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ALL-STAR

AMERICAS | VOL 1

SOLID END MILLING



COMPLETE
METALWORKING
SOLUTIONS

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WIDIA

The All-Star Program reinforces the core qualities of the WIDIA™ diamond — providing proven solutions that are easy to find and always available.

With All-Star, customers can benefit from product reliability and quick delivery to increase machine utilization.



 ALL-STAR



PROVEN SOLUTIONS

Products included in the All-Star program were chosen based on their proven performance and popularity. These industry-leading solutions combine versatility and productivity to deliver savings.

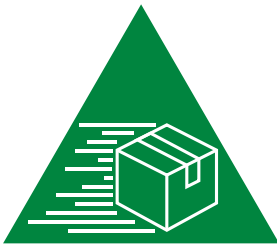


EASY TO FIND

It is easy to recommend All-Star on-the-go or in the shop while using tools like the NOVO™ tool advisor or the Machining Central app. To view All-Star products on widia.com, use the All-Star filter.



Available to download in the app store!



ALWAYS AVAILABLE

All-Star products are held to the highest availability standards. This means products that are flagged as All-Star feature same-day shipping for all orders received before 6pm EST.

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SOLID END MILLING

HIGH-PERFORMANCE SOLID CARBIDE END MILLS

Pages B4–B37

- VariMill I™
- VariMill II™
- VariMill III™
- AluSurf™
- HP Finishing
- HP Roughing



GENERAL PURPOSE SOLID CARBIDE END MILLS

Pages B38–B46

- GP 2-Flute
- GP 3-Flute
- GP 4-Flute



AEROSPACE TECHNOLOGY



WIDIA drills for composite machining utilize PCD and diamond coatings made for the machining of aerospace CFRP (Carbon Fiber Reinforced Plastics). These coatings enable longer tool life at much higher machining speeds.



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



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



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

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HIGH-PERFORMANCE SOLID CARBIDE

VariMill I™

Pages B6–B12

This 4-flute geometry is designed with unequal flute spacing for plunging, slotting, and profiling at the highest possible feed rates for a wide range of materials.



VariMill II™

Pages B14–B23

This 5-flute geometry is designed with unequal flute spacing for advanced milling jobs in a wide range of materials.

VariMill III™

Pages B24–B26

This 7-flute geometry is designed with unequal flute spacing and is designed to provide the highest Metal Removal Rates (MRR) and extended tool life in the most demanding materials in the aerospace industry.



CBN END MILLS



AluSurf™

Pages B28–B30

AluSurf end mills provide extraordinary Metal Removal Rates (MRR) by combining roughing and finishing operations for any aluminum plunging, slotting, and profiling application. Its proprietary flute geometry is designed for rigidity and improved chip evacuation generating exceptional wall-to-floor perpendicularity, even in thin wall applications.



HP ROUGHING

Pages B34–B37

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

HP FINISHING

Pages B32–B33

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



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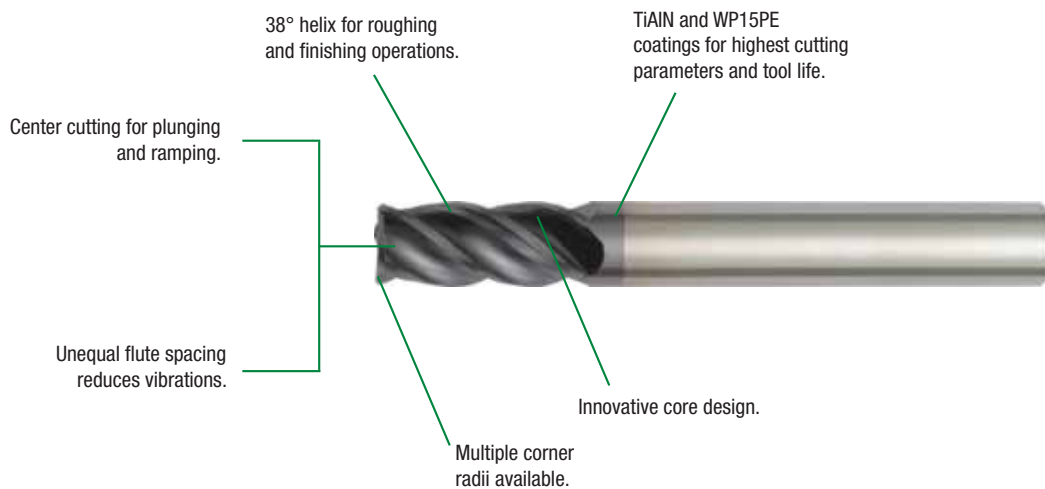
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To learn more, visit widia.com

Four unequally spaced flutes to increase your output with less tool changes and increased Metal Removal Rates (MRR).

Materials:



4V05/4777 Series

- High metal removal rates and tool life in:
 - Stainless steels, steels, and alloyed steels.
 - High-temperature alloys and titanium.
- Radii, sharp, and corner chamfer configurations.



4VP0 Series

- Center cutting ball nose series.
- Benefit from long reach design for deep cavities.



4VP5 Series

- Stainless steel and steel geometry design.
- Sharp and corner chamfer configuration.
- Benefit from long reach design for deep cavities.



4V00 Series

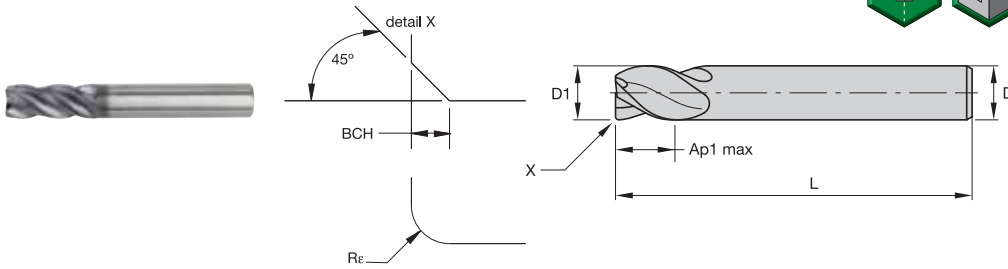
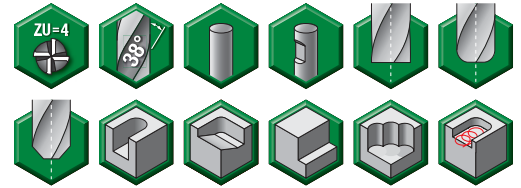
- Center cutting ball nose series.
- Benefit from long length of cut.



4VN5 Series

- Stainless steel and steel geometry design.
- Sharp and corner chamfer configuration.
- Benefit from long reach and neck design for deep cavities.

VariMill I™ • Series 4777 • Metric

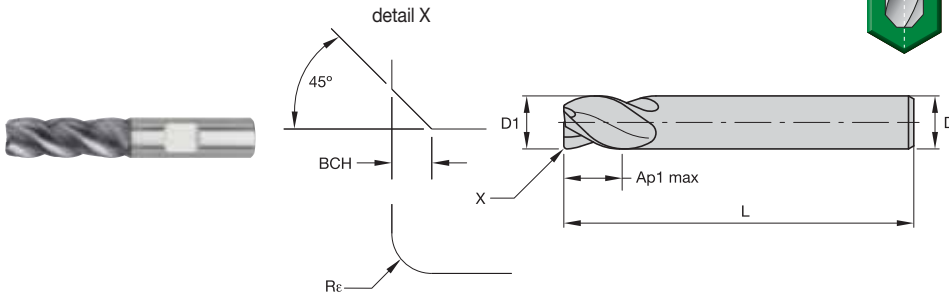
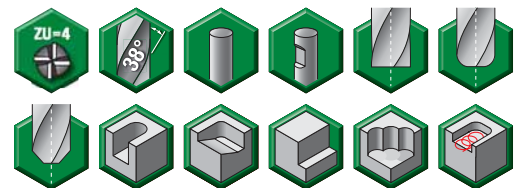


- first choice
- alternate choice

P	●
M	●
K	●
N	○
S	○
H	○

catalog number	D1	D	length of cut Ap1 max	length L	Rε	BCH	WP15PE
4777060R2TE	6,0	6	13,00	57	0,50	—	6471861
477707003T	7,0	8	16,00	63	—	0,40	5576763

VariMill I • Series 4V05 4V15 4V45 4V65 • Inch



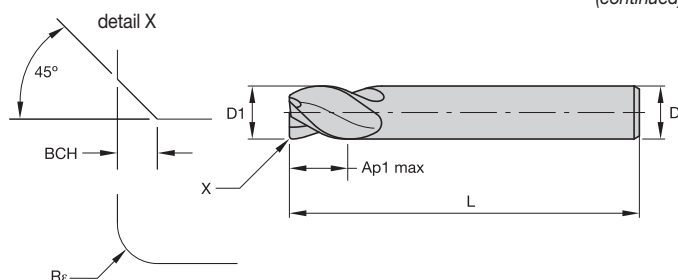
- first choice
- alternate choice

P	●
M	●
K	●
N	○
S	○
H	○

catalog number	D1	D	length of cut Ap1 max	length L	Rε	BCH	SS	WP15PE
4V4503001NT	1/8	1/8	1/4	1 1/2	—	.010	—	5576590
4V4503001ST	1/8	1/8	1/4	1 1/2	—	—	—	5576591
4V0503001AT	1/8	1/8	1/2	2	.015	—	—	5576530
4V0503001ST	1/8	1/8	1/2	2	—	—	—	5576346
4V0503001NT	1/8	1/8	1/2	2	—	.010	—	5576345
4V4505000NT	3/16	3/16	5/16	1 1/2	—	.010	—	5576592
4V4505000ST	3/16	3/16	5/16	1 1/2	—	—	—	5576593
4V0505000AT	3/16	3/16	5/8	2 1/4	.015	—	—	5576531
4V0505000BT	3/16	3/16	5/8	2 1/4	.030	—	—	5576532
4V0505000NT	3/16	3/16	5/8	2 1/4	—	.010	—	5576347
4V0505000ST	3/16	3/16	5/8	2 1/4	—	—	—	5576348
4V4507002BT	1/4	1/4	3/8	2	.030	—	—	5576610
4V4507002NT	1/4	1/4	3/8	2	—	.016	—	5576595
4V4507002ST	1/4	1/4	3/8	2	—	—	—	5576596
4V0507002AT	1/4	1/4	3/4	2 1/2	.015	—	—	5576533
4V0507002BT	1/4	1/4	3/4	2 1/2	.030	—	—	5576534
4V0507002CT	1/4	1/4	3/4	2 1/2	.060	—	—	5576535
4V0507002NT	1/4	1/4	3/4	2 1/2	—	.016	—	5576349
4V0507002ST	1/4	1/4	3/4	2 1/2	—	—	—	5576510
4V1507002AT	1/4	1/4	1 1/4	3 1/4	.015	—	—	5576577

VariMill I™ • Series 4V05 4V15 4V45 4V65 • Inch

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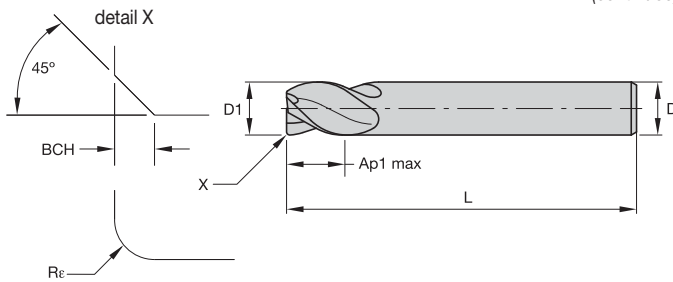
- first choice
- alternate choice

P		●
M		●
K		●
N		○
S		○
H		○

catalog number	D1	D	length of cut Ap1 max	length L	R _ε	BCH	SS	WP15PE
4V1507002BT	1/4	1/4	1 1/4	3 1/4	.030	—	—	5576579
4V1507002ST	1/4	1/4	1 1/4	3 1/4	—	—	—	5576566
4V4508003BT	5/16	5/16	1/2	2	.030	—	—	5576611
4V4508003NT	5/16	5/16	1/2	2	—	.016	—	5576597
4V4508003ST	5/16	5/16	1/2	2	—	—	—	5576598
4V0508003AT	5/16	5/16	3/4	2 1/2	.015	—	—	5576536
4V0508003BT	5/16	5/16	3/4	2 1/2	.030	—	—	5576537
4V0508003CT	5/16	5/16	3/4	2 1/2	.060	—	—	5576538
4V0508003NT	5/16	5/16	3/4	2 1/2	—	.016	—	5576511
4V0508003ST	5/16	5/16	3/4	2 1/2	—	—	—	5576512
4V1508003BT	5/16	5/16	1 1/4	3 1/4	.030	—	—	5576580
4V1508003ST	5/16	5/16	1 1/4	3 1/4	—	—	—	5576567
4V4510004BT	3/8	3/8	1/2	2	.030	—	—	5576612
4V4510004NT	3/8	3/8	1/2	2	—	.020	—	5576599
4V4510004ST	3/8	3/8	1/2	2	—	—	—	5576600
4V0510004AT	3/8	3/8	7/8	2 1/2	.015	—	—	5576539
4V0510004BT	3/8	3/8	7/8	2 1/2	.030	—	—	5576540
4V0510004CT	3/8	3/8	7/8	2 1/2	.060	—	—	5576542
4V0510004DT	3/8	3/8	7/8	2 1/2	.090	—	—	5576543
4V0510004NT	3/8	3/8	7/8	2 1/2	—	.020	—	5576513
4V0510004ST	3/8	3/8	7/8	2 1/2	—	—	—	5576514
4V1510004BT	3/8	3/8	1 1/2	4	.030	—	—	5576581
4V1510004CT	3/8	3/8	1 1/2	4	.060	—	W	5576582
4V1510004ST	3/8	3/8	1 1/2	4	—	—	—	5576568
4V451101ANT	7/16	7/16	5/8	2 1/2	—	.020	—	5576601
4V451101AST	7/16	7/16	5/8	2 1/2	—	—	—	5576602
4V051101ANT	7/16	7/16	7/8	2 1/2	—	.020	—	5576515
4V051101AST	7/16	7/16	7/8	2 1/2	—	—	—	5576516
4V151100AST	7/16	7/16	2	4	—	—	—	5576569
4V4513005BT	1/2	1/2	5/8	2 1/2	.030	—	—	6522632
4V4513005BW	1/2	1/2	5/8	2 1/2	.030	—	W	5576613
4V4513005CW	1/2	1/2	5/8	2 1/2	.060	—	W	5576614
4V4513005NW	1/2	1/2	5/8	2 1/2	—	.020	W	5576604
4V4513005SW	1/2	1/2	5/8	2 1/2	—	—	W	5576605
4V0513005NW	1/2	1/2	1	3	—	.020	W	5576517
4V0513005SW	1/2	1/2	1	3	—	—	W	5576518
4V0513015AW	1/2	1/2	1 1/4	3	.015	—	W	5576544
4V0513015BT	1/2	1/2	1 1/4	3	.030	—	—	6522633
4V0513015BW	1/2	1/2	1 1/4	3	.030	—	W	5576545
4V0513015CW	1/2	1/2	1 1/4	3	.060	—	W	5576546
4V0513015DW	1/2	1/2	1 1/4	3	.090	—	W	5576547
4V0513015EW	1/2	1/2	1 1/4	3	.120	—	W	5576548
4V0513015SW	1/2	1/2	1 1/4	3	—	—	W	5576520
4V0513015NW	1/2	1/2	1 1/4	3	—	.020	W	5576519
4V0513015ST	1/2	1/2	1 1/4	3	—	—	—	6522624
4V6513015BW	1/2	1/2	1 1/2	4	.030	—	W	5576636
4V6513015CW	1/2	1/2	1 1/2	4	.060	—	W	5576637
4V6513015NW	1/2	1/2	1 1/2	4	—	.020	W	5576621
4V6513015SW	1/2	1/2	1 1/2	4	—	—	W	5576622
4V1513005BW	1/2	1/2	2	4	.030	—	W	5576583
4V1513005CW	1/2	1/2	2	4	.060	—	W	5576584
4V1513005SW	1/2	1/2	2	4	—	—	W	5576570
4V6513025BW	1/2	1/2	2 1/4	4 1/2	.030	—	W	5576638
4V6513025CW	1/2	1/2	2 1/4	4 1/2	.060	—	W	5576639
4V6513025SW	1/2	1/2	2 1/4	4 1/2	—	—	W	5576623
4V4516006CW	5/8	5/8	3/4	3	.060	—	W	5576615
4V4516006NW	5/8	5/8	3/4	3	—	.020	W	5576606
4V4516006SW	5/8	5/8	3/4	3	—	—	W	5576607
4V0516006BW	5/8	5/8	1 1/4	3 1/2	.030	—	W	5576549
4V0516006EW	5/8	5/8	1 1/4	3 1/2	.120	—	W	5576552

VariMill I™ • Series 4V05 4V15 4V45 4V65 • Inch

(continued)



● first choice
○ alternate choice

P	Blue	●
M	Yellow	●
K	Red	●
N	Green	○
S	Orange	○
H	Grey	○

catalog number	D1	D	length of cut Ap1 max	length L	Re	BCH	SS	WP15PE
4V0516006NW	5/8	5/8	1 1/4	3 1/2	—	.020	W	5576521
4V0516006SW	5/8	5/8	1 1/4	3 1/2	—	—	W	5576528
4V6516016CW	5/8	5/8	1 5/8	4 1/8	.060	—	W	5576650
4V6516016NW	5/8	5/8	1 5/8	4 1/8	—	.020	W	5576624
4V6516016SW	5/8	5/8	1 5/8	4 1/8	—	—	W	5576625
4V1516006CW	5/8	5/8	2 1/4	5	.060	—	W	5576585
4V1516006SW	5/8	5/8	2 1/4	5	—	—	W	5576572
4V1516006NW	5/8	5/8	2 1/4	5	—	.020	W	5576571
4V4519007BW	3/4	3/4	7/8	3 1/2	.030	—	W	5576618
4V4519007CW	3/4	3/4	7/8	3 1/2	.060	—	W	5576619
4V4519007EW	3/4	3/4	7/8	3 1/2	.120	—	W	5576620
4V4519007NW	3/4	3/4	7/8	3 1/2	—	.020	W	5576608
4V4519007SW	3/4	3/4	7/8	3 1/2	—	—	W	5576609
4V0519007BW	3/4	3/4	1 1/2	4	.030	—	W	5576553
4V0519007CW	3/4	3/4	1 1/2	4	.060	—	W	5576554
4V0519007DW	3/4	3/4	1 1/2	4	.090	—	W	5576555
4V0519007EW	3/4	3/4	1 1/2	4	.120	—	W	5576557
4V0519007NW	3/4	3/4	1 1/2	4	—	.020	W	5576522
4V0519007SW	3/4	3/4	1 1/2	4	—	—	W	5576529
4V6519017BT	3/4	3/4	1 5/8	4	.030	—	—	6522635
4V6519017ET	3/4	3/4	1 5/8	4	.120	—	—	6522655
4V6519017NW	3/4	3/4	1 5/8	4	—	.020	W	5576630
4V6519017SW	3/4	3/4	1 5/8	4	—	—	W	5576631
4V1519007BW	3/4	3/4	2 1/4	5	.030	—	W	5576586
4V1519007CW	3/4	3/4	2 1/4	5	.060	—	W	5576587
4V1519007NW	3/4	3/4	2 1/4	5	—	.020	W	5576573
4V1519007SW	3/4	3/4	2 1/4	5	—	—	W	5576574
4V6519007BW	3/4	3/4	3	6	.030	—	W	5576651
4V6519007NW	3/4	3/4	3	6	—	.020	W	5576626
4V6519007SW	3/4	3/4	3	6	—	—	W	5576627
4V0525008BW	1	1	1 1/2	4	.030	—	W	5576558
4V0525008CW	1	1	1 1/2	4	.060	—	W	5576560
4V0525008SW	1	1	1 1/2	4	—	—	W	5576525
4V0525008NW	1	1	1 1/2	4	—	.020	W	5576523
4V6525018NW	1	1	2	5	—	.020	W	5576632
4V1525008BW	1	1	2 1/4	5	.030	—	W	5576588
4V1525008CW	1	1	2 1/4	5	.060	—	W	5576589
4V1525008SW	1	1	2 1/4	5	—	—	W	5576576
4V1525008NW	1	1	2 1/4	5	—	.020	W	5576575
4V6525028BW	1	1	4	7	.030	—	W	5576653
4V6525028CW	1	1	4	7	.060	—	W	5576654
4V6525028NW	1	1	4	7	—	.020	W	5576634
4V6525028SW	1	1	4	7	—	—	W	5576635

NOTE: SS = Shank Style
W = Weldon®




FOR MORE INFORMATION ON THE PRODUCTS SHOWN, PLEASE SEE PAGES F46–F79 OF THE TECHNICAL CATALOG.

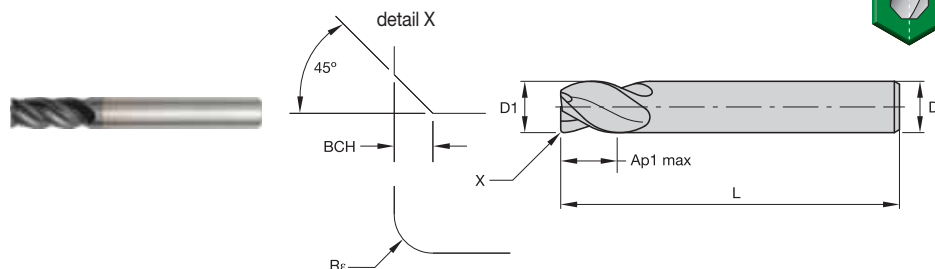
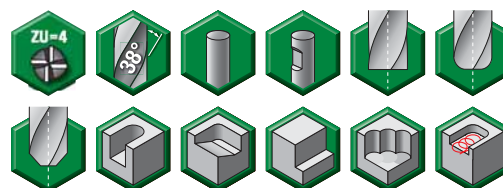
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VariMill I™ • Series 4V05 • Inch



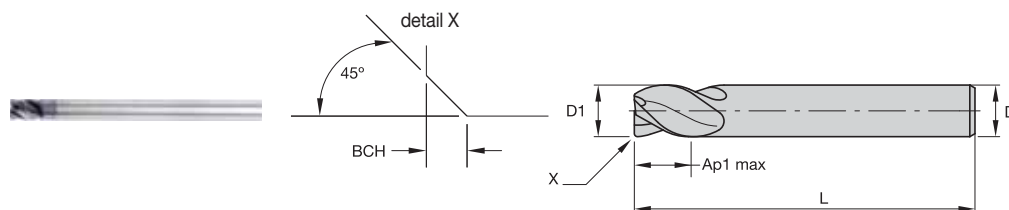
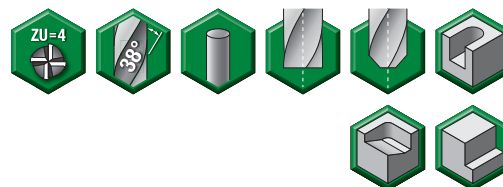
● first choice
○ alternate choice

P	●	●
M	●	●
K	○	○
N	○	○
S	○	○
H	●	●

catalog number	D1	D	length of cut Ap1 max	length L	Rε	BCH	SS	TiAlN-LT	TiAlN-LW
TF4V2507002S	1/4	1/4	1 3/4	4	—	—	—	2837447	—
TF4V2508003S	5/16	5/16	1 5/8	4	—	—	—	2837441	—
TF4V2513005B	1/2	1/2	3	5	.030	—	W	—	3704326
TF4V2513005S	1/2	1/2	3	5	—	—	W	—	2837414
TF4V2516006S	5/8	5/8	3	5 1/4	—	—	W	—	2837408
TF4V2519007S	3/4	3/4	4	6 1/4	—	—	W	—	2837395
TF4V2525008S	1	1	3	6	—	—	W	—	2837384
TF4V2525008	1	1	3	6	—	.020	W	—	2837388

NOTE: SS = Shank Style
W = Weldon®

VariMill I • Series 4VP5 • Inch



● first choice
○ alternate choice

P	●	●
M	●	●
K	○	○
N	○	○
S	○	○
H	●	●

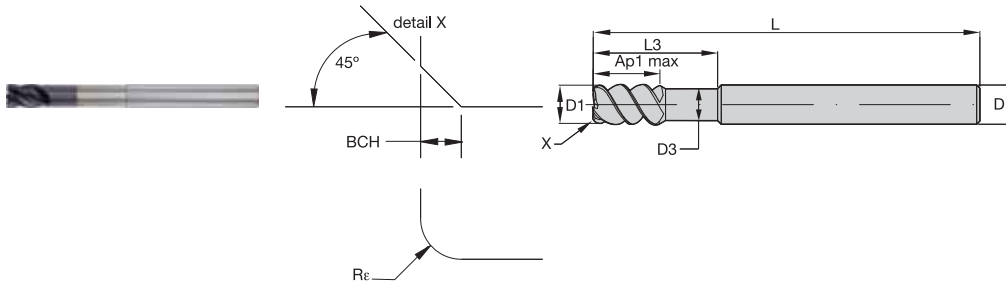
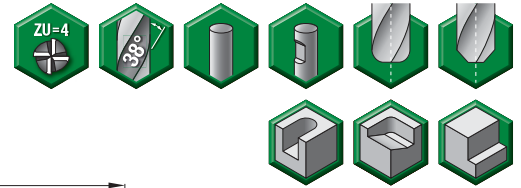
catalog number	D1	D	length of cut Ap1 max	length L	BCH	TiAlN-LT
TF4VP510014S	3/8	3/8	1/2	4	—	2837032
TF4VP513005	1/2	1/2	5/8	5	.020	2837025
TF4VP513015	1/2	1/2	5/8	6	.020	2837007
TF4VP519027	3/4	3/4	1	7	.020	2836916



FOR MORE INFORMATION ON THE PRODUCTS SHOWN, PLEASE SEE PAGES F46–F79 OF THE TECHNICAL CATALOG.

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VariMill I™ • Series 4VN5 • Inch



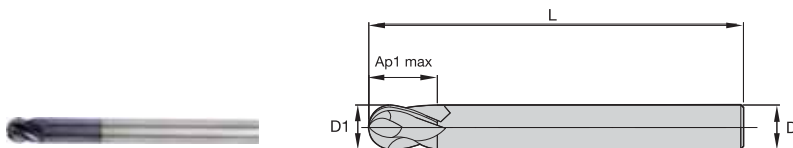
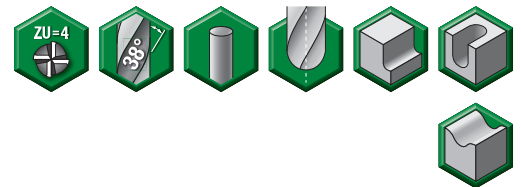
● first choice
○ alternate choice

P	●	●
M	●	●
K	○	○
N	○	○
S	○	○
H	●	●

catalog number	D1	D	D3	length of cut Ap1 max	L3	length L	Rε	BCH	SS	TiAIN-LT	TiAIN-LW
TF4VN507012A	1/4	1/4	.24	3/8	1 1/4	4	.015	—	—	3738940	—
TF4VN507012	1/4	1/4	.24	3/8	1 1/4	4	—	.016	—	2837188	—
TF4VN510014B	3/8	3/8	.35	1/2	1 7/8	4	.030	—	—	3738973	—
TF4VN510014	3/8	3/8	.35	1/2	1 7/8	4	—	.020	—	2837182	—
TF4VN513005B	1/2	1/2	.47	5/8	2 1/4	4	.030	—	W	—	3738975
TF4VN513005E	1/2	1/2	.47	5/8	2 1/4	4	.120	—	W	—	3738977
TF4VN513005	1/2	1/2	.47	5/8	2 1/4	4	—	.020	W	—	2837178
TF4VN516006	5/8	5/8	.59	3/4	2 1/4	4 1/8	—	.020	W	—	2837171
TF4VN516016	5/8	5/8	.59	3/4	3 1/8	5	—	.020	W	—	2837160
TF4VN519007	3/4	3/4	.71	1	2 1/4	4 1/4	—	.020	W	—	2837154
TF4VN519017	3/4	3/4	.71	1	3 1/4	5 1/4	—	.020	W	—	2837146
TF4VN525028	1	1	.94	1 1/8	4 1/4	6 1/2	—	.020	W	—	2837110

NOTE: SS = Shank Style
W = Weldon®

VariMill I • Series 4VP0 • Inch

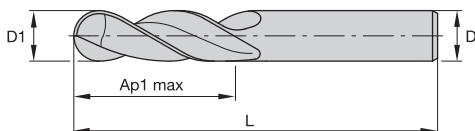
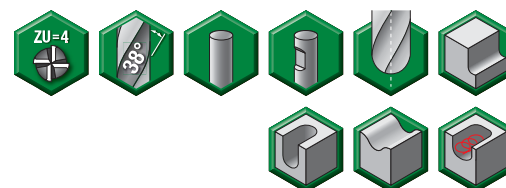


● first choice
○ alternate choice

P	●	●
M	●	●
K	○	○
N	○	○
S	○	○
H	●	●

catalog number	D1	D	length of cut Ap1 max	length L	TiAIN-LT
TF4VP007012	1/4	1/4	3/8	4	2837105
TF4VP010014	3/8	3/8	1/2	4	3018276
TF4VP013005	1/2	1/2	5/8	5	2837088
TF4VP016016	5/8	5/8	3/4	6	2837081
TF4VP019017	3/4	3/4	1	6	2837073

VariMill I™ • Series 4V00 • Inch



- first choice
- alternate choice

P	●
M	●
K	●
N	○
S	○
H	●

catalog number	D1	D	length of cut Ap1 max	length L	SS	WP15PE
4V0003001XT	1/8	1/8	1/2	2	—	5576655
4V0005000XT	3/16	3/16	5/8	2 1/4	—	5576656
4V0007002XT	1/4	1/4	3/4	2 1/2	—	5576658
4V0008003XT	5/16	5/16	3/4	2 1/2	—	5576659
4V0010004XT	3/8	3/8	7/8	2 1/2	—	5576660
4V0013005XW	1/2	1/2	1	3	W	5576662
4V0013015XW	1/2	1/2	1 1/4	3	W	5576663
4V0016006XW	5/8	5/8	1 1/4	3 1/2	W	5576664
4V0019007XW	3/4	3/4	1 1/2	4	W	5576665
4V0025008XW	1	1	1 1/2	4	W	5576666
4V0032009XW	1 1/4	1 1/4	2 1/4	5	W	5576667

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The original variable pitched geometry end mill that revolutionized the industry.



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Propriety geometry is designed for rigidity and improved chip evacuation in roughing and finishing aluminum.



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VariMill II™

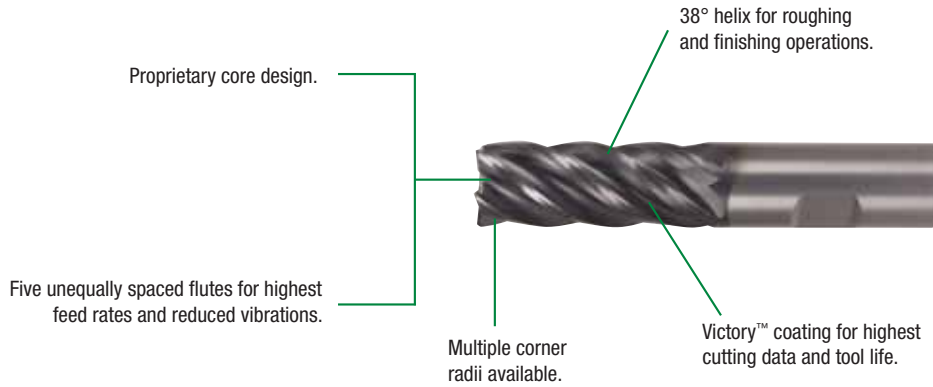
High-Performance Solid Carbide End Mills

Five unequally spaced flutes to increase your output with less tool changes and increased Metal Removal Rates (MRR).

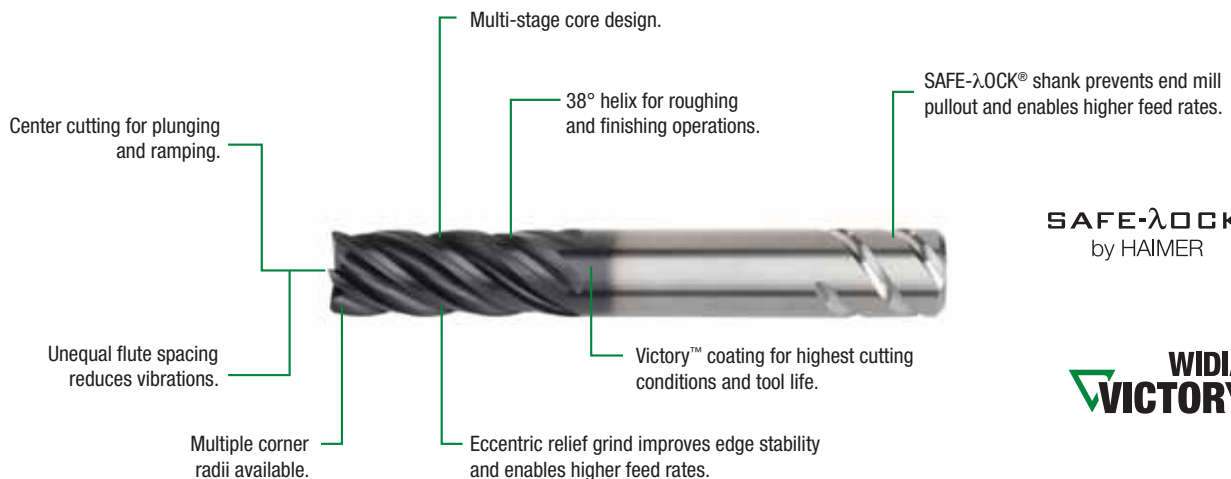
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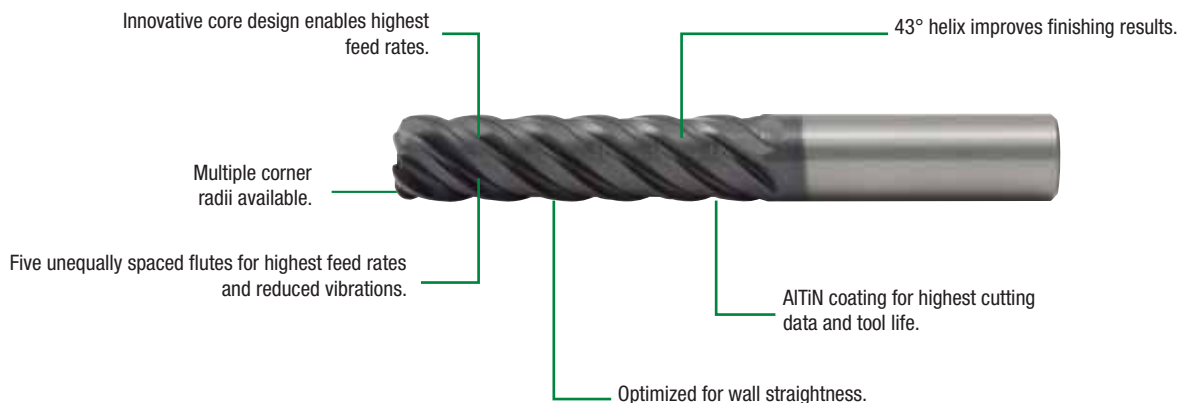
VariMill II™



VariMill II™ ER



VariMill II™ Long



VariMill II™



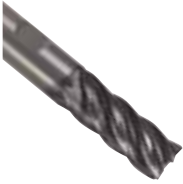
5V0C/577C Series

- High metal removal rates and tool life in:
 - Stainless steels, steels, and alloyed steels.
 - Cast iron.
 - High-temperature alloys and titanium.
- Corner radii and sharp edges.
- Center cutting.



5VNC Series

- Steels, stainless steels, and high-temperature alloys.
- Radii corner and neck design for depths requiring additional passes.
- Center cutting.



TM5V0S

- High metal removal rates and tool life in:
 - Stainless steels, steels, and alloyed steels.
 - Cast iron.
 - High-temperature alloys and titanium.
- Corner radii and sharp edges.
- Non-center cutting.

VariMill II™ ER



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.

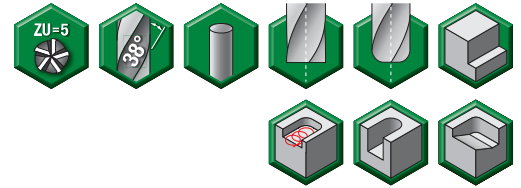
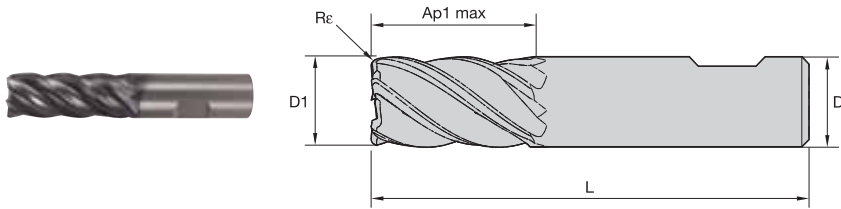
VariMill II™ Long



5W1S Series

- Highest surface quality and tool life in:
 - Titanium.
 - Stainless steels.
- Corner radii and sharp edges.
- 4 x D length of cut.
- Non-center cutting.

VariMill II™ • Series 577 • Metric

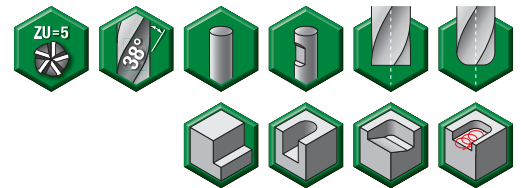
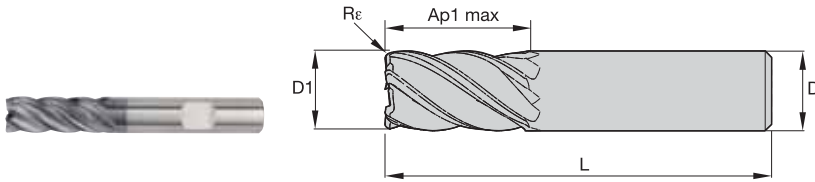


- first choice
- alternate choice

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catalog number	D1	D	length of cut Ap1 max	length L	Re	WP15PE
577716006MT	16,0	16	32,00	92	0,75	3524601

VariMill II • Series 577C • Metric



- first choice
- alternate choice

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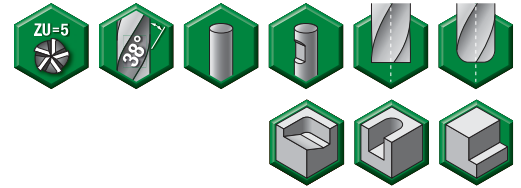
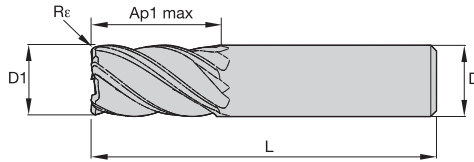
catalog number	D1	D	length of cut Ap1 max	length L	Re	WP15PE
577C050R2TE	5,0	6	13,00	57	0,50	6519448



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VariMill II™ • Series TM5V0S • Inch



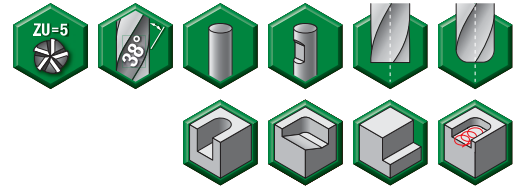
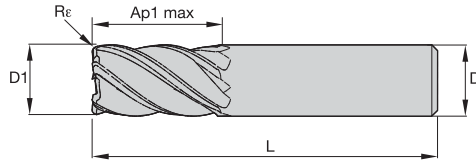
- first choice
- alternate choice

P	●
M	●
K	●
N	○
S	○
H	○

catalog number	D1	D	length of cut Ap1 max	length L	Rε	SS	WP15PE
TM5V0S05000A	3/16	3/16	5/8	2 1/4	.015	—	3552614
TM5V0S05000B	3/16	3/16	5/8	2 1/4	.030	—	3552615
TM5V0S05000S	3/16	3/16	5/8	2 1/4	—	—	3552613
TM5V0S07002A	1/4	1/4	3/4	2 1/2	.015	—	3552617
TM5V0S07002B	1/4	1/4	3/4	2 1/2	.030	—	3552618
TM5V0S07002C	1/4	1/4	3/4	2 1/2	.060	—	3660162
TM5V0S07002S	1/4	1/4	3/4	2 1/2	—	—	3552616
TM5V0S08003A	5/16	5/16	3/4	2 1/2	.015	—	3552585
TM5V0S08003B	5/16	5/16	3/4	2 1/2	.030	—	3552587
TM5V0S08003S	5/16	5/16	3/4	2 1/2	—	—	3552586
TM5V0S10004A	3/8	3/8	7/8	2 1/2	.015	—	3552589
TM5V0S10004B	3/8	3/8	7/8	2 1/2	.030	—	3552590
TM5V0S10004C	3/8	3/8	7/8	2 1/2	.060	—	3660385
TM5V0S10004S	3/8	3/8	7/8	2 1/2	—	—	3552588
TM5V0S13015A	1/2	1/2	1 1/4	3	.015	—	3552620
TM5V0S13015AW	1/2	1/2	1 1/4	3	.015	W	3552580
TM5V0S13015B	1/2	1/2	1 1/4	3	.030	—	3552621
TM5V0S13015BW	1/2	1/2	1 1/4	3	.030	W	3552581
TM5V0S13015C	1/2	1/2	1 1/4	3	.060	—	3660386
TM5V0S13015CW	1/2	1/2	1 1/4	3	.060	W	3660390
TM5V0S13015E	1/2	1/2	1 1/4	3	.120	—	3552622
TM5V0S13015S	1/2	1/2	1 1/4	3	—	—	3552619
TM5V0S16006B	5/8	5/8	1 1/4	3 1/2	.030	—	3552612
TM5V0S16006BW	5/8	5/8	1 1/4	3 1/2	.030	W	3552578
TM5V0S16006S	5/8	5/8	1 1/4	3 1/2	—	—	3552611
TM5V0S16006SW	5/8	5/8	1 1/4	3 1/2	—	W	3552577
TM5V0S19007B	3/4	3/4	1 1/2	4	.030	—	3552592
TM5V0S19007BW	3/4	3/4	1 1/2	4	.030	W	3552538
TM5V0S19007S	3/4	3/4	1 1/2	4	—	—	3552591
TM5V0S25008B	1	1	1 3/4	4 1/2	.030	—	3552607

NOTE: SS = Shank Style
W = Weldon

VariMill II™ • Series 5VOC • Inch



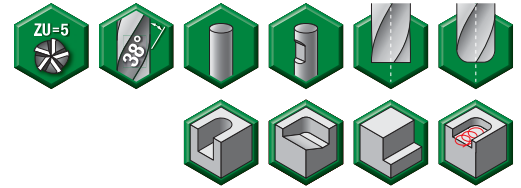
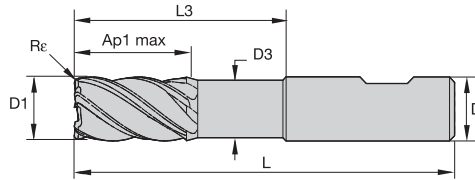
● first choice
○ alternate choice

P	●
M	●
K	●
N	○
S	○
H	○

catalog number	D1	D	length of cut Ap1 max	length L	Re	SS	WP15PE
5VOC05000AT	3/16	3/16	5/8	2 1/4	.015	—	5577051
5VOC05000BT	3/16	3/16	5/8	2 1/4	.030	—	5577052
5VOC05000ST	3/16	3/16	5/8	2 1/4	—	—	5577053
5V4C07002AT	1/4	1/4	3/8	2	.015	—	6513585
5V4C07002ST	1/4	1/4	3/8	2	—	—	6513584
5VOC07002AT	1/4	1/4	3/4	2 1/2	.015	—	5577054
5VOC07002BT	1/4	1/4	3/4	2 1/2	.030	—	5577055
5VOC07002CT	1/4	1/4	3/4	2 1/2	.060	—	5577056
5VOC07002ST	1/4	1/4	3/4	2 1/2	—	—	5577057
5VOC08003AT	5/16	5/16	3/4	2 1/2	.015	—	5577058
5VOC08003BT	5/16	5/16	3/4	2 1/2	.030	—	5577059
5VOC08003CT	5/16	5/16	3/4	2 1/2	.060	—	5577100
5VOC08003ST	5/16	5/16	3/4	2 1/2	—	—	5577101
5V4C10004ST	3/8	3/8	1/2	2	—	—	6513590
5VOC10004AT	3/8	3/8	7/8	2 1/2	.015	—	5577102
5VOC10004BT	3/8	3/8	7/8	2 1/2	.030	—	5577103
5VOC10004CT	3/8	3/8	7/8	2 1/2	.060	—	5577104
5VOC10004ST	3/8	3/8	7/8	2 1/2	—	—	5577105
5V1C10014AT	3/8	3/8	1 1/4	3	.015	—	6513594
5V1C10014BT	3/8	3/8	1 1/4	3	.030	—	6513595
5V4C13015BT	1/2	1/2	5/8	2 1/2	.030	—	6517095
5VOC13005ST	1/2	1/2	1	3	—	—	6517097
5VOC13015AW	1/2	1/2	1 1/4	3	.015	W	5577107
5VOC13015AT	1/2	1/2	1 1/4	3	.015	—	5577106
5VOC13015BT	1/2	1/2	1 1/4	3	.030	—	5577108
5VOC13015BW	1/2	1/2	1 1/4	3	.030	W	5577109
5VOC13015CW	1/2	1/2	1 1/4	3	.060	W	5577111
5VOC13015CT	1/2	1/2	1 1/4	3	.060	—	5577110
5VOC13015DT	1/2	1/2	1 1/4	3	.090	—	5577112
5VOC13015DW	1/2	1/2	1 1/4	3	.090	W	5577113
5VOC13015ET	1/2	1/2	1 1/4	3	.120	—	5577114
5VOC13015ST	1/2	1/2	1 1/4	3	—	—	5577116
5VOC13015SW	1/2	1/2	1 1/4	3	—	W	5577117
5V1C13015AT	1/2	1/2	1 5/8	4	.015	—	6517100
5V1C13015BT	1/2	1/2	1 5/8	4	.030	—	6517111
5V1C13015ST	1/2	1/2	1 5/8	4	—	—	6517099
5V1C13025ET	1/2	1/2	2 1/8	4	.120	—	6517116
5V1C13025ST	1/2	1/2	2 1/8	4	—	—	6517113
5VOC16006BW	5/8	5/8	1 1/4	3 1/2	.030	W	5577119
5VOC16006BT	5/8	5/8	1 1/4	3 1/2	.030	—	5577118
5VOC16006CW	5/8	5/8	1 1/4	3 1/2	.060	W	5577131
5VOC16006CT	5/8	5/8	1 1/4	3 1/2	.060	—	5577130
5VOC16006ST	5/8	5/8	1 1/4	3 1/2	—	—	5577134
5VOC16006SW	5/8	5/8	1 1/4	3 1/2	—	W	5577135
5VOC19007BT	3/4	3/4	1 1/2	4	.030	—	5577136
5VOC19007BW	3/4	3/4	1 1/2	4	.030	W	5577137
5VOC19007CT	3/4	3/4	1 1/2	4	.060	—	5577138
5VOC19007CW	3/4	3/4	1 1/2	4	.060	W	5577139
5VOC19007DW	3/4	3/4	1 1/2	4	.090	W	5577161
5VOC19007ET	3/4	3/4	1 1/2	4	.120	—	5577162
5VOC19007EW	3/4	3/4	1 1/2	4	.120	W	5577163
5VOC19007ST	3/4	3/4	1 1/2	4	—	—	5577164
5VOC19007SW	3/4	3/4	1 1/2	4	—	W	5577165
5VOC19027BT	3/4	3/4	1 3/4	4	.030	—	6517141
5VOC25008BW	1	1	1 3/4	4 1/2	.030	W	5577167
5VOC25008BT	1	1	1 3/4	4 1/2	.030	—	5577166
5VOC25008CT	1	1	1 3/4	4 1/2	.060	—	5577168
5VOC25008EW	1	1	1 3/4	4 1/2	.120	W	5577183
5VOC25008ST	1	1	1 3/4	4 1/2	—	—	5577184
5VOC25008SW	1	1	1 3/4	4 1/2	—	W	5577185

NOTE: SS = Shank Style
W = Weldon®

VariMill II™ • Series 5VNC • Inch



- first choice
- alternate choice

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catalog number	D1	D	D3	length of cut Ap1 max	L3	length L	Re	SS	WP15PE
5VNC07012AT	1/4	1/4	.24	1/2	1.250	4	.015	—	5594727
5VNC10014AT	3/8	3/8	.35	7/8	1.875	4	.015	—	5594728
5VNC13005BT	1/2	1/2	.47	1 1/4	2.250	4	.030	—	5594729
5VNC13005BW	1/2	1/2	.47	1 1/4	2.250	4	.030	W	5594850
5VNC19017BT	3/4	3/4	.71	1 1/2	3.250	5 1/2	.030	—	5594853
5VNC19017BW	3/4	3/4	.71	1 1/2	3.250	5 1/2	.030	W	5594854

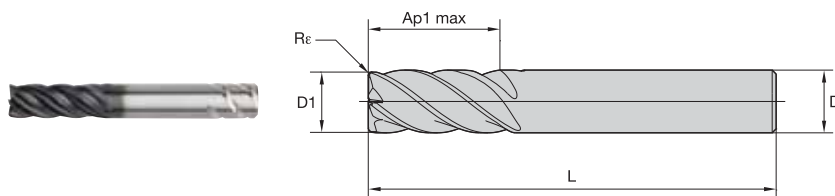
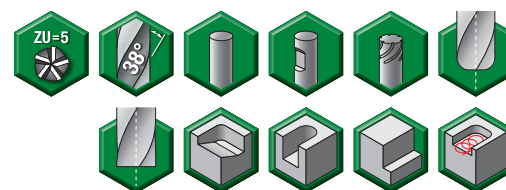
NOTE: SS = Shank Style
W = Weldon



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VariMill II ER • Series 5VOE • Inch



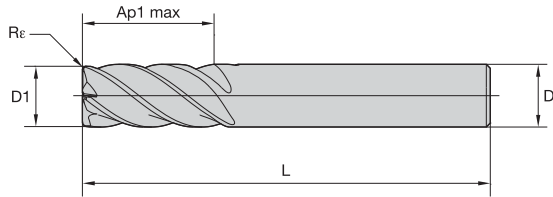
- first choice
- alternate choice

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catalog number	D1	D	length of cut Ap1 max	length L	Re	SS	WS15PE
5V4E05000ST	3/16	3/16	5/16	2	—	—	6146483
5V0E05000AT	3/16	3/16	9/16	2	.015	—	6146487
5V0E05000ST	3/16	3/16	9/16	2	—	—	6146486
5V1E05000AT	3/16	3/16	3/4	2 1/2	.015	—	6146490
5V1E05000ST	3/16	3/16	3/4	2 1/2	—	—	6146489
5V4E07002AT	1/4	1/4	3/8	2	.015	—	6146523
5V4E07002BT	1/4	1/4	3/8	2	.030	—	6146524
5V4E07002CT	1/4	1/4	3/8	2	.060	—	6146525
5V4E07002ST	1/4	1/4	3/8	2	—	—	6146522
5V0E07002AT	1/4	1/4	3/4	2 1/2	.015	—	6146528
5V0E07002BT	1/4	1/4	3/4	2 1/2	.030	—	6146529
5V0E07002CT	1/4	1/4	3/4	2 1/2	.060	—	6146530
5V0E07002ST	1/4	1/4	3/4	2 1/2	—	—	6146526
5V1E07002ST	1/4	1/4	1 1/8	3	—	—	6146531
5V0E08003AT	5/16	5/16	13/16	2 1/2	.015	—	6146536
5V0E08003ST	5/16	5/16	13/16	2 1/2	—	—	6146535
5V4E10004AT	3/8	3/8	1/2	2	.015	—	6146540
5V4E10004BT	3/8	3/8	1/2	2	.030	—	6146541
5V4E10004CT	3/8	3/8	1/2	2	.060	—	6146542
5V4E10004ST	3/8	3/8	1/2	2	—	—	6146539
5V0E10004AT	3/8	3/8	7/8	2 1/2	.015	—	5594857
5V0E10004BT	3/8	3/8	7/8	2 1/2	.030	—	5594858
5V0E10004ST	3/8	3/8	7/8	2 1/2	—	—	5594859
5V0E10014AT	3/8	3/8	1	2 1/2	.015	—	6146545
5V0E10014BT	3/8	3/8	1	2 1/2	.030	—	6146546
5V0E10014CT	3/8	3/8	1	2 1/2	.060	—	6146547
5V0E10014ET	3/8	3/8	1	2 1/2	.120	—	6146548
5V0E10014ST	3/8	3/8	1	2 1/2	—	—	6146544
5V1E10004AT	3/8	3/8	1	3	.015	—	6146550
5V1E10004BT	3/8	3/8	1	3	.030	—	6146551
5V1E10004ST	3/8	3/8	1	3	—	—	6146549
5V4E13015AV	1/2	1/2	5/8	2 1/2	.015	V	6146552
5V4E13015BV	1/2	1/2	5/8	2 1/2	.030	V	6146553
5V4E13015CV	1/2	1/2	5/8	2 1/2	.060	V	6146554
5V4E13015SV	1/2	1/2	5/8	2 1/2	—	V	6146557
5V0E13005BT	1/2	1/2	1	3	.030	—	6146558
5V0E13005CT	1/2	1/2	1	3	.060	—	6146559
5V0E13005ET	1/2	1/2	1	3	.120	—	6146560
5V0E13005ST	1/2	1/2	1	3	—	—	6146561
5V0E13015AW	1/2	1/2	1 1/4	3	.015	W	5594861
5V0E13015AV	1/2	1/2	1 1/4	3	.015	V	5594860
5V0E13015AT	1/2	1/2	1 1/4	3	.015	—	6146562
5V0E13015BT	1/2	1/2	1 1/4	3	.030	—	6146563
5V0E13015BW	1/2	1/2	1 1/4	3	.030	W	5594863
5V0E13015BV	1/2	1/2	1 1/4	3	.030	V	5594862
5V0E13015CW	1/2	1/2	1 1/4	3	.060	W	5594865
5V0E13015CT	1/2	1/2	1 1/4	3	.060	—	6146564
5V0E13015CV	1/2	1/2	1 1/4	3	.060	V	5594864
5V0E13015ET	1/2	1/2	1 1/4	3	.120	—	6146566
5V0E13015EV	1/2	1/2	1 1/4	3	.120	V	5594868
5V0E13015EW	1/2	1/2	1 1/4	3	.120	W	5594869
5V0E13015ST	1/2	1/2	1 1/4	3	—	—	6146567
5V0E13015SV	1/2	1/2	1 1/4	3	—	V	5594870
5V0E13015SW	1/2	1/2	1 1/4	3	—	W	5594871
5V1E13015BT	1/2	1/2	1 5/8	4	.030	—	6146568
5V1E13015CT	1/2	1/2	1 5/8	4	.060	—	6146569

VariMill II™ ER • Series 5VOE • Inch

(continued)



- first choice
- alternate choice

P	<input type="radio"/>
M	<input type="radio"/>
K	<input type="radio"/>
N	<input type="radio"/>
S	<input checked="" type="radio"/>
H	<input type="radio"/>

catalog number	D1	D	length of cut Ap1 max	length L	Re	SS	WS15PE
5V1E13015ET	1/2	1/2	1 5/8	4	.120	—	6146570
5V1E13015ST	1/2	1/2	1 5/8	4	—	—	6146571
5V4E16006BV	5/8	5/8	3/4	3	.030	V	6146572
5V0E16006BT	5/8	5/8	1 1/4	3 1/2	.030	—	6146576
5V0E16006BV	5/8	5/8	1 1/4	3 1/2	.030	V	5594872
5V0E16006BW	5/8	5/8	1 1/4	3 1/2	.030	W	5594873
5V0E16006CV	5/8	5/8	1 1/4	3 1/2	.060	V	5594874
5V0E16006CW	5/8	5/8	1 1/4	3 1/2	.060	W	5594875
5V0E16006CT	5/8	5/8	1 1/4	3 1/2	.060	—	6146577
5V0E16006ET	5/8	5/8	1 1/4	3 1/2	.120	—	6146578
5V0E16006SV	5/8	5/8	1 1/4	3 1/2	—	V	5594876
5V0E16006SW	5/8	5/8	1 1/4	3 1/2	—	W	5594877
5V1E16006BV	5/8	5/8	1 5/8	3 1/2	.030	V	6146580
5V1E16006CV	5/8	5/8	1 5/8	3 1/2	.060	V	6146581
5V1E16006EV	5/8	5/8	1 5/8	3 1/2	.120	V	6146584
5V6E16006BT	5/8	5/8	2 5/8	5	.030	—	6525209
5V0E19007BV	3/4	3/4	1 1/2	4	.030	V	5594878
5V0E19007BT	3/4	3/4	1 1/2	4	.030	—	6146591
5V0E19007BW	3/4	3/4	1 1/2	4	.030	W	5594879
5V0E19007CV	3/4	3/4	1 1/2	4	.060	V	5594880
5V0E19007CT	3/4	3/4	1 1/2	4	.060	—	6146592
5V0E19007CW	3/4	3/4	1 1/2	4	.060	W	5594881
5V0E19007DW	3/4	3/4	1 1/2	4	.090	W	5594883
5V0E19007EV	3/4	3/4	1 1/2	4	.120	V	5594884
5V0E19007EW	3/4	3/4	1 1/2	4	.120	W	5594885
5V0E19007FW	3/4	3/4	1 1/2	4	.250	W	6146590
5V0E19007SV	3/4	3/4	1 1/2	4	—	V	5594886
5V0E19007SW	3/4	3/4	1 1/2	4	—	W	5594887
5V0E19007ST	3/4	3/4	1 1/2	4	—	—	6146594
5V0E19017BV	3/4	3/4	1 5/8	4	.030	V	6146595
5V0E19017CV	3/4	3/4	1 5/8	4	.060	V	6146596
5V0E19017SV	3/4	3/4	1 5/8	4	—	V	6146598
5V1E19007CV	3/4	3/4	2 1/4	5	.060	V	6146599
5V1E19007EV	3/4	3/4	2 1/4	5	.120	V	6146600
5V1E19007SV	3/4	3/4	2 1/4	5	—	V	6146601
5V2E19007BT	3/4	3/4	3 1/4	6	.030	—	6525261
5V0E25008BV	1	1	1 3/4	4 1/2	.030	V	5594888
5V0E25008BW	1	1	1 3/4	4 1/2	.030	W	5594889
5V0E25008CV	1	1	1 3/4	4 1/2	.060	V	5594890
5V0E25008EW	1	1	1 3/4	4 1/2	.120	W	5594893
5V0E25008EV	1	1	1 3/4	4 1/2	.120	V	5594892
5V0E25008SV	1	1	1 3/4	4 1/2	—	V	5594896
5V1E25008BW	1	1	3 1/4	6	.030	W	6146610
5V1E25008BT	1	1	3 1/4	6	.030	—	6525267
5V1E25008EW	1	1	3 1/4	6	.120	W	6146613
5V1E25008SW	1	1	3 1/4	6	—	W	6146615

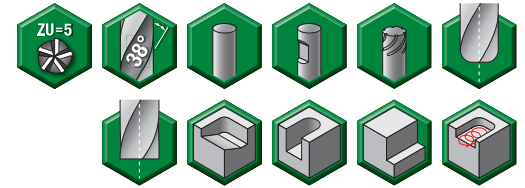
NOTE: SS = Shank Style
W = Weldon®
V = Safe-Lock™



FOR MORE INFORMATION ON THE PRODUCTS SHOWN, PLEASE SEE PAGES F46–F79 OF THE TECHNICAL CATALOG.

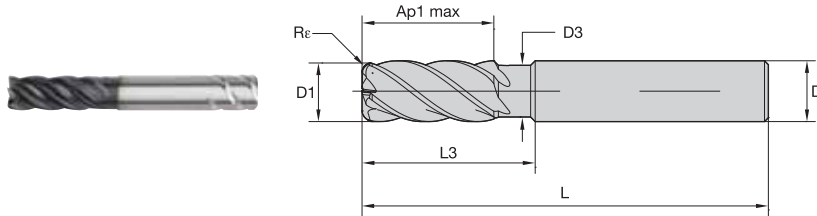
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VariMill II™ ER • Series 5VNE • Inch



- first choice
- alternate choice

P	<input type="radio"/>
M	<input type="radio"/>
K	<input type="radio"/>
N	<input type="radio"/>
S	<input checked="" type="radio"/>
H	<input type="radio"/>



catalog number	D1	D	D3	length of cut Ap1 max	L3	length L	Re	SS	WS15PE
5VNE10014AT	3/8	3/8	.35	7/8	1.875	4	.015	—	5594898
5VNE13015EV	1/2	1/2	.47	5/8	.875	5	.120	V	6168962
5VNE13005AT	1/2	1/2	.47	1 1/4	2.250	4	.015	—	6168954
5VNE13005BW	1/2	1/2	.47	1 1/4	2.250	4	.030	W	5594900
5VNE13005BV	1/2	1/2	.47	1 1/4	2.250	4	.030	V	5594899
5VNE13005CT	1/2	1/2	.47	1 1/4	2.250	4	.060	—	6168955
5VNE13005DT	1/2	1/2	.47	1 1/4	2.250	4	.090	—	6168956
5VNE16006BV	5/8	5/8	.59	1 1/4	2.250	4	.030	V	5594901
5VNE16006BW	5/8	5/8	.59	1 1/4	2.250	4	.030	W	5594902
5VNE19017BV	3/4	3/4	.71	1 1/2	3.250	5 1/2	.030	V	5594903
5VNE19017BW	3/4	3/4	.71	1 1/2	3.250	5 1/2	.030	W	5594904
5VNE19027CV	3/4	3/4	.71	1 1/2	3.250	6	.060	V	6168983
5VNE19027EV	3/4	3/4	.71	1 1/2	3.250	6	.120	V	6168985
5VNE25028CV	1	1	.94	1 1/4	3.250	6	.060	V	6169006
5VNE25048SV	1	1	.94	1 1/4	1.750	8	—	V	6169008
5VNE25018BW	1	1	.94	1 3/4	3.250	5 1/2	.030	W	5594906

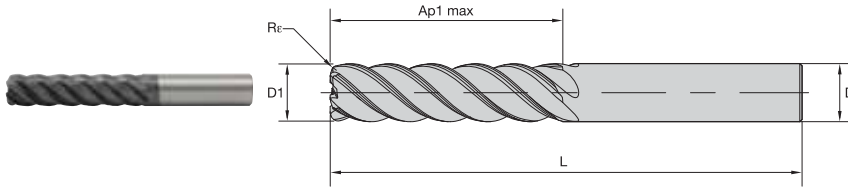
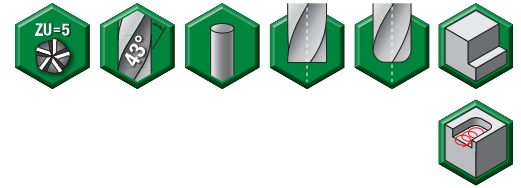
NOTE: SS = Shank Style
W = Weldon®
V = Safe-Lock™



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VariMill II™ Long • Series 5W1S • Inch



- first choice
- alternate choice

P	<input checked="" type="checkbox"/>	●
M	<input type="checkbox"/>	○
K	<input type="checkbox"/>	○
N	<input type="checkbox"/>	○
S	<input checked="" type="checkbox"/>	●
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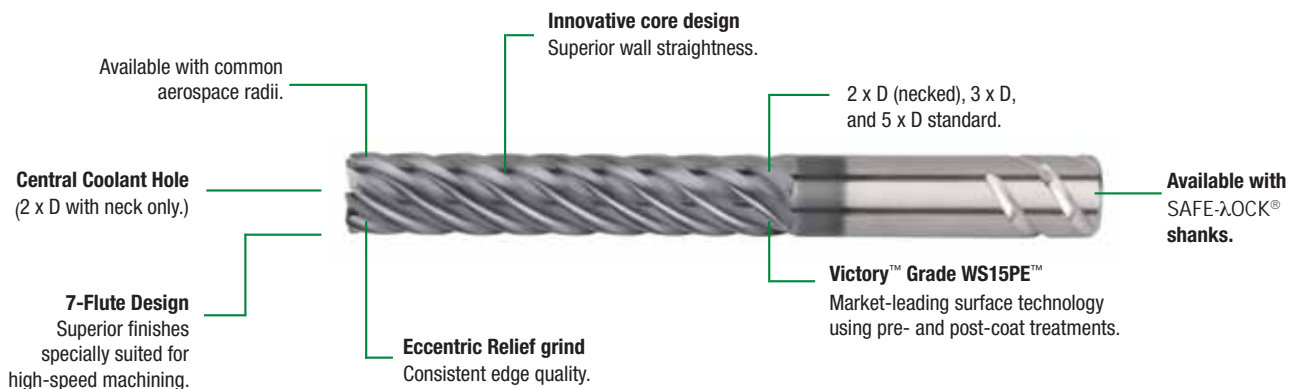
catalog number	D1	D	length of cut Ap1 max	length L	Re	AlTiN-MT
TM5W1S07002S	1/4	1/4	1	3	—	5095167
TM5W1S10004A	3/8	3/8	1 1/2	4	.015	5095345
TM5W1S10004B	3/8	3/8	1 1/2	4	.030	5095346
TM5W1S13005A	1/2	1/2	2	5	.015	5095420
TM5W1S13005B	1/2	1/2	2	5	.030	5095421
TM5W1S13005C	1/2	1/2	2	5	.060	5095422
TM5W1S13005S	1/2	1/2	2	5	—	5095348
TM5W1S16006A	5/8	5/8	2 1/2	5 1/4	.015	5095425
TM5W1S16006B	5/8	5/8	2 1/2	5 1/4	.030	5095426
TM5W1S16006E	5/8	5/8	2 1/2	5 1/4	.120	5095428
TM5W1S16006S	5/8	5/8	2 1/2	5 1/4	—	5095423
TM5W1S19007B	3/4	3/4	3	6	.030	5095472
TM5W1S19007C	3/4	3/4	3	6	.060	5095473
TM5W1S19007E	3/4	3/4	3	6	.120	5095474
TM5W1S19007S	3/4	3/4	3	6	—	5095429
TM5W1S25008B	1	1	4	7	.030	5095530

VariMill III™ ER

High-Performance Solid Carbide End Mills

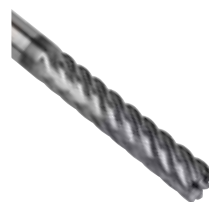
Seven unequally spaced flutes to increase productivity using high-speed machining techniques such as trochoidal and peel milling.

Materials:



7VNX Series

- Titanium and stainless steel geometry design.
- Corner radii.
- 2 x D length of cut.
- Necked 5 x D reach.
- Central coolant hole.
- SAFE-LOCK®.
- Non-center cutting.



7V2E/772E Series

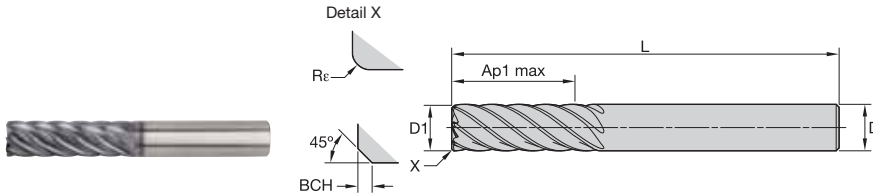
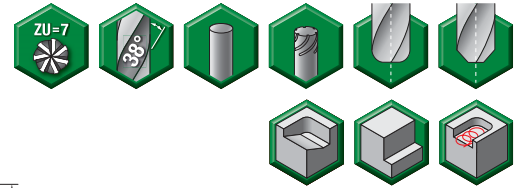
- Titanium and stainless steel geometry design.
- Corner radii.
- 5 x D length of cut.
- Center cutting.
- SAFE-LOCK®.
- Center cutting.



7V1E/771E Series

- Titanium and stainless steel geometry design.
- Corner radii.
- 3 x D length of cut.
- Center cutting.
- SAFE-LOCK®.
- Center cutting.

VariMill III™ ER • Series 771E 772E • Metric

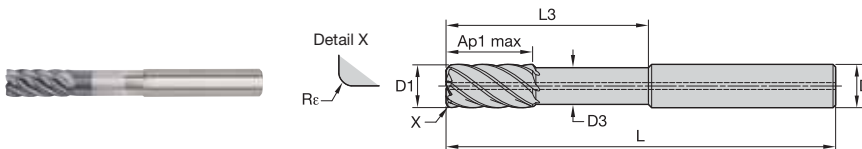
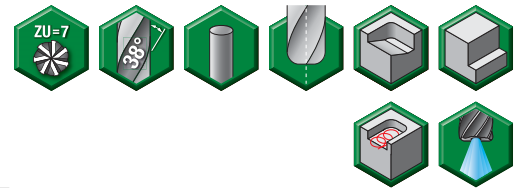


- first choice
- alternate choice

P	<input type="radio"/>
M	<input type="radio"/>
K	<input type="radio"/>
N	<input type="radio"/>
S	<input checked="" type="radio"/>
H	<input type="radio"/>

catalog number	D1	D	length of cut Ap1 max	length L	Re	BCH	WS15PE
771E12025T	12,0	12	36,00	100	0,50	—	5978099
771E20027T	20,0	20	60,00	125	0,50	—	5978115

VariMill III ER • Series 7VNX • Inch



- first choice
- alternate choice

P	<input type="radio"/>
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K	<input type="radio"/>
N	<input type="radio"/>
S	<input checked="" type="radio"/>
H	<input type="radio"/>

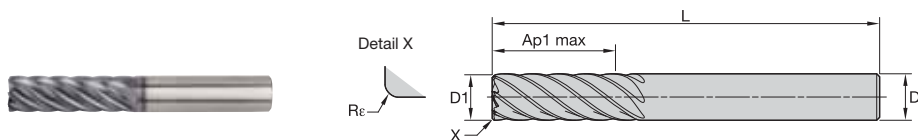
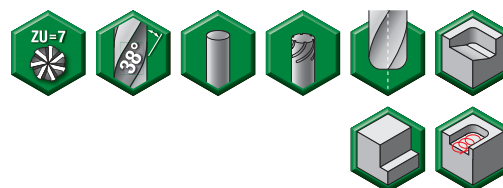
catalog number	D1	D	D3	length of cut Ap1 max	L3	length L	Re	WS15PE
7VNX10004BT	3/8	3/8	.35	3/4	2.125	4	.030	5971349
7VNX13005BT	1/2	1/2	.47	1	2.375	4 1/2	.030	5971424
7VNX19007ET	3/4	3/4	.71	1 1/2	3.125	5 1/2	.120	5971441



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VariMill III™ ER • Series 7V1E 7V2E • Inch



- first choice
- alternate choice

P		<input type="radio"/>
M		<input type="radio"/>
K		<input type="radio"/>
N		<input type="radio"/>
S		<input checked="" type="radio"/>
H		<input type="radio"/>

catalog number	D1	D	length of cut Ap1 max	length L	Rε	SS	WS15PE
7V0E10004AT	3/8	3/8	7/8	2 1/2	.015	—	6566337
7V1E10004AT	3/8	3/8	1 1/8	3	.015	—	5971350
7V1E10004BT	3/8	3/8	1 1/8	3	.030	—	5971421
7V2E10004BT	3/8	3/8	1 7/8	4	.030	—	5971423
7V0E13005BT	1/2	1/2	1 1/4	3	.030	—	6566411
7V0E13005ST	1/2	1/2	1 1/4	3	—	—	6566340
7V1E13005BT	1/2	1/2	1 1/2	3 1/2	.030	—	5971427
7V1E13005CT	1/2	1/2	1 1/2	3 1/2	.060	—	5971428
7V1E13005ET	1/2	1/2	1 1/2	3 1/2	.120	—	5971429
7V2E13005BV	1/2	1/2	2 1/2	4 1/2	.030	V	5971430
7V2E13005CV	1/2	1/2	2 1/2	4 1/2	.060	V	5971431
7V1E16006BT	5/8	5/8	1 7/8	4	.030	—	5971435
7V1E16006CT	5/8	5/8	1 7/8	4	.060	—	5971436
7V2E16006BV	5/8	5/8	3 1/8	5 1/2	.030	V	5971437
7V0E19007BT	3/4	3/4	1 3/4	4	.030	—	6566416
7V1E19007BT	3/4	3/4	2 1/4	5	.030	—	5971445
7V1E19007BV	3/4	3/4	2 1/4	5	.030	V	5971448
7V1E19007CV	3/4	3/4	2 1/4	5	.060	V	5971449
7V1E19007CT	3/4	3/4	2 1/4	5	.060	—	5971446
7V1E19007ET	3/4	3/4	2 1/4	5	.120	—	5971447
7V1E19007EV	3/4	3/4	2 1/4	5	.120	V	5971450
7V2E19007BV	3/4	3/4	3 3/4	6	.030	V	5971451
7V2E19007CV	3/4	3/4	3 3/4	6	.060	V	5971452
7V2E19007EV	3/4	3/4	3 3/4	6	.120	V	5971453
7V1E25008CV	1	1	3	5 1/2	.060	V	5971457
7V1E25008CT	1	1	3	5 1/2	.060	—	5971456
7V2E25008CV	1	1	5	7 1/2	.060	V	5971458

NOTE: SS = Shank Style
V = Safe-Lock™



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Engine Components



Integral Blade Rotor
(IBR)



Single Blade



Bracket



Depressor
Fine Seal



WIDIA™ Offers Machining Strategies and Innovative Tooling Technology that Reduces Cycle Time and Increases Cost Savings.

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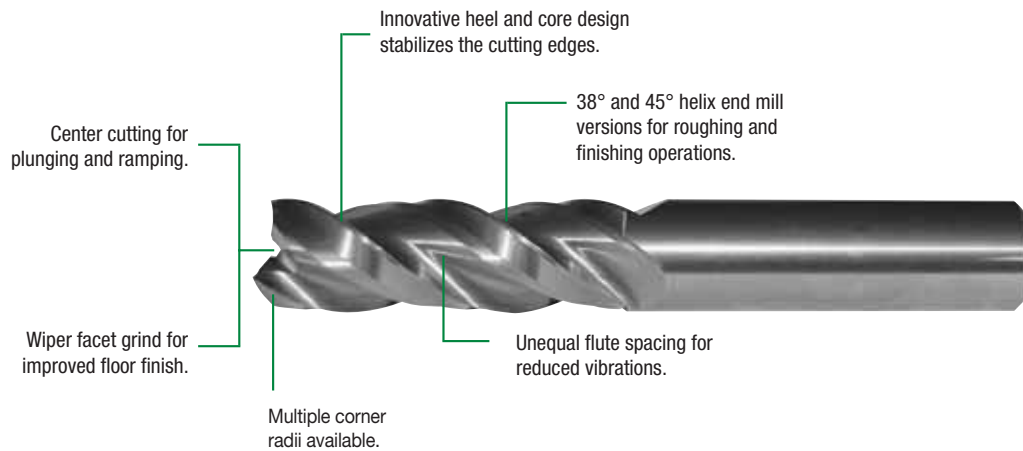
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A wiper facet grind provides a superior floor surface finish.

Materials:



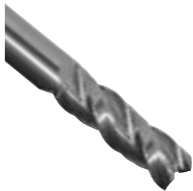
5A02 Series

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



5AN2 Series

- 2 flute, 45° helix.
- Extended neck for long-reach applications.
- Radii and sharp corner configuration.



5A03 Series

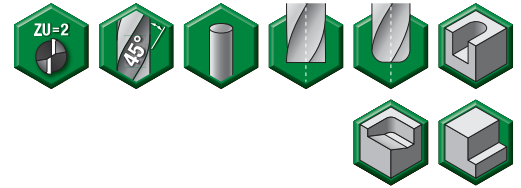
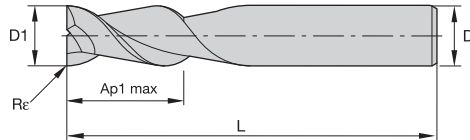
- 3 flute, 38° helix.
- Unequal flute spacing.
- Radii and sharp corner configuration.



5AN3 Series

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

Series 5A02 • Aluminum • Inch

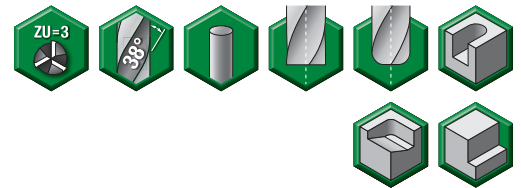
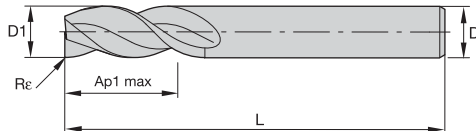


- first choice
- alternate choice

P	Blue	
M	Yellow	
K	Red	
N	Green	●
S	Orange	
H	Grey	

catalog number	D1	D	length of cut Ap1 max	length L	Re	UNCOATED
5A0207002	1/4	1/4	1/2	2 1/2	—	3336098
5A0210004	3/8	3/8	3/4	2 1/2	—	3336102
5A0213015E	1/2	1/2	1 1/4	3	.120	3649753
5A0213015	1/2	1/2	1 1/4	3	—	3336104

Series 5A03 • Aluminum • Inch



- first choice
- alternate choice

P	Blue	
M	Yellow	
K	Red	
N	Green	●
S	Orange	
H	Grey	

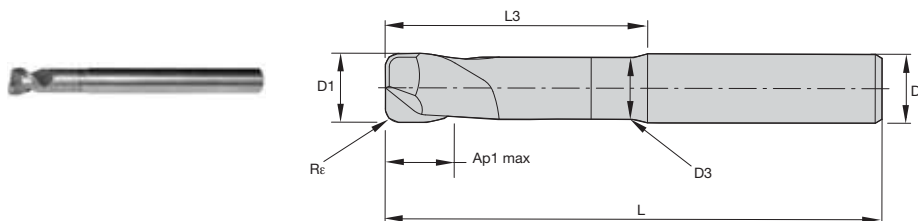
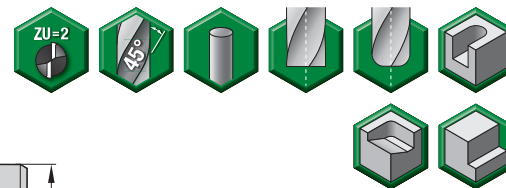
catalog number	D1	D	length of cut Ap1 max	length L	Re	UNCOATED
5A0307002B	1/4	1/4	1/2	2 1/2	.030	3649758
5A0307002C	1/4	1/4	1/2	2 1/2	.060	3738929
5A0307002	1/4	1/4	1/2	2 1/2	—	3336112
5A0308003	5/16	5/16	5/8	2 1/2	—	3336114
5A0310004B	3/8	3/8	3/4	2 1/2	.030	3336117
5A0310004C	3/8	3/8	3/4	2 1/2	.060	3649759
5A0310004	3/8	3/8	3/4	2 1/2	—	3336116
5A0313015B	1/2	1/2	1 1/4	3	.030	3336119
5A0313015C	1/2	1/2	1 1/4	3	.060	3649760
5A0313015D	1/2	1/2	1 1/4	3	.090	3739147
5A0313015E	1/2	1/2	1 1/4	3	.120	3649761
5A0313015	1/2	1/2	1 1/4	3	—	3336118
5A0316006	5/8	5/8	1 1/4	3 1/2	—	3336120
5A0319007E	3/4	3/4	1 1/2	4	.120	3649763
5A0319007	3/4	3/4	1 1/2	4	—	3336122
5A0325008C	1	1	1 1/2	4	.060	3336125



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Series 5AN2 • Aluminum • Inch

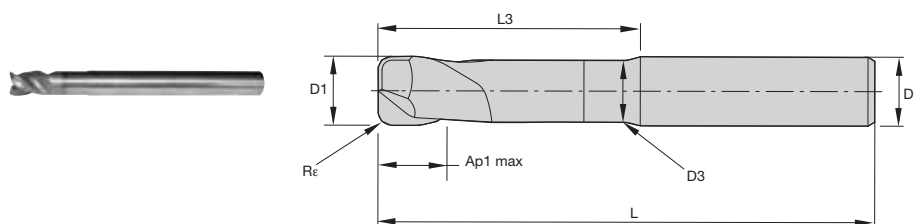
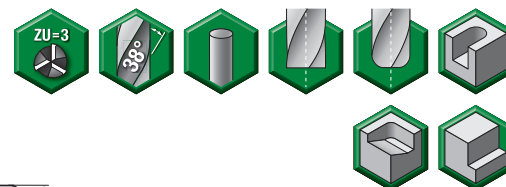


- first choice
- alternate choice

P	Blue	
M	Yellow	
K	Red	
N	Green	●
S	Orange	
H	Grey	

catalog number	D1	D	D3	length of cut Ap1 max	L3	length L	Re	UNCOATED
5AN205042A	3/16	1/4	.18	1/4	9/16	3	.015	3336001
5AN207042	1/4	1/4	.23	5/16	3/4	3	—	3659287
5AN207012	1/4	1/4	.23	3/8	2 1/4	4	—	3659288
5AN207012B	1/4	1/4	.23	3/8	2 1/4	4	.030	3683906
5AN213045	1/2	1/2	.47	9/16	1 1/2	5	—	3659292

Series 5AN3 • Aluminum • Inch



- first choice
- alternate choice

P	Blue	
M	Yellow	
K	Red	
N	Green	●
S	Orange	
H	Grey	

catalog number	D1	D	D3	length of cut Ap1 max	L3	length L	Re	UNCOATED
5AN303042A	1/8	1/4	.12	3/16	1/2	3	.015	3336089
5AN305042A	3/16	1/4	.18	1/4	9/16	3	.015	3336090
5AN310014B	3/8	3/8	.35	7/16	2 1/4	4	.030	3684127
5AN310014	3/8	3/8	.35	7/16	2 1/4	4	—	3474847
5AN310044B	3/8	3/8	.35	7/16	1 1/8	4	.030	3336093
5AN313005B	1/2	1/2	.47	9/16	2 1/4	5	.030	3684131
5AN313005	1/2	1/2	.47	9/16	2 1/4	5	—	3664611
5AN313015B	1/2	1/2	.47	9/16	3 1/4	6	.030	3684144
5AN313045	1/2	1/2	.47	9/16	1 1/2	5	—	3664610
5AN319067	3/4	3/4	.70	1	4 1/4	7	—	3664641

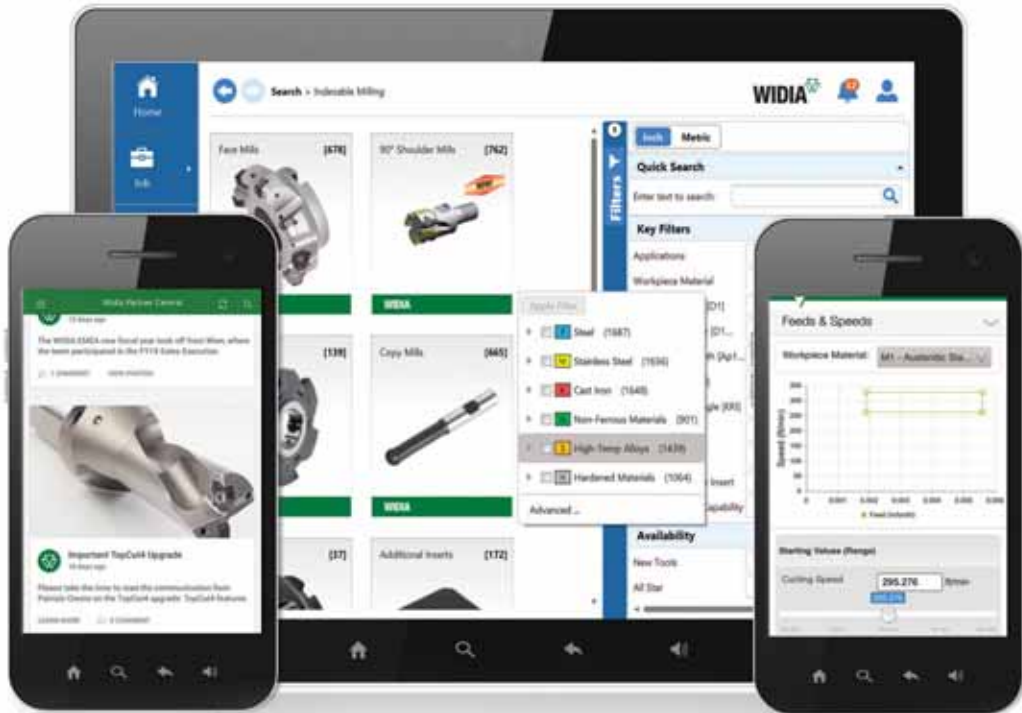


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PRODUCT DATA

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- Feeds and Speeds
- Inventory Availability
- ...and More!

ELECTRONIC CATALOG

- Complete cutting tool assortment, cutting data, and 2D/3D models.
- Build cutting tool assemblies for easy import into CAD/CAM software, pre-setters, and tool management systems.

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- News and updates about our products and services.
- Partner Resources — training, product sheets, marketing templates, campaign collateral, emails, branding elements, merchandise, upcoming webinars, etc.

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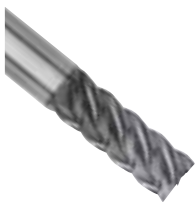
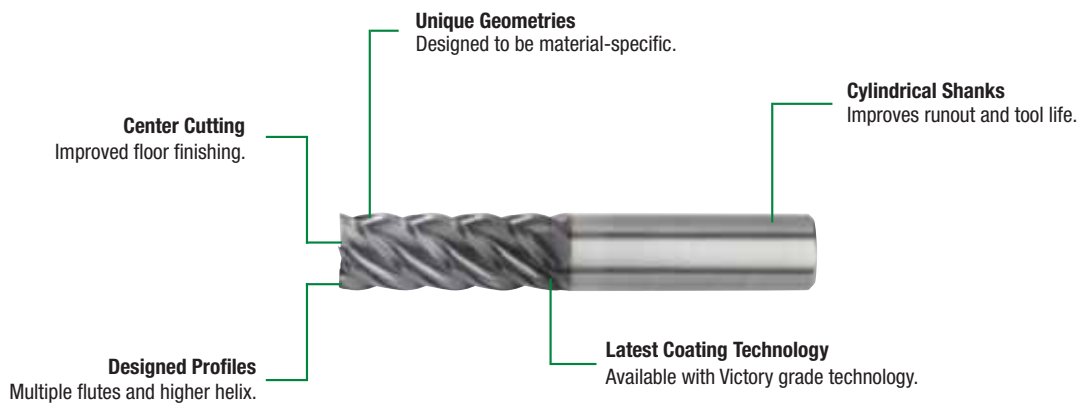
WIDIA 

HP Finishers

High-Performance Solid Carbide End Mills • Finishing

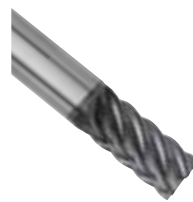
Specific geometries, with the latest coating technology, including Victory™ grades, targeted for steels, stainless steels, high-temperature alloys, and titanium.

Materials:



4C05 4C15 Series

- Center cutting.
- 5 flute.
- High helix.
- Works in a variety of workpiece materials.
- Light finishing cuts.



4S07 Series

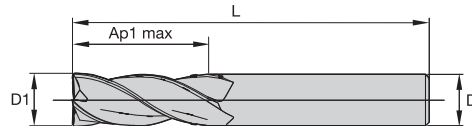
- Center cutting.
- 6 flute.
- High helix.
- Use for super finishing in multiple workpiece materials.

Series 4C05 4C15 • Inch



- first choice
- alternate choice

P	●
M	○
K	○
N	○
S	○
H	●



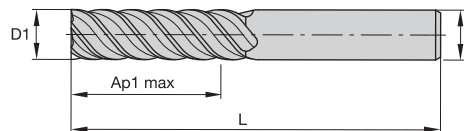
catalog number	D1	D	length of cut Ap1 max	length L	WP15PE
4C0503001ST	1/8	1/8	1/2	1 1/2	5577187
4C0505000ST	3/16	3/16	5/8	2	5577188
4C0507002ST	1/4	1/4	3/4	2 1/2	5577189
4C1507002ST	1/4	1/4	1 1/4	4	5577247
4C0510004ST	3/8	3/8	7/8	2 1/2	5577241
4C1510004ST	3/8	3/8	1 1/2	4	5577249
4C0513005ST	1/2	1/2	1	3	5577242
4C0513015ST	1/2	1/2	1 1/4	3	5577243
4C1513005ST	1/2	1/2	2	4 1/2	5577250
4C0516006ST	5/8	5/8	1 1/4	3 1/2	5577244
4C0519007ST	3/4	3/4	1 1/2	4	5577245
4C1519007ST	3/4	3/4	2 1/4	5	5577252
4C1525008ST	1	1	2 1/4	5	5577253

Series 4S07 • Inch



- first choice
- alternate choice

P	●
M	○
K	○
N	○
S	○
H	●



catalog number	D1	D	length of cut Ap1 max	length L	WP15PE
4S0707002ST	1/4	1/4	3/4	2 1/2	5577255
4S0710004ST	3/8	3/8	7/8	2 1/2	5577254
4S0713005ST	1/2	1/2	1	3	5577258
4S0716006ST	5/8	5/8	1 1/4	3 1/2	5577259
4S0719007ST	3/4	3/4	1 1/2	4	5577260



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HP Rougher

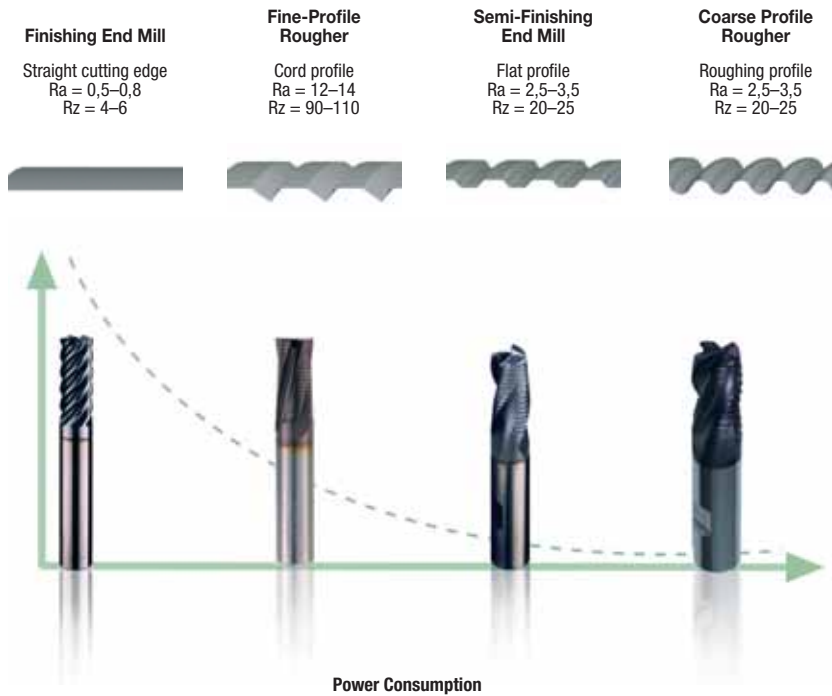
High-Performance Solid Carbide End Mills • Roughing







Reduce machine time with heavier, deeper cuts requiring fewer passes while lowering power consumption.

Materials:



Rougher Profiles



- 
Coarse profile
 For slotting, pocketing, and heavy profile cuts in ferrous materials.
- 
Fine profile
 For profile cuts and shallow slots (less than .50) in ferrous materials.
- 
Extra-Fine profile
 For profiling cuts in medium to hard steels.
- 
Chamfered profile
 For machining non-ferrous materials.
- 
Flat shallow profile
 For machining alloyed steels, stainless steels, high-temp alloys, titanium, and hard materials.
- 
Chipbreaker profile
 For roughing and semi-finishing.



4Q03/4Q43/4Q05 Series

- Center cutting.
- Chipbreaker profile.
- All ferrous workpiece materials.



4M0R/4M4R/4976/4U70 Series

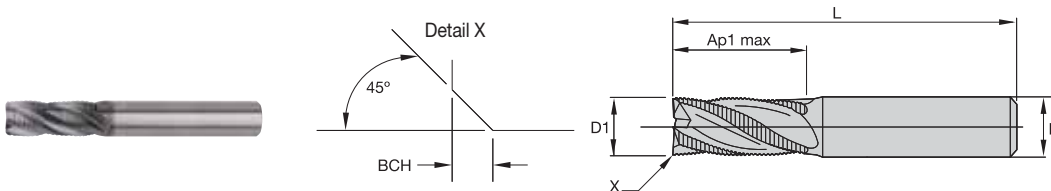
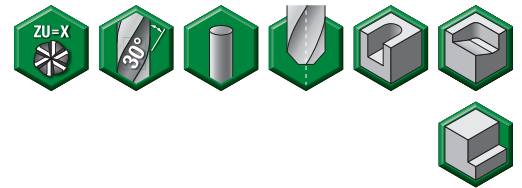
- Center cutting.
- Flat shallow profile.
- Steels, stainless steel, and high-temperature alloys.



4S0R Series

- Center cutting.
- Fine profile.
- All ferrous workpiece materials.

Series 4976 • Metric

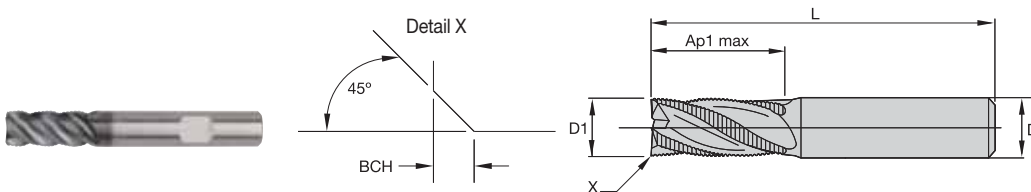
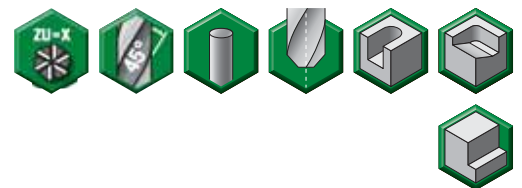


● first choice
○ alternate choice

P	<input checked="" type="checkbox"/>
M	<input checked="" type="checkbox"/>
K	<input checked="" type="checkbox"/>
N	<input type="checkbox"/>
S	<input type="checkbox"/>
H	<input checked="" type="checkbox"/>

catalog number	D1	D	length of cut Ap1 max	length L	BCH	ZU	WP15PE
497606002T	6,0	6	13,00	57	0,30	3	5560710

Series 4U70 • Metric



● first choice
○ alternate choice

P	<input type="checkbox"/>
M	<input checked="" type="checkbox"/>
K	<input type="checkbox"/>
N	<input type="checkbox"/>
S	<input type="checkbox"/>
H	<input checked="" type="checkbox"/>

catalog number	D1	D	length of cut Ap1 max	length L	BCH	ZU	WP15PE
4U7020047T	20,0	20	38,00	104	1,00	4	5583433

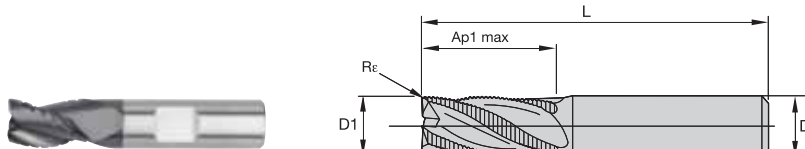
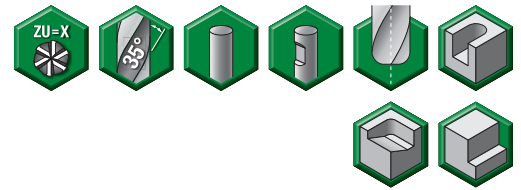


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High-Performance Solid Carbide End Mills • Roughing

Series 4Q03 4Q05 4Q43 • Inch



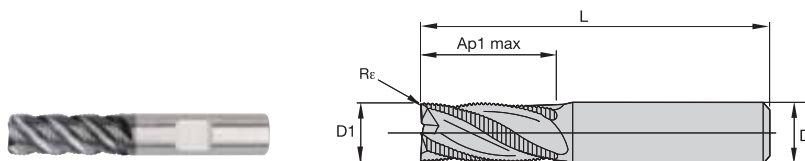
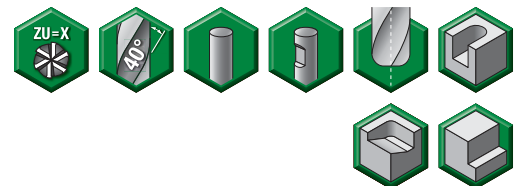
- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	○
H	○

catalog number	D1	D	length of cut Ap1 max	length L	Re	ZU	SS	WP15PE
4Q4305000XW	3/16	3/16	5/16	2	.010	3	—	5576744
4Q0305000XT	3/16	3/16	5/8	2	.010	3	—	5576674
4Q0307002XW	1/4	1/4	3/4	2 1/2	.020	3	W	5576675
4Q0310014XW	3/8	3/8	1	2 1/2	.020	3	W	5576677
4Q0313015BW	1/2	1/2	1 1/4	3	.030	3	W	5576678
4Q0525008BW	1	1	2	4	.030	4	W	5576743

NOTE: SS = Shank Style
W = Weldon

Series 4M0R 4M4R • Inch



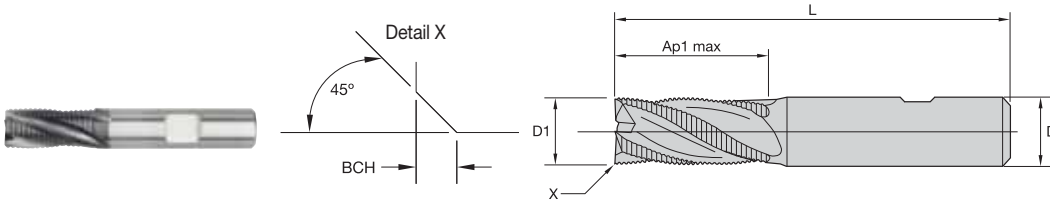
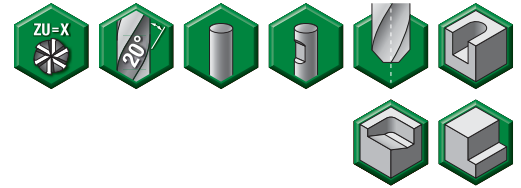
- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	○
H	●

catalog number	D1	D	length of cut Ap1 max	length L	Re	ZU	SS	WP15PE
4M4R07002BT	1/4	1/4	3/8	2	.030	3	—	5577384
4M0R07002BT	1/4	1/4	3/4	2 1/2	.030	4	—	5577315
4M4R10004BT	3/8	3/8	1/2	2	.030	4	—	5577385
4M0R10004BT	3/8	3/8	7/8	2 1/2	.030	4	—	5577316
4M4R13005XW	1/2	1/2	5/8	2 1/2	.040	4	W	5577386
4M0R13005XW	1/2	1/2	1 1/4	3	.040	4	W	5577317
4M4R19009XW	3/4	3/4	7/8	3 1/2	.050	4	W	5577388
4M0R19007XW	3/4	3/4	1 1/2	4	.050	4	W	5577380
4M0R19017XW	3/4	3/4	1 1/2	4	.050	6	W	5577381
4M0R25008XW	1	1	1 1/2	4	.050	4	W	5577382
4M0R25018XW	1	1	1 1/2	4	.050	6	W	5577383

NOTE: SS = Shank Style
W = Weldon

Series 4SOR • Inch



- first choice
- alternate choice

P	<input checked="" type="checkbox"/>
M	<input type="checkbox"/>
K	<input type="checkbox"/>
N	<input type="checkbox"/>
S	<input type="checkbox"/>
H	<input checked="" type="checkbox"/>

catalog number	D1	D	length of cut Ap1 max	length L	BCH	ZU	SS	WP15PE
TR4S4R07002	1/4	1/4	3/8	2	.012	3	W	2831385
4S0R07002NT	1/4	1/4	3/4	2 1/2	.012	3	—	5577389
TR4S4R10004	3/8	3/8	1/2	2	.020	4	W	1952552
4S0R10004NW	3/8	3/8	7/8	2 1/2	.020	4	W	5577390
TR4S4R13005	1/2	1/2	5/8	2 1/2	.020	4	W	1952593
4S0R13005NW	1/2	1/2	1	3	.020	4	W	5577391
4S0R16006NW	5/8	5/8	1 1/4	3 1/2	.020	4	W	5577392
TR4S4R19007	3/4	3/4	7/8	3 1/2	.020	4	W	2831355
4S0R19007NW	3/4	3/4	1 1/2	4	.020	4	W	5577393
4S0R25018NW	1	1	1 1/2	4	.020	4	W	5577395

NOTE: SS = Shank Style
W = Weldon®



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GENERAL PURPOSE SOLID CAR

2-FLUTE GP

Pages B40–B41

- Series I2S
- Series I2B



3-FLUTE GP

Pages B40, B42

- Series I3S





4-FLUTE GP

Pages B40, B42–B46

- Series 4004/4014/4024
- Series D010
- Series 4000/4010
- Series I4S
- Series I4B
- Series I4R

WIDIA-Hanita™ General Purpose End Mills offer 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.

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Download for iOS or Android:
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General Purpose End Mills

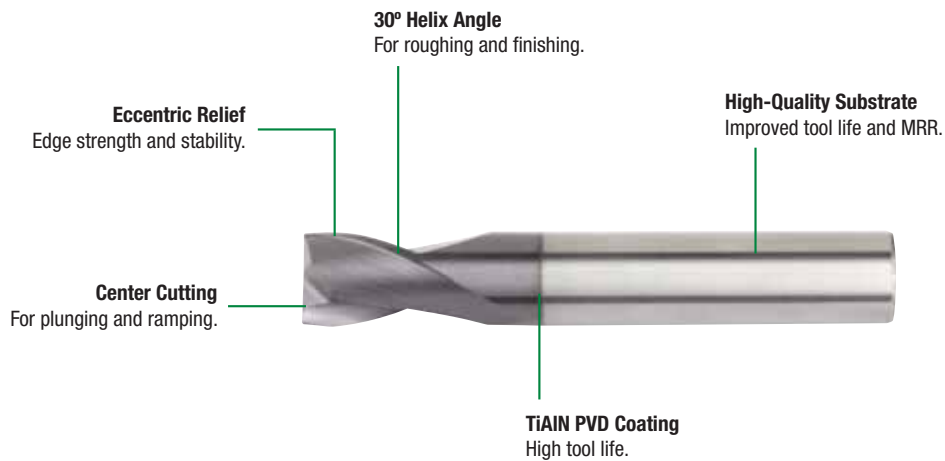
2-, 3-, and 4-Flute General Purpose Solid Carbide End Mills

A wide range of diameters, lengths, and corner styles (such as chamfered, sharp edge, and ball nose) are available from stock.

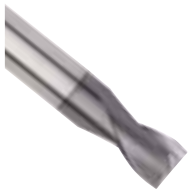
2-, 4-Flute Materials:



3-Flute Materials:



2-Flute



I2S Series

- Wide range of lengths-of-cut — short, regular, long, and extra long.
- Steel, stainless steel, and cast iron.
- Center cut.

4-Flute



I4S/4004/4014/4024 Series

- Wide range of lengths-of-cut — short, regular, long, and extra long.
- Steel, stainless steel, and cast iron.



I2B Series

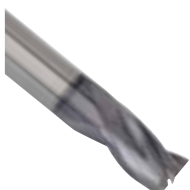
- Wide range of lengths-of-cut — short, regular, long, and extra long.
- Steel, stainless steel, and cast iron.
- Center cut ball nose.



I4B/D010/4000/4010 Series

- Wide range of lengths-of-cut — short, regular, long, and extra long.
- Steel, stainless steel, and cast iron.
- Center cut ball nose.

3-Flute



I3S..S Series

- 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.



I4R Series

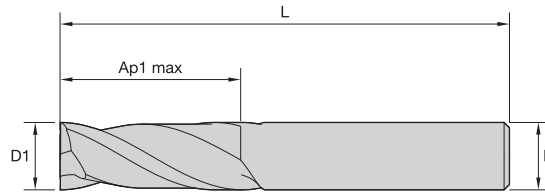
- Regular length-of-cut with corner radius.
- Steel, stainless steel, and cast iron.
- Center cut.

Series I2S • Inch



● first choice
○ alternate choice

P	●	●
M	●	●
K	●	●
N	●	●
S	●	●
H	●	●



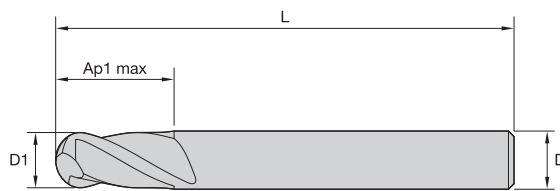
catalog number	D1	D	length of cut Ap1 max	length L	UNCOATED	TIALN
I2S0062T012R	1/16	1/8	1/8	1 1/2	5873661	—
I2S0062T018L	1/16	1/8	3/16	1 1/2	5873650	—
I2S0062T050X	1/16	1/8	1/2	2	—	5872797
I2S0094T037R	3/32	1/8	3/8	1 1/2	5873665	5872800
I2S0094T062L	3/32	1/8	5/8	2	—	5872841
I2S0125T025S	1/8	1/8	1/4	1 1/2	—	5872844
I2S0125T050R	1/8	1/8	1/2	1 1/2	5873669	5872845
I2S0125T075L	1/8	1/8	3/4	2 1/4	—	5872846
I2S0188T062R	3/16	3/16	5/8	2	5873676	5872853
I2S0250T050S	1/4	1/4	1/2	2	5873681	5872858
I2S0250T075R	1/4	1/4	3/4	2 1/2	5873682	5872859
I2S0250T112R	1/4	1/4	1 1/8	3	—	5872860
I2S0312T081R	5/16	5/16	13/16	2 1/2	5873687	5872863
I2S0375T100R	3/8	3/8	1	2 1/2	5873692	5872868
I2S0375T112R	3/8	3/8	1 1/8	3	—	5872869
I2S0437T100R	7/16	7/16	1	2 1/2	—	5872884
I2S0500T100R	1/2	1/2	1	3	5873713	5872889
I2S0500T200L	1/2	1/2	2	4	—	5872890
I2S0562T125L	9/16	9/16	1 1/4	3 1/2	—	5872893

Series I2B • Inch



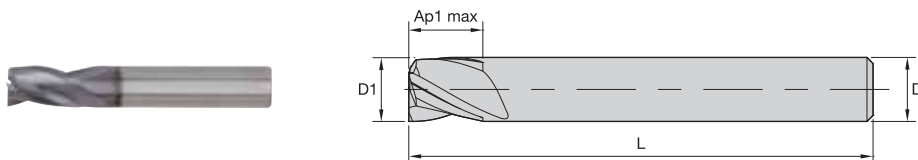
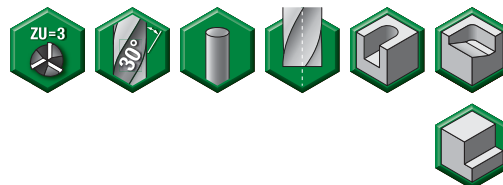
● first choice
○ alternate choice

P	●	●
M	●	●
K	●	●
N	●	●
S	●	●
H	●	●



catalog number	D1	D	length of cut Ap1 max	length L	TIALN
I2B0031T007R	1/32	1/8	5/64	1 1/2	5878172
I2B0062T018R	1/16	1/8	3/16	1 1/2	5878173
I2B0093T037L	3/32	1/8	3/8	1 1/2	5878177
I2B0125T025S	1/8	1/8	1/4	1 1/2	5878179
I2B0125T050R	1/8	1/8	1/2	1 1/2	5878180
I2B0187T062R	3/16	3/16	5/8	2	5878186
I2B0187T100X	3/16	3/16	1	4	5878188
I2B0250T050S	1/4	1/4	1/2	2	5878190
I2B0250T075R	1/4	1/4	3/4	2 1/2	5878191
I2B0375T087R	3/8	3/8	7/8	2 1/2	5878200
I2B0500T100R	1/2	1/2	1	3	5878207

Series I3S • Inch

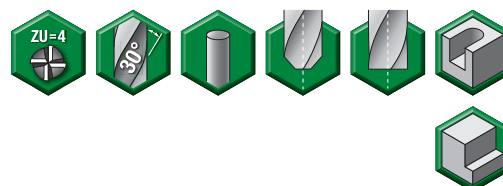


● first choice
○ alternate choice

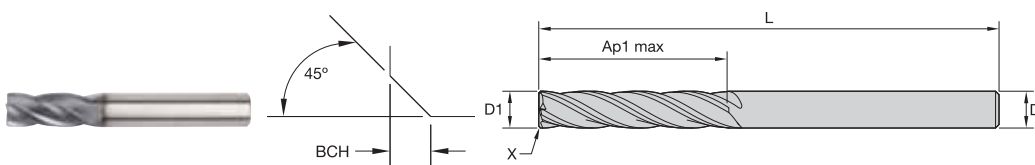
P	●	●
M	●	●
K	●	●
N	○	○
S		
H		

catalog number	D1	D	length of cut Ap1 max	length L	UNCOATED	TIALN
I3S0062T019R	1/16	1/8	3/16	1 1/2	6144208	—
I3S0094T037R	3/32	1/8	3/8	1 1/2	6144210	6144141
I3S0125T050L	1/8	1/8	1/2	2 1/2	6144233	—
I3S0188T056R	3/16	3/16	9/16	2	6144238	6144149
I3S0188T100X	3/16	3/16	1	4	—	6144151
I3S0250T075R	1/4	1/4	3/4	2 1/2	—	6144156

Series 4004 4014 4024 • Metric



Detail X



● first choice
○ alternate choice

P	●	●
M	●	●
K	●	●
N	○	○
S		
H		

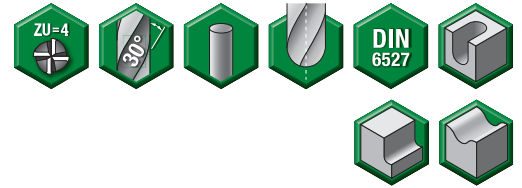
catalog number	D1	D	length of cut Ap1 max	length L	BCH	UNCOATED	TIALN
40040150T004	1,5	3	4,00	38	—	5826086	—
40040400T011S	4,0	4	11,00	50	—	—	6085576
40040600T016S	6,0	6	16,00	50	—	—	6085584



FOR MORE INFORMATION ON THE PRODUCTS SHOWN, PLEASE SEE PAGES F46–F79 OF THE TECHNICAL CATALOG.

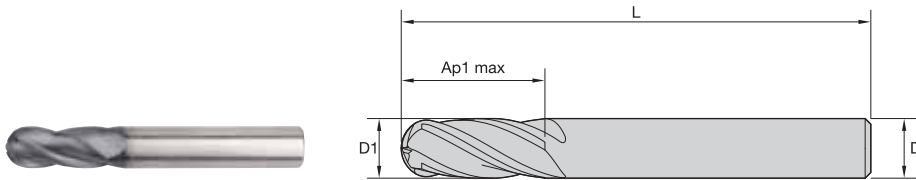
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FOR THE COMPLETE OFFERING, VISIT WIDIA NOVO™ OR WIDIA.COM.

Series D010 • Metric



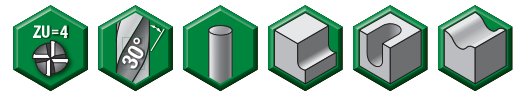
- first choice
- alternate choice

P	•
M	•
K	•
N	
S	
H	



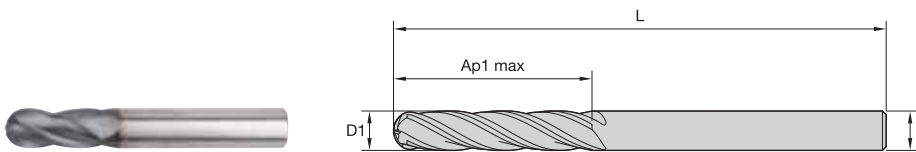
catalog number	D1	D	length of cut Ap1 max	length L	TIALN
D0101000T022	10,0	10	22,00	72	5825532

Series 4000 4010 • Metric



- first choice
- alternate choice

P	•
M	•
K	•
N	
S	
H	



catalog number	D1	D	length of cut Ap1 max	length L	TIALN
40000400T014	4,0	4	14,00	50	5825557
40000600T016	6,0	6	16,00	50	5825573

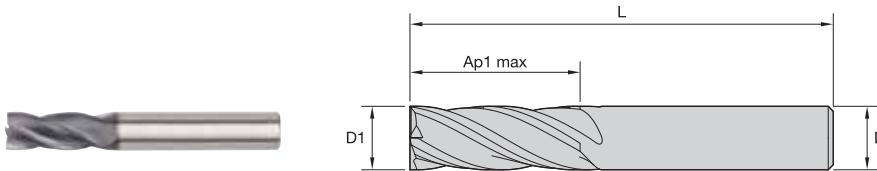
General Purpose Solid Carbide End Mills • Roughing/Finishing

Series I4S • Inch



● first choice
○ alternate choice

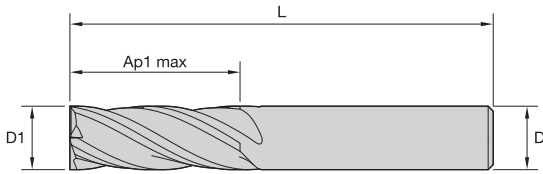
P	●	●
M	●	●
K	●	●
N	●	●
S	●	●
H	●	●



catalog number	D1	D	length of cut Ap1 max	length L	SS	UNCOATED	TIALN
I4S0016T003R	1/64	1/8	1/32	1 1/2	—	—	5879053
I4S0031T008R	1/32	1/8	5/64	1 1/2	—	—	5879054
I4S0062T010R	1/16	1/8	7/64	1 1/2	—	5879198	—
I4S0062T011R	1/16	1/8	7/64	1 1/2	—	—	5879055
I4S0078T018R	5/64	1/8	3/16	1 1/2	—	—	5879056
I4S0093T037R	3/32	1/8	3/8	1 1/2	—	—	5879057
I4S0094T037R	3/32	1/8	3/8	1 1/2	—	5879200	—
I4S0093T062L	3/32	1/8	5/8	2	—	—	5879058
I4S0109T037R	7/64	1/8	3/8	1 1/2	—	—	5879059
I4S0125T025S	1/8	1/8	1/4	1 1/2	—	—	5879060
I4S0125T050R	1/8	1/8	1/2	1 1/2	—	—	5879131
I4S0125T075L	1/8	1/8	3/4	2 1/4	—	—	5879132
I4S0125T100X	1/8	1/8	1	3	—	5879202	5879133
I4S0140T056R	9/64	3/16	9/16	2	—	—	5879134
I4S0156T056R	5/32	3/16	9/16	2	—	—	5879135
I4S0187T062R	3/16	3/16	5/8	2	—	5879203	5879136
I4S0187T075L	3/16	3/16	3/4	2 1/2	—	—	5879138
I4S0187T075S	3/16	3/16	3/4	1 1/2	—	—	5879137
I4S0187T112L	3/16	3/16	1 1/8	3	—	—	5879139
I4S0203T062R	13/64	1/4	5/8	2 1/2	—	—	5879141
I4S0218T043R	7/32	1/4	7/16	2	—	—	5879142
I4S0218T062L	7/32	1/4	5/8	2 1/2	—	—	5879143
I4S0250T050S	1/4	1/4	1/2	2	—	5879205	5879145
I4S0250T075R	1/4	1/4	3/4	2 1/2	—	5879206	5879146
I4S0250T112L	1/4	1/4	1 1/8	3	—	5879207	5879147
I4S0250T150X	1/4	1/4	1 1/2	4	—	5879208	5879148
I4S0281T075R	9/32	5/16	3/4	2 1/2	—	—	5879150
I4S0312T050S	5/16	5/16	1/2	2	—	—	5879152
I4S0312T081R	5/16	5/16	13/16	2 1/2	—	5879210	5879153
I4S0312T112L	5/16	5/16	1 1/8	3	—	5879211	5879154
I4S0312T162X	5/16	5/16	1 5/8	4	—	5879212	5879155
I4S0343T100R	11/32	3/8	1	2 1/2	—	—	5879157
I4S0359T100R	23/64	3/8	1	2 1/2	—	—	5879158
I4S0375T062S	3/8	3/8	5/8	2	—	—	5879159
I4S0375T100R	3/8	3/8	1	2 1/2	—	5879214	5879160
I4S0375T112L	3/8	3/8	1 1/8	3	—	—	5879161
I4S0375T175X	3/8	3/8	1 3/4	4	—	—	5879162
I4S0406T100R	13/32	7/16	1	2 3/4	—	—	5879164
I4S0437T100R	7/16	7/16	1	2 3/4	—	—	5879167
I4S0437T200L	7/16	7/16	2	4	—	—	5879168
I4S0500T062S	1/2	1/2	5/8	2 1/2	—	5879220	5879173
I4S0500T100R	1/2	1/2	1	3	—	5879221	5879174
I4S0500W100R	1/2	1/2	1	3	W	—	5879527
I4S0500T200L	1/2	1/2	2	4	—	5879222	5879175
I4S0500W200L	1/2	1/2	2	4	W	—	5879528
I4S0500T300X	1/2	1/2	3	6	—	—	5879176
I4S0500W300X	1/2	1/2	3	6	W	—	5879529
I4S0562T125L	9/16	9/16	1 1/4	3 1/2	—	—	5879178
I4S0625T125R	5/8	5/8	1 1/4	3 1/2	—	5879228	5879181
I4S0625W125R	5/8	5/8	1 1/4	3 1/2	W	—	5879554
I4S0625T225L	5/8	5/8	2 1/4	5	—	5879229	5879182
I4S0625W225L	5/8	5/8	2 1/4	5	W	—	5879555
I4S0625T400X	5/8	5/8	4	7	—	—	5879183
I4S0687T137R	11/16	3/4	1 3/8	4	—	—	5879184
I4S0750T100S	3/4	3/4	1	3	—	—	5879185
I4S0750T150R	3/4	3/4	1 1/2	4	—	5879242	5879186
I4S0750W150R	3/4	3/4	1 1/2	4	W	—	5879558
I4S0750T225R	3/4	3/4	2 1/4	5	—	—	5879187
I4S0750W225R	3/4	3/4	2 1/4	5	W	—	5879559
I4S0750T300L	3/4	3/4	3	6	—	—	5879188
I4S0750W300L	3/4	3/4	3	6	W	—	5879560
I4S0812T150R	13/16	7/8	1 1/2	4	—	—	5879190
I4S0875T150R	7/8	7/8	1 1/2	4	—	—	5879191
I4S0875W150R	7/8	7/8	1 1/2	4	W	—	5879562

Series I4S • Inch

(continued)



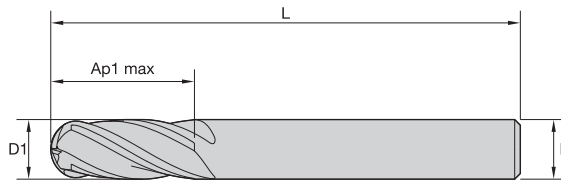
- first choice
- alternate choice

P	●	●
M	●	●
K	●	●
N		
S		
H		

catalog number	D1	D	length of cut Ap1 max	length L	SS	UNCOATED	TIALN
I4S1000T150S	1	1	1 1/2	4	—	5879248	5879193
I4S1000W225R	1	1	2 1/4	5	W	—	5879565
I4S1000T300L	1	1	3	6	—	—	5879195
I4S1000W300L	1	1	3	6	W	—	5879566
I4S1000T400X	1	1	4	7	—	—	5879196
I4S1000W400X	1	1	4	7	W	—	5879567

NOTE: SS = Shank Style
W = Weldon

Series I4B • Inch

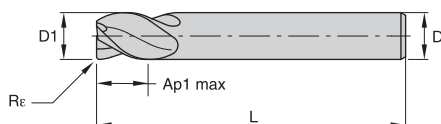
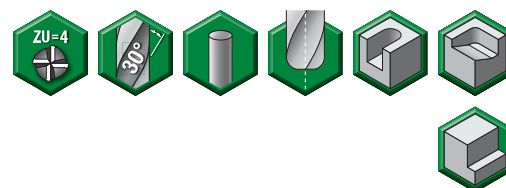


- first choice
- alternate choice

P	●	●
M	●	●
K	●	●
N		
S		
H		

catalog number	D1	D	length of cut Ap1 max	length L	TIALN
I4B0031T008R	1/32	1/8	5/64	1 1/2	5825624
I4B0047T012R	3/64	1/8	1/8	1 1/2	5825625
I4B0062T019R	1/16	1/8	3/16	1 1/2	5825626
I4B0094T019R	3/32	1/8	3/16	1 1/2	5825628
I4B0094T037L	3/32	1/8	3/8	1 1/2	5825643
I4B0125T025S	1/8	1/8	1/4	1 1/2	5825646
I4B0125T050R	1/8	1/8	1/2	1 1/2	5825647
I4B0125T075L	1/8	1/8	3/4	2 1/4	5825648
I4B0125T075X	1/8	1/8	3/4	3	5825649
I4B0156T056L	5/32	3/16	9/16	2	5825652
I4B0187T031S	3/16	3/16	5/16	1 1/2	5825654
I4B0187T062R	3/16	3/16	5/8	2	5825655
I4B0187T075L	3/16	3/16	3/4	2 1/2	5825656
I4B0187T100X	3/16	3/16	1	4	5825657
I4B0219T062R	7/32	1/4	5/8	2 1/2	5825659
I4B0250T050S	1/4	1/4	1/2	2	5825661
I4B0250T075R	1/4	1/4	3/4	2 1/2	5825663
I4B0250T112R	1/4	1/4	1 1/8	3	5825664
I4B0250T150L	1/4	1/4	1 1/2	4	5825665
I4B0312T081R	5/16	5/16	13/16	2 1/2	5825670
I4B0375T100L	3/8	3/8	1	4	5825685
I4B0375T100S	3/8	3/8	1	2 1/2	5825684
I4B0375T112R	3/8	3/8	1 1/8	3	5825686
I4B0375T150X	3/8	3/8	1 1/2	6	5825687
I4B0500T100R	1/2	1/2	1	4	5825690
I4B0500T100S	1/2	1/2	1	3	5825689
I4B0500T150X	1/2	1/2	1 1/2	6	5825691
I4B0500T200R	1/2	1/2	2	4	5825692
I4B0500T300X	1/2	1/2	3	6	5825694
I4B0562T125R	9/16	9/16	1 1/4	3 1/2	5825695
I4B0625T125R	5/8	5/8	1 1/4	3 1/2	5825697
I4B0750T100R	3/4	3/4	1	3	5825700
I4B0750T150L	3/4	3/4	1 1/2	4	5825711

Series I4R • Inch



- first choice
- alternate choice

P	●
M	●
K	●
N	
S	
H	

catalog number	D1	D	length of cut Ap1 max	length L	Rε	TIALN
I4R0062T011R010	1/16	1/8	1/8	1 1/2	.010	6282423
I4R0125T050R015	1/8	1/8	1/2	1 1/2	.015	6282429
I4R0125T050R030	1/8	1/8	1/2	1 1/2	.030	6282441
I4R0187T062R015	3/16	3/16	5/8	2	.015	6282443
I4R0187T062R020	3/16	3/16	5/8	2	.020	6282444
I4R0250T075R015	1/4	1/4	3/4	2 1/2	.015	6282447
I4R0250T075R020	1/4	1/4	3/4	2 1/2	.020	6282448
I4R0250T075R030	1/4	1/4	3/4	2 1/2	.030	6282449
I4R0375T100R015	3/8	3/8	1	2 1/2	.015	6285506
I4R0375T100R030	3/8	3/8	1	2 1/2	.030	6282469
I4R0500T100R015	1/2	1/2	1	3	.015	6282503
I4R0500T100R020	1/2	1/2	1	3	.020	6282504
I4R0500T100R030	1/2	1/2	1	3	.030	6282505
I4R0500T100R060	1/2	1/2	1	3	.060	6282507
I4R0750T150R030	3/4	3/4	1 1/2	4	.030	6282538
I4R0750T150R060	3/4	3/4	1 1/2	4	.060	6282540
I4R0750T150R125	3/4	3/4	1 1/2	4	.125	6282562



FOR MORE INFORMATION ON THE PRODUCTS SHOWN, PLEASE SEE PAGES F46–F79 OF THE TECHNICAL CATALOG.

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Solid End Milling Icons

	Plunge Milling		Ramping Blank		Slotting: Ball Nose		Slotting: Square End		Trochoidal Milling
	Trochoidal Milling: Ball Nose		Side Milling: Shoulder Milling: Ball Nose		Side Milling/ Shoulder Milling: Square End		3D Profiling		Corner Style: Ball Nose
	Corner Style: Corner Chamfer		Corner Style: Corner Radius		Corner Style: Square End		Helix Angle: 20°		Helix Angle: 30°
	Helix Angle: 35°		Helix Angle: 38°		Helix Angle: 40°		Helix Angle: 45°		Helix Angle: 43°
	DIN Number 6527		Through Coolant: Axial: Solid End Mill		Tool Dimensions: Flute Configuration: X (Variable)		Tool Dimensions: Flute Configuration: 2		Tool Dimensions: Flute Configuration: 3
	Tool Dimensions: Flute Configuration: 4		Tool Dimensions: Flute Configuration: 5		Tool Dimensions: Flute Configuration: 6		Tool Dimensions: Flute Configuration: 7		Shank: Cylindrical Weldon®
	Shank: Safe-Lock™		Cylindrical/Plain Shank						

Material Overview • ANSI

ANSI

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	Grey 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, Inconel™, 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	Astroloy™, 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

DIN

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

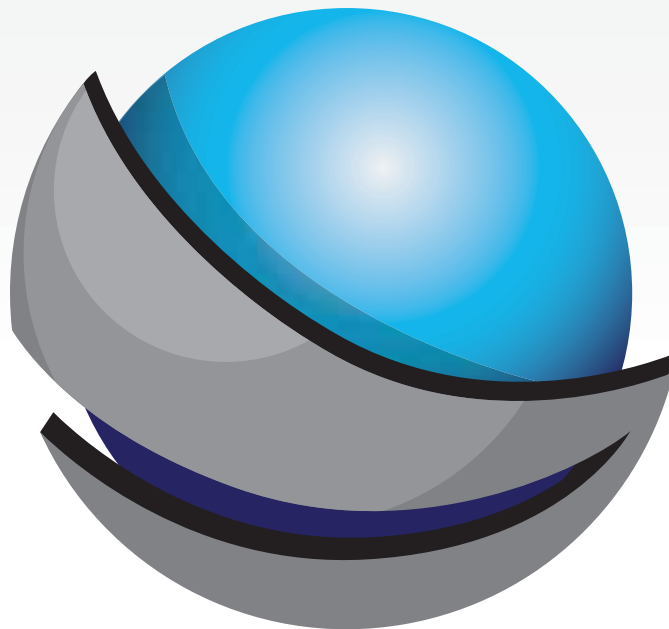
material group	description	content	tensile strength RM (MPa)*	hardness (HB)	hardness (HRC)	material number
P0	Low-Carbon Steels, Long Chipping	C <0,25%	<530	<125	–	–
P1	Low-Carbon Steels, Short Chipping, Free Machining	C <0,25%	<530	<125	–	C15, Ck22, ST37-2, S235JR, 9SMnPb28, GS38
P2	Medium- and High-Carbon 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, ALMg-SiPb
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.

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 the WIDIA Metalcutting Safety booklet, available free from WIDIA at +1 724 539 5747 or fax +1 724 539 5439. For specific product safety and environmental questions, contact our Corporate Environmental Health and Safety Office at +1 724 539 5066 or fax +1 724 539 5372.

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.

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