RELIABLE CUTTING TOOLS FOR EVERY MACHINE SHOP

CUTTING TOOLS

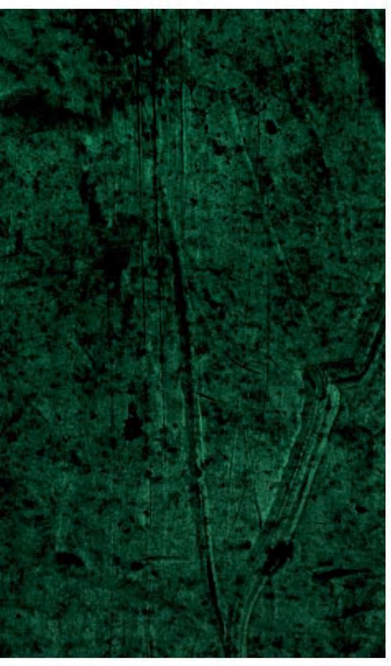
METRIC | 2022

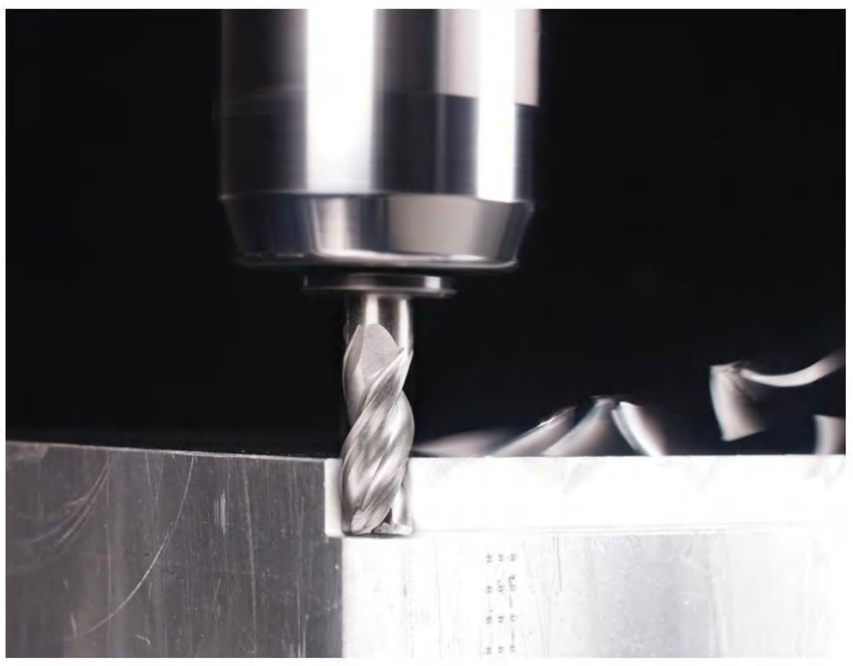
WIDIA™

HANITA™

For more than 95 years, the WIDIA™ brand has delivered high-quality milling, turning, holemaking, tapping, and systems tooling to metalcutting customers across the globe. Customers experience reliability from selection to post-delivery support through product availability, digital connectivity, and an accessible network of authorized distribution partners.

For more information regarding the WIDIA brand or products, visit **widia.com** or connect with us on Instagram, Facebook, LinkedIn, and YouTube.





WIDIA

WIDIA is a brand for machinists, mechanical engineers, and machine shop owners who are depending on a reliable tool to keep their shop running through the night.

The brand offers a full portfolio of standard milling, drilling, holemaking tools, technical information, and support to everyday consumers.

WIDIA tools are sold through distribution partners. Find a distributor in your area by using the distributor finder on **widia.com**.

HANITA

Hanita™ solutions are developed for customers who have a passion for performance. Hanita delivers not only the tool for the job but the experience to develop a solution for the customer.

The Hanita brand offers a comprehensive range of custom and standard end mills spanning a broad range of diameters and lengths, all boasting unparalleled metal removal rates through innovative geometries.

Hanita solutions are sold primarily through WIDIA channel partners, alongside WIDIA.

Table of Contents

Rotating Tools

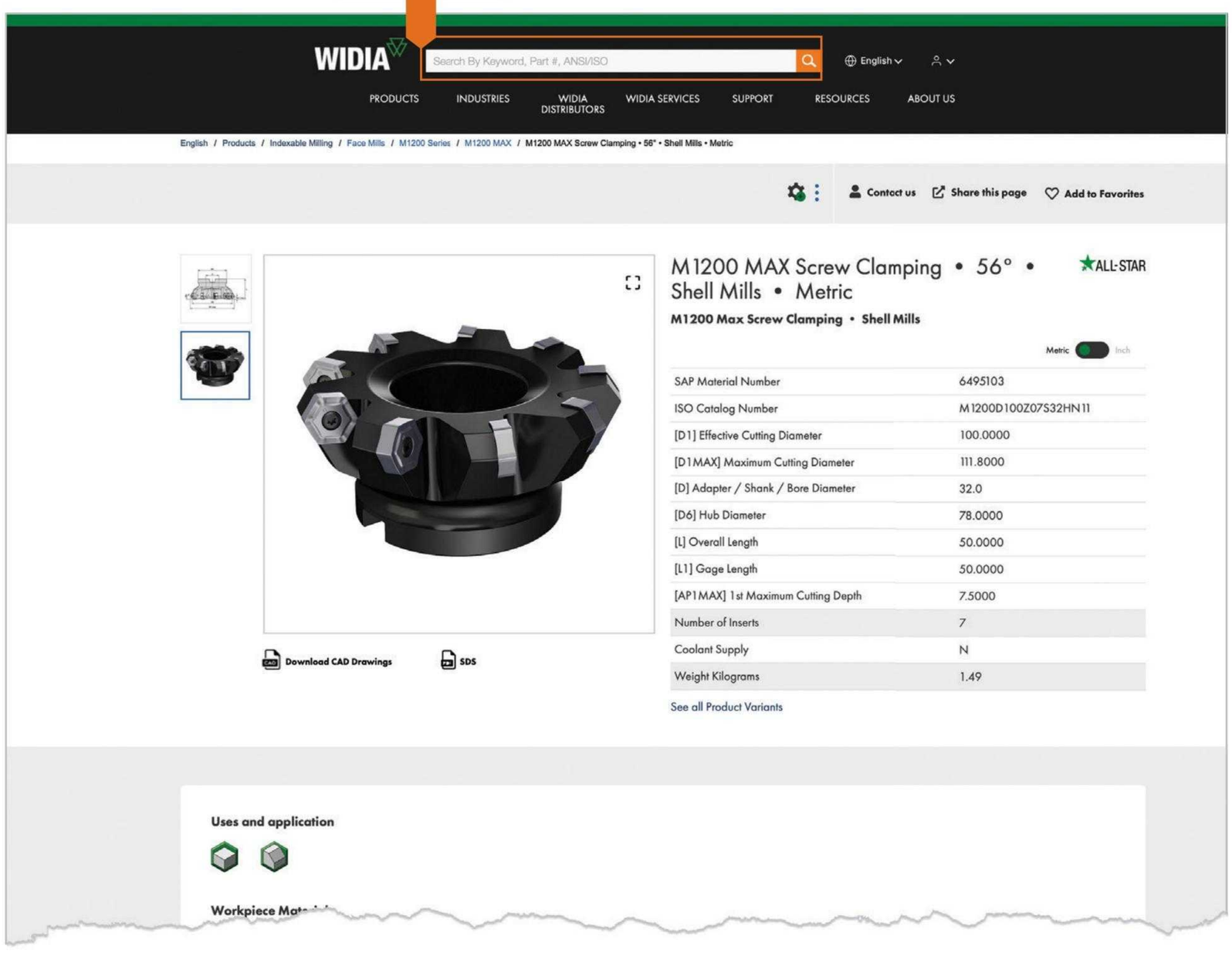
Stationary Tools

Spare Parts & Accessories Information

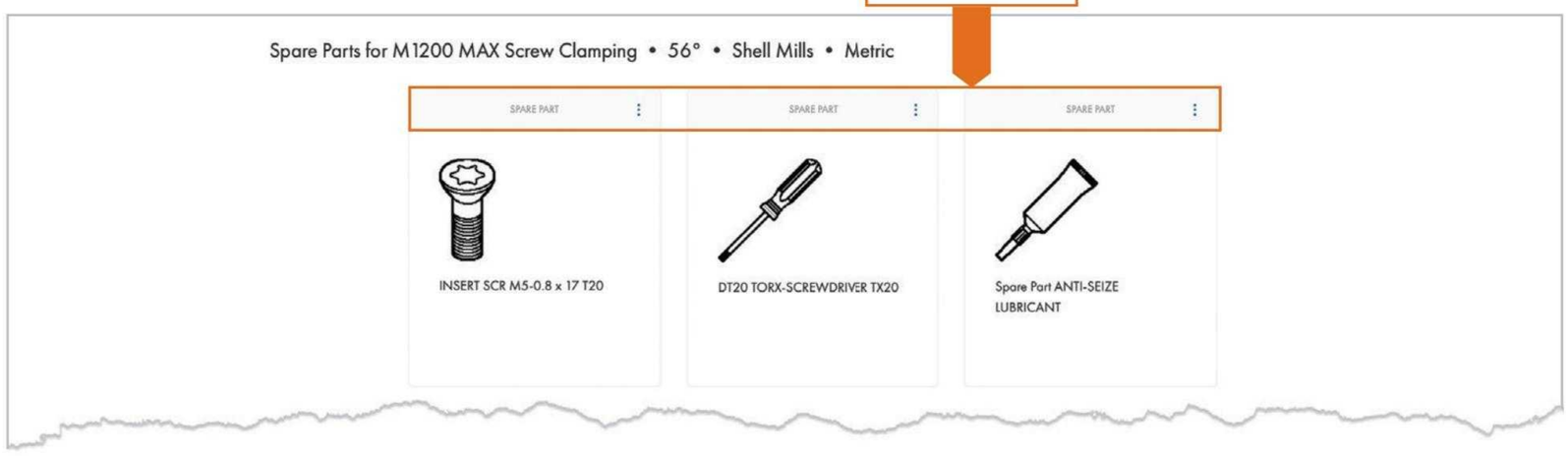
Lost a screw? Have to replace worn-out clamping wedges? Need to find and re-order those spare parts?

Are you in need of some accessories, like a torque wrench or coolant shower plate? These tools are at your fingertips!
Go to **widia.com** and find what you need in seconds. Enter the catalog number of the corresponding tool, and it will display.

STEP 1 Enter the tool catalog number here



STEP 2 Select the spare parts & accessories



WIDIA™ Digital Solutions

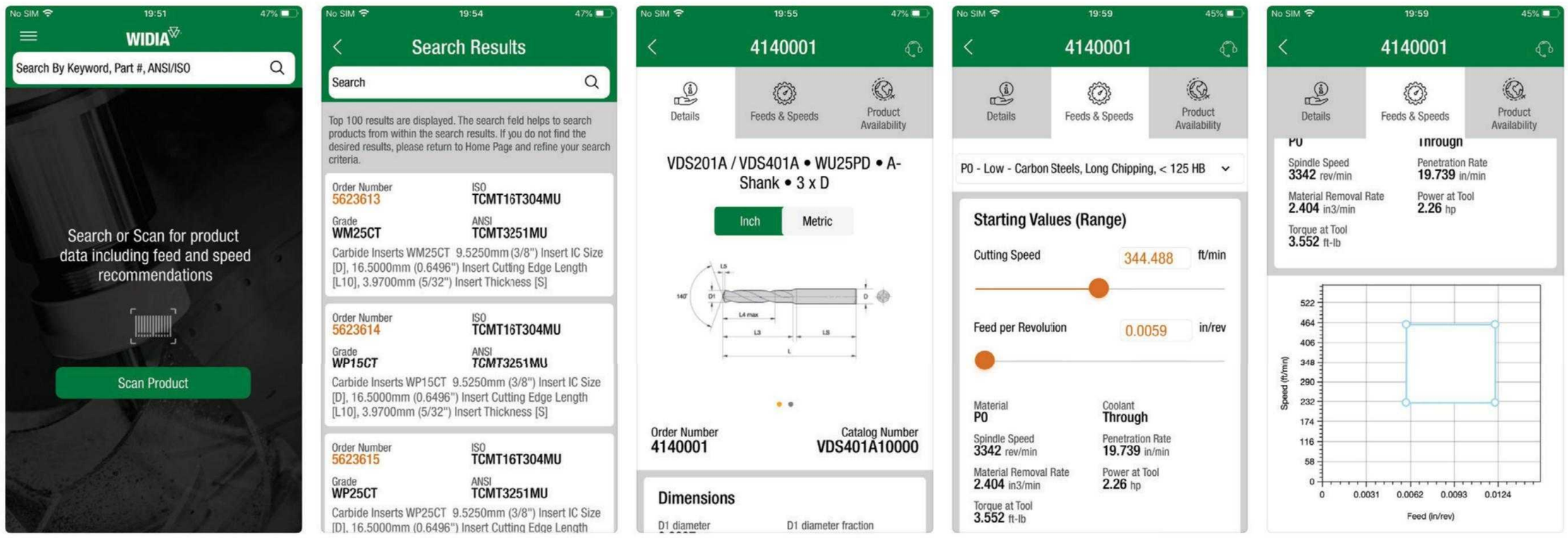
WIDIA Machining Central

WIDIA™ Machining Central Mobile App
Download for iOS or Android™:
widia.com/en/featured/WidiaMobileApp

Product Data

- Tooling Dimensional Data
- Feeds and Speeds
- Inventory Availability
- ...and More!

Tools and Resources at Your Fingertips



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widia.com

WIDIA™

TO SEE ALL PRODUCT LINES, VISIT OUR DIGITAL RESOURCES

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www.instagram.com/widiatools/

www.facebook.com/widiatools

Speed

The WIDIA™ brand encompasses a variety of standard tooling designed to perform well in a range of typical machine shop operations. A team of experienced application support specialists is readily available to help increase productivity in your shop via WIDIA website chat or over the phone for every step of the way.

Simplicity

Machinists can rely on the NOVO™ machining advisor or **widia.com** to easily select the right tool for the job.

Reliability

Trust our network of authorized distributors to put WIDIA tools to work for you — in your industry, in your region, and in your business. Together we will keep your machine running through the night.

For more than 95 years, the WIDIA brand has delivered quality milling, turning, holemaking, tapping, and systems tooling to metalcutting customers across the globe. Customers experience reliability from selection to post-delivery support through product availability, digital connectivity, and an accessible network of authorized distribution partners.

Test WIDIA tooling today by selecting tools from the All-Star program. The All-Star program is comprised of proven tooling solutions that are easy to find and always available. This includes solid end mills, turning tools, drills, and taps from our most popular platforms, grades, and sizes grouped into one program and guaranteed to be in stock with same-day shipping on orders placed before 4pm CET.

Visit **widia.com** to see what products are available for same-day shipping through All-Star.

WIDIA™

widia.com

widia.com

WIDIA™

Indexable Milling

Choosing the Correct Cutter

Find and Select the Right Milling Cutter

1. Identify material to be machined:

A Each tool has a material grid marked with a letter indicating the materials that can be machined.

2. Select tool based on maximum depth of cut and diameter required:

B Information is given in this area to provide specific detail as a quick reference.

C Informational Icons. Connection type and possible operations.

3. Select product name:

D Navigate to introduction detail, toolbodies, inserts, and cutting data within section.

NOVO™

You can also use our NOVO app to guide you to the correct choice!

For more information, please visit widia.com/novo

Face Milling Portfolio Overview

Face Milling	SuperFeed™	M640	M660	M1600 Mini-F	M1600	M1200 Mini
Page	A82–A83	A18–A20	A24–A27	A34–A35	A37–A38	A42–A47
Work Piece Materials	N	P M K N S H	P M K N S H	K	P M K	P M K N S H
Max. Axial Depth of Cut (Ap1 Max)	6,35mm	1,52mm	6,4/8,0mm	1,52mm	3,7mm	4,7mm
Approach/Lead Angle	90°	58°	45°	45°	43°	15/45/59°
Effective Cutting Edges	1	6	4	16	16	12
Diameter Range	25–200mm	32–125mm	20–160mm	80–160mm	50–160mm	25–125mm
Insert Style	Single-Sided	Single-Sided	Single-Sided	Double-Sided	Double-Sided	Double-Sided
Ground Insert	◉	◉	◉	◉	◉	◉
Pressed to Size Insert	○	◉	◉	○	○	◉
Insert Nose Radii	0,8/2,36mm	0,90/0,98mm	Not applicable	0,8mm	1,2mm	1,2/3,2mm
Embedded Wiper Facet	1,52mm	—	1,54–2,0mm	0,6mm	0,765mm	1,454–1,6mm
Separate Wiper Insert	○	◉	◉	◉	○	◉
Cutter Pitch	fine	coarse	regular	regular	regular	coarse & fine
Workpiece Floor Finish	✓✓	✓✓	✓✓	✓✓	✓	✓✓
Screw Insert Clamping	○	◉	◉	◉	◉	◉
Wedge Clamping of Inserts	◉	○	○	○	○	○
Additional Operations	PCD					
Shell Mills	◉	◉	◉	◉	◉	◉
Screw-On End Mills	○	○	○	○	○	◉
Cylindrical End Mills	◉ *Shoulder Mill only*	○	○	○	○	◉
Weldon® End Mills	○	◉	◉	○	○	◉
Cartridge for M4000	○	◉	◉	○	○	◉

Determining Cutting Data

Selecting Tool Body, Insert, and Cutting Data

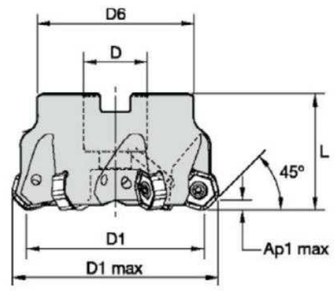
4. Choose the tool body:

Choose diameter (D1) and pitch (Z) of tool body.

NOTE: Make sure you select the correct shank style for your toolholder. For toolholders, visit widia.com

Face Mills • M1200 Series

M1200 Mini • 45° • Shell Mills • Metric



order number	catalogue number	D1	D1 max	D	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
3957995	M1200D040Z04HN07	40	48,7	22	38	40	3,5	4	15800	Yes	0,26
3957996	M1200D040Z05HN07	40	48,7	22	38	40	3,5	5	15800	Yes	0,26

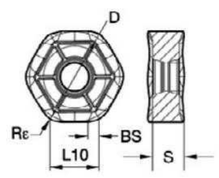
5. Choose the inserts with the WIDIA™ insert selection guide:

A Determine light machining, general purpose, or heavy machining according to workpiece material. See the Material Overview at the end of the catalog for material descriptions.

B Select the grade given in the insert selection guide. Use the six-digit order number to easily place your order.

Material Group	Light Machining Geometry	Light Machining Grade	General Purpose Geometry	General Purpose Grade	Heavy Machining Geometry	Heavy Machining Grade
P1–P2	.E..LD	WP40PM	.E..GD	WP40PM	.E..GD	WP40PM
P3–P4	.E..LD	WP25PM	.E..GD	WS40PM	.E..GD	WS40PM
P5–P6	.E..LD	WP25PM	.E..GD	WP25PM	.E..GD	WP25PM
M1–M2	.E..LD	WP25PM	.E..GD	WP25PM	.E..GD	WP25PM
M3	.E..LD	WP40PM	.E..GD	WS30PM	.E..GD	WS30PM
K1–K2	.E..GD	TN6510	.E..GD	WK15CM	.E..GD	WK15CM
K3	.E..LD	TN6520	.E..GD	WP25PM	.E..GD	WP25PM

5A



● first choice
○ alternate choice

	THM-U	TN6501	TN6510	TN6520	TN6525	TN6540	WK15CM	WP25PM	WP35CM	WP40PM	WS30PM	WS40PM
P					●	●		●	●	●	○	●
M					○	●		●	●	●	●	●
K	●		●	●	○	○	●	○	○			
N	○	●										○
S						●		●	○	○	●	●
H								○			○	

5B

ISO catalogue number	cutting edges	D	L10	S	BS	Rε	hm	THM-U	TN6501	TN6510	TN6520	TN6525	TN6540	WK15CM	WP25PM	WP35CM	WP40PM	WS30PM	WS40PM
HNPJ0704ANSNGD	12	13	6,80	4,45	1,45	1,20	0,10	-	-	3954432	3954473	-	3954474	5427374	5695293	5695294	5550906	5528976	6180297

6. Determine cutting data — with the WIDIA Recommended Speeds and Feeds tables:

A Choose the recommended speed value according to the workpiece material and grade.

B Choose the recommended starting feed rate according to the insert geometry and % of radial engagement ae.

Starting values are given in bold.

6A

Material Group		TN6510			TN6520			TN6525			TN6540			WK15CM		
P	1	–	–	–	–	–	–	410	**320**	280	360	**280**	240	–	–	–
	2	–	–	–	–	–	–	320	**250**	215	250	**190**	170	–	–	–
	3	–	–	–	–	–	–	280	**215**	185	215	**170**	140	–	–	–
	4	–	–	–	–	–	–	235	**170**	145	180	**130**	110	–	–	–
	5	–	–	–	–	–	–	310	**235**	200	240	**180**	150	–	–	–
	6	–	–	–	–	–	–	205	**160**	130	160	**120**	100	–	–	–
M	1	–	–	–	–	–	–	190	**120**	80	130	**80**	60	–	–	–
	2	–	–	–	–	–	–	120	**80**	50	80	**50**	40	–	–	–
	3	–	–	–	–	–	–	125	**80**	55	85	**50**	40	–	–	–
K	1	480	**350**	260	450	**320**	230	275	**245**	220	220	**205**	180	505	**460**	410
	2	420	**280**	205	390	**250**	190	215	**190**	180	175	**155**	140	400	**355**	330
	3	335	**260**	200	300	**230**	160	180	**160**	145	155	**145**	125	335	**300**	275
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	50	**35**	30	–	–	–
	2	–	–	–	–	–	–	–	–	–	25	**20**	10	–	–	–
	3	–	–	–	–	–	–	–	–	–	70	**40**	30	–	–	–
	4	–	–	–	–	–	–	–	–	–	60	**30**	25	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

6A

6A

6A

M640 • Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae) 5%			10%			20%			30%			40–100%			Insert Geometry
.F..LDAL	0,13	0,34	0,47	0,10	0,25	0,34	0,07	0,18	0,25	0,06	0,16	0,22	0,06	0,15	0,20	.F..LDAL
.E..LD	0,13	0,34	0,47	0,10	0,25	0,34	0,07	0,18	0,25	0,06	0,16	0,22	0,06	0,15	0,20	.E..LD
.E..GD	0,13	0,48	0,54	0,10	0,35	0,39	0,07	0,26	0,29	0,06	0,23	0,25	0,06	0,21	0,23	.E..GD

6B

6B

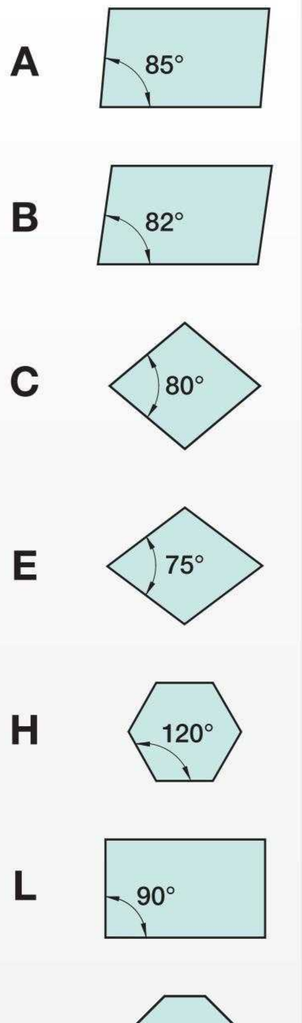
6B

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

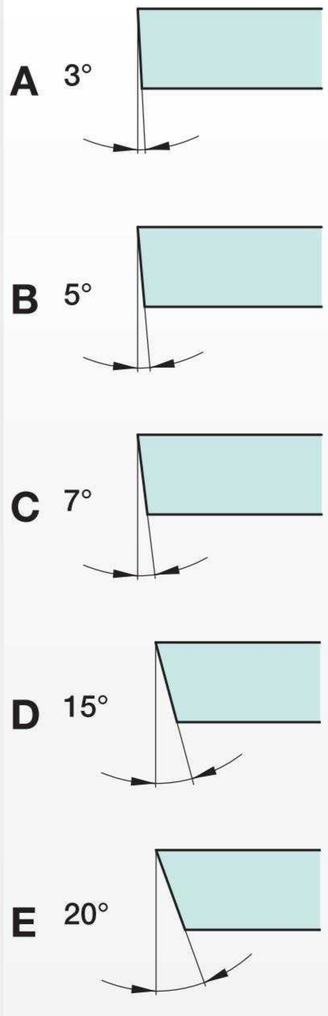
Inserts • Catalog Numbering System

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.

H — Insert Shape



N — Insert Clearance Angle

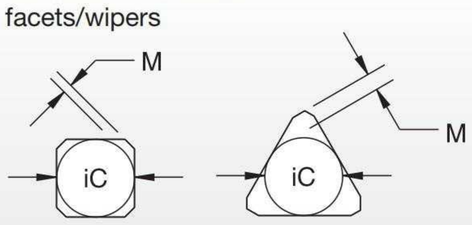


P — Tolerance Class

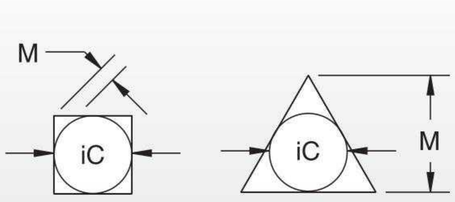
J — Geometry and Clamping Type

symbol	hole	shape of hole	chipbreaker	shape of insert's section
N	without		without	
R			single-sided	
F			double-sided	
A	with	cylindrical hole	without	
M			single-sided	
G			double-sided	
W	with	partly cylindrical hole, 40–60° countersink	without	
T			single-sided	
Q	with	partly cylindrical hole, 40–60° double countersink	without	
U			double-sided	
B	with	partly cylindrical hole, 70–90° countersink	without	
H			single-sided	
C	with	partly cylindrical hole, 70–90° double countersink	without	
J			double-sided	
X	special design			

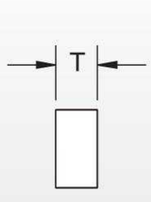
indexable inserts with facets/wipers



indexable inserts with corner radii



insert thickness



iC	tolerances on "iC"		tolerances on "M"	
	classes J, K, L, M, N (+/–)	class U (+/–)	classes M & N (+/–)	class U (+/–)
4,76–10,00	0,051	0,076	0,076	0,127
11,11–14,29	0,076	0,127	0,127	0,203
15,00–20,64	0,102	0,178	0,152	0,279
22,00–31,16	0,127	0,254	0,178	0,381
31,75–35,00	0,152	0,254	0,2	0,381

	iC (+/–)	M (+/–)	T (+/–)		iC (+/–)	M (+/–)	T (+/–)
A	0,025	0,005	0,025	J	0,05–0,15*	0,005	0,025
B	0,025	0,005	0,013	K	0,05–0,15*	0,013	0,025
C	0,025	0,013	0,025	L	0,05–0,15*	0,025	0,025
D	0,025	0,013	0,013	M	0,05–0,15*	0,08–0,20*	0,013
E	0,025	0,025	0,025	N	0,05–0,15*	0,08–0,20*	0,025
F	0,013	0,005	0,025	P**	0,038	0,038	0,038
G	0,025	0,025	0,013	U	0,08–0,25*	0,13–0,30*	0,013
H	0,013	0,013	0,025				

*See table above for tolerances according to insert size and class.
**WIDIA standard only.

Inserts • Catalog Numbering System

(continued)

07	04	AN	S	N	GD
Size (Cutting Edge Length)	Insert Thickness	Corner Configuration	Cutting Edge Form	Insert Hand	Edge Geometry

symbol	thickness
T1	1,98
02	2,38
03	3,18
T3	3,97
04	4,76
05	5,56
06	6,35
07	7,94

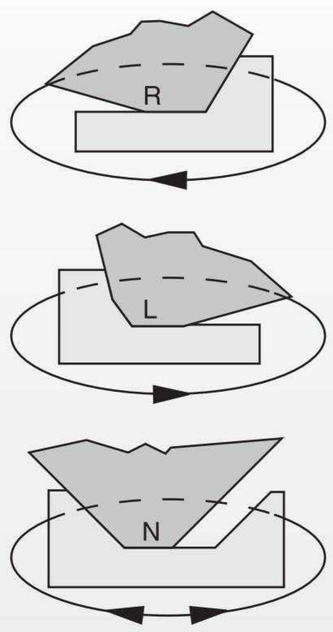
F sharp

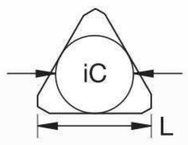
E honed

T T-land

S honed + T-land

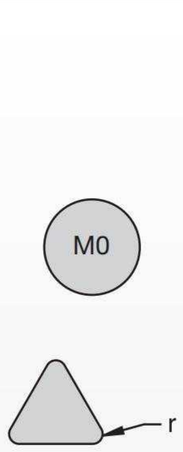
direction of cutter rotation

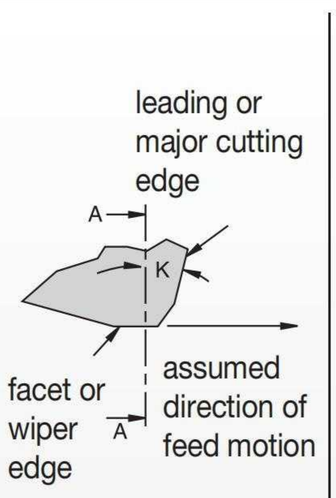


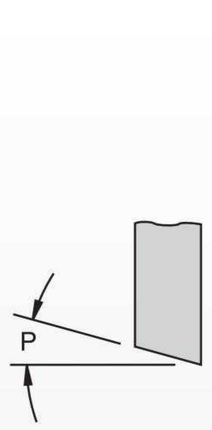


inscribed circle "iC" versus cutting edge length "L"
For shapes A, L, and X, see position #1; use length of leading cutting edge.

iC	"L" for shapes						
	S	T	R	O	C	H	E
6,00	–	–	06	–	–	–	–
6,35	06	11	06	02	06	03	06
8,00	–	–	08	–	–	–	–
9,52	09	16	09	04	09	05	09
10,00	–	–	10	–	–	–	–
12,00	–	–	12	–	–	–	–
12,70	12	22	12	05	12	07	13
15,88	15	27	15	06	16	09	16
16,00	–	–	16	–	–	–	–
19,05	19	33	19	07	19	11	19
20,00	–	–	20	–	–	–	–
25,00	–	–	25	–	–	–	–
25,40	25	4					







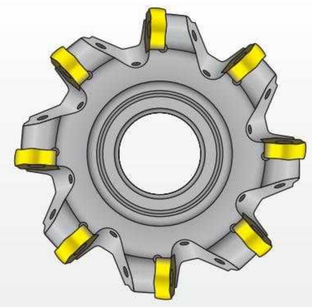
radius				wiper edge clearance P	
MO	round insert				
01	0,1mm				
02	0,2mm				
04	0,4mm			A	3º
05	0,5mm			B	5º
08	0,8mm	If letter is replaced by number(s), refer to table for radius "r."		C	7º
10	1,0mm			D	15º
12	1,2mm	lead angle K		E	20º
15	1,5mm	A	45º	F	25º
16	1,6mm	D	60º	G	30º
24	2,4mm	E	75º	N	0º
32	3,2mm	P	90º	P	11º

Tool Bodies • Catalog Numbering System

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.

M1200	D	100	Z	03	C
Series	Cutting Diameter		Number of Flutes		Shank Form

Z = Number of effective flutes



C = Cylindrical

W = Weldon®

M = Modular

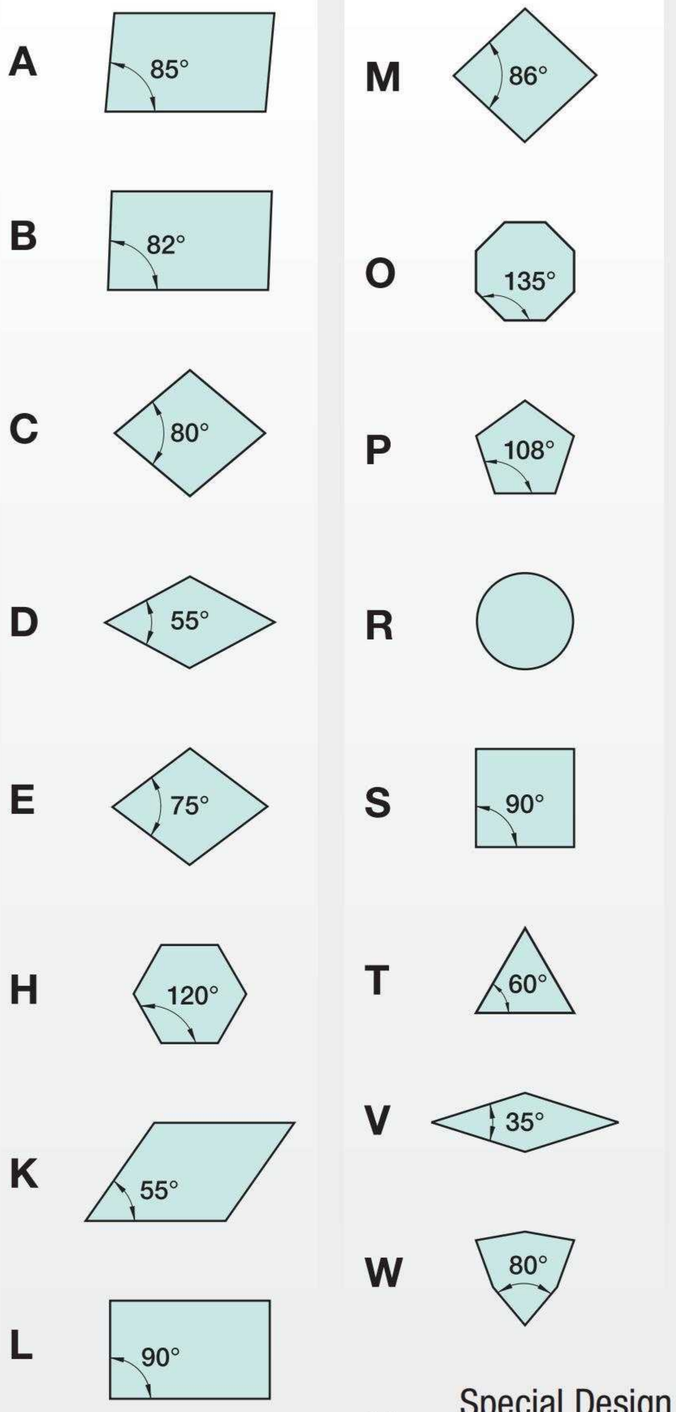
S = Shell Mill

Tool Bodies • Catalog Numbering System

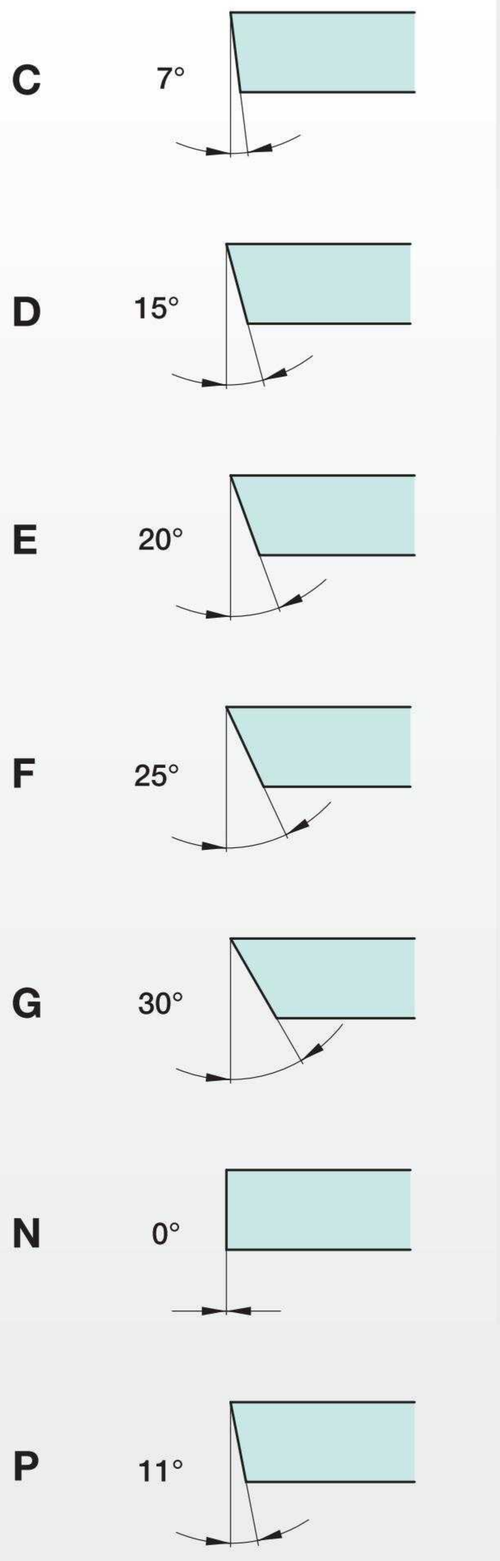
(continued)

100	H	N	07	L	800
Shank/Pilot Diameter	Insert Shape	Insert Clearance Angle	Insert Size (Cutting Edge Length)	Overall Length of Tool Used for all cylindrical shank and long version Weldon® if required (standard Weldon without)	

Insert Shape



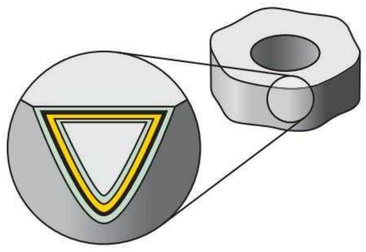
Insert Clearance Angle



Optional uses as required

LH	Left Hand
C	Carbide Shank
HM	Heavy Metal Shank

Grades and Grade Descriptions



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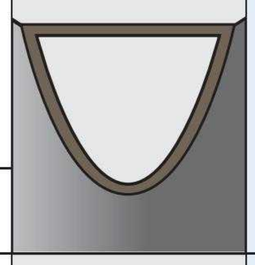
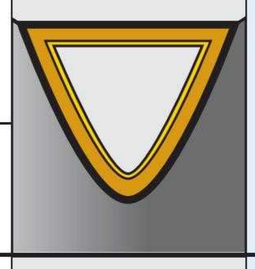
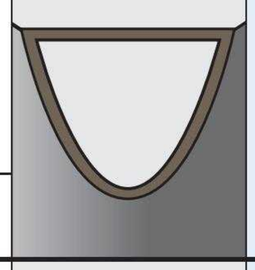
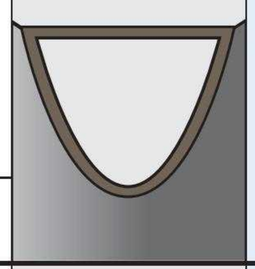
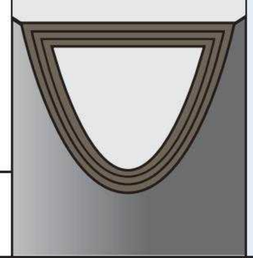
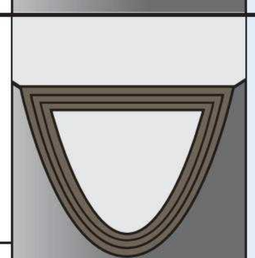
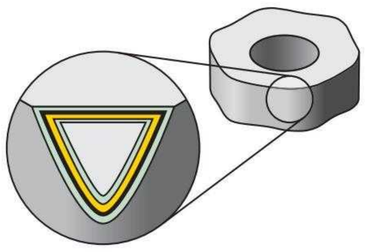
P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

primary use		alternate use	
▼▼▼	Light (finishing)	∇∇∇	Light (finishing)
▼▼	Medium	∇∇	Medium
▼	Heavy (roughing)	∇	Heavy (roughing)

Grade		P	M	K	N	S	H	dry	with coolant
TN2505 HC-H05 • PVD-TiAlN		∇∇∇		▼▼▼			▼▼▼	•	
TN2510 HC-H10 • MT-CVD/CVD-TiN-TiCN-(ZrO_2-Al_2O_3-TiOx)		∇∇		▼▼			▼▼	•	
TN2525 HC-H20 • PVD-TiAlN		▼▼		∇∇			▼▼	•	
TN6501 HC-N03 • PVD-TiB_2					▼▼▼			•	•
TN6510 HC-K10 • PVD-TiAlN Nanolayer				▼▼				•	
TN6520 HC-K20 • PVD-TiAlN Nanolayer				▼▼				•	•

Grades and Grade Descriptions



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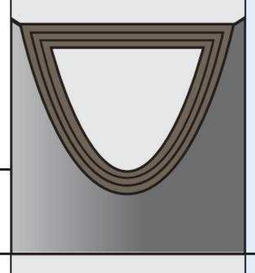
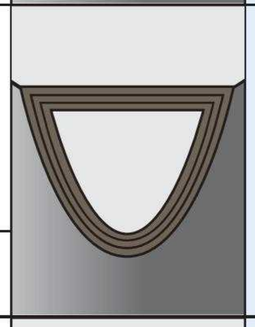
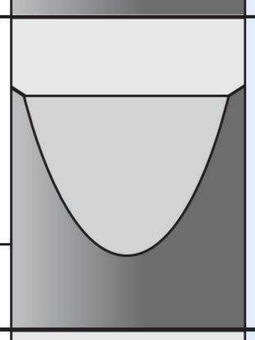
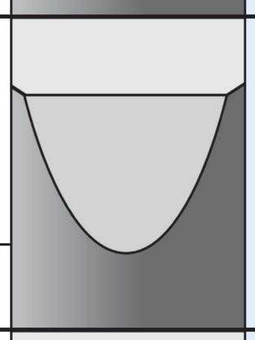
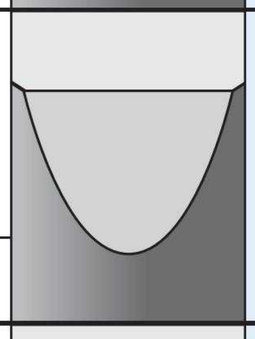
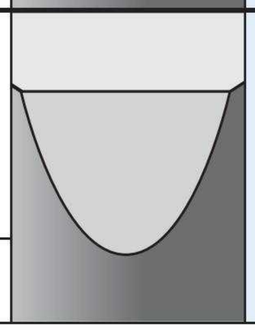
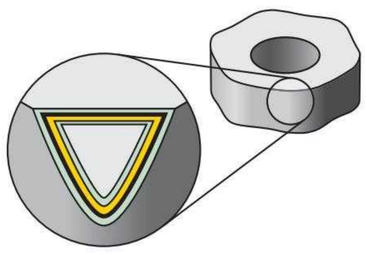
H	Hardened Materials

primary use		alternate use	
▼▼▼	Light (finishing)	∇∇∇	Light (finishing)
▼▼	Medium	∇∇	Medium
▼	Heavy (roughing)	∇	Heavy (roughing)

Grade		P	M	K	N	S	H	dry	with coolant
TN6525 HC-P25 • PVD-TiAlN Nanolayer		▼▼	∇∇	∇∇				•	
TN6540 HC-P40 • PVD-TiAlN Nanolayer		▼	▼	∇		▼▼		•	•
TTI25 HT-P15 • Cermet		▼▼▼	∇∇∇					•	•
THM HW-K15 • Uncoated				∇	▼	∇		•	•
THM-U HF-N05 • Uncoated					▼▼▼			•	•
TTM/TTM08 HW-P25 • Uncoated		▼▼	∇∇	∇∇				•	•

Grades and Grade Descriptions



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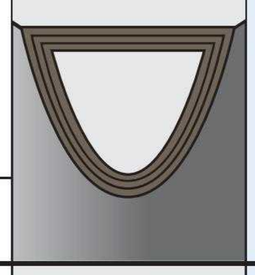
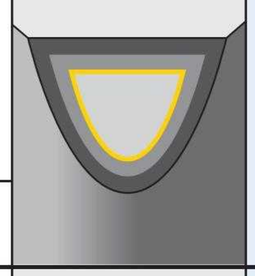
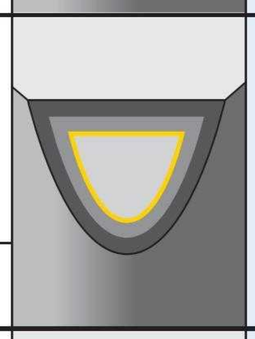
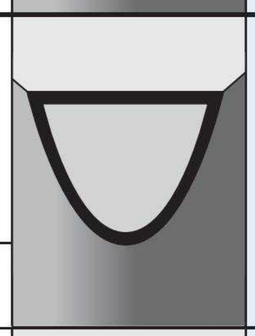
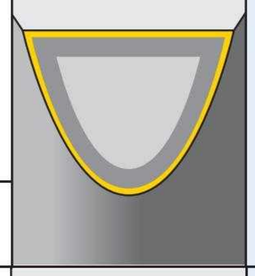
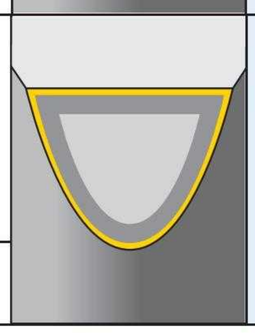
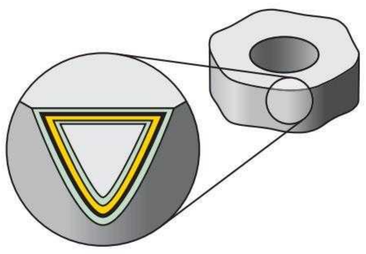
primary use		alternate use	
▼▼▼	Light (finishing)	∇∇∇	Light (finishing)
▼▼	Medium	∇∇	Medium
▼	Heavy (roughing)	∇	Heavy (roughing)

Grade		P	M	K	N	S	H	dry	with coolant
WK15PM PVD-TiAlN Nanolayer				▼▼				•	•
WK15CM™ MT-CVD/TiN-TiCN-Al_2O_3				▼▼				•	
WP20CM MT-CVD/TiN-TiCN-Al_2O_3		▼▼		∇∇					
WP25PM PVD-AlTiN Multilayer		▼▼	▼▼	∇∇		▼▼	∇∇	•	•
WS30PM™ PVD-AlTiN Multilayer		∇∇	▼▼			▼▼		•	•
WS40PM PVD-TiAlN/TiN Multilayer		∇	▼			▼		•	•

Grades and Grade Descriptions



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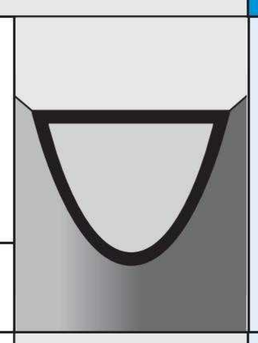
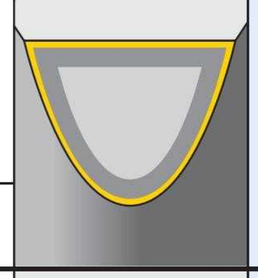
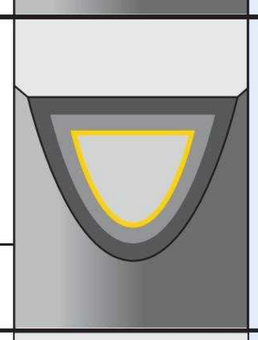
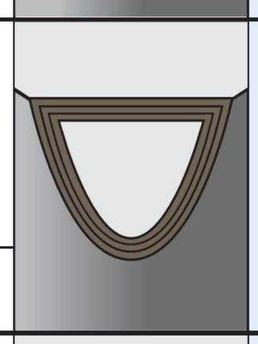
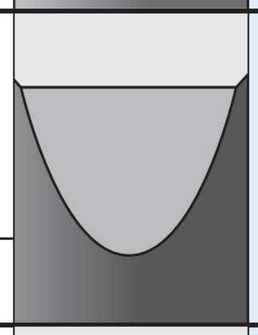
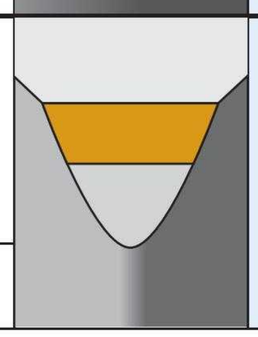
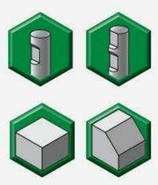
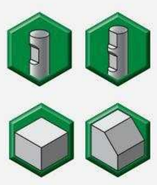
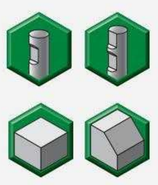
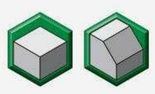
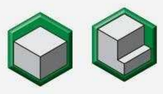
▼▼	Medium	∇∇	Medium
▼	Heavy (roughing)	∇	Heavy (roughing)

Grade		P	M	K	N	S	H	dry	with coolant
WU20PM PVD-TiAlN		▼▼	▼▼	∇∇		▼▼	∇∇	•	•
WU35PM PVD-AlTiN Multilayer		▼	▼			▼		•	•
WP35CM MT-CVD/TiN-TiCN-Al_2O_3		▼	∇	▼				•	
WP40PM™ PVD TiAlN-AlCrN Multilayer		▼	▼			∇		•	•
WK25YM Silicon Nitride				▼▼				•	
WDN00U™ Ultra-fine grain PCD					▼▼▼ ▼▼ ▼				•

Face Milling Portfolio Overview

Face Milling	SuperFeed™	M640	M660	M1600 Mini-F	M1600	M1200 Mini
						
Page	A82–A83	A18–A20	A24–A27	A34–A35	A37–A38	A42–A47
Work Piece Materials	N	P M K N S H	P M K N S H	K	P M K	P M K N S H
Max. Axial Depth of Cut (Ap1 Max)	6,35mm	1,52mm	6,4/8,0mm	1,52mm	3,7mm	4,7mm
Approach/Lead Angle	90°	58°	45°	45°	43°	15/45/59°
Effective Cutting Edges	1	6	4	16	16	12
Diameter Range	25–200mm	32–125mm	20–160mm	80–160mm	50–160mm	25–125mm
Insert Style	Single-Sided	Single-Sided	Single-Sided	Double-Sided	Double-Sided	Double-Sided
Ground Insert	◉	◉	◉	◉	◉	◉
Pressed to Size Insert	○	◉	◉	○	○	◉
Insert Nose Radii	0,8/2,36mm	0,90/0,98mm	Not applicable	0,8mm	1,2mm	1,2/3,2mm
Embedded Wiper Facet	1,52mm	—	1,54–2,0mm	0,6mm	0,765mm	1,454–1,6mm
Separate Wiper Insert	○	◉	◉	◉	○	◉
Cutter Pitch	fine	coarse	regular	regular	regular	coarse & fine
Workpiece Floor Finish	✓✓	✓✓	✓✓	✓✓	✓	✓✓
Screw Insert Clamping	○	◉	◉	◉	◉	◉
Wedge Clamping of Inserts	◉	○	○	○	○	○
Additional Operations	PCD					
Shell Mills	◉	◉	◉	◉	◉	◉
Screw-On End Mills	○	○	○	○	○	◉
Cylindrical End Mills	◉ *Shoulder Mill only*	○	○	○	○	◉
Weldon® End Mills	○	◉	◉	○	○	◉
Cartridge for M4000	○	◉	◉	○	○	◉

Face Milling Portfolio Overview

★	★	★	★	★	★	★	
							
M1200	**M1200 Max Screw**	**M1200 Max Wedge**	**M8065HD**	**M8090**	**M8090-F**	**M4070**	**M4000**
A49–A54	A56–A57	A56–A57	A62–A63	A68–A69	A71–A72	A76–A77	A88
P M K N S H	P M K	K	P M K S	K	K	P K	—
6mm	7,5mm	7,5mm	9,0mm	11,5mm	1mm	17mm	—
15/45/59°	56°	56°	64°	89°	89°	70°	—
12	12	12	8	8	8	4	—
50–315mm	80–250mm	63–250mm	50–315mm	63–250mm	80–250mm	125–315mm	125–315mm
Double-Sided	Double-Sided	Double-Sided	Double-Sided	Double-Sided	Double-Sided	Double-Sided	—
◉	○	○	○	◉	◉	◉	—
◉	◉	◉	◉	○	○	○	—
1,2/4,34mm	Not applicable	Not applicable	1,2mm	1,2mm	1,2mm	1,2mm	—
1,8mm	1,2mm	1,2mm	2,37mm	—	—	—	—
◉	○	○	○	○	◉	○	—
coarse & fine	regular	regular	regular	coarse & fine	regular	regular	—
✓✓	✓	✓	✓	✓	✓✓	✓	✓✓
◉	◉	○	◉	○	○	◉	—
○	○	◉	○	◉	○	○	—
							
◉	◉	◉	◉	◉	◉	◉	◉
○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○
◉	○	○	○	○	○	○	○
◉	○	○	○	○	○	○	—

✓ Good	✓✓ Perfect	◉ Yes	○ No	★ All-Star Program

M640

M640 Face Mill

Use the M640 face mill to create smooth finishes in all workpiece materials using soft cutting action on low-power machines.

Through-tool coolant up to 80mm diameter.

One insert screw enables fast, accurate indexing.

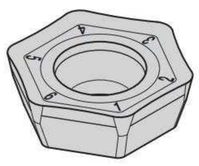
Insert with six effective cutting edges.

Highly positive rake for low-power machines.

The M640 face mill features six cutting edges on the insert with a highly positive rake enhancing productivity in finishing operations on low-power machines and driven units.

WIPER INSERT

P M K N S H



-GD

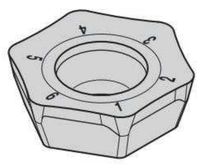
Positive and stable geometry for medium machining. The positive stabilized cutting edge improves the milling action.

-3W

Geometry with wiper facet for best surface qualities. Only to be used in conjunction with the ground geometry -GD

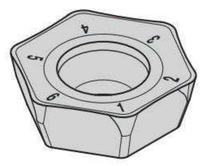
INSERT

P M K N S H



-LD

Highly positive geometry for smooth and soft cutting action. Geometry with face cutting edge for finish machining.



-AL

Geometry for machining aluminum. The main and secondary cutting edges are sharp edged.

LOW CUTTING FORCES, FINISHING OPERATIONS

PRODUCT

SERIES

M640

DIAMETER RANGE

32–125mm

SHANK TYPES

Weldon® End Mills
Shell Mills

INDUSTRY

GENERAL ENGINEERING

AEROSPACE

APPLICATIONS

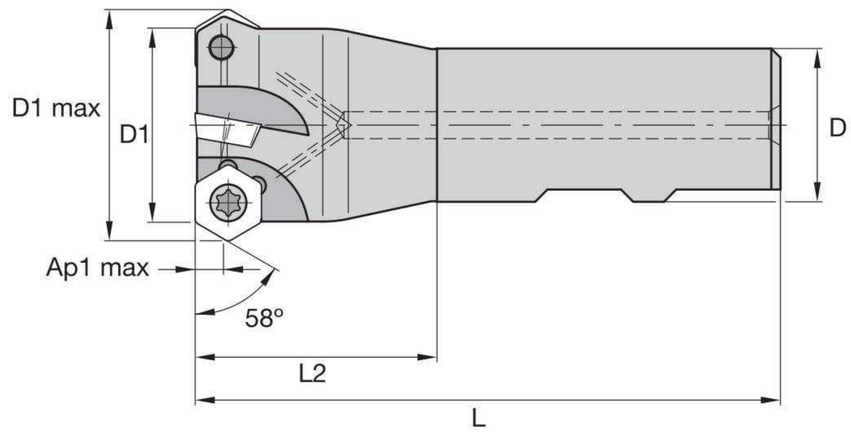
FACE MILLING

SLEEK FINISH

LOW CUTTING FORCES

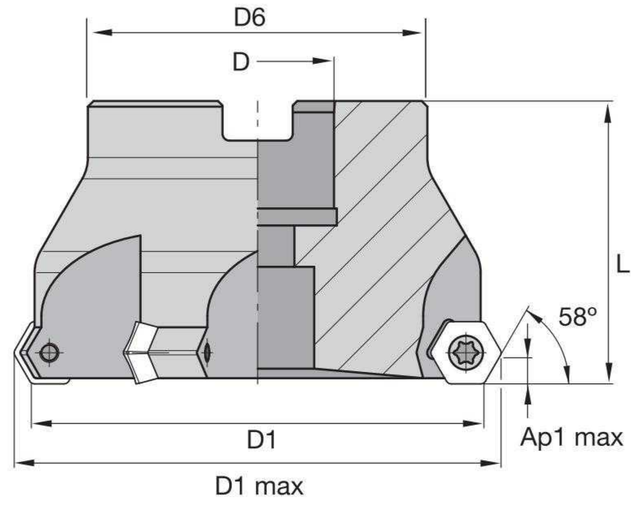
Highly positive rake angle for extremely low cutting forces.

M640 • Weldon® End Mills • Metric



order number	catalogue number	D1	D1 max	D	L	L2	Ap1 max	Z	max RPM	coolant supply	kg
2263165	12395405200	32	38,4	32	100	40	4,8	4	29500	Yes	0,35

M640 • Shell Mills • Metric

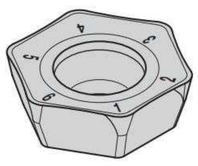


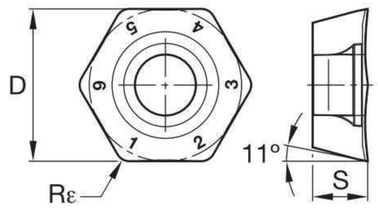
order number	catalogue number	D1	D1 max	D	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
2263132	12395410200	50	56,4	22	47	40	4,8	4	19000	Yes	0,40
2263154	12395410400	63	69,4	22	50	40	4,8	5	15000	Yes	0,55
2263156	12395410600	80	86,4	27	60	50	4,8	6	11500	Yes	1,05
2263158	12395410800	100	106,4	32	78	50	4,8	7	9500	No	1,50
2263159	12395415800	100	106,4	32	78	50	4,8	10	9500	No	1,65
2263160	12395411000	125	131,4	40	89	63	4,8	8	7500	No	2,90

FOR SPARE PARTS, PLEASE VISIT WIDIA.COM OR WIDIANOVO.COM.

MOUNTING SCREWS ARE NOT INCLUDED IN STANDARD PACKAGING.

M640 • HPGT-LDAL



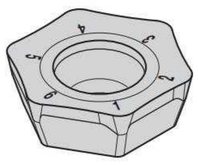


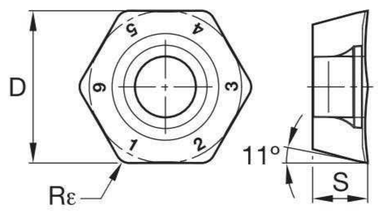
● first choice
○ alternate choice

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

ISO catalogue number	cutting edges	D	S	Rε	hm	THM	THM-U	TN6510	TN6520	TN6525	TN6540	WK15CM	WP25PM	WP40PM	WS30PM	WS40PM
HPGT06T3DZFRLDAL	6	11	4,00	0,90	0,08	2288106	2288107	-	-	-	-	-	-	-	-	-

M640 • HPGT-LD





● first choice
○ alternate choice

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

ISO catalogue number	cutting edges	D	S	Rε	hm	THM	THM-U	TN6510	TN6520	TN6525	TN6540	WK15CM	WP25PM	WP40PM	WS30PM	WS40PM
HPGT06T3DZERLD	6	11	3,99	0,98	0,08	-	-	-	2957585	2957547	-	-	5895784	5895785	-	6180312

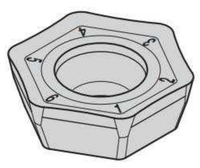
M640 • HPPT-GD

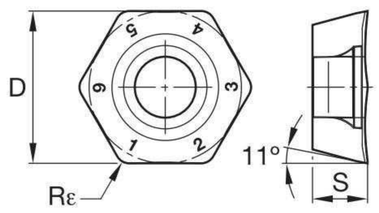
● first choice
○ alternate choice

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

ISO catalogue number	cutting edges	D	S	Rε	hm	THM	THM-U	TN6510	TN6520	TN6525	TN6540	WK15CM	WP25PM	WP40PM	WS30PM	WS40PM
HPPT06T3DZENGD	6	11	3,97	0,98	0,10	-	-	-	2957583	2957586	2957552	-	5895788	5895789	-	6180315

M640 • HPGT-GD



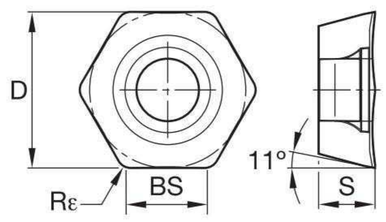


● first choice
○ alternate choice

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

ISO catalogue number	cutting edges	D	S	Rε	hm	THM	THM-U	TN6510	TN6520	TN6525	TN6540	WK15CM	WP25PM	WP40PM	WS30PM	WS40PM
HPGT06T3DZENGD	6	11	3,97	0,98	0,10	-	-	2957589	-	2957588	2957546	5427387	5895782	5895783	5528978	6180313

M640 • HPGT-GD Wiper



● first choice
○ alternate choice

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

ISO catalogue number	cutting edges	D	S	BS	Rε	hm	THM	THM-U	TN6510	TN6520	TN6525	TN6540	WK15CM	WP25PM	WP40PM	WS30PM	WS40PM
HPGT06T3DZERGD3W	3	11	4,00	2,88	0,98	0,10	-	-	2957549	-	2957584	-	5427388	5895786	5895787	-	6180316

M640 • Insert Selection Guide

Material Group	Light Machining Geometry	Light Machining Grade	General Purpose Geometry	General Purpose Grade	Heavy Machining Geometry	Heavy Machining Grade
P1–P2	.E..LD	WP40PM	**.E..GD**	**WP40PM**	.E..GD	WP40PM
P3–P4	.E..LD	WP25PM	**.E..GD**	**WS40PM**	.E..GD	WS40PM
P5–P6	.E..LD	WP25PM	**.E..GD**	**WP25PM**	.E..GD	WP25PM
M1–M2	.E..LD	WP25PM	**.E..GD**	**WP25PM**	.E..GD	WP25PM
M3	.E..LD	WP40PM	**.E..GD**	**WS30PM**	.E..GD	WS30PM
K1–K2	.E..GD	TN6510	**.E..GD**	**WK15CM**	.E..GD	WK15CM
K3	.E..LD	TN6520	**.E..GD**	**WP25PM**	.E..GD	WP25PM
N1–N2	.E..LD	WS40PM	**.E..GD**	**WS40PM**	.E..GD	WS40PM
N3	.E..LD	WS40PM	**.E..GD**	**WS40PM**	.E..GD	WS40PM

M640 • Recommended Starting Speeds [m/min]

Material Group		TN6510			TN6520			TN6525			TN6540			WK15CM		
P	1	–	–	–	–	–	–	410	**320**	280	360	**280**	240	–	–	–
	2	–	–	–	–	–	–	320	**250**	215	250	**190**	170	–	–	–
	3	–	–	–	–	–	–	280	**215**	185	215	**170**	140	–	–	–
	4	–	–	–	–	–	–	235	**170**	145	180	**130**	110	–	–	–
	5	–	–	–	–	–	–	310	**235**	200	240	**180**	150	–	–	–
	6	–	–	–	–	–	–	205	**160**	130	160	**120**	100	–	–	–
M	1	–	–	–	–	–	–	190	**120**	80	130	**80**	60	–	–	–
	2	–	–	–	–	–	–	120	**80**	50	80	**50**	40	–	–	–
	3	–	–	–	–	–	–	125	**80**	55	85	**50**	40	–	–	–
K	1	480	**350**	260	450	**320**	230	275	**245**	220	220	**205**	180	505	**460**	410
	2	420	**280**	205	390	**250**	190	215	**190**	180	175	**155**	140	400	**355**	330
	3	335	**260**	200	300	**230**	160	180	**160**	145	155	**145**	125	335	**300**	275
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	50	**35**	30	–	–	–
	2	–	–	–	–	–	–	–	–	–	25	**20**	10	–	–	–
	3	–	–	–	–	–	–	–	–	–	70	**40**	30	–	–	–
	4	–	–	–	–	–	–	–	–	–	60	**30**	25	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Material Group		WP25PM			WP40PM			WS30PM			WS40PM			THM-U			THM		
P	1	395	**340**	325	355	**310**	295	–	–	–	–	–	–	–	–	–	–	–	–
	2	330	**290**	240	300	**260**	215	–	–	–	–	–	–	–	–	–	–	–	–
	3	305	**260**	210	275	**235**	190	–	–	–	–	–	–	–	–	–	–	–	–
	4	270	**220**	180	245	**205**	160	–	–	–	–	–	–	–	–	–	–	–	–
	5	220	**205**	180	205	**185**	160	–	–	–	205	**175**	145	–	–	–	–	–	–
	6	200	**150**	120	180	**140**	110	–	–	–	180	**130**	95	–	–	–	–	–	–
M	1	245	**215**	200	235	**205**	185	270	**240**	220	250	**205**	170	–	–	–	–	–	–
	2	220	**190**	155	210	**180**	150	245	**215**	175	215	**175**	145	–	–	–	–	–	–
	3	170	**145**	115	155	**140**	110	185	**160**	125	175	**130**	100	–	–	–	–	–	–
K	1	275	**245**	220	–	–	–	–	–	–	–	–	–	230	**205**	180	145	**110**	90
	2	215	**190**	180	–	–	–	–	–	–	–	–	–	–	–	–	150	**120**	85
	3	180	**160**	145	–	–	–	–	–	–	–	–	–	–	–	–	155	**115**	70
N	1	–	–	–	–	–	–	–	–	–	–	–	–	2400	**1440**	1200	1080	**720**	600
	2	–	–	–	–	–	–	–	–	–	–	–	–	1640	**980**	800	820	**560**	460
	3	–	–	–	–	–	–	–	–	–	–	–	–	960	**600**	480	540	**335**	240
S	1	50	**40**	30	50	**40**	35	55	**50**	35	50	**40**	30	–	–	–	–	–	–
	2	50	**40**	30	50	**40**	35	55	**50**	35	50	**40**	30	–	–	–	–	–	–
	3	60	**50**	30	60	**50**	35	65	**55**	35	60	**50**	30	–	–	–	–	–	–
	4	85	**60**	40	80	**60**	40	100	**70**	50	70	**60**	35	–	–	–	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

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

M640 • Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDAL	0,13	0,34	0,47	0,10	0,25	0,34	0,07	0,18	0,25	0,06	0,16	0,22	0,06	0,15	0,20	.F..LDAL
.E..LD	0,13	0,34	0,47	0,10	0,25	0,34	0,07	0,18	0,25	0,06	0,16	0,22	0,06	0,15	0,20	.E..LD
.E..GD	0,13	0,48	0,54	0,10	0,35	0,39	0,07	0,26	0,29	0,06	0,23	0,25	0,06	0,21	0,23	.E..GD

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

M660

M660 Face Mill

The M660 face mill is designed with a strong tool body and perfect axial and radial runout for heavy roughing of steel and cast iron materials.

Three chipbreakers with four cutting edges and a positive rake angle.

Easy, safe and stable clamping ensures accurate indexing.

Thick inserts for reliability and high MRR capability.

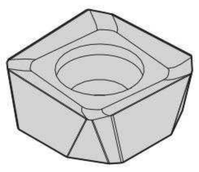
Insert with integrated wiper facet for good surface finish.

Body with a large chip gash for excellent chip evacuation.

45-degree lead angle.

M660 face mills are equipped with thick inserts and a body design with a large chip gash to efficiently evacuate chips from heavy-duty applications.

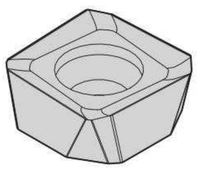
THREE CHIPBREAKERS FOR ALL HEAVY-DUTY APPLICATIONS IN STEEL AND CAST IRON



-20

P M S

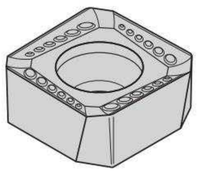
Light Machining



-21

K

General Purpose Machining



-31

P M K S

General Purpose and Heavy Machining

HEAVY-DUTY FACE MILLING OF STEEL AND CAST IRON

PRODUCT

SERIES

M660

DIAMETER RANGE

20–160mm

SHANK TYPES

Shell Mills
Weldon® End Mills

INDUSTRY

ENERGY

GENERAL ENGINEERING

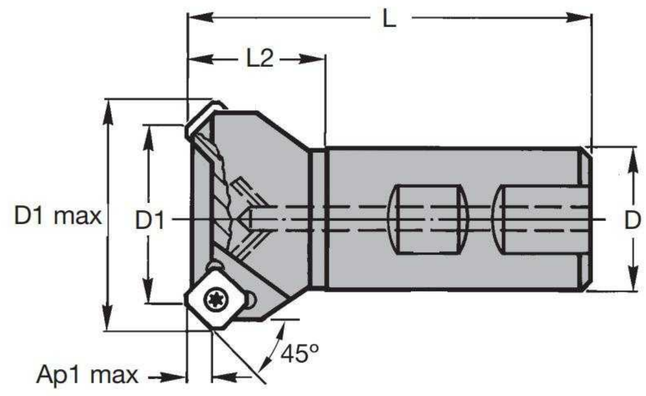
TRANSPORTATION

APPLICATIONS

FACE
MILLING

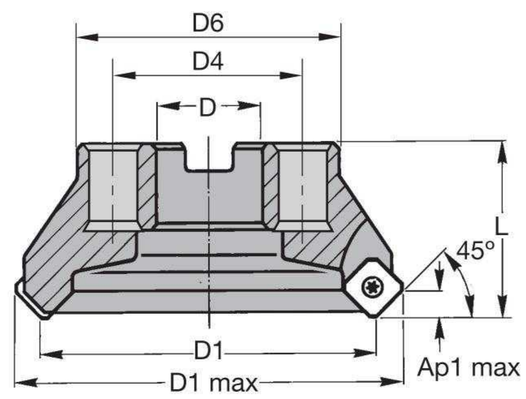
HEAVY DUTY

M660 • Weldon® Shank SN1205.. • Metric



order number	catalogue number	D1	D1 max	D	L	L2	Ap1 max	Z	max RPM	coolant supply	kg
2002367	12396202200	20	33,8	25	86	30	6,4	2	17000	Yes	0,30
2002370	12396202600	25	38,7	25	91	35	6,4	2	15000	Yes	0,40

M660 • Shell Mills SN1205.. • Metric

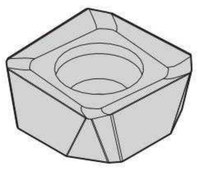


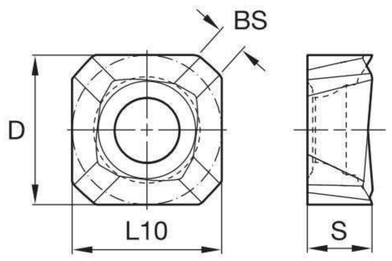
order number	catalogue number	D1	D1 max	D	D4	D6	L	Ap1 max	Z	max RPM	coolant supply	kg
2003541	12396203800	50	63,5	22	—	50	40	6,4	4	12500	Yes	0,45
2003558	12396204200	63	76,5	22	—	50	40	6,4	5	11000	Yes	0,60
2003575	12396204600	80	94,3	27	—	60	50	6,4	6	9900	Yes	1,15
2003582	12396205000	100	113,4	32	—	78	50	6,4	7	8900	No	1,60
2003679	12396205400	125	138,3	40	—	89	63	6,4	8	7900	No	2,80
2003780	12396205800	160	173,3	40	66,7	90	63	6,4	10	7000	No	4,10

FOR SPARE PARTS, PLEASE VISIT WIDIA.COM OR WIDIANOVO.COM.

MOUNTING SCREWS ARE NOT INCLUDED IN STANDARD PACKAGING.

M660 • SNKT-20 • SN1205..



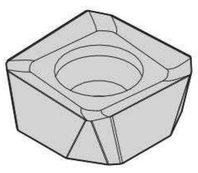


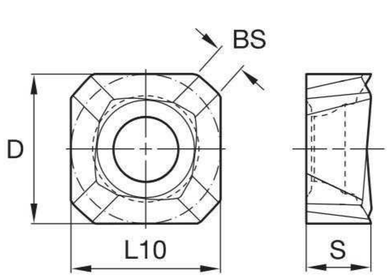
● first choice
○ alternate choice

ISO catalogue number	cutting edges	D	L10	S	BS	hm	THM	TN6525	TN6540	TTI25	TTM08	WK15CM	WP25PM	WP35CM	WP40PM
SNKT1205AZER20	4	12,70	12,70	5,49	2,00	0,10	–	–	2964201	–	–	–	–	–	–
SNKT1205AZER20	4	12,70	12,70	5,49	2,00	—	–	–	–	–	–	–	–	6842099	–

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

M660 • SNKT-21 • SN1205..



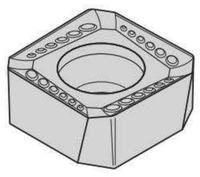


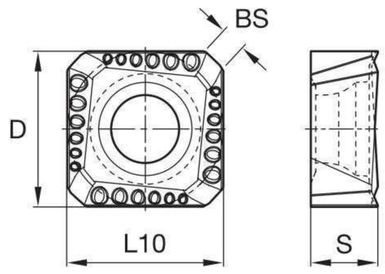
● first choice
○ alternate choice

ISO catalogue number	cutting edges	D	L10	S	BS	hm	THM	TN6525	TN6540	TTI25	TTM08	WK15CM	WP25PM	WP35CM	WP40PM
SNKT1205AZR21	4	12,70	12,70	5,56	1,54	0,15	2022373	–	–	2022374	–	5427383	–	–	–
SNKT1205AZR21	4	12,70	12,70	5,56	1,54	—	–	–	–	–	–	–	–	6842100	–

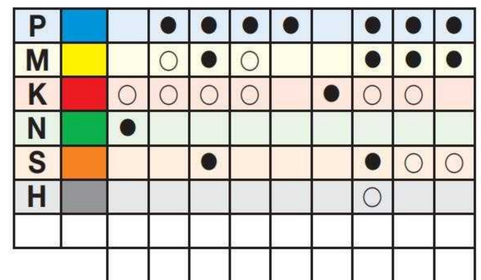
P			●	●	●	●		●	●	●					
M			○	●	○			●	●	●					
K		○	○	○	○		●	○	○						
N		●													
S				●				●	○	○					
H								○							

M660 • SNMT-31 • SN1205..



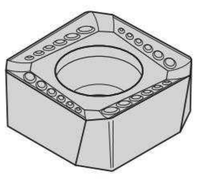


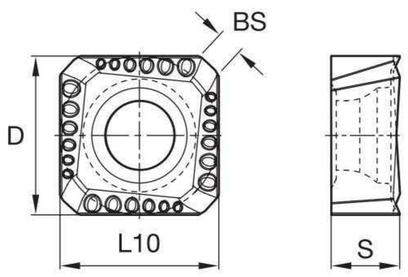
● first choice
○ alternate choice



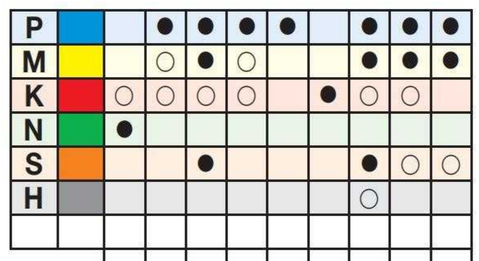
catalogue number	cutting edges	D	L10	S	BS	Rε	hm	THM	TN6525	TN6540	TTI25	TTM08	WK15CM	WP25PM	WP35CM	WP40PM
SNMT1205AZR31	4	12,70	12,70	5,56	1,54	–	0,16	-	2964206	2964204	-	2013680	5427382	6895536	6895537	5551088

M660 • SNKT-31 • SN1205..



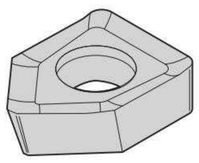


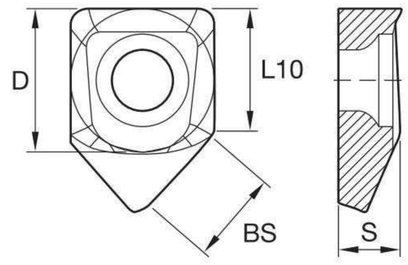
● first choice
○ alternate choice



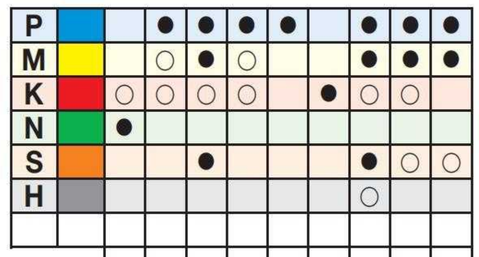
catalogue number	cutting edges	D	L10	S	BS	hm	THM	TN6525	TN6540	TTI25	TTM08	WK15CM	WP25PM	WP35CM	WP40PM
SNKT1205AZR31	4	12,70	12,70	5,56	1,54	0,16	-	2964208	2964205	-	-	5427384	-	6826407	-

M660 • XNKT-11 Wiper • SN1205..





● first choice
○ alternate choice



ISO catalogue number	cutting edges	D	L10	S	BS	Rε	hm	THM	TN6525	TN6540	TTI25	TTM08	WK15CM	WP25PM	WP35CM	WP40PM
XNKT1205AZER11	1	12,70	12,70	5,15	8,00	1,30	0,15	2015246	–	–	–	–	5427381	–	5842111	–

M660 • SN1205.. • Insert Selection Guide

Material Group	Light Machining Geometry	Light Machining Grade	General Purpose Geometry	General Purpose Grade	Heavy Machining Geometry	Heavy Machining Grade
P1–P2	…20	TN6540	**…31**	**WP40PM**	…31	WP40PM
P3–P4	…20	WP35CM	**…31**	**WP35CM**	…31	WP35CM
P5–P6	…20	WP35CM	**…31**	**WP35CM**	…31	WP35CM
M1–M2	…20	TN6540	**…31**	**WP25PM**	…31	WP25PM
M3	…20	WP35CM	**…31**	**WP35CM**	…31	WP35CM
K1–K2	…21	WK15CM	**…31**	**WK15CM**	…31	WK15CM
K3	…21	WK15CM	**…31**	**WP35CM**	…31	WP35CM
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	…20	TN6540	**…31**	**WP25PM**	…31	WP25PM
S3	–	–	**–**	**–**	–	–
S4	…20	TN6540	**…31**	**WP40PM**	…31	WP40PM
H1	–	–	**–**	**–**	–	–