	VTSFT5158	3/8 - 24	2.92	.74	1.25	.381	3	H5
5390244	VTSFT5159	7/16 - 14	3.16	.88	1.49	.323	3	H3
5390245	VTSFT5160	7/16 - 14	3.16	.88	1.49	.323	3	H5
5390246	VTSFT5161	7/16 - 20	3.16	.88	1.49	.323	3	H3
5390247	VTSFT5162	7/16 - 20	3.16	.88	1.49	.323	3	H5
5390248	VTSFT5163	1/2 - 13	3.38	.94	1.74	.367	3	H3
5390249	VTSFT5164	1/2 - 13	3.38	.94	1.74	.367	3	H5
5390260	VTSFT5165	1/2 - 20	3.38	.94	1.74	.367	3	H3
5390261	VTSFT5166	9/16 - 12	3.59	1.00	1.74	.429	3	H3
5390262	VTSFT5167	9/16 - 18	3.59	1.00	1.74	.429	3	H3
5390263	VTSFT5168	5/8 - 11	3.81	1.09	1.89	.480	3	H3
5390264	VTSFT5169	5/8 - 11	3.81	1.09	1.89	.480	3	H5
5390265	VTSFT5170	5/8 - 18	3.81	1.09	1.89	.480	3	H3
5390266	VTSFT5171	5/8 - 18	3.81	1.09	1.89	.480	3	H5
5390267	VTSFT5172	3/4 - 10	4.25	1.22	2.08	.590	4	H3
5390268	VTSFT5173	3/4 - 16	4.25	1.22	2.08	.590	4	H3

NOTE: Suggested for use in rigid and synchronous holders.

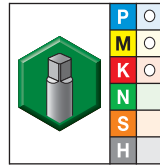
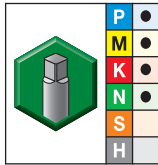
- WP42EG TiCN
- WP49EG oxide



Shank Tolerance	
D inch	tolerance
.141-.635	+0, -.0015
>.635-1.51	+0, -.0020
>1.51-2.01	+0, -.0030

Tapping

■ VT-SFT TC • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • ANSI • Tension/Compression Holders



- first choice
- alternate choice

grade WP42EG TiCN		grade WP49EG Oxide		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	D1 TPI	L	L3	L2	D		
6140248	VTSFT-TC5001	6140249	VTSFT-TC5001	2 - 56	1.76	.39	.50	.141	2	H2
6140250	VTSFT-TC5002	6140271	VTSFT-TC5002	3 - 48	1.82	.46	.57	.141	2	H2
6140272	VTSFT-TC5003	6140273	VTSFT-TC5003	4 - 40	1.88	.52	.70	.141	2	H2
6140274	VTSFT-TC5004	6140275	VTSFT-TC5004	4 - 40	1.88	.52	.70	.141	2	H3
6140276	VTSFT-TC5005	6140277	VTSFT-TC5005	4 - 40	1.88	.52	.70	.141	2	H4
6140278	VTSFT-TC5006	6140279	VTSFT-TC5006	4 - 40	1.88	.52	.70	.141	2	H5
-		6140280	VTSFT-TC5007	4 - 40	1.88	.52	.70	.141	2	H6
6140281	VTSFT-TC5008	6140282	VTSFT-TC5008	4 - 48	1.88	.53	.70	.141	2	H2
6140283	VTSFT-TC5009	6140284	VTSFT-TC5009	5 - 40	1.95	.59	.76	.141	2	H2
6140285	VTSFT-TC5010	6140286	VTSFT-TC5010	6 - 32	2.00	.39	.72	.141	2	H2
5886705	VTSFT-TC5011	5886704	VTSFT-TC5011	6 - 32	2.00	.38	.72	.141	3	H3
-		6140287	VTSFT-TC5012	6 - 32	2.00	.39	.72	.141	2	H4
6140288	VTSFT-TC5013	-		6 - 32	2.00	.39	.72	.141	2	H5
-		5886706	VTSFT-TC5013	6 - 32	2.00	.38	.72	.141	3	H5
6140289	VTSFT-TC5014	6140290	VTSFT-TC5014	6 - 32	2.00	.39	.72	.141	2	H7
6140291	VTSFT-TC5015	6140292	VTSFT-TC5015	6 - 32	2.00	.39	.72	.141	2	H11
6140293	VTSFT-TC5016	6140294	VTSFT-TC5016	6 - 40	2.00	.39	.72	.141	2	H2
-		6140295	VTSFT-TC5017	6 - 40	2.00	.39	.72	.141	2	H3
6140296	VTSFT-TC5018	6140297	VTSFT-TC5018	8 - 32	2.13	.38	.77	.168	3	H2
5886708	VTSFT-TC5019	5886707	VTSFT-TC5019	8 - 32	2.13	.38	.77	.168	3	H3
-		6140298	VTSFT-TC5020	8 - 32	2.13	.38	.77	.168	3	H4
6140299	VTSFT-TC5021	5886709	VTSFT-TC5021	8 - 32	2.13	.38	.77	.168	3	H5
-		6140300	VTSFT-TC5022	8 - 32	2.13	.38	.77	.168	3	H6
6140301	VTSFT-TC5023	6140302	VTSFT-TC5023	8 - 32	2.13	.38	.77	.168	3	H7

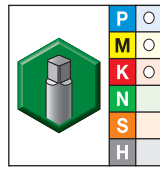
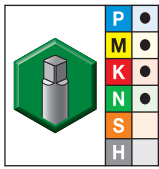
(continued)

Multipurpose Taps

VariTap™ Spiral-Flute HSS-E Taps • Blind Holes



(VT-SFT TC • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • ANSI • Tension/Compression Holders — continued)



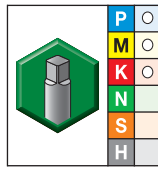
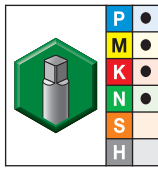
● first choice
○ alternate choice

Tapping

grade WP42EG TiCN		grade WP49EG Oxide		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	D1 TPI	L	L3	L2	D		
6140303	VTSFT-TC5024	6140304	VTSFT-TC5024	8 - 32	2.13	.38	.77	.168	3	H11
-	-	6140305	VTSFT-TC5025	8 - 36	2.13	.38	.77	.168	3	H3
5887031	VTSFT-TC5027	6140306	VTSFT-TC5026	10 - 24	2.38	.50	.92	.194	3	H2
-	-	5886710	VTSFT-TC5027	10 - 24	2.38	.50	.92	.194	3	H3
6140308	VTSFT-TC5029	6140307	VTSFT-TC5028	10 - 24	2.38	.50	.92	.194	3	H4
-	-	5887032	VTSFT-TC5029	10 - 24	2.38	.50	.92	.194	3	H5
6140310	VTSFT-TC5031	6140309	VTSFT-TC5030	10 - 24	2.38	.50	.92	.194	3	H7
6140312	VTSFT-TC5032	6140311	VTSFT-TC5031	10 - 24	2.38	.50	.92	.194	3	H11
5887034	VTSFT-TC5033	6140313	VTSFT-TC5032	10 - 32	2.38	.50	.92	.194	3	H2
-	-	5887033	VTSFT-TC5033	10 - 32	2.38	.50	.92	.194	3	H3
6140315	VTSFT-TC5035	6140314	VTSFT-TC5034	10 - 32	2.38	.50	.92	.194	3	H4
-	-	5887035	VTSFT-TC5035	10 - 32	2.37	.50	.91	.194	3	H5
6140317	VTSFT-TC5037	6140316	VTSFT-TC5036	10 - 32	2.38	.50	.92	.194	3	H6
6140319	VTSFT-TC5038	6140318	VTSFT-TC5037	10 - 32	2.38	.50	.92	.194	3	H7
5887037	VTSFT-TC5039	6140320	VTSFT-TC5038	10 - 32	2.38	.50	.92	.194	3	H11
6140321	VTSFT-TC5040	5887036	VTSFT-TC5039	12 - 24	2.43	.50	.96	.220	3	H3
5887039	VTSFT-TC5041	6140322	VTSFT-TC5040	12 - 28	2.43	.50	.96	.220	3	H3
6140183	VTSFT-TC5042	5887038	VTSFT-TC5041	1/4 - 20	2.50	.63	1.00	.255	3	H3
6140184	VTSFT-TC5043	6140185	VTSFT-TC5042	1/4 - 20	2.50	.63	1.00	.255	3	H5
6140186	VTSFT-TC5044	6140186	VTSFT-TC5043	1/4 - 20	2.50	.63	1.00	.255	3	H7
5887042	VTSFT-TC5045	6140187	VTSFT-TC5044	1/4 - 20	2.50	.63	1.00	.255	3	H11
6140188	VTSFT-TC5046	5887041	VTSFT-TC5045	1/4 - 28	2.49	.62	1.00	.255	3	H3
6140191	VTSFT-TC5047	6140190	VTSFT-TC5046	1/4 - 28	2.49	.62	1.00	.255	3	H4
-	-	5887043	VTSFT-TC5047	1/4 - 28	2.49	.62	1.00	.255	3	H5
6140193	VTSFT-TC5049	6140192	VTSFT-TC5048	1/4 - 28	2.49	.62	1.00	.255	3	H6
6140196	VTSFT-TC5050	6140195	VTSFT-TC5049	1/4 - 28	2.49	.62	1.00	.255	3	H7
5887045	VTSFT-TC5051	6140197	VTSFT-TC5050	1/4 - 28	2.49	.62	1.00	.255	3	H11
6140198	VTSFT-TC5052	5887044	VTSFT-TC5051	5/16 - 18	2.72	.69	1.13	.318	3	H3
6140200	VTSFT-TC5053	5887046	VTSFT-TC5052	5/16 - 18	2.72	.69	1.13	.318	3	H5
6140202	VTSFT-TC5054	6140201	VTSFT-TC5053	5/16 - 18	2.72	.69	1.13	.318	3	H7
5887048	VTSFT-TC5055	6140203	VTSFT-TC5054	5/16 - 18	2.72	.69	1.13	.318	3	H11
6140212	VTSFT-TC5056	5887047	VTSFT-TC5055	5/16 - 24	2.71	.68	1.13	.318	3	H3
6140214	VTSFT-TC5057	6140213	VTSFT-TC5056	5/16 - 24	2.71	.68	1.13	.318	3	H4
6140215	VTSFT-TC5058	5887049	VTSFT-TC5057	5/16 - 24	2.71	.68	1.12	.318	3	H5
6140218	VTSFT-TC5059	6140216	VTSFT-TC5058	5/16 - 24	2.71	.68	1.12	.318	3	H6
6140220	VTSFT-TC5060	6140219	VTSFT-TC5059	5/16 - 24	2.71	.68	1.12	.318	3	H7
5887051	VTSFT-TC5061	6140221	VTSFT-TC5060	5/16 - 24	2.71	.68	1.12	.318	3	H11
6140222	VTSFT-TC5062	5887050	VTSFT-TC5061	3/8 - 16	2.94	.75	1.27	.381	3	H3
6140223	VTSFT-TC5063	5887052	VTSFT-TC5062	3/8 - 16	2.94	.75	1.27	.381	3	H5
		6140224	VTSFT-TC5063	3/8 - 16	2.94	.75	1.27	.381	3	H7

(continued)

(VT-SFT TC • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • ANSI • Tension/Compression Holders — continued)



● first choice
○ alternate choice

grade WP42EG TiCN		grade WP49EG Oxide		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	D1 TPI	L	L3	L2	D		
6140225	VTSFT-TC5064	6140226	VTSFT-TC5064	3/8 - 16	2.93	.75	1.27	.381	3	H11
5887054	VTSFT-TC5065	5887053	VTSFT-TC5065	3/8 - 24	2.92	.74	1.25	.381	3	H3
6140227	VTSFT-TC5066	6140228	VTSFT-TC5066	3/8 - 24	2.92	.74	1.25	.381	3	H4
6140229	VTSFT-TC5067	5887055	VTSFT-TC5067	3/8 - 24	2.92	.74	1.25	.381	3	H5
-		6140230	VTSFT-TC5068	3/8 - 24	2.92	.74	1.25	.381	3	H6
6140231	VTSFT-TC5069	6140232	VTSFT-TC5069	3/8 - 24	2.92	.74	1.25	.381	3	H7
6140233	VTSFT-TC5070	6140234	VTSFT-TC5070	3/8 - 24	2.92	.74	1.25	.381	3	H11
5887057	VTSFT-TC5071	5887056	VTSFT-TC5071	7/16 - 14	3.16	.88	1.49	.323	3	H3
6140235	VTSFT-TC5072	5887058	VTSFT-TC5072	7/16 - 14	3.16	.88	1.49	.323	3	H5
6140236	VTSFT-TC5073	6140237	VTSFT-TC5073	7/16 - 14	3.16	.88	1.49	.323	3	H7
6140238	VTSFT-TC5074	6140239	VTSFT-TC5074	7/16 - 14	3.16	.88	1.49	.323	3	H11
5887061	VTSFT-TC5075	5887059	VTSFT-TC5075	7/16 - 20	3.16	.88	1.49	.323	3	H3
6140240	VTSFT-TC5076	5887062	VTSFT-TC5076	7/16 - 20	3.16	.88	1.49	.323	3	H5
-		6140241	VTSFT-TC5077	7/16 - 20	3.16	.88	1.49	.323	3	H6
6140242	VTSFT-TC5078	6140243	VTSFT-TC5078	7/16 - 20	3.16	.88	1.49	.323	3	H7
6140244	VTSFT-TC5079	6140245	VTSFT-TC5079	7/16 - 20	3.16	.88	1.49	.323	3	H11
5887064	VTSFT-TC5080	5887063	VTSFT-TC5080	1/2 - 13	3.38	.94	1.74	.367	3	H3
6140422	VTSFT-TC5081	5887065	VTSFT-TC5081	1/2 - 13	3.38	.94	1.74	.367	3	H5
6140423	VTSFT-TC5082	6140424	VTSFT-TC5082	1/2 - 13	3.38	.94	1.74	.367	3	H7
6140425	VTSFT-TC5083	6140426	VTSFT-TC5083	1/2 - 13	3.38	.94	1.74	.367	3	H11
5887068	VTSFT-TC5084	5887067	VTSFT-TC5084	1/2 - 20	3.38	.94	1.74	.367	3	H3
6140427	VTSFT-TC5085	5887069	VTSFT-TC5085	1/2 - 20	3.38	.94	1.74	.367	3	H5
-		6140428	VTSFT-TC5086	1/2 - 20	3.38	.94	1.74	.367	3	H6
6140429	VTSFT-TC5087	6140430	VTSFT-TC5087	1/2 - 20	3.38	.94	1.74	.367	3	H7
6140431	VTSFT-TC5088	6140432	VTSFT-TC5088	1/2 - 20	3.38	.94	1.74	.367	3	H11
6140434	VTSFT-TC5089	6140436	VTSFT-TC5089	9/16 - 12	3.59	1.00	1.74	.429	3	H3
-		6140438	VTSFT-TC5090	9/16 - 12	3.59	1.00	1.74	.429	3	H5
6140440	VTSFT-TC5091	6140452	VTSFT-TC5091	9/16 - 18	3.59	1.00	1.74	.429	3	H3
-		6140454	VTSFT-TC5092	9/16 - 18	3.59	1.00	1.74	.429	3	H5
5887071	VTSFT-TC5093	5887070	VTSFT-TC5093	5/8 - 11	3.81	1.09	1.89	.480	3	H3
6140456	VTSFT-TC5094	5887072	VTSFT-TC5094	5/8 - 11	3.81	1.09	1.89	.480	3	H5
-		6140458	VTSFT-TC5095	5/8 - 11	3.81	1.09	1.89	.480	3	H7
5887074	VTSFT-TC5096	5887073	VTSFT-TC5096	5/8 - 18	3.81	1.09	1.89	.480	3	H3
-		5887075	VTSFT-TC5097	5/8 - 18	3.81	1.09	1.89	.480	3	H5
-		6140460	VTSFT-TC5098	5/8 - 18	3.81	1.09	1.89	.480	3	H6
-		6140463	VTSFT-TC5099	5/8 - 18	3.81	1.09	1.88	.480	3	H7
5887077	VTSFT-TC5100	5887076	VTSFT-TC5100	3/4 - 10	4.25	1.22	2.08	.590	4	H3
6140465	VTSFT-TC5101	5887078	VTSFT-TC5101	3/4 - 10	4.25	1.22	2.08	.590	4	H5
5887080	VTSFT-TC5102	5887079	VTSFT-TC5102	3/4 - 16	4.25	1.22	2.08	.590	4	H3
6140467	VTSFT-TC5103	5887081	VTSFT-TC5103	3/4 - 16	4.25	1.22	2.08	.590	4	H5

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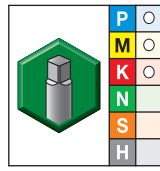
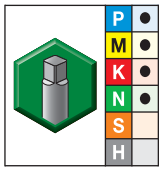


Multipurpose Taps

VariTap™ Spiral-Flute HSS-E Taps • Blind Holes



(VT-SFT TC • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • ANSI • Tension/Compression Holders — continued)



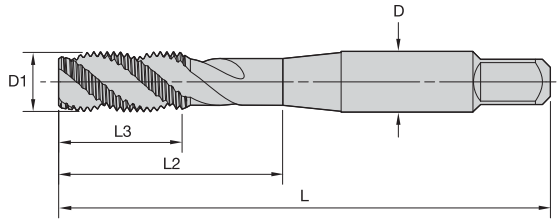
● first choice
○ alternate choice

grade WP42EG TiCN		grade WP49EG Oxide		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	D1 TPI	L	L3	L2	D		
-	-	6140469	VTSFT-TC5104	3/4 - 16	4.25	1.22	2.08	.590	4	H7
-	-	5887082	VTSFT-TC5105	7/8 - 9	4.69	1.34	2.30	.697	4	H4
6140471	VTSFT-TC5106	6140473	VTSFT-TC5106	7/8 - 9	4.69	1.34	2.30	.697	4	H5
6140475	VTSFT-TC5107	6140477	VTSFT-TC5107	7/8 - 14	4.69	1.34	2.30	.697	4	H4
-	-	5887083	VTSFT-TC5108	1 - 8	5.13	1.50	2.58	.800	4	H5
6140479	VTSFT-TC5109	6140481	VTSFT-TC5109	1 - 12	5.13	1.50	2.58	.800	4	H4
-	-	6140483	VTSFT-TC5110	1 1/8 - 7	5.44	1.71	2.56	.896	4	H6
-	-	6140484	VTSFT-TC5111	1 1/8 - 8	5.44	1.71	2.56	.896	4	H6
-	-	6140486	VTSFT-TC5112	1 1/8 - 12	5.44	1.71	2.56	.896	4	H5
-	-	6140488	VTSFT-TC5113	1 1/4 - 7	5.75	1.71	2.56	1.021	4	H6
-	-	6140490	VTSFT-TC5114	1 1/4 - 12	5.75	1.71	2.56	1.021	4	H5
-	-	6140492	VTSFT-TC5115	1 1/4 - 8	5.75	1.71	2.56	1.021	4	H6
-	-	6140494	VTSFT-TC5116	1 3/8 - 6	6.06	2.00	3.00	1.108	5	H6
-	-	6140496	VTSFT-TC5117	1 3/8 - 12	6.06	2.00	3.00	1.108	5	H5
-	-	6140498	VTSFT-TC5118	1 3/8 - 8	6.06	2.00	3.00	1.108	5	H6
-	-	6140500	VTSFT-TC5119	1 1/2 - 6	6.38	2.00	3.00	1.233	5	H6
-	-	6140502	VTSFT-TC5120	1 1/2 - 8	6.38	2.00	3.00	1.233	5	H6
-	-	6140504	VTSFT-TC5121	1 1/2 - 12	6.38	2.00	3.00	1.258	5	H5
-	-	6140506	VTSFT-TC5122	1 3/4 - 5	7.00	2.40	3.19	1.430	5	H7

NOTE: Suitable for tension/compression holders.

Tapping

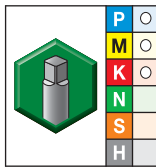
• WP49EG oxide



Shank Tolerance	
D inch	tolerance
.141-.635	+0, -.0015
>.635-1.51	+0, -.0020
>1.51-2.01	+0, -.0030

Tapping

■ VT-SFT TC • Form E Bottoming Chamfer • Machine Screw and Fractional • ANSI • Tension/Compression Holders



● first choice
○ alternate choice

grade WP49EG Oxide		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	D1 TPI	L	L3	L2	D		
6140539	VTSFT-TC5130	4 - 40	1.88	.51	.69	.141	2	H2
6140540	VTSFT-TC5131	4 - 40	1.88	.51	.69	.141	2	H3
6140541	VTSFT-TC5132	4 - 40	1.88	.51	.69	.141	2	H5
6140542	VTSFT-TC5133	5 - 40	1.94	.58	.75	.141	2	H2
6140543	VTSFT-TC5134	6 - 32	1.99	.38	.71	.141	2	H2
6140544	VTSFT-TC5135	6 - 32	1.99	.38	.71	.141	2	H3
6140545	VTSFT-TC5136	6 - 32	1.99	.38	.71	.141	2	H5
6140546	VTSFT-TC5137	6 - 40	2.00	.38	.71	.141	2	H2
6140547	VTSFT-TC5138	6 - 40	2.00	.38	.71	.141	2	H3
6140548	VTSFT-TC5139	8 - 32	2.12	.38	.76	.168	3	H2
6140549	VTSFT-TC5140	8 - 32	2.12	.38	.76	.168	3	H3
6140550	VTSFT-TC5141	8 - 32	2.12	.38	.76	.168	3	H5
6140561	VTSFT-TC5142	10 - 24	2.37	.50	.91	.194	3	H3
6140562	VTSFT-TC5143	10 - 24	2.37	.50	.91	.194	3	H5
6140563	VTSFT-TC5144	10 - 32	2.38	.50	.91	.194	3	H3
6140564	VTSFT-TC5145	10 - 32	2.38	.50	.91	.194	3	H5
6140565	VTSFT-TC5146	1/4 - 20	2.50	.63	1.00	.255	3	H3
6140566	VTSFT-TC5147	1/4 - 20	2.50	.63	1.00	.255	3	H5
6140567	VTSFT-TC5148	1/4 - 28	2.50	.63	1.00	.255	3	H3
6140568	VTSFT-TC5149	1/4 - 28	2.50	.63	1.00	.255	3	H5
6140569	VTSFT-TC5150	5/16 - 18	2.72	.69	1.13	.318	3	H3
6140570	VTSFT-TC5151	5/16 - 18	2.72	.69	1.13	.318	3	H5
6140571	VTSFT-TC5152	5/16 - 24	2.72	.69	1.13	.318	3	H3
6140572	VTSFT-TC5153	5/16 - 24	2.72	.69	1.12	.318	3	H5

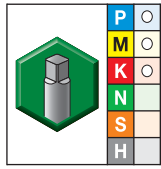
(continued)

Multipurpose Taps

VariTap™ Spiral-Flute HSS-E Taps • Blind Holes



(VT-SFT TC • Form E Bottoming Chamfer • Machine Screw and Fractional • ANSI • Tension/Compression Holders — continued)



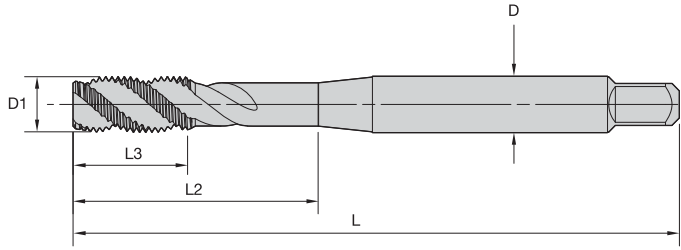
- first choice
- alternate choice

Tapping

grade WP49EG Oxide		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	D1 TPI	L	L3	L2	D		
6140573	VTSFT-TC5154	3/8 - 16	2.94	.75	1.27	.381	3	H5
6140574	VTSFT-TC5155	3/8 - 16	2.94	.75	1.27	.381	3	H3
6140579	VTSFT-TC5156	3/8 - 24	2.94	.75	1.27	.381	3	H3
6140580	VTSFT-TC5157	3/8 - 24	2.94	.75	1.27	.381	3	H4
6140581	VTSFT-TC5158	3/8 - 24	2.94	.75	1.27	.381	3	H5
6140582	VTSFT-TC5159	7/16 - 14	3.16	.88	1.49	.323	3	H3
6140583	VTSFT-TC5160	7/16 - 14	3.16	.88	1.49	.323	3	H5
6140584	VTSFT-TC5161	7/16 - 20	3.16	.88	1.49	.323	3	H3
6140585	VTSFT-TC5162	7/16 - 20	3.16	.88	1.49	.323	3	H5
6140586	VTSFT-TC5163	1/2 - 13	3.38	.94	1.74	.367	3	H3
6140587	VTSFT-TC5164	1/2 - 13	3.38	.94	1.74	.367	3	H5
6140588	VTSFT-TC5165	1/2 - 20	3.38	.94	1.74	.367	3	H3
6140589	VTSFT-TC5166	9/16 - 12	3.59	1.00	1.74	.429	3	H3
6140590	VTSFT-TC5167	9/16 - 18	3.59	1.00	1.74	.429	3	H3
6140591	VTSFT-TC5168	5/8 - 11	3.81	1.09	1.89	.480	3	H3
6140592	VTSFT-TC5169	5/8 - 11	3.81	1.09	1.89	.480	3	H5
6140593	VTSFT-TC5170	5/8 - 18	3.81	1.09	1.89	.480	3	H3
6140595	VTSFT-TC5171	5/8 - 18	3.81	1.09	1.89	.480	3	H5
6140597	VTSFT-TC5172	3/4 - 10	4.25	1.22	2.08	.590	4	H3
6140599	VTSFT-TC5173	3/4 - 16	4.25	1.22	2.08	.590	4	H3

NOTE: Suitable for tension/compression holders.

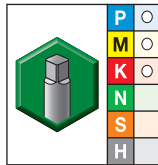
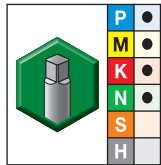
- WP42EG TiCN
- WP49EG oxide



Shank Tolerance	
D inch	tolerance
0.141–0.635	+0, -.0015
>0.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030



■ **VT-SFT • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • DIN Length ANSI Shank • Rigid and Synchronous Holders**

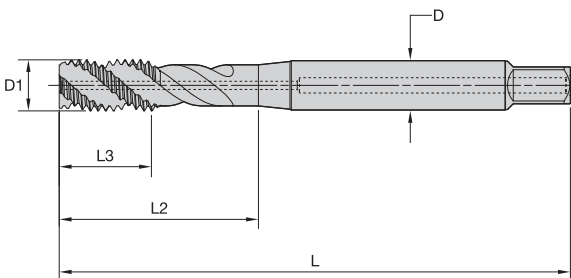


- first choice
- alternate choice

grade WP42EG TiCN		grade WP49EG Oxide		inch dimensions					number of flutes	dimension standard	class of fit
order #	catalog #	order #	catalog #	D1 size	L	L3	L2	D			
5436673	VTSFT9008	5436672	VTSFT9008	4 - 40	2.20	.31	.71	.141	2	DIN-ANSI	2B
5436675	VTSFT9009	5436674	VTSFT9009	6 - 32	2.20	.35	.79	.141	2	DIN-ANSI	2B
5436677	VTSFT9010	5436676	VTSFT9010	8 - 32	2.48	.43	.83	.168	3	DIN-ANSI	2B
5436679	VTSFT9011	5436678	VTSFT9011	10 - 24	2.76	.47	.99	.194	3	DIN-ANSI	2B
5436701	VTSFT9012	5436700	VTSFT9012	10 - 32	2.75	.47	.98	.194	3	DIN-ANSI	2B
5436703	VTSFT9013	5436702	VTSFT9013	1/4 - 20	3.15	.59	1.18	.255	3	DIN-ANSI	2B
5436705	VTSFT9014	5436704	VTSFT9014	1/4 - 28	3.14	.58	1.17	.255	3	DIN-ANSI	2B
5436707	VTSFT9015	5436706	VTSFT9015	5/16 - 18	3.54	.59	1.38	.318	3	DIN-ANSI	2B
5436709	VTSFT9016	5436708	VTSFT9016	5/16 - 24	3.53	.58	1.37	.318	3	DIN-ANSI	2B
5436721	VTSFT9017	5436720	VTSFT9017	3/8 - 16	3.94	.75	1.54	.381	3	DIN-ANSI	2B
5436723	VTSFT9018	5436722	VTSFT9018	3/8 - 24	3.92	.73	1.52	.381	3	DIN-ANSI	2B
5436725	VTSFT9019	5436724	VTSFT9019	7/16 - 14	3.94	.71	1.61	.323	3	DIN-ANSI	2B
5436727	VTSFT9020	5436726	VTSFT9020	7/16 - 20	3.94	.71	1.61	.323	3	DIN-ANSI	2B
5436729	VTSFT9021	5436728	VTSFT9021	1/2 - 13	4.33	.91	1.85	.367	3	DIN-ANSI	2B
5436731	VTSFT9022	5436730	VTSFT9022	1/2 - 20	4.33	.91	1.85	.367	3	DIN-ANSI	2B
5436733	VTSFT9023	5436732	VTSFT9023	5/8 - 11	4.33	.94	2.01	.480	3	DIN-ANSI	2B
5436735	VTSFT9024	5436734	VTSFT9024	5/8 - 18	4.33	.94	2.01	.480	3	DIN-ANSI	2B
5436737	VTSFT9025	5436736	VTSFT9025	3/4 - 10	4.92	1.18	2.52	.590	3	DIN-ANSI	2B
5436739	VTSFT9026	5436738	VTSFT9026	3/4 - 16	4.92	1.18	2.52	.590	3	DIN-ANSI	2B

NOTE: Suggested for use in rigid and synchronous holders.

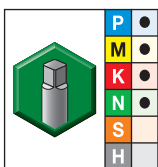
• WP42EG TiCN



Shank Tolerance	
D inch	tolerance
0.141-0.635	+0, -.0015
>0.635-1.51	+0, -.0020
>1.51-2.01	+0, -.0030

Tapping

■ VT-SFT • Form C Semi-Bottoming Chamfer • Through Coolant • Fractional • DIN Length ANSI Shank • Rigid and Synchronous Holders

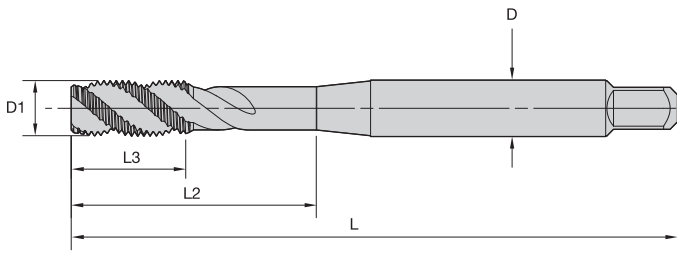


- first choice
- alternate choice

grade WP42EG TiCN		inch dimensions					number of flutes	dimension standard	class of fit
order #	catalog #	D1 TPI	L	L3	L2	D			
5436357	VTSFT9762	1/4 - 20	3.15	.59	1.18	.255	3	DIN-ANSI	2B
5436358	VTSFT9763	1/4 - 28	3.15	.59	1.18	.255	3	DIN-ANSI	2B
5436359	VTSFT9764	5/16 - 18	3.54	.59	1.38	.318	3	DIN-ANSI	2B
5436460	VTSFT9765	5/16 - 24	3.54	.59	1.38	.318	3	DIN-ANSI	2B
5436461	VTSFT9766	3/8 - 16	3.94	.75	1.54	.381	3	DIN-ANSI	2B
5436462	VTSFT9767	3/8 - 24	3.94	.75	1.54	.381	3	DIN-ANSI	2B
5436463	VTSFT9768	7/16 - 14	3.94	.71	1.61	.323	3	DIN-ANSI	2B
5436464	VTSFT9769	7/16 - 20	3.94	.71	1.61	.323	3	DIN-ANSI	2B
5436465	VTSFT9770	1/2 - 13	3.94	.91	1.85	.367	3	DIN-ANSI	2B
5436466	VTSFT9771	1/2 - 20	4.33	.91	1.85	.367	3	DIN-ANSI	2B
5436467	VTSFT9772	9/16 - 18	4.33	.98	2.09	.429	3	DIN-ANSI	2B
5436468	VTSFT9773	5/8 - 11	4.33	.94	2.01	.480	3	DIN-ANSI	2B
5436469	VTSFT9774	5/8 - 18	4.33	.94	2.01	.480	3	DIN-ANSI	2B
5436470	VTSFT9775	3/4 - 10	4.92	1.18	2.52	.590	4	DIN-ANSI	2B
5436471	VTSFT9776	3/4 - 16	4.92	1.18	2.52	.590	4	DIN-ANSI	2B
5436472	VTSFT9777	7/8 - 9	5.51	1.34	2.80	.697	4	DIN-ANSI	2B
5436473	VTSFT9778	7/8 - 14	5.51	1.34	2.80	.697	4	DIN-ANSI	2B
5436474	VTSFT9779	1 - 8	6.30	1.50	3.19	.800	4	DIN-ANSI	2B

NOTE: Suggested for use in rigid and synchronous holders.

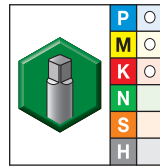
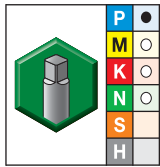
- WU41EG TiN
- WP49EG oxide



Shank Tolerance	
D mm	tolerance h9
1-3	+0, -0,025
>3-6	+0, -0,030
>6-10	+0, -0,036
>10-18	+0, -0,043
>18-30	+0, -0,052

Tapping

■ **VT-SFT • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • DIN 371 and 376 • Rigid and Synchronous Holders**



- first choice
- alternate choice

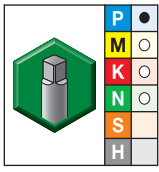
grade WU41EG TiN		grade WP49EG Oxide		metric dimensions					number of flutes	dimension standard	class of fit
order #	catalog #	order #	catalog #	D1 size	L	L3	L2	D			
5472587	VTSFT6005	5387487	VTSFT6005	4 - 40	56	8	18	3,5	2	DIN 371	2B
5472589	VTSFT6007	5387489	VTSFT6007	5 - 40	56	9	20	4,0	2	DIN 371	2B
5472600	VTSFT6008	5387640	VTSFT6008	6 - 32	56	9	20	4,0	2	DIN 371	2B
5472602	VTSFT6010	5387642	VTSFT6010	6 - 40	56	9	20	4,0	2	DIN 371	2B
5472603	VTSFT6011	5387643	VTSFT6011	8 - 32	63	11	21	4,5	3	DIN 371	2B
5472605	VTSFT6013	5387645	VTSFT6013	10 - 24	70	12	25	6,0	3	DIN 371	2B
5472606	VTSFT6014	5387646	VTSFT6014	10 - 32	70	12	25	6,0	3	DIN 371	2B
5472608	VTSFT6016	5387648	VTSFT6016	1/4 - 20	80	15	30	7,0	3	DIN 371	2B
5472609	VTSFT6017	5387649	VTSFT6017	1/4 - 28	80	15	30	7,0	3	DIN 371	2B
5472611	VTSFT6019	5387651	VTSFT6019	5/16 - 18	90	15	35	8,0	3	DIN 371	2B
5472612	VTSFT6020	5387652	VTSFT6020	5/16 - 24	90	15	35	8,0	3	DIN 371	2B
5472614	VTSFT6022	5387654	VTSFT6022	3/8 - 16	100	19	39	10,0	3	DIN 371	2B
5472615	VTSFT6023	5387655	VTSFT6023	3/8 - 24	100	19	39	10,0	3	DIN 371	2B
5472617	VTSFT6025	5387657	VTSFT6025	7/16 - 14	100	18	41	8,0	3	DIN 376	2B
5472618	VTSFT6026	5387658	VTSFT6026	7/16 - 20	100	18	41	8,0	3	DIN 376	2B
5472620	VTSFT6028	5387670	VTSFT6028	1/2 - 13	110	23	40	9,0	3	DIN 376	2B
5472621	VTSFT6029	5387671	VTSFT6029	1/2 - 20	110	23	40	9,0	3	DIN 376	2B
5472623	VTSFT6031	5387673	VTSFT6031	9/16 - 12	110	25	32	11,0	3	DIN 376	2B
5472624	VTSFT6032	5387674	VTSFT6032	9/16 - 18	110	25	32	11,0	3	DIN 376	2B
5472625	VTSFT6033	5387675	VTSFT6033	5/8 - 11	110	24	35	12,0	3	DIN 376	2B

(continued)

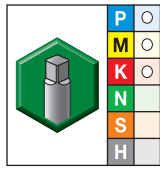
Multipurpose Taps

VariTap™ Spiral-Flute HSS-E Taps • Blind Holes

(VT-SFT • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • DIN 371 and 376 • Rigid and Synchronous Holders — continued)



grade WU41EG
TiN



grade WP49EG
Oxide

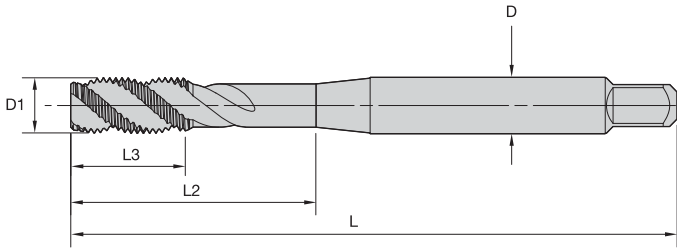
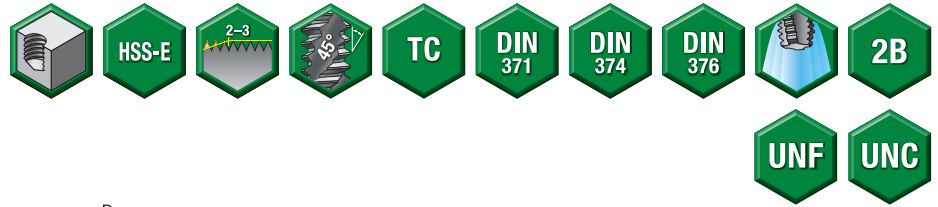
- first choice
- alternate choice

grade WU41EG TiN		grade WP49EG Oxide		metric dimensions					number of flutes	dimension standard	class of fit
order #	catalog #	order #	catalog #	D1 size	L	L3	L2	D			
5472626	VTSFT6034	5387676	VTSFT6034	5/8 - 18	110	24	35	12,0	3	DIN 376	2B
5472627	VTSFT6035	5387677	VTSFT6035	3/4 - 10	140	30	46	16,0	4	DIN 376	2B
5472628	VTSFT6036	5387678	VTSFT6036	3/4 - 16	140	30	46	16,0	4	DIN 376	2B
5472629	VTSFT6037	5387679	VTSFT6037	7/8 - 9	140	34	35	18,0	4	DIN 376	2B
5472630	VTSFT6038	5387700	VTSFT6038	7/8 - 14	140	34	35	18,0	4	DIN 376	2B
5472631	VTSFT6039	5387701	VTSFT6039	1 - 8	160	38	41	18,0	4	DIN 376	2B
5472632	VTSFT6040	5387702	VTSFT6040	1 - 12	160	38	41	18,0	4	DIN 376	2B

NOTE: Suggested for use in rigid and synchronous holders.

Tapping

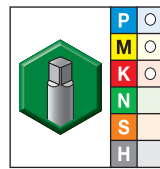
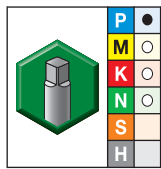
- WU41EG TiN
- WP49EG oxide



Shank Tolerance	
D mm	tolerance h9
1-3	+0, -0,025
>3-6	+0, -0,030
>6-10	+0, -0,036
>10-18	+0, -0,043
>18-30	+0, -0,052



■ VT-SFT TC • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • DIN 371, 374, and 376 • Tension/Compression Holders

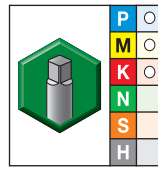
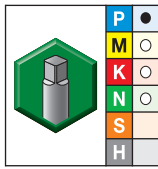


- first choice
- alternate choice

grade WU41EG TiN		grade WP49EG Oxide		metric dimensions					number of flutes	dimension standard	class of fit
order #	catalog #	order #	catalog #	D1 size	L	L3	L2	D			
6172748	VTSFT-TC6008	6172747	VTSFT-TC6008	6 - 32	56	7	21	4,0	3	DIN 371	2B
6172750	VTSFT-TC6009	6172749	VTSFT-TC6009	6 - 40	56	7	21	4,0	3	DIN 371	2B
6172782	VTSFT-TC6010	6172781	VTSFT-TC6010	8 - 32	63	7	21	4,5	3	DIN 371	2B
6172784	VTSFT-TC6011	6172783	VTSFT-TC6011	8 - 36	63	7	21	4,5	3	DIN 371	2B
6172786	VTSFT-TC6012	6172785	VTSFT-TC6012	10 - 24	70	8	25	6,0	3	DIN 371	2B
6172788	VTSFT-TC6013	6172787	VTSFT-TC6013	10 - 32	70	8	25	6,0	3	DIN 371	2B
6172790	VTSFT-TC6014	6172789	VTSFT-TC6014	12 - 24	80	10	30	6,0	3	DIN 371	2B
6172792	VTSFT-TC6015	6172791	VTSFT-TC6015	12 - 28	80	10	30	6,0	3	DIN 371	2B
6172794	VTSFT-TC6016	6172793	VTSFT-TC6016	1/4 - 20	80	10	29	7,0	3	DIN 371	2B
6172796	VTSFT-TC6017	6172795	VTSFT-TC6017	1/4 - 20	80	10	36	4,5	3	DIN 376	2B
6172798	VTSFT-TC6018	6172797	VTSFT-TC6018	1/4 - 28	80	10	29	7,0	3	DIN 371	2B
6172800	VTSFT-TC6050	6172799	VTSFT-TC6050	1/4 - 28	80	10	36	4,5	3	DIN 374	2B
6172802	VTSFT-TC6052	6172801	VTSFT-TC6052	5/16 - 18	90	13	37	8,0	3	DIN 371	2B
6172804	VTSFT-TC6021	6172803	VTSFT-TC6021	5/16 - 18	90	13	37	6,0	3	DIN 376	2B
6172806	VTSFT-TC6054	6172805	VTSFT-TC6054	5/16 - 24	90	13	37	6,0	3	DIN 374	2B
6172808	VTSFT-TC6056	6172807	VTSFT-TC6056	3/8 - 16	100	15	42	10,0	3	DIN 371	2B
6172810	VTSFT-TC6024	6172809	VTSFT-TC6024	3/8 - 16	100	15	45	7,0	3	DIN 376	2B
6172812	VTSFT-TC6058	6172811	VTSFT-TC6058	3/8 - 24	90	15	40	7,0	3	DIN 374	2B
6172814	VTSFT-TC6060	6172813	VTSFT-TC6060	7/16 - 14	100	15	47	8,0	3	DIN 376	2B
6172816	VTSFT-TC6027	6172815	VTSFT-TC6027	7/16 - 20	100	15	47	8,0	3	DIN 374	2B

(continued)

(VT-SFT TC • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • DIN 371, 374, and 376 • Tension/Compression Holders — continued)



● first choice
○ alternate choice

grade WU41EG
TiN

grade WP49EG
Oxide

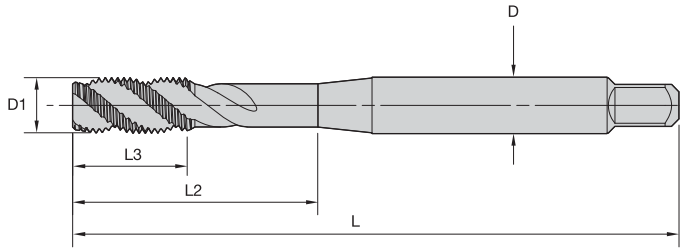
metric dimensions

grade WU41EG TiN		grade WP49EG Oxide		metric dimensions					number of flutes	dimension standard	class of fit
order #	catalog #	order #	catalog #	D1 size	L	L3	L2	D			
6172818	VTSFT-TC6062	6172817	VTSFT-TC6062	1/2 - 13	110	18	50	9,0	3	DIN 376	2B
6172820	VTSFT-TC6029	6172819	VTSFT-TC6029	1/2 - 20	100	13	44	9,0	3	DIN 374	2B
6172837	VTSFT-TC6030	6172836	VTSFT-TC6030	9/16 - 12	110	20	55	11,0	4	DIN 376	2B
6172839	VTSFT-TC6031	6172838	VTSFT-TC6031	9/16 - 18	100	15	44	11,0	4	DIN 374	2B
6172911	VTSFT-TC6032	6172840	VTSFT-TC6032	5/8 - 11	110	20	55	12,0	4	DIN 376	2B
6172913	VTSFT-TC6033	6172912	VTSFT-TC6033	5/8 - 18	100	15	45	12,0	4	DIN 374	2B
6172915	VTSFT-TC6034	6172914	VTSFT-TC6034	3/4 - 10	125	25	65	14,0	4	DIN 376	2B
6172917	VTSFT-TC6035	6172916	VTSFT-TC6035	3/4 - 16	110	17	55	14,0	4	DIN 374	2B
6172919	VTSFT-TC6036	6172918	VTSFT-TC6036	7/8 - 9	140	25	68	18,0	4	DIN 376	2B
6172932	VTSFT-TC6037	6172920	VTSFT-TC6037	7/8 - 14	125	18	57	18,0	4	DIN 374	2B
6172934	VTSFT-TC6038	6172933	VTSFT-TC6038	1 - 8	160	30	89	18,0	4	DIN 376	2B
6172936	VTSFT-TC6039	6172935	VTSFT-TC6039	1 - 12	140	22	63	18,0	4	DIN 374	2B
6172938	VTSFT-TC6040	6172937	VTSFT-TC6040	1 1/8 - 7	180	35	90	22,0	4	DIN 376	2B
6172940	VTSFT-TC6041	6172939	VTSFT-TC6041	1 1/8 - 12	150	22	70	22,0	4	DIN 374	2B
6172952	VTSFT-TC6042	6172951	VTSFT-TC6042	1 1/4 - 7	180	35	95	22,0	4	DIN 376	2B
6172954	VTSFT-TC6043	6172953	VTSFT-TC6043	1 1/4 - 12	150	22	67	22,0	5	DIN 374	2B
6172956	VTSFT-TC6044	6172955	VTSFT-TC6044	1 3/8 - 6	200	40	100	28,0	4	DIN 376	2B
6172958	VTSFT-TC6045	6172957	VTSFT-TC6045	1 3/8 - 12	170	24	80	28,0	5	DIN 374	2B
6172960	VTSFT-TC6046	6172959	VTSFT-TC6046	1 1/2 - 6	200	40	100	28,0	4	DIN 376	2B
6172962	VTSFT-TC6047	6172961	VTSFT-TC6047	1 1/2 - 12	170	24	72	28,0	6	DIN 374	2B
6172964	VTSFT-TC6048	6172963	VTSFT-TC6048	1 3/4 - 5	220	50	108	36,0	5	DIN 376	2B
6172966	VTSFT-TC6049	6172965	VTSFT-TC6049	2 - 4 1/2	250	55	140	40,0	5	DIN 376	2B

NOTE: Suitable for tension/compression holders.

Tapping

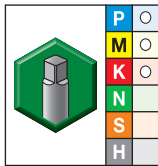
• WP49EG oxide



Shank Tolerance	
D mm	tolerance h9
1-3	+0, -0,025
>3-6	+0, -0,030
>6-10	+0, -0,036
>10-18	+0, -0,043
>18-30	+0, -0,052

Tapping

■ VT-SFT • Form C Semi-Bottoming Chamfer • UNJC/UNJF • Inch DIN 371 and 376 • Rigid and Synchronous Holders



- first choice
- alternate choice

grade WP49EG Oxide		metric dimensions					number of flutes	dimension standard	class of fit
order #	catalog #	D1 size	L	L3	L2	D			
5387488	VTSFT6006	4 - 40	56	8	18	3,5	2	DIN 371	3B
5387641	VTSFT6009	6 - 32	56	9	20	4,0	2	DIN 371	3B
5387644	VTSFT6012	8 - 32	63	11	21	4,5	3	DIN 371	3B
5387647	VTSFT6015	10 - 32	70	12	25	6,0	3	DIN 371	3B
5387650	VTSFT6018	1/4 - 28	80	15	30	7,0	3	DIN 371	3B
5387653	VTSFT6021	5/16 - 24	90	15	35	8,0	3	DIN 371	3B
5387656	VTSFT6024	3/8 - 24	100	19	39	10,0	3	DIN 371	3B
5387659	VTSFT6027	7/16 - 20	100	18	41	8,0	3	DIN 376	3B
5387672	VTSFT6030	1/2 - 20	110	23	40	9,0	3	DIN 376	3B

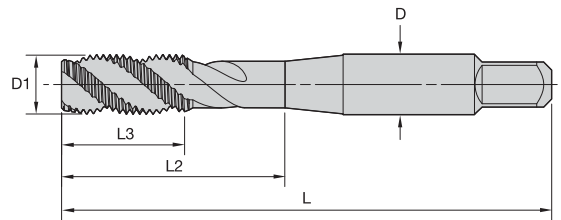
NOTE: Suggested for use in rigid and synchronous holders.

Multipurpose Taps

VariTap™ Spiral-Flute HSS-E Taps • Blind Holes



- WP42EG TiCN
- WU41EG TiN
- WP49EG oxide
- WU40EG bright

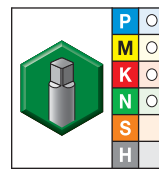
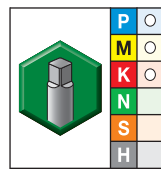
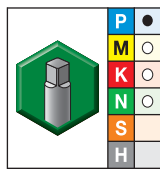
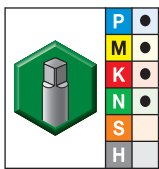


Shank Tolerance

D inch	tolerance
.141-.635	+0, -.0015
>.635-1.51	+0, -.0020
>1.51-2.01	+0, -.0030

Tapping

■ VT-SFT • Form C Semi-Bottoming Chamfer • Metric • ANSI • Rigid and Synchronous Holders



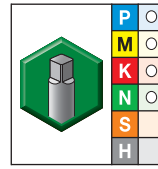
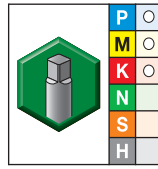
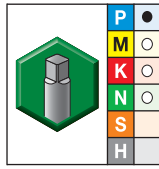
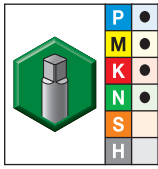
- first choice
- alternate choice

grade WP42EG TiCN		grade WU41EG TiN		grade WP49EG Oxide		grade WU40EG Bright		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #	D1 size	L	L3	L2	D		
5357033	VTSFT5505	5357034	VTSFT5505	5357031	VTSFT5505	5357035	VTSFT5505	M3 X 0,5	1.94	.58	.75	.141	2	D3
5357037	VTSFT5506	-	-	5357036	VTSFT5506	-	-	M3 X 0,5	1.94	.58	.75	.141	2	D11
5357039	VTSFT5507	5357050	VTSFT5507	5357038	VTSFT5507	5357051	VTSFT5507	M3,5 X 0,6	1.99	.38	.71	.141	2	D4
5357053	VTSFT5508	-	-	5357052	VTSFT5508	-	-	M3,5 X 0,6	1.99	.38	.71	.141	2	D11
5357055	VTSFT5509	5357056	VTSFT5509	5357054	VTSFT5509	5357057	VTSFT5509	M4 X 0,7	2.12	.38	.76	.168	3	D4
5357059	VTSFT5510	-	-	5357058	VTSFT5510	-	-	M4 X 0,7	2.12	.38	.76	.168	3	D11
5357061	VTSFT5511	5357062	VTSFT5511	5357060	VTSFT5511	5357063	VTSFT5511	M5 X 0,8	2.37	.50	.91	.194	3	D4
5357066	VTSFT5512	-	-	5357064	VTSFT5512	-	-	M5 X 0,8	2.37	.50	.91	.194	3	D11
5357068	VTSFT5513	5357069	VTSFT5513	5357067	VTSFT5513	5357080	VTSFT5513	M6 X 1	2.50	.63	1.01	.255	3	D5
5357083	VTSFT5514	-	-	5357082	VTSFT5514	-	-	M6 X 1	2.50	.63	1.01	.255	3	D11
5357085	VTSFT5515	5357086	VTSFT5515	5357084	VTSFT5515	5357087	VTSFT5515	M7 X 1	2.73	.69	1.15	.318	3	D5
5357089	VTSFT5516	-	-	5357088	VTSFT5516	-	-	M7 X 1	2.73	.69	1.15	.318	3	D11
5357101	VTSFT5517	5357102	VTSFT5517	5357100	VTSFT5517	5357103	VTSFT5517	M8 X 1	2.71	.69	1.12	.318	3	D5
5357105	VTSFT5518	-	-	5357104	VTSFT5518	-	-	M8 X 1	2.71	.69	1.12	.318	3	D11
5357107	VTSFT5519	5357108	VTSFT5519	5357106	VTSFT5519	5357120	VTSFT5519	M8 X 1,25	2.71	.69	1.12	.318	3	D5
5357123	VTSFT5520	-	-	5357121	VTSFT5520	-	-	M8 X 1,25	2.71	.69	1.12	.318	3	D11
5365567	VTSFT5521	-	-	5365566	VTSFT5521	5365568	VTSFT5521	M10 X 1	2.91	.74	1.24	.381	3	D5
5365590	VTSFT5522	-	-	5365569	VTSFT5522	-	-	M10 X 1	2.91	.74	1.24	.381	3	D11
5365592	VTSFT5523	5365593	VTSFT5523	5365591	VTSFT5523	5365594	VTSFT5523	M10 X 1,25	2.92	.74	1.25	.381	3	D5
5365596	VTSFT5524	-	-	5365595	VTSFT5524	-	-	M10 X 1,25	2.92	.74	1.25	.381	3	D11
5365598	VTSFT5525	5365599	VTSFT5525	5365597	VTSFT5525	5365610	VTSFT5525	M10 X 1,5	2.92	.75	1.26	.381	3	D6
5365612	VTSFT5526	-	-	5365611	VTSFT5526	-	-	M10 X 1,5	2.92	.75	1.25	.381	3	D11
5365614	VTSFT5527	5365615	VTSFT5527	5365613	VTSFT5527	5365616	VTSFT5527	M12 X 1,25	3.38	.94	1.74	.367	3	D5
5365618	VTSFT5528	-	-	5365617	VTSFT5528	-	-	M12 X 1,25	3.38	.94	1.74	.367	3	D11

(continued)



(VT-SFT • Form C Semi-Bottoming Chamfer • Metric • ANSI • Rigid and Synchronous Holders — continued)



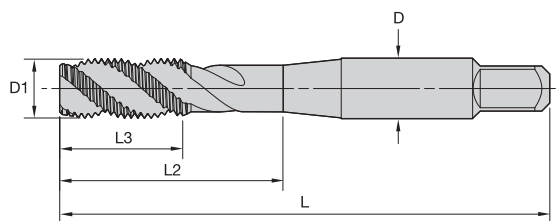
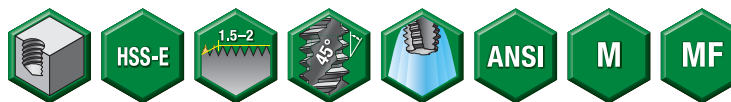
● first choice
○ alternate choice

grade WP42EG TiCN		grade WU41EG TiN		grade WP49EG Oxide		grade WU40EG Bright		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #	D1 size	L	L3	L2	D		
5365621	VTSFT5529	-	-	5365619	VTSFT5529	5365622	VTSFT5529	M12 X 1,5	3.38	.94	1.74	.367	3	D6
5365624	VTSFT5530	-	-	5365623	VTSFT5530	-	-	M12 X 1,5	3.38	.94	1.74	.367	3	D11
5365626	VTSFT5531	5365627	VTSFT5531	5365625	VTSFT5531	5365628	VTSFT5531	M12 X 1,75	3.38	.94	1.74	.367	3	D6
5365630	VTSFT5532	-	-	5365629	VTSFT5532	-	-	M12 X 1,75	3.38	.94	1.74	.367	3	D11
5365632	VTSFT5533	-	-	5365631	VTSFT5533	5365633	VTSFT5533	M14 X 1,5	3.59	1.00	1.74	.429	3	D6
-	-	-	-	-	-	5365634	VTSFT5534	M14 X 1,5	3.59	1.00	1.74	.429	3	D7
5365636	VTSFT5535	-	-	5365635	VTSFT5535	-	-	M14 X 2	3.59	1.00	1.74	.429	3	D7
5365638	VTSFT5536	-	-	5365637	VTSFT5536	5365639	VTSFT5536	M16 X 1,5	3.81	1.09	1.89	.480	3	D6
5365641	VTSFT5537	-	-	5365640	VTSFT5537	5365642	VTSFT5537	M16 X 2	3.81	1.09	1.89	.480	3	D7
5365644	VTSFT5538	-	-	5365643	VTSFT5538	5365645	VTSFT5538	M18 X 1,5	4.03	1.09	1.89	.542	4	D6
5365647	VTSFT5539	-	-	5365646	VTSFT5539	5365648	VTSFT5539	M18 X 2,5	4.03	1.09	1.89	.542	4	D7
5365650	VTSFT5540	-	-	5365649	VTSFT5540	-	-	M20 X 1,5	4.47	1.22	2.08	.652	4	D6
5365652	VTSFT5541	-	-	5365651	VTSFT5541	-	-	M20 X 2,5	4.47	1.22	2.08	.652	4	D7
-	-	-	-	5365653	VTSFT5542	-	-	M22 X 1,5	4.69	1.34	2.30	.697	4	D6
-	-	-	-	5365654	VTSFT5543	-	-	M22 X 2,5	4.69	1.34	2.30	.697	4	D7
-	-	-	-	5365655	VTSFT5544	-	-	M24 X 1,5	4.91	1.34	2.30	.760	4	D6
-	-	-	-	5365656	VTSFT5545	-	-	M24 X 3	4.91	1.34	2.30	.760	4	D8
-	-	-	-	5365657	VTSFT5546	-	-	M27 X 1,5	5.13	1.50	2.50	.896	4	D7
-	-	-	-	5365658	VTSFT5547	-	-	M27 X 3	5.13	1.50	2.50	.896	4	D8
-	-	-	-	5365659	VTSFT5548	-	-	M30 X 1,5	5.44	1.71	2.56	1.021	4	D6
-	-	-	-	5365660	VTSFT5549	-	-	M30 X 3,5	5.44	1.71	2.56	1.021	4	D9



NOTE: Suggested for use in rigid and synchronous holders.

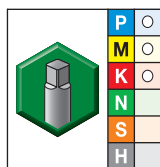
• WP49EG oxide



Shank Tolerance

D inch	tolerance
.141-.635	+0, -.0015
>.635-1.51	+0, -.0020
>1.51-2.01	+0, -.0030

■ VT-SFT • Form E Bottoming Chamfer • Metric • ANSI • Rigid and Synchronous Holders

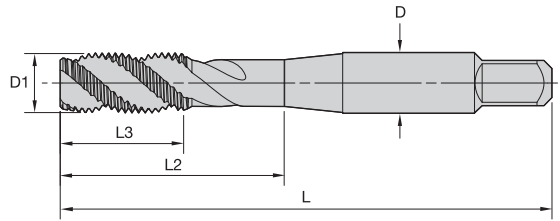


● first choice
○ alternate choice

grade WP49EG Oxide		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	D1 size	L	L3	L2	D		
5400155	VTSFT5550	M3 X 0,5	1.94	.58	.75	.141	2	D3
5400156	VTSFT5551	M3,5 X 0,6	2.00	.38	.71	.141	2	D4
5400157	VTSFT5552	M4 X 0,7	2.13	.38	.76	.168	3	D4
5400158	VTSFT5553	M5 X 0,8	2.38	.50	.91	.194	3	D4
5400159	VTSFT5554	M6 X 1	2.50	.63	1.00	.255	3	D5
5400230	VTSFT5555	M7 X 1	2.72	.69	1.15	.318	3	D5
5400232	VTSFT5557	M8 X 1	2.72	.69	1.12	.318	3	D5
5400231	VTSFT5556	M8 X 1,25	2.72	.69	1.12	.318	3	D5
5400234	VTSFT5559	M10 X 1,25	2.94	.75	1.26	.381	3	D5
5400233	VTSFT5558	M10 X 1,5	2.94	.75	1.26	.381	3	D6
5400237	VTSFT5562	M12 X 1,25	3.38	.94	1.74	.367	3	D5
5400236	VTSFT5561	M12 X 1,5	3.38	.94	1.74	.367	3	D6
5400235	VTSFT5560	M12 X 1,75	3.38	.94	1.74	.367	3	D6
5400239	VTSFT5564	M14 X 1,5	3.59	1.00	1.74	.429	3	D6
5400238	VTSFT5563	M14 X 2	3.59	1.00	1.74	.429	3	D7
5400241	VTSFT5566	M16 X 1,5	3.81	1.09	1.89	.480	3	D6
5400240	VTSFT5565	M16 X 2	3.81	1.09	1.89	.480	3	D7
5400242	VTSFT5567	M18 X 1,5	4.03	1.09	1.89	.542	4	D6

NOTE: Suggested for use in rigid and synchronous holders.

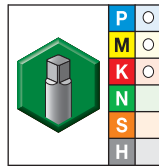
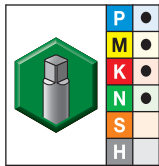
Tapping



Shank Tolerance	
D inch	tolerance
.141-.635	+0, -.0015
>.635-1.51	+0, -.0020
>1.51-2.01	+0, -.0030

Tapping

■ VT-SFT TC • Form C Semi-Bottoming Chamfer • Metric • ANSI • Tension/Compression Holders



- first choice
- alternate choice

grade WP42EG TiCN		grade WP49EG Oxide		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	D1 TPI	L	L3	L2	D		
5887085	VTSFT-TC5505	5887084	VTSFT-TC5505	M3 X 0,5	1.94	.58	.76	.141	3	D3
6141628	VTSFT-TC5506	6141629	VTSFT-TC5506	M3 X 0,5	1.94	.58	.75	.141	2	D11
6141630	VTSFT-TC5507	6141781	VTSFT-TC5507	M3,5 X 0,6	1.99	.38	.71	.141	2	D4
6141782	VTSFT-TC5508	6141783	VTSFT-TC5508	M3,5 X 0,6	1.99	.38	.71	.141	2	D11
5887087	VTSFT-TC5509	5887086	VTSFT-TC5509	M4 X 0,7	2.12	.38	.76	.168	3	D4
6141784	VTSFT-TC5510	6141785	VTSFT-TC5510	M4 X 0,7	2.12	.38	.76	.168	3	D11
5887089	VTSFT-TC5511	5887088	VTSFT-TC5511	M5 X 0,8	2.37	.50	.91	.194	3	D4
6141786	VTSFT-TC5512	6141787	VTSFT-TC5512	M5 X 0,8	2.37	.50	.91	.194	3	D11
5887091	VTSFT-TC5513	5887090	VTSFT-TC5513	M6 X 1	2.50	.63	1.01	.255	3	D5
6141789	VTSFT-TC5514	6141790	VTSFT-TC5514	M6 X 1	2.50	.63	1.00	.255	3	D11
6141791	VTSFT-TC5515	6141792	VTSFT-TC5515	M7 X 1	2.73	.69	1.15	.318	3	D5
6141793	VTSFT-TC5516	6141794	VTSFT-TC5516	M7 X 1	2.73	.69	1.15	.318	3	D11
6141796	VTSFT-TC5517	6141797	VTSFT-TC5517	M8 X 1	2.71	.69	1.12	.318	3	D5
6141798	VTSFT-TC5518	6141799	VTSFT-TC5518	M8 X 1	2.71	.69	1.12	.318	3	D11
5887093	VTSFT-TC5519	5887092	VTSFT-TC5519	M8 X 1,25	2.71	.69	1.12	.318	3	D5
6141800	VTSFT-TC5520	6141801	VTSFT-TC5520	M8 X 1,25	2.71	.69	1.12	.318	3	D11
6141802	VTSFT-TC5522	6141803	VTSFT-TC5522	M10 X 1	2.91	.74	1.24	.381	3	D11
6141804	VTSFT-TC5523	6141805	VTSFT-TC5523	M10 X 1,25	2.92	.74	1.25	.381	3	D5
6141806	VTSFT-TC5524	6141807	VTSFT-TC5524	M10 X 1,25	2.92	.74	1.25	.381	3	D11
6141808	VTSFT-TC5525	6141809	VTSFT-TC5525	M10 X 1,5	2.92	.75	1.26	.381	3	D6
6141810	VTSFT-TC5526	-	-	M10 X 1,5	2.92	.75	1.26	.381	3	D11
-	-	6141811	VTSFT-TC5526	M10 X 1,5	2.92	.75	1.24	.381	3	D11
6140507	VTSFT-TC5527	6140508	VTSFT-TC5527	M12 X 1,25	3.38	.94	1.74	.367	3	D5
6140509	VTSFT-TC5528	6140510	VTSFT-TC5528	M12 X 1,25	3.38	.94	1.74	.367	3	D11

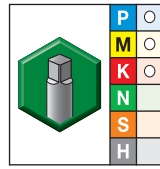
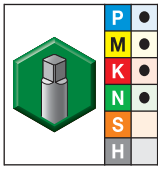
(continued)

Multipurpose Taps

VariTap™ Spiral-Flute HSS-E Taps • Blind Holes



(VT-SFT TC • Form C Semi-Bottoming Chamfer • Metric • ANSI • Tension/Compression Holders — continued)



● first choice
○ alternate choice

grade WP42EG
TiCN

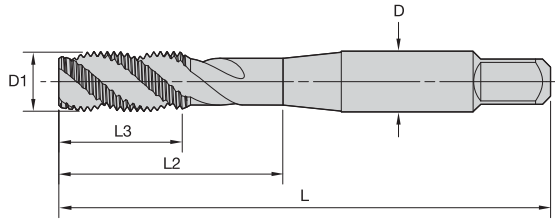
grade WP49EG
Oxide

inch dimensions

grade WP42EG TiCN		grade WP49EG Oxide		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	order #	catalog #	D1 TPI	L	L3	L2	D		
6140511	VTSFT-TC5529	6140512	VTSFT-TC5529	M12 X 1,5	3.38	.94	1.74	.367	3	D6
6140513	VTSFT-TC5530	6140514	VTSFT-TC5530	M12 X 1,5	3.38	.94	1.74	.367	3	D11
5887097	VTSFT-TC5531	5887096	VTSFT-TC5531	M12 X 1,75	3.38	.94	1.74	.367	3	D6
6140515	VTSFT-TC5532	6140516	VTSFT-TC5532	M12 X 1,75	3.38	.94	1.74	.367	3	D11
6140517	VTSFT-TC5533	6140518	VTSFT-TC5533	M14 X 1,5	3.59	1.00	1.74	.429	3	D6
6140519	VTSFT-TC5535	6140520	VTSFT-TC5535	M14 X 2	3.59	1.00	1.74	.429	3	D7
6140521	VTSFT-TC5536	6140522	VTSFT-TC5536	M16 X 1,5	3.81	1.09	1.89	.480	3	D6
5887099	VTSFT-TC5537	5887098	VTSFT-TC5537	M16 X 2	3.81	1.09	1.89	.480	3	D7
6140523	VTSFT-TC5538	6140524	VTSFT-TC5538	M18 X 1,5	4.03	1.09	1.89	.542	4	D6
6140525	VTSFT-TC5539	6140526	VTSFT-TC5539	M18 X 2,5	4.03	1.22	1.89	.542	4	D7
6140527	VTSFT-TC5540	6140528	VTSFT-TC5540	M20 X 1,5	4.47	1.22	2.08	.652	4	D6
6140529	VTSFT-TC5541	6140530	VTSFT-TC5541	M20 X 2,5	4.47	1.34	2.30	.652	4	D7
-		6140531	VTSFT-TC5542	M22 X 1,5	4.69	1.34	2.30	.697	4	D6
-		6140532	VTSFT-TC5543	M22 X 2,5	4.69	1.34	2.30	.697	4	D7
-		6140533	VTSFT-TC5544	M24 X 1,5	4.91	1.34	2.30	.760	4	D6
-		6140534	VTSFT-TC5545	M24 X 3	4.91	1.34	2.30	.760	4	D8
-		6140535	VTSFT-TC5546	M27 X 1,5	5.13	1.50	2.50	.896	4	D7
-		6140536	VTSFT-TC5547	M27 X 3	5.13	1.50	2.50	.896	4	D8
-		6140537	VTSFT-TC5548	M30 X 1,5	5.44	1.71	2.56	1.021	4	D6
-		6140538	VTSFT-TC5549	M30 X 3,5	5.44	1.71	2.56	1.021	4	D9

NOTE: Suitable for tension/compression holders.

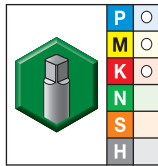
Tapping



Shank Tolerance	
D inch	tolerance
.141-.635	+0, -.0015
>.635-1.51	+0, -.0020
>1.51-2.01	+0, -.0030

Tapping

■ VT-SFT TC • Form E Bottoming Chamfer • Metric • ANSI • Tension/Compression Holders

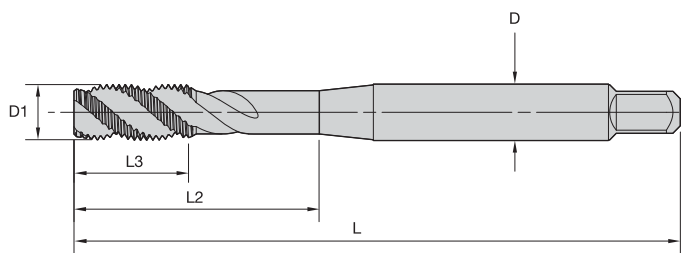


- first choice
- alternate choice

grade WP49EG Oxide		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	D1 TPI	L	L3	L2	D		
6140343	VTSFT-TC5550	M3 X 0,5	1.94	—	.75	.141	2	D3
6140344	VTSFT-TC5551	M3,5 X 0,6	2.00	.38	.71	.141	2	D4
6140345	VTSFT-TC5552	M4 X 0,7	2.13	.38	.76	.168	3	D4
6140346	VTSFT-TC5553	M5 X 0,8	2.38	.50	.91	.194	3	D4
6140347	VTSFT-TC5554	M6 X 1	2.50	.63	1.00	.255	3	D5
6140348	VTSFT-TC5555	M7 X 1	2.72	.69	1.15	.318	3	D5
6140349	VTSFT-TC5556	M8 X 1,25	2.72	.69	1.12	.318	3	D5
6140350	VTSFT-TC5557	M8 X 1	2.72	.69	1.12	.318	3	D5
6140391	VTSFT-TC5558	M10 X 1,5	2.94	.75	1.26	.381	3	D6
6140392	VTSFT-TC5559	M10 X 1,25	2.94	.75	1.26	.381	3	D5
6140393	VTSFT-TC5560	M12 X 1,75	3.38	.94	1.74	.367	3	D6
6140394	VTSFT-TC5561	M12 X 1,5	3.38	.94	1.74	.367	3	D5
6140395	VTSFT-TC5562	M12 X 1,25	3.38	.94	1.74	.367	3	D5
6140396	VTSFT-TC5563	M14 X 2	3.59	1.00	1.74	.429	3	D7
6140397	VTSFT-TC5564	M14 X 1,5	3.59	1.00	1.74	.429	3	D6
6140398	VTSFT-TC5565	M16 X 2	3.81	1.09	1.89	.480	3	D7
6140399	VTSFT-TC5566	M16 X 1,5	3.81	1.09	1.89	.480	3	D6
6140400	VTSFT-TC5567	M18 X 1,5	4.03	1.09	—	.542	4	D6

NOTE: Suitable for tension/compression holders.

- WP42EG TiCN
- WP49EG oxide

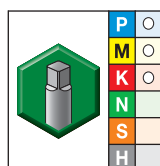
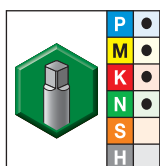


Shank Tolerance

D inch	tolerance
.141-.635	+0, -.0015
>.635-1.51	+0, -.0020
>1.51-2.01	+0, -.0030

Tapping

■ VT-SFT • Form C Semi-Bottoming Chamfer • Metric • DIN Length ANSI Shank • Rigid and Synchronous Holders

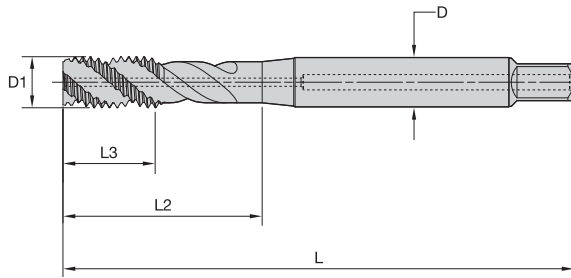


- first choice
- alternate choice

grade WP42EG TiCN		grade WP49EG Oxide		inch dimensions					number of flutes	dimension standard	class of fit
order #	catalog #	order #	catalog #	D1 size	L	L3	L2	D			
5436522	VTSFT9504	5436521	VTSFT9504	M3 X 0,5	2.20	.31	.71	.141	2	DIN-ANSI	6H
5436524	VTSFT9505	5436523	VTSFT9505	M4 X 0,7	2.48	.43	.83	.168	3	DIN-ANSI	6H
5436526	VTSFT9506	5436525	VTSFT9506	M5 X 0,8	2.75	.47	.97	.194	3	DIN-ANSI	6H
5436528	VTSFT9507	5436527	VTSFT9507	M6 X 1	3.15	.47	1.18	.255	3	DIN-ANSI	6H
5436540	VTSFT9508	5436529	VTSFT9508	M8 X 1,25	3.54	.58	1.37	.318	3	DIN-ANSI	6H
5436542	VTSFT9509	5436541	VTSFT9509	M10 X 1,25	3.93	.70	1.53	.381	3	DIN-ANSI	6H
5436544	VTSFT9510	5436543	VTSFT9510	M10 X 1,5	3.94	.71	1.53	.381	3	DIN-ANSI	6H
5436546	VTSFT9511	5436545	VTSFT9511	M12 X 1,25	4.33	.83	1.73	.367	3	DIN-ANSI	6H
5436548	VTSFT9512	5436547	VTSFT9512	M12 X 1,5	4.33	.83	1.73	.367	3	DIN-ANSI	6H
5436550	VTSFT9513	5436549	VTSFT9513	M12 X 1,75	4.33	.83	1.73	.367	3	DIN-ANSI	6H
5436552	VTSFT9514	5436551	VTSFT9514	M14 X 1,5	4.33	.94	2.05	.429	3	DIN-ANSI	6H
5436554	VTSFT9515	5436553	VTSFT9515	M14 X 2	4.33	.94	2.05	.429	3	DIN-ANSI	6H
5436556	VTSFT9516	5436555	VTSFT9516	M16 X 1,5	4.33	.94	2.01	.480	3	DIN-ANSI	6H
5436558	VTSFT9517	5436557	VTSFT9517	M16 X 2	4.33	.94	2.01	.480	3	DIN-ANSI	6H
5436560	VTSFT9518	5436559	VTSFT9518	M18 X 1,5	4.92	1.18	2.28	.542	4	DIN-ANSI	6H
5436562	VTSFT9519	5436561	VTSFT9519	M18 X 2,5	4.92	1.18	2.28	.542	4	DIN-ANSI	6H
5436564	VTSFT9520	5436563	VTSFT9520	M20 X 1,5	5.51	1.18	2.52	.652	4	DIN-ANSI	6H
5436566	VTSFT9521	5436565	VTSFT9521	M20 X 2,5	5.51	1.18	2.52	.652	4	DIN-ANSI	6H

NOTE: Suggested for use in rigid and synchronous holders.

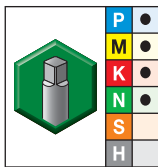
• WP42EG TiCN



Shank Tolerance	
D inch	tolerance
0.141-0.635	+0, -.0015
>0.635-1.51	+0, -.0020
>1.51-2.01	+0, -.0030

Tapping

■ VT-SFT • Form C Semi-Bottoming Chamfer • Through Coolant • Metric • DIN Length ANSI Shank • Rigid and Synchronous Holders

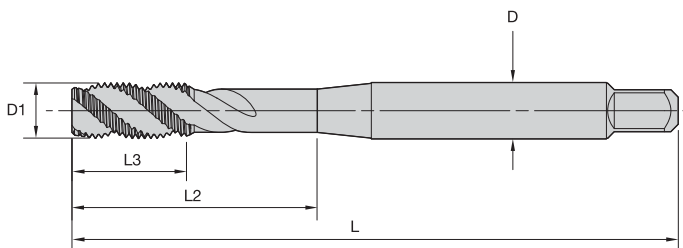


● first choice
○ alternate choice

order #	catalog #	grade WP42EG TiCN	D1 size	inch dimensions			number of flutes	dimension standard	class of fit	
				L	L3	L2				D
5436475	VTSFT9925		M6 X 1	3.15	.47	1.18	.255	3	DIN-ANSI	6H
5436476	VTSFT9926		M8 X 1,25	3.54	.59	1.38	.318	3	DIN-ANSI	6H
5436477	VTSFT9927		M10 X 1,25	3.94	.71	1.54	.381	3	DIN-ANSI	6H
5436478	VTSFT9928		M10 X 1,5	3.94	.71	1.53	.381	3	DIN-ANSI	6H
5436479	VTSFT9929		M12 X 1,25	4.33	.83	1.73	.367	3	DIN-ANSI	6H
5436480	VTSFT9930		M12 X 1,5	4.33	.83	1.73	.367	3	DIN-ANSI	6H
5436481	VTSFT9931		M12 X 1,75	4.33	.83	1.73	.367	3	DIN-ANSI	6H
5436482	VTSFT9932		M14 X 1,5	4.33	.94	2.05	.429	3	DIN-ANSI	6H
5436483	VTSFT9933		M14 X 2	4.33	.94	2.05	.429	3	DIN-ANSI	6H
5436484	VTSFT9934		M16 X 1,5	4.33	.94	2.01	.480	3	DIN-ANSI	6H
5436485	VTSFT9935		M16 X 2	4.33	.94	2.01	.480	3	DIN-ANSI	6H
5436486	VTSFT9936		M18 X 1,5	4.92	1.18	2.28	.542	4	DIN-ANSI	6H
5436487	VTSFT9937		M18 X 2,5	4.92	1.18	2.28	.542	4	DIN-ANSI	6H
5436488	VTSFT9938		M20 X 1,5	5.51	1.18	2.52	.652	4	DIN-ANSI	6H
5436489	VTSFT9939		M20 X 2,5	5.51	1.18	2.52	.652	4	DIN-ANSI	6H

NOTE: Suggested for use in rigid and synchronous holders.

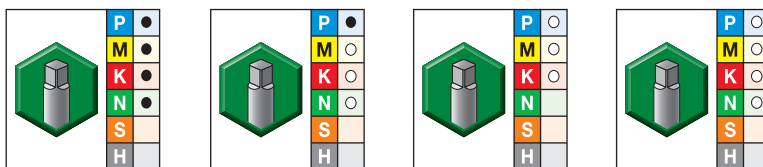
- WP42EG TiCN
- WU41EG TiN
- WP49EG oxide
- WU40EG bright



Shank Tolerance

D mm	tolerance h9
1-3	+0, -0,025
>3-6	+0, -0,030
>6-10	+0, -0,036
>10-18	+0, -0,043
>18-30	+0, -0,052

■ VT-SFT • Form C Semi-Bottoming Chamfer • Metric DIN 371, 374, and 376 • Rigid and Synchronous Holders

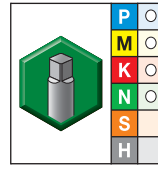
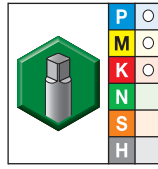
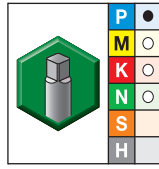
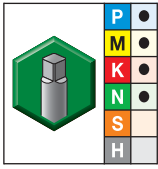


- first choice
- alternate choice

grade WP42EG TiCN		grade WU41EG TiN		grade WP49EG Oxide		grade WU40EG Bright		metric dimensions				number of flutes	dimension standard	class of fit	
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #	D1 size	L	L3	L2				D
5368703	VTSFT6506	5368702	VTSFT6506	5368704	VTSFT6506	5368705	VTSFT6506	M2 X 0,4	45	7	13	2,8	2	DIN 371	6H
-	-	-	-	5368706	VTSFT6507	-	-	M2 X 0,4	45	7	13	2,8	2	DIN 371	6G
-	-	-	-	5368707	VTSFT6508	-	-	M2,2 X 0,45	45	7	13	2,8	2	DIN 371	6H
-	-	5368708	VTSFT6509	5368709	VTSFT6509	5368720	VTSFT6509	M2,5 X 0,45	50	7	15	2,8	2	DIN 371	6H
-	-	-	-	5368721	VTSFT6510	-	-	M2,5 X 0,45	50	7	15	2,8	2	DIN 371	6G
-	-	-	-	5402138	VTSFT6545	-	-	M3 X 0,35	56	8	-	2,2	2	DIN 374	6H
-	-	-	-	5368726	VTSFT6512	-	-	M3 X 0,5	56	8	18	3,5	2	DIN 371	6G
-	-	-	-	5402227	VTSFT6525	5402228	VTSFT6525	M3 X 0,5	56	8	-	2,2	2	DIN 376	6H
5368723	VTSFT6511	5368722	VTSFT6511	5368724	VTSFT6511	5368725	VTSFT6511	M3 X 0,5	56	8	18	3,5	2	DIN 371	6H
-	-	5368727	VTSFT6513	5368728	VTSFT6513	5368729	VTSFT6513	M3,5 X 0,6	56	9	20	4,0	2	DIN 371	6H
-	-	-	-	5402139	VTSFT6546	5402180	VTSFT6546	M4 X 0,5	63	10	21	2,8	3	DIN 374	6H
-	-	-	-	5368734	VTSFT6515	-	-	M4 X 0,7	63	11	21	4,5	3	DIN 371	6G
-	-	-	-	5402229	VTSFT6526	5402250	VTSFT6526	M4 X 0,7	63	10	21	2,8	3	DIN 376	6H
5368731	VTSFT6514	5368730	VTSFT6514	5368732	VTSFT6514	5368733	VTSFT6514	M4 X 0,7	63	11	21	4,5	3	DIN 371	6H
-	-	-	-	5402181	VTSFT6547	5402182	VTSFT6547	M5 X 0,5	70	12	25	3,5	3	DIN 374	6H
-	-	-	-	5368739	VTSFT6517	-	-	M5 X 0,8	70	12	25	6,0	3	DIN 371	6G
-	-	-	-	5402251	VTSFT6527	5402252	VTSFT6527	M5 X 0,8	70	12	25	3,5	3	DIN 376	6H
5368736	VTSFT6516	5368735	VTSFT6516	5368737	VTSFT6516	5368738	VTSFT6516	M5 X 0,8	70	12	25	6,0	3	DIN 371	6H
-	-	-	-	5402183	VTSFT6548	-	-	M6 X 0,5	80	12	30	4,5	3	DIN 374	6H
-	-	-	-	5402185	VTSFT6549	5402184	VTSFT6549	M6 X 0,75	80	12	30	4,5	3	DIN 374	6H
5368741	VTSFT6518	5368740	VTSFT6518	5368742	VTSFT6518	5368743	VTSFT6518	M6 X 1	80	12	30	6,0	3	DIN 371	6H
-	-	-	-	5402253	VTSFT6528	5402254	VTSFT6528	M6 X 1	80	12	30	4,5	3	DIN 376	6H
-	-	-	-	5368744	VTSFT6519	-	-	M6 X 1	80	12	30	6,0	3	DIN 371	6G
-	-	-	-	5368745	VTSFT6520	5368746	VTSFT6520	M7 X 1	80	12	30	7,0	3	DIN 371	6H

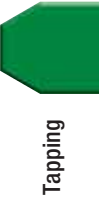
(continued)

(VT-SFT • Form C Semi-Bottoming Chamfer • Metric DIN 371, 374, and 376 • Rigid and Synchronous Holders — continued)



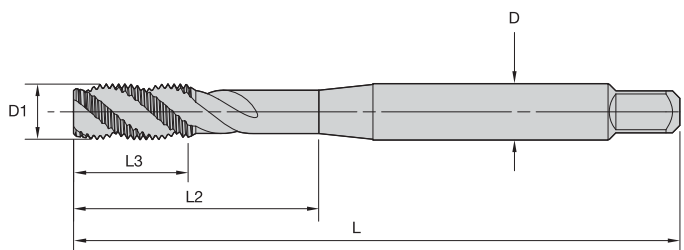
● first choice
○ alternate choice

grade WP42EG TiCN		grade WU41EG TiN		grade WP49EG Oxide		grade WU40EG Bright		metric dimensions					number of flutes	dimension standard	class of fit
order #	catalog #	order #	catalog #	order #	catalog #	order #	catalog #	D1 size	L	L3	L2	D			
-	-	-	-	5402186	VTSFT6550	5402187	VTSFT6550	M8 X 0,75	80	12	30	6,0	3	DIN 374	6H
5402188	VTSFT6551	-	-	5402189	VTSFT6551	5402190	VTSFT6551	M8 X 1	90	15	35	6,0	3	DIN 374	6H
-	-	-	-	5368752	VTSFT6522	-	-	M8 X 1,25	90	15	35	8,0	3	DIN 371	6G
-	-	-	-	5402255	VTSFT6529	5402256	VTSFT6529	M8 X 1,25	90	15	35	6,0	3	DIN 376	6H
5368749	VTSFT6521	5368748	VTSFT6521	5368750	VTSFT6521	5368751	VTSFT6521	M8 X 1,25	90	15	35	8,0	3	DIN 371	6H
-	-	-	-	-	-	5402191	VTSFT6552	M10 X 0,75	90	15	35	7,0	3	DIN 374	6H
-	-	-	-	5402192	VTSFT6553	5402193	VTSFT6553	M10 X 1	90	15	35	7,0	3	DIN 374	6H
5402194	VTSFT6554	-	-	5402195	VTSFT6554	5402196	VTSFT6554	M10 X 1,25	100	18	39	7,0	3	DIN 374	6H
5368754	VTSFT6523	5368753	VTSFT6523	5368755	VTSFT6523	5368756	VTSFT6523	M10 X 1,5	100	18	39	10,0	3	DIN 371	6H
-	-	-	-	5368757	VTSFT6524	-	-	M10 X 1,5	100	18	39	10,0	3	DIN 371	6G
-	-	-	-	5402257	VTSFT6530	5402258	VTSFT6530	M10 X 1,5	100	18	39	7,0	3	DIN 376	6H
-	-	-	-	5402197	VTSFT6555	5402198	VTSFT6555	M12 X 1	100	21	39	9,0	3	DIN 374	6H
-	-	-	-	5402199	VTSFT6556	5402200	VTSFT6556	M12 X 1,25	100	21	39	9,0	3	DIN 374	6H
5402201	VTSFT6557	-	-	5402202	VTSFT6557	5402203	VTSFT6557	M12 X 1,5	100	21	39	9,0	3	DIN 374	6H
-	-	-	-	5402263	VTSFT6532	-	-	M12 X 1,75	110	21	44	9,0	3	DIN 376	6G
5402260	VTSFT6531	5402259	VTSFT6531	5402261	VTSFT6531	5402262	VTSFT6531	M12 X 1,75	110	21	44	9,0	3	DIN 376	6H
-	-	-	-	-	-	5402204	VTSFT6558	M14 X 1	100	21	47	11,0	3	DIN 374	6H
-	-	-	-	-	-	5402205	VTSFT6559	M14 X 1,25	100	21	47	11,0	3	DIN 374	6H
5402206	VTSFT6560	-	-	5402207	VTSFT6560	5402208	VTSFT6560	M14 X 1,5	100	21	47	11,0	3	DIN 374	6H
-	-	-	-	5402268	VTSFT6534	-	-	M14 X 2	110	24	52	11,0	3	DIN 376	6G
5402265	VTSFT6533	5402264	VTSFT6533	5402266	VTSFT6533	5402267	VTSFT6533	M14 X 2	110	24	52	11,0	3	DIN 376	6H
-	-	-	-	-	-	5402209	VTSFT6561	M16 X 1	100	21	46	12,0	3	DIN 374	6H
-	-	-	-	5402210	VTSFT6562	5402211	VTSFT6562	M16 X 1,5	100	21	46	12,0	3	DIN 374	6H
-	-	-	-	5402272	VTSFT6536	-	-	M16 X 2	110	24	51	12,0	3	DIN 376	6G
-	-	5402269	VTSFT6535	5402270	VTSFT6535	5402271	VTSFT6535	M16 X 2	110	24	51	12,0	3	DIN 376	6H
-	-	-	-	-	-	5402212	VTSFT6563	M18 X 1	110	21	50	14,0	4	DIN 374	6H
-	-	-	-	5402214	VTSFT6564	5402213	VTSFT6564	M18 X 1,5	110	21	50	14,0	4	DIN 374	6H
-	-	-	-	-	-	5402215	VTSFT6565	M18 X 2	125	30	58	14,0	4	DIN 374	6H
-	-	5402273	VTSFT6537	5402274	VTSFT6537	5402275	VTSFT6537	M18 X 2,5	125	30	58	14,0	4	DIN 376	6H
-	-	-	-	-	-	5402216	VTSFT6566	M20 X 1	125	24	56	16,0	4	DIN 374	6H
-	-	-	-	5402217	VTSFT6567	5402218	VTSFT6567	M20 X 1,5	125	24	56	16,0	4	DIN 374	6H
-	-	-	-	-	-	5402219	VTSFT6568	M20 X 2	140	30	64	16,0	4	DIN 374	6H
-	-	5402276	VTSFT6538	5402277	VTSFT6538	5402278	VTSFT6538	M20 X 2,5	140	30	64	16,0	4	DIN 376	6H
-	-	-	-	5402220	VTSFT6569	5402221	VTSFT6569	M22 X 1,5	125	24	62	18,0	4	DIN 374	6H
-	-	-	-	-	-	5402222	VTSFT6570	M22 X 2	140	30	70	18,0	4	DIN 374	6H
-	-	5402279	VTSFT6539	5402280	VTSFT6539	5402281	VTSFT6539	M22 X 2,5	140	30	70	18,0	4	DIN 376	6H
-	-	-	-	5402223	VTSFT6571	5402224	VTSFT6571	M24 X 1,5	140	28	67	18,0	4	DIN 374	6H
-	-	-	-	-	-	5402225	VTSFT6572	M24 X 2	140	28	67	18,0	4	DIN 374	6H
-	-	5402282	VTSFT6540	5402283	VTSFT6540	5402284	VTSFT6540	M24 X 3	160	36	77	18,0	4	DIN 376	6H
-	-	5402285	VTSFT6541	5402286	VTSFT6541	5402287	VTSFT6541	M27 X 3	160	36	82	20,0	4	DIN 376	6H
-	-	-	-	-	-	5402226	VTSFT6573	M30 X 2	150	28	80	22,0	2	DIN 374	6H
-	-	5402288	VTSFT6542	5402289	VTSFT6542	5402290	VTSFT6542	M30 X 3,5	180	42	91	22,0	4	DIN 376	6H
-	-	-	-	5402291	VTSFT6543	5402292	VTSFT6543	M33 X 3,5	180	42	100	25,0	4	DIN 376	6H
-	-	-	-	5402293	VTSFT6544	5402294	VTSFT6544	M36 X 4	200	48	110	28,0	5	DIN 376	6H



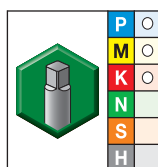
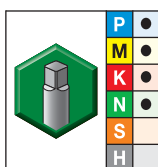
NOTE: Suggested for use in rigid and synchronous holders.

- WP42EG TiCN
- WP49EG oxide



Shank Tolerance	
D mm	tolerance h9
1-3	+0, -0,025
>3-6	+0, -0,030
>6-10	+0, -0,036
>10-18	+0, -0,043
>18-30	+0, -0,052

■ VT-SFT • Form E Bottoming Chamfer • Metric DIN 371, 374, and 376 • Rigid and Synchronous Holders

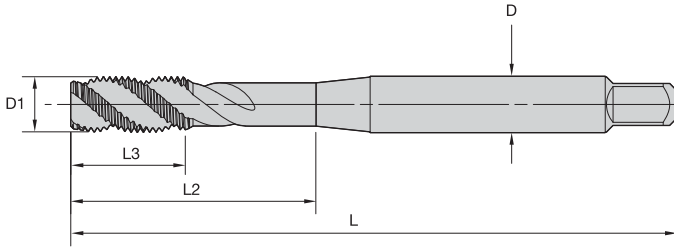
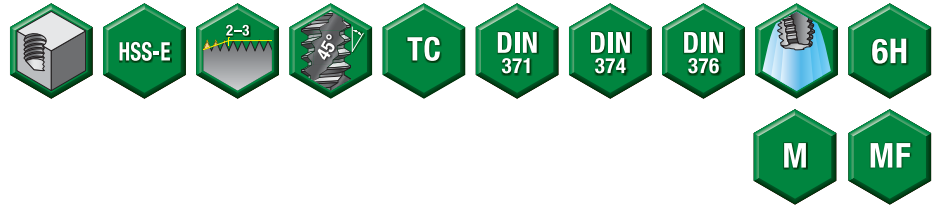


- first choice
- alternate choice

grade WP42EG TiCN		grade WP49EG Oxide		metric dimensions					number of flutes	dimension standard	class of fit
order #	catalog #	order #	catalog #	D1 size	L	L3	L2	D			
5387434	VTSFT6574	5387435	VTSFT6574	M3 X 0,5	56	8	18	3,5	2	DIN 371	6H
5387436	VTSFT6575	5387437	VTSFT6575	M4 X 0,7	63	11	21	4,5	3	DIN 371	6H
5387438	VTSFT6576	5387439	VTSFT6576	M5 X 0,8	70	12	25	6,0	3	DIN 371	6H
5387460	VTSFT6577	5387461	VTSFT6577	M6 X 1	80	12	30	6,0	3	DIN 371	6H
5387475	VTSFT6585	5387476	VTSFT6585	M8 X 1	90	15	35	6,0	3	DIN 374	6H
5387462	VTSFT6578	5387463	VTSFT6578	M8 X 1,25	90	15	35	8,0	3	DIN 371	6H
5387477	VTSFT6586	5387478	VTSFT6586	M10 X 1,25	100	18	39	7,0	3	DIN 374	6H
5387464	VTSFT6579	5387465	VTSFT6579	M10 X 1,5	100	18	39	10,0	3	DIN 371	6H
5387479	VTSFT6587	5387481	VTSFT6587	M12 X 1,5	100	21	39	9,0	3	DIN 374	6H
5387466	VTSFT6580	5387467	VTSFT6580	M12 X 1,75	110	21	44	9,0	3	DIN 376	6H
5387482	VTSFT6588	5387483	VTSFT6588	M14 X 1,5	100	21	47	11,0	3	DIN 374	6H
5387468	VTSFT6581	5387469	VTSFT6581	M14 X 2	110	24	52	11,0	3	DIN 376	6H
-		5387470	VTSFT6582	M16 X 2	110	24	51	12,0	3	DIN 376	6H
5387471	VTSFT6583	5387472	VTSFT6583	M18 X 2,5	125	30	58	14,0	4	DIN 376	6H
5387473	VTSFT6584	5387474	VTSFT6584	M20 X 2,5	140	30	64	16,0	4	DIN 376	6H

NOTE: Suggested for use in rigid and synchronous holders.

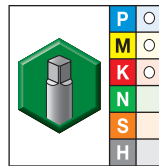
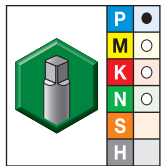
- WU41EG TiN
- WP49EG oxide



Shank Tolerance	
D mm	tolerance h9
1-3	+0, -0,025
>3-6	+0, -0,030
>6-10	+0, -0,036
>10-18	+0, -0,043
>18-30	+0, -0,052

Tapping

VT-SFT TC • Form C Semi-Bottoming Chamfer • Metric DIN 371, 374, and 376 • Tension/Compression Holders

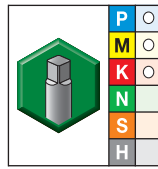
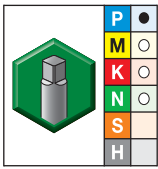


- first choice
- alternate choice

grade WU41EG TiN		grade WP49EG Oxide		metric dimensions					number of flutes	dimension standard	class of fit
order #	catalog #	order #	catalog #	D1 size	L	L3	L2	D			
6172434	VTSFT-TC6506	6172432	VTSFT-TC6506	M2 X 0,4	45	7	13	2,8	3	DIN 371	6H
6172438	VTSFT-TC6508	6172436	VTSFT-TC6508	M3 X 0,5	56	5	19	3,5	3	DIN 371	6H
6172442	VTSFT-TC6510	6172440	VTSFT-TC6510	M4 X 0,7	63	7	21	4,5	3	DIN 371	6H
6172446	VTSFT-TC6511	6172444	VTSFT-TC6511	M5 X 0,8	70	8	26	6,0	3	DIN 371	6H
6172450	VTSFT-TC6512	6172448	VTSFT-TC6512	M5 X 0,8	70	8	27	3,5	3	DIN 376	6H
6172464	VTSFT-TC6513	6172462	VTSFT-TC6513	M6 X 0,75	80	10	34	4,5	3	DIN 374	6H
6172468	VTSFT-TC6514	6172466	VTSFT-TC6514	M6 X 1	80	10	30	6,0	3	DIN 371	6H
6172470	VTSFT-TC6515	6172469	VTSFT-TC6515	M6 X 1	80	10	34	4,5	3	DIN 376	6H
6172482	VTSFT-TC6516	6172481	VTSFT-TC6516	M8 X 0,75	90	13	37	6,0	3	DIN 374	6H
6172484	VTSFT-TC6517	6172483	VTSFT-TC6517	M8 X 1	90	13	37	6,0	3	DIN 374	6H
6172486	VTSFT-TC6518	6172485	VTSFT-TC6518	M8 X 1,25	90	13	37	8,0	3	DIN 371	6H
6172488	VTSFT-TC6519	6172487	VTSFT-TC6519	M8 X 1,25	90	13	37	6,0	3	DIN 376	6H
6172490	VTSFT-TC6520	6172489	VTSFT-TC6520	M10 X 0,75	90	15	40	7,0	3	DIN 374	6H
6172492	VTSFT-TC6540	6172491	VTSFT-TC6540	M10 X 1	90	15	40	7,0	3	DIN 374	6H
6172494	VTSFT-TC6522	6172493	VTSFT-TC6522	M10 X 1,25	100	15	44	7,0	3	DIN 374	6H
6172496	VTSFT-TC6550	6172495	VTSFT-TC6550	M10 X 1,5	100	15	41	10,0	3	DIN 371	6H
6172498	VTSFT-TC6524	6172497	VTSFT-TC6524	M10 X 1,5	100	15	44	7,0	3	DIN 376	6H
6172500	VTSFT-TC6525	6172499	VTSFT-TC6525	M12 X 1	100	13	50	9,0	3	DIN 374	6H
6172502	VTSFT-TC6526	6172501	VTSFT-TC6526	M12 X 1,25	100	13	50	9,0	3	DIN 374	6H
6172504	VTSFT-TC6527	6172503	VTSFT-TC6527	M12 X 1,5	100	13	50	9,0	3	DIN 374	6H

(continued)

(VT-SFT TC • Form C Semi-Bottoming Chamfer • Metric DIN 371, 374, and 376 • Tension/Compression Holders — continued)



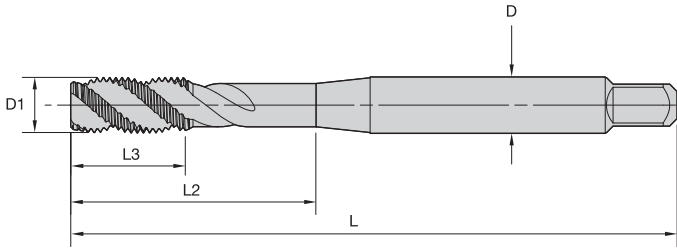
● first choice
○ alternate choice

Tapping

grade WU41EG TiN		grade WP49EG Oxide		metric dimensions					number of flutes	dimension standard	class of fit
order #	catalog #	order #	catalog #	D1 size	L	L3	L2	D			
6172506	VTSFT-TC6528	6172505	VTSFT-TC6528	M12 X 1,75	110	18	55	9,0	3	DIN 376	6H
6172508	VTSFT-TC6529	6172507	VTSFT-TC6529	M14 X 1	100	15	41	11,0	4	DIN 374	6H
6172510	VTSFT-TC6530	6172509	VTSFT-TC6530	M14 X 1,25	100	15	41	11,0	4	DIN 374	6H
6172512	VTSFT-TC6536	6172511	VTSFT-TC6536	M14 X 1,5	100	15	41	11,0	4	DIN 374	6H
6172672	VTSFT-TC6532	6172671	VTSFT-TC6532	M14 X 2	110	20	50	11,0	3	DIN 376	6H
6172674	VTSFT-TC6534	6172673	VTSFT-TC6534	M16 X 1,5	100	15	45	12,0	4	DIN 374	6H
6172676	VTSFT-TC6564	6172675	VTSFT-TC6564	M16 X 2	110	20	55	12,0	4	DIN 376	6H
6172678	VTSFT-TC6537	6172677	VTSFT-TC6537	M18 X 1,5	110	17	55	14,0	4	DIN 374	6H
6172680	VTSFT-TC6538	6172679	VTSFT-TC6538	M18 X 2	125	25	61	14,0	4	DIN 374	6H
6172692	VTSFT-TC6539	6172691	VTSFT-TC6539	M18 X 2,5	125	25	61	14,0	4	DIN 376	6H
6172694	VTSFT-TC6541	6172693	VTSFT-TC6541	M20 X 1,5	125	17	56	16,0	4	DIN 374	6H
6172696	VTSFT-TC6542	6172695	VTSFT-TC6542	M20 X 2	140	25	65	16,0	4	DIN 374	6H
6172698	VTSFT-TC6543	6172697	VTSFT-TC6543	M20 X 2,5	140	25	65	16,0	4	DIN 376	6H
6172700	VTSFT-TC6544	6172699	VTSFT-TC6544	M22 X 1,5	125	18	61	18,0	4	DIN 374	6H
6172712	VTSFT-TC6545	6172711	VTSFT-TC6545	M22 X 2	140	25	66	18,0	4	DIN 374	6H
6172714	VTSFT-TC6546	6172713	VTSFT-TC6546	M22 X 2,5	140	25	66	18,0	4	DIN 376	6H
6172716	VTSFT-TC6547	6172715	VTSFT-TC6547	M24 X 1,5	140	20	67	18,0	4	DIN 374	6H
6172718	VTSFT-TC6548	6172717	VTSFT-TC6548	M24 X 2	140	20	67	18,0	4	DIN 374	6H
6172720	VTSFT-TC6549	6172719	VTSFT-TC6549	M24 X 3	160	30	77	18,0	4	DIN 376	6H
6172722	VTSFT-TC6551	6172721	VTSFT-TC6551	M27 X 1,5	140	20	65	20,0	4	DIN 374	6H
6172724	VTSFT-TC6552	6172723	VTSFT-TC6552	M27 X 3	160	33	85	20,0	4	DIN 376	6H
6172726	VTSFT-TC6554	6172725	VTSFT-TC6554	M30 X 1,5	150	22	68	20,0	4	DIN 374	6H
6172728	VTSFT-TC6555	6172727	VTSFT-TC6555	M30 X 2	150	22	68	22,0	4	DIN 374	6H
6172730	VTSFT-TC6556	6172729	VTSFT-TC6556	M30 X 3,5	180	35	87	22,0	4	DIN 376	6H
6172732	VTSFT-TC6558	6172731	VTSFT-TC6558	M33 X 3,5	180	35	92	25,0	4	DIN 376	6H
6172734	VTSFT-TC6560	6172733	VTSFT-TC6560	M36 X 4	200	40	110	28,0	4	DIN 376	6H
6172736	VTSFT-TC6563	6172735	VTSFT-TC6563	M39 X 4	200	40	105	32,0	4	DIN 376	6H
6172738	VTSFT-TC6565	6172737	VTSFT-TC6565	M42 X 4,5	200	40	105	32,0	5	DIN 376	6H
6172740	VTSFT-TC6567	6172739	VTSFT-TC6567	M45 X 5	220	50	110	36,0	5	DIN 376	6H
6172742	VTSFT-TC6569	6172741	VTSFT-TC6569	M48 X 5	250	50	145	36,0	5	DIN 376	6H
6172744	VTSFT-TC6571	6172743	VTSFT-TC6571	M52 X 5	250	50	135	40,0	5	DIN 376	6H

NOTE: Suitable for tension/compression holders.

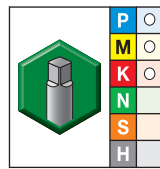
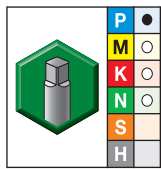
- WU41EG TiN
- WP49EG oxide



Shank Tolerance	
D mm	tolerance h9
1-3	+0, -0,025
>3-6	+0, -0,030
>6-10	+0, -0,036
>10-18	+0, -0,043
>18-30	+0, -0,052

Tapping

■ VT-SFT TC • Form E Bottoming Chamfer • Metric DIN 371 and 376 • Tension/Compression Holders

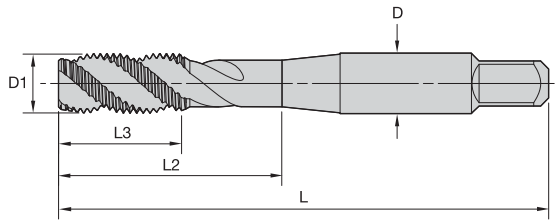


- first choice
- alternate choice

grade WU41EG TiN		grade WP49EG Oxide		metric dimensions					number of flutes	dimension standard	class of fit
order #	catalog #	order #	catalog #	D1 size	L	L3	L2	D			
6173197	VTSFT-TC6708	6173196	VTSFT-TC6708	M3 X 0,5	56	5	19	3,5	3	DIN 371	6H
6173199	VTSFT-TC6710	6173198	VTSFT-TC6710	M4 X 0,7	63	7	21	4,5	3	DIN 371	6H
6173211	VTSFT-TC6711	6173200	VTSFT-TC6711	M5 X 0,8	70	8	26	6,0	3	DIN 371	6H
6173213	VTSFT-TC6714	6173212	VTSFT-TC6714	M6 X 1	80	10	30	6,0	3	DIN 371	6H
6173215	VTSFT-TC6718	6173214	VTSFT-TC6718	M8 X 1,25	90	13	37	8,0	3	DIN 371	6H
6173217	VTSFT-TC6723	6173216	VTSFT-TC6723	M10 X 1,5	100	15	42	10,0	3	DIN 371	6H
6173219	VTSFT-TC6728	6173218	VTSFT-TC6728	M12 X 1,75	110	18	55	9,0	3	DIN 376	6H
6173231	VTSFT-TC6732	6173220	VTSFT-TC6732	M14 X 2	110	20	50	11,0	3	DIN 376	6H
6173233	VTSFT-TC6735	6173232	VTSFT-TC6735	M16 X 2	110	20	55	12,0	4	DIN 376	6H
6173235	VTSFT-TC6739	6173234	VTSFT-TC6739	M18 X 2,5	125	25	61	14,0	4	DIN 376	6H
6173237	VTSFT-TC6743	6173236	VTSFT-TC6743	M20 X 2,5	140	25	65	16,0	4	DIN 376	6H

NOTE: Suitable for tension/compression holders.

- WU41EG TiN
- WU40EG bright

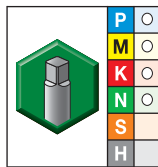
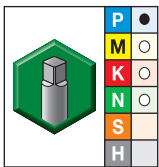


Shank Tolerance

D mm	tolerance h9
1-3	+0, -0,025
>3-6	+0, -0,030
>6-10	+0, -0,036
>10-18	+0, -0,043
>18-30	+0, -0,052

Tapping

■ VT-SFT • Form C Semi-Bottoming Chamfer • Metric • JIS • Rigid and Synchronous Holders

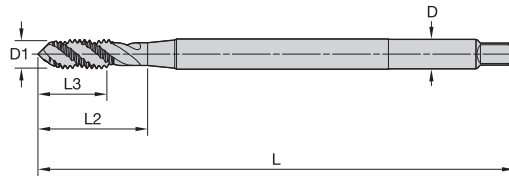


- first choice
- alternate choice

grade WU41EG TiN		grade WU40EG Bright		metric dimensions				number of flutes	dimension standard	tap class	
order #	catalog #	order #	catalog #	D1 size	L	L3	L2				D
5398709	VTSFT7505	5398708	VTSFT7505	M3 X 0,5	46	11	19	4,0	2	JIS	ISO 2
5398791	VTSFT7506	5398790	VTSFT7506	M4 X 0,7	52	13	21	5,0	3	JIS	ISO 2
5398793	VTSFT7507	5398792	VTSFT7507	M5 X 0,8	60	16	24	5,5	3	JIS	ISO 2
5398795	VTSFT7508	5398794	VTSFT7508	M6 X 1	62	19	29	6,0	3	JIS	ISO 2
5398797	VTSFT7509	5398796	VTSFT7509	M8 X 1,25	70	22	37	6,2	3	JIS	ISO 2
5398799	VTSFT7510	5398798	VTSFT7510	M10 X 1,5	75	24	41	7,0	3	JIS	ISO 2
-		5398800	VTSFT7511	M12 X 1,25	82	29	48	8,5	3	JIS	ISO 2
-		5398802	VTSFT7513	M12 X 1,5	82	29	48	8,5	3	JIS	ISO 2
-		5398801	VTSFT7512	M12 X 1,75	82	29	48	8,5	3	JIS	ISO 2
-		5398804	VTSFT7515	M14 X 1,5	88	30	48	10,5	3	JIS	ISO 2
-		5398803	VTSFT7514	M14 X 2	88	30	48	10,5	3	JIS	ISO 2
-		5398806	VTSFT7517	M16 X 1,5	95	32	52	12,5	3	JIS	ISO 2
-		5398805	VTSFT7516	M16 X 2	95	32	52	12,5	3	JIS	ISO 2
-		5398807	VTSFT7518	M18 X 2,5	100	37	55	14,0	4	JIS	ISO 2
-		5398808	VTSFT7519	M20 X 2,5	105	37	60	15,0	4	JIS	ISO 2

NOTE: Suggested for use in rigid and synchronous holders.

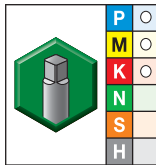
• WP49EG oxide



Shank Tolerance	
D inch	tolerance
.141-.635	+0, -.0015
>.635-1.51	+0, -.0020
>1.51-2.01	+0, -.0030

Tapping

■ VT-SFT TC • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • 6" Length • ANSI • Tension/Compression Holders



● first choice
○ alternate choice

grade WP49EG Oxide		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	D1 TPI	L	L3	L2	D		
5601929	VTSFT-TC5403	4 - 40	6.00	.56	.87	.141	2	H2
5602110	VTSFT-TC5404	6 - 32	6.00	.38	.71	.141	2	H3
5602111	VTSFT-TC5405	8 - 32	6.00	.38	.76	.168	3	H3
5602112	VTSFT-TC5406	10 - 24	6.00	.50	.91	.194	3	H3
5602113	VTSFT-TC5407	10 - 32	6.00	.50	.91	.194	3	H3
5602114	VTSFT-TC5408	1/4 20	6.00	.63	1.00	.255	3	H3
5602115	VTSFT-TC5409	1/4 - 28	6.00	.63	1.01	.255	3	H3
5602116	VTSFT-TC5410	5/16 - 18	6.00	.69	1.13	.318	3	H3
5602117	VTSFT-TC5411	5/16 - 24	6.00	.69	1.13	.318	3	H3
5602118	VTSFT-TC5412	3/8 - 16	6.00	.75	1.27	.381	3	H3
5602119	VTSFT-TC5413	3/8 - 24	6.00	.75	1.26	.381	3	H3
5602120	VTSFT-TC5414	7/16 - 14	6.00	.88	1.49	.323	3	H3
5602121	VTSFT-TC5415	7/16 - 20	6.00	.88	1.49	.323	3	H3
5602122	VTSFT-TC5416	1/2 - 13	6.00	.94	1.74	.367	3	H3
5602123	VTSFT-TC5417	1/2 - 20	6.00	.94	1.74	.367	3	H3
5602124	VTSFT-TC5418	5/8 - 11	6.00	1.09	1.89	.480	3	H3

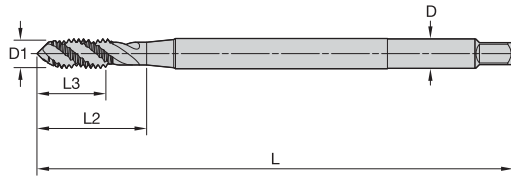
NOTE: Suitable for tension/compression holders.

High-Performance Taps

VariTap™ Spiral-Flute HSS-E Extension Taps • Blind Holes • 4" Length



- WP49EG oxide

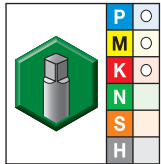


Shank Tolerance

D inch	tolerance
.141-.635	+0, -.0015
>.635-1.51	+0, -.0020
>1.51-2.01	+0, -.0030

Tapping

■ VT-SFT TC • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • 4" Length • ANSI • Tension/Compression Holders

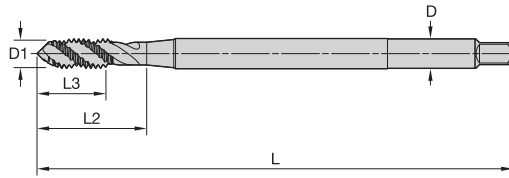


- first choice
- alternate choice

grade WP49EG Oxide		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	D1 TPI	L	L3	L2	D		
5602125	VTSFT-TC5419	4 - 40	4.00	.56	.87	.141	2	H2
5602126	VTSFT-TC5420	6 - 32	4.00	.38	.71	.141	2	H3
5602127	VTSFT-TC5421	8 - 32	4.00	.38	.76	.168	3	H3
5602128	VTSFT-TC5422	10 - 24	4.00	.50	.91	.194	3	H3
5602129	VTSFT-TC5423	10 - 32	4.00	.50	.91	.194	3	H3
5602130	VTSFT-TC5424	1/4 20	4.00	.63	1.00	.255	3	H3

NOTE: Suitable for tension/compression holders.

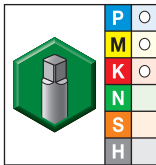
• WP49EG oxide



Shank Tolerance	
D inch	tolerance
.141-.635	+0, -.0015
>.635-1.51	+0, -.0020
>1.51-2.01	+0, -.0030

Tapping

■ VT-SFT TC • Form E Bottoming Chamfer • Machine Screw and Fractional • 6" Length • ANSI • Tension/Compression Holders

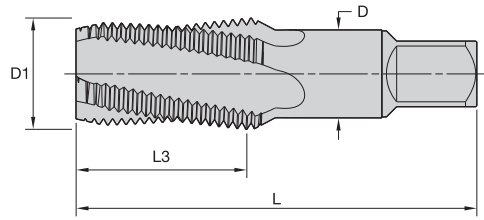


- first choice
- alternate choice

grade WP49EG Oxide		inch dimensions					number of flutes	pitch diameter limit
order #	catalog #	D1 TPI	L	L3	L2	D		
5602131	VTSFT-TC5425	4 - 40	6.00	.56	.87	.141	2	H2
5602132	VTSFT-TC5426	6 - 32	6.00	.38	.71	.141	2	H3
5602133	VTSFT-TC5427	8 - 32	6.00	.38	.76	.168	3	H3
5602134	VTSFT-TC5428	10 - 32	6.00	.50	.91	.194	3	H3
5602135	VTSFT-TC5429	1/4 - 20	6.00	.63	1.00	.255	3	H3
5602136	VTSFT-TC5430	1/4 - 28	6.00	.63	1.01	.255	3	H3
5602137	VTSFT-TC5431	5/16 - 18	6.00	.69	1.13	.318	3	H3
5602138	VTSFT-TC5432	3/8 - 16	6.00	.75	1.27	.381	3	H3
5602139	VTSFT-TC5433	3/8 - 24	6.00	.75	1.26	.381	3	H3
5602140	VTSFT-TC5434	7/16 - 14	6.00	.88	1.49	.323	3	H3

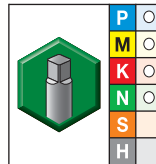
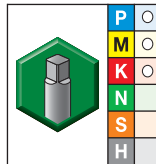
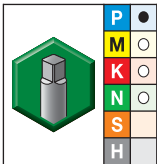
NOTE: Suitable for tension/compression holders.

- WU41EG TiN
- WP49EG oxide
- WU40EG bright



Tapping

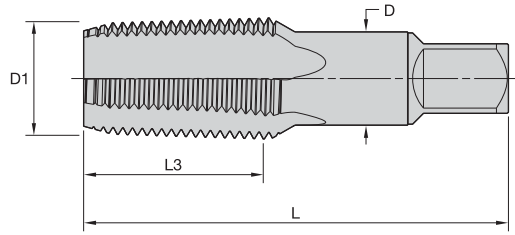
■ VT-SFT • Standard Chamfer • Standard Projection



- first choice
- alternate choice

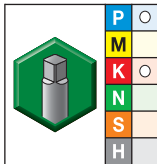
grade WU41EG TiN		grade WP49EG Oxide		grade WU40EG Bright		D1 TPI	L	L3	D	number of flutes	thread type
order #	catalog #	order #	catalog #	order #	catalog #						
5629600	VTSFT8001	5629359	VTSFT8001	5629601	VTSFT8001	1/16 - 27	2.13	.69	.313	4	NPT
5629618	VTSFT8501	5629617	VTSFT8501	5629619	VTSFT8501	1/16 - 27	2.13	.69	.313	4	NPTF
5629603	VTSFT8002	5629602	VTSFT8002	5629604	VTSFT8002	1/8 - 27	2.13	.75	.313	4	NPT
5629621	VTSFT8502	5629620	VTSFT8502	5629622	VTSFT8502	1/8 - 27	2.13	.75	.313	4	NPTF
5629606	VTSFT8003	5629605	VTSFT8003	5629607	VTSFT8003	1/8 - 27	2.13	.75	.438	4	NPT
5629624	VTSFT8503	5629623	VTSFT8503	5629625	VTSFT8503	1/8 - 27	2.13	.75	.438	4	NPTF
5629609	VTSFT8004	5629608	VTSFT8004	5629610	VTSFT8004	1/4 - 18	2.44	1.03	.563	4	NPT
5629627	VTSFT8504	5629626	VTSFT8504	5629628	VTSFT8504	1/4 - 18	2.44	1.03	.563	4	NPTF
5629612	VTSFT8005	5629611	VTSFT8005	5629613	VTSFT8005	3/8 - 18	2.56	1.03	.700	4	NPT
5629640	VTSFT8505	5629629	VTSFT8505	5629641	VTSFT8505	3/8 - 18	2.56	1.03	.700	4	NPTF
5629615	VTSFT8006	5629614	VTSFT8006	5629616	VTSFT8006	1/2 - 14	3.13	1.38	.688	4	NPT
5629643	VTSFT8506	5629642	VTSFT8506	5629644	VTSFT8506	1/2 - 14	3.13	1.38	.688	4	NPTF
5629836	VTSFT8007	5629835	VTSFT8007	5629837	VTSFT8007	3/4 - 14	3.25	1.38	.906	4	NPT
5629871	VTSFT8507	5629861	VTSFT8507	5629881	VTSFT8507	3/4 - 14	3.25	1.38	.906	4	NPTF
5629839	VTSFT8008	5629838	VTSFT8008	5629860	VTSFT8008	1 - 11 1/2	3.75	1.75	1.125	4	NPT
5629890	VTSFT8508	5629889	VTSFT8508	5629891	VTSFT8508	1 - 11 1/2	3.75	1.75	1.125	4	NPTF

- WU40EG bright



Tapping

■ VT-STR • Standard Chamfer • Standard Projection



grade WU40EG
Bright

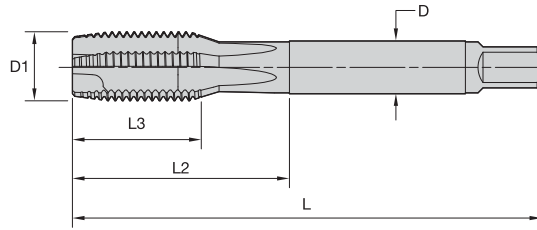
- first choice
- alternate choice

order #	catalog #	D1 TPI	L	L3	D	number of flutes	thread type
5629646	VTSTR8001	1/8 - 27	2.13	.75	.313	4	NPT
5629647	VTSTR8002	1/4 - 18	2.44	1.03	.563	4	NPT
5629648	VTSTR8003	3/8 - 18	2.56	1.03	.700	4	NPT
5629649	VTSTR8004	1/2 - 14	3.13	1.38	.688	4	NPT
5629904	VTSTR8005	3/4 - 14	3.25	1.38	.906	5	NPT

Multipurpose Taps

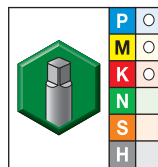
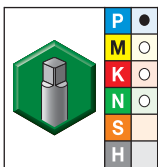
VariTap™ Spiral-Point HSS-E ISO Pipe Taps • Through Holes

- WU41EG TiN
- WP49EG oxide



Tapping

■ VTSP0 • (G) Whitworth Pipe Thread • DIN EN ISO 228 • Form B Plug Chamfer

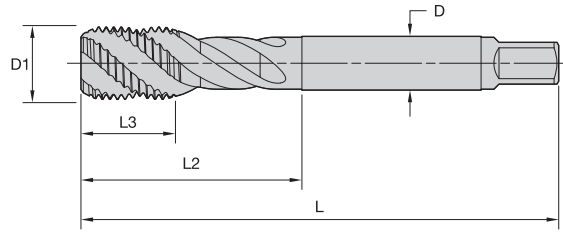


- first choice
- alternate choice

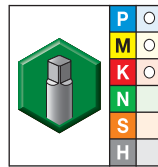
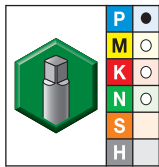
grade WU41EG TiN		grade WP49EG Oxide		D1 TPI	L	L2	L3	D	number of flutes	thread type
order #	catalog #	order #	catalog #							
6058785	VTSP08605	6058784	VTSP08605	1/8 - 28	90	35	15	7	3	G
6058787	VTSP08606	6058786	VTSP08606	1/4 - 19	100	44	22	11	3	G
6058790	VTSP08607	6058788	VTSP08607	3/8 - 19	100	47	22	12	4	G
6058792	VTSP08608	6058791	VTSP08608	1/2 - 14	125	55	25	16	4	G
6058794	VTSP08609	6058793	VTSP08609	5/8 - 14	125	61	25	18	4	G
6058797	VTSP08610	6058796	VTSP08610	3/4 - 14	140	60	25	20	4	G
6058799	VTSP08611	6058798	VTSP08611	7/8 - 14	150	68	28	22	4	G
6058811	VTSP08612	6058800	VTSP08612	1 - 11	160	68	30	25	5	G

NOTE: Suitable for tension/compression holders.

- WU41EG TiN
- WP49EG oxide



■ VTSFT • (G) Whitworth Pipe Thread • DIN EN ISO 228 • Form C Semi-Bottoming Chamfer



- first choice
- alternate choice

grade WU41EG TiN		grade WP49EG Oxide		D1 TPI	L	L2	L3	D	number of flutes	thread type
order #	catalog #	order #	catalog #							
6058815	VTSFT8605	6058814	VTSFT8605	1/8 - 28	90	35	15	7	3	G
6058817	VTSFT8606	6058816	VTSFT8606	1/4 - 19	100	44	15	11	3	G
6058819	VTSFT8607	6058818	VTSFT8607	3/8 - 19	100	47	15	12	4	G
6058871	VTSFT8608	6058820	VTSFT8608	1/2 - 14	125	55	18	16	4	G
6058873	VTSFT8609	6058872	VTSFT8609	5/8 - 14	125	61	18	18	4	G
6058875	VTSFT8610	6058874	VTSFT8610	3/4 - 14	140	65	20	20	4	G
6058877	VTSFT8611	6058876	VTSFT8611	7/8 - 14	150	68	22	22	4	G
6058879	VTSFT8612	6058878	VTSFT8612	1 - 11	160	74	24	25	5	G

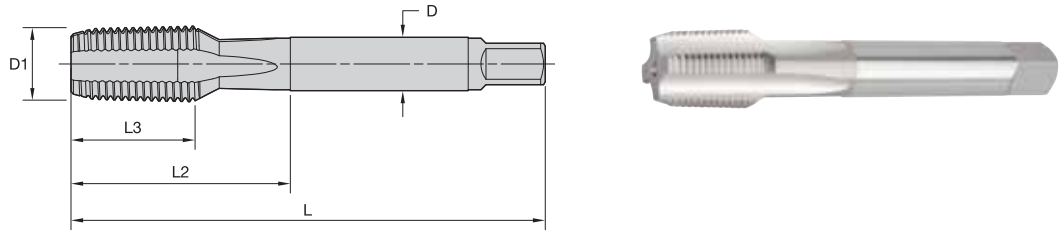
NOTE: Suitable for tension/compression holders.

Tapping

Multipurpose Taps

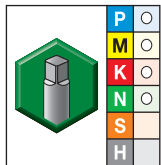
VariTap™ Straight-Flute HSS-E American National Taper Pipe Taps • Through and Blind Holes

• WU40EG bright



Tapping

■ VTSTR • NPT and NPTF • Standard Projection • Form C Semi-Bottoming Chamfer





● first choice
○ alternate choice

grade WU40EG Bright							number of flutes	thread type
order #	catalog #	D1 TPI	L	L2	L3	D		
6058953	VTSTR8301	1/16 - 27	90	35	13	6	3	NPT
6058960	VTSTR8801	1/16 - 27	90	35	13	6	3	NPTF
6058954	VTSTR8302	1/8 - 27	90	36	13	7	4	NPT
6059011	VTSTR8802	1/8 - 27	90	36	13	7	4	NPTF
6058955	VTSTR8303	1/4 - 18	100	39	20	11	4	NPT
6059012	VTSTR8803	1/4 - 18	100	39	20	11	4	NPTF
6058956	VTSTR8304	3/8 - 18	110	39	20	12	4	NPT
6059013	VTSTR8804	3/8 - 18	110	39	20	12	4	NPTF
6058957	VTSTR8305	1/2 - 14	125	56	26	16	4	NPT
6059014	VTSTR8805	1/2 - 14	125	56	26	16	4	NPTF
6058958	VTSTR8306	3/4 - 14	140	55	26	20	4	NPT
6059015	VTSTR8806	3/4 - 14	140	55	26	20	4	NPTF
6058959	VTSTR8307	1 - 11.5	160	71	32	25	5	NPT
6059016	VTSTR8807	1 - 11.5	160	71	32	25	5	NPTF

NOTE: Suitable for tension/compression holders.

■ VariTap™ • HSS-E • Metric

Material Group	 Through Holes					 Blind Holes					
	Tap Style	Grade	Range – m/min			Tap Style	Grade	Range – m/min			
			min	Starting Value	max			min	Starting Value	max	
P	P1	VT-SPO	WP42EG, WU41EG	21	27	34	VT-SFT (TC)	WP42EG, WU41EG	13	18	26
		VT-SPO	WP49EG, WU40EG	10	14	17	VT-SFT (TC)	WP49EG, WU40EG	6	9	13
	P2	VT-SPO	WP42EG, WU41EG	16	21	27	VT-SFT (TC)	WP42EG, WU41EG	11	15	22
		VT-SPO	WP49EG, WU40EG	8	11	13	VT-SFT (TC)	WP49EG, WU40EG	4	6	9
	P3	VT-SPO	WP42EG, WU41EG	9	12	15	VT-SFT (TC)	WP42EG, WU41EG	6	9	13
		VT-SPO	WP49EG, WU40EG	5	6	8	VT-SFT (TC)	WP49EG, WU40EG	2	3	4
		VT-STR NPT	WU41EG	5	6	8	VT-STR NPT	WU41EG	5	6	8
		VT-STR NPT	WU40EG	2	3	4	VT-STR NPT	WU40EG	2	3	4
M	M1	VT-SPO	WP42EG, WU41EG	9	12	15	VT-SFT (TC)	WP42EG, WU41EG	6	9	13
		VT-SPO	WP49EG, WU40EG	5	6	8	VT-SFT (TC)	WP49EG, WU40EG	2	3	4
		VT-SFT NPT	WU41EG	5	6	8	VT-SFT NPT	WU41EG	5	6	8
		VT-SFT NPT	WP49EG, WU40EG	2	3	4	VT-SFT NPT	WP49EG, WU40EG	2	3	4
	M3	VT-SPO	WP42EG, WU41EG	7	9	11	VT-SFT (TC)	WP42EG, WU41EG	4	6	9
		VT-SPO	WP49EG, WU40EG	3	5	6	VT-SFT (TC)	WP49EG, WU40EG	2	3	4
K	K1	VT-STR NPT	WU41EG	10	14	17	VT-STR NPT	WU41EG	10	14	17
		VT-STR NPT	WU40EG	6	8	10	VT-STR NPT	WU40EG	6	8	10
	K2	VT-SPO	WP42EG, WU41EG	21	27	34	VT-SFT (TC)	WP42EG, WU41EG	13	18	26
		VT-SPO	WP49EG, WU40EG	10	14	17	VT-SFT (TC)	WP49EG, WU40EG	6	9	13
N	N1	VT-SPO	WP42EG, WU41EG	34	46	57	VT-SFT (TC)	WP42EG, WU41EG	23	34	48
		VT-SPO	WU40EG	17	23	29	VT-SFT	WU40EG	11	15	22
	N2	VT-SPO	WP42EG, WU41EG	30	40	50	VT-SFT (TC)	WP42EG, WU41EG	19	27	39
		VT-SPO	WU40EG	15	20	25	VT-SFT	WU40EG	11	15	22
	N4	VT-SPO	WP42EG, WU41EG	7	9	11	VT-SFT (TC)	WP42EG, WU41EG	4	6	9
		VT-SPO	WU40EG	3	5	6	VT-SFT	WU40EG	2	3	4

* Grades: WP42EG = TiCN
WU41EG = TiN
WP49EG = oxide
WU40EG = bright



VariTap™ • HSS-E • Inch

Tapping

Material Group	Through Holes					Blind Holes					
	Tap Style	Grade	Range – SFM			Tap Style	Grade	Range – SFM			
			min	Starting Value	max			min	Starting Value	max	
P	P1	VT-SPO	WP42EG, WU41EG	70	90	110	VT-SFT (TC)	WP42EG, WU41EG	40	60	90
		VT-SPO	WP49EG, WU40EG	30	45	60	VT-SFT (TC)	WP49EG, WU40EG	20	30	40
	P2	VT-SPO	WP42EG, WU41EG	50	70	90	VT-SFT (TC)	WP42EG, WU41EG	40	50	70
		VT-SPO	WP49EG, WU40EG	30	35	40	VT-SFT (TC)	WP49EG, WU40EG	10	20	30
	P3	VT-SPO	WP42EG, WU41EG	30	40	50	VT-SFT (TC)	WP42EG, WU41EG	20	30	40
		VT-SPO	WP49EG, WU40EG	20	20	30	VT-SFT (TC)	WP49EG, WU40EG	10	10	10
		VT-STR NPT	WU41EG	20	20	30	VT-STR NPT	WU41EG	20	20	30
		VT-STR NPT	WU40EG	10	10	10	VT-STR NPT	WU40EG	10	10	10
M	M1	VT-SPO	WP42EG, WU41EG	30	40	50	VT-SFT (TC)	WP42EG, WU41EG	20	30	40
		VT-SPO	WP49EG, WU40EG	20	20	30	VT-SFT (TC)	WP49EG, WU40EG	10	10	10
		VT-SFT NPT	WU41EG	20	20	30	VT-SFT NPT	WU41EG	20	20	30
		VT-SFT NPT	WP49EG, WU40EG	10	10	10	VT-SFT NPT	WP49EG, WU40EG	10	10	10
	M3	VT-SPO	WP42EG, WU41EG	20	30	40	VT-SFT (TC)	WP42EG, WU41EG	10	20	30
		VT-SPO	WP49EG, WU40EG	10	15	20	VT-SFT (TC)	WP49EG, WU40EG	7	10	10
K	K1	VT-STR NPT	WU41EG	30	45	60	VT-STR NPT	WU41EG	30	45	60
		VT-STR NPT	WU40EG	20	25	30	VT-STR NPT	WU40EG	20	25	30
	K2	VT-SPO	WP42EG, WU41EG	70	90	110	VT-SFT (TC)	WP42EG, WU41EG	40	60	90
		VT-SPO	WP49EG, WU40EG	30	45	60	VT-SFT (TC)	WP49EG, WU40EG	20	30	40
N	N1	VT-SPO	WP42EG, WU41EG	110	150	190	VT-SFT (TC)	WP42EG, WU41EG	80	110	160
		VT-SPO	WU40EG	60	75	90	VT-SFT	WU40EG	40	50	72
	N2	VT-SPO	WP42EG, WU41EG	100	130	160	VT-SFT (TC)	WP42EG, WU41EG	60	90	130
		VT-SPO	WU40EG	50	65	80	VT-SFT	WU40EG	40	50	70
	N4	VT-SPO	WP42EG, WU41EG	23	30	40	VT-SFT (TC)	WP42EG, WU41EG	10	20	30
		VT-SPO	WU40EG	10	15	20	VT-SFT	WU40EG	10	10	10

* Grades: WP42EG = TiCN
 WU41EG = TiN
 WP49EG = oxide
 WU40EG = bright

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Customer Application Support (CAS)

ORIGINATING COUNTRY	LANGUAGE	TEL	FAX	EMAIL
Australia	English	001-724-539-6921 *	001-724-539-6830 *	ap.techsupport@widia.com
Austria	German	0800 291630	0049-911-9735-429 *	eu.techsupport@widia.com
Belgium	English/French	0800 80410	0049-911-9735-429 *	eu.techsupport@widia.com
China	Chinese	400-889-2237	+86-21-58999985 *	w-cn.techsupport@widia.com
Denmark	English	808 89295	001-724-539-6830 *	na.techsupport@widia.com
Finland	English	0800 919413	001-724-539-6830 *	na.techsupport@widia.com
France	French	080 5540 379	0049-911-9735-429 *	eu.techsupport@widia.com
Germany	German	0800 1015774	0911-9735-429 *	eu.techsupport@widia.com
India	English	1 800 103 5227	—	in.techsupport@widia.com
Israel	English	1809 449907	001-724-539-6830 *	na.techsupport@widia.com
Italy	Italian	800 916568	02 89512146 *	eu.techsupport@widia.com
Japan	English	001-724539-6921 *	001-724-539-6830 *	ap.techsupport@widia.com
Korea (South)	English	001-724539-6921 *	001-724-539-6830 *	ap.techsupport@widia.com
Malaysia	English	001-724539-6921 *	001-724-539-6830 *	ap.techsupport@widia.com
Netherlands	English	0800 0201131	001-724-539-6830 *	na.techsupport@widia.com
New Zealand	English	001-724539-6921 *	001-724-539-6830 *	ap.techsupport@widia.com
Norway	English	800 10081	001-724-539-6830 *	na.techsupport@widia.com
Poland	Polish	00800 4411943	06166 56504 *	eu.techsupport@widia.com
Russia (landline)	Russian	8800 5556395	0048 6166 56504 *	eu.techsupport@widia.com
Russia (cell phone)	Russian	+7 8005556395	0048 6166 56504 *	eu.techsupport@widia.com
Singapore	English	001-724539-6921 *	001-724-539-6830 *	ap.techsupport@widia.com
South Africa	English	0800 981644	001-724-539-6830 *	na.techsupport@widia.com
Sweden	English	020798794	001-724-539-6830 *	na.techsupport@widia.com
Taiwan	English	001-724539-6921 *	001-724-539-6830 *	ap.techsupport@widia.com
Thailand	English	001-724539-6921 *	001-724-539-6830 *	ap.techsupport@widia.com
United Kingdom	English	0800 028 2996	001-724-539-6830 *	na.techsupport@widia.com
Ukraine	Russian	800502665	0048 6166 56504 *	eu.techsupport@widia.com
USA	English	888 539 5145	001-724-539-6830 *	na.techsupport@widia.com

Phone and fax numbers marked with * are not toll free.

For more information, contact your local WIDIA
Authorized Distributor or visit widia.com/services.



WIDIA-GTD™ Lightning™ Service Delivery Matrix Update

Rely on the WIDIA™ Lightning Service program to deliver the special taps you need, when and where you need them. Within minutes, we can quote, process, and release your order to the factory.

Lightning Service



Features and Benefits

- Non-standard tap sizes, pitches, PDs, coatings, etc.
- Special taps can be used for tapping steel, cast iron, aluminum, or brass.
- Custom-ordered taps can be designed to thread INCONEL®, titanium, and high-temp alloys.
- Always accurate thread pitch diameters and gage fits.
- Select products available for shipping within 24 hours.

LIGHTNING SERVICE
24 HOUR
SHIPPING

How to Order Lightning™ Service Taps

WIDIA™ leads the industry in quoting technology. Experienced quotation specialists and product engineers use in-house designed software to generate a quote from a customer inquiry and design cutting tools with the requested features, modifications, options, and surface treatments.

Use the following outline when selecting a tap:

1. Determine the tap that meets your cutting tool needs.
2. If the style, size, and/or quantity is not listed, consult customer service for a factory quote. WIDIA is fully equipped and ready to design your tool to your unique specifications.

Please use the following guidelines when placing an order:

1. Tap style and required quantity.
2. Catalog number.
3. Size and pitch (nominal diameter and threads per inch or mm pitch).
4. Chamfer (taper, plug, modified bottoming, or bottoming).
5. Surface treatments.
6. Additional features or options.

NOTE: If you do not specify the pitch, number of flutes, and/or chamfer, standard specifications will be applied and shipped uncoated. Any additional information, such as material to be tapped, type of hole, and any general dimensions, such as overall length and shank diameter, will ensure a correct tap for your application.

Delivery Matrix

■ Surface Treatments and Coatings

treatment/coating	lead time	price
TiN – Titanium Nitride	4 days	consult customer service
Steam Oxide	2 days	N/C
Nitride	2 days	N/C
Steam Oxide/Nitride	2 days	N/C
TiCN – Titanium Carbonitride	1 week	consult customer service

NOTE: Add to lead time designated for Lightning Service taps.

■ Common Special Taps and Special Taps from Blanks

sizes	max quantity	lead time
up to 13/16", M20	72 pcs.	1 day
7/8-1", M22-M25	24 pcs.	1 day
1 1/16-1 1/2, M27-M36	12 pcs.	1 day
larger than 1 9/16, M38	2 pcs.	2 weeks
pipe taps larger than 2 1/2"	2 pcs.	2 weeks
Rp (BSPP), Rc (BSPT), G (BSPF)	47 pcs.	3 days

NOTE: For orders greater than specified maximum quantity, consult customer service.

■ Additional Features and Options

feature/option	lead time
controlled root (minor diameter ±.001") double lead (except form taps)	no additional time 1 day
triple lead interrupted threads, taper or straight, odd number of flutes	1 day 1 day
external centers removed	no additional time
special marking	no additional time
special VariTap, EM-NI, & EM-TI Taps	2 weeks
STI taps	1 day

NOTE: Add to lead time designated for Lightning Service taps.

■ Coating Recommendation Chart

- first choice
- alternate choice

	oxide	nitride	TiN	TiCN
P	○		○	●
M	○		○	○
K	○	○	○	●
N		○	○	○
S		○	○	○
H				
speed (SFM) increase	0%	0%	50%	50%



Tooling Systems

HydroForce E2-E23

Hydraulic Chuck Reducer Sleeves E24-E29

ERICKSON NG (New Generation) Shrink Fit Unit E30-E33



HydroForce™ HT Hydraulic Chuck High Torque

- First choice solution for rotating applications.
- HydroForce HT gives you an unparalleled combination of accuracy and clamping force.
- HydroForce HT requires only two clamping sizes for all of your tooling applications.



HydroForce

Compact and Stable Design

- Shorter projection length and thicker front wall cross section result in higher rigidity. This allows higher cutting parameters and better surface quality.

Advanced Hydraulic Clamping

- Three times better clamping force than regular hydraulic chucks, runout of 3 microns at 2.5 times diameter overhang vibration dampening. This results in up to 50% longer tool life and improved workpiece surface quality.

Balance Quality at G2.5 at 25.000 RPM

- Lower vibration, particularly at high speeds. This results in higher productivity.

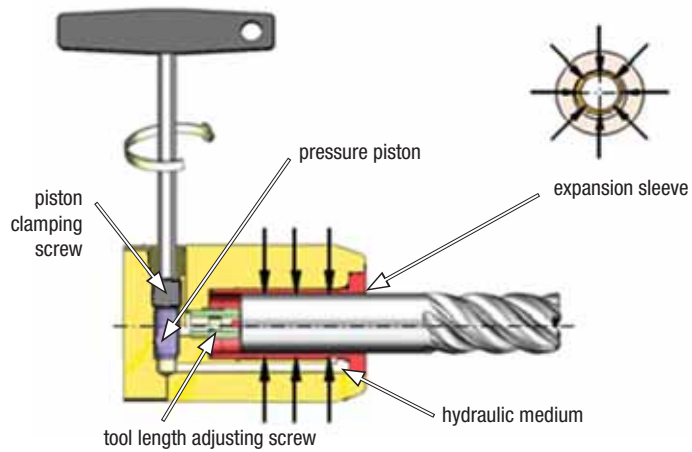
Easy Side Access for Clamping/Unclamping

- Mechanical stop for clamping and 3/8" (10mm) length adjustment. This results in reliable, consistent clamping and no over torque. No torque wrench required.

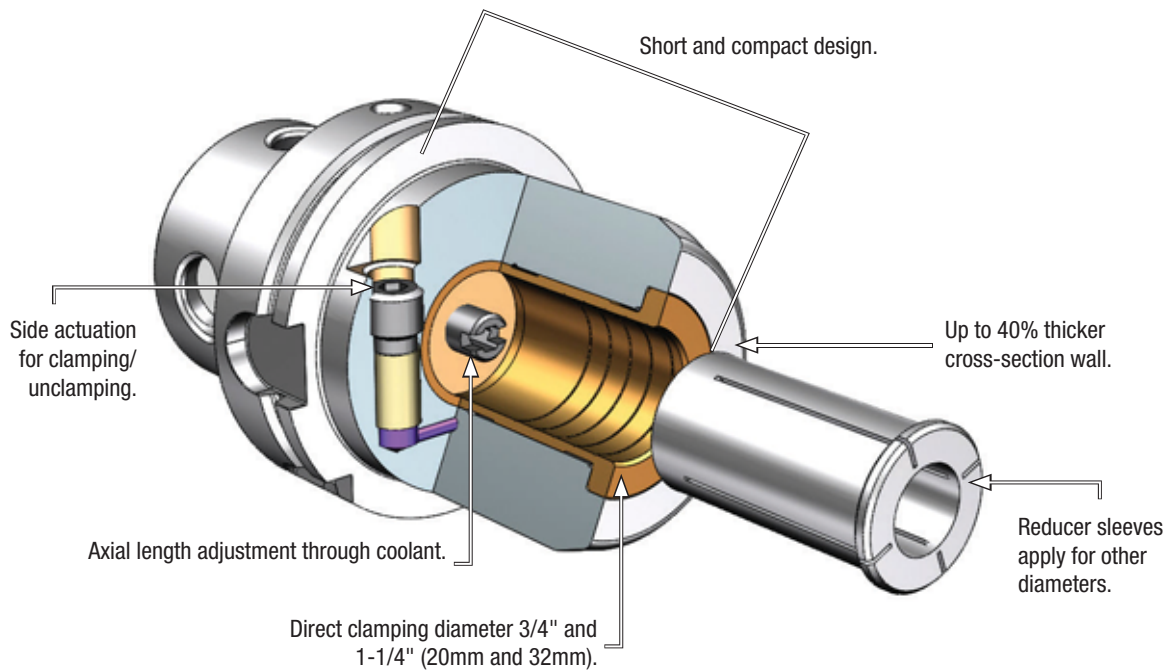
Focused and Flexible Product Offering

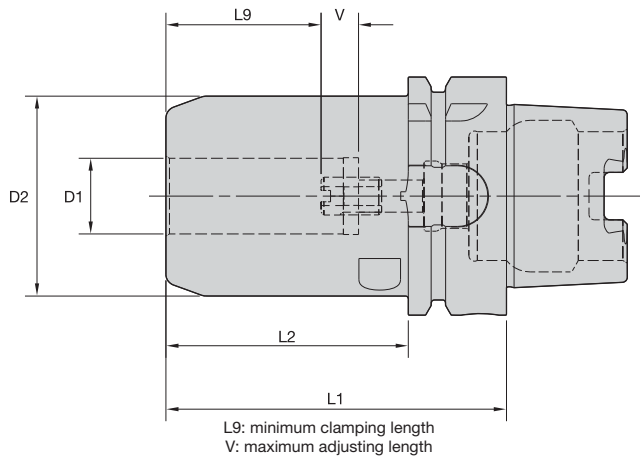
- Allows direct clamping for 3/4" and 1-1/4" (20mm and 32mm). Reducer sleeves available for all combinations metric/inch, which results in reduced toolholder inventory, maximum flexibility, and minimum cost.

Hydraulic Chuck (HC) Basic Working Principle



HydroForce™ Advanced Features





Tooling Systems

Cutting Tool Shank Requirements metric (ISO standard)

cutting tool shank diameter	tolerance	
6	h6	0,000/-0,008
8 & 10	h6	0,000/-0,009
12, 14, 16, & 18	h6	0,000/-0,011
20	h6	0,000/-0,013

Cutting Tool Shank Requirements inch (industry standard)

cutting tool shank diameters	tolerance
1/4, 5/16 & 3/8	.0000/-0.0004
7/16, 1/2, 9/16, 5/8, & 11/16	.0000/-0.0004
3/4, 7/8, 1, & 1-1/4	.0000/-0.0005

ERICKSON™

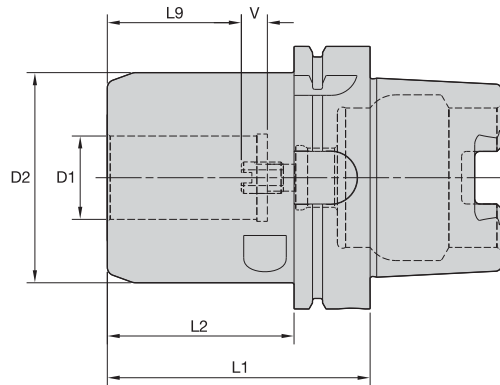
■ HCTHT • Metric • HSK Form A

order number	catalog number	D1	D2	D21	L1	L2	L9	V	actuation wrench	wrench size actuation screw	wrench size stop screw	kg
5520975	HSK63AHCTHT20090M	20	53	—	90	64	41	10		5 mm	5 mm	1,54
6048237	HSK63AHCTHT32100	32	65	80	100	32	51	10		6 mm	6 mm	2,25

■ HCTHT • Inch • HSK Form A

order number	catalog number	D1	D2	D21	L1	L2	L9	V	actuation wrench	wrench size actuation screw	wrench size stop screw	lbs
5520958	HSK63AHCTHT075350	.750	2.067	—	3.500	2.478	1.618	.394		5 mm	5 mm	3.39
6048238	HSK63AHCTHT125400	1.250	2.559	3.150	4.000	1.260	2.008	.394		6 mm	6 mm	5.11


NOTE: Do not overtorque actuation screw. Tighten by hand until stop is felt.
 Hydraulic chuck technical section, see pages K60–K63 of the WIDIA Tooling Systems catalog A-09-02122.
 Wrenches must be ordered separately.
 Supplied with stop screw.
 Actuation wrench must be ordered separately.
 Reduction sleeves are available and must be ordered separately; see pages E18–E19.
 HSK coolant unit and wrench are available and must be ordered separately;
 see page J32 of the WIDIA Tooling Systems catalog A-09-02122.




Cutting Tool Shank Requirements metric (ISO standard)			Cutting Tool Shank Requirements inch (industry standard)	
cutting tool shank diameter	tolerance		cutting tool shank diameters	tolerance
6	h6	0,000/-0,008	1/4, 5/16 & 3/8	.0000/-0.0004
8 & 10	h6	0,000/-0,009	7/16, 1/2, 9/16, 5/8, & 11/16	.0000/-0.0004
12, 14, 16, & 18	h6	0,000/-0,011	3/4, 7/8, 1, & 1-1/4	.0000/-0.0005
20	h6	0,000/-0,013		

ERICKSON™

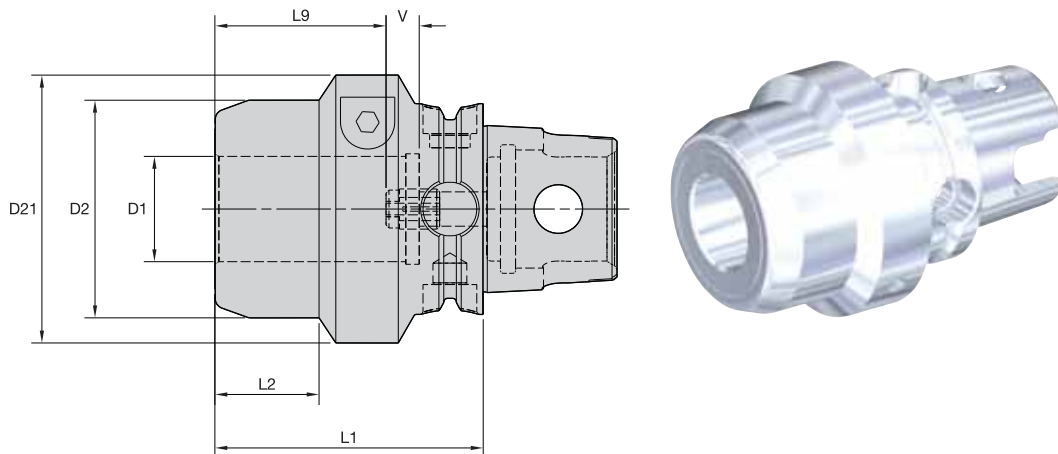
■ HCTHT • Metric • HSK Form A

order number	catalog number	D1	D2	L1	L2	L9	V	actuation wrench	wrench size actuation screw	wrench size stop screw	kg
5520976	HSK100AHCTHT20090M	20	65	90	61	41	10		5 mm	5 mm	3,38
5520977	HSK100AHCTHT32100M	32	80	100	71	51	10		6 mm	6 mm	4,29

■ HCTHT • Inch • HSK Form A

order number	catalog number	D1	D2	L1	L2	L9	V	actuation wrench	wrench size actuation screw	wrench size stop screw	lbs
5520959	HSK100AHCTHT125400	1.250	3.150	4.000	2.860	2.012	.394		6 mm	6 mm	9.61

NOTE: Do not overtorque actuation screw. Tighten by hand until stop is felt.
Hydraulic chuck technical section, see pages K60-K63 of the WIDIA™ Tooling Systems catalog A-09-02122.
Supplied with stop screw.
Actuation wrench must be ordered separately.
Reduction sleeves are available and must be ordered separately; see pages E18-E19.
HSK coolant unit and wrench are available and must be ordered separately;
see page J32 of the WIDIA Tooling Systems catalog A-09-02122.
For diameter D1 32mm (1-1/4"), use an L-shape Allen wrench with side length of approximately 200mm.



Tooling Systems

**Cutting Tool Shank Requirements
metric (ISO standard)**

cutting tool shank diameter	tolerance	
6	h6	0,000/-0,008
8 & 10	h6	0,000/-0,009
12, 14, 16, & 18	h6	0,000/-0,011
20	h6	0,000/-0,013

**Cutting Tool Shank Requirements
inch (industry standard)**

cutting tool shank diameters	tolerance
1/4, 5/16 & 3/8	.0000/-0.0004
7/16, 1/2, 9/16, 5/8, & 11/16	.0000/-0.0004
3/4, 7/8, 1, & 1-1/4	.0000/-0.0005



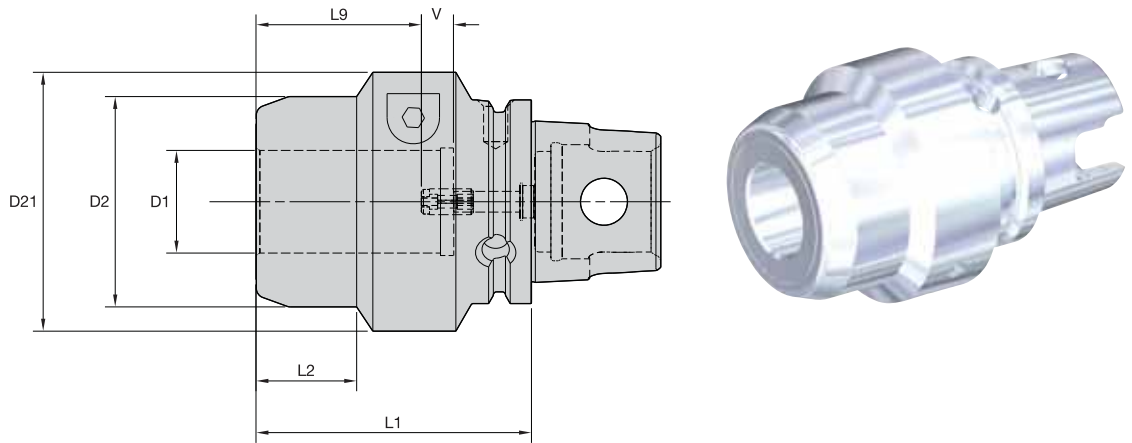
■ HCTHT • Metric • KM63TS

order number	catalog number	D1	D2	D21	L1	L2	L9	V	wrench size actuation screw	wrench size stop screw	kg
5520979	KM63TSHCTHT32080M	32	65,0	80	80	31	51	10	6 mm	6 mm	2,00

■ HCTHT • Inch • KM63TS

order number	catalog number	D1	D2	D21	L1	L2	L9	V	wrench size actuation screw	wrench size stop screw	lbs
5521070	KM63TSHCTHT125315	1.250	2.559	3.150	3.150	1.220	2.012	.394	6 mm	6 mm	4.42

NOTE: Do not overtorque actuation screw. Tighten by hand until stop is felt.
 Hydraulic chuck technical section, see pages K60–K63 of the WIDIA™ Tooling Systems catalog A-09-02122.
 Supplied with stop screw.
 Actuation wrench must be ordered separately.
 Reduction sleeves are available and must be ordered separately; see pages E18–E19.
 For diameter D1 32mm (1-1/4"), use an L-shape Allen wrench with side length of approximately 200mm.



Cutting Tool Shank Requirements metric (ISO standard)

cutting tool	tolerance	
6	h6	0,000/-0,008
8 & 10	h6	0,000/-0,009
12, 14, 16, & 18	h6	0,000/-0,011
20	h6	0,000/-0,013

Cutting Tool Shank Requirements inch (industry standard)

cutting tool shank diameters	tolerance
1/4, 5/16 & 3/8	.0000/-0.0004
7/16, 1/2, 9/16, 5/8, & 11/16	.0000/-0.0004
3/4, 7/8, 1, & 1-1/4	.0000/-0.0005



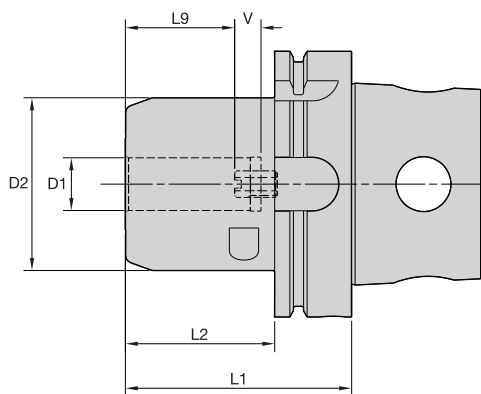
■ HCTHT • Metric • KM63XMZ

order number	catalog number	D1	D2	D21	L1	L2	L9	V	wrench size actuation screw	wrench size stop screw	kg
5520978	KM63XMZHCTHT32085M	32	65,0	80	85	31	51	10	6 mm	4 mm	2,27

■ HCTHT • Inch • KM63XMZ

order number	catalog number	D1	D2	D21	L1	L2	L9	V	wrench size actuation screw	wrench size stop screw	lbs
5521079	KM63XMZHCTHT125315	1.250	2.559	3.150	3.150	1.260	2.012	.394	6 mm	4 mm	4.59

NOTE: Do not overtorque actuation screw. Tighten by hand until stop is felt.
Hydraulic chuck technical section, see pages K60–K63 of the WIDIA™ Tooling Systems catalog A-09-02122.
Supplied with stop screw.
Actuation wrench must be ordered separately.
Reduction sleeves are available and must be ordered separately; see pages E18–E19.
For diameter D1 32mm (1-1/4"), use an L-shape Allen wrench with side length of approximately 200mm.



L9: minimum clamping length
V: maximum adjusting length



Tooling Systems

**Cutting Tool Shank Requirements
metric (ISO standard)**

cutting tool shank diameter	tolerance	
6	h6	0,000/-0,008
8 & 10	h6	0,000/-0,009
12, 14, 16, & 18	h6	0,000/-0,011
20	h6	0,000/-0,013

**Cutting Tool Shank Requirements
inch (industry standard)**

cutting tool shank diameters	tolerance
1/4, 5/16 & 3/8	.0000/-0.0004
7/16, 1/2, 9/16, 5/8, & 11/16	.0000/-0.0004
3/4, 7/8, 1, & 1-1/4	.0000/-0.0005



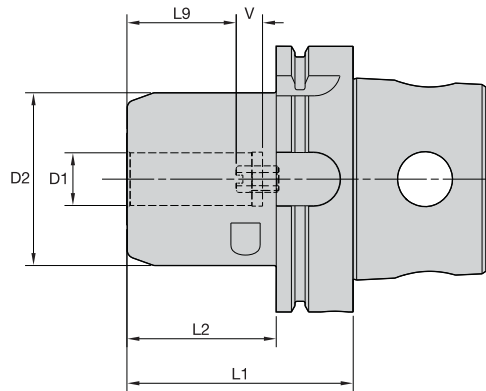
■ HCTHT • Metric • KM4X™

order number	catalog number	D1	D2	L1	L2	L9	V	wrench size actuation screw	wrench size stop screw	kg
5520990	KM4X63HCTHT20090M	20	52,5	90	64	41	10	5 mm	5 mm	1,63

■ HCTHT • Inch • KM4X

order number	catalog number	D1	D2	L1	L2	L9	V	wrench size actuation screw	wrench size stop screw	lbs
5521071	KM4X63HCTHT075350	.750	2.067	3.500	2.478	1.618	.394	5 mm	5 mm	3.57

NOTE: Do not overtorque actuation screw. Tighten by hand until stop is felt.
Hydraulic chuck technical section, see pages K60–K63 of the WIDIA™ Tooling Systems catalog A-09-02122.
Supplied with stop screw.
Actuation wrench must be ordered separately.
Reduction sleeves are available and must be ordered separately; see pages E18–E19.
KM4X63 coolant unit and wrench are available and must be ordered separately; order number 5572428 and 1134161.



Cutting Tool Shank Requirements metric (ISO standard)

cutting tool shank diameter	tolerance	
6	h6	0,000/-0,008
8 & 10	h6	0,000/-0,009
12, 14, 16, & 18	h6	0,000/-0,011
20	h6	0,000/-0,013

Cutting Tool Shank Requirements inch (industry standard)

cutting tool shank diameters	tolerance
1/4, 5/16 & 3/8	.0000/-0.0004
7/16, 1/2, 9/16, 5/8, & 11/16	.0000/-0.0004
3/4, 7/8, 1, & 1-1/4	.0000/-0.0005

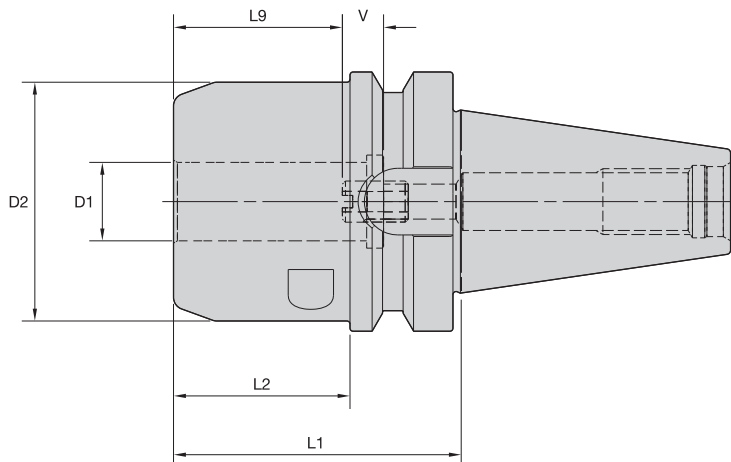
■ HCTHT • Metric • KM4X™

order number	catalog number	D1	D2	L1	L2	L9	V	wrench size actuation screw	wrench size stop screw	kg
5520991	KM4X100HCTHT20085M	20	65,0	85	56	41	10	5 mm	5 mm	3,53
5520992	KM4X100HCTHT32095M	32	80,0	95	66	51	10	6 mm	6 mm	4,37

■ HCTHT • Inch • KM4X

order number	catalog number	D1	D2	L1	L2	L9	V	wrench size actuation screw	wrench size stop screw	lbs
5521072	KM4X100HCTHT125375	1.250	3.150	3.750	2.630	2.012	.394	6 mm	6 mm	9.66

NOTE: Do not overtorque actuation screw. Tighten by hand until stop is felt.
Hydraulic chuck technical section, see pages K60–K63 of the WIDIA™ Tooling Systems catalog A-09-02122.
Supplied with stop screw.
Actuation wrench must be ordered separately.
Reduction sleeves are available and must be ordered separately; see pages E18–E19.
KM4X63 coolant unit and wrench are available and must be ordered separately; order number 5572428 and 1134161.



L9: minimum clamping length
V: maximum adjusting length



Tooling Systems

**Cutting Tool Shank Requirements
metric (ISO standard)**

cutting tool shank diameter	tolerance	
6	h6	0,000/-0,008
8 & 10	h6	0,000/-0,009
12, 14, 16, & 18	h6	0,000/-0,011
20	h6	0,000/-0,013

**Cutting Tool Shank Requirements
inch (industry standard)**

cutting tool shank diameters	tolerance
1/4, 5/16 & 3/8	.0000/-0.0004
7/16, 1/2, 9/16, 5/8, & 11/16	.0000/-0.0004
3/4, 7/8, 1, & 1-1/4	.0000/-0.0005

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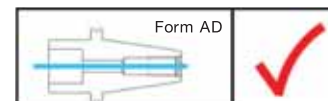
■ HCTHT • Metric • BT40

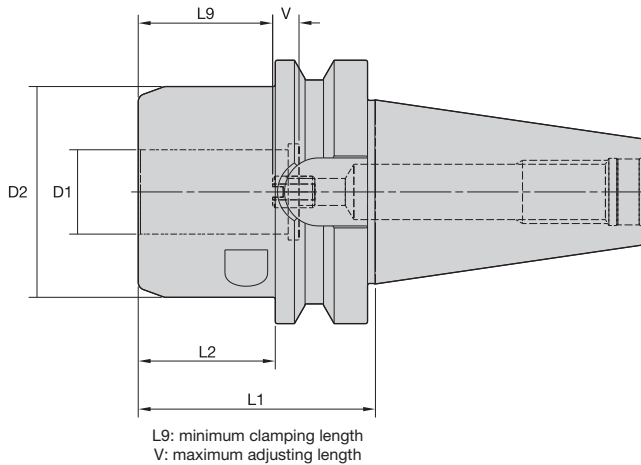
order number	catalog number	D1	D2	L1	L2	L9	V	actuation wrench	wrench size actuation screw	wrench size stop screw	kg
6048257	BT40HCTHT32080M	32	80	80	80	51	10	170.136	6 mm	6 mm	2,31

■ HCTHT • Inch • BT40

order number	catalog number	D1	D2	L1	L2	L9	V	actuation wrench	wrench size actuation screw	wrench size stop screw	lbs
6048258	BT40HCTHT125315	—	3.150	3.150	3.150	2.008	.394	170.136	6 mm	6 mm	5.03

NOTE: Do not overtorque actuation screw. Tighten by hand until stop is felt.
Hydraulic chuck technical section, see pages K60–K63 of the WIDIA™ Tooling Systems catalog A-09-02122.
Supplied with stop screw.
Actuation wrench must be ordered separately.
Reduction sleeves are available and must be ordered separately; see pages E18–E19.
For retention knobs, see pages J33–J38 of the WIDIA Tooling Systems catalog A-09-02122.





Cutting Tool Shank Requirements metric (ISO standard)		
cutting tool shank diameter	tolerance	
6	h6	0,000/-0,008
8 & 10	h6	0,000/-0,009
12, 14, 16, & 18	h6	0,000/-0,011
20	h6	0,000/-0,013

Cutting Tool Shank Requirements inch (industry standard)	
cutting tool shank diameters	tolerance
1/4, 5/16 & 3/8	.0000/-0.0004
7/16, 1/2, 9/16, 5/8, & 11/16	.0000/-0.0004
3/4, 7/8, 1, & 1-1/4	.0000/-0.0005

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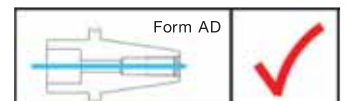
■ HCTHT • Metric • BT50

order number	catalog number	D1	D2	L1	L2	L9	V	actuation wrench	wrench size actuation screw	wrench size stop screw	kg	
5520972	BT50HCTHT32090M	32	80	90	52	51	10		170.136	6 mm	6 mm	5,09

■ HCTHT • Inch • BT50

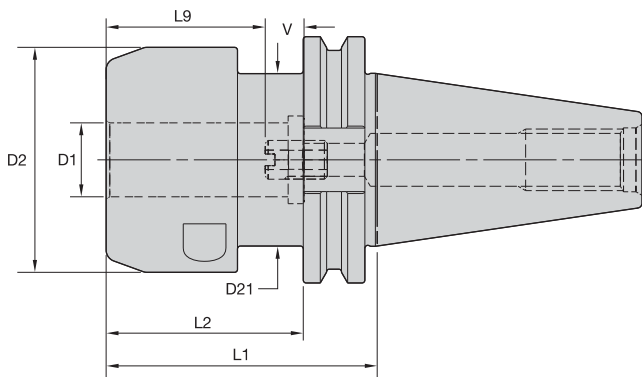
order number	catalog number	D1	D2	L1	L2	L9	V	actuation wrench	wrench size actuation screw	wrench size stop screw	lbs	
5521074	BT50HCTHT125350	1 1/4	3.150	3.500	2.004	2.012	.394		170.136	6 mm	6 mm	11.14

NOTE: Do not overtorque actuation screw. Tighten by hand until stop is felt.
Hydraulic chuck technical section, see pages K60-K63 of the WIDIA™ Tooling Systems catalog A-09-02122.
Supplied with stop screw.
Actuation wrench must be ordered separately.
Reduction sleeves are available and must be ordered separately; see pages E18-E19.
For retention knobs, see pages J33-J38 of the WIDIA Tooling Systems catalog A-09-02122.
For D1 of 32mm (1,25"), please use 6mm Allen wrench with minimum length of 180mm.



CV40 • CV50 Shank Tools

HydroForce™ Hydraulic Toolholders High Torque (HT)



L9: minimum clamping length
V: maximum adjusting length



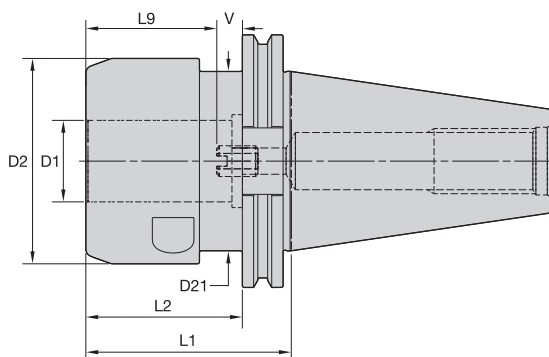
Cutting Tool Shank Requirements
inch (industry standard)

cutting tool shank diameters	tolerance
1/4, 5/16 & 3/8	.0000/-0.0004
7/16, 1/2, 9/16, 5/8, & 11/16	.0000/-0.0004
3/4, 7/8, 1, & 1-1/4	.0000/-0.0005

ERICKSON™

■ HCTHT • Inch • CV40

order number	catalog number	D1	D2	D21	L1	L2	L9	V	actuation wrench	wrench size actuation screw	wrench size stop screw	lbs
5521075	CV40HCTHT075275	3/4	2.283	—	2.750	2.000	1.618	.394	170.135	5 mm	5 mm	3.41
5647194	CV40HCTHT125400	1 1/4	2.559	3.150	4.000	1.575	2.012	.394	170.136	6 mm	6 mm	5.59



L9: minimum clamping length
V: maximum adjusting length

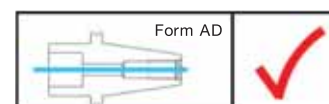


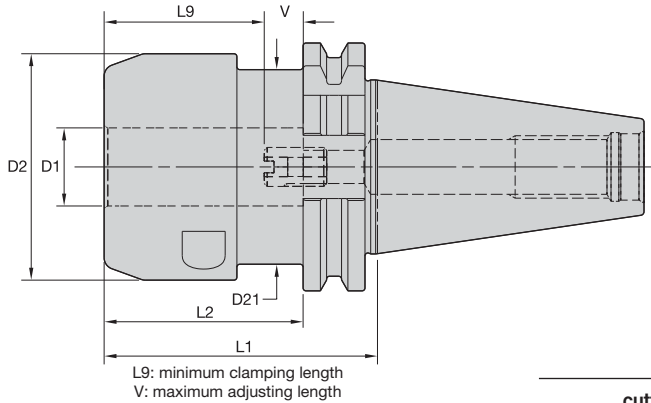
ERICKSON™

■ HCTHT • Inch • CV50

order number	catalog number	D1	D2	L1	L2	L9	V	actuation wrench	wrench size actuation screw	wrench size stop screw	lbs
5521076	CV50HCTHT125315	1 1/4	3.150	3.150	2.400	2.012	.394	170.136	6 mm	6 mm	9.48

NOTE: Do not overtorque actuation screw. Tighten by hand until stop is felt.
Hydraulic chuck technical section, see pages K60–K63 of the WIDIA™ Tooling Systems catalog A-09-02122.
Supplied with stop screw.
Actuation wrench must be ordered separately.
Reduction sleeves are available and must be ordered separately; see pages E18–E19.
For retention knobs, see pages J33–J38 of the WIDIA Tooling Systems catalog A-09-02122.
For diameter D1 32mm (1-1/4"), use an L-shape Allen wrench with side length of approximately 200mm.





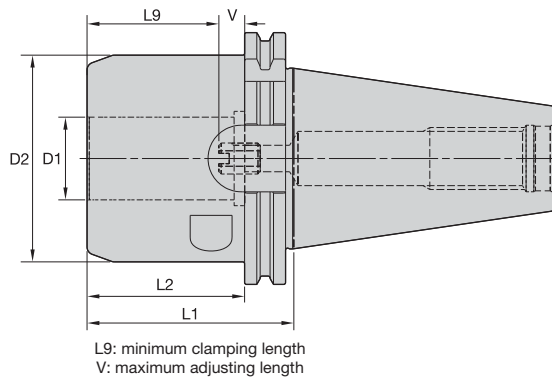
Cutting Tool Shank Requirements
metric (ISO standard)

cutting tool shank diameter	tolerance	
6	h6	0,000/-0,008
8 & 10	h6	0,000/-0,009
12, 14, 16, & 18	h6	0,000/-0,011
20	h6	0,000/-0,013

ERICKSON™

■ HCTHT • Metric • DV40

order number	catalog number	D1	D2	L1	L2	L9	V	actuation wrench	wrench size actuation screw	wrench size stop screw	kg
5520973	DV40HCTHT20070M	20	58	70	51	41	10	170.135	5 mm	5 mm	1,58
6048256	DV40HCTHT125315	32	80	80	80	51	10	170.136	6 mm	—	2,32
6048255	DV40HCTHT32080M	32	80	80	80	51	10	170.136	6 mm	6 mm	2,32

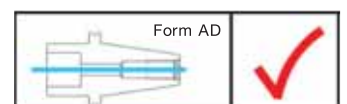


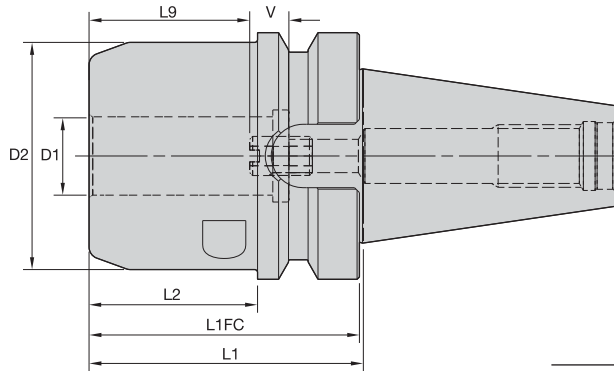
ERICKSON™

■ HCTHT • Metric • DV50

order number	catalog number	D1	D2	L1	L2	L9	V	actuation wrench	wrench size actuation screw	wrench size stop screw	kg
5520974	DV50HCTHT32080M	32	80	80	61	51	10	170.136	6 mm	6 mm	4,45

NOTE: Do not overtorque actuation screw. Tighten by hand until stop is felt.
Hydraulic chuck technical section, see pages K60–K63 of the WIDIA™ Tooling Systems catalog A-09-02122.
Supplied with stop screw.
Actuation wrench must be ordered separately.
Reduction sleeves are available and must be ordered separately; see pages E18–E19.
For retention knobs, see pages J33–J38 WIDIA Tooling Systems catalog A-09-02122.
For diameter D1 32mm (1-1/4"), use an L-shape Allen wrench with side length of approximately 200mm.





L9: minimum clamping length
V: maximum adjusting length



**Cutting Tool Shank Requirements
metric (ISO standard)**

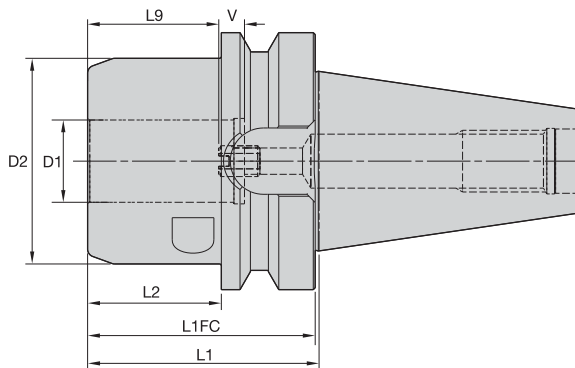
cutting tool shank diameter	tolerance	
6	h6	0,000/-0,008
8 & 10	h6	0,000/-0,009
12, 14, 16, & 18	h6	0,000/-0,011
20	h6	0,000/-0,013

Tooling Systems

ERICKSON™

■ HCTHT • Metric • BTKV40

order number	catalog number	D1	D2	L1	L1FC	L2	L9	V	actuation wrench	wrench size actuation screw	wrench size stop screw	kg
5520993	BTKV40HCTHT20070M	20	58	70	69	43	41	10	170.135	5 mm	5 mm	1,62
6048260	BTKV40HCTHT125315	32	80	80	79	79	51	10	170.136	6 mm	—	2,28
6048259	BTKV40HCTHT32080M	32	80	80	79	79	51	10	170.136	6 mm	6 mm	2,29



L9: minimum clamping length
V: maximum adjusting length

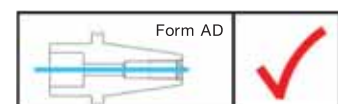


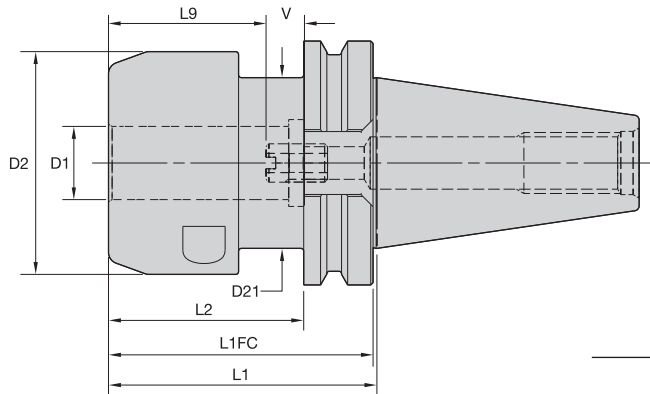
ERICKSON™

■ HCTHT • Metric • BTKV50

order number	catalog number	D1	D2	L1	L1FC	L2	L9	V	actuation wrench	wrench size actuation screw	wrench size stop screw	kg
5520994	BTKV50HCTHT32090M	32	80	90	89	52	51	10	170.136	6 mm	6 mm	5,13

NOTE: Do not overtorque actuation screw. Tighten by hand until stop is felt.
Hydraulic chuck technical section, see pages K60–K63 of the WIDIA™ Tooling Systems catalog A-09-02122.
Supplied with stop screw.
Actuation wrench must be ordered separately.
Reduction sleeves are available and must be ordered separately; see pages E18–E19.
For retention knobs, see pages J33–J38 WIDIA Tooling Systems catalog A-09-02122.
For diameter D1 32mm (1-1/4"), use an L-shape Allen wrench with side length of approximately 200mm.





L9: minimum clamping length
V: maximum adjusting length



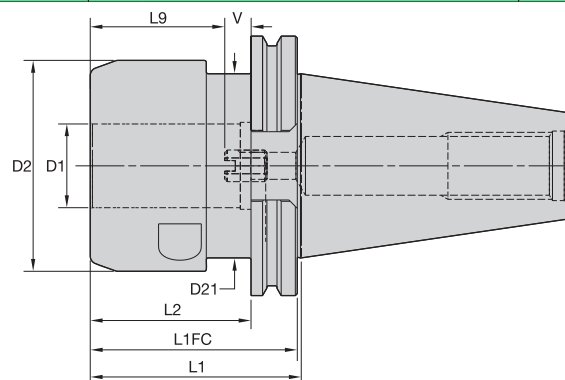
Cutting Tool Shank Requirements
inch (industry standard)

cutting tool shank diameters	tolerance
1/4, 5/16 & 3/8	.0000/-0.0004
7/16, 1/2, 9/16, 5/8, & 11/16	.0000/-0.0004
3/4, 7/8, 1, & 1-1/4	.0000/-0.0005

ERICKSON™

■ HCTHT • Inch • CVKV40

order number	catalog number	D1	D2	D21	L1	L1FC	L2	L9	V	actuation wrench	wrench size actuation screw	wrench size stop screw	lbs
5521077	CVKV40HCTHT075275	.750	2.283	1.750	2.750	2.711	2.000	1.618	.394	170.135	5 mm	5 mm	3.43
6048261	CVKV40HCTHT125315	1.250	2.559	3.150	3.150	3.110	.787	2.008	.394	170.136	6 mm	6 mm	4.39



L9: minimum clamping length
V: maximum adjusting length

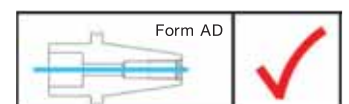


ERICKSON™

■ HCTHT • Inch • CVKV50

order number	catalog number	D1	D2	D21	L1	L1FC	L2	L9	V	actuation wrench	wrench size actuation screw	wrench size stop screw	lbs
5521078	CVKV50HCTHT125315	1.250	3.150	2.750	3.150	3.091	2.400	2.012	.394	170.136	6 mm	6 mm	9.52

NOTE: Do not overtorque actuation screw. Tighten by hand until stop is felt.
Hydraulic chuck technical section, see pages K60–K63 of the WIDIA Tooling Systems catalog A-09-02122.
Supplied with stop screw.
Actuation wrench must be ordered separately.
Reduction sleeves are available and must be ordered separately; see pages E18–E19.
For retention knobs, see pages J33–J38 WIDIA Tooling Systems catalog A-09-02122.
For diameter D1 32mm (1-1/4"), use an L-shape Allen wrench with side length of approximately 200mm.



ERICKSON™ HC Hydraulic Chuck Sleeves

ERICKSON™

HC

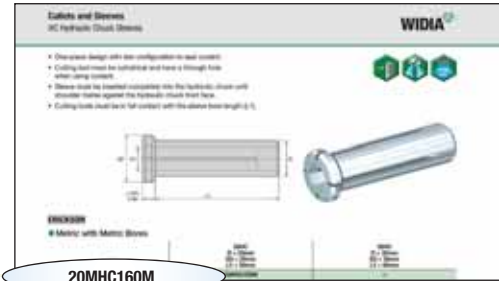


ERICKSON Hydraulic Reduction Sleeves are specially designed for high-precision clamping of straight cylindrical cutting tool shanks. The self-sealing design enables efficient use of through coolant cutting tools when the cutting tool shank completely engages the full gripping length of the sleeve.

- One-piece design with slot configuration to seal coolant.
- Cutting tool must be cylindrical and have a through hole when using coolant.
- Capable of up to 100 bar (1,500 psi) coolant pressure.
- Cutting tool shank requirement tolerance is h6 and $Ra \geq 0,3 \mu m$ (12 μin) surface finish.
- Maximum collapse is h6.

How Do Catalog Numbers Work?

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

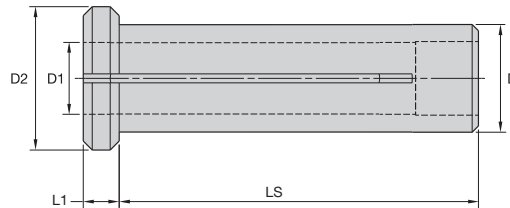


ERICKSON

20	M	HC	160	M
System Size	System Value	Sleeve Style	Sleeve Bore Size	Identification Value
<p>12 = 12mm 20 = 20mm 32 = 32mm 50 = 1/2" 75 = 3/4" 12 = 1-1/4"</p>	<p>M = Previous two numbers built in metric values</p>	<p>HC = Hydraulic Chuck</p>	<p>metric (xx.x) 010 = 1mm 010 = 16mm 010 = 25mm inch (x.xxx) 0125 = 1/8" 0500 = 1/2" 1000 = 1"</p>	<p>M = Sleeve bore size built to metric values</p> <p>(blank) = Sleeve bore size built to inch values</p>



- One-piece design with slot configuration to seal coolant.
- Cutting tool must be cylindrical and have a through hole when using coolant.
- Sleeve must be inserted completely into the hydraulic chuck until shoulder mates against the hydraulic chuck front face.
- Cutting tools must be in full contact with the sleeve bore length (L9).



ERICKSON

■ Metric with Metric Bores

Tooling Systems

D1	L9	12HC D = 12mm D2 = 16mm LS = 40mm	20HC D = 20mm D2 = 25mm LS = 50mm	25HC D = 25mm D2 = 30mm LS = 56mm	32HC D = 32mm D2 = 36mm LS = 60mm
3,0	29	12MHC030M	—	25MHC030M	—
3,0	28	—	20MHC030M	—	—
4,0	29	12MHC040M	—	25MHC040M	—
4,0	28	—	20MHC040M	—	—
5,0	29	12MHC050M	—	25MHC050M	—
5,0	28	—	20MHC050M	—	—
6,0	36	12MHC060M	20MHC060M	—	—
6,0	37	—	—	25MHC060M	32MHC060M
7,0	37	12MHC070M	20MHC070M	25MHC070M	32MHC070M
8,0	37	12MHC080M	20MHC080M	25MHC080M	32MHC080M
9,0	37	12MHC090M	—	—	32MHC090M
9,0	38	—	20MHC090M	25MHC090M	—
10,0	40	12MHC100M	20MHC100M	25MHC100M	32MHC100M
11,0	40	—	20MHC110M	—	—
11,0	41	—	—	—	32MHC110M
12,0	45	—	20MHC120M	—	32MHC120M
12,0	46	—	—	25MHC120M	—
13,0	45	—	20MHC130M	—	32MHC130M
14,0	45	—	20MHC140M	—	—
14,0	47	—	—	25MHC140M	—
14,0	46	—	—	—	32MHC140M
15,0	45	—	20MHC150M	—	—
15,0	46	—	—	—	32MHC150M
16,0	48	—	20MHC160M	25MHC160M	32MHC160M
17,0	48	—	—	—	32MHC170M
18,0	48	—	—	25MHC180M	—
18,0	49	—	—	—	32MHC180M
19,0	49	—	—	—	32MHC190M
20,0	49	—	—	25MHC200M	—
20,0	50	—	—	—	32MHC200M
22,0	51	—	—	—	32MHC220M
25,0	57	—	—	—	32MHC250M

(continued)

(HC Hydraulic Chuck Sleeves – continued)

■ **Metric with Inch Bores**

D1	L9	20HC	32HC
		D = 20mm D2 = 25mm LS = 50mm	D = 32mm D2 = 36mm LS = 60mm
3/16	28	20HCM0188	—
1/4	36	20HCM0250	—
5/16	37	20HCM0312	—
3/8	38	20HCM0375	—
7/16	40	20HCM0438	—
1/2	45	20HCM0500	32HCM0500
9/16	45	20HCM0562	—
5/8	48	20HCM0625	—
9/16	46	—	32HCM0562
5/8	46	—	32HCM0625
11/16	48	—	32HCM0688
3/4	50	—	32HCM0750
7/8	51	—	32HCM0875
1	56	—	32HCM1000

■ **Inch with Metric Bores**

D1	L9	50HC	75HC	12HC
		D = .500 D2 = .630 LS = 1.575	D = .750 D2 = .984	D = 1.250 D2 = 1.417
3,0	29	50HC030M	—	—
3,0	28	—	75HC030M	—
4,0	29	50HC040M	—	—
4,0	28	—	75HC040M	—
5,0	29	50HC050M	—	—
5,0	28	—	75HC050M	—
6,0	36	50HC060M	75HC060M	—
8,0	37	50HC080M	75HC080M	—
10,0	40	50HC100M	75HC100M	—
12,0	45	—	75HC120M	—
14,0	45	—	75HC140M	—
16,0	48	—	75HC160M	—
18,0	49	—	—	12HC180M
20,0	50	—	—	12HC200M
25,0	57	—	—	12HC250M

■ **Inch with Inch Bores**

D1	L9	50HC	75HC	12HC
		D = .500 D2 = .630 LS = 1.575	D = .750 D2 = .945 LS = 1.969	D = 1.250 D2 = 1.417 LS = 2.362
1/8	29	50HC0125	—	—
1/8	28	—	75HC0125	—
3/16	29	50HC0188	75HC0188	—
1/4	36	50HC0250	—	—
1/4	38	—	75HC0250	—
5/16	37	50HC0312	—	—
5/16	41	—	75HC0312	—
3/8	40	50HC0375	—	—
3/8	41	—	75HC0375	—
7/16	41	—	75HC0438	—
1/2	45	—	—	12HC0500
1/2	46	—	75HC0500	—
9/16	46	—	75HC0562	12HC0562
5/8	46	—	75HC0625	12HC0625
11/16	48	—	—	12HC0688
3/4	50	—	—	12HC0750
13/16	50	—	—	12HC0812
7/8	51	—	—	12HC0875
1	55	—	—	12HC1000

NOTE: Inserting the cutting tool less than the gripping length (L9) of the sleeve can permanently damage the sleeve and hydraulic chuck. Recommended to clean coolant holes periodically with air.

HydroForce HT Torque Comparison



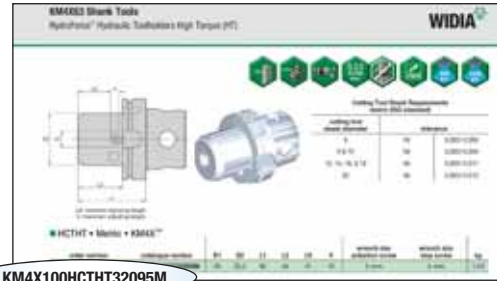
Torque Capacity of Toolholders, Nm

bore diameter (mm)	shank diameter (mm)	adapter type				
		regular hydraulic chuck	Shrink Fit holder* GP	Shrink Fit holder* HT	HydroForce hydraulic chuck	milling chuck (bearing type)
20	20	220	410-1050	650-1290	800	1120
32	32	700	1030-2080	1340-2380	2000	2350
32 with sleeve	20	440	-	-	1500	1460

**Torque is highly influenced by shank diameter of cutting tool and bore size.
All above torque values are for solid carbide shanks in dry condition at minimum clamping length.*

How Do Catalog Numbers Work?

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



KM4X100HCTHT32095M

KM4X
Shank Style

100
System Size

HCTHT
Toolholder Style
(Hydraulic Chuck Trend Line High Torque)

32
Toolholder Size
(Bore Size)

095
Tool Length

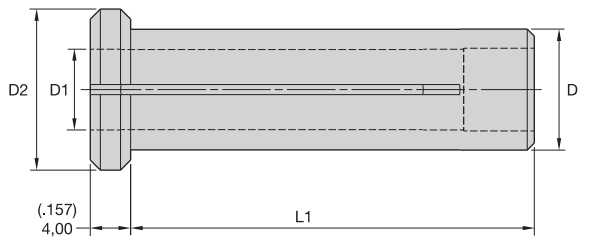
M
Metric

- HC** = Hydraulic Chuck – Standard Line
- HCB** = Hydraulic Chuck – Basic Line
- HCSLT** = Hydraulic Chuck – Slim Line – Trend
- HCT** = Hydraulic Chuck – Trend Line



Reducer Sleeve Product Portfolio

Reducer Sleeves		
d	D (metric)	D (inch)
12mm	3-10	-
20mm	3-16	3/16-5/8"
25mm	3-20	-
32mm	6-25	1/2-1"
1/2"	3-10	1/8-3/8"
3/4"	3-16	1/8-5/8"
1-1/4"	6-25	1/2-1"



Reduction sleeves available in metric and inch bores.

Applying the Product

High Torque Hydraulic Chuck is a new solution developed by WIDIA™ to address holding in all types of applications in all types of material.

These chucks have great gripping torque comparable to shrinkers and power grip chucks.

They can be used to hold shank diameters having h4 (3–4mm), h5 (5mm), h6 (>6mm) tolerance in rough milling, tapping, drilling, and reaming applications recommended to hold solid carbide shanks.

Parameters as recommended in solid carbide end milling catalogs can be used.

NOTE: Check if spindle connections can support the bending loads.

One Powerful Chuck — Best Suited for All Operations.

3D Profiling	Coolant — Through Coolant 100 bar (1500 psi) Maximum	Drilling into Solid	Drilling — Through Coolant
Plunge Milling	Ramping: Blank	Reaming: Through Hole	Shank — Cylindrical Plain
Side/Shoulder Milling: Square End with AE/AP Dimensions	Slotting: Square End	Tapping: Through Hole	

- Cutting tool must be cylindrical and have a through hole when using coolant.
- Sleeve must be inserted completely into the hydraulic chuck until shoulder mates against the hydraulic chuck front face.

Benchmark Toolholders

technical data/characteristics	toolholders				
	HydroForce high torque	Shrink Fit	milling chuck	ER collet chuck	Weldon® adapter
torque transmission	★★★★★	★★★★	★★★★★	★★	★★★★★
radial runout (T.I.R.) ¹	★★★★★	★★★★★	★★★★	★★★	★
radial rigidity ²	★★★	★★★★★	★★★	★★★	★★★
tool length adjustment	★★★★★	★★★★	★	★★★★	★★
tool shank tolerance requirement	★★★	★★	★★★	★★★★★	★★★
through coolant	★★★★★	★★★★★	★★★	★★★	★★
minimum quantity lubrication (MQL)	★★★★★	★★★★★	★	★	★
dampening capability	★★★★★	★	★★★	★★★	★★★
shank diameter range ³	★★★★★	★	★★★★★	★★★★★	★
cost of toolholder	★★	★★★	★	★★★★	★★★★★
low requirement of external devices ⁴	★★★★★	★	★★★★	★★★★	★★★★★
ease of handling	★★★★★	★★★	★★	★★★★	★★★★
dust resistance	★★★★★	★★★★★	★★★	★★★	★★★★
high-speed capability	★★★★★	★★★★★	★★★	★★★	★
balancing accuracy	★★★★★	★★★★★	★★★	★★★	★

¹ Radial runout may affect tool life.

² Radial rigidity for Weldon holder is low at a direction perpendicular to the screw.

³ Accepts different shank diameters through the use of reduction sleeves or due to collapse range.

⁴ Collet chucks and milling chucks may require the use of a torque or special wrench; Shrink Fit adapter requires a shrinking unit.



\$25,000 estimated savings per year	2.3x longer tool life	Exceptional surface quality
Field Test 1	Field Test 2	Field Test 3
S650 Cylinder Head	Mill Mounting & Pump Flange	Straightness Test with INCONEL® 718
<p>CHALLENGE</p> <ul style="list-style-type: none"> • Operation — End milling inside of rocker valley • Material — Varifer cast iron • Coolant type — External emulsion 	<p>CHALLENGE</p> <ul style="list-style-type: none"> • Operation — Side/face milling and slotting • Material — 80-55-06 (gray cast iron) • Coolant type — External emulsion 	<p>CHALLENGE</p> <ul style="list-style-type: none"> • Operation — Slotting • Material — INCONEL 718 • Coolant type — External emulsion
<p>SOLUTION</p> <ul style="list-style-type: none"> • Adapter — CV50BHCHTHT32080M; used 1" reduction sleeve • Base line — CV50BHPMC100650 • End mill — 4V6525028BW WP15PE 	<p>SOLUTION</p> <ul style="list-style-type: none"> • Adapter — CV50BHCHTHT32080M; used 3/4" reduction sleeve • Base line — CV50EM075575 • End mill — 5V0C19007BT WP15PE 	<p>SOLUTION</p> <ul style="list-style-type: none"> • Adapter — DV40BHCHTHT20090M; direct clamp • Base line — D = 20mm, GPL = 82mm
<p>CUTTING DATA</p> <ul style="list-style-type: none"> • vc — 380 SFM (116 m/min) • fz — .0045 IPT (0,114 mm/U) • Ap — .2" (5,08mm) • Ae — .1" (2,54mm) • Spindle speed — 1451 rev/min 	<p>CUTTING DATA</p> <ul style="list-style-type: none"> • vc — 344 SFM (105,1 m/min) • F — .0046 IPT (0,116 mm/U) • Ap — .69" (17,526mm) • Ae — .15" (3,81mm) • Spindle speed — 1750 rev/min 	<p>CUTTING DATA</p> <ul style="list-style-type: none"> • vc — 85.09 SFM (26 m/min) • F — 120 m/min • Ap — .787" (20mm) • Ae — .015" (4mm) • Ran for 20 minutes.
<p>RESULT</p> <ul style="list-style-type: none"> • Standard HPMC chuck — 63 minute tool life. • New HydroForce HT — 101 minute tool life. • 984 ft (299 m) increment in tool life distance. 	<p>RESULT</p> <ul style="list-style-type: none"> • Standard end mill adapter — 80.9 minute tool life. • New HydroForce HT — 213.1 minute tool life. • 5290 ft (1612 m) increment in tool life distance. 	<p>RESULT</p> <ul style="list-style-type: none"> • Straightness measured — 0,05mm. • No chip-off and no wear found on cutting edges.
<p>BENEFIT</p> <ul style="list-style-type: none"> • Up to 80% more tool life compared to competition. • Estimated savings of \$25,893 per year. • Exceptional surface finish. • Easy handling and tool presetting. 	<p>BENEFIT</p> <ul style="list-style-type: none"> • 2.3x more tool life compared to competition. • Estimated savings of \$14,840 per year. • Exceptional surface finish. • Easy handling and tool presetting. 	<p>BENEFIT</p> <ul style="list-style-type: none"> • Better quality of straightness. • No pullout. • Exceptional surface finish. • Easy handling and tool presetting.

Hydraulic Chuck Reducer Sleeves

with Safe-Lock™ Smart Coolant

Hydraulic Chuck Reducer Sleeves

Primary Application

Safe-Lock™ Smart Coolant reducer sleeves are specially designed for high precision and secure clamping of Safe-Lock™ tool shanks. The special drive feature in the reducer sleeve and grooves in the tool shank prevent the end mill from spinning and pullout during extreme machining conditions. The Smart Coolant feature enhances efficient cooling and easy chip evacuation, which leads to increased tool life. In addition, the real locking feature, which engages with a basic holder, provides bonus security for reducer sleeves against slippage and pullout.

Low vibration, in combination with pullout protection, excellent runout accuracy, and the hydraulic system's dampening property, results in very efficient machining with reduced and uniform tool wear. Due to the increased cutting depths and feeds, the metal removal rates can be increased up to the maximum limits of the tool and machine.

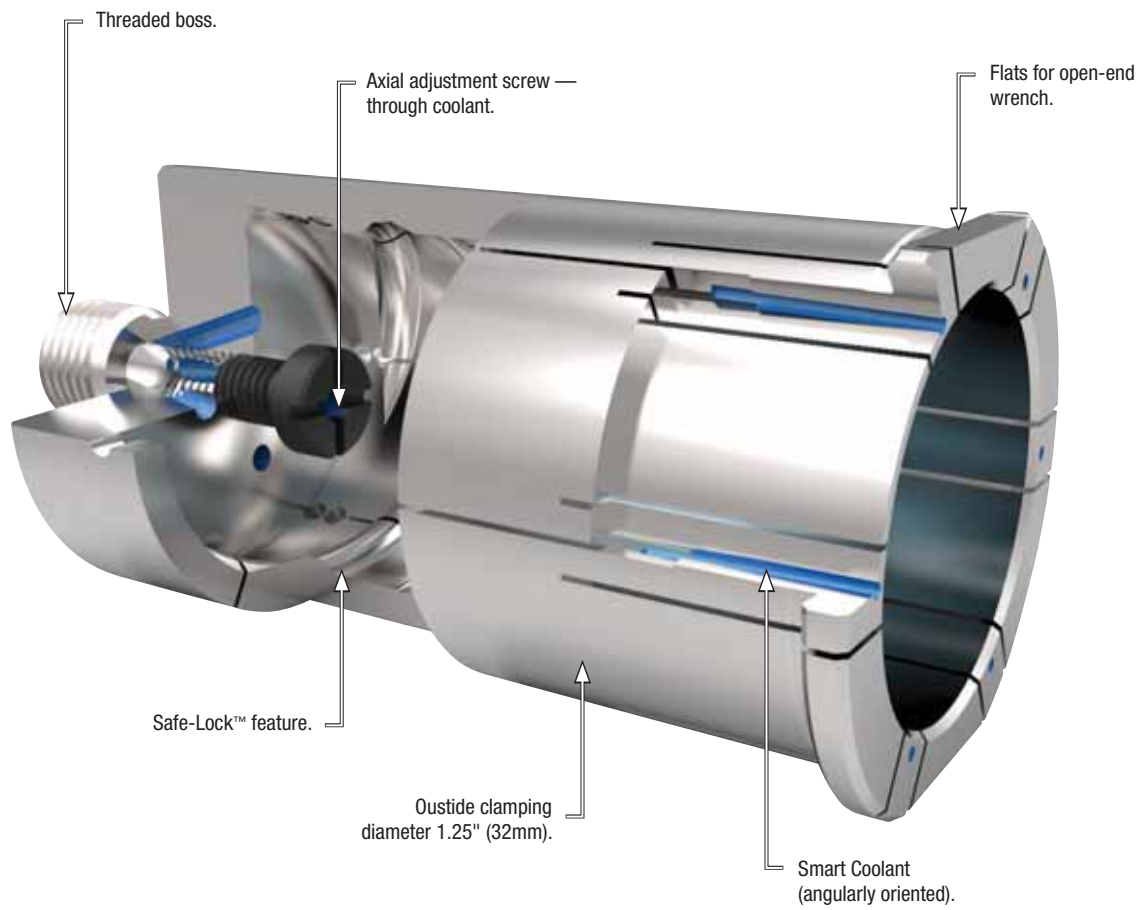
We are the first in the market to introduce the Safe-Lock™ with Smart Coolant feature in the high torque hydraulic chuck portfolio.

Features and Benefits

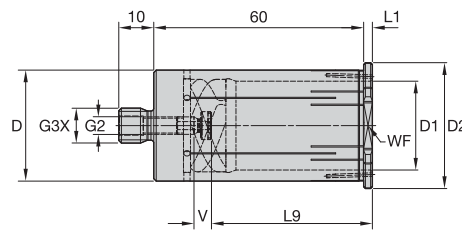
Stay Safe with Safe-Lock™ Smart Coolant

- For High-Performance Cutting (HPC).
- Highly accurate clamping due to hydraulic technology.
- High torque due to form-closed clamping.
- Highest stiffness by robust construction of HydroForce™.
- No loss of accuracy.
- No pullout of the tool.
- No spinning of the tool.
- No damage on workpiece or machine.
- Easy and quick clamping and unclamping cycles.
- Safe-Lock™ Smart Coolant reducer sleeves are available for shank diameters .5, .625, .75, and 1" (12, 14, 16, 20, and 25mm).





- One-piece design with slot configuration to seal coolant.
- Cutting tool must be cylindrical and have the Safe-Lock™ grooves on the shank.
- Sleeve must be screwed completely into the hydraulic chuck until shoulder mates against the hydraulic chuck front face.
- Cutting tool shank holding requirement at least to L9 dimension.

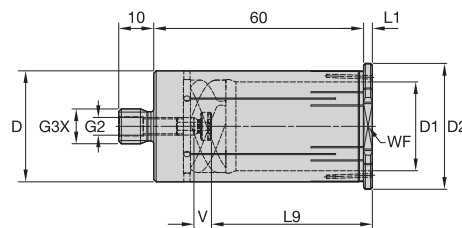


MHCSFC • Metric

order number	catalog number	D1	D2	D	L1	L9	V	G3X	G2	WF
5998607	32MHCSFC120M	12	36	32	2,5	41	4	M12	M6	32
5998608	32MHCSFC140M	14	36	32	2,5	41	4	M12	M6	32
5998609	32MHCSFC160M	16	36	32	2,5	44	4	M12	M6	32
5998610	32MHCSFC200M	20	36	32	2,5	46	4	M12	M6	32
5998751	32MHCSFC250M	25	36	32	2,5	47	4	M12	M6	32

NOTE: Inserting the cutting tool less than the gripping length (L9) of the sleeve can permanently damage the sleeve and hydraulic chuck. Recommended to clean coolant holes periodically with air.

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- Cutting tool must be cylindrical and have the Safe-Lock™ grooves on the shank.
- Sleeve must be screwed completely into the hydraulic chuck until shoulder mates against the hydraulic chuck front face.
- Cutting tool shank holding requirement at least to L9 dimension.



HCSFC • Inch

order number	catalog number	D1	D2	D	L1	L9	V	G3X	G2	WF
5998754	12HCSFC0500	.500	1.417	1.250	.098	1.614	.154	M12	M6	1.260
5998755	12HCSFC0625	.625	1.417	1.250	.098	1.732	.154	M12	M6	1.260
5998756	12HCSFC0750	.750	1.417	1.250	.098	1.811	.154	M12	M6	1.260
5998757	12HCSFC1000	1.000	1.417	1.250	.098	1.850	.154	M12	M6	1.260

NOTE: Inserting the cutting tool less than the gripping length (L9) of the sleeve can permanently damage the sleeve and hydraulic chuck. Recommended to clean coolant holes periodically with air.

■ **Safe-Lock™ Smart Coolant**

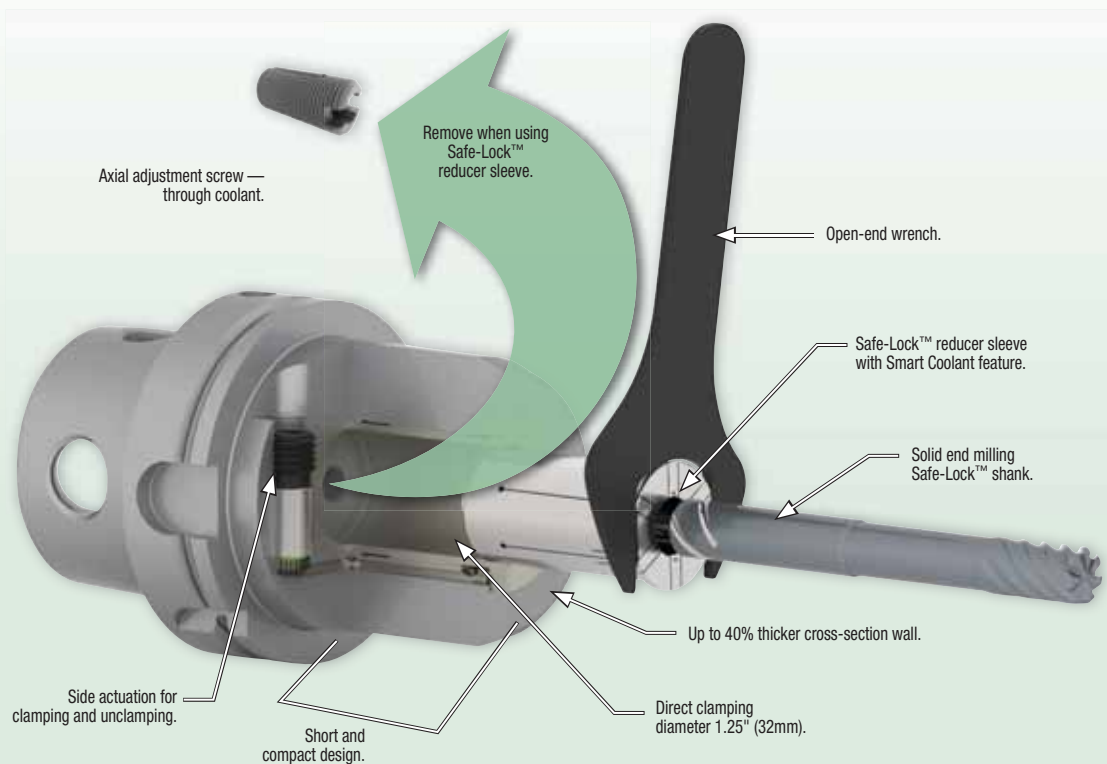
The Safe-Lock™ Smart Coolant feature is a pullout protection system with an effective cooling feature for high-performance machining, in particular for heavy-duty machining. This is achieved by helical grooves that are ground into the tool shank. These, in combination with the drive feature in a Safe-Lock™ Smart Coolant reducer sleeve, prevent the tool from being pulled out during extreme machining conditions.

In addition, the rear-locking feature, which engages with a basic holder, provides bonus security for reducer sleeves against slippage and pullout.

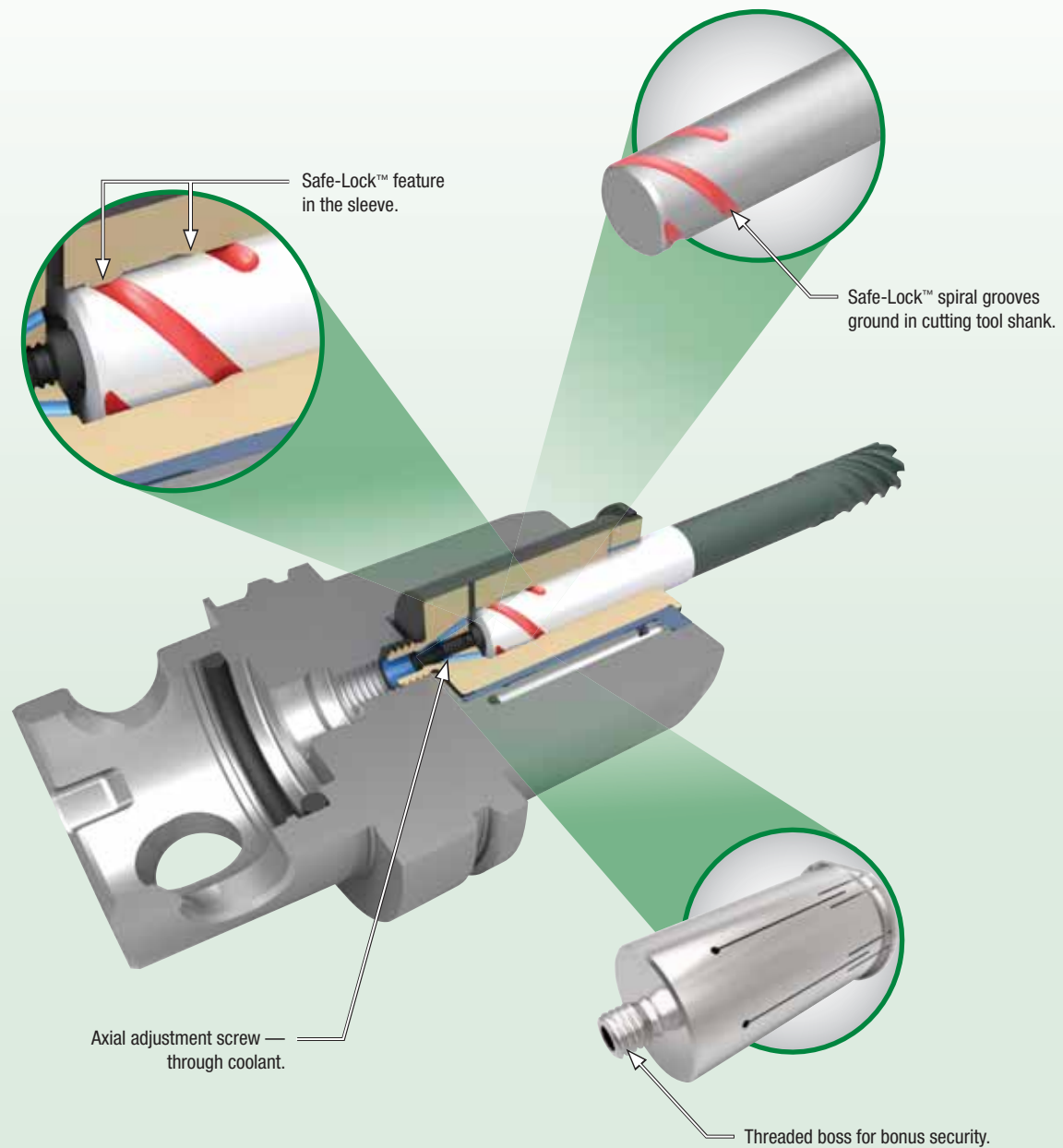
By locking the cutting tool in the Safe-Lock™ Smart Coolant reducer sleeve, the pullout security ensures optimum process reliability in conjunction with the HydroForce™ HT, which has benefits such as runout accuracy, excellent torque, and a unique dampening property. This makes for longer tool life, higher productivity, and excellent part accuracy for our customers.

- Optimum process reliability and security.
- Higher productivity.
- Greater cutting depths and higher feed rates.
- Time-saving and longer cutting tool life.
- Less vibration.
- Optimizes the cutting edge technology.
- Able to fully utilize potential of machine tool.
- Minimizes potential scrap.
- High accuracy clamping.
- Excellent runout.
- Helical grooves.
- Adjustable clamping length.
- No need to change NC program after regrinding.

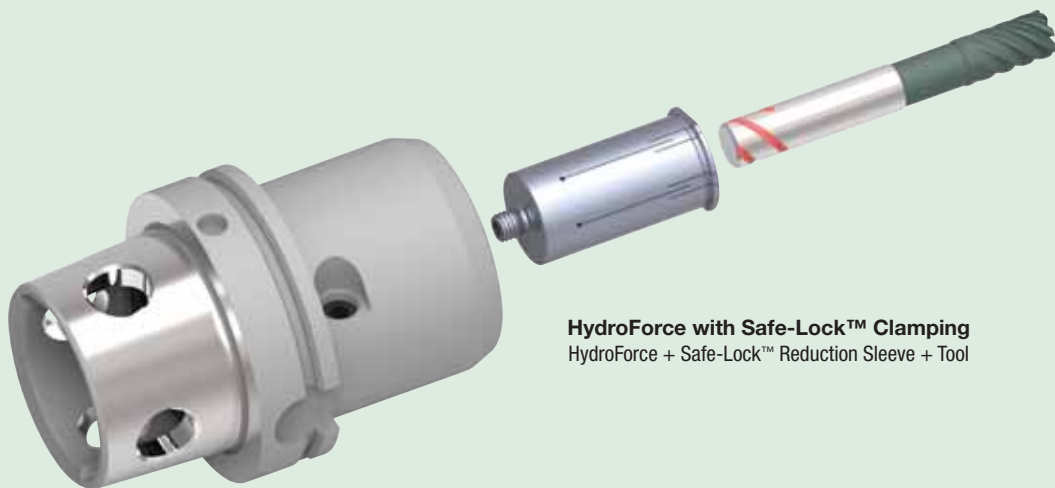
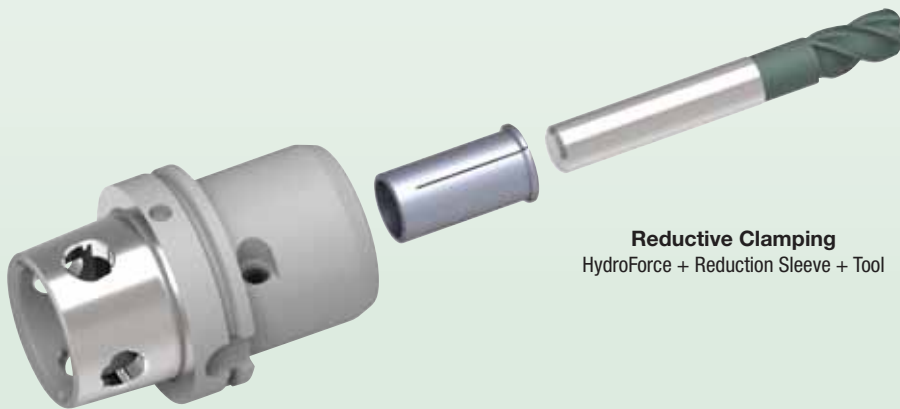
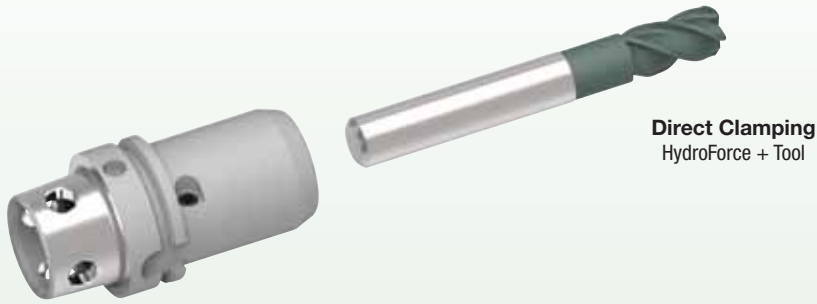
■ **HydroForce – Conversion from Standard to Safe-Lock™**



■ Product Construction and Assembly



■ Clamping Combinations with HydroForce™



ERICKSON™ NG Induction Shrink Fit Unit

A complete Shrink Fit unit to fully support your thermo-tool needs!

ERICKSON NG Induction Shrink Fit Unit

- High-performance Shrink Fit machine for all tools.
- With intelligent new generation coil.
- With integrated contact cooling system.

Features and Benefits

- Tool exchanges in 3–5 seconds.
- Complete tool cooling in 30 seconds.
- Simultaneous shrinking and cooling in record time (3 stations).
- Reduction of tool assembly cost.
- Adaptable to multi-clamping.

Delivery Includes:

- Intelligent NG coil VS32-h.
- Integrated contact cooling.
- Speed cooler.
- Cooling manager.
- Rotary table with 3 stations.
- 2 chuck supports for rotary table for your selection.
- Craning boxes.
- System cart.
- Inserts for system cart.
- TME Cooling System for safe handling.
 - 2 cooling adapters for Shrink Fit extensions.
 - 1 cooling body for Shrink Fit chucks.
- Protection gloves.
- Safe packaging.



ERICKSON NG Induction Shrink Fit Unit comes complete, ready to work!



Enhanced Coil Technology

- Coil is flexible and adjustable by diameter.
- Coils can be set to the size of the diameter with one turn.
- Stop disks are no longer necessary.
- Chucks are only heated where it is intended.
- Intelligent coil to protect from overheating of the chuck.

Select the back ends of the holders you need to shrink and the pots you need will be included with your unit.

Technical Details

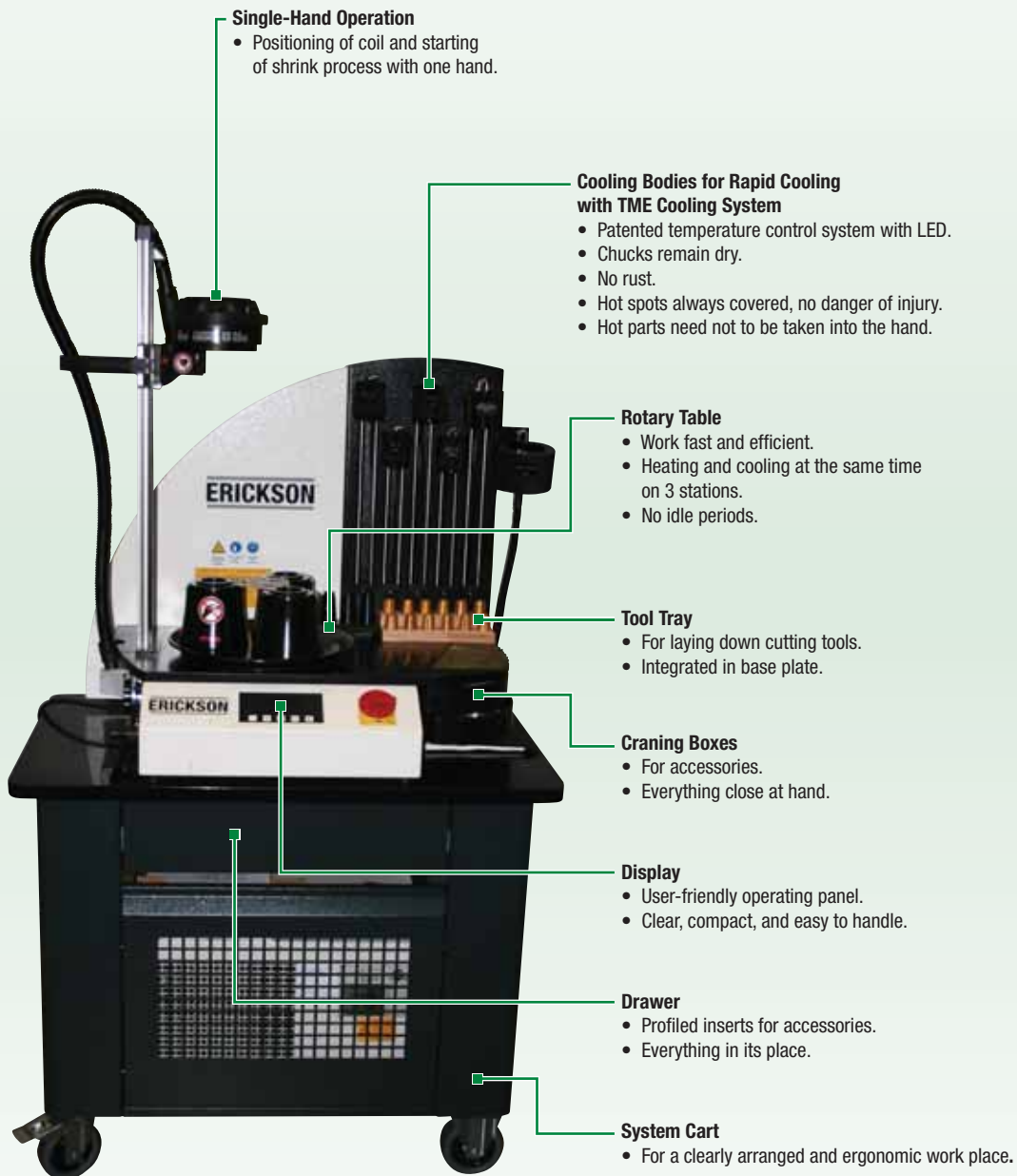
- Power: 13 kW
- Main voltage: 3 x 400–480 V, 16 A
- Tools: solid carbide and HSS from Ø 0.12–1.25"
- Maximum Length of shrink fit chuck = 22.4"
- Dimensions WxDxH = 33.86 x 23.62 x 39"
- Weight 154.32 pounds

US Version

- Order No. **5905657**
- Cat No. **TTPWCNGNA**

EU Version

- Order No. **5906168**
- Cat No. **TTPWCNGEU**



Your first choice for fast, reliable heating and cooling of your Shrink Fit tools.



■ Shrink Fit Unit Complete

order number	catalog number	description
5905657	TTPWCNGNA	POWER CLAMP NEW GEN SHRINK FIT (UL and CSA approved) for North America
5906168	TTPWCNGEU	POWER CLAMP NEXT GEN SHRINK FIT (CE and FC approved) for Europe/ROW

Order No.	Catalog No.	Page(s)	Order No.	Catalog No.	Page(s)	Order No.	Catalog No.	Page(s)	Order No.	Catalog No.	Page(s)
1022317	TT20	A30-31	2271759	HPPT225DZENG TN7535	A13	3030017	HNGJ535ANENLD TN7535	A10	5068352	M200D125Z03M16RN12	A48
1022519	TT25	A34	2271760	HPPT225DZENG TN7525	A13	3030034	HNGJ535ANENLD TN6540	A10	5068372	M200D125Z02W125RN12	A49
1023244	S422	A43, A51	2288066	HPGT225DZENG TN7535	A13	3037596	HNGJ535ANSNGD TN6540	A11	5068374	M200D125Z02C125RN12L900	A50
1023315	S458	A22, A31, A34	2288067	HPGT225DZENG TN7525	A13	3045800	S422CG	A43, A51	5068400	M200D150Z03C150RN12L900	A50
1093268	75HC0500	E19	2288069	HPGT225DZENG TN2510	A13	3045801	S467	A31, A34	5068401	M200D150Z04S050RN12	A51
1093269	75HC0562	E19	2288070	HPGT225DZERLD TN7525	A13	3066479	XNGJ535ANSNGD3W TN6540	A10	5068402	M200D200Z04S075RN12	A51
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1093271	75HC060M	E19	2288103	HPGT06T3DZERGD3W TN7525	A13	3093721	HNGJ535ANSNGD TN7535	A11	5068404	M200D250Z07S075RN12	A51
1093272	75HC080M	E19	2576202	S459	A56	3094667	SDMT43PDRML TN6520	A14	5068405	M200D300Z08S100RN12	A51
1093273	75HC100M	E19	2636820	S2163C	A31, A34	3117962	XNGJ535ANSNGD3W TN6510	A10	5068406	M200D400Z09S150RN12	A51
1093496	75HC0188	E19	2636822	S445CG	A22, A43, A51, A56	3119541	HNGJ535ANSNGD TN6520	A11	5123863	RNGJ1204MOEML WP25PM	A52
1093497	75HC0250	E19	2636823	S458CG	A22	3121225	193.492	A48-51	5123864	RNGJ1204MOEML WP35PM	A52
1093498	75HC0312	E19	2957546	HPGT225DZENG TN6540	A13	3138957	S2172CG	A31, A34	5123865	RNGJ1204MOEML WP35CM	A52
1093500	75HC0375	E19	2957547	HPGT225DZENG TN6525	A13	3330950	HNGJ535ANENLD TN6525	A10	5123866	RNGJ1204MOSMM WK15PM	A53
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1093541	12HC250M	E19	3026452	12MHC050M	E18	3670865	HNPJ53511ANSNHD TN6540	A12	5274561	RNGJ1605MOEML WP25PM	A57
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1093573	20HCM0625	E19	3026650	20MHC050M	E18	3861632	KST300350RK	C9	5276242	RNPJ10T3MOSMH WK15CM	A45
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1136414	192.932	A56	3026661	20MHC160M	E18	3954420	HNGJ0704ANENLD TN6520	A8	5276473	RNPJ1605MOSMH WP35CM	A58
1138438	170.025	A40-43, A48-51	3026662	25MHC030M	E18	3954421	HNGJ0704ANENLD TN6525	A8	5276474	RNPJ1605MOSMH WP25PM	A58
1138446	170.026	A56	3026663	25MHC040M	E18	3954422	HNGJ0704ANENLD TN6540	A8	5276475	RNPJ1605MOSMH WP20CM	A58
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1826709	S445	A22, A31, A43, A51, A56	3026675	32MHC060M	E18	3954477	HNPJ0704ANSNHD TN6510	A9	5283482	M200D150Z05S050RN10	A43
1845807	420.201	A22	3026676	32MHC070M	E18	3954478	HNPJ0704ANSNHD TN6540	A9	5283483	M200D200Z04S075RN10	A43
1884629	420.241	A22	3026677	32MHC080M	E18	3954479	HNPJ0704ANSNHD TN6540	A9	5283484	M200D200Z06S075RN10	A43
1937870	75HC0125	E19	3026678	32MHC090M	E18	3954480	HNPJ0704ANSNHD TN7535	A9	5283521	M200D200Z04S075RN16	A56
2018296	MS2260	A56	3026679	32MHC100M	E18	3954481	HNPJ070432ANSNHD TN6510	A9	5283522	M200D250Z05S100RN16	A56
2028323	SDMT43PDRML THM	A14	3026680	32MHC110M	E18	3954482	HNPJ070432ANSNHD TN6520	A9	5283523	M200D300Z05S100RN16	A56
2030437	SDMT43PDRML TN7535	A14	3026681	32MHC120M	E18	3954483	HNPJ070432ANSNHD TN6540	A9	5283524	M200D300Z07S100RN16	A56
2030439	SDMT43PDRML TN7525	A14	3026682	32MHC130M	E18	3954484	HNPJ070432ANSNHD TN7535	A9	5283525	M200D400Z06S150RN16	A56
2248951	50HC0125	E19	3026683	32MHC140M	E18	3960761	S-2165-C	A51	5283526	M200D400Z08S150RN16	A56
2248952	12HC0812	E19	3026684	32MHC150M	E18	4145063	SDMX434RMM TN6520	A14	5356668	VTSFT5001 WP49EG	D37
2248953	50HC030M	E19	3026685	32MHC160M	E18	4145064	SDMX434RMM TN6525	A14	5356669	VTSFT5001 WP42EG	D37
2248994	50HC050M	E19	3026686	32MHC170M	E18	4145065	SDMX434RMM TN6540	A14	5356730	VTSFT5001 WU40EG	D37
2248995	75HC030M	E19	3026687	32MHC180M	E18	4145072	SDMX436RMM TN6540	A14	5356731	VTSFT5002 WP49EG	D37
2248996	75HC040M	E19	3026688	32MHC200M	E18	4145093	SDMX436RMM TN7535	A14	5356732	VTSFT5002 WP42EG	D37
2248997	75HC050M	E19	3026689	32MHC220M	E18	4145094	SDMX438RMM TN6540	A14	5356733	VTSFT5002 WU40EG	D37
2269914	DT15IP	A20-22	3026690	32MHC250M	E18	4145095	SDMX438RMM TN7535	A14	5356734	VTSFT5003 WP49EG	D37

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5364549	VTSFT5062 WP49EG	D38	5364648	VTSFT5088 WP49EG	D39	5364755	VTSFT5122 WP49EG	D40	5365744	VTSP05023 WP42EG	D13
5364550	VTSFT5062 WP42EG	D38	5364649	VTSFT5088 WP42EG	D39	5364756	VTSFT5123 WU40EG	D40	5365745	VTSP05023 WU41EG	D13
5364551	VTSFT5062 WU40EG	D38	5364670	VTSFT5088 WU40EG	D39	5365566	VTSFT5521 WP49EG	D56	5365746	VTSP05023 WU40EG	D13
5364553	VTSFT5063 WP49EG	D38	5364671	VTSFT5089 WP49EG	D39	5365567	VTSFT5523 WP42EG	D56	5365747	VTSP05024 WP49EG	D13
5364554	VTSFT5063 WP42EG	D38	5364672	VTSFT5089 WU41EG	D39	5365568	VTSFT5521 WU40EG	D56	5365748	VTSP05024 WP42EG	D13
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5965016 VSM490KITSD300Z07WP40PM A26	6009965 M200D500Z06S150RN64 A31	6058798 VTSP08611 WP49EG D76	6071685 5VCC19DDL20 WS15PE B27
5965017 VSM490KITSD400Z08WP40PM A26	6009966 M200D500Z08S150RN64 A31	6058799 VTSP08611 WU41EG D76	6071686 5VCC19DDL20 WS15PE B27
5965018 VSM490KITCD100Z02WU35PM A27	6009967 M200D600Z08S150RN64 A31	6058800 VTSP08612 WP49EG D76	6071687 5VCC19DDL20 WS15PE B27
5965019 VSM490KITCD125Z03WU35PM A27	6009968 M200D300Z03S100RN85 A34	6058811 VTSP08612 WU41EG D76	6071688 5VCC19DDL20 WS15PE B27
5965031 VSM490KITSD150Z05WU35PM A27	6009969 M200D400Z05S125RN85 A34	6058814 VTSFT8605 WP49EG D77	6071689 5VCC25DDL25 WS15PE B27
5965032 VSM490KITSD200Z05WU35PM A27	6009970 M200D500Z06S150RN85 A34	6058815 VTSFT8605 WU41EG D77	6071690 5VCC25DDL25 WS15PE B27
5965033 VSM490KITSD200Z06WU35PM A27	6009971 M200D600Z07S150RN85 A34	6058816 VTSFT8606 WP49EG D77	6071691 5VCC16BDL16 WS15PE B27
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6071754	7VCE32DDL32 WS15PE	B30	6136935	PSC63DL25238	B34	6140284	VTSFT-TC5009 WP49EG	D43	6140463	VTSFT-TC5099 WP49EG	D45
6071755	7VCE32FDL32 WS15PE	B30	6136936	PSC63DL32275	B34	6140285	VTSFT-TC5010 WP42EG	D43	6140465	VTSFT-TC5101 WP42EG	D45
6082644	XNGU1501ERALP WN25PM	A23	6136939	CV40BDL16200	B35	6140286	VTSFT-TC5010 WP49EG	D43	6140467	VTSFT-TC5103 WP42EG	D45
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6118069	XDCT171SERML WP40PM	A6	6136941	CV40BDL25225	B35	6140288	VTSFT-TC5013 WP42EG	D43	6140471	VTSFT-TC5106 WP42EG	D46
6135130	TRF21000H7SF WU05PR	C5	6136942	CV40BDL32250	B35	6140289	VTSFT-TC5014 WP42EG	D43	6140473	VTSFT-TC5106 WP49EG	D46
6135191	TRF22000H7SF WU05PR	C5	6136945	BT40BDL16225	B35	6140290	VTSFT-TC5014 WP49EG	D43	6140475	VTSFT-TC5107 WP42EG	D46
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6135194	TRF25000H7SF WU05PR	C5	6136948	BT40BDL32275	B35	6140293	VTSFT-TC5016 WP42EG	D43	6140481	VTSFT-TC5109 WP49EG	D46
6135195	TRF26000H7SF WU05PR	C5	6140183	VTSFT-TC5042 WP42EG	D44	6140294	VTSFT-TC5016 WP49EG	D43	6140483	VTSFT-TC5110 WP49EG	D46
6135196	TRF27000H7SF WU05PR	C5	6140184	VTSFT-TC5043 WP42EG	D44	6140295	VTSFT-TC5017 WP49EG	D43	6140484	VTSFT-TC5111 WP49EG	D46
6135197	TRF28000H7SF WU05PR	C5	6140185	VTSFT-TC5043 WP49EG	D44	6140296	VTSFT-TC5018 WP42EG	D43	6140486	VTSFT-TC5112 WP49EG	D46
6135198	TRF29000H7SF WU05PR	C5	6140186	VTSFT-TC5044 WP42EG	D44	6140297	VTSFT-TC5018 WP49EG	D43	6140488	VTSFT-TC5113 WP49EG	D46
6135199	TRF30000H7SF WU05PR	C5	6140187	VTSFT-TC5044 WP49EG	D44	6140298	VTSFT-TC5020 WP49EG	D43	6140490	VTSFT-TC5114 WP49EG	D46
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6135201	TRF32000H7SF WU05PR	C5	6140190	VTSFT-TC5046 WP49EG	D44	6140300	VTSFT-TC5022 WP49EG	D43	6140494	VTSFT-TC5116 WP49EG	D46
6135202	TRF33000H7SF WU05PR	C5	6140191	VTSFT-TC5047 WP42EG	D44	6140301	VTSFT-TC5023 WP42EG	D43	6140496	VTSFT-TC5117 WP49EG	D46
6135203	TRF34000H7SF WU05PR	C5	6140192	VTSFT-TC5048 WP49EG	D44	6140302	VTSFT-TC5023 WP49EG	D43	6140498	VTSFT-TC5118 WP49EG	D46
6135204	TRF35000H7SF WU05PR	C5	6140193	VTSFT-TC5049 WP42EG	D44	6140303	VTSFT-TC5024 WP42EG	D44	6140500	VTSFT-TC5119 WP49EG	D46
6135205	TRF36000H7SF WU05PR	C5	6140195	VTSFT-TC5049 WP49EG	D44	6140304	VTSFT-TC5024 WP49EG	D44	6140502	VTSFT-TC5120 WP49EG	D46
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6135207	TRF38000H7SF WU05PR	C5	6140197	VTSFT-TC5050 WP49EG	D44	6140306	VTSFT-TC5026 WP49EG	D44	6140506	VTSFT-TC5122 WP49EG	D46
6135208	TRF39000H7SF WU05PR	C5	6140198	VTSFT-TC5052 WP42EG	D44	6140307	VTSFT-TC5028 WP49EG	D44	6140507	VTSFT-TC5527 WP42EG	D59
6135209	TRF40000H7SF WU05PR	C5	6140200	VTSFT-TC5053 WP42EG	D44	6140308	VTSFT-TC5029 WP42EG	D44	6140508	VTSFT-TC5527 WP49EG	D59
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6135211	TRF42000H7SF WU05PR	C5	6140202	VTSFT-TC5054 WP42EG	D44	6140310	VTSFT-TC5031 WP42EG	D44	6140510	VTSFT-TC5528 WP49EG	D59
6135212	TRF21000H7HF WU05PR	C6	6140203	VTSFT-TC5054 WP49EG	D44	6140311	VTSFT-TC5031 WP49EG	D44	6140511	VTSFT-TC5529 WP42EG	D60
6135213	TRF22000H7HF WU05PR	C6	6140212	VTSFT-TC5056 WP42EG	D44	6140312	VTSFT-TC5032 WP42EG	D44	6140512	VTSFT-TC5529 WP49EG	D60
6135214	TRF23000H7HF WU05PR	C6	6140213	VTSFT-TC5056 WP49EG	D44	6140313	VTSFT-TC5032 WP49EG	D44	6140513	VTSFT-TC5530 WP42EG	D60
6135215	TRF24000H7HF WU05PR	C6	6140214	VTSFT-TC5057 WP42EG	D44	6140314	VTSFT-TC5034 WP49EG	D44	6140514	VTSFT-TC5530 WP49EG	D60
6135216	TRF25000H7HF WU05PR	C6	6140215	VTSFT-TC5058 WP42EG	D44	6140315	VTSFT-TC5035 WP42EG	D44	6140515	VTSFT-TC5532 WP42EG	D60
6135217	TRF26000H7HF WU05PR	C6	6140216	VTSFT-TC5058 WP49EG	D44	6140316	VTSFT-TC5036 WP49EG	D44	6140516	VTSFT-TC5533 WP49EG	D60
6135218	TRF27000H7HF WU05PR	C6	6140218	VTSFT-TC5059 WP42EG	D44	6140317	VTSFT-TC5037 WP42EG	D44	6140517	VTSFT-TC5533 WP42EG	D60
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6135220	TRF29000H7HF WU05PR	C6	6140220	VTSFT-TC5060 WP42EG	D44	6140319	VTSFT-TC5038 WP42EG	D44	6140519	VTSFT-TC5535 WP42EG	D60
6135221	TRF30000H7HF WU05PR	C6	6140221	VTSFT-TC5060 WP49EG	D44	6140320	VTSFT-TC5038 WP49EG	D44	6140520	VTSFT-TC5535 WP49EG	D60
6135222	TRF31000H7HF WU05PR	C6	6140222	VTSFT-TC5062 WP42EG	D44	6140321	VTSFT-TC5040 WP42EG	D44	6140521	VTSFT-TC5536 WP42EG	D60
6135223	TRF32000H7HF WU05PR	C6	6140223	VTSFT-TC5063 WP42EG	D44	6140322	VTSFT-TC5040 WP49EG	D44	6140522	VTSFT-TC5536 WP49EG	D60
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6135226	TRF35000H7HF WU05PR	C6	6140226	VTSFT-TC5064 WP49EG	D45	6140325	VTSFT-TC5040 WP42EG	D44	6140525	VTSFT-TC5539 WP42EG	D60
6135227	TRF36000H7HF WU05PR	C6	6140227	VTSFT-TC5066 WP42EG	D45	6140326	VTSFT-TC5040 WP49EG	D44	6140526	VTSFT-TC5539 WP49EG	D60
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6135229	TRF38000H7HF WU05PR	C6	6140229	VTSFT-TC5067 WP42EG	D45	6140328	VTSFT-TC5040 WP49EG	D44	6140528	VTSFT-TC5540 WP49EG	D60
6135230	TRF39000H7HF WU05PR	C6	6140230	VTSFT-TC5068 WP49EG	D45	6140329	VTSFT-TC5040 WP42EG	D44	6140529	VTSFT-TC5541 WP42EG	D60
6135231	TRF40000H7HF WU05PR	C6	6140231	VTSFT-TC5069 WP42EG	D45	6140330	VTSFT-TC5040 WP49EG	D44	6140530	VTSFT-TC5541 WP49EG	D60
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6135233	TRF42000H7HF WU05PR	C6	6140233	VTSFT-TC5070 WP42EG	D45	6140332	VTSFT-TC5040 WP49EG	D44	6140532	VTSFT-TC5542 WP49EG	D60
6135412	TWDLTMSSET	B37	6140234	VTSFT-TC5070 WP49EG	D45	6140333	VTSFT-TC5040 WP42EG	D44	6140533	VTSFT-TC5544 WP49EG	D60
6135413	TWDLTLM	B37	6140235	VTSFT-TC5072 WP42EG	D45	6140334	VTSFT-TC5040 WP49EG	D44	6140534	VTSFT-TC5545 WP49EG	D60
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6135419	TWTMINSERD32	B37	6140241	VTSFT-TC5077 WP49EG	D45	6140400	VTSFT-TC5567 WP49EG	D61	6140540	VTSFT-TC5131 WP49EG	D47
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6135422	TWTMEXT	B37	6140244	VTSFT-TC5079 WP42EG	D45	6140424	VTSFT-TC5082 WP49EG	D45	6140543	VTSFT-TC5134 WP49EG	D47
6135423	TWTMBC	B37	6140245	VTSFT-TC5079 WP49EG	D45	6140425	VTSFT-TC5083 WP42EG	D45	6140544	VTSFT-TC5135 WP49EG	D47
6136874	SS062SLDL160250	B36	6140248	VTSFT-TC5001 WP42EG	D43	6140426	VTSFT-TC5083 WP49EG	D45	6140545	VTSFT-TC5136 WP49EG	D47
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6140590 VTSFT-TC5167 WP49EG D48	6144195 I3S0500T100R TIALN B17	6146533 5V1E07002BT WS15PE B4	6146614 5V1E25008FW WS15PE B7
6140591 VTSFT-TC5168 WP49EG D48	6144196 I3S0500T200L TIALN B17	6146534 5V1E07002CT WS15PE B4	6146615 5V1E25008SV WS15PE B7
6140592 VTSFT-TC5169 WP49EG D48	6144198 I3S0563T112R TIALN B17	6146535 5V0E08003ST WS15PE B5	6146616 5V4E25008AV WS15PE B7
6140593 VTSFT-TC5170 WP49EG D48	6144199 I3S0625T075R TIALN B17	6146536 5V0E08003AT WS15PE B5	6146617 5V4E25008SV WS15PE B7
6140595 VTSFT-TC5171 WP49EG D48	6144200 I3S0625T125L TIALN B17	6146537 5V0E08003BT WS15PE B5	6146618 5V0E25009CW WS15PE B7
6140597 VTSFT-TC5172 WP49EG D48	6144201 I3S0750T100R TIALN B17	6146538 5V0E08003CT WS15PE B5	6146619 5V0E25009DV WS15PE B7
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6141629 VTSFT-TC5506 WP49EG D59	6144204 I3S1000T150R TIALN B17	6146541 5V4E10004BT WS15PE B5	6168600 5VNE07002ST WS15PE B8
6141630 VTSFT-TC5507 WP42EG D59	6144205 I3S1000T225X TIALN B17	6146542 5V4E10004CT WS15PE B5	6168921 5VNE07002AT WS15PE B8
6141781 VTSFT-TC5507 WP49EG D59	6144206 I3S0031T007R UNCOATED B16	6146543 5V4E10004ST WS15PE B5	6168922 5VNE07002BT WS15PE B8
6141782 VTSFT-TC5508 WP42EG D59	6144208 I3S0062T019R UNCOATED B16	6146544 5V0E10014ST WS15PE B5	6168923 5VNE07002CT WS15PE B8
6141783 VTSFT-TC5508 WP49EG D59	6144209 I3S0078T011R UNCOATED B16	6146545 5V0E10014AT WS15PE B5	6168924 5VNE07012ST WS15PE B8
6141784 VTSFT-TC5510 WP42EG D59	6144210 I3S0094T037R UNCOATED B16	6146546 5V0E10014BT WS15PE B5	6168925 5VNE07012AT WS15PE B8
6141785 VTSFT-TC5510 WP49EG D59	6144231 I3S0109T037R UNCOATED B16	6146547 5V0E10014CT WS15PE B5	6168926 5VNE07012BT WS15PE B8
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6141794 VTSFT-TC5516 WP49EG D59	6144240 I3S0188T100X UNCOATED B16	6146555 5V4E13015DV WS15PE B5	6168944 5VNE10014CT WS15PE B8
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6141798 VTSFT-TC5518 WP42EG D59	6144244 I3S0250T050S UNCOATED B16	6146558 5V0E13005BT WS15PE B5	6168947 5VNE10024BT WS15PE B8
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6172672	VTSFT-TC6532 WU41EG	D68	6172801	VTSFT-TC6052 WP49EG	D53	6173233	VTSFT-TC6735 WU41EG	D69			
6172673	VTSFT-TC6534 WP49EG	D68	6172802	VTSFT-TC6052 WU41EG	D53	6173234	VTSFT-TC6739 WP49EG	D69			
6172674	VTSFT-TC6534 WU41EG	D68	6172803	VTSFT-TC6021 WP49EG	D53	6173235	VTSFT-TC6739 WU41EG	D69			
6172675	VTSFT-TC6564 WP49EG	D68	6172804	VTSFT-TC6021 WU41EG	D53	6173236	VTSFT-TC6743 WP49EG	D69			

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12146110500	A51, A56	32MHC100M	E18	5V0E13005BT WS15PE	B5	5V1E16006BV WS15PE	B6
12HC0500	E19	32MHC110M	E18	5V0E13005CT WS15PE	B5	5V1E16006CV WS15PE	B6
12HC0562	E19	32MHC120M	E18	5V0E13005ET WS15PE	B5	5V1E16006CW WS15PE	B6
12HC0625	E19	32MHC130M	E18	5V0E13005ST WS15PE	B5	5V1E16006DV WS15PE	B6
12HC0688	E19	32MHC140M	E18	5V0E13015AT WS15PE	B5	5V1E16006EV WS15PE	B6
12HC0750	E19	32MHC150M	E18	5V0E13015AV WS15PE	B5	5V1E16006SV WS15PE	B6
12HC0812	E19	32MHC160M	E18	5V0E13015AW WS15PE	B5	5V1E19007CV WS15PE	B6
12HC0875	E19	32MHC170M	E18	5V0E13015BT WS15PE	B5	5V1E19007EV WS15PE	B6
12HC1000	E19	32MHC180M	E18	5V0E13015BV WS15PE	B5	5V1E19007SV WS15PE	B6
12HC180M	E19	32MHC190M	E18	5V0E13015BW WS15PE	B5	5V1E25008AW WS15PE	B7
12HC200M	E19	32MHC200M	E18	5V0E13015CT WS15PE	B5	5V1E25008BW WS15PE	B7
12HC250M	E19	32MHC220M	E18	5V0E13015CV WS15PE	B5	5V1E25008CW WS15PE	B7
12HCSFC0500	E26	32MHC250M	E18	5V0E13015CW WS15PE	B5	5V1E25008DW WS15PE	B7
12HCSFC0625	E26	32MHCSFC120M	E26	5V0E13015DT WS15PE	B5	5V1E25008EW WS15PE	B7
12HCSFC0750	E26	32MHCSFC140M	E26	5V0E13015DV WS15PE	B5	5V1E25008FW WS15PE	B7
12HCSFC1000	E26	32MHCSFC160M	E26	5V0E13015DW WS15PE	B5	5V1E25008SW WS15PE	B7
12MHC030M	E18	32MHCSFC200M	E26	5V0E13015ET WS15PE	B5	5V1E32009CW WS15PE	B7
12MHC040M	E18	32MHCSFC250M	E26	5V0E13015EV WS15PE	B5	5V1E32009SW WS15PE	B7
12MHC050M	E18	420.201	A22	5V0E13015EW WS15PE	B5	5V4E05000AT WS15PE	B4
12MHC060M	E18	420.241	A22	5V0E13015ST WS15PE	B6	5V4E05000BT WS15PE	B4
12MHC070M	E18	4XC0160DL16 WP15PE	B32	5V0E13015SV WS15PE	B6	5V4E05000ST WS15PE	B4
12MHC080M	E18	4XC0190DL20 WP15PE	B32	5V0E13015SW WS15PE	B6	5V4E07002AT WS15PE	B4
12MHC090M	E18	4XC0250DL25 WP15PE	B32	5V0E16006BT WS15PE	B6	5V4E07002BT WS15PE	B4
12MHC100M	E18	4XC516NDL16 WP15PE	B22	5V0E16006BV WS15PE	B6	5V4E07002CT WS15PE	B4
170.025	A40-43, A48-51	4XC516SDL16 WP15PE	B22	5V0E16006BW WS15PE	B6	5V4E07002ST WS15PE	B4
170.026	A56	4XC519NDL20 WP15PE	B22	5V0E16006CT WS15PE	B6	5V4E10004AT WS15PE	B5
170.135	E4-5, E10, E12-15	4XC519SDL20 WP15PE	B22	5V0E16006CV WS15PE	B6	5V4E10004BT WS15PE	B5
170.136	E4-5, E10-15	4XC525NDL25 WP15PE	B22	5V0E16006CW WS15PE	B6	5V4E10004CT WS15PE	B5
191.848	A40-43	4XC525SDL25 WP15PE	B22	5V0E16006ET WS15PE	B6	5V4E10004ET WS15PE	B5
192.932	A56	4XC532NDL32 WP15PE	B22	5V0E16006GT WS15PE	B6	5V4E10004ST WS15PE	B5
193.492	A48-51	4XC532SDL32 WP15PE	B22	5V0E16006SV WS15PE	B6	5V4E13015AV WS15PE	B5
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20HCM0250	E19	4XCT16BDL16 WS15PE	B23	5V0E19007BT WS15PE	B6	5V4E13015CV WS15PE	B5
20HCM0312	E19	4XCT16CDL16 WS15PE	B23	5V0E19007BV WS15PE	B6	5V4E13015DV WS15PE	B5
20HCM0375	E19	4XCT16DDL16 WS15PE	B23	5V0E19007BW WS15PE	B6	5V4E13015EV WS15PE	B5
20HCM0438	E19	4XCT16EDL16 WS15PE	B23	5V0E19007CT WS15PE	B6	5V4E13015SV WS15PE	B5
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20MHC110M	E18	50HC0125	E19	5V0E19017BV WS15PE	B6	5V4E32009CW WS15PE	B7
20MHC120M	E18	50HC0188	E19	5V0E19017CV WS15PE	B6	5V4E32009SW WS15PE	B7
20MHC130M	E18	50HC0250	E19	5V0E19017EV WS15PE	B6	5VCC16NDL16 WP15PE	B26
20MHC140M	E18	50HC030M	E19	5V0E19017SV WS15PE	B6	5VCC16SDL16 WP15PE	B26
20MHC150M	E18	50HC0312	E19	5V0E25008BV WS15PE	B7	5VCC19NDL20 WP15PE	B26
20MHC160M	E18	50HC0375	E19	5V0E25008BW WS15PE	B7	5VCC19SDL20 WP15PE	B26
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25MHC080M	E18	5V0E05000AT WS15PE	B4	5V0E25008BV WS15PE	B7	5VCE16BDL16 WS15PE	B27
25MHC090M	E18	5V0E05000BT WS15PE	B4	5V0E25008SV WS15PE	B7	5VCE16DDL16 WS15PE	B27
25MHC100M	E18	5V0E05000ST WS15PE	B4	5V0E25008SW WS15PE	B7	5VCE16EDL16 WS15PE	B27
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25MHC160M	E18	5V0E07002CT WS15PE	B4	5V1E05000BT WS15PE	B4	5VCE19DDL20 WS15PE	B27
25MHC180M	E18	5V0E07002ST WS15PE	B4	5V1E05000ST WS15PE	B4	5VCE19DDL20 WS15PE	B27
25MHC200M	E18	5V0E08003AT WS15PE	B5	5V1E07002AT WS15PE	B4	5VCE19DDL20 WS15PE	B27
32HCM0500	E19	5V0E08003BT WS15PE	B5	5V1E07002BT WS15PE	B4	5VCE25BDL25 WS15PE	B27
32HCM0562	E19	5V0E08003CT WS15PE	B5	5V1E07002CT WS15PE	B4	5VCE25CDL25 WS15PE	B27
32HCM0625	E19	5V0E08003ST WS15PE	B5	5V1E07002CT WS15PE	B4	5VCE25DDL25 WS15PE	B27
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32HCM0750	E19	5V0E10004BT WS15PE	B5	5V1E10004AT WS15PE	B5	5VCE25FDL25 WS15PE	B27
32HCM0875	E19	5V0E10004ST WS15PE	B5	5V1E10004BT WS15PE	B5	5VCE32DDL32 WS15PE	B27
32HCM1000	E19	5V0E10014AT WS15PE	B5	5V1E10004ST WS15PE	B5	5VCE32FDL32 WS15PE	B27
32MHC060M	E18	5V0E10014BT WS15PE	B5	5V1E13015CT WS15PE	B6	5VNE07002AT WS15PE	B8
32MHC070M	E18	5V0E10014CT WS15PE	B5	5V1E13015ET WS15PE	B6	5VNE07002BT WS15PE	B8
32MHC080M	E18	5V0E10014ET WS15PE	B5	5V1E13015ST WS15PE	B6	5VNE07002CT WS15PE	B8
32MHC090M	E18	5V0E10014ST WS15PE	B5			5VNE07002ST WS15PE	B8

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5VNE07012BT WS15PE	B8	75HC030M	E19	HNGJ53511ANSNHD WS40PM	A11	HPGT06T3DZERGD3W WP25PM	A13
5VNE07012CT WS15PE	B8	75HC0312	E19	HNGJ535ANENLD TN6520	A10	HPGT06T3DZERGD3W WP40PM	A13
5VNE07012ST WS15PE	B8	75HC0375	E19	HNGJ535ANENLD TN6525	A10	HPGT225DZENG TN2510	A13
5VNE10004AT WS15PE	B8	75HC040M	E19	HNGJ535ANENLD TN6540	A10	HPGT225DZENG TN6510	A13
5VNE10004BT WS15PE	B8	75HC0438	E19	HNGJ535ANENLD TN7535	A10	HPGT225DZENG TN6525	A13
5VNE10004CT WS15PE	B8	75HC0500	E19	HNGJ535ANENLD WP25PM	A10	HPGT225DZENG TN6540	A13
5VNE10004ST WS15PE	B8	75HC050M	E19	HNGJ535ANENLD WP35CM	A10	HPGT225DZENG TN7525	A13
5VNE10014AT WS15PE	B8	75HC0562	E19	HNGJ535ANENLD WP40PM	A10	HPGT225DZENG TN7535	A13
5VNE10014BT WS15PE	B8	75HC060M	E19	HNGJ535ANENLD WS30PM	A10	HPGT225DZENG WK15CM	A13
5VNE10014CT WS15PE	B8	75HC0625	E19	HNGJ535ANENLD WS40PM	A10	HPGT225DZENG WP25PM	A13
5VNE10014ST WS15PE	B8	75HC080M	E19	HNGJ535ANSNGD TN6520	A11	HPGT225DZENG WP40PM	A13
5VNE10024AT WS15PE	B8	75HC100M	E19	HNGJ535ANSNGD TN6525	A11	HPGT225DZENG WS30PM	A13
5VNE10024BT WS15PE	B8	75HC120M	E19	HNGJ535ANSNGD TN6540	A11	HPGT225DZENG WS40PM	A13
5VNE10024CT WS15PE	B8	75HC140M	E19	HNGJ535ANSNGD TN7535	A11	HPGT225DZERLD TN2510	A13
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5VNE13005AT WS15PE	B9	7VCE16ADL16 WS15PE	B30	HNGJ535ANSNGD WP25PM	A11	HPGT225DZERLD TN6525	A13
5VNE13005BV WS15PE	B9	7VCE16BDL16 WS15PE	B30	HNGJ535ANSNGD WP35CM	A11	HPGT225DZERLD TN6540	A13
5VNE13005BW WS15PE	B9	7VCE16CDL16 WS15PE	B30	HNGJ535ANSNGD WP40PM	A11	HPGT225DZERLD TN7525	A13
5VNE13005CT WS15PE	B9	7VCE16DDL16 WS15PE	B30	HNGJ535ANSNGD WS30PM	A11	HPGT225DZERLD WP25PM	A13
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5VNE13025AT WS15PE	B9	7VCE25FDL25 WS15PE	B30	HNPJ070432ANSNHD TN6520	A9	HPPT225DZENG WP40PM	A13
5VNE13025BT WS15PE	B9	7VCE32DDL32 WS15PE	B30	HNPJ070432ANSNHD TN6540	A9	HPPT225DZENG WS40PM	A13
5VNE13025CT WS15PE	B9	7VCE32FDL32 WS15PE	B30	HNPJ070432ANSNHD TN7535	A9	HSK100AHCTHT125400	E5
5VNE13025ST WS15PE	B9	BT40BDL16225	B35	HNPJ070432ANSNHD WP40PM	A9	HSK100AHCTHT20090M	E5
5VNE16006BV WS15PE	B9	BT40BDL20225	B35	HNPJ070432ANSNHD WS40PM	A9	HSK100AHCTHT32100M	E5
5VNE16006BW WS15PE	B9	BT40BDL25238	B35	HNPJ0704ANSNGD TN6510	A9	HSK63ADL16225	B34
5VNE16016AV WS15PE	B9	BT40BDL32275	B35	HNPJ0704ANSNGD TN6520	A9	HSK63ADL20225	B34
5VNE16016BV WS15PE	B9	BT40HCTHT075275	E10	HNPJ0704ANSNGD TN6540	A9	HSK63ADL25250	B34
5VNE16016CV WS15PE	B9	BT40HCTHT125315	E10	HNPJ0704ANSNGD TN7535	A9	HSK63ADL32288	B34
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5VNE16026BV WS15PE	B9	BT50HCTHT32090M	E11	HNPJ0704ANSNGD WP40PM	A9	HSK63AHCTHT32100	E4
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5VNE19007BT WS15PE	B9	CV40BDL20200	B35	HNPJ0704ANSNHD TN7535	A9	IS30078T011R UNCOATED	B16
5VNE19007CT WS15PE	B9	CV40BDL25225	B35	HNPJ0704ANSNHD WK15CM	A9	IS30094T037R TIALN	B16
5VNE19007ET WS15PE	B9	CV40BDL32250	B35	HNPJ0704ANSNHD WP25PM	A9	IS30094T037R UNCOATED	B16
5VNE19007ST WS15PE	B9	CV40HCTHT075275	E12	HNPJ0704ANSNHD WP35CM	A9	IS30109T037R TIALN	B16
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5VNE19017BW WS15PE	B9	CV50HCTHT125315	E12	HNPJ0704ANSNHD WS40PM	A9	IS30125T025R TIALN	B16
5VNE19027AV WS15PE	B9	CVKV40HCTHT075275	E15	HNPJ53511ANSNHD TN6520	A12	IS30125T025R UNCOATED	B16
5VNE19027BV WS15PE	B9	CVKV40HCTHT125315	E15	HNPJ53511ANSNHD TN6540	A12	IS30125T050L TIALN	B16
5VNE19027CV WS15PE	B10	CVKV50HCTHT125315	E15	HNPJ53511ANSNHD WP25PM	A12	IS30125T050L UNCOATED	B16
5VNE19027DV WS15PE	B10	DT15IP	A20-22	HNPJ53511ANSNHD WP35CM	A12	IS30125T062X TIALN	B16
5VNE19027EV WS15PE	B10	DV40HCTHT125315	E13	HNPJ53511ANSNHD WP40PM	A12	IS30125T062X UNCOATED	B16
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5VNE25008AT WS15PE	B10	DV50HCTHT32080M	E13	HNPJ535ANSNGD TN6540	A12	IS30188T031S TIALN	B16
5VNE25008BT WS15PE	B10	HNGJ070432ANENLD TN6510	A8	HNPJ535ANSNGD TN7535	A12	IS30188T031S UNCOATED	B16
5VNE25008CT WS15PE	B10	HNGJ070432ANENLD TN6525	A8	HNPJ535ANSNGD WK15CM	A12	IS30188T100X TIALN	B16
5VNE25008DT WS15PE	B10	HNGJ070432ANENLD TN6540	A8	HNPJ535ANSNGD WP25PM	A12	IS30188T056R UNCOATED	B16
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5VNE25018BW WS15PE	B10	HNGJ0704ANENLD TN6520	A8	HNPJ535ANSNHD TN6520	A12	IS30219T062R TIALN	B16
5VNE25028AV WS15PE	B10	HNGJ0704ANENLD TN6525	A8	HNPJ535ANSNHD TN6540	A12	IS30219T062R UNCOATED	B16
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5VNE25028CV WS15PE	B10	HNGJ0704ANENLD WP25PM	A8	HNPJ535ANSNHD WP25PM	A12	IS30219T075L UNCOATED	B16
5VNE25028EV WS15PE	B10	HNGJ0704ANENLD WP35CM	A8	HNPJ535ANSNHD WP35CM	A12	IS30250T050S TIALN	B16
5VNE25028SV WS15PE	B10	HNGJ0704ANENLD WP40PM	A8	HNPJ535ANSNHD WP40PM	A12	IS30250T050S UNCOATED	B16
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VTSP09707 WP42EG	D20	XDPT1101SRMM WP25PM	A5	XNGU1501ERALP WN25PM	A23		
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VTSP09715 WP42EG	D20	XDPT1102SRMM WS30PM	A5	XNGU1502ERALP WN25PM	A23		
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Holemaking Icons

Reaming: Through Hole	Reaming: Blind Hole	Reaming: Through and Cross Holes	Reaming: Blind and Cross Holes	Shank: Cylindrical Plain
Shank: Cylindrical Plain ≤h6	Through Coolant: Radial Drilling	Through Coolant: Axial: Drilling	Through Coolant: Axial: Reaming	

Tapping Icons

Tapping: Through Hole	Tapping: Blind Hole	Tapping: Pipe Thread	HSS-E: High-Speed Steel with Cobalt for Materials with Higher Hardness	Profile: Thread
Chamfer Form B (3.5-5)	Chamfer Form C (2-3)	Chamfer Form E (1.5-2)	Plug Chamfer (3-5)	Chamfer Form: 2.5-3.5
Tapping Helix: Angle: 0°	Tapping Helix: Angle: 15°	Tapping Helix: Angle: 42°	Tapping Helix: Angle: 45°	Multipurpose Taps: Spiral Point
Tension/ Compression	DIN Number 371	DIN Number 374	DIN Number 376	DIN Number 5156
DIN Numbers: DIN ANSI	Through Coolant: Radial Drilling	Flood Coolant: Tapping	Through Coolant: Axial: Drilling	ISO 2
Manufacturer's Specs: JIS	Class of Fit: 2B	Class of Fit: 3B	Class of Fit: 6H	Class of Fit: 6G
Unified Fine Thread	Unified Course Thread	American Tapered Pipe Thread for Threads with Dryseal Material	American Tapered Pipe Thread for Threads without Dryseal Material	Manufacturer's Specs: ANSI

(continued)

(Tapping Icons – continued)

Tapping Icons

<p>Manufacturer's Specs: G</p>	<p>Unified Course Thread: J Profile</p>	<p>Unified Fine Thread: J Profile</p>	<p>ISO Metric Coarse Thread</p>	<p>ISO Metric Fine Thread</p>
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Tooling Systems Icons

<p>Shank: Cylindrical Plain ≤h6</p>	<p>Shank: SK BT (MAS-403-BT)</p>	<p>Shank: SK CAT (ANSI B5.50)</p>	<p>Shank: SK DV (DIN 69871)</p>	<p>Shank: SK Shank; BT: Taper Face Contact</p>
<p>Shank: SK Shank; CAT: Taper Face Contact</p>	<p>Shank: HSK DIN Number 69893 Form A</p>	<p>Shank: HSK DIN Number 69893 Form A</p>	<p>Shank: KM-TS™ ISO 26622</p>	<p>Shank: KM-XMZ</p>
<p>Shank: KM4X™</p>	<p>Shank: Safe-Lock™ <h6</p>	<p>Axial Adjustments: End</p>	<p>Balance: G 2.5@ 25,000 min⁻¹</p>	<p>Max RPM: 30,000</p>
<p>Accuracy: 3µm or Less</p>	<p>Through Coolant: Radial Drilling</p>	<p>Through Coolant: 100 bar</p>	<p>Through Coolant: 1500 psi</p>	<p>Through Coolant: Adapter Face</p>
<p>Manufacturer's Specs: ISO 26622</p>				

DIN – German Institute for Standardization

ISO – International Standardization Organization

P Steel	K Cast Iron	S High-Temp Alloys
M Stainless Steel	N Non-Ferrous	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	–	A36, 1008, 1010, 1018 through 1029; 1108, 1117
P1	Low-Carbon Steels, Short Chipping, Free Machining	C <0,25%	<530	<125	–	10L18, 1200 Series, 1213, 12L14
P2	Medium- and High-Carbon Steels	C >0,25%	>530	<220	<25	1035, 1045, 10L45, 1050, 10L50, 1080, 1137, 1144, 11L44, 1525, 1545, 1572
P3	Alloy Steels and Tool Steels	C >0,25%	600–850	<330	<35	1300, 2000, 3000, 4000, 5000, 8000, P20, SAE: A, D, H, O, S, M, T
P4	Alloy Steels and Tool Steels	C >0,25%	850–1400	340–450	35–48	1300, 2000, 3000, 4000, 5000, 8000, P20, SAE: A, D, H, O, S, M, T
P5	Ferritic, Martensitic, and PH Stainless Steels	–	600–900	<330	<35	15–5 PH, 13–8 PH, 17–4 PH, 400 and 500 Series
P6	High-Strength Ferritic, Martensitic, and PH Stainless Steels	–	900–1350	350–450	35–48	15–5 PH, 13–8 PH, 17–4 PH, 400 and 500 Series
M1	Austenitic Stainless Steel	–	<600	130–200	–	200 Series, 301, 302, 304, 304L, 309
M2	High-Strength Austenitic Stainless and Cast Stainless Steels	–	600–800	150–230	<25	310, 316, 316L, 321, 347, 384 ASTM Cast XM-1, XM-5, XM-7, XM-21
M3	Duplex Stainless Steel	–	<800	135–275	<30	323, 329, F55, 2205, S329000
K1	Gray Cast Iron	–	125–500	120–290	<32	class 20, 25, 30, 35, 40, 45, 50, 55, 60, G1800, G3000, G3500, G4000
K2	Low- and Medium-Strength Ductile Irons (Nodular Irons) and Compacted Graphite Irons (CGI)	–	<600	130–260	<28	60-40-18, 65-45-12, 80-55-06, SAE J434:D4018, D4512, D5506, ASTM A47: Grade 32510, 35018, SAE J158: Grade M3210, M4504, M5003, M5503, M7002, ASTM A842: Grade 250, 300, 350, 400, 450
K3	High-Strength Ductile Irons and Austempered Ductile Iron (ADI)	–	>600	180–350	<43	ASTM A536:100-70-03, 120-90-02, SAE J434: D7003, SAE J158: Grade M8501AST A897: 125-80-10, 150-100-7, 175-125-4, 200-150-1, 230-185
N1	Wrought Aluminum	–	–	–	–	2025, 5050, 7050, 1000, 2017
N2	Low-Silicon Aluminum Alloys and Magnesium Alloys	Si <12,2%	–	–	–	2024, 6061, 7075
N3	High-Silicon Aluminum Alloys and Magnesium Alloys	Si >12,2%	–	–	–	–
N4	Copper-, Brass-, Zinc-Based on Machinability Index Range of 70–100	–	–	–	–	C81500
N5	Nylon, Plastics, Rubbers, Phenolics, Resins, Fiberglass	–	–	–	–	–
N6	Carbon, Graphite Composites, CFRP	–	–	–	–	Graphite, CFK, CFRP
N7	Metal Matrix Composites (MMC)	–	–	–	–	C63000
S1	Iron-Based, Heat-Resistant Alloys	–	500–1200	160–260	25–48	A-286, INCOLOY® 800 Series, A608, A567, Discaloy™, INVAR®, N-155, 16-25-6, 19-9 DL; Cast: ASTM A-297, A-351, A-567, A-608
S2	Cobalt-Based, Heat-Resistant Alloys	–	1000–1450	250–450	25–48	Haynes® 25 (L605), Haynes 188, J-1570, Stellite®, AiResist 213; Cast: AiResist 13, Haynes 21, MAR-M302, MAR-M509, NASA Co-W-Re, WI-52
S3	Nickel-Based, Heat-Resistant Alloys	–	600–1700	160–450	<48	Astrolloy™, Hastelloy® B/C/ C-276 /X, INCONEL® 600 and 700 Series, IN102, INCOLOY 900 Series, Rene 41, Waspalloy®, Monel®, K-500, MAR-M20, NIMONIC®, UDIMET®
S4	Titanium and Titanium Alloys	–	900–1600	300–400	33–48	Pure: Ti 98.8, Ti 98.9, Ti 99.9; Alloyed: Ti 5Al-2.5Sn, Ti6Al-4V, Ti6Al-2Sn-4Zr-2Mo, Ti-3Al-8V-6Cr-4Mo-4Zr, Ti-10V-2Fe-3Al, Ti-13V-11Cr-3Al
H1	Hardened Materials	–	–	–	44–48	Tool Steel H10, H11, H13, D2, D3, 4340, P20
H2	Hardened Materials	–	–	–	48–55	Tool Steel H10, H11, H13, D2, D3, 4340, P20
H3	Hardened Materials	–	–	–	56–60	Tool Steel H10, H11, H13, D2, D3, 4340, P20
H4	Hardened Materials	–	–	–	>60	Tool Steel H10, H11, H13, D2, D3, 4340, P20

P Steel	K Cast Iron	S High-Temp Alloys
M Stainless Steel	N Non-Ferrous	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	Gray 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 Aluminum	–	–	–	–	AlMg1, Al99.5, AlCuMg1, AlCuBiPb, AlMgSi1, AlMgSiPb
N2	Low-Silicon Aluminum Alloys and Magnesium Alloys	Si <12,2%	–	–	–	GAISiCu4, GDAISi10Mg
N3	High-Silicon Aluminum Alloys and Magnesium Alloys	Si >12,2%	–	–	–	G-ALSi12, G-AISi17Cu4, G-AISi21CuNiMg
N4	Copper-, Brass-, Zinc-Based on Machinability Index Range of 70–100	–	–	–	–	CuZn40, Ms60, G-CuSn5ZnPb, CuZn37, CuSi3Mn
N5	Nylon, Plastics, Rubbers, Phenolics, Resins, Fiberglass	–	–	–	–	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	–

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IMPORTANT SAFETY INSTRUCTIONS: READ BEFORE USING THE TOOLS IN THIS CATALOG

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 catalog and recommendations on machining practices may not apply to your particular operation.

For more information, consult 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.

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