



# Turning

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# WIDIA™ Victory™ Turning Inserts

## Turning

The Victory ISO turning portfolio offers a comprehensive range of ISO Turning Inserts with advanced substrates and coating technologies for high productivity, long tool life, and reliability in rough to finish-turning applications. Inserts in this portfolio can be applied across a wide range of applications with effective chip control and smooth surface finish at a strong cost performance ratio.

### NEGATIVE INSERTS

- Negative-style inserts are first choice for general machining of materials in medium to large lathes
- Negative-style inserts are available in flat-top and chip-control chip breakers in both molded and ground peripheries suitable for all workpiece materials



### POSITIVE INSERTS

- Screw-on inserts are the first choice for I.D. turning of all materials and O.D. turning on small to medium lathes suitable for all workpiece materials



### PCBN AND PCD INSERTS

- PcBN can be used for machining steels with a hardness higher than 48 HRC
- PcBN inserts can also be used for productivity improvements in machining cast irons and high-temp alloys
- PCD inserts are used to machine non-ferrous materials



### CERAMIC INSERTS

- Ceramic inserts are a great choice for productive machining of high-temp alloys
- Negative rake inserts are also recommended for the machining of hardened materials and cast irons available in flat-top chip breakers with molded and ground peripheries



## WIDIA VICTORY TURNING INSERTS

### VERSATILITY

Specialty engineering substrate with wear-resistant, multi-layer coating makes it suitable for wide range of applications.

### STABILITY

Pre- and post-coat treatment along with post-coat grinding improves edge toughness, provides secure seating leading to consistent performance.

### PRODUCTIVITY

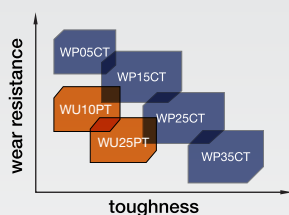
Multi-layer CVD coating with alpha-alumina layer provides higher productivity and tool life with reliability at elevated speeds and feeds.

### SIMPLICITY

Outer layer bronze colored for easy wear identification. Easy to select and apply grades and chip breakers for roughing to finishing applications in variety of workpiece materials.

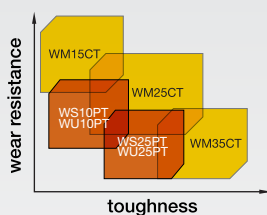
# STEEL, STAINLESS STEEL, CAST IRON, AND HIGH-TEMP ALLOY INSERTS

## VICTORY™ Turning



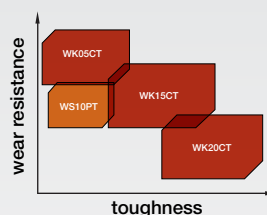
### WP GRADES FOR STEEL

- Four grades for use in roughing to finishing operations
- Increase cutting speed and/or feed rate to gain productivity



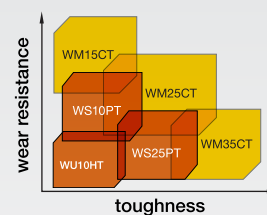
### WM GRADES FOR STAINLESS STEEL

- Three grades in suitable chip breakers for use in roughing to finishing operations
- Very good balance of wear resistance and toughness for long, predictable tool life



### WK GRADES FOR CAST IRON

- Three grades to cover all of your cast iron turning operations
- Increase cutting speed and/or feed rate by up to 30% over similar competitive grades
- WK15CT is the first choice for cast iron turning



### WS GRADES FOR HIGH-TEMP ALLOYS

- Two grades for use in roughing to finishing operations
- Very good wear resistance for longer tool life

## INDUSTRY



### 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.

C		N		M		G		4																																																																																																																																																																																																																									
Insert Shape		Insert Clearance Angle		Tolerance Class		Insert Features		Size																																																																																																																																																																																																																									
H	Hexagon 120°	A	3°	<p>Tolerances apply prior to edge prep and coating</p> <p>D = Theoretical diameter of the insert inscribed circle S = Thickness B = See figures below</p>	N		<p>Code for inch cutting edge length "L10"</p> <table border="1"> <thead> <tr> <th>inch</th> <th>"D"</th> <th>C</th> <th>D</th> <th>R</th> <th>S</th> <th>T</th> <th>V</th> <th>W</th> </tr> </thead> <tbody> <tr> <td>1.2 (5)</td> <td>5/32</td> <td>S4</td> <td>04</td> <td>03</td> <td>03</td> <td>06</td> <td>—</td> <td>—</td> </tr> <tr> <td>1.5 (6)</td> <td>3/16</td> <td>04</td> <td>05</td> <td>04</td> <td>04</td> <td>08</td> <td>08</td> <td>S3</td> </tr> <tr> <td>1.8 (7)</td> <td>7/32</td> <td>05</td> <td>06</td> <td>05</td> <td>05</td> <td>09</td> <td>09</td> <td>03</td> </tr> <tr> <td>—</td> <td>.236</td> <td>—</td> <td>—</td> <td>06</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> </tr> <tr> <td>2</td> <td>1/4</td> <td>06</td> <td>07</td> <td>06</td> <td>06</td> <td>11</td> <td>11</td> <td>04</td> </tr> <tr> <td>2.5</td> <td>5/16</td> <td>08</td> <td>09</td> <td>07</td> <td>07</td> <td>13</td> <td>13</td> <td>05</td> </tr> <tr> <td>—</td> <td>.315</td> <td>—</td> <td>—</td> <td>08</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> </tr> <tr> <td>3</td> <td>3/8</td> <td>09</td> <td>11</td> <td>09</td> <td>09</td> <td>16</td> <td>16</td> <td>06</td> </tr> <tr> <td>—</td> <td>.394</td> <td>—</td> <td>—</td> <td>10</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> </tr> <tr> <td>3.5</td> <td>7/16</td> <td>11</td> <td>13</td> <td>11</td> <td>11</td> <td>19</td> <td>19</td> <td>07</td> </tr> <tr> <td>—</td> <td>.472</td> <td>—</td> <td>—</td> <td>12</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> </tr> <tr> <td>4</td> <td>1/2</td> <td>12</td> <td>15</td> <td>12</td> <td>12</td> <td>22</td> <td>22</td> <td>08</td> </tr> <tr> <td>4.5</td> <td>9/16</td> <td>14</td> <td>17</td> <td>14</td> <td>14</td> <td>24</td> <td>24</td> <td>09</td> </tr> <tr> <td>5</td> <td>5/8</td> <td>16</td> <td>19</td> <td>15</td> <td>15</td> <td>27</td> <td>27</td> <td>10</td> </tr> <tr> <td>—</td> <td>.630</td> <td>—</td> <td>—</td> <td>16</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> </tr> <tr> <td>5.5</td> <td>11/16</td> <td>17</td> <td>21</td> <td>17</td> <td>17</td> <td>30</td> <td>30</td> <td>11</td> </tr> <tr> <td>6</td> <td>3/4</td> <td>19</td> <td>23</td> <td>19</td> <td>19</td> <td>33</td> <td>33</td> <td>13</td> </tr> <tr> <td>—</td> <td>.787</td> <td>—</td> <td>—</td> <td>20</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> </tr> <tr> <td>7</td> <td>7/8</td> <td>22</td> <td>27</td> <td>22</td> <td>22</td> <td>38</td> <td>38</td> <td>15</td> </tr> <tr> <td>—</td> <td>.984</td> <td>—</td> <td>—</td> <td>25</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> </tr> <tr> <td>8</td> <td>1</td> <td>25</td> <td>31</td> <td>25</td> <td>25</td> <td>44</td> <td>44</td> <td>17</td> </tr> <tr> <td>10</td> <td>1-1/4</td> <td>32</td> <td>38</td> <td>31</td> <td>31</td> <td>54</td> <td>54</td> <td>21</td> </tr> <tr> <td>—</td> <td>1.260</td> <td>—</td> <td>—</td> <td>32</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> </tr> </tbody> </table>	inch	"D"	C	D	R	S	T	V	W	1.2 (5)	5/32	S4	04	03	03	06	—	—	1.5 (6)	3/16	04	05	04	04	08	08	S3	1.8 (7)	7/32	05	06	05	05	09	09	03	—	.236	—	—	06	—	—	—	—	2	1/4	06	07	06	06	11	11	04	2.5	5/16	08	09	07	07	13	13	05	—	.315	—	—	08	—	—	—	—	3	3/8	09	11	09	09	16	16	06	—	.394	—	—	10	—	—	—	—	3.5	7/16	11	13	11	11	19	19	07	—	.472	—	—	12	—	—	—	—	4	1/2	12	15	12	12	22	22	08	4.5	9/16	14	17	14	14	24	24	09	5	5/8	16	19	15	15	27	27	10	—	.630	—	—	16	—	—	—	—	5.5	11/16	17	21	17	17	30	30	11	6	3/4	19	23	19	19	33	33	13	—	.787	—	—	20	—	—	—	—	7	7/8	22	27	22	22	38	38	15	—	.984	—	—	25	—	—	—	—	8	1	25	31	25	25	44	44	17	10	1-1/4	32	38	31	31	54	54	21	—	1.260	—	—	32	—	—	—	—	R	
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O	Octagon 135°	B	5°	M																																																																																																																																																																																																																													
P	Pentagon 108°	C	7°	F																																																																																																																																																																																																																													
R	Round —	D	15°	A																																																																																																																																																																																																																													
S	Square 90°	E	20°	M																																																																																																																																																																																																																													
T	Triangular 60°	F	25°	G																																																																																																																																																																																																																													
C	Rhomboid 80°	G	30°	W																																																																																																																																																																																																																													
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L	Rectangular 90°			X	Special Design																																																																																																																																																																																																																												
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tolerance class	tolerance on "D"	tolerance on "B"	tolerance on "S"
C	±.0010"	±.0005"	±.001"
H	±.0005"	±.0005"	±.001"
E	±.0010"	±.0010"	±.001"
G	±.0010"	±.0010"	±.005"
M	See tables on next page		±.005"
U	See tables on next page		±.005"

### Catalog Numbering System

(continued)

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

#### 3

Thickness  
S

symbol	thickness
inch	inch
.5 (1)	1/32
.6	.040
1 (2)	1/16
1.2	5.64
1.5	3/32
2	1/8
2.5	5/32
3	3/16
3.5	7/32
4	1/4
5	5/16
6	3/8
7	7/16
18	1/2

#### 2

Corner  
Radius "Rε"

symbol	corner radius
inch	inch
X0	.0015
0	.004
.5	.008
1	1/64
2	1/32
3	3/64
4	1/16
5	5/64
6	3/32
7	7/64
8	1/8
—	round insert
—	

#### 3

Hand of Insert  
(optional)

R = Right hand  
L = Left hand  
N = Neutral

#### 2

Cutting Edge  
(optional)

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

#### UR

Chipbreaker  
(optional)

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

"D"	± Tolerance on "D"				"D"	± Tolerance on "B"			
	Class M Tolerance			Class U Tolerance		Class M Tolerance			Class U Tolerance
	Shapes S, T, C, R, & W	Shape D	Shape V	Shapes S, T, & C		Shapes S, T, C, R, & W	Shape D	Shape V	Shapes S, T, & C
inch	inch	inch	inch	inch	inch	inch	inch	inch	
5/32	.002	—	—	—	5/32	.003	—	—	—
3/16	.002	—	—	.003	3/16	.003	—	—	.005
7/32	.002	.002	.002	.003	7/32	.003	.004	—	.005
1/4	.002	.002	.002	.003	1/4	.003	.004	—	.005
5/16	.002	.002	.002	.003	5/16	.003	.004	—	.005
3/8	.002	.002	.002	.003	3/8	.003	.004	.007	.005
7/16	.003	.003	.003	.005	7/16	.005	.006	—	—
1/2	.003	.003	.003	.005	1/2	.005	.006	.010	.008
9/16	.003	.003	.003	.005	9/16	.005	.006	—	—
5/8	.004	.004	.004	.007	5/8	.006	.007	—	.011
11/16	.004	.004	.004	.007	11/16	.006	.007	—	.011
3/4	.004	.004	.004	.007	3/4	.006	.007	—	.011
7/8	.005	—	—	.010	7/8	.006	—	—	.015
1	.005	—	—	.010	1	.007	—	—	.015
1 1/4	.006	—	—	.010	1 1/4	.008	—	—	.015


## Victory Grade Naming System

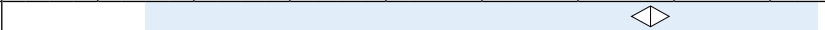


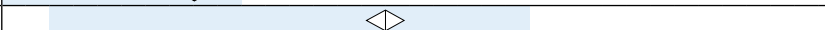

ISO turning products featured in the All-Star program provide solutions for applications in steel, stainless steel, cast iron, and high-temp alloys. WIDIA™ Victory turning grades and geometries deliver higher productivity through reduced cycle time, long tool life, and improved chip control.


W	P	15	C	T
Brand	Workpiece Material	Application Range	Insert Material	Application
<p><b>W</b> = WIDIA</p>	<p><b>P</b> = Steel  <b>M</b> = Stainless Steel  <b>K</b> = Cast Iron  <b>N</b> = Non Ferrous  <b>S</b> = High-Temp Alloys  <b>H</b> = Hardened Materials  <b>U</b> = Universal Application</p>	<p><b>05</b> = Fine Finishing  <b>10</b> = Finishing  <b>15</b> = }  <b>20</b> = } Medium to Roughing  <b>25</b> = }  <b>30</b> = } Roughing  <b>35</b> = }  <b>40</b> = }  <b>45</b> = } Heavy Roughing  <b>50</b> = }</p>	<p><b>H</b> = Carbide (Uncoated)  <b>C</b> = Carbide + CVD  <b>P</b> = Carbide + PVD  <b>T</b> = Cermet  <b>Y</b> = Ceramics  <b>D</b> = Diamond  <b>B</b> = PCBN  <b>S</b> = HSS  <b>E</b> = HSS-E  <b>M</b> = HSS-E-PM</p>	<p><b>T</b> = Turning  <b>M</b> = Milling  <b>H</b> = Holemaking  <b>D</b> = Solid Drills  <b>E</b> = Solid End Mills  <b>G</b> = Taps  <b>R</b> = Reamers  <b>V</b> = Thread Mills</p>

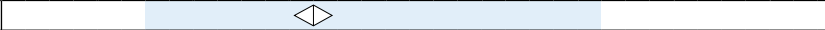







## Cutting Speed Recommendation • P • Inch






**Low-Carbon (<0.3% C) and Free-Machining Steel** Starting Conditions 


material group	grade	speed – m/min (SFM)									m/min	SFM
		135 (450)	180 (600)	225 (800)	275 (900)	320 (1050)	360 (1200)	410 (1350)	455 (1500)	495 (1650)		
P0/P1	WP05CT										435	1450
	WP15CT										395	1320
	WP25CT										275	925
	WP35CT										210	700
	WS10PT/WU10PT										280	925



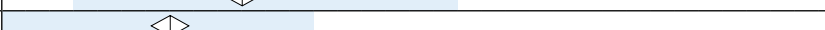
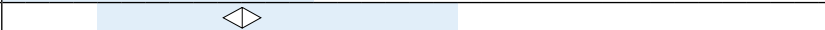

**Medium- and High-Carbon Steels (>0.3% C)** Starting Conditions 


material group	grade	speed – m/min (SFM)									m/min	SFM
		135 (450)	180 (600)	225 (800)	275 (900)	320 (1050)	360 (1200)	410 (1350)	455 (1500)	495 (1650)		
P2	WP05CT										240	800
	WP15CT										265	880
	WP25CT										195	650
	WP35CT										150	500
	WS10PT/WU10PT										200	650

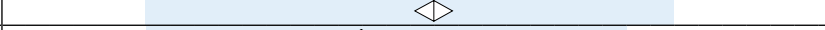


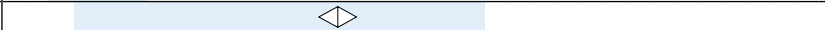

**Alloy Steels and Tool Steels (≤330 HB) (≤35 HRC)** Starting Conditions 


material group	grade	speed – m/min (SFM)									m/min	SFM
		135 (450)	180 (600)	225 (800)	275 (900)	320 (1050)	360 (1200)	410 (1350)	455 (1500)	495 (1650)		
P3	WP05CT										205	680
	WP15CT										190	630
	WP25CT										155	510
	WP35CT										120	400
	WS10PT/WU10PT										155	510




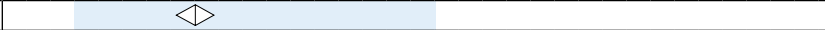

**Alloy Steels and Tool Steels (340–450 HB) (36–48 HRC)** Starting Conditions 

material group	grade	speed – m/min (SFM)									m/min	SFM
		60 (200)	90 (300)	120 (400)	150 (500)	180 (600)	210 (700)	240 (800)	270 (900)	300 (1000)		
P4	WP05CT										160	530
	WP15CT										145	480
	WP25CT										105	360
	WP35CT										95	325
	WS10PT/WU10PT										110	360

**Ferritic, Martensitic, and PH Stainless Steels (≤330 HB) (≤35 HRC)** Starting Conditions 

material group	grade	speed – m/min (SFM)									m/min	SFM
		120 (400)	150 (500)	180 (600)	210 (700)	240 (800)	270 (900)	300 (1000)	330 (1100)	360 (1200)		
P5	WP05CT										240	800
	WP15CT										215	720
	WP25CT										195	650
	WP35CT										135	450
	WS10PT/WU10PT										200	660

**Ferritic, Martensitic, and PH Stainless Steels (340–450 HB) (36–48 HRC)** Starting Conditions 

material group	grade	speed – m/min (SFM)									m/min	SFM
		105 (350)	135 (450)	165 (550)	195 (650)	225 (750)	255 (850)	285 (950)	315 (1050)	345 (1150)		
P6	WP05CT										200	660
	WP15CT										180	600
	WP25CT										150	500
	WP35CT										105	350
	WS10PT/WU10PT										150	500

## Cutting Speed Recommendation • M • Inch

**Austenitic Stainless Steel** Starting Conditions

material group	grade	speed – m/min (SFM)										m/min	SFM
		90 (300)	135 (450)	180 (600)	225 (800)	270 (900)	315 (1050)	360 (1200)	405 (1350)	450 (1500)			
M1	WM15CT	◇										180	600
	WM25CT	◇										150	500
	WM35CT	◇										120	400
	WS10PT	◇										215	700
	WS25PT	◇										180	550

**Austenitic Stainless Steel** Starting Conditions

material group	grade	speed – m/min (SFM)										m/min	SFM
		90 (300)	135 (450)	180 (600)	225 (800)	270 (900)	315 (1050)	360 (1200)	405 (1350)	450 (1500)			
M2	WM15CT	◇										165	550
	WM25CT	◇										140	450
	WM35CT	◇										105	350
	WS10PT	◇										200	650
	WS25PT	◇										165	500

**Austenitic Stainless Steel: Duplex (Ferritic and Austenitic Mixture)** Starting Conditions

material group	grade	speed – m/min (SFM)										m/min	SFM
		90 (300)	135 (450)	180 (600)	225 (800)	270 (900)	315 (1050)	360 (1200)	405 (1350)	450 (1500)			
M3	WM15CT	◇										150	500
	WM25CT	◇										120	400
	WM35CT	◇										90	300
	WS10PT	◇										185	600
	WS10PT/WU25PT	◇										150	450

## Cutting Speed Recommendation • K • Inch

**Gray Cast Iron** Starting Conditions

material group	grade	speed – m/min (SFM)										m/min	SFM
		60 (200)	180 (600)	305 (1000)	430 (1400)	550 (1800)	675 (2200)	800 (2600)	920 (3000)	1040 (3400)	1160 (3800)		
K1	WK05CT	◇										450	1500
	WK15CT	◇										360	1200
	WK20CT	◇										300	1000

**Ductile, Compacted Graphite, and Malleable Cast Irons (<600 MPa tensile strength)** Starting Conditions

material group	grade	speed – m/min (SFM)										m/min	SFM
		90 (300)	135 (450)	180 (600)	225 (750)	275 (900)	320 (1050)	360 (1200)	410 (1350)	460 (1500)	500 (1650)		
K2	WS10PT/WU10PT	◇										200	650
	WK05CT	◇										360	1200
	WK15CT	◇										270	900
	WK20CT	◇										240	800

**Ductile, Malleable, and Austempered Cast Irons (>600 MPa tensile strength)** Starting Conditions

material group	grade	speed – m/min (SFM)										m/min	SFM
		90 (300)	135 (450)	180 (600)	225 (750)	275 (900)	320 (1050)	360 (1200)	410 (1350)	460 (1500)	500 (1650)		
K3	WS10PT/WU10PT	◇										150	500
	WK05CT	◇										240	800
	WK15CT	◇										215	725
	WK20CT	◇										210	700

## CUTTING SPEED RECOMMENDATION • N • INCH

### Low-Silicon Aluminum Alloys (hypoeutectic <12,2% Si) and Magnesium Alloys

material group	grade	Speed – m/min (SFM)										Starting Conditions	
		250 (800)	500 (1600)	750 (2400)	1000 (3200)	1250 (4000)	1500 (4800)	1750 (5600)	2000 (6400)	2250 (7200)	2500 (8000)	m/min	SFM
N1	WU10HT	◊										488	1597

### Low-Silicon Aluminum Alloys (hypoeutectic <12,2% Si) and Magnesium Alloys

material group	grade	Speed – m/min (SFM)										Starting Conditions	
		250 (800)	500 (1600)	750 (2400)	1000 (3200)	1250 (4000)	1500 (4800)	1750 (5600)	2000 (6400)	2250 (7200)	2500 (8000)	m/min	SFM
N2	WU10HT	◊										488	1597

### High-Silicon Aluminum Alloys (hypereutectic >12,2% Si) and Magnesium Alloys

material group	grade	Speed – m/min (SFM)										Starting Conditions	
		250 (800)	500 (1600)	750 (2400)	1000 (3200)	1250 (4000)	1500 (4800)	1750 (5600)	2000 (6400)	2250 (7200)	2500 (8000)	m/min	SFM
N3	WU10HT	◊										488	1597
	WU05PT	◊										550	1800

### Copper-, Brass-, Zinc-Based on a Machinability Index Range of 70–100

material group	grade	Speed – m/min (SFM)				Starting Conditions	
		250 (800)	500 (1600)	750 (2400)	1000 (3200)	m/min	SFM
N4	WU10HT	◊				259	847
	WU05PT	◊				275	900

### Nylon, Plastics, Rubbers, Phenolics, Resins, Fiberglass, and Glass

material group	grade	Speed – m/min (SFM)				Starting Conditions	
		250 (800)	500 (1600)	750 (2400)	1000 (3200)	m/min	m/min
N5	WU10HT	◊				170	550
	WU05PT	◊				170	550

### Carbon and Graphite Composites: Brush Alloys, Kevlar, and Graphite (280–400 HB) (30–43 HRC)

material group	grade	Speed – m/min (SFM)				Starting Conditions	
		250 (800)	500 (1600)	750 (2400)	1000 (3200)	m/min	m/min
N6	WU05PT	◊				200	650

### MMCs (Aluminum-Based Metal Matrix Composites)

material group	grade	Speed – m/min (SFM)				Starting Conditions	
		250 (800)	500 (1600)	750 (2400)	1000 (3200)	m/min	SFM
N7	WU10HT	◊				180	589

### Tin Alloys, Cast: ASTM 823, Alloys 1, 2, 3, 11

material group	grade	Speed – m/min (SFM)				Starting Conditions	
		250 (800)	500 (1600)	750 (2400)	1000 (3200)	m/min	SFM
N8	WU05PT	◊				215	700

## Cutting Speed Recommendation • S • Inch

### Iron-Based, Heat-Resistant Alloys (135–320 HB) (≤34 HRC)

material group	grade	speed – m/min (SFM)										Starting Conditions	
		15 (50)	45 (150)	75 (250)	105 (350)	140 (450)	170 (550)	200 (650)	230 (750)	290 (950)	310 (1050)	m/min	SFM
S1	WU10HT	◇										30	100
	WS10PT/WU10PT	◇										55	180
	WS25PT/WU25PT	◇										40	125
	WM15CT	◇										55	180
	WM25CT/WM35CT	◇										40	125

### Cobalt-Based, Heat-Resistant Alloys (150–425 HB) (≤45 HRC)

material group	grade	speed – m/min (SFM)										Starting Conditions	
		15 (50)	45 (150)	75 (250)	105 (350)	140 (450)	170 (550)	200 (650)	230 (750)	290 (950)	310 (1050)	m/min	SFM
S2	WU10HT	◇										35	110
	WS10PT/WU10PT	◇										60	195
	WS25PT/WU25PT	◇										30	100
	WM15CT	◇										60	195
	WM25CT/WM35CT	◇										30	100

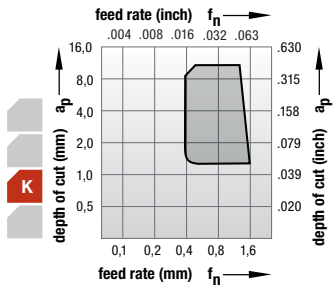
### Nickel-Based, Heat-Resistant Alloys (140–475 HB) (≤48 HRC)

material group	grade	speed – m/min (SFM)										Starting Conditions	
		15 (50)	45 (150)	75 (250)	105 (350)	140 (450)	170 (550)	200 (650)	230 (750)	290 (950)	310 (1050)	m/min	SFM
S3	WU10HT	◇										40	125
	WS10PT/WU10PT	◇										70	225
	WS25PT/WU25PT	◇										40	125
	WM15CT	◇										70	225
	WM25CT/WM35CT	◇										40	125

### Titanium and Titanium Alloys (110–450 HB) (≤48 HRC)

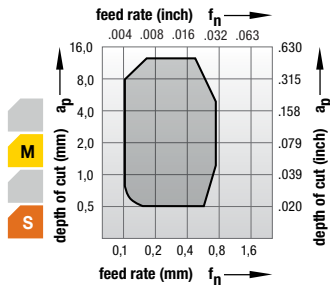
material group	grade	speed – m/min (SFM)										Starting Conditions	
		15 (50)	45 (150)	75 (250)	105 (350)	140 (450)	170 (550)	200 (650)	230 (750)	290 (950)	310 (1050)	m/min	SFM
S4	WU10HT	◇										45	150
	WM15CT	◇										70	225
	WM25CT/WM35CT	◇										55	175

Negative Inserts



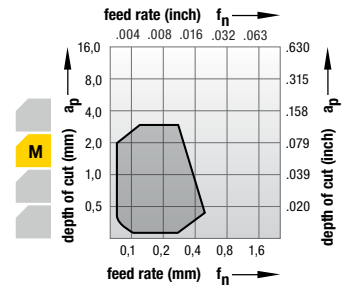
**..MA**

Flat-top geometry for machining cast iron. For finishing to roughing applications.



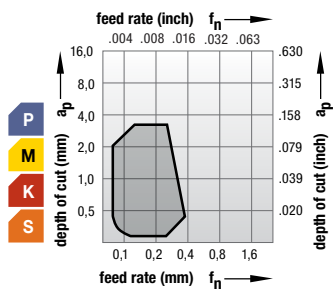
**.NMP**

For medium-duty machining of tough work materials, such as chrome- and nickel-based alloys. Minimizes tendency for materials to adhere to insert.



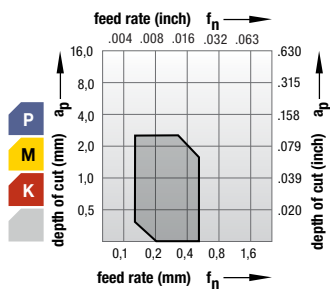
**CT**

Designed for outward copy turning. Where other geometries produce long chips, the unique distribution of the cut results in good chip control.



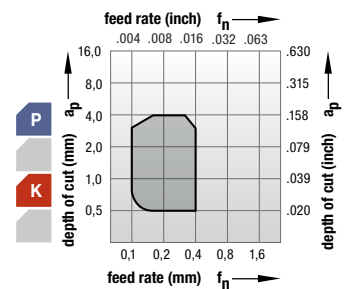
**FF**

For finish turning, producing smooth, accurate surfaces. Very good chip control, especially at low depths of cut.



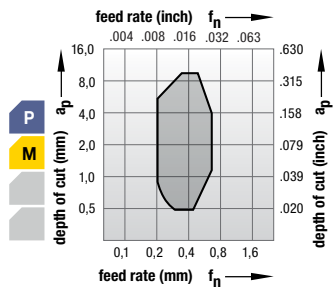
**FW**

Wiper geometry for finishing when good surface finish is needed using high feed rates. First choice for high-performance finishing.



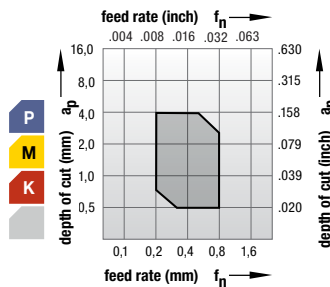
**ML**

For finishing to medium machining with a negative, stable cutting edge.



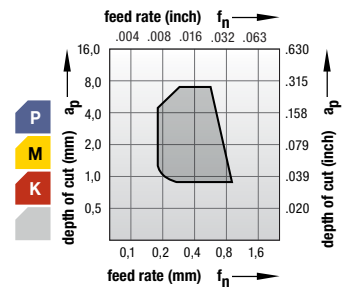
**MR**

For medium to light roughing of steels, difficult-to-machine high-alloy titanium, and aluminum materials. High strength to deal with heavy chip deformation.



**MW**

Wiper geometry for light to medium turning with high feed rates. Feed twice as high as with edges with full corner radii to produce same surface finish.



**RH**

For medium-duty to roughing. Outstanding chip control. High edge strength for interrupted cuts, forging skin, or scale. Preferred for all cast iron, such as gray, malleable, and nodular.

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING



## Negative Inserts

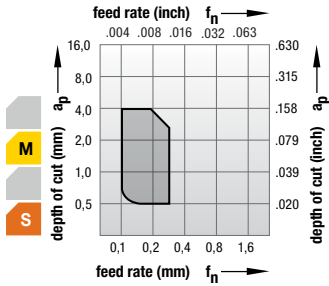
INDEXABLE MILLING

SOLID END MILLING

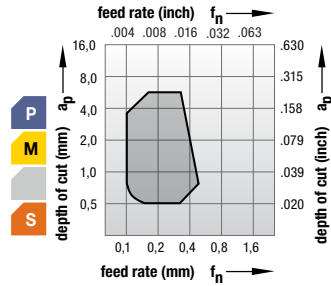
HOLEMAKING

TAPPING

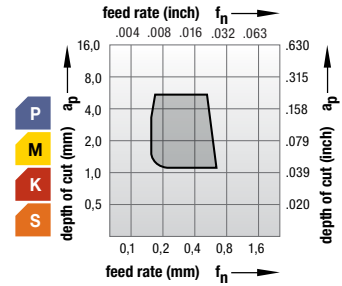
TURNING



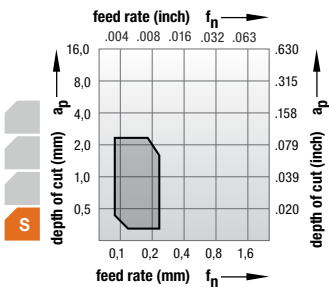
**UF**  
For finishing with a positive cutting edge for reduced cutting forces and superior surface quality.



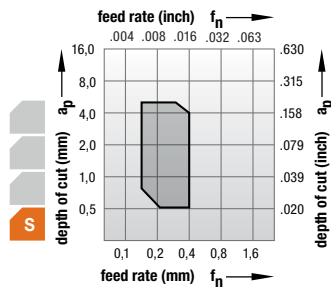
**UM**  
For medium-duty turning operations. Soft-cutting chipbreaker. Used in applications producing varying chip sections, such as profile or copy turning. Good dimensional accuracy. For soft steel materials and stainless steels.



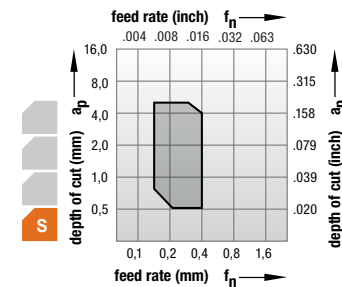
**UR**  
Roughing geometry with smooth chip forming and improved coolant flow for increased tool life. Positive geometry reduces cutting forces and improves depth-of-cut notching resistance. Ideally suitable for stainless steel applications and for smooth machining of steel.



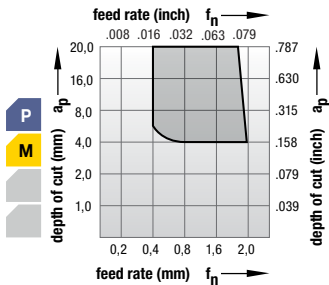
**FS**  
For finishing applications. Ground periphery with positive cutting edge ideally suited for high-temp alloys. Micro-finished edge on the ground periphery adds just a slight hone for improved edge integrity and reliability.



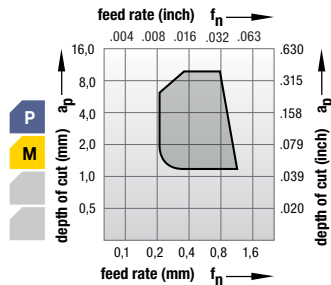
**MS**  
For medium machining in high-temp materials. Utilizes a micro-finished edge preparation to increase edge toughness.



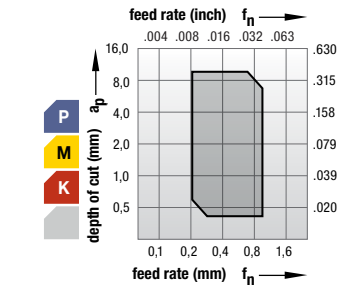
**.NGP**  
For medium-duty machining of tough work materials, such as chrome- and nickel-based alloys. Minimizes tendency for materials to adhere to insert.



**SR**  
A super-roughing geometry. The -SR has a strong cutting edge to support high cutting loads in roughing applications. Can produce high metal removal rates.

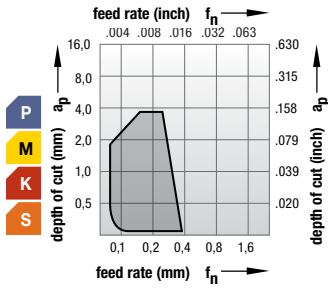


**65**  
Rough-turning geometry with chip control extending to the medium-duty range. Positive rake angle lowers cutting forces, reducing power requirements. Used on low-tensile and stainless steels.



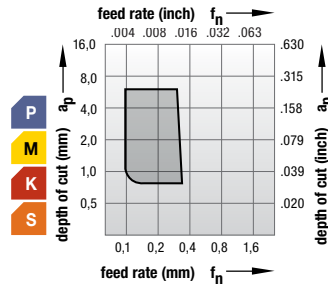
**-RU**  
Positive geometry for smooth cutting. Positive T-land with rake angle to lower cutting forces and improve DOCN resistance. Post-coat grinding of seating surface for secure seating surface. Good edge strength for interrupted cuts, forging skin, and casting surfaces.

## Positive Inserts



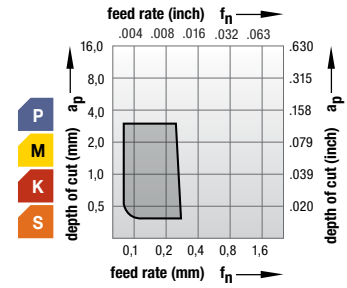
**MU**

A medium universal geometry with a soft cutting action due to its positive geometry. Has a versatile application range and is suited for turning unstable components and for boring applications.



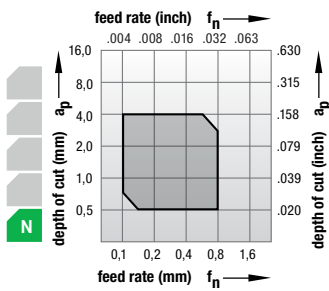
**MP**

For medium to rough turning with reduced cutting forces and improved chip control for high feed rates. Suitable for high metal removal rates and spindling applications.



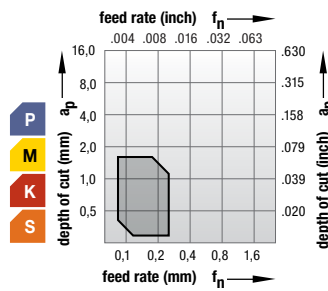
**FP**

For finishing to medium turning operations with optimal chip control over a wide range of cutting conditions and workpiece materials.



**-AL**

For cost-effective machining of aluminum, non-ferrous metals, and plastics. Extremely sharp cutting edges result in optimum part finishes with low cutting forces and short chips.



**1P**

Preferred for light finishing. Low cutting forces and reduced power requirements due to positive rake angle. Good chip control over a wide range.

## **P** Steel Turning



**Crankshaft/Camshaft**  
*Roughing and Finishing*



**Connecting Rods**  
*Boring*



**Gears**  
*Roughing and Finishing*



**Input/Output Shafts**

## **M** Stainless Steel Turning



**Turbo Charger**  
*Roughing and Finishing*



**Flanges**  
*Roughing and Finishing*



**Bearing Housing**  
*Roughing and Finishing*



**Valve Body**  
*Roughing and Finishing*

## **K** Cast Iron Turning



**Cylinder Liner**  
*Roughing and Finishing*



**Engine Block**



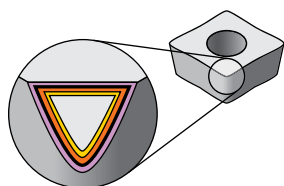
**Brake Drum and Disc**



**Hub**  
*Roughing and Finishing*



## Grades and Grade Descriptions



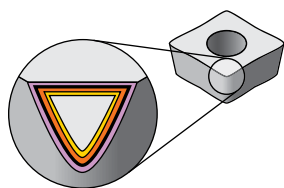
Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

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

Grade	Coating	Grade Description	wear resistance ← → toughness																				
			05	10	15	20	25	30	35	40	45												
WM15CT	HC-M15	Coated carbide. MT-CVD/CVD – TiN-TiCN-Al <sub>2</sub> O <sub>3</sub> -TiOCN. High degree of wear resistance and good resistance to depth-of-cut notching for long tool life in finishing to medium turning applications.	P																				
			M																				
WM20CT	HC-K15	A multilayer CVD coated carbide grade with TiN-TiCN-Al <sub>2</sub> O <sub>3</sub> coating over a wear-resistant substrate. Suitable for general-purpose/medium machining applications in stainless steels at moderate speeds and feeds. The substrate offers very good toughness and the coating provides high wear resistance, ensuring performance even in interrupted cuts with long tool life.	P																				
			M																				
WM25CT	HC-M25	Coated carbide. MT-CVD/CVD – TiN-TiCN-Al <sub>2</sub> O <sub>3</sub> -TiOCN. Good balance of wear resistance and toughness properties. Light and medium machining. For austenitic stainless steel AISI series.	P																				
			M																				
WM35CT	HC-M35	Coated carbide. MT-CVD/CVD – TiN-TiCN-Al <sub>2</sub> O <sub>3</sub> -TiOCN. Good toughness and wear resistance balance. For medium to roughing operations with light and heavily interrupted cuts.	P																				
			M																				
THM	HW-K15	Uncoated carbide. Extraordinary balance of toughness, wear resistance, edge stability. Suitable for light to medium turning applications in continuous and light interrupted cuts in materials like cast iron and non-ferrous metals.	K																				
			N																				
WK05CT	HC-K05	Coated carbide. MT-CVD/CVD – TiN-TiCN-Al <sub>2</sub> O <sub>3</sub> . Increased wear resistance for long tool life at high cutting speeds. Enhanced edge strength against depth-of-cut notching in interrupted cuts. Maximum wear resistance for long tool life at high cutting speeds in finish to medium machining.	P																				
			K																				



Grades and Grade Descriptions



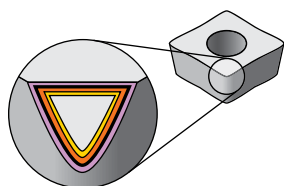
Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

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

Grade	Coating	Grade Description	wear resistance ← → toughness																					
			05	10	15	20	25	30	35	40	45													
WK15CT		Composition: A multilayered coating with moderately thick MTCVD TiCN-Al <sub>2</sub> O <sub>3</sub> layers over a highly deformation-resistant carbide substrate. Application: Designed for high-speed machining of gray and ductile irons. The substrate and coating architecture together with post-coat treatment ensure a tremendous tool life advantage, especially when cutting higher tensile strength ductile and gray irons where workpiece size consistency and reliability of tool life are critical. Excellent both in continuous cuts and varied depths of cut.	P																					
	HC-M20		K																					
WK20CT		Coated carbide. MT-CVD/CVD – TiN-TiCN-Al <sub>2</sub> O <sub>3</sub> . First choice for a wide range of machining on all gray and ductile irons, light to heavy machining, smooth or interrupted cuts, and wet or dry.	P																					
	HC-K20		K																					
WS10PT		An advanced multilayer PVD coating over a very deformation-resistant unalloyed carbide substrate. The new and improved coating improves edge stability with wide range speed and feed capabilities. WS10PT™ is ideal for finishing to general machining of most workpiece materials at a wide range of speed and feed capabilities. Excellent for machining most steels, stainless steels, cast irons, non-ferrous materials, and super alloys with improved edge toughness and higher cutting speed and feed capabilities.	P																					
			M																					
			K																					
			N																					
			S																					
WS25PT		An advanced PVD grade with hard AlTiN coating and fine-grain unalloyed substrate. The new and improved coating improves edge stability with wide range speed and feed capabilities. WS25PT™ is ideal for general machining of most steels, stainless steels, high-temp alloys, titanium, irons, and non-ferrous materials at moderate speeds and over a wide range of feeds, with improved edge toughness for interrupted cut and high feed rates.	P																					
			M																					
			K																					
			N																					
			S																					
WU10HT		Uncoated carbide. Highly wear-resistant microfine substrate. Suitable for finish turning applications in aluminum and all types of non-ferrous materials, stainless steel, and high-temp alloys with suitable edge preparation. Mainly applied in continuous cuts.																						
			M																					
			N																					
WU05PT		Coated carbide. PVD AlTiN-coated grade with microfine substrate and highly wear-resistant coating. Suitable for finish turning in aluminum and other non-ferrous materials and also steels, stainless steel, and high-temp alloys with reliability in continuous cuts with suitable edge preparation.																						
			M																					
			K																					
			N																					

INDEXABLE MILLING  
SOLID END MILLING  
HOLE/MAKING  
TAPPING  
TURNING

## Grades and Grade Descriptions



Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

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

Grade	Coating	Grade Description	wear resistance ← → toughness																				
			05	10	15	20	25	30	35	40	45												
WU10PT	HC-P10	The WU10PT grade is ideal for finishing to general machining of most workpiece materials at higher speeds. Excellent for machining most steels, stainless steels, cast irons, and super alloys under stable conditions.	P																				
			M																				
			K																				
			N																				
			S																				
			H																				
WU25PT	HC-P25	An advanced PVD-Al TiN-coated grade with a tough, ultra-fine-grain, unalloyed substrate. For general-purpose machining of most steels, stainless steels, high-temperature alloys, titanium alloys, and cast irons.	P																				
			M																				
			K																				
			N																				
			S																				
			H																				



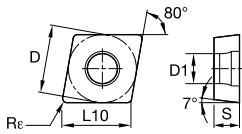








## CCMT-MU • Medium Universal



● first choice  
○ alternate choice

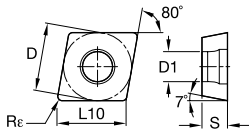
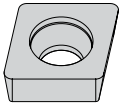
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M	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○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

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1																																																			
		mm	in	mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT																														
CCMT060208MU	CCMT2152MU	6,35	1/4	6,45	.254	2,38	3/32	0,8	1/32	2,80	.110																																																		
CCMT090304MU	CCMT321MU	9,53	3/8	9,67	.381	3,18	1/8	0,4	1/64	4,40	.173																																																		
CCMT090308MU	CCMT322MU	9,53	3/8	9,67	.381	3,18	1/8	0,8	.315	4,40	.173																																																		
CCMT09T3041P	CCMT32511P	9,53	3/8	9,67	.381	3,97	5/32	0,4	1/64	4,40	.173																																																		
CCMT09T304MU	CCMT3251MU	9,53	3/8	9,67	.381	3,97	5/32	0,4	1/64	4,40	.173																																																		
CCMT09T3081P	CCMT32521P	9,53	3/8	9,67	.381	3,97	5/32	0,8	1/32	4,40	.173																																																		
CCMT09T308MU	CCMT3252MU	9,53	3/8	9,67	.381	3,97	5/32	0,8	1/32	4,40	.173																																																		
CCMT120404MU	CCMT431MU	12,70	1/2	12,90	.508	4,76	3/16	0,4	1/64	5,50	.217																																																		
CCMT120408MU	CCMT432MU	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,50	.217																																																		

INDEXABLE MILLING  
SOLID END MILLING  
HOLEMAKING  
TAPPING  
TURNING



## CCMW • Medium Machining



● first choice  
○ alternate choice

P	M	K	N	S	H	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT	
●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
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○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1																											
		mm	in	mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT						
CCMW060202	CCMW21505	6,35	1/4	6,45	.254	2,38	3/32	0,2	.008	2,80	.110	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
CCMW060204	CCMW060204	6,35	1/4	6,45	.236	2,38	3/32	0,4	1/64	2,84	.112	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
CCMW060204	CCMW2151	6,35	1/4	6,45	.236	2,38	3/32	0,4	1/64	2,84	.112	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
CCMW090302	CCMW3205	9,53	3/8	9,67	.381	3,18	1/8	0,2	.00787	4,40	.173	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
CCMW090304	CCMW321	9,53	3/8	9,67	.381	3,18	1/8	0,4	1/64	4,45	.175	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
CCMW090308	CCMW090308	9,53	3/8	9,67	.381	3,18	1/8	0,8	1/32	4,45	.175	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
CCMW090308	CCMW322	9,53	3/8	9,67	.381	3,18	1/8	0,8	1/32	4,45	.175	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
CCMW09T304	CCMW3251	9,53	3/8	9,67	.381	3,97	5/32	0,4	1/64	4,45	.175	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
CCMW09T308	CCMW3252	9,53	3/8	9,67	.381	3,97	5/32	0,8	1/32	4,40	.173	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
CCMW120404	CCMW431	12,70	1/2	12,90	.508	4,76	3/16	0,4	1/64	5,50	.217	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
CCMW120408	CCMW120408	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,50	.217	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
CCMW120408	CCMW432	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,50	.217	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

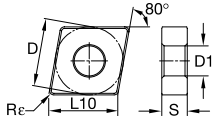
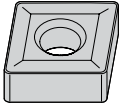
TURNING







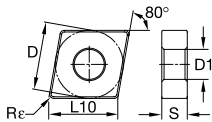
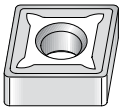
CNMG • Roughing



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1																									
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT		
CNMG120404	CNMG431	12,70	1/2	12,90	.508	4,76	3/16	0,4	1/64	5,16	.203																								
CNMG120408	CNMG432	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,16	.203																								
CNMG190612	CNMG643	19,05	3/4	19,34	.762	6,35	1/4	1,2	3/64	7,93	.313																								

CNMG-5 • Roughing



● first choice  
○ alternate choice

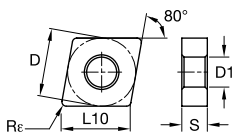
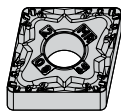
ISO catalog number	ANSI catalog number	D		L10		S		Re		D1																										
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CNMG120408-5	CNMG4325	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,16	.203																									
CNMG120412-5	CNMG4335	12,70	1/2	12,90	.508	4,76	3/16	1,2	3/64	5,16	.203																									







## CNMG-MR • Medium Roughing



● first choice

○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT			
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in																					
CNMG120404MR	CNMG431MR	12,70	1/2	12,90	.508	4,76	3/16	0,4	1/64	5,16	.203																							
CNMG120408MR	CNMG432MR	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,16	.203																							
CNMG120412MR	CNMG433MR	12,70	1/2	12,90	.508	4,76	3/16	1,2	3/64	5,16	.203																							
CNMG120416MR	CNMG434MR	12,70	1/2	12,90	.508	4,76	3/16	1,6	1/16	5,16	.203																							
CNMG160608MR	CNMG542MR	15,88	5/8	16,12	.635	6,35	1/4	0,8	1/32	6,35	.250																							
CNMG160612MR	CNMG543MR	15,88	5/8	16,12	.635	6,35	1/4	1,2	3/64	6,35	.250																							
CNMG160616MR	CNMG544MR	15,88	5/8	16,12	.635	6,35	1/4	1,6	1/16	6,35	.250																							
CNMG190612MR	CNMG643MR	19,05	3/4	19,34	.762	6,35	1/4	1,2	3/64	7,93	.313																							
CNMG190616MR	CNMG644MR	19,05	3/4	19,34	.762	6,35	1/4	1,6	1/16	7,93	.313																							

INDEXABLE MILLING

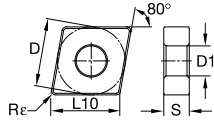
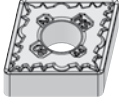
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## CNMG-MS • Medium Sharp



● first choice  
○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT
		mm	in	mm	in	mm	in	mm	in	mm	in																				
CNMG120404MS	CNMG431MS	12,70	1/2	12,90	.508	4,76	3/16	0,4	1/64	5,16	.203																				
CNMG120408MS	CNMG432MS	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,16	.203																				
CNMG120412MS	CNMG433MS	12,70	1/2	12,90	.508	4,76	3/16	1,2	3/64	5,16	.203																				
CNMG120416MS	CNMG434MS	12,70	1/2	12,90	.508	4,76	3/16	1,6	1/16	5,16	.203																				
CNMG160608MS	CNMG542MS	15,88	5/8	16,12	.635	6,35	1/4	0,8	1/32	6,35	.250																				
CNMG160612MS	CNMG543MS	15,88	5/8	16,12	.635	6,35	1/4	1,2	3/64	6,35	.250																				
CNMG190608MS	CNMG642MS	19,05	3/4	19,34	.762	6,35	1/4	0,8	1/32	7,93	.313																				
CNMG190612MS	CNMG643MS	19,05	3/4	19,34	.762	6,35	1/4	1,2	3/64	7,93	.313																				
CNMG190616MS	CNMG644MS	19,05	3/4	19,34	.762	6,35	1/4	1,6	1/16	7,92	.312																				

INDEXABLE MILLING

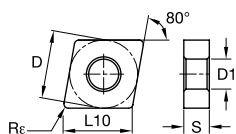
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## CNMG-MW • Medium Wiper

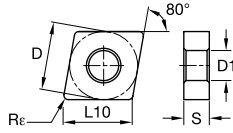
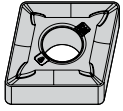


● first choice  
○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT
		mm	in	mm	in	mm	in	mm	in	mm	in																				
CNMG120408MW	CNMG432MW	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNMG120412MW	CNMG433MW	12,70	1/2	12,90	.508	4,76	3/16	1,2	3/64	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

CNMG-RH • Roughing



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1																												
		mm	in	mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT							
CNMG120408RH	CNMG432RH	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○				
CNMG120412RH	CNMG433RH	12,70	1/2	12,90	.508	4,76	3/16	1,2	3/64	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○				
CNMG120416RH	CNMG434RH	12,70	1/2	12,90	.508	4,76	3/16	1,6	1/16	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			
CNMG160608RH	CNMG542RH	15,88	5/8	16,12	.635	6,35	1/4	0,8	1/32	6,35	.250	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			
CNMG160612RH	CNMG543RH	15,88	5/8	16,12	.635	6,35	1/4	1,2	3/64	6,35	.250	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
CNMG160616RH	CNMG544RH	15,88	5/8	16,12	.635	6,35	1/4	1,6	1/16	6,35	.250	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
CNMG190608RH	CNMG642RH	19,05	3/4	19,34	.762	6,35	1/4	0,8	1/32	7,93	.313	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
CNMG190612RH	CNMG643RH	19,05	3/4	19,34	.762	6,35	1/4	1,2	3/64	7,93	.313	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNMG190616RH	CNMG644RH	19,05	3/4	19,34	.762	6,35	1/4	1,6	1/16	7,93	.313	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNMG190624RH	CNMG646RH	19,05	3/4	19,34	.762	6,35	1/4	2,4	3/32	7,93	.313	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

INDEXABLE MILLING

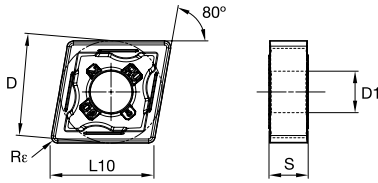
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

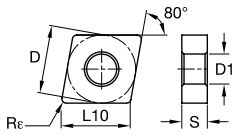
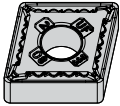
## CNMG-RU • Roughing Universal



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		Material Compatibility																						
		mm	in	mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT			
CNMG120408RU	CNMG432RU	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNMG120412RU	CNMG433RU	12,70	1/2	12,90	.508	4,76	3/16	1,2	3/64	5,16	.203	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	

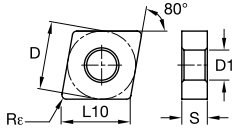
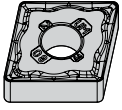
## CNMG-UF • Fine Finishing



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		Material Compatibility																					
		mm	in	mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT		
CNMG120404UF	CNMG431UF	12,70	1/2	12,90	.508	4,76	3/16	0,4	1/64	5,16	.203	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNMG120408UF	CNMG432UF	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNMG120412UF	CNMG433UF	12,70	1/2	12,90	.508	4,76	3/16	1,2	3/64	5,16	.203	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

**CNMG-UM • Medium Machining**



● first choice  
○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
CNMG120404UM	CNMG431UM	12,70	1/2	12,90	.508	4,76	3/16	0,4	1/64	5,16	.203																					
CNMG120408UM	CNMG432UM	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,16	.203	6496789	5645219			4172335	4172380	4172381	4172411				5645217									
CNMG120412UM	CNMG433UM	12,70	1/2	12,90	.508	4,76	3/16	1,2	3/64	5,16	.203	6496790					4172382															

INDEXABLE MILLING

SOLID END MILLING

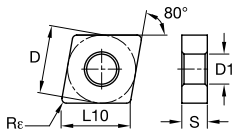
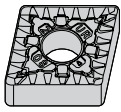
HOLEMAKING

TAPPING

TURNING



CNMG-UR • Universal Roughing



● first choice  
○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1																												
		mm	in	mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT							
CNMG120404UR	CNMG431UR	12,70	1/2	12,90	.508	4,76	3/16	0,4	1/64	5,16	.203	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○				
CNMG120408UR	CNMG432UR	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,16	.203	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○				
CNMG120412UR	CNMG433UR	12,70	1/2	12,90	.508	4,76	3/16	1,2	3/64	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			
CNMG120416UR	CNMG434UR	12,70	1/2	12,90	.508	4,76	3/16	1,6	1/16	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
CNMG160608UR	CNMG542UR	15,88	5/8	16,12	.635	6,35	1/4	0,8	1/32	6,35	.250	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
CNMG160612UR	CNMG543UR	15,88	5/8	16,12	.635	6,35	1/4	1,2	3/64	6,35	.250	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
CNMG160616UR	CNMG544UR	15,88	5/8	16,12	.635	6,35	1/4	1,6	1/16	6,35	.250	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
CNMG190612UR	CNMG643UR	19,05	3/4	19,34	.762	6,35	1/4	1,2	3/64	7,93	.313	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
CNMG190616UR	CNMG644UR	19,05	3/4	19,34	.762	6,35	1/4	1,6	1/16	7,93	.313	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

INDEXABLE MILLING

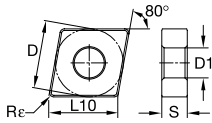
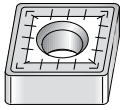
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HOLE MAKING

TAPPING

TURNING

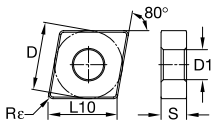
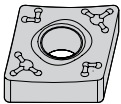
### CNMM-8 • Heavy Roughing



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT	
		mm	in	mm	in	mm	in	mm	in	mm	in																					
CNMM1906168	CNMM6448	19,05	3/4	19,34	.762	6,35	1/4	1,6	1/16	7,93	.313	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

### CNMM-65 • Heavy Roughing

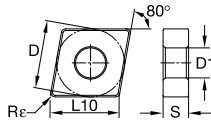
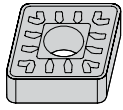


● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT	
		mm	in	mm	in	mm	in	mm	in	mm	in																					
CNMM12040865	CNMM43265	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
CNMM12041265	CNMM43365	12,70	1/2	12,90	.508	4,76	3/16	1,2	3/64	5,16	.203	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
CNMM16060865	CNMM54265	15,88	5/8	16,12	.635	6,35	1/4	0,8	1/32	6,35	.250	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
CNMM16061265	CNMM54365	15,88	5/8	16,12	.635	6,35	1/4	1,2	3/64	6,35	.250	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNMM16061665	CNMM54465	15,88	5/8	16,12	.635	6,35	1/4	1,6	1/16	6,35	.250	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNMM19061265	CNMM64365	19,05	3/4	19,34	.762	6,35	1/4	1,2	3/64	7,93	.313	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNMM19061665	CNMM64465	19,05	3/4	19,34	.762	6,35	1/4	1,6	1/16	7,93	.313	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNMM19062465	CNMM64665	19,05	3/4	19,34	.762	6,35	1/4	2,4	3/32	7,93	.313	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

INDEXABLE MILLING

## CNMM-SR • Heavy Roughing



SOLID END MILLING

● first choice  
○ alternate choice

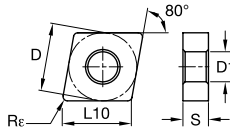
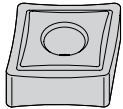
P	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
M	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in																			
CNMM190616SR	CNMM644SR	19,05	3/4	19,34	.762	6,35	1/4	1,6	1/16	7,93	.313	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNMM190624SR	CNMM646SR	19,05	3/4	19,34	.762	6,35	1/4	2,4	3/32	7,93	.313	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNMM250924SR	CNMM866SR	25,40	1	25,79	1.015	9,53	3/8	2,4	3/32	9,12	.359	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

HOLEMAKING

TAPPING

## CNMP • Medium Machining



● first choice  
○ alternate choice

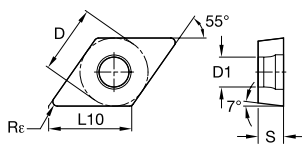
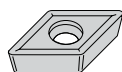
P	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
M	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○	○	○	○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

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT		
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in																				
CNMP120404	CNMP431	12,70	1/2	12,90	.508	4,76	3/16	0,4	1/64	5,16	.203	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
CNMP120408	CNMP432	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNMP120412	CNMP433	12,70	1/2	12,90	.508	4,76	3/16	1,2	3/64	5,16	.203	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNMP190612	CNMP643	19,05	3/4	19,34	.762	6,35	1/4	1,2	3/64	7,93	.313	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNMP190616	CNMP644	19,05	3/4	19,34	.762	6,35	1/4	1,6	1/16	7,93	.313	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

TURNING



## DCMT • Medium Machining



● first choice

○ alternate choice

P	M	K	N	S	H	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT	
●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT			
		mm	in	mm	in	mm	in	mm	in	mm	in																							
DCMT070204	DCMT2151	6,35	1/4	7,75	.305	2,38	3/32	0,4	1/64	2,80	.110	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DCMT11T304	DCMT11T304	9,53	3/8	11,63	.458	3,97	5/32	0,4	1/64	4,40	.173	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DCMT11T304	DCMT3251	9,53	3/8	11,63	.458	3,97	5/32	0,4	1/64	4,40	.173	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DCMT11T308	DCMT11T308	9,53	3/8	11,63	.458	3,97	5/32	0,8	1/32	4,45	.175	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DCMT11T308	DCMT3252	9,53	3/8	11,63	.458	3,97	5/32	0,8	1/32	4,45	.175	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DCMT11T312	DCMT3253	9,53	3/8	11,63	.458	3,97	5/32	1,2	3/64	4,45	.175	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DCMT150408	DCMT432	12,70	1/2	15,50	.610	4,76	3/16	0,8	1/32	5,55	.218	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DCMT150412	DCMT433	12,70	1/2	15,50	.610	4,76	3/16	1,2	3/64	5,55	.218	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

INDEXABLE MILLING

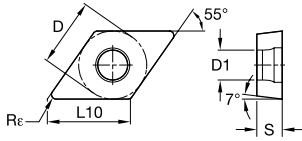
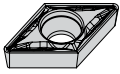
SOLID END MILLING

HOLE MAKING

TAPPING

TURNING

DCMT-FP • Finishing Positive



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT	
		mm	in	mm	in	mm	in	mm	in	mm	in																					
DCMT070202FP	DCMT21505FP	6,35	1/4	7,75	.305	2,38	3/32	0,2	.008	2,80	.110	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DCMT070204FP	DCMT2151FP	6,35	1/4	7,75	.305	2,38	3/32	0,4	1/64	2,80	.110	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
DCMT070208FP	DCMT2152FP	6,35	1/4	7,75	.305	2,38	3/32	0,8	1/32	2,80	.110	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
DCMT11T302FP	DCMT32505FP	9,53	3/8	11,63	.458	3,97	5/32	0,2	.008	4,40	.173	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
DCMT11T304FP	DCMT3251FP	9,53	3/8	11,63	.458	3,97	5/32	0,4	1/64	4,40	.173	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
DCMT11T308FP	DCMT3252FP	9,53	3/8	11,63	.458	3,97	5/32	0,8	1/32	4,40	.173	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
DCMT150404FP	DCMT431FP	12,70	1/2	15,50	.610	4,76	3/16	0,4	1/64	5,50	.217	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
DCMT150408FP	DCMT432FP	12,70	1/2	15,50	.610	4,76	3/16	0,8	1/32	5,50	.217	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

INDEXABLE MILLING

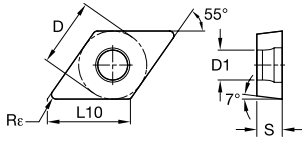
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## DCMT-MP • Medium Positive

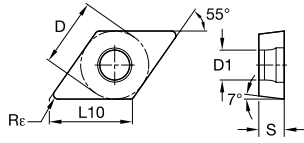
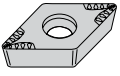


● first choice  
○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT	
		mm	in	mm	in	mm	in	mm	in	mm	in																					
DCMT11T304MP	DCMT3251MP	9,53	3/8	11,63	.458	3,97	5/32	0,4	1/64	4,40	.173	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DCMT11T308MP	DCMT3252MP	9,53	3/8	11,63	.458	3,97	5/32	0,8	1/32	4,40	.173	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DCMT11T312MP	DCMT3253MP	9,53	3/8	11,63	.458	3,97	5/32	1,2	3/64	4,40	.173	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

DCMT-MU • Medium Universal



● first choice  
○ alternate choice

P	M	K	N	S	H	WP05CT	WP15CT	WP25CT	WP35CT	WMT15CT	WMT25CT	WMT35CT	WM05CT	WM15CT	WM20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT	
						●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
						○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP05CT	WP15CT	WP25CT	WP35CT	WMT15CT	WMT25CT	WMT35CT	WM05CT	WM15CT	WM20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT		
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in																				
DCMT070204MU	DCMT2151MU	6,35	1/4	7,75	.305	2,38	3/32	0,4	1/64	2,80	.110	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DCMT070208MU	DCMT2152MU	6,35	1/4	7,75	.305	2,38	3/32	0,8	1/32	3,75	.148	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DCMT11T308MU	DCMT3252MU	9,52	3/8	11,63	.458	3,97	5/32	0,8	1/32	4,40	.173	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DCMT11T304MU	DCMT3251MU	9,53	3/8	11,63	.458	3,97	5/32	0,4	1/64	4,40	.173	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DCMT150404MU	DCMT431MU	12,70	1/2	15,50	.610	4,76	3/16	0,4	1/64	5,50	.217	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DCMT150408MU	DCMT432MU	12,70	1/2	15,50	.610	4,76	3/16	0,8	1/32	5,50	.217	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DCMT150412MU	DCMT433MU	12,70	1/2	15,50	.610	4,76	3/16	1,2	3/64	5,55	.214	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

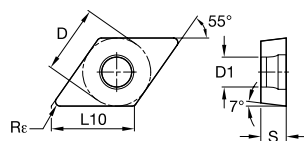
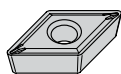
TAPPING

TURNING



INDEXABLE MILLING

## DCMT-1P • Finishing



● first choice

○ alternate choice

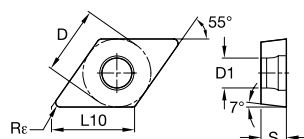
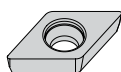
P		●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
M		●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○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

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT							
		mm	in	mm	in	mm	in	mm	in	mm	in																											
DCMT11T3041P	DCMT32511P	9,53	3/8	11,63	.458	3,97	5/32	0,4	1/64	4,40	.173	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
DCMT11T3081P	DCMT32521P	9,53	3/8	11,63	.458	3,97	5/32	0,8	1/32	4,40	.173	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

SOLID END MILLING

HOLEMAKING

## DCMW • Medium Machining



● first choice

○ alternate choice

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

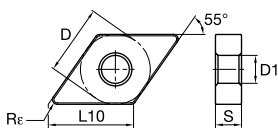
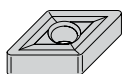
ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT								
		mm	in	mm	in	mm	in	mm	in	mm	in																												
DCMW070204	DCMW2151	6,35	1/4	7,75	.305	2,38	3/32	0,4	1/64	2,80	.110	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DCMW11T304	DCMW3251	9,53	3/8	11,63	.458	3,97	5/32	0,4	1/64	4,40	.173	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DCMW150408	DCMW432	12,70	1/2	15,50	.610	4,76	3/16	0,8	1/32	5,50	.217	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

TAPPING

TURNING



## DNGP • Medium Machining



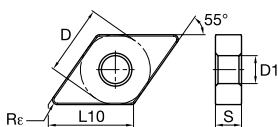
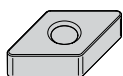
● first choice

○ alternate choice

	P	M	K	N	S	H																											
P	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○										
M	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○										
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○										
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○										
S	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○										
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○										
ISO catalog number	ANSI catalog number	D mm	D in	L10 mm	L10 in	S mm	S in	Rr mm	Rr in	D1 mm	D1 in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT		
DNGP150404	DNGP431	12,70	1/2	15,50	.610	4,76	3/16	0,4	1/64	5,16	.203	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

NOTE: Single sided

## DNMA • Roughing

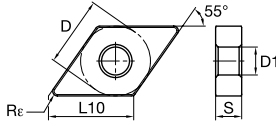
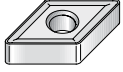


● first choice

○ alternate choice

	P	M	K	N	S	H																																
P	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○				
M	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
S	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
ISO catalog number	ANSI catalog number	D mm	D in	L10 mm	L10 in	S mm	S in	Rr mm	Rr in	D1 mm	D1 in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT							
DNMA110408	DNMA332	9,53	3/8	11,63	.458	4,76	3/16	0,8	1/32	3,81	.150	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			
DNMA150408	DNMA432	12,70	1/2	15,50	.610	4,76	3/16	0,8	1/32	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
DNMA150412	DNMA433	12,70	1/2	15,50	.610	4,76	3/16	1,2	3/64	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
DNMA150608	DNMA442	12,70	1/2	15,50	.610	6,35	1/4	0,8	1/32	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
DNMA150612	DNMA443	12,70	1/2	15,50	.610	6,35	1/4	1,2	3/64	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DNMA150616	DNMA444	12,70	1/2	15,50	.610	6,35	1/4	1,6	1/16	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

DNMG • Roughing



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT
		mm	in	mm	in	mm	in	mm	in	mm	in																				
DNMG150608	DNMG442	12,70	1/2	15,50	.610	6,35	1/4	0,8	1/32	5,16	.203	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

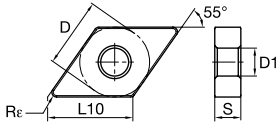
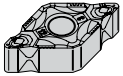
P	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
M	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○	○	○	○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

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

DNMG-CT



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT
		mm	in	mm	in	mm	in	mm	in	mm	in																				
DNMG150608CT	DNMG442CT	12,70	1/2	15,50	.610	6,35	1/4	0,8	1/32	5,16	.203	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

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

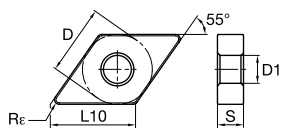
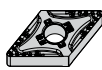
TAPPING

TURNING





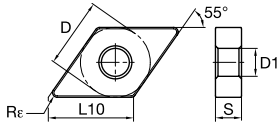
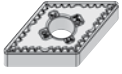
## DNMG-MR • Medium Roughing



● first choice  
○ alternate choice

	Material Groups											Grade Families																					
	P	M	K	N	S	H	Al			Ti			In			Cu			Ni			St											
	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
ISO catalog number	ANSI catalog number	D mm	D in	L10 mm	L10 in	S mm	S in	Re mm	Re in	D1 mm	D1 in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT		
DNMG110408MR	DNMG332MR	9,53	3/8	11,63	.458	4,76	3/16	0,8	1/32	3,81	.150	4171139	4171139	4170564																			
DNMG150404MR	DNMG431MR	12,70	1/2	15,50	.610	4,76	3/16	0,4	1/64	5,16	.203	4171140	4170565																				
DNMG150408MR	DNMG432MR	12,70	1/2	15,50	.610	4,76	3/16	0,8	1/32	5,16	.203	4171141	4170566	4170052																			
DNMG150412MR	DNMG433MR	12,70	1/2	15,50	.610	4,76	3/16	1,2	3/64	5,16	.203	4171142	4170567																				
DNMG150604MR	DNMG441MR	12,70	1/2	15,50	.610	6,35	1/4	0,4	1/64	5,16	.203	4171143	4170568	4170054																			
DNMG150608MR	DNMG442MR	12,70	1/2	15,50	.610	6,35	1/4	0,8	1/32	5,16	.203	4171144	4170569	4170055	4170054	4173023																	
DNMG150612MR	DNMG443MR	12,70	1/2	15,50	.610	6,35	1/4	1,2	3/64	5,16	.203	4171145	4170570																				

## DNMG-MS • Medium Sharp



● first choice  
○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		R <sub>ε</sub>		D1		Material Selection Matrix																																										
		mm	in	mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT																							
DNMG110408MS	DNMG332MS	9,53	3/8	11,63	.458	4,76	3/16	0,8	1/32	3,81	.150	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○									
DNMG150404MS	DNMG431MS	12,70	1/2	15,50	.610	4,76	3/16	0,4	1/64	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○								
DNMG150408MS	DNMG432MS	12,70	1/2	15,50	.610	4,76	3/16	0,8	1/32	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
DNMG150412MS	DNMG433MS	12,70	1/2	15,50	.610	4,76	3/16	1,2	3/64	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○					
DNMG150604MS	DNMG441MS	12,70	1/2	15,50	.610	6,35	1/4	0,4	1/64	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			
DNMG150608MS	DNMG442MS	12,70	1/2	15,50	.610	6,35	1/4	0,8	1/32	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
DNMG150612MS	DNMG443MS	12,70	1/2	15,50	.610	6,35	1/4	1,2	3/64	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

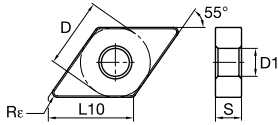








**DNMG-UR • Universal Roughing**



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		R <sub>e</sub>		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT	
		mm	in	mm	in	mm	in	mm	in	mm	in																					
DNMG110408UR	DNMG332UR	9,53	3/8	11,63	.458	4,76	3/16	0,8	1/32	3,81	.150	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DNMG110412UR	DNMG333UR	9,53	3/8	11,63	.458	4,76	3/16	1,2	3/64	3,81	.150	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
DNMG150408UR	DNMG432UR	12,70	1/2	15,50	.610	4,76	3/16	0,8	1/32	5,16	.203	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
DNMG150412UR	DNMG433UR	12,70	1/2	15,50	.610	4,76	3/16	1,2	3/64	5,16	.203	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
DNMG150608UR	DNMG442UR	12,70	1/2	15,50	.610	6,35	1/4	0,8	1/32	5,16	.203	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
DNMG150612UR	DNMG443UR	12,70	1/2	15,50	.610	6,35	1/4	1,2	3/64	5,16	.203	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
DNMG150616UR	DNMG444UR	12,70	1/2	15,50	.610	6,35	1/4	1,6	1/16	5,16	.203	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	

INDEXABLE MILLING

SOLID END MILLING

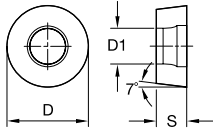
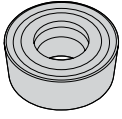
HOLEMAKING

TAPPING

TURNING



## RCMT • Medium Machining



● first choice  
○ alternate choice

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

ISO catalog number	ANSI catalog number	D		S		D1																																		
		mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT													
RCMT0602M0	RCMT0602M0	6,00	.236	2,38	3/32	2,80	.110	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
RCMT0803M0	RCMT0803M0	8,00	.315	3,18	1/8	3,40	.134	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
RCMT10T3M0	RCMT10T3M0	10,00	.394	3,97	5/32	4,40	.173	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
RCMT1204M0	RCMT1204M0	12,00	.472	4,76	3/16	4,40	.173	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
RCMT1606M0	RCMT1606M0	16,00	.630	6,35	1/4	5,50	.217	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

INDEXABLE MILLING

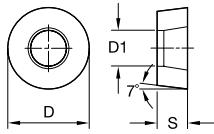
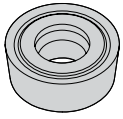
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

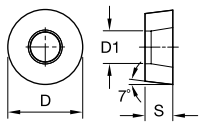
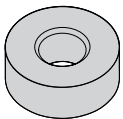
## RCMX • Roughing



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		S		D1		Material Compatibility Matrix																																	
		mm	in	mm	in	mm	in	P	M	K	N	S	H	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT								
								●	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
RCMX2006M0	RCMX2006M0	20,00	.7874	6,35	1/4	6,50	.256	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
RCMX2006M0T	RCMX2006M0T	20,00	.7874	6,35	1/4	6,50	.256	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
RCMX2507M0T	RCMX2507M0T	25,00	63/64	7,94	5/16	7,40	.291	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
RCMX3209M0	RCMX3209M0	32,00	1.2598	9,53	3/8	11,85	.465	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
RCMX3209M0T	RCMX3209M0T	32,00	1.258	9,53	3/8	9,50	.374	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

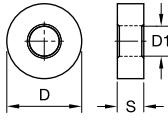
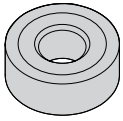
## RNMA • Roughing



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		S		D1		Material Compatibility Matrix																																		
		mm	in	mm	in	mm	in	P	M	K	N	S	H	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT									
								●	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
RNMA120400	RNMA43	12,70	1/2	4,76	3/16	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

RNMG-RH • Roughing



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		S		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT
		mm	in	mm	in	mm	in																				
RNMG090300RH	RNMG32RH	9,53	3/8	3,18	1/8	3,81	.150	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
RNMG120400RH	RNMG43RH	12,70	1/2	4,76	3/16	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
RNMG190600RH	RNMG64RH	19,05	3/4	6,35	1/4	7,93	.313	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

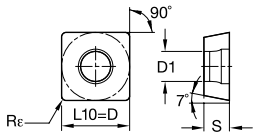
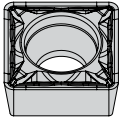
TAPPING

TURNING





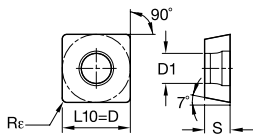
SCMT-FP • Finishing Positive



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT	
		mm	in	mm	in	mm	in	mm	in	mm	in																					
SCMT09T308FP	SCMT3252FP	9,53	3/8	9,53	.375	3,97	5/32	0,8	1/32	4,40	.173	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
SCMT120408FP	SCMT432FP	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,50	.217	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	

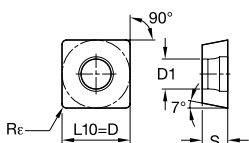
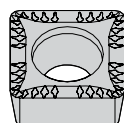
SCMT-MP • Medium Positive



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT
		mm	in	mm	in	mm	in	mm	in	mm	in																				
SCMT09T304MP	SCMT3251MP	9,53	3/8	9,53	.375	3,97	5/32	0,4	1/64	4,40	.173	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
SCMT09T308MP	SCMT3252MP	9,53	3/8	9,53	.375	3,97	5/32	0,8	1/32	4,40	.173	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
SCMT120404MP	SCMT431MP	12,70	1/2	12,70	.500	4,76	3/16	0,4	1/64	5,50	.217	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
SCMT120408MP	SCMT432MP	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,50	.217	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
SCMT120412MP	SCMT433MP	12,70	1/2	12,70	.500	4,76	3/16	1,2	3/64	5,50	.217	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

## SCMT-MU • Medium Universal

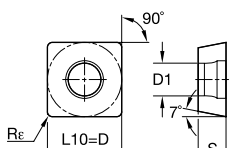
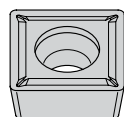


● first choice

○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT		
		mm	in	mm	in	mm	in	mm	in	mm	in																						
SCMT090308MU	SCMT322MU	9,53	3/8	9,53	.375	3,18	1/8	0,8	1/32	4,40	.173	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
SCMT09T304MU	SCMT3251MU	9,53	3/8	9,53	.375	3,97	5/32	0,4	1/64	4,40	.173	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
SCMT09T308MU	SCMT3252MU	9,53	3/8	9,53	.375	3,97	5/32	0,8	1/32	4,40	.173	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
SCMT120408MU	SCMT432MU	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,50	.217	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
SCMT120412MU	SCMT433MU	12,70	1/2	12,70	.500	4,76	3/16	1,2	3/64	5,50	.217	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

## SCMT-1P • Finishing



● first choice

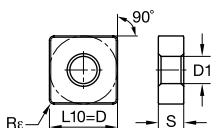
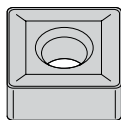
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT			
		mm	in	mm	in	mm	in	mm	in	mm	in																							
SCMT1204081P	SCMT4321P	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,50	.217	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○





**SNMG • Roughing**



● first choice

○ alternate choice

P	M	K	N	S	H	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT
●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
SNMG120408	SNMG120408	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,16	.203																					
SNMG190612	SNMG190612	19,05	3/4	19,05	.750	6,35	1/4	1,2	3/64	7,93	.313																					
SNMG120408	SNMG432	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,16	.203									6613608												
SNMG250724	SNMG856	25,40	1	25,40	1.000	7,94	5/16	2,4	3/32	9,12	.359																					
SNMG250924	SNMG866	25,40	1	25,40	1.000	9,53	3/8	2,4	3/32	9,12	.359				5091303																	

INDEXABLE MILLING

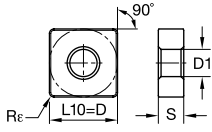
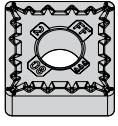
SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

## SNMG-FF • Fine Finishing



● first choice

○ alternate choice

	P	M	K	N	S	H
WP05CT	●	●	○	○	○	○
WP15CT	●	●	○	○	○	○
WP25CT	○	○	○	○	○	○
WP35CT	○	○	○	○	○	○
WM15CT	○	○	○	○	○	○
WM25CT	○	○	○	○	○	○
WM35CT	○	○	○	○	○	○
WK05CT	○	○	○	○	○	○
WK15CT	○	○	○	○	○	○
WK20CT	○	○	○	○	○	○
WS10PT	○	○	○	○	○	○
WS25PT	○	○	○	○	○	○
WU10HT	○	○	○	○	○	○
WU05PT	○	○	○	○	○	○
WP20TT	○	○	○	○	○	○
THM	○	○	○	○	○	○
TTR	○	○	○	○	○	○
WM20CT	○	○	○	○	○	○
WU10PT	○	○	○	○	○	○
WU25PT	○	○	○	○	○	○

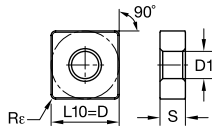
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		Material Groups																							
		mm	in	mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT				
SNMG090308FF	SNMG322FF	9,53	3/8	9,53	.375	3,18	1/8	0,8	1/32	3,81	.150																								
SNMG120404FF	SNMG431FF	12,70	1/2	12,70	.500	4,76	3/16	0,4	1/64	5,16	.203																								
SNMG120408FF	SNMG432FF	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,16	.203																								
SNMG120412FF	SNMG433FF	12,70	1/2	12,70	.500	4,76	3/16	1,2	3/64	5,16	.203																								







SNMG-MS • Medium Sharp



● first choice

○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT		
		mm	in	mm	in	mm	in	mm	in	mm	in																						
SNMG120408MS	SNMG432MS	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,16	.203																						
SNMG120412MS	SNMG433MS	12,70	1/2	12,70	.500	4,76	3/16	1,2	3/64	5,16	.203																						
SNMG120416MS	SNMG434MS	12,70	1/2	12,70	.500	4,76	3/16	1,6	1/16	5,16	.203																						
SNMG150612MS	SNMG543MS	15,88	5/8	15,88	.625	6,35	1/4	1,2	3/64	6,35	.250																						
SNMG190612MS	SNMG643MS	19,05	3/4	19,05	.750	6,35	1/4	1,2	3/64	7,93	.313																						
SNMG190616MS	SNMG644MS	19,05	3/4	19,05	.750	6,35	1/4	1,6	1/16	7,94	.312																						

INDEXABLE MILLING

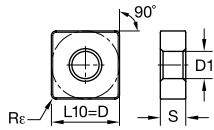
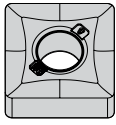
SOLID END MILLING

HOLE/DRILLING

TAPPING

TURNING

## SNMG-RH • Roughing



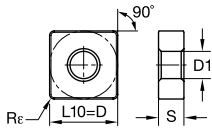
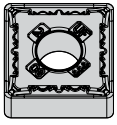
● first choice

○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1																													
		mm	in	mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT								
<b>SNMG120408RH</b>	<b>SNMG432RH</b>	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,16	.203	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○				
<b>SNMG120412RH</b>	<b>SNMG433RH</b>	12,70	1/2	12,70	.500	4,76	3/16	1,2	3/64	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			
<b>SNMG120416RH</b>	<b>SNMG434RH</b>	12,70	1/2	12,70	.500	4,76	3/16	1,6	1/16	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
<b>SNMG150608RH</b>	<b>SNMG542RH</b>	15,88	5/8	15,88	.625	6,35	1/4	0,8	1/32	6,35	.250	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
<b>SNMG150612RH</b>	<b>SNMG543RH</b>	15,88	5/8	15,88	.625	6,35	1/4	1,2	3/64	6,35	.250	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
<b>SNMG150616RH</b>	<b>SNMG544RH</b>	15,88	5/8	15,88	.625	6,35	1/4	1,6	1/16	6,35	.250	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
<b>SNMG190608RH</b>	<b>SNMG642RH</b>	19,05	3/4	19,05	.750	6,35	1/4	0,8	1/32	7,93	.313	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
<b>SNMG190612RH</b>	<b>SNMG643RH</b>	19,05	3/4	19,05	.750	6,35	1/4	1,2	3/64	7,93	.313	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
<b>SNMG190616RH</b>	<b>SNMG644RH</b>	19,05	3/4	19,05	.750	6,35	1/4	1,6	1/16	7,93	.313	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

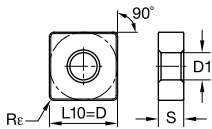
**SNMG-UF • Fine Finishing**



● first choice  
○ alternate choice

P	M	K	N	S	H	D		L10		S		Re		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT						
						mm	in	mm	in	mm	in	mm	in	mm	in																					mm	in	mm	in		
SNMG120404UF	SNMG431UF	12,70	1/2	12,70	.500	4,76	3/16	0,4	1/64	5,16	.203	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
SNMG120408UF	SNMG432UF	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,16	.203	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

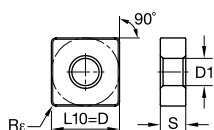
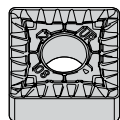
**SNMG-UM • Medium Machining**



● first choice  
○ alternate choice

P	M	K	N	S	H	D		L10		S		Re		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT													
						mm	in	mm	in	mm	in	mm	in	mm	in																					mm	in	mm	in									
SNMG120404UM	SNMG431UM	12,70	1/2	12,70	.500	4,76	3/16	0,4	1/64	5,16	.203	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
SNMG120408UM	SNMG432UM	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,16	.203	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
SNMG120412UM	SNMG433UM	12,70	1/2	12,70	.500	4,76	3/16	1,2	3/64	5,16	.203	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

## SNMG-UR • Universal Roughing



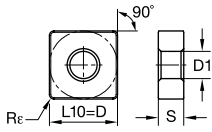
● first choice

○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		R <sub>r</sub>		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT	
		mm	in	mm	in	mm	in	mm	in	mm	in																					
SNMG120408UR	SNMG432UR	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,16	.203		4171108	4170516																		
SNMG120412UR	SNMG433UR	12,70	1/2	12,70	.500	4,76	3/16	1,2	3/64	5,16	.203		4171109	4170517	4169989	4169429	4169458	4169495			4171434											
SNMG120416UR	SNMG434UR	12,70	1/2	12,70	.500	4,76	3/16	1,6	1/16	5,16	.203		4171110								4171436	5680174										
SNMG150612UR	SNMG543UR	15,88	5/8	15,88	.625	6,35	1/4	1,2	3/64	6,35	.250		4171111	4170518	4169991		4169461	4169497			4171437	5579352	5680173									
SNMG150616UR	SNMG544UR	15,88	5/8	15,88	.625	6,35	1/4	1,6	1/16	6,35	.250			4170519			4169462	4169499			4171438											
SNMG190612UR	SNMG643UR	19,05	3/4	19,05	.750	6,35	1/4	1,2	3/64	7,93	.313		4171113	4170520		4169433							5512538									
SNMG190616UR	SNMG644UR	19,05	3/4	19,05	.750	6,35	1/4	1,6	1/16	7,93	.313		4171114	4170521			4169464	4169501														

### SNMM-8 • Heavy Roughing

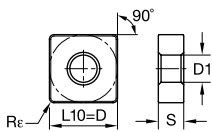
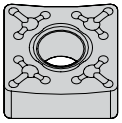


● first choice  
○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1																								
		mm	in	mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT			
SNMM2507248	SNMM8568	25,40	1	25,40	1.000	7,94	5/16	2,4	3/32	9,12	.359	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

### SNMM-65 • Heavy Roughing



● first choice  
○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1																											
		mm	in	mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT						
SNMM12040865	SNMM43265	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			
SNMM12041265	SNMM43365	12,70	1/2	12,70	.500	4,76	3/16	1,2	3/64	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
SNMM15061665	SNMM54465	15,88	5/8	15,88	.625	6,35	1/4	1,6	1/16	6,35	.250	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
SNMM19061265	SNMM64365	19,05	3/4	19,05	.750	6,35	1/4	1,2	3/64	7,93	.313	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
SNMM19061665	SNMM64465	19,05	3/4	19,05	.750	6,35	1/4	1,6	1/16	7,93	.313	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
SNMM19062465	SNMM64665	19,05	3/4	19,05	.750	6,35	1/4	2,4	3/32	7,93	.313	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

INDEXABLE MILLING

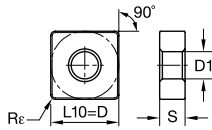
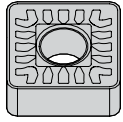
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

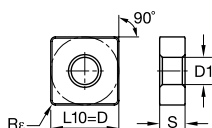
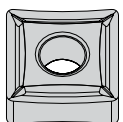
## SNMM-SR • Heavy Roughing



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT		
		mm	in	mm	in	mm	in	mm	in	mm	in																						
SNMM190616SR	SNMM644SR	19,05	3/4	19,05	.750	6,35	1/4	1,6	1/16	7,93	.313	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
SNMM190624SR	SNMM646SR	19,05	3/4	19,05	.750	6,35	1/4	2,4	3/32	7,93	.313	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
SNMM250724SR	SNMM856SR	25,40	1	25,40	1.000	7,94	5/16	2,4	3/32	9,12	.359	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
SNMM250924SR	SNMM866SR	25,40	1	25,40	1.000	9,53	3/8	2,4	3/32	9,12	.359	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	

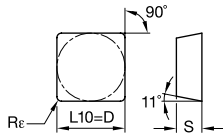
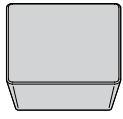
## SNMP • Medium Machining



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT	
		mm	in	mm	in	mm	in	mm	in	mm	in																					
SNMP120408	SNMP432	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
SNMP120412	SNMP433	12,70	1/2	12,70	.500	4,76	3/16	1,2	3/64	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
SNMP150612	SNMP543	15,88	5/8	15,88	.625	6,35	1/4	1,2	3/64	6,35	.250	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

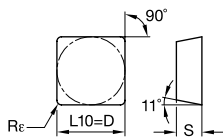
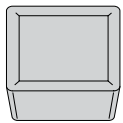
### SPGN/SPG • Medium Machining



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Re																												
		mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT							
SPGN090308	SPG322	9,53	3/8	9,53	.375	3,18	1/8	0,8	1/32																											

### SPMR • Medium Machining



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Re																												
		mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT							
SPMR120308	SPMR422	12,70	1/2	12,70	.500	3,18	1/8	0,8	1/32																											

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

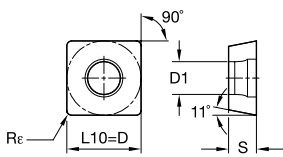
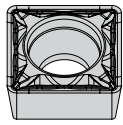
TAPPING

TURNING



INDEXABLE MILLING

SPMT-FP • Finishing Positive



● first choice

○ alternate choice

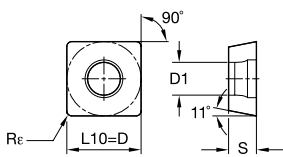
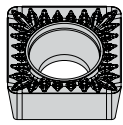
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SOLID END MILLING

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1																	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in		
SPMT09T308FP	SPMT3252FP	9,53	3/8	9,53	.375	3,97	5/32	0,8	1/32	4,40	.173	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

HOLEMAKING

SPMT-MP • Medium Positive



● first choice

○ alternate choice

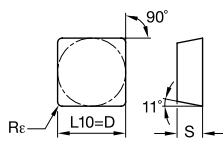
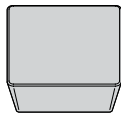
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○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

TAPPING

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1																	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in		
SPMT09T308MP	SPMT3252MP	9,53	3/8	9,53	.375	3,97	5/32	0,8	1/32	4,40	.173	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
SPMT120408MP	SPMT432MP	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,50	.217	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

TURNING

SPUN/SPU • Medium Machining



● first choice

○ alternate choice

	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
<b>P</b>																														
<b>M</b>																														
<b>K</b>	○	○	○	○		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
<b>N</b>																														
<b>S</b>																														
<b>H</b>																														

ISO catalog number	ANSI catalog number	D		L10		S		Rε		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT
		mm	in	mm	in	mm	in	mm	in																				
SPUN090308	SPU322	9,53	3/8	9,53	.375	3,18	1/8	0,8	1/32	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
SPUN120304	SPU421	12,70	1/2	12,70	.500	3,18	1/8	0,4	1/64	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
SPUN120308	SPU422	12,70	1/2	12,70	.500	3,18	1/8	0,8	1/32	•	4170857	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
SPUN120308	SPUN120308	12,70	1/2	12,70	.500	3,18	1/8	0,8	1/32	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
SPUN120312	SPU423	12,70	1/2	12,70	.500	3,18	1/8	1,2	3/64	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
SPUN120312	SPUN120312	12,70	1/2	12,70	.500	3,18	1/8	1,2	3/64	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
SPUN120412	SPU433	12,70	1/2	12,70	.500	4,76	3/16	1,2	3/64	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
SPUN150412	SPUN533	15,88	5/8	15,88	.625	4,76	3/16	1,2	3/64	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
SPUN190412	SPUN633	19,05	3/4	19,05	.750	4,76	3/16	1,2	3/64	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
SPUN190416	SPU634	19,05	3/4	19,05	.750	4,76	3/16	1,6	1/16	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

INDEXABLE MILLING  
 SOLID END MILLING  
 HOLE MAKING  
 TAPPING  
 TURNING

INDEXABLE MILLING

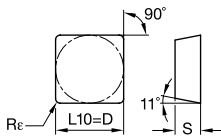
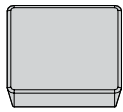
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## SPUN-T/SPU-T • Medium Machining

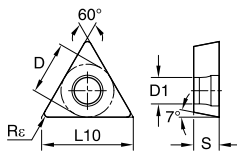
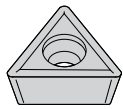


● first choice  
○ alternate choice

P	M	K	N	S	H	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

ISO catalog number	ANSI catalog number	D		L10		S		Rε		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT
		mm	in	mm	in	mm	in	mm	in																				
SPUN250620T	SPU845T	25,40	1	25,40	1.000	6,35	1/4	2,0	5/64	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

## TCMT • Medium Machining



● first choice  
○ alternate choice

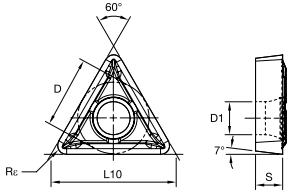
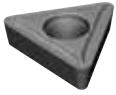
P	M	K	N	S	H	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT
		mm	in	mm	in	mm	in	mm	in	mm	in																				
TCMT110202	TCMT21505	6,35	1/4	11,00	.433	2,38	3/32	0,2	.008	2,80	.110	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
TCMT110204	TCMT2151	6,35	1/4	11,00	.433	2,38	3/32	0,4	1/64	2,80	.110	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TCMT16T304	TCMT3251	9,53	3/8	16,50	.650	3,97	5/32	0,4	1/64	4,40	.173	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TCMT16T308	TCMT3252	9,53	3/8	16,50	.650	3,97	5/32	0,8	1/32	4,40	.173	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TCMT220408	TCMT432	12,70	1/2	22,00	.866	4,76	3/16	0,8	1/32	5,50	.217	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○





TCMT-1P • Finishing

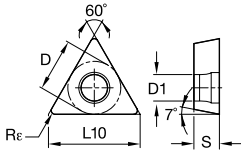
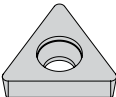


● first choice  
○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT
		mm	in	mm	in	mm	in	mm	in	mm	in																				
TCMT1102041P	TCMT21511P	6,35	1/4	11,00	.433	2,38	3/32	0,4	1/64	2,80	.110																				6868862
TCMT1102081P	TCMT21521P	6,35	1/4	11,00	.433	2,38	3/32	0,8	1/32	2,80	.110																				6868863
TCMT16T3041P	TCMT32511P	9,53	3/8	16,50	.650	3,97	5/32	0,4	1/64	4,40	.173																				6868865

TCMW • Medium Machining

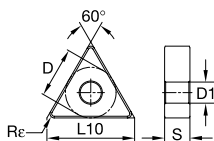
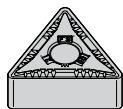


● first choice  
○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT	
		mm	in	mm	in	mm	in	mm	in	mm	in																					
TCMW110204	TCMW2151	6,35	1/4	11,00	.433	2,38	3/32	0,4	1/64	2,85	.112								4170476													
TCMW16T304	TCMW3251	9,53	3/8	16,50	.650	3,97	5/32	0,4	1/64	4,45	.175																					

## TNGG-FS • Finishing Sharp

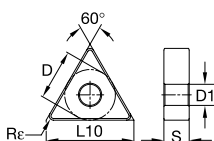
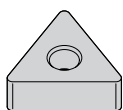


● first choice

○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT		
		mm	in	mm	in	mm	in	mm	in	mm	in																						
TNGG160404FS	TNGG331FS	9,53	3/8	16,50	.620	4,76	3/16	0,4	1/64	3,81	.150	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNGG220408FS	TNGG432FS	12,70	1/2	22,00	.866	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

## TNMA • Roughing

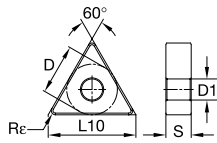
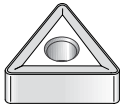


● first choice

○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT			
		mm	in	mm	in	mm	in	mm	in	mm	in																							
TNMA160408	TNMA160408	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
TNMA160408	TNMA332	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
TNMA160412	TNMA333	9,53	3/8	16,50	.650	4,76	3/16	1,2	3/64	3,81	.150	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
TNMA220408	TNMA432	12,70	1/2	22,00	.866	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMA220412	TNMA433	12,70	1/2	22,00	.866	4,76	3/16	1,2	3/64	5,16	.203	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMA220416	TNMA434	12,70	1/2	22,00	.866	4,76	3/16	1,6	1/16	5,16	.203	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMA270616	TNMA544	15,88	5/8	27,50	1.083	6,35	1/4	1,6	1/16	6,35	.250	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

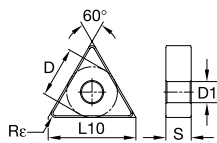
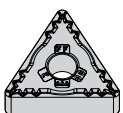
## TNMG • Roughing



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT
		mm	in	mm	in	mm	in	mm	in	mm	in																				
TNMG160404	TNMG160404	9,53	3/8	16,50	.650	4,76	3/16	0,4	1/64	3,81	.150	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
TNMG160408	TNMG160408	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
TNMG160404	TNMG331	9,53	3/8	16,50	.650	4,76	3/16	0,4	1/64	3,81	.150	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
TNMG160408	TNMG332	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
TNMG160412	TNMG333	9,53	3/8	16,50	.650	4,76	3/16	1,2	3/64	3,81	.150	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	

## TNMG-FF • Fine Finishing



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT
		mm	in	mm	in	mm	in	mm	in	mm	in																				
TNMG160404FF	TNMG331FF	9,53	3/8	16,50	.650	4,76	3/16	0,4	1/64	3,81	.150	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
TNMG160408FF	TNMG332FF	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
TNMG160412FF	TNMG333FF	9,53	3/8	16,50	.650	4,76	3/16	1,2	3/64	3,81	.150	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	



INDEXABLE MILLING

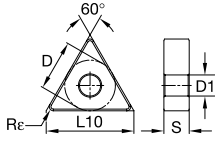
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## TNMG-ML • Medium Machining

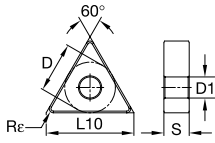


- first choice
- alternate choice

	P	M	K	N	S	H
WP05CT	●	○	○	○	○	○
WP15CT	○	○	○	○	○	○
WP25CT	○	○	○	○	○	○
WP35CT	○	○	○	○	○	○
WM15CT	○	○	○	○	○	○
WM25CT	○	○	○	○	○	○
WM35CT	○	○	○	○	○	○
WK05CT	○	○	○	○	○	○
WK15CT	○	○	○	○	○	○
WK20CT	○	○	○	○	○	○
WS10PT	○	○	○	○	○	○
WS25PT	○	○	○	○	○	○
WU10HT	○	○	○	○	○	○
WU05PT	○	○	○	○	○	○
WP20TT	○	○	○	○	○	○
THM	○	○	○	○	○	○
TTR	○	○	○	○	○	○
WM20CT	○	○	○	○	○	○
WU10PT	○	○	○	○	○	○
WU25PT	○	○	○	○	○	○

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT	
		mm	in	mm	in	mm	in	mm	in	mm	in																					
TNMG160404ML	TNMG331ML	9,53	3/8	16,50	.650	4,76	3/16	0,4	1/64	3,81	.150	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMG160408ML	TNMG332ML	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMG160412ML	TNMG333ML	9,53	3/8	16,50	.650	4,76	3/16	1,2	3/64	3,81	.150	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMG220404ML	TNMG431ML	12,70	1/2	22,00	.866	4,76	3/16	0,4	1/64	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMG220408ML	TNMG432ML	12,70	1/2	22,00	.866	4,76	3/16	0,8	1/32	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

TNMG-MR • Medium Roughing



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT
		mm	in	mm	in	mm	in	mm	in	mm	in																				
TNMG160404MR	TNMG331MR	9,53	3/8	16,50	.650	4,76	3/16	0,4	1/64	3,81	.150	•	•	•	•	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMG160408MR	TNMG332MR	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150	•	•	•	•	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
TNMG160412MR	TNMG333MR	9,53	3/8	16,50	.650	4,76	3/16	1,2	3/64	3,81	.150	•	•	•	•	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
TNMG220404MR	TNMG431MR	12,70	1/2	22,00	.866	4,76	3/16	0,4	1/64	5,16	.203	•	•	•	•	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
TNMG220408MR	TNMG432MR	12,70	1/2	22,00	.866	4,76	3/16	0,8	1/32	5,16	.203	•	•	•	•	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
TNMG220412MR	TNMG433MR	12,70	1/2	22,00	.866	4,76	3/16	1,2	3/64	5,16	.203	•	•	•	•	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
TNMG220416MR	TNMG434MR	12,70	1/2	22,00	.866	4,76	3/16	1,6	1/16	5,16	.203	•	•	•	•	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	

INDEXABLE MILLING

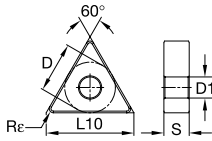
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## TNMG-MS • Medium Sharp



● first choice

○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT						
		mm	in	mm	in	mm	in	mm	in	mm	in																										
TNMG160404MS	TNMG331MS	9,53	3/8	16,50	.650	4,76	3/16	0,4	1/64	3,81	.150	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
TNMG160408MS	TNMG332MS	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
TNMG220404MS	TNMG431MS	12,70	1/2	22,00	.866	4,76	3/16	0,4	1/64	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
TNMG220408MS	TNMG432MS	12,70	1/2	22,00	.867	4,76	3/16	0,8	1/32	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMG220412MS	TNMG433MS	12,70	1/2	22,00	.866	4,76	3/16	1,2	3/64	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMG270608MS	TNMG542MS	15,88	5/8	27,50	1.083	6,35	1/4	0,8	1/32	6,35	.250	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

INDEXABLE MILLING

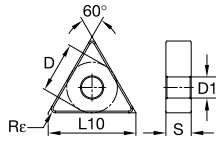
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

### TNMG-RH • Roughing



● first choice  
○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		R <sub>ε</sub>		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT							
		mm	in	mm	in	mm	in	mm	in	mm	in																											
TNMG160408RH	TNMG332RH	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150			4171007	4171542	4171724					6673946	4171927																
TNMG160412RH	TNMG333RH	9,53	3/8	16,50	.650	4,76	3/16	1,2	3/64	3,81	.150			4171543	4171725					4173058																		
TNMG220408RH	TNMG432RH	12,70	1/2	22,00	.866	4,76	3/16	0,8	1/32	5,16	.203			4171009	4171544	4171726						4171929	4171927															
TNMG220412RH	TNMG433RH	12,70	1/2	22,00	.866	4,76	3/16	1,2	3/64	5,16	.203			4171010	4171545	4171727						4171930	4171929															
TNMG220416RH	TNMG434RH	12,70	1/2	22,00	.866	4,76	3/16	1,6	1/16	5,16	.203				4171728																							
TNMG270612RH	TNMG543RH	15,88	5/8	27,50	1.083	6,35	1/4	1,2	3/64	6,35	.250			4171547	4171729																							
TNMG270616RH	TNMG544RH	15,88	5/8	27,50	1.083	6,35	1/4	1,6	1/16	6,35	.250			4171548	4171730																							
TNMG330924RH	TNMG666RH	19,05	3/4	33,00	1.299	9,53	3/8	2,4	3/32	7,93	.313			4171549	4171731																							

INDEXABLE MILLING

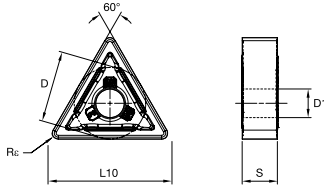
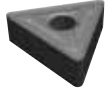
SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

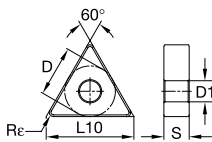
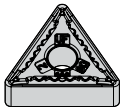
## TNMG-RU • Roughing Universal



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT	
		mm	in	mm	in	mm	in	mm	in	mm	in																					
TNMG160408RU	TNMG332RU	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMG160412RU	TNMG333RU	9,53	3/8	16,50	.650	4,76	3/16	1,2	3/64	3,81	.150	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	

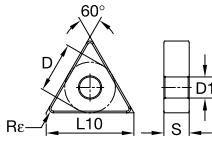
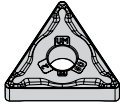
## TNMG-UF • Fine Finishing



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT
		mm	in	mm	in	mm	in	mm	in	mm	in																				
TNMG160404UF	TNMG331UF	9,53	3/8	16,50	.650	4,76	3/16	0,4	1/64	3,81	.150	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMG160408UF	TNMG332UF	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMG220404UF	TNMG431UF	12,70	1/2	22,00	.866	4,76	3/16	0,4	1/64	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMG220408UF	TNMG432UF	12,70	1/2	22,00	.866	4,76	3/16	0,8	1/32	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

TNMG-UM • Medium Machining



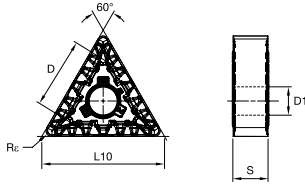
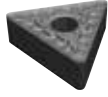
● first choice  
○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		Inserts																						
		mm	in	mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT			
TNMG160404UM	TNMG331UM	9,53	3/8	16,50	.650	4,76	3/16	0,4	1/64	3,81	.150	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
TNMG160408UM	TNMG332UM	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
TNMG160412UM	TNMG333UM	9,53	3/8	16,50	.650	4,76	3/16	1,2	3/64	3,81	.150	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
TNMG160416UM	TNMG334UM	9,53	3/8	16,50	.650	4,76	3/16	1,6	1/16	3,81	.150	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
TNMG220404UM	TNMG431UM	12,70	1/2	22,00	.866	4,76	3/16	0,4	1/64	5,16	.203	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
TNMG220408UM	TNMG432UM	12,70	1/2	22,00	.866	4,76	3/16	0,8	1/32	5,16	.203	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
TNMG220412UM	TNMG433UM	12,70	1/2	22,00	.866	4,76	3/16	1,2	3/64	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

INDEXABLE MILLING  
SOLID END MILLING  
HOLEMAKING  
TAPPING  
TURNING

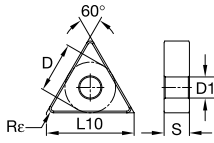
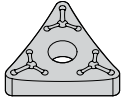
## TNMG-UR • Universal Roughing



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	T-HM	T-TR	WM20CT	WU10PT	WU25PT		
		mm	in	mm	in	mm	in	mm	in	mm	in																						
TNMG160408UR	TNMG332UR	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMG160412UR	TNMG333UR	9,53	3/8	16,50	.650	4,76	3/16	1,2	3/64	3,81	.150	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
TNMG160416UR	TNMG334UR	9,53	3/8	16,50	.650	4,76	3/16	1,6	1/16	3,81	.150	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
TNMG220408UR	TNMG432UR	12,70	1/2	22,00	.866	4,76	3/16	0,8	1/32	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
TNMG220412UR	TNMG433UR	12,70	1/2	22,00	.866	4,76	3/16	1,2	3/64	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
TNMG220416UR	TNMG434UR	12,70	1/2	22,00	.866	4,76	3/16	1,6	1/16	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
TNMG270612UR	TNMG543UR	15,88	5/8	27,50	1.083	6,35	1/4	1,2	3/64	6,35	.250	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
TNMG270616UR	TNMG544UR	15,88	5/8	27,50	1.083	6,35	1/4	1,6	1/16	6,35	.250	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	

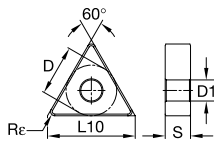
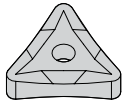
## TNMM-65 • Heavy Roughing



- first choice
- alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1																									
		mm	in	mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT				
TNMM16040865	TNMM33265	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
TNMM22040865	TNMM43265	12,70	1/2	22,00	.866	4,76	3/16	0,8	1/32	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMM22041265	TNMM43365	12,70	1/2	22,00	.866	4,76	3/16	1,2	3/64	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

## TNMP • Medium Machining



- first choice
- alternate choice

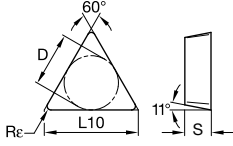
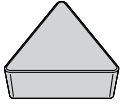
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1																										
		mm	in	mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT					
TNMP160404	TNMP331	9,53	3/8	16,50	.650	4,76	3/16	0,4	1/64	3,81	.150	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
TNMP160408	TNMP332	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMP160412	TNMP333	9,53	3/8	16,50	.650	4,76	3/16	1,2	3/64	3,81	.150	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMP220404	TNMP431	12,70	1/2	22,00	.866	4,76	3/16	0,4	1/64	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMP220408	TNMP432	12,70	1/2	22,00	.866	4,76	3/16	0,8	1/32	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○







## TPUN/TPU • Medium Machining



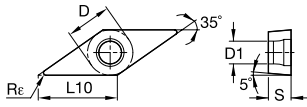
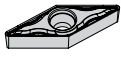
● first choice  
○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT																			
		mm	in	mm	in	mm	in	mm	in																																							
TPUN110304	TPU221	6,35	1/4	11,00	.433	3,18	1/8	0,4	1/64	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
TPUN110308	TPU222	6,35	1/4	11,00	.433	3,18	1/8	0,8	1/32	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○				
TPUN160304	TPU321	9,53	3/8	16,50	.650	3,18	1/8	0,4	1/64	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			
TPUN160308	TPU322	9,53	3/8	16,50	.650	3,18	1/8	0,8	1/32	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
TPUN160312	TPU323	9,53	3/8	16,50	.650	3,18	1/8	1,2	3/64	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			
TPUN220408	TPU432	12,70	1/2	22,00	.866	4,76	3/16	0,8	1/32	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
TPUN220408	TPUN 432	12,70	1/2	22,00	.866	4,76	3/16	0,8	1/32	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
TPUN220412	TPU433	12,70	1/2	22,00	.866	4,76	3/16	1,2	3/64	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



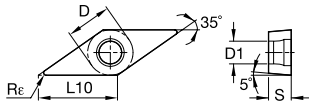
## VBMT-FP • Finishing Positive



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		Material																									
		mm	in	mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK06CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT						
VBMT110302FP	VBMT2205FP	6,35	1/4	11,07	.436	3,18	1/8	0,2	.008	2,80	.110	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
VBMT110304FP	VBMT221FP	6,35	1/4	11,07	.436	3,18	1/8	0,4	1/64	2,80	.110	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
VBMT110308FP	VBMT222FP	6,35	1/4	11,07	.436	3,18	1/8	0,8	1/32	2,80	.110	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
VBMT160402FP	VBMT3305FP	9,53	3/8	16,61	.654	4,76	3/16	0,2	.008	4,40	.173	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
VBMT160404FP	VBMT331FP	9,53	3/8	16,61	.654	4,76	3/16	0,4	1/64	4,40	.173	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
VBMT160408FP	VBMT332FP	9,53	3/8	16,61	.654	4,76	3/16	0,8	1/32	4,40	.173	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

**VBMT-MP • Medium Positive**

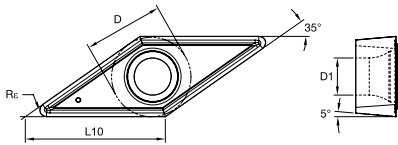


● first choice  
○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT	
		mm	in	mm	in	mm	in	mm	in	mm	in																					
VBMT160404MP	VBMT331MP	9,53	3/8	16,61	.654	4,76	3/16	0,4	1/64	4,40	.173	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋
VBMT160408MP	VBMT332MP	9,53	3/8	16,61	.654	4,76	3/16	0,8	1/32	4,40	.173	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋

**VBMT-1P • Finishing**



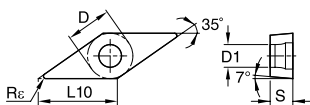
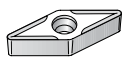
● first choice  
○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT		
		mm	in	mm	in	mm	in	mm	in	mm	in																						
VBMT1604041P	VBMT3311P	9,53	3/8	16,61	.654	4,76	3/16	0,4	1/64	4,40	.173	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	
VBMT1604081P	VBMT3321P	9,53	3/8	16,61	.654	4,76	3/16	0,8	1/32	4,40	.173	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋	⌋

INDEXABLE MILLING

## VCMT • Medium Machining



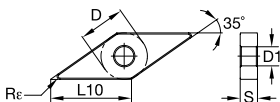
● first choice  
○ alternate choice

	P	M	K	N	S	H																										
	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
ISO catalog number	ANSI catalog number	D mm	D in	L10 mm	L10 in	S mm	S in	Rε mm	Rε in	D1 mm	D1 in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT	
VCMT16T304	VCMT3251	9,53	3/8	16,61	.654	3,97	5/32	0,4	1/64	4,40	.173	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
VCMT16T308	VCMT3252	9,53	3/8	16,61	.654	3,97	5/32	0,8	1/32	4,40	.180	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

SOLID END MILLING

HOLEMAKING

## VNGG-FS • Finishing Sharp



● first choice  
○ alternate choice

	P	M	K	N	S	H																															
	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
ISO catalog number	ANSI catalog number	D mm	D in	L10 mm	L10 in	S mm	S in	Rε mm	Rε in	D1 mm	D1 in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT						
VNGG160402FS	VNGG3305FS	9,53	3/8	16,61	.654	4,76	3/16	0,2	.008	3,81	.150	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			
VNGG160401FS	VNGG330FS	9,53	3/8	16,61	.654	4,76	3/16	0,1	.004	3,81	.150	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			
VNGG160404FS	VNGG331FS	9,53	3/8	16,61	.654	4,76	3/16	0,4	1/64	3,81	.150	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
VNGG160408FS	VNGG332FS	9,53	3/8	16,61	.654	4,76	3/16	0,8	1/32	3,81	.150	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		

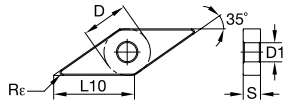
TAPPING

TURNING





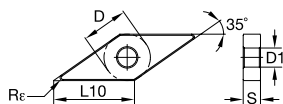
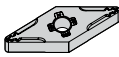
## VNMG • Medium Machining



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT	
		mm	in	mm	in	mm	in	mm	in	mm	in																					
VNMG12T304	VNMG12T304	7,14	9/32	12,45	.490	3,97	5/32	0,4	.016	3,60	.142	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
VNMG12T308	VNMG12T308	7,14	9/32	12,45	.490	3,97	5/32	0,8	.031	3,60	.142	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

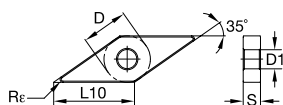
## VNMG-FF • Fine Finishing



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT	
		mm	in	mm	in	mm	in	mm	in	mm	in																					
VNMG160404FF	VNMG331FF	9,53	3/8	16,61	.654	4,76	3/16	0,4	1/64	3,81	.150	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
VNMG160408FF	VNMG332FF	9,53	3/8	16,61	.654	4,76	3/16	0,8	1/32	3,81	.150	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

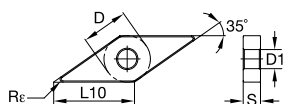
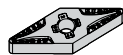
### VNMG-ML • Medium Machining



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Rø		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT					
		mm	in	mm	in	mm	in	mm	in	mm	in																									
VNMG160404ML	VNMG331ML	9,53	3/8	16,61	.654	4,76	3/16	0,4	1/64	3,81	.150				○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
VNMG160408ML	VNMG332ML	9,53	3/8	16,61	.654	4,76	3/16	0,8	1/32	3,81	.150																									

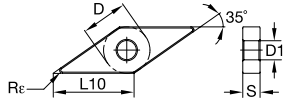
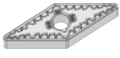
### VNMG-MR • Medium Roughing



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Rø		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT				
		mm	in	mm	in	mm	in	mm	in	mm	in																								
VNMG160408MR	VNMG332MR	9,53	3/8	16,61	.654	4,76	3/16	0,8	1/32	3,81	.150																								

## VNMG-MS • Medium Sharp

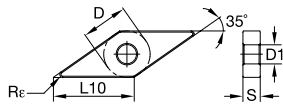


● first choice

○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		Material Compatibility																								
		mm	in	mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT					
VNMG160404MS	VNMG331MS	9,53	3/8	16,61	.654	4,76	3/16	0,4	1/64	3,81	.150	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
VNMG160408MS	VNMG332MS	9,53	3/8	16,61	.654	4,76	3/16	0,8	1/32	3,81	.150	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
VNMG220404MS	VNMG431MS	12,70	1/2	22,14	.872	4,76	3/16	0,4	1/64	5,16	.203	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
VNMG220408MS	VNMG432MS	12,70	1/2	22,14	.872	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

## VNMG-RH • Roughing



● first choice

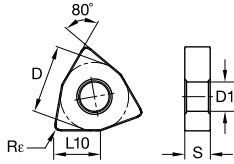
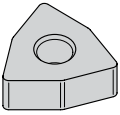
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		Material Compatibility																								
		mm	in	mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT					
VNMG160408RH	VNMG332RH	9,53	3/8	16,61	.654	4,76	3/16	0,8	1/32	3,81	.150	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
VNMG220408RH	VNMG432RH	12,70	1/2	22,14	.872	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
VNMG220412RH	VNMG433RH	12,70	1/2	22,14	.872	4,76	3/16	1,2	3/64	5,16	.203	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○





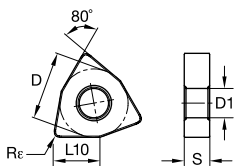
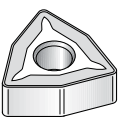
### WNMA • Roughing



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		Material Selection Matrix																									
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT				
WNMA060408	WNMA332	9,53	3/8	6,52	.257	4,76	3/16	0,8	1/32	3,81	.150																										
WNMA060412	WNMA333	9,53	3/8	6,52	.257	4,76	3/16	1,2	3/64	3,81	.150																										
WNMA080408	WNMA432	12,70	1/2	8,69	.342	4,76	3/16	0,8	1/32	5,16	.203																										
WNMA080412	WNMA433	12,70	1/2	8,69	.342	4,76	3/16	1,2	3/64	5,16	.203																										
WNMA080416	WNMA434	12,70	1/2	8,69	.342	4,76	3/16	0,6	1/16	5,16	.203																										

### WNMG-5 • Roughing



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		Material Selection Matrix																									
		mm	in	mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT						
WNMG080408-5	WNMG4325	12,70	1/2	8,69	.342	4,76	3/16	0,8	1/32	5,16	.203																										

INDEXABLE MILLING

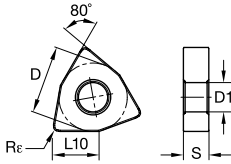
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## WNMG-FF • Fine Finishing

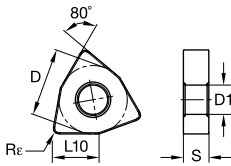
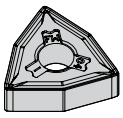


- first choice
- alternate choice

P	M	K	N	S	H	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT
●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in																	
WNMG060404FF	WNMG331FF	9,53	3/8	6,52	.257	4,76	3/16	0,4	1/64	3,81	.150	■	■	■	■	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNMG060408FF	WNMG332FF	9,53	3/8	6,52	.257	4,76	3/16	0,8	1/32	3,81	.150	■	■	■	■	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNMG080404FF	WNMG431FF	12,70	1/2	8,69	.342	4,76	3/16	0,4	1/64	5,16	.203	■	■	■	■	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNMG080408FF	WNMG432FF	12,70	1/2	8,69	.342	4,76	3/16	0,8	1/32	5,16	.203	■	■	■	■	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

## WNMG-FW • Finishing Wiper



- first choice
- alternate choice

P	M	K	N	S	H	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT
●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

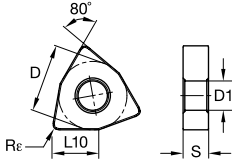
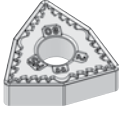
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in																	
WNMG080408FW	WNMG432FW	12,70	1/2	8,69	.342	4,76	3/16	0,8	1/32	5,16	.203	■	■	■	■	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○





INDEXABLE MILLING

**WNMG-MS • Medium Sharp**



- first choice
- alternate choice

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

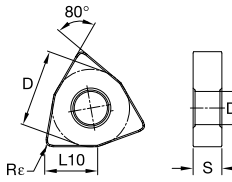
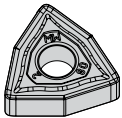
SOLID END MILLING

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1																								
		mm	in	mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT			
WNMG060408MS	WNMG332MS	9,53	3/8	6,52	.257	4,76	3/16	0,8	1/32	3,81	.150	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNMG080404MS	WNMG431MS	12,70	1/2	8,69	.342	4,76	3/16	0,4	1/64	5,16	.203	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNMG080408MS	WNMG432MS	12,70	1/2	8,69	.342	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

HOLEMAKING

TAPPING

**WNMG-MW • Medium Wiper**



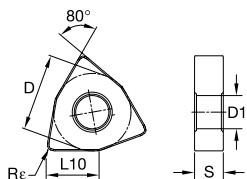
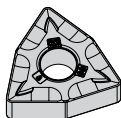
- first choice
- alternate choice

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

TURNING

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1																								
		mm	in	mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT			
WNMG080408MW	WNMG432MW	12,70	1/2	8,69	.342	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNMG080412MW	WNMG433MW	12,70	1/2	8,69	.342	4,76	3/16	1,2	3/64	5,16	.203	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

### WNMG-RH • Roughing



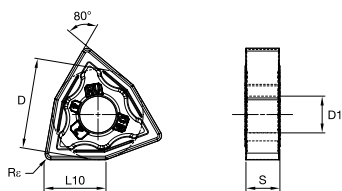
● first choice

○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT	
		mm	in	mm	in	mm	in	mm	in	mm	in																					
WNMG060408RH	WNMG332RH	9,53	3/8	6,52	.257	4,76	3/16	0,8	1/32	3,81	.150	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNMG080408RH	WNMG432RH	12,70	1/2	8,69	.342	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNMG080412RH	WNMG433RH	12,70	1/2	8,69	.342	4,76	3/16	1,2	3/64	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNMG080416RH	WNMG434RH	12,70	1/2	8,69	.342	4,76	3/16	1,6	1/16	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

### WNMG-RU • Roughing Universal



● first choice

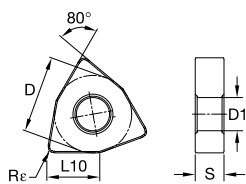
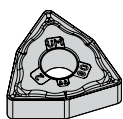
○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT	
		mm	in	mm	in	mm	in	mm	in	mm	in																					
WNMG080408RU	WNMG432RU	12,70	1/2	8,69	.342	4,76	3/16	0,8	1/32	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNMG080412RU	WNMG433RU	12,70	1/2	8,69	.342	4,76	3/16	1,2	3/64	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



WNMG-UM • Medium Machining



● first choice  
○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT				
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in		
WNMG060404UM	WNMG331UM	9,53	3/8	6,52	.257	4,76	3/16	0,4	1/64	3,81	.150	■	■	■	■	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○			
WNMG060408UM	WNMG332UM	9,53	3/8	6,52	.257	4,76	3/16	0,8	1/32	3,81	.150	■	■	■	■	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
WNMG060412UM	WNMG333UM	9,53	3/8	6,52	.257	4,76	3/16	1,2	3/64	3,81	.150	■	■	■	■	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		
WNMG080404UM	WNMG431UM	12,70	1/2	8,69	.342	4,76	3/16	0,4	1/64	5,16	.203	■	■	■	■	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
WNMG080408UM	WNMG432UM	12,70	1/2	8,69	.342	4,76	3/16	0,8	1/32	5,16	.203	6496991	■	■	■	■	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNMG080412UM	WNMG433UM	12,70	1/2	8,69	.342	4,76	3/16	1,2	3/64	5,16	.203	6496992	■	■	■	■	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

INDEXABLE MILLING

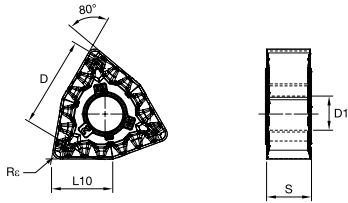
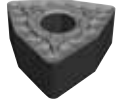
SOLID END MILLING

HOLE MAKING

TAPPING

TURNING

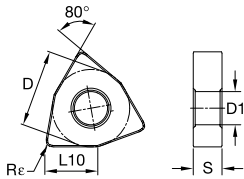
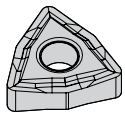
## WNMG-UR • Universal Roughing



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1																											
		mm	in	mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT						
WNMG060408UR	WNMG332UR	9,53	3/8	6,52	.257	4,76	3/16	0,8	1/32	3,81	.150	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
WNMG060412UR	WNMG333UR	9,53	3/8	6,52	.257	4,76	3/16	1,2	3/64	3,81	.150	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
WNMG080408UR	WNMG432UR	12,70	1/2	8,69	.342	4,76	3/16	0,8	1/32	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
WNMG080412UR	WNMG433UR	12,70	1/2	8,69	.342	4,76	3/16	1,2	3/64	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNMG080416UR	WNMG434UR	12,70	1/2	8,69	.342	4,76	3/16	1,6	1/16	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

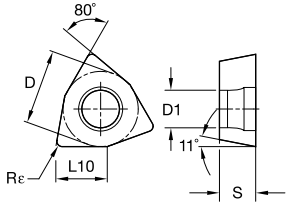
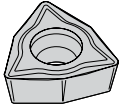
## WNMP • Medium Machining



● first choice  
○ alternate choice

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1																												
		mm	in	mm	in	mm	in	mm	in	mm	in	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT							
WNMP080408	WNMP432	12,70	1/2	8,69	.342	4,76	3/16	0,8	1/32	5,16	.203	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

WPMT-FP • Finishing Positive



● first choice  
○ alternate choice

P	M	K	N	S	H	WP05CT	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK15CT	WK20CT	WS10PT	WS25PT	WU10HT	WU05PT	WP20TT	THM	TTR	WM20CT	WU10PT	WU25PT
●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1	
		mm	in	mm	in	mm	in	mm	in	mm	in
WPMT06T308FP	WPMT3252FP	9,53	3/8	6,52	.257	3,97	5/32	0,8	1/32	4,40	.173

INDEXABLE MILLING

SOLID END MILLING

HOLENMAKING

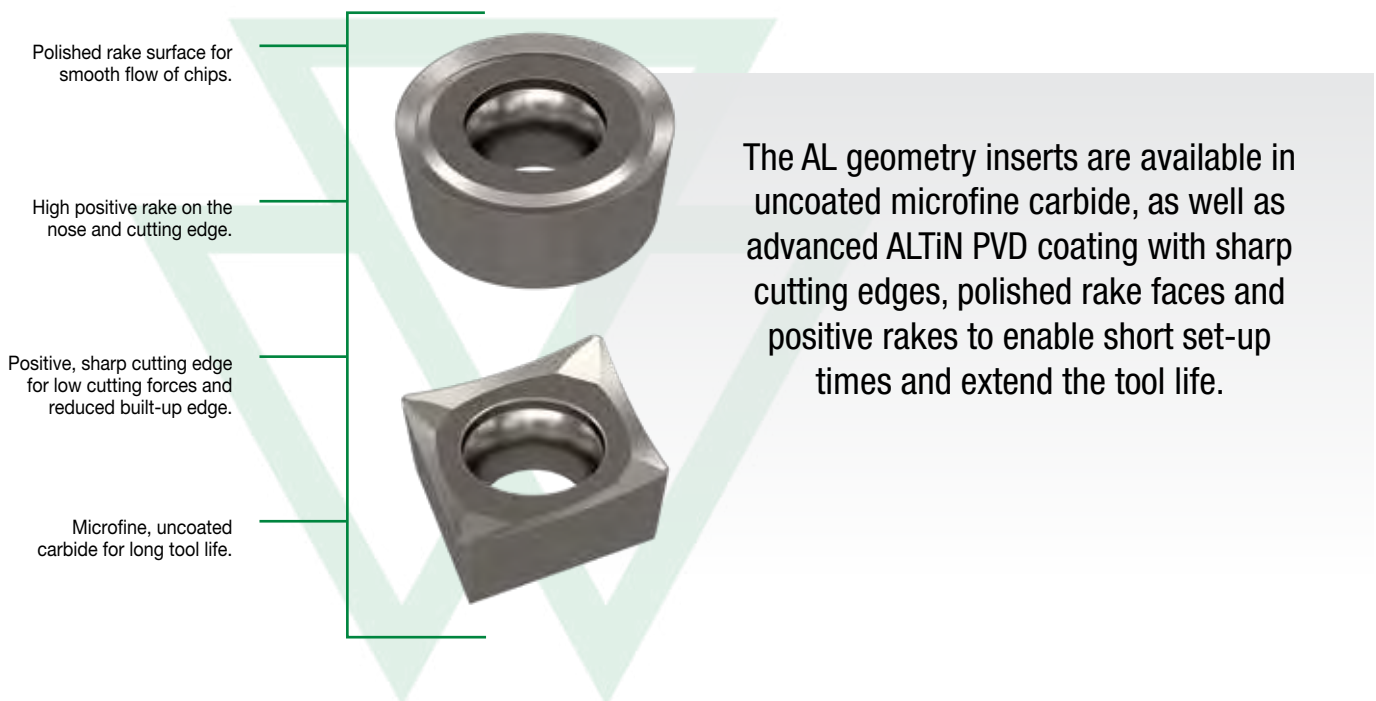
TAPPING

TURNING

# Inserts for Aluminum

## -AL Geometry

The AL geometry ISO turning series offers various grades and popular styles, giving customers more versatility and optionality when machining aluminum and non-ferrous metal materials in medium to finish turning applications.



## INSERTS FOR ALUMINUM

**VERSATILE**

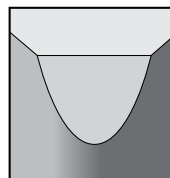
**RELIABLE**

**AFFORDABLE**

# MEDIUM TO FINISHING ALUMINUM TURNING

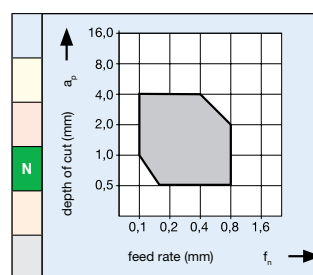
## WU10HT/WU05PT • GRADE INFORMATION

A hard, unalloyed, low-binder content with fine-grained carbide. WU10HT/WU05PT are wear-resistant, uncoated carbide grades for machining of aluminum and other non-ferrous materials.



WU10HT/WU05PT

		Geometry
		AL
Lightly Interrupted Cut		WU10HT/WU05PT
Varying Depth of Cut		WU10HT/WU05PT
Smooth Cut		WU10HT/WU05PT



For cost-effective machining of aluminum, non-ferrous metals, and plastics. Extremely sharp cutting edges result in optimum part finishes with low cutting forces and short chips.

### APPLICATIONS



TURNING



FACING



PROFILING

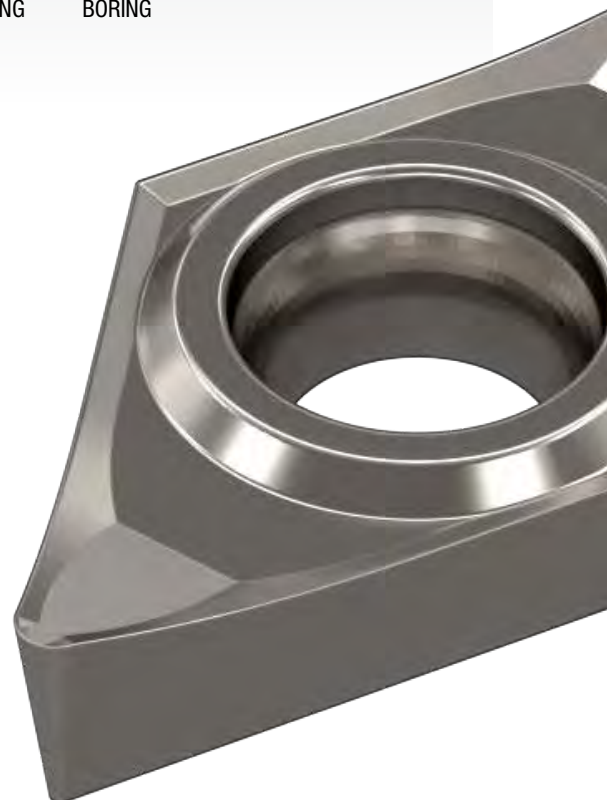


CHAMFERING



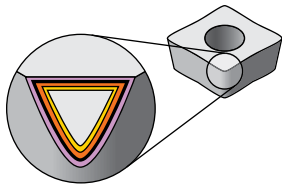
BORING

### INDUSTRY



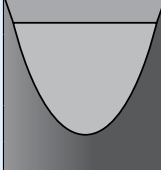
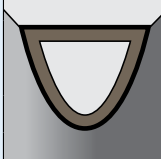


## Grades and Grade Descriptions



Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

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

Coating	Grade Description	wear resistance ← → toughness									
		05	10	15	20	25	30	35	40	45	
<b>WU10HT</b>  <b>HW-N10</b>	Uncoated carbide. Highly wear-resistant microfine substrate. Suitable for finish turning applications in aluminum and all types of non-ferrous materials, stainless steel, and high-temp alloys with suitable edge preparation. Mainly applied in continuous cuts.										
		<b>M</b>									
		<b>N</b>									
		<b>S</b>									
<b>WU05PT</b>  <b>HC-N05</b>	Coated carbide. PVD AlTiN-coated grade with microfine substrate and highly wear-resistant coating. Suitable for finish turning in aluminum and other non-ferrous materials and also steels, stainless steel, and high-temp alloys with reliability in continuous cuts with suitable edge preparation.	<b>P</b>									
		<b>M</b>									
		<b>K</b>									
		<b>N</b>									
<b>S</b>											

## CUTTING SPEED RECOMMENDATION • N • INCH

### Low-Silicon Aluminum Alloys (hypoeutectic <12,2% Si) and Magnesium Alloys

material group	grade	Speed – m/min (SFM)										Starting Conditions	
		250 (800)	500 (1600)	750 (2400)	1000 (3200)	1250 (4000)	1500 (4800)	1750 (5600)	2000 (6400)	2250 (7200)	2500 (8000)	m/min	SFM
N1	WU10HT	◊										488	1597

### Low-Silicon Aluminum Alloys (hypoeutectic <12,2% Si) and Magnesium Alloys

material group	grade	Speed – m/min (SFM)										Starting Conditions	
		250 (800)	500 (1600)	750 (2400)	1000 (3200)	1250 (4000)	1500 (4800)	1750 (5600)	2000 (6400)	2250 (7200)	2500 (8000)	m/min	SFM
N2	WU10HT	◊										488	1597

### High-Silicon Aluminum Alloys (hypereutectic >12,2% Si) and Magnesium Alloys

material group	grade	Speed – m/min (SFM)										Starting Conditions	
		250 (800)	500 (1600)	750 (2400)	1000 (3200)	1250 (4000)	1500 (4800)	1750 (5600)	2000 (6400)	2250 (7200)	2500 (8000)	m/min	SFM
N3	WU10HT	◊										488	1597
	WU05PT	◊										550	1800

### Copper-, Brass-, Zinc-Based on a Machinability Index Range of 70–100

material group	grade	Speed – m/min (SFM)				Starting Conditions	
		250 (800)	500 (1600)	750 (2400)	1000 (3200)	m/min	SFM
N4	WU10HT	◊				259	847
	WU05PT	◊				275	900

### Nylon, Plastics, Rubbers, Phenolics, Resins, Fiberglass, and Glass

material group	grade	Speed – m/min (SFM)				Starting Conditions	
		250 (800)	500 (1600)	750 (2400)	1000 (3200)	m/min	m/min
N5	WU10HT	◊				170	550
	WU05PT	◊				170	550

### Carbon and Graphite Composites: Brush Alloys, Kevlar, and Graphite (280–400 HB) (30–43 HRC)

material group	grade	Speed – m/min (SFM)				Starting Conditions	
		250 (800)	500 (1600)	750 (2400)	1000 (3200)	m/min	m/min
N6	WU05PT	◊				200	650

### MMCs (Aluminum-Based Metal Matrix Composites)

material group	grade	Speed – m/min (SFM)				Starting Conditions	
		250 (800)	500 (1600)	750 (2400)	1000 (3200)	m/min	SFM
N7	WU10HT	◊				180	589

### Tin Alloys, Cast: ASTM 823, Alloys 1, 2, 3, 11

material group	grade	Speed – m/min (SFM)				Starting Conditions	
		250 (800)	500 (1600)	750 (2400)	1000 (3200)	m/min	SFM
N8	WU05PT	◊				215	700

# High-Performance Inserts for Machining Aluminum

INDEXABLE MILLING

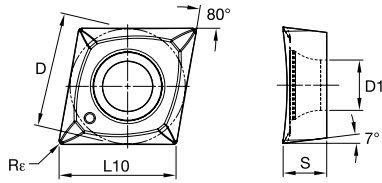
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## CCGT-AL • Inserts for Aluminum

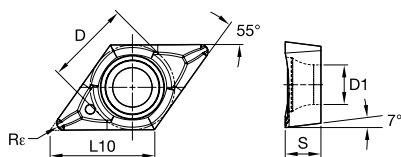


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		R $\epsilon$		D1		WU10HT	WU05PT
		mm	in	mm	in	mm	in	mm	in	mm	in		
CCGT060202AL	CCGT21505AL	6,35	1/4	6,45	.254	2,38	3/32	0,2	.008	2,80	.110	6846528	6968709
CCGT060204AL	CCGT2151AL	6,35	1/4	6,47	.255	2,38	3/32	0,4	.016	2,79	.110	6846529	6968709
CCGT060208AL	CCGT2152AL	6,35	1/4	6,45	.254	2,38	3/32	0,8	.031	2,80	.110	6846530	6968710
CCGT09T302AL	CCGT32505AL	9,53	3/8	9,67	.381	3,97	5/32	0,2	.008	4,40	.173	6846531	6968711
CCGT09T304AL	CCGT3251AL	9,53	3/8	9,67	.381	3,97	5/32	0,4	.016	4,40	.173	6846532	6968751
CCGT09T308AL	CCGT3252AL	9,53	3/8	9,67	.381	3,97	5/32	0,8	.031	4,40	.173	6846533	6968752
CCGT120402AL	CCGT4305AL	12,70	1/2	12,90	.508	4,76	3/16	0,2	.008	5,50	.217	6846584	6968753
CCGT120404AL	CCGT431AL	12,70	1/2	12,90	.508	4,76	3/16	0,4	.016	5,50	.217	6846585	6968753
CCGT120408AL	CCGT432AL	12,70	1/2	12,90	.508	4,76	3/16	0,8	.031	5,50	.217	6846586	6968754

## DCGT-AL • Inserts for Aluminum

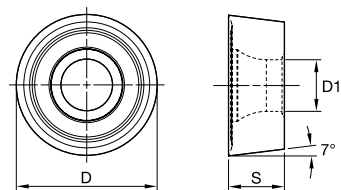


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WU10HT	WU05PT
		mm	in	mm	in	mm	in	mm	in	mm	in		
DCGT070202AL	DCGT21505AL	6,35	1/4	7,75	.305	2,38	3/32	0,2	.008	2,90	.114	6846587	6846587
DCGT070204AL	DCGT2151AL	6,35	1/4	7,75	.305	2,38	3/32	0,4	.016	2,90	.114	6846598	6968755
DCGT11T302AL	DCGT32505AL	9,53	3/8	11,63	.458	3,97	5/32	0,2	.008	4,40	.173	6846589	6846589
DCGT11T304AL	DCGT3251AL	9,53	3/8	11,59	.457	3,97	5/32	0,4	.016	4,40	.173	6846590	6968756
DCGT11T308AL	DCGT3252AL	9,53	3/8	11,63	.458	3,97	5/32	0,8	.031	4,40	.173	6846591	6968757

## RCGT-AL • Inserts for Aluminum



- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		S		D1		WU10HT	WU05PT
		mm	in	mm	in	mm	in		
RCGT0803M0AL	RCGT0803M0AL	8,00	.315	3,18	1/8	3,40	.134	6846592	6968758
RCGT1204M0AL	RCGT1204M0AL	12,00	.4724	4,76	3/16	4,40	.173	6846592	6968758

# High-Performance Inserts for Machining Aluminum

INDEXABLE MILLING

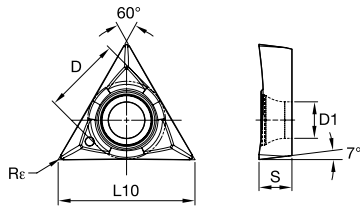
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## TCGT-AL • Inserts for Aluminum

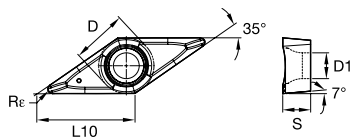


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WU10HT	WU05PT
		mm	in	mm	in	mm	in	mm	in	mm	in		
TCGT110204AL	TCGT2151AL	6,35	1/4	11,00	.433	2,38	3/32	0,4	.016	2,80	.110	6846593	6968759
TCGT16T304AL	TCGT3251AL	9,53	3/8	16,51	.650	3,97	5/32	0,4	.016	4,40	.173	6846594	6968760
TCGT16T308AL	TCGT3252AL	9,53	3/8	16,50	.650	3,97	5/32	0,8	.031	4,40	.173	6846595	6968761

## VCGT-AL • Inserts for Aluminum

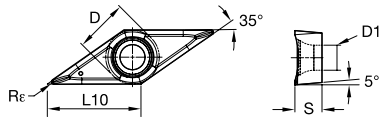


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WU10HT	WU05PT
		mm	in	mm	in	mm	in	mm	in	mm	in		
VCGT160404AL	VCGT331AL	9,53	3/8	16,61	.654	4,76	3/16	0,4	.031	4,40	.173	6968762	6968763
VCGT160408AL	VCGT332AL	9,53	3/8	16,61	.654	4,76	3/16	0,8	.031	4,40	.173	6968762	6968763

## VBGT-AL • Inserts for Aluminum



- first choice
- alternate choice

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S	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		WU10HT	WU05PT
		mm	in	mm	in	mm	in	mm	in	mm	in		
VBGT160404AL	VBGT331AL	9,53	3/8	16,61	.654	4,76	3/16	0,4	.016	4,40	.173	6846596	I
VBGT160408AL	VBGT332AL	9,53	3/8	16,46	.648	4,76	3/16	0,8	.031	4,40	.173	6846597	I

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

# Advanced Material Inserts

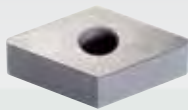
## Ceramic, PcBN, PCD Inserts

Hard part turning, along with the machining of cast irons, high-temp alloys, and non-ferrous materials, can be accomplished through the use of inserts made from advanced materials. These advanced materials include ceramics, PcBN (polycrystalline cubic boron nitride), and PCD (polycrystalline diamond).

### ADVANCED MATERIAL INSERT COMPOSITION

#### CERAMIC INSERTS

- Silicon-nitride based ceramic for cast iron machining.
- Mixed ceramic for hard machining and finishing of cast iron.
- Whisker ceramic for high-temp alloy and hard part turning.



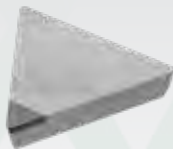
#### PCBN SOLID INSERTS

- Inserts are made only from PcBN.
- No material joint.
- Best heat-absorption capacity.
- Can work at highest temperatures.
- Inserts suitable for hard part turning with interruptions.



#### PcBN Tipped Inserts

- Require a carrier and a PcBN tip.
- The tips are brazed to a carrier.
- The substrate has to have a pocket that will accommodate and support the tip.
- Inserts are available in Multi Tip.
- Inserts suitable for hard part turning in continuous and interrupted applications.



#### PCD Inserts

- Targeted machining of non-ferrous materials.
- Significant advantage in hardness over carbide tools.
- Increased productivity through higher speeds and longer tool life.
- Best used in processing materials that are un-machinable with conventional tooling.



# ADVANCED MATERIAL INSERTS

## MATERIALS



### CERAMIC

- Ceramics offer greater wear resistance and toughness.
- Ceramics can be used in high-speed, continuous, and lightly interrupted turning applications in cast iron materials.
- Ceramics can be used for high-speed applications in high-temp alloys.
- Ceramics can also be used for hard part turning.

## MATERIALS



### PCBN

- PVD-coated grades available.
- Complete range of CBN grades for continuous to heavily interrupted turning.
- Industry-leading grades for gray cast iron machining.
- Full line of grades for hard part turning.
- For best performance: solid, full-top, and tipped inserts are available.

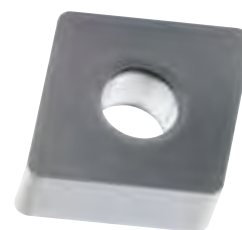
## MATERIALS



### PCD

- Two PCD grades — WDN25U and WDN00U — cover a wide range of applications.
- New grades provide outstanding performance to increase productivity and cut manufacturing costs.
- High abrasion and chipping resistance.
- Used in machining aluminum alloys with low- and high-silicon content, copper alloys, ceramics, and plastics.
- Suitable for machining highly abrasive materials such as titanium and Metal Matrix Composites (MMC).

## INDUSTRY





## 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.

C		C		G		W		2																																																																																																																																																																																																																																			
Insert Shape		Insert Clearance Angle		Tolerance Class		Insert Features		Size																																																																																																																																																																																																																																			
<b>H</b>	Hexagon 120°		<b>A</b>	3°	<p>Tolerances apply prior to edge prep and coating</p> <p><b>D</b> = Theoretical diameter of the insert inscribed circle  <b>S</b> = Thickness  <b>B</b> = See figures below</p>	<b>N</b>		<table border="1"> <thead> <tr> <th colspan="2">"D"</th> <th colspan="7">Code for inch cutting edge length "L10"</th> </tr> <tr> <th>inch</th> <th>inch</th> <th>C</th> <th>D</th> <th>R</th> <th>S</th> <th>T</th> <th>V</th> <th>W</th> </tr> </thead> <tbody> <tr> <td>1.2 (5)</td> <td>5/32</td> <td>S4</td> <td>04</td> <td>03</td> <td>03</td> <td>06</td> <td>—</td> <td>—</td> </tr> <tr> <td>1.5 (6)</td> <td>3/16</td> <td>04</td> <td>05</td> <td>04</td> <td>04</td> <td>08</td> <td>08</td> <td>S3</td> </tr> <tr> <td>1.8 (7)</td> <td>7/32</td> <td>05</td> <td>06</td> <td>05</td> <td>05</td> <td>09</td> <td>09</td> <td>03</td> </tr> <tr> <td>—</td> <td>.236</td> <td>—</td> <td>—</td> <td>06</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> </tr> <tr> <td>2</td> <td>1/4</td> <td>06</td> <td>07</td> <td>06</td> <td>06</td> <td>11</td> <td>11</td> <td>04</td> </tr> <tr> <td>2.5</td> <td>5/16</td> <td>08</td> <td>09</td> <td>07</td> <td>07</td> <td>13</td> <td>13</td> <td>05</td> </tr> <tr> <td>—</td> <td>.315</td> <td>—</td> <td>—</td> <td>08</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> </tr> <tr> <td>3</td> <td>3/8</td> <td>09</td> <td>11</td> <td>09</td> <td>09</td> <td>16</td> <td>16</td> <td>06</td> </tr> <tr> <td>—</td> <td>.394</td> <td>—</td> <td>—</td> <td>10</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> </tr> <tr> <td>3.5</td> <td>7/16</td> <td>11</td> <td>13</td> <td>11</td> <td>11</td> <td>19</td> <td>19</td> <td>07</td> </tr> <tr> <td>—</td> <td>.472</td> <td>—</td> <td>—</td> <td>12</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> </tr> <tr> <td>4</td> <td>1/2</td> <td>12</td> <td>15</td> <td>12</td> <td>12</td> <td>22</td> <td>22</td> <td>08</td> </tr> <tr> <td>4.5</td> <td>9/16</td> <td>14</td> <td>17</td> <td>14</td> <td>14</td> <td>24</td> <td>24</td> <td>09</td> </tr> <tr> <td>5</td> <td>5/8</td> <td>16</td> <td>19</td> <td>15</td> <td>15</td> <td>27</td> <td>27</td> <td>10</td> </tr> <tr> <td>—</td> <td>.630</td> <td>—</td> <td>—</td> <td>16</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> </tr> <tr> <td>5.5</td> <td>11/16</td> <td>17</td> <td>21</td> <td>17</td> <td>17</td> <td>30</td> <td>30</td> <td>11</td> </tr> <tr> <td>6</td> <td>3/4</td> <td>19</td> <td>23</td> <td>19</td> <td>19</td> <td>33</td> <td>33</td> <td>13</td> </tr> <tr> <td>—</td> <td>.787</td> <td>—</td> <td>—</td> <td>20</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> </tr> <tr> <td>7</td> <td>7/8</td> <td>22</td> <td>27</td> <td>22</td> <td>22</td> <td>38</td> <td>38</td> <td>15</td> </tr> <tr> <td>—</td> <td>.984</td> <td>—</td> <td>—</td> <td>25</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> </tr> <tr> <td>8</td> <td>1</td> <td>25</td> <td>31</td> <td>25</td> <td>25</td> <td>44</td> <td>44</td> <td>17</td> </tr> <tr> <td>10</td> <td>1-1/4</td> <td>32</td> <td>38</td> <td>31</td> <td>31</td> <td>54</td> <td>54</td> <td>21</td> </tr> <tr> <td>—</td> <td>1.260</td> <td>—</td> <td>—</td> <td>32</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> </tr> </tbody> </table>	"D"		Code for inch cutting edge length "L10"							inch	inch	C	D	R	S	T	V	W	1.2 (5)	5/32	S4	04	03	03	06	—	—	1.5 (6)	3/16	04	05	04	04	08	08	S3	1.8 (7)	7/32	05	06	05	05	09	09	03	—	.236	—	—	06	—	—	—	—	2	1/4	06	07	06	06	11	11	04	2.5	5/16	08	09	07	07	13	13	05	—	.315	—	—	08	—	—	—	—	3	3/8	09	11	09	09	16	16	06	—	.394	—	—	10	—	—	—	—	3.5	7/16	11	13	11	11	19	19	07	—	.472	—	—	12	—	—	—	—	4	1/2	12	15	12	12	22	22	08	4.5	9/16	14	17	14	14	24	24	09	5	5/8	16	19	15	15	27	27	10	—	.630	—	—	16	—	—	—	—	5.5	11/16	17	21	17	17	30	30	11	6	3/4	19	23	19	19	33	33	13	—	.787	—	—	20	—	—	—	—	7	7/8	22	27	22	22	38	38	15	—	.984	—	—	25	—	—	—	—	8	1	25	31	25	25	44	44	17	10	1-1/4	32	38	31	31	54	54	21	—	1.260	—	—	32	—	—	—	—	<b>R</b>	
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<b>W</b>	Trigon 80° with enlarged corner angles		<b>N</b>	0°	<b>C</b>																																																																																																																																																																																																																																						
<b>L</b>	Rectangular 90°		<b>O</b>	For other clearance angles requiring descriptions.	<b>J</b>																																																																																																																																																																																																																																						
<b>A</b>	Parallelogram 85°		<b>N</b>	0°	<b>X</b>	Special Design																																																																																																																																																																																																																																					
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tolerance class*	tolerance on "D"	tolerance on "B"	tolerance on "S"
C	±.0010"	±.0005"	±.001"
H	±.0005"	±.0005"	±.001"
E	±.0010"	±.0010"	±.001"
G	±.0010"	±.0010"	±.005"
M	See tables on next page		±.005"
U	See tables on next page		±.005"

\*Tolerances apply prior to edge prep and coating.

Catalog Numbering System

(continued)

<b>15</b>	<b>05</b>		<b>E</b>			<b>C</b>																																																																																															
Thickness "S"	Corner Radius "Re"	Hand of Insert (optional)	Cutting Edge (optional)	T-Land Width (optional)	T-Land Angle (optional)	Tip Style (optional)	Chipbreaker (optional)																																																																																														
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inch	inch	inch	inch	inch	inch	inch	inch	inch	
5/32	.002	—	—	—	5/32	.003	—	—	—
3/16	.002	—	—	.003	3/16	.003	—	—	.005
7/32	.002	.002	.002	.003	7/32	.003	.004	—	.005
1/4	.002	.002	.002	.003	1/4	.003	.004	—	.005
5/16	.002	.002	.002	.003	5/16	.003	.004	—	.005
3/8	.002	.002	.002	.003	3/8	.003	.004	.007	.005
7/16	.003	.003	.003	.005	7/16	.005	.006	—	—
1/2	.003	.003	.003	.005	1/2	.005	.006	.010	.008
9/16	.003	.003	.003	.005	9/16	.005	.006	—	—
5/8	.004	.004	.004	.007	5/8	.006	.007	—	.011
11/16	.004	.004	.004	.007	11/16	.006	.007	—	.011
3/4	.004	.004	.004	.007	3/4	.006	.007	—	.011
7/8	.005	—	—	.010	7/8	.006	—	—	.015
1	.005	—	—	.010	1	.007	—	—	.015
1 1/4	.006	—	—	.010	1 1/4	.008	—	—	.015

## WBH20P™ for Enhanced Performance — Five Unique Features

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

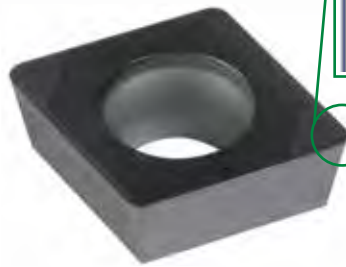
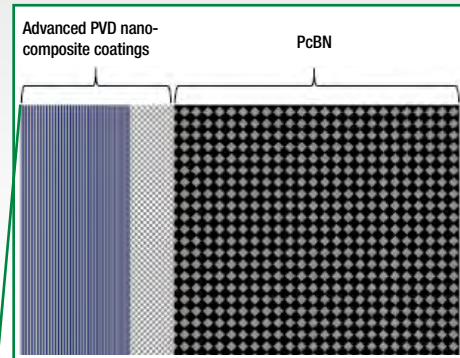
### 1 Newly developed substrate enables application in a wide variety of demanding situations.

The substrate contains superhard grains with a uniquely formulated size distribution and nano-structured binder phase. This unique combination provides an unparalleled balance of wear resistance and toughness. The net result is a robust hard turning tooling solution for a wide range of applications, including continuous to interrupted cutting.



### 2 Nano-composite coating that enhances speed capabilities and tool life.

- Specially developed, advanced PVD coating with nano-composite architecture for improved performance.
- Improved wear resistance by PVD coating chemistry technology for machining hardened steels.
- Enhanced PVD coating adhesion on PcBN substrates.



### 3 Improved edge preparation technology for longer tool life, reliable performance, better surface finish, and tighter workpiece tolerances.

A critical performance factor is the edge preparation itself. The grind direction, surface roughness, hone sizes, and tolerances have great impact on performance and process reliability. WIDIA™ has performed significant research work and optimized edge preparation to improve your overall machining effectiveness.

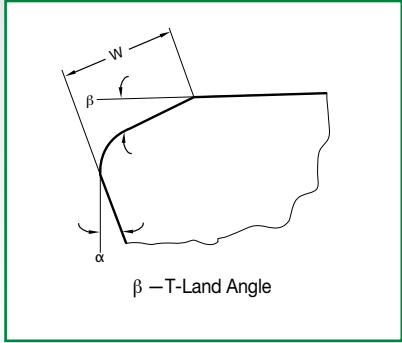
WBH20P™ for Enhanced Performance — Five Unique Features

(continued)

4 Large standard portfolio.

Standard edge preparation — the optimum combination of T-land angle, T-land width, and hone size — is paramount in achieving maximum performance. WIDIA™ has developed three standard edge configurations, including wiper inserts.

- Light machining edge prep E.
  - Medium machining edge prep S01015.
  - Heavy machining edge prep S01025.
- E: Honed cutting edge  
 S01015:  $W \times \beta = 0,10\text{mm} \times 15^\circ$   
 S01025:  $W \times \beta = 0,10\text{mm} \times 25^\circ$

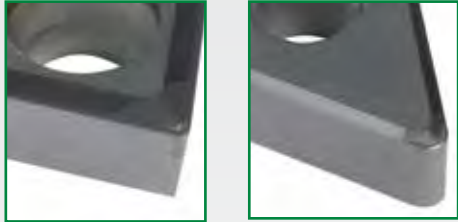


These edge preps are available in common styles, sizes, and nose radii in both positive and negative geometries.

5 CB1 chipbreaker in positive and negative geometries, solving chipbreaking and chip control issues.

Chipbreaker — when machining case-hardened steel with a hard outer skin and a tough and softer core, a chipbreaker provides a great advantage. The CB1 chipbreaker is a proven solution to effectively breaking chips. Long chips can form bird nests, causing machine malfunctions, increasing scrap-rates, and reducing the overall equipment effectiveness.

Available as a custom solution product.



Insert without Chipbreaker



- Long chips.
- Bird-nest formation.

Insert with Chipbreaker



- Chips are broken.

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## Grade Numbering System — Ceramics

CW	2	0	15
Brand	Cutting Material Group		Application Range
CW = WIDIA™	<p>2 = CM Mixed (black) ceramic</p> <p>3 = CR Whisker reinforced ceramic</p> <p>5 = CN Silicon-nitride ceramic</p>	<p>0 = Stationary cutting edges (turning, parting, threading)</p> <p>1 = First successor</p> <p>2 = Semi-standard rotating cutting edges</p> <p>3 = Semi-standard general applications</p> <p>5 = Rotating cutting edges (milling, drilling, reaming)</p>	<p>05 = fine finishing</p> <p>10 = finishing</p> <p>15 = } medium to roughing</p> <p>20 = }</p> <p>25 = }</p> <p>30 = } roughing</p> <p>35 = }</p> <p>40 = }</p> <p>45 = } heaviest roughing</p> <p>50 = }</p>



Grade Numbering System — PcBN and PCD

<b>W</b>	<b>B</b>	<b>H</b>	<b>30</b>	<b>P</b>
Brand	Cutting Material Group	Material Range	Application Range	Coating
WIDIA™	<p><b>B</b> = CBN</p> <p><b>D</b> = PCD</p>	<p><b>H</b> = hardened materials</p> <p><b>N</b> = non-ferrous materials</p>	<p><b>05</b> = fine finishing</p> <p><b>10</b> = finishing</p> <p><b>15</b> = } medium to roughing</p> <p><b>20</b> = }</p> <p><b>25</b> = }</p> <p><b>30</b> = } roughing</p> <p><b>35</b> = }</p> <p><b>40</b> = }</p> <p><b>45</b> = } heaviest roughing</p> <p><b>50</b> = }</p>	<p><b>U</b> = Uncoated</p> <p><b>C</b> = CVD Coated</p> <p><b>P</b> = PVD Coated</p>

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

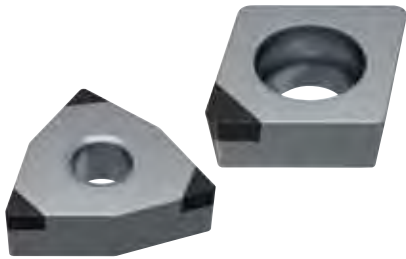
INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

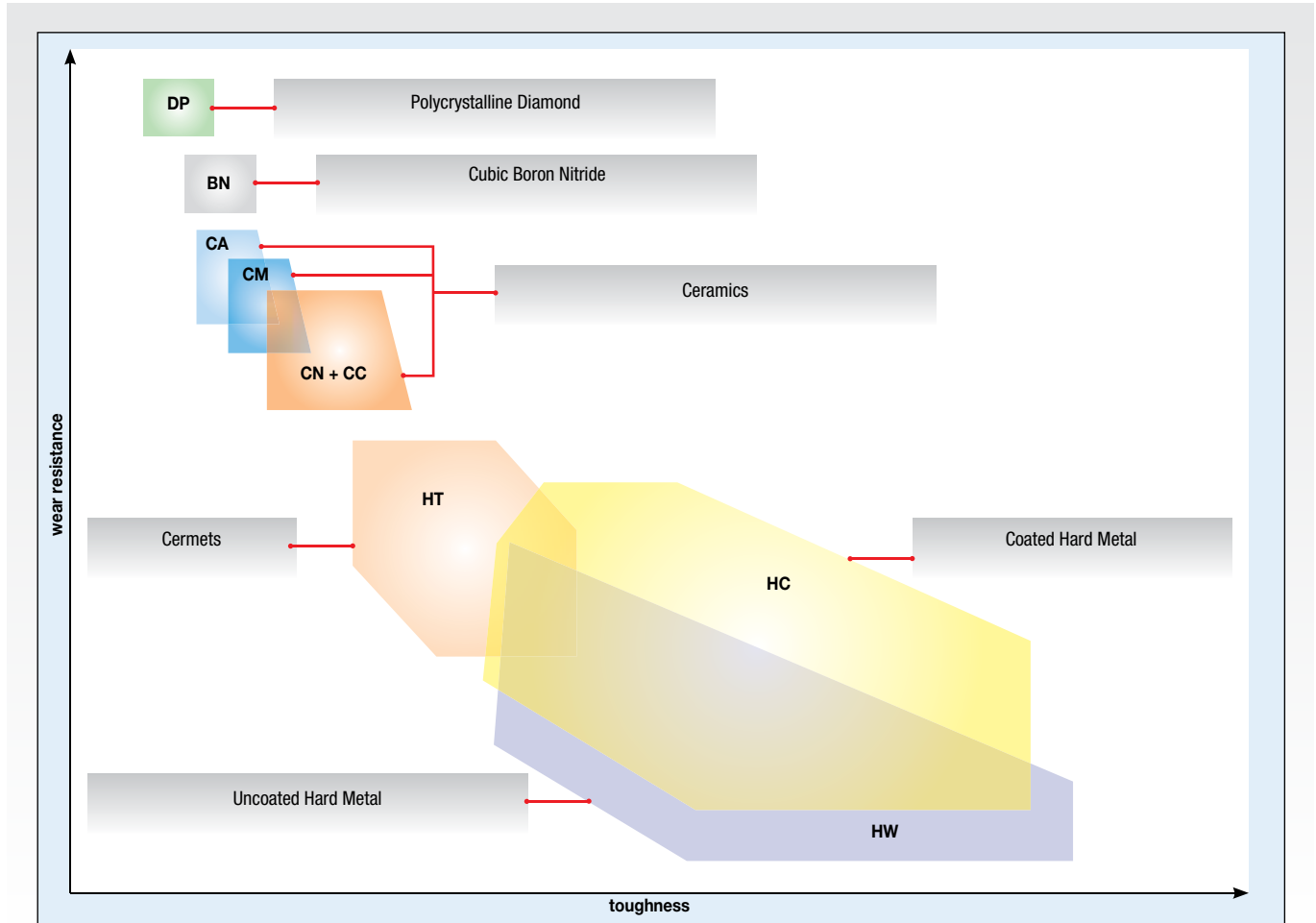
TURNING



## Cutting Material Groups

The cutting tool materials are classified by the combination of their hardness and wear-resistance characteristics.

The extended standard DIN ISO 513 also includes ceramic cutting materials and the super-hard polycrystalline materials, boron nitride and diamond, resulting in additional identification symbols for these cutting material groups.



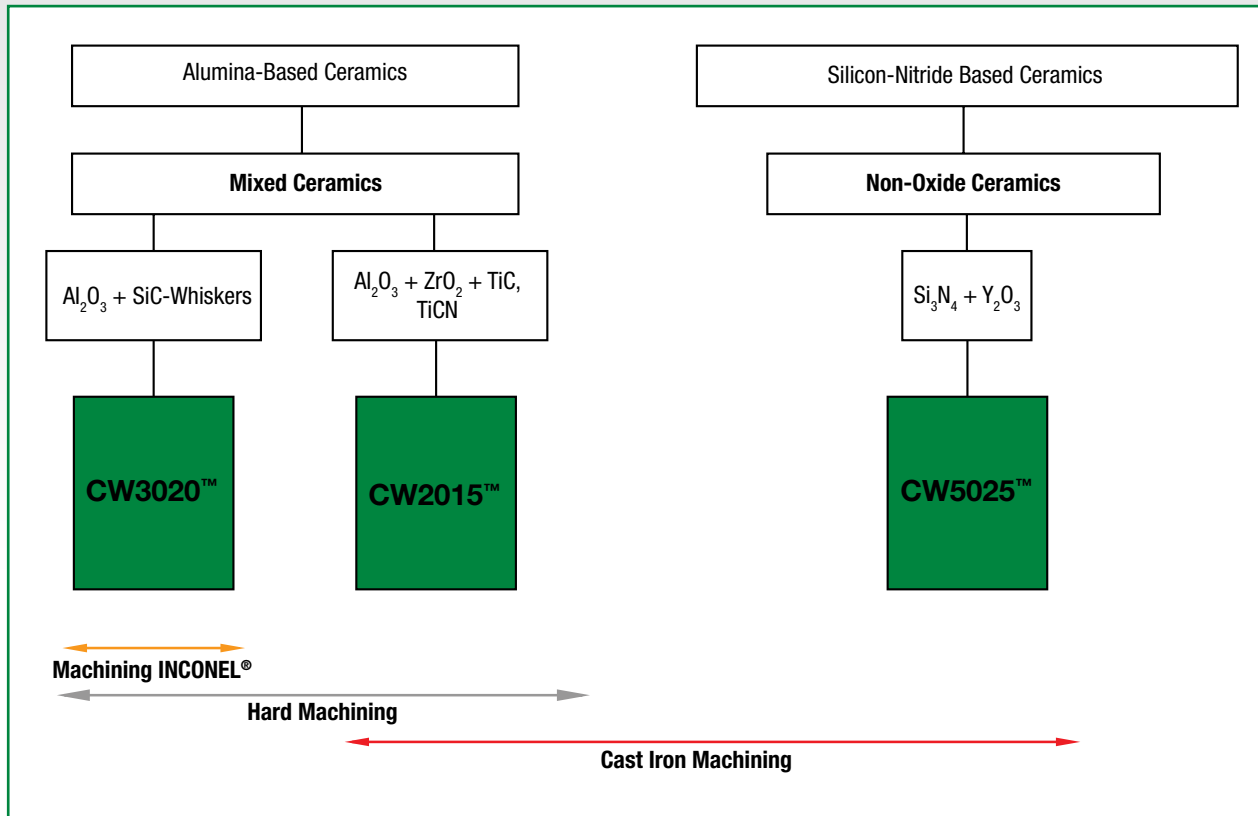
main group	sub-group (symbol)	feature
hard metal	HW	Uncoated WC-base hard metal
	HT	Uncoated TiC/TiN-base hard metal (cermets)
	HC	Coated hard metal
ceramics	CA	Al <sub>2</sub> O <sub>3</sub> -base oxide ceramics
	CM	Composite ceramics Al <sub>2</sub> O <sub>3</sub> + metal carbide
	CN	Si <sub>3</sub> N <sub>4</sub> -base nitride ceramics
	CC	Coated ceramics
cubic boron nitride	BL	Cubic boron nitride (CBN) with low CBN content
	BH	Cubic boron nitride (CBN) with high CBN content
diamond	DP	Polycrystalline diamond (PCD)

## Ceramic Inserts for Hard Turning, Turning in Cast Iron Materials, and Turning in High-Temp Alloys



- Ceramics offer greater wear resistance and toughness.
- Ceramics can be used in high-speed, continuous, and lightly interrupted turning applications in cast iron materials.
- Ceramics can be used for high-speed applications in high-temp alloys.

### Ceramic Turning Grades



#### CW2015™

- Alumina and titanium carbo-nitride.
- High hardness and wear resistance.
- TiCN increases strength and hardness.
- Black in color.

#### CW3020™

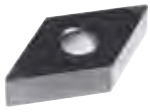
- Alumina + SiC whisker.
- High hardness and wear resistance.
- Whisker ceramic with elongated crystals and very high strength.
- Gray-green color.

#### CW5025™

- Pure silicon-nitride composition.
- Used in high-speed turning applications.
- Designed for use in gray cast iron and lower-tensile ductile irons.

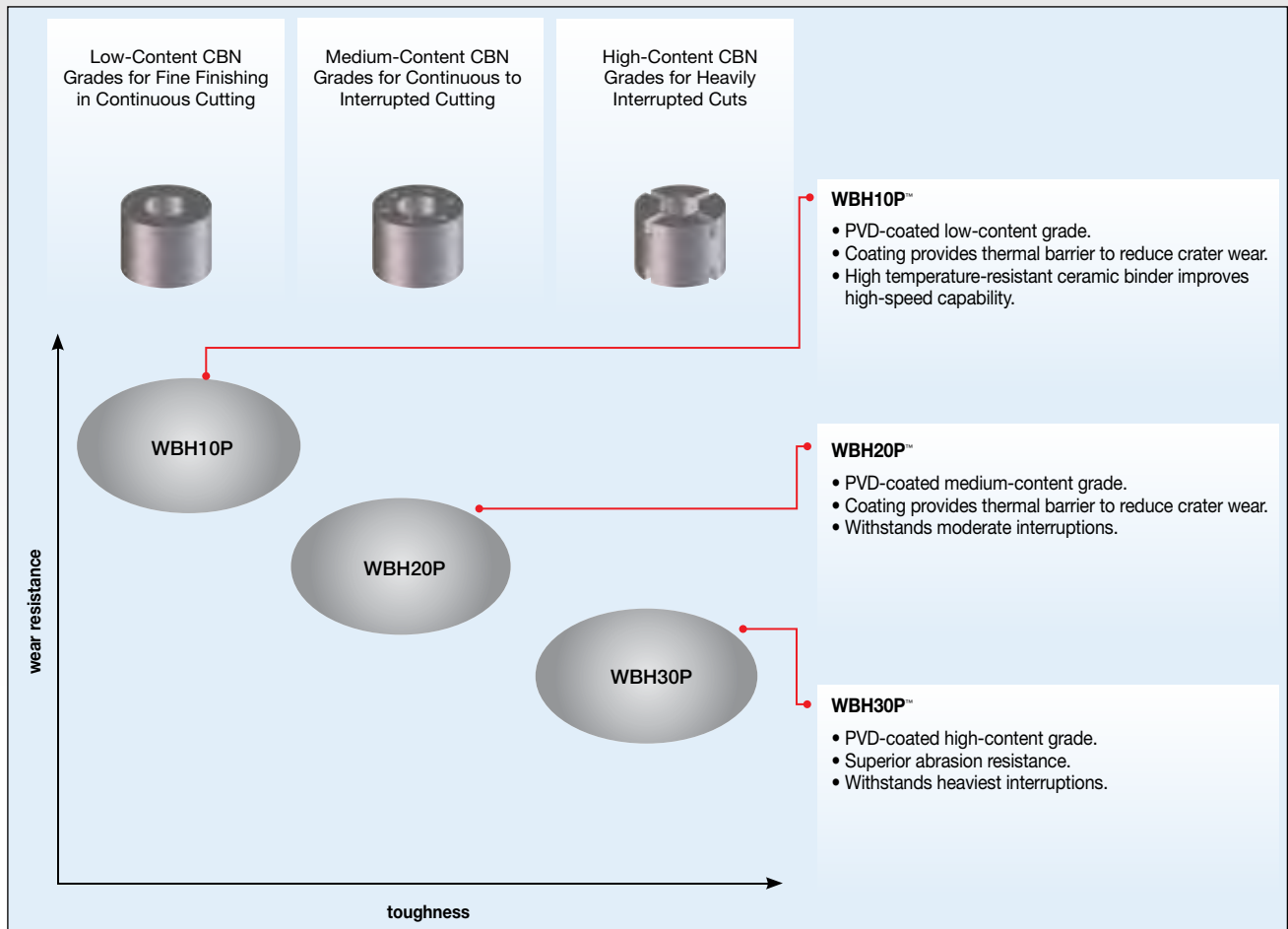


## PcBN Grades for Hard Turning, Powder Metal, and Gray Cast Iron Machining

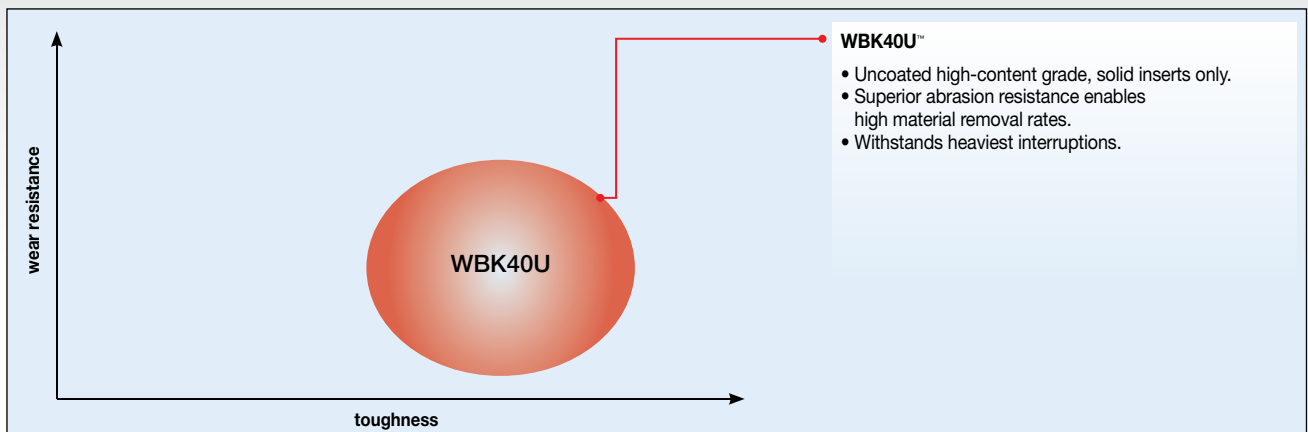


- PVD-coated grades available.
- Complete range of CBN grades for continuous to heavily interrupted turning.
- Industry-leading grades for gray cast iron machining.
- Full line of grades for hard turning.
- For best performance: solid, full-top, and tipped inserts are available.

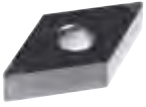
### Hard Turning Grades



### Gray Cast Iron Grade

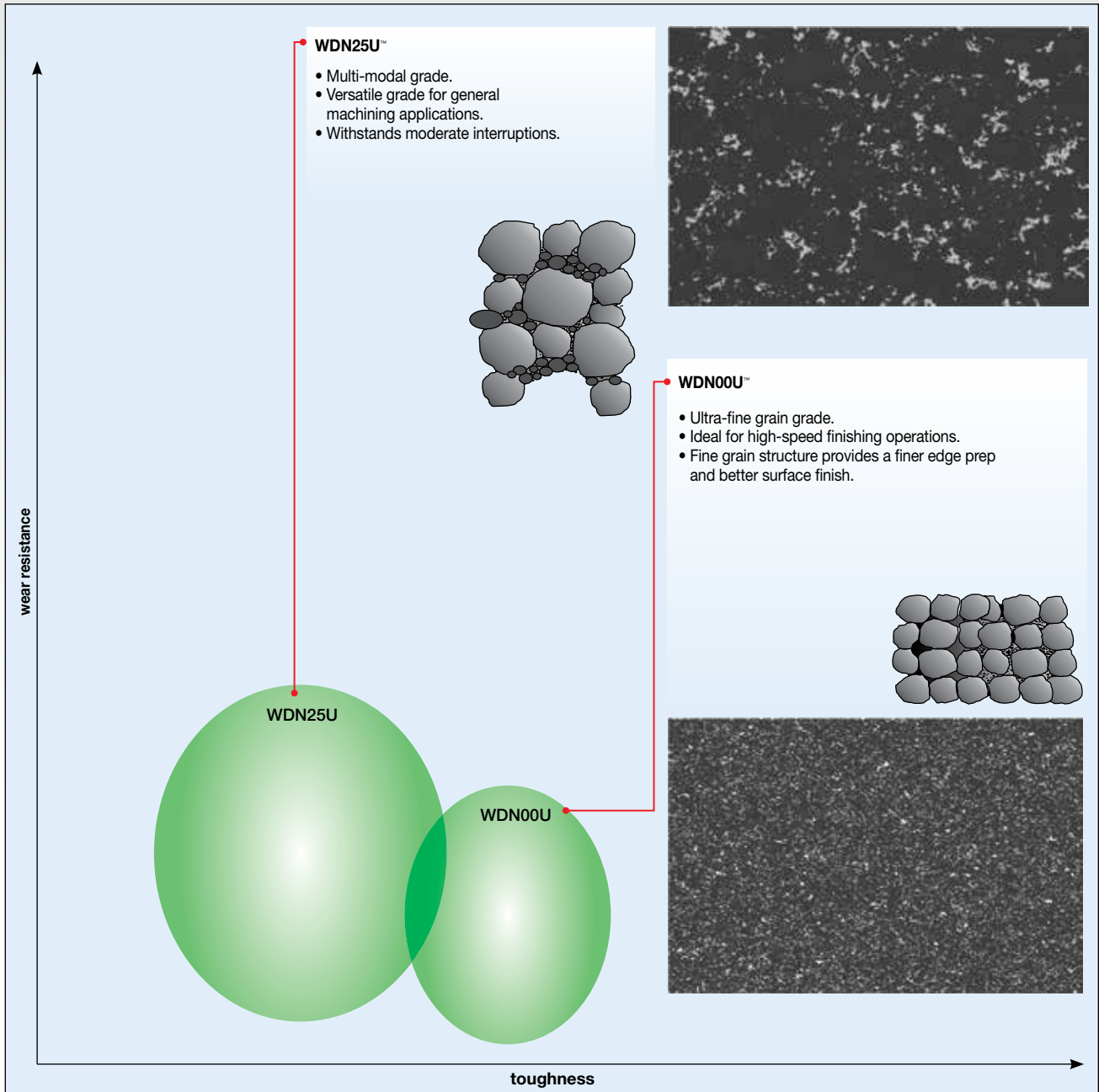


## PCD Grades for Turning Non-Ferrous Materials



- Two PCD grades — WDN25U and WDN00U — cover a wide range of applications.
- Grades provide outstanding performance to increase productivity and cut manufacturing costs.
- High abrasion and chipping resistance.
- Used in machining aluminum alloys with low- and high-silicon content, copper alloys, ceramics, and plastics.
- Suitable for machining highly abrasive materials such as titanium and Metal Matrix Composites (MMC).

### Non-Ferrous Grades



INDEXABLE MILLING

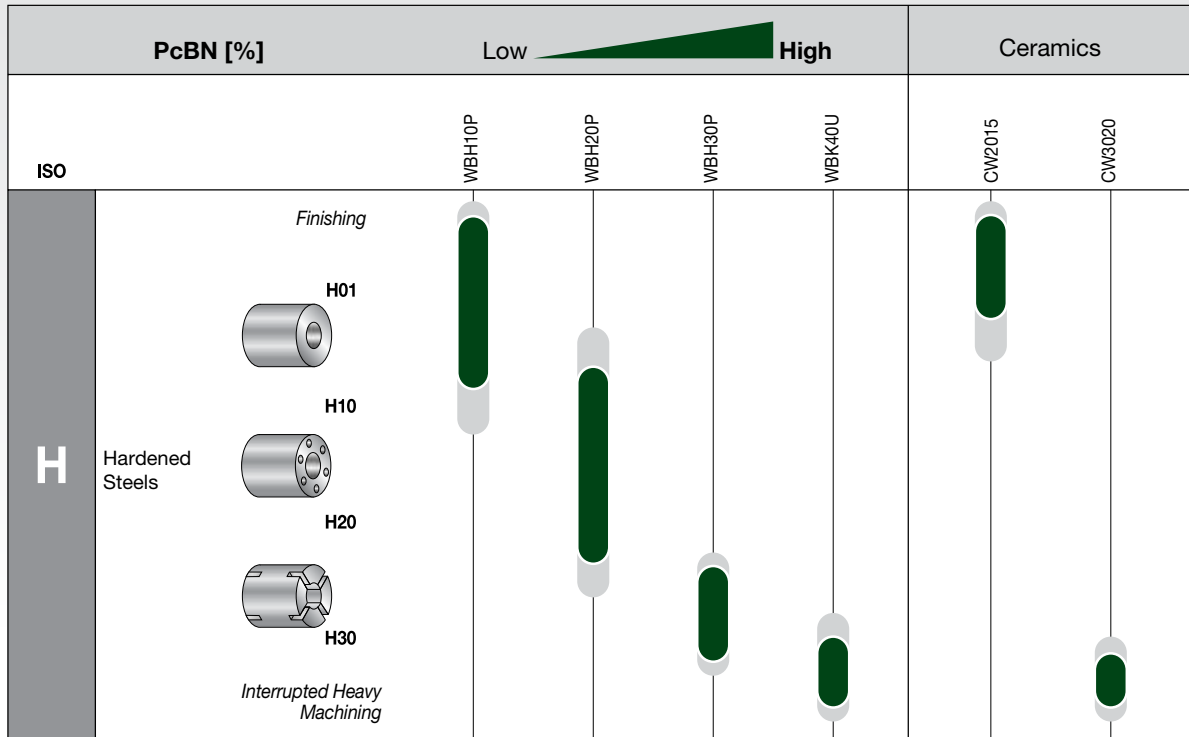
SOLID END MILLING

HOLEMAKING

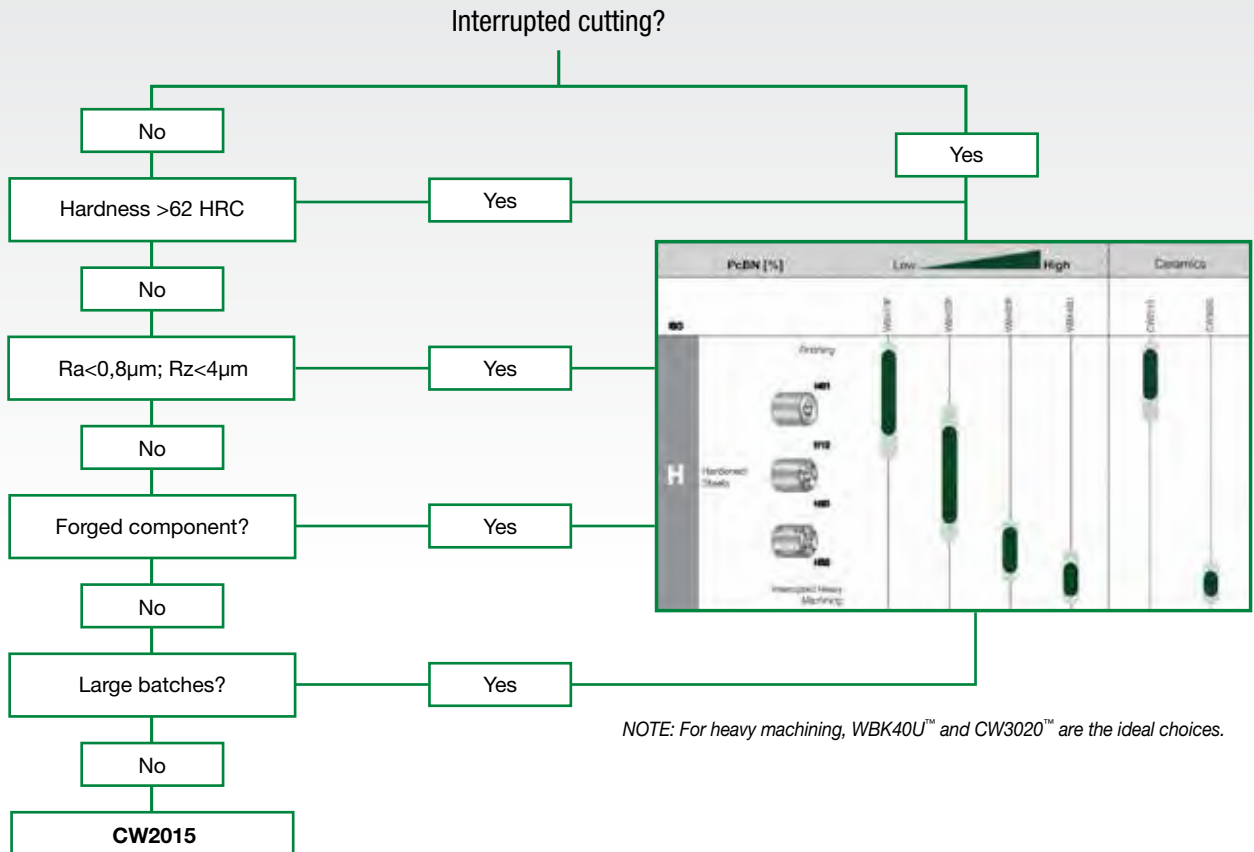
TAPPING

TURNING

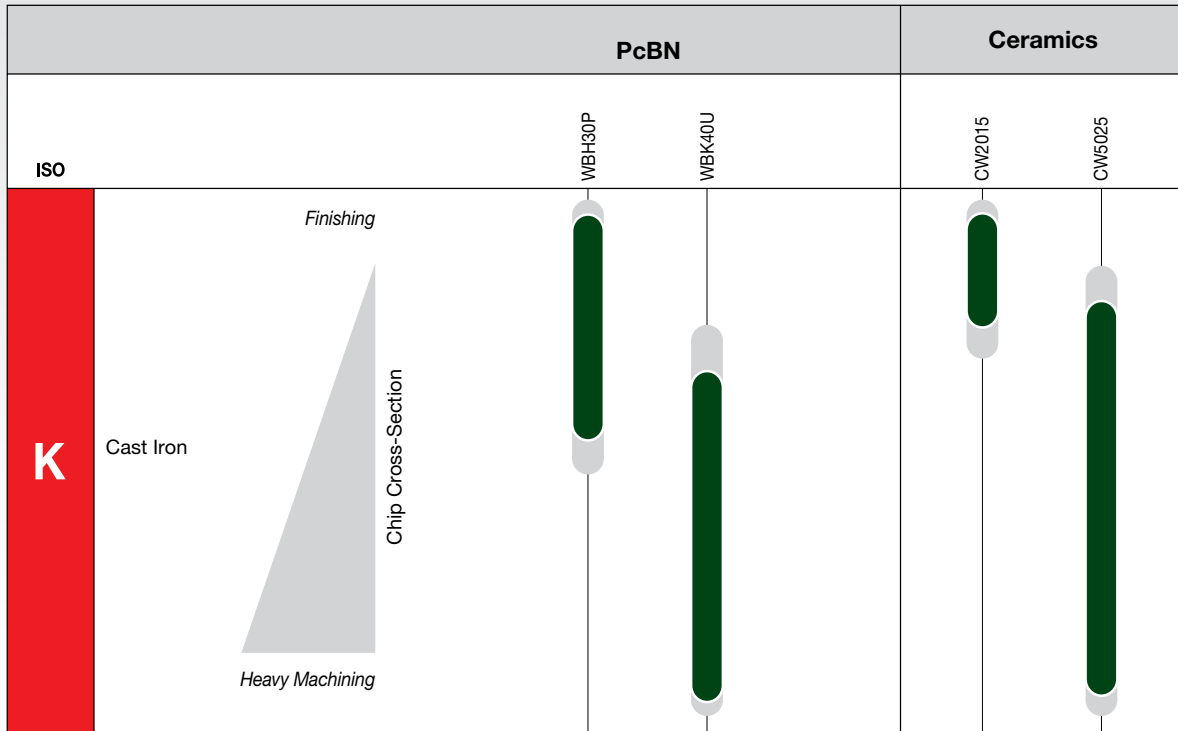
## Advanced Materials for Hard Turning



### Hard Turning Grade Selection

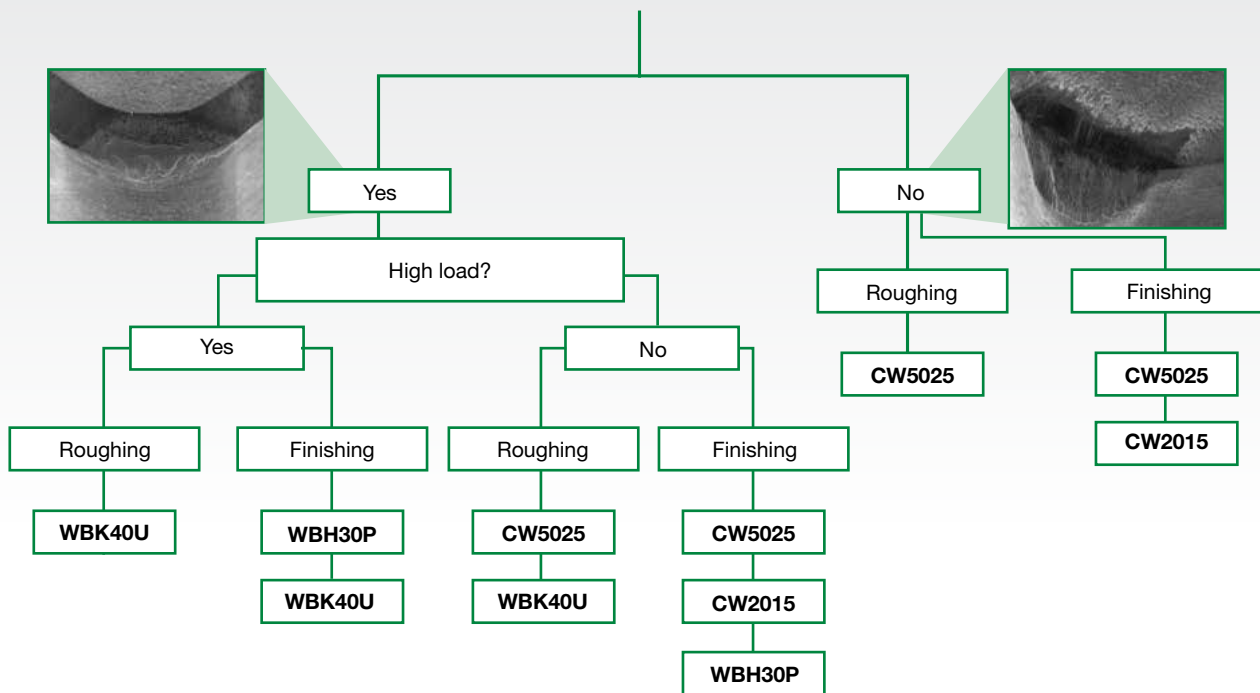


## Advanced Materials for Cast Iron Machining

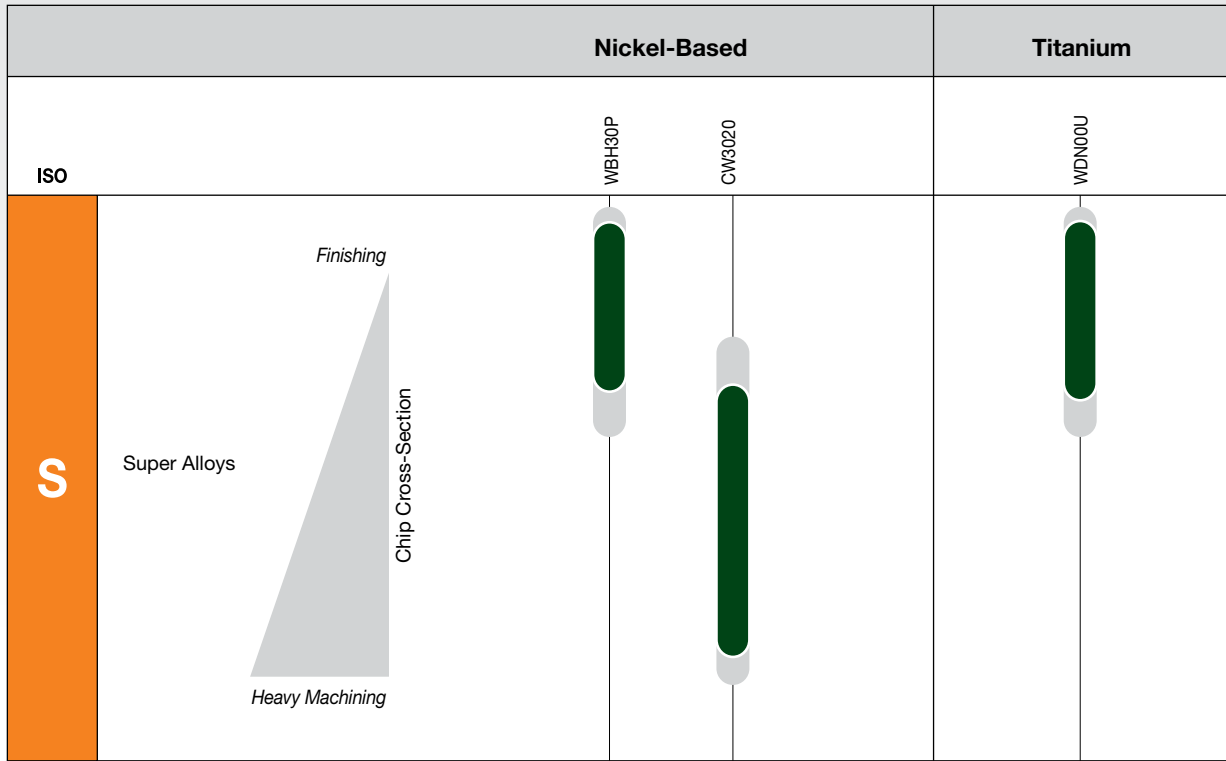


### Cast Iron Machining Grade Selection

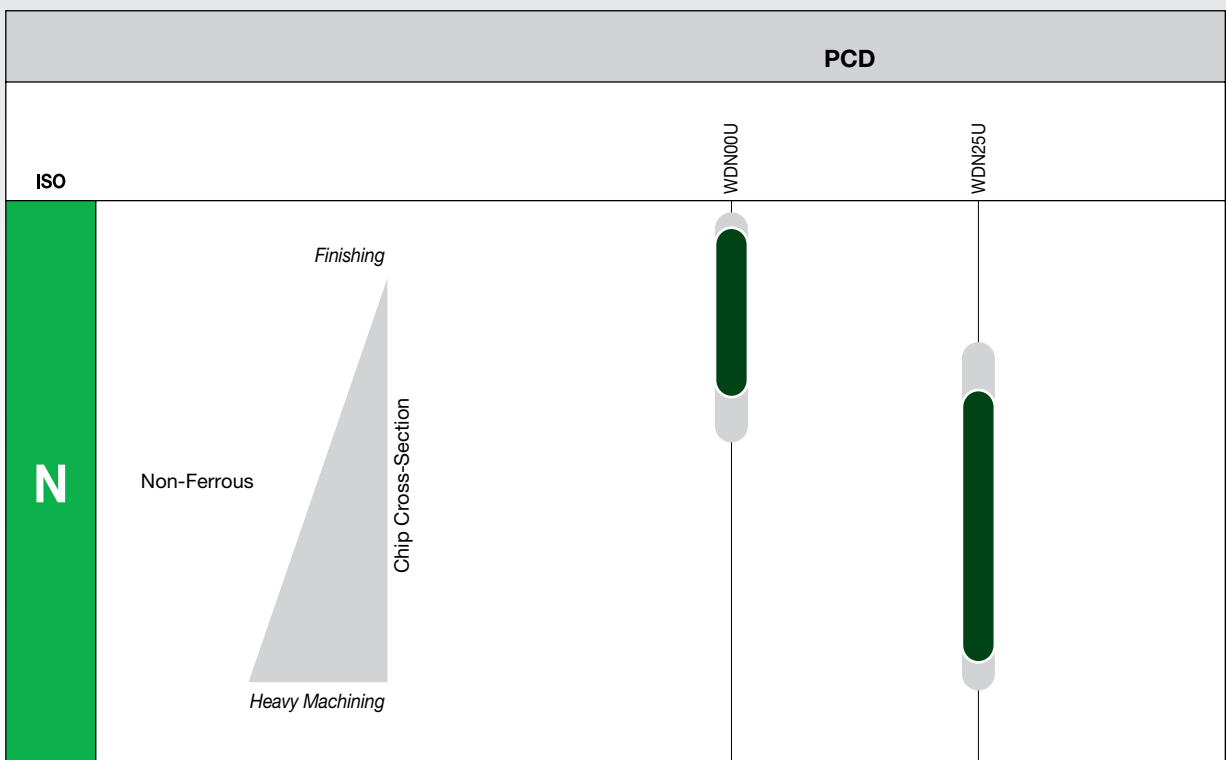
Constant and high-quality casting?



## Advanced Materials for High-Temperature Machining



## Advanced Materials for Non-Ferrous Machining



INDEXABLE MILLING

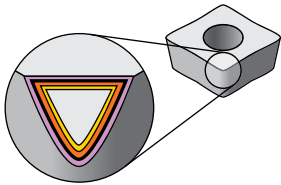
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Grades and Grade Descriptions



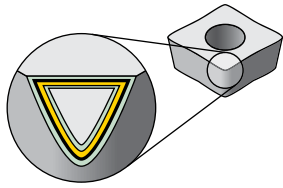
Reduce cycle times. High speed and feed capability. Long tool life. New multi-layer coating provides better wear resistance.

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

Grade	Coating	Grade Description	wear resistance ← → toughness																		
			05	10	15	20	25	30	35	40	45										
CW2015		Mixed (black) ceramic. Matrix Al <sub>2</sub> O <sub>3</sub> and TiCN. Good toughness properties combined with good wear resistance. Semi-finishing and finishing. For hardened iron base materials and gray cast iron (finishing).	P																		
	CM-H10		K																		
CW5025		Silicon-nitride ceramic. Extraordinary toughness properties. Roughing, also in heavily interrupted cuts. Capable of high-performance turning. To be used with or without coolant. For gray cast iron.	P																		
	CN-K15		K																		
CW3020		Whisker ceramic with a matrix of Al <sub>2</sub> O <sub>3</sub> + SiCw. The SiC whiskers embedded in the micro-structure give this ceramic excellent toughness for cutting high-temp alloys and cast materials with high Brinell hardness.	P																		
	C4		S																		
WBK40U		A high-content CBN, solid CBN insert with multiple cutting edges. Applied in roughing to finishing of fully pearlitic gray cast iron, chilled irons, high-chrome alloyed steels, sintered powdered metals, and heavy cuts in hardened steels (>45 HRC). Use for finishing chilled and fully pearlitic cast iron. Solid inserts offer better security and shock resistance than tipped inserts, while also enabling deeper depth-of-cut capability.	P																		
	BN-K40		K																		
WBH10P		A low-content CBN grade with a PVD-AlTiN coating for added wear resistance. Designed for precision machining of hardened steels (>45 HRC); the harder the steel the better. PVD coating offers improved wear resistance and excellent surface finish capability. Effectively applied on bearing steels, hot and cold work tool steels, high-speed steels, die steels, case-hardened steels, carburized and nitrided irons, and some hard coatings.	P																		
	BN-H10		H																		

INDEXABLE MILLING  
SOLID END MILLING  
HOLEMAKING  
TAPPING  
TURNING

## Grades and Grade Descriptions



Reduce cycle times. High speed and feed capability. Long tool life. New multi-layer coating provides better wear resistance.

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

wear resistance ← → toughness

Grade	Coating	Grade Description																		
			05	10	15	20	25	30	35	40	45									
WBH20P		A PVD-AlTiN coating over a low-content, CBN tip brazed onto a carbide insert. Designed for roughing to finishing of hardened steels (>45 HRC). Use on bearing steel, hot and cold work tool steels, high-speed steels, die steels, case-hardened steels, carburized and nitrided irons, and some hard coatings.																		
	BN-H25																			
WBH30P		A PVD-AlTiN coating over a low-content, CBN tip brazed onto a carbide insert. Designed for roughing to finishing in interrupted cuts on hardened steels (>45 HRC). Applied on gray cast iron, chilled irons, high-chrome alloyed steels, high-temp alloys, and sintered powdered metals.																		
	BN-H30																			
WDN00U		An ultra-fine grained polycrystalline diamond (PCD) tip brazed onto a carbide substrate. Designed for general-purpose turning of primarily non-ferrous materials. Applied over a wide range of continuous to interrupted cuts where superior surface finish is needed. Use on low to medium silicon content aluminum alloys, non-metallics, copper, brass, and zinc-based alloys. The ultra-fine grained diamond particle size enables superior surface finishes while ensuring the best mechanical shock resistance of any PCD cutting tool.																		
	DP-N10																			
WDN25U		A multi-modal PCD grade with a range of grain sizes brazed onto a carbide substrate. Engineered for extreme abrasion resistance and good edge strength for demanding applications. An ideal choice for high-silicon aluminum alloys, bi-metallic (AL/GC) materials, MMC, carbon-fiber reinforced plastics, and other abrasive non-metallic materials.																		
	DP-N25																			

\*Grade available as Custom Solution only.

Speed and Feed Chart • Ceramics • Metric

Material Group		Cutting Speed – vc m/min								
		CW2015			CW3020			CW5025		
		min	Start	max	min	Start	max	min	Start	max
ap [mm]		0,5		4,0	0,5		4,0	1,0		8,0
f [mm/rev]		0,2		0,4	0,1		0,5	0,2		0,6
P	0	-	-	-	-	-	-	-	-	-
	1	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-
	4	-	-	-	-	-	-	-	-	-
	5	-	-	-	-	-	-	-	-	-
M	1	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-
K	1	250	475	725	-	-	-	250	760	1000
	2	300	550	800	-	-	-	275	365	490
	3	250	400	600	-	-	-	275	335	440
N	1	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-
	4	-	-	-	-	-	-	-	-	-
	5	-	-	-	-	-	-	-	-	-
	6	-	-	-	-	-	-	-	-	-
	7	-	-	-	-	-	-	-	-	-
	8	-	-	-	-	-	-	-	-	-
S	1	-	-	-	170	200	375	-	-	-
	2	-	-	-	170	200	375	-	-	-
	3	-	-	-	190	250	375	-	-	-
	4	-	-	-	-	-	-	-	-	-
H	1	60	100	140	45	85	125	-	-	-
	2	60	100	140	45	85	125	-	-	-
	3	60	100	140	45	85	125	-	-	-
	4	60	100	140	45	85	125	-	-	-

INDEXABLE INSERTS

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING



## Speed and Feed Chart • Ceramics • Inch

Material Group		Cutting Speed – vc SFM								
		CW2015			CW3020			CW5025		
		min	Start	max	min	Start	max	min	Start	max
ap [inch]		0.0197		0.1575	0.0197		0.0394	0.0394		0.315
f [inch]		0.0079		0.0157	0.0039		0.0197	0.0047		0.0236
P	0	-	-	-	-	-	-	-	-	-
	1	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-
	4	-	-	-	-	-	-	-	-	-
	5	-	-	-	-	-	-	-	-	-
M	1	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-
K	1	815	1555	2375	-	-	-	800	2500	3300
	2	980	1800	2600	-	-	-	900	1200	1600
	3	820	1310	1965	-	-	-	900	1100	1450
N	1	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-
	4	-	-	-	-	-	-	-	-	-
	5	-	-	-	-	-	-	-	-	-
	6	-	-	-	-	-	-	-	-	-
	7	-	-	-	-	-	-	-	-	-
	8	-	-	-	-	-	-	-	-	-
S	1	-	-	-	550	650	1200	-	-	-
	2	-	-	-	550	720	1200	-	-	-
	3	-	-	-	600	820	1200	-	-	-
	4	-	-	-	-	-	-	-	-	-
H	1	200	325	450	150	275	400	-	-	-
	2	200	325	450	150	275	400	-	-	-
	3	200	325	450	150	275	400	-	-	-
	4	200	325	450	150	275	400	-	-	-

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Speed and Feed Chart • PcBN PCD • Metric

Material Group		Cutting Speed – vc m/min																	
		WBH10P			WBH20P			WBH30P			WBK40U			WDN00U			WDN25U		
		min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
ap [mm]		0,10		0,50	0,10		0,50	0,08		0,40	0,10		1,50	0,20		2,00	0,20		2,00
f [mm/rev]		0,06		0,25	0,05		0,20	0,05		0,20	0,08		0,20	0,10		0,30	0,10		0,25
P	0/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
K	1	-	-	-	-	-	-	400	600	800	650	800	1200	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N	1	-	-	-	-	-	-	-	-	-	-	-	-	500	765	2500	500	765	2500
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	350	580	1000
	3	-	-	-	-	-	-	-	-	-	-	-	-	250	520	1000	250	520	1000
	4	-	-	-	-	-	-	-	-	-	-	-	-	250	400	750	250	400	750
	5	-	-	-	-	-	-	-	-	-	-	-	-	550	760	1000	550	760	1000
	6	-	-	-	-	-	-	-	-	-	-	-	-	400	460	850	400	365	750
	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S	1	-	-	-	-	-	-	120	160	200	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	120	160	200	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	120	160	200	-	-	-	-	-	-	-	-	-
	4	-	-	-	-	-	-	-	-	-	-	-	-	100	180	320	-	-	-
H	1	80	170	260	80	160	230	60	120	220	60	120	220	-	-	-	-	-	-
	2	80	170	260	80	160	230	60	120	220	60	120	220	-	-	-	-	-	-
	3	80	170	260	80	160	230	60	120	220	60	120	220	-	-	-	-	-	-
	4	80	170	260	80	160	230	60	120	220	60	120	220	-	-	-	-	-	-

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

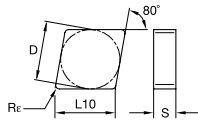
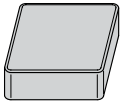
TAPPING

TURNING

## Speed and Feed Chart • PcBN PCD • Inch

Material Group		Cutting Speed – vc SFM																	
		WBH10P			WBH20P			WBH30P			WBK40U			WDN00U			WDN25U		
		min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
ap [inch]		0.004      0.020			0.004      0.020			0.003      0.016			0.008      0.080			0.008      0.079			0.008      0.079		
f [inch]		0.002      0.010			0.002      0.008			0.002      0.008			0.003      0.010			0.004      0.010			0.004      0.010		
P	0/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
K	1	-	-	-	-	-	-	1310	1975	2625	2125	2625	3950	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N	1	-	-	-	-	-	-	-	-	-	-	-	-	1600	2500	8000	1600	2500	8000
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1000	2000	3200
	3	-	-	-	-	-	-	-	-	-	-	-	-	800	1700	3200	800	1700	3200
	4	-	-	-	-	-	-	-	-	-	-	-	-	800	1300	2400	800	1300	2400
	5	-	-	-	-	-	-	-	-	-	-	-	-	1700	2500	3200	1700	2500	3200
	6	-	-	-	-	-	-	-	-	-	-	-	-	1000	1200	2400	1000	1500	2800
	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S	1	-	-	-	-	-	-	400	525	650	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	400	525	650	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	400	525	650	-	-	-	-	-	-	-	-	-
	4	-	-	-	-	-	-	-	-	-	-	-	-	325	600	1050	-	-	-
H	1	275	550	850	275	525	755	200	400	725	200	400	725	-	-	-	-	-	-
	2	275	550	850	275	525	755	200	400	725	200	400	725	-	-	-	-	-	-
	3	275	550	850	275	525	755	200	400	725	200	400	725	-	-	-	-	-	-
	4	275	550	850	275	525	755	200	400	725	200	400	725	-	-	-	-	-	-

Ceramic Inserts • CNGN/CNG



- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		CW2015	CW3020	CW5025
		mm	in	mm	in	mm	in	mm	in			
CNGN120404T02020	CNG431T0820	12,70	1/2	12,90	.508	4,76	3/16	0,4	.016	2952551	■	■
CNGN120408T01020	CNG432T0420	12,70	1/2	12,90	.508	4,76	3/16	0,8	.031	■	3869578	■
CNGN120408T02020	CNG432T0820	12,70	1/2	12,90	.508	4,76	3/16	0,8	.031	2952552	■	■
CNGN120412T01020	CNG433T0420	12,70	1/2	12,90	.508	4,76	3/16	1,2	.047	■	3869579	■
CNGN120412T02020	CNG433T0820	12,70	1/2	12,90	.508	4,76	3/16	1,2	.047	2952603	■	■
CNGN120712T01020	CNG453T0420	12,70	1/2	12,90	.508	7,94	5/16	1,2	.047	■	3869581	■
CNGN120712T02020	CNG453T0820	12,70	1/2	12,90	.508	7,94	5/16	1,2	.047	2952605	■	2952115

INDEXABLE MILLING

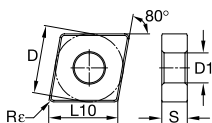
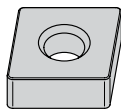
SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

## Ceramic Inserts • CNGA

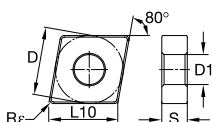
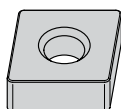


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		R <sub>ε</sub>		D1		CW2015	CW3020	CW5025
		mm	in	mm	in	mm	in	mm	in	mm	in			
CNGA120404T02020	CNGA431T0820	12,70	1/2	12,90	.508	4,76	3/16	0,4	.016	5,16	.203	2952526	2952527	2952159
CNGA120408T02020	CNGA432T0820	12,70	1/2	12,90	.508	4,76	3/16	0,8	.031	5,16	.203	2952528	2952161	2952173
CNGA120412T02020	CNGA433T0820	12,70	1/2	12,90	.508	4,76	3/16	1,2	.047	5,16	.203	2952529	2952175	
CNGA120416T02020	CNGA434T0820	12,70	1/2	12,90	.508	4,76	3/16	1,6	.063	5,16	.203			
CNGA160612T02020	CNGA543T0820	15,88	5/8	16,12	.635	6,35	1/4	1,2	.047	6,35	.250			
CNGA160616T02020	CNGA544T0820	15,88	5/8	16,12	.635	6,35	1/4	1,6	.063	6,35	.250			

## Ceramic Inserts • CNGA-FW

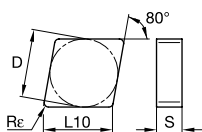
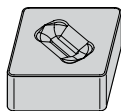


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		R <sub>ε</sub>		D1		CW2015	CW3020	CW5025
		mm	in	mm	in	mm	in	mm	in	mm	in			
CNGA120412T01020FW	CNGA433T0420FW	12,70	1/2	12,90	.508	4,76	3/16	1,2	.047	5,16	.203			2952160

Ceramic Inserts • CNGX

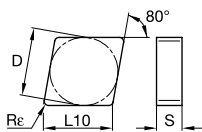
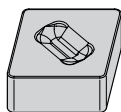


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		CW2015	CW3020	CW5025
		mm	in	mm	in	mm	in	mm	in			
CNGX120712T02020	CNGX453T0820	12,70	1/2	12,90	.508	7,94	5/16	1,2	.047	■	■	2952119

Ceramic Inserts • CNMX

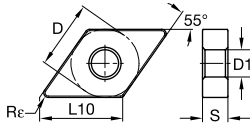
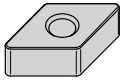


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		CW2015	CW3020	CW5025
		mm	in	mm	in	mm	in	mm	in			
CNMX120712T02020	CNMX453T0820	12,70	1/2	12,90	.508	7,94	5/16	1,2	.047	■	■	2952122
CNMX120716T02020	CNMX454T0820	12,70	1/2	12,90	.508	7,94	5/16	1,6	.063	■	■	2952123

## Ceramic Inserts • DNGA

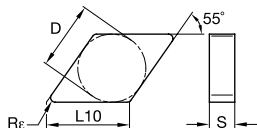
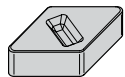


- first choice
- alternate choice

P				
M				
K	●			●
N				
S				●
H	●			

ISO catalog number	ANSI catalog number	D		L10		S		R <sub>ε</sub>		D1		CW2015	CW3020	CW5025	
		mm	in	mm	in	mm	in	mm	in	mm	in				
DNGA150404T02020	DNGA431T0820	12,70	1/2	15,50	.610	4,76	3/16	0,4	.016	5,16	.203	2952532	2952532	●	●
DNGA150408T02020	DNGA432T0820	12,70	1/2	15,50	.610	4,76	3/16	0,8	.031	5,16	.203	2952533	2952533	●	●
DNGA150412T02020	DNGA433T0820	12,70	1/2	15,50	.610	4,76	3/16	1,2	.047	5,16	.203	2952534	2952534	●	●
DNGA150604T02020	DNGA441T0820	12,70	1/2	15,50	.610	6,35	1/4	0,4	.016	5,16	.203	2952535	2952535	●	●
DNGA150608T02020	DNGA442T0820	12,70	1/2	15,50	.610	6,35	1/4	0,8	.031	5,16	.203	2952536	2952536	●	●
DNGA150612T02020	DNGA443T0820	12,70	1/2	15,50	.610	6,35	1/4	1,2	.047	5,16	.203	2952537	2952185	●	●

Ceramic Inserts • DNGX

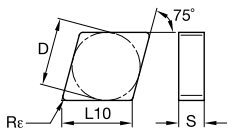
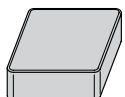


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		CW2015	CW3020	CW5025
		mm	in	mm	in	mm	in	mm	in			
DNGX120712T02020	DNGX120712T02020	10,00	.3937	12,21	.481	7,94	5/16	1,2	.047	■	■	2952124
DNGX150712T02020	DNGX453T0820	12,70	1/2	15,50	.610	7,94	5/16	1,2	.047	■	■	2952127
DNGX150716T02020	DNGX454T0820	12,70	1/2	15,50	.610	7,94	5/16	1,6	.063	■	■	2952128

Ceramic Inserts • ENGN/ENG



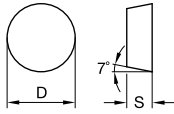
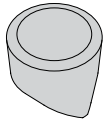
- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		CW2015	CW3020	CW5025
		mm	in	mm	in	mm	in	mm	in			
ENGN130712T02020	ENG453T0820	12,70	1/2	13,15	.518	7,94	5/16	1,2	.047	2952613	■	■



## Ceramic Inserts • RCGX/RCGV



- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		S		CW2015	CW3020	CW5025
		mm	in	mm	in			
RCGX060400T01020	RCGV23T0420	6,35	1/4	4,76	3/16		3869746	
RCGX090700T02020	RCGV35T0820	9,53	3/8	7,92	5/16	2952694		
RCGX090700T07015	RCGV35T2815	9,53	3/8	7,92	5/16	2952695		
RCGX090700T01020	RCGV35T0420	9,53	3/8	7,94	5/16	2952693	3869747	
RCGX120700T01020	RCGV45T0420	12,70	1/2	7,92	5/16		3869748	
RCGX120700T02020	RCGV45T0820	12,70	1/2	7,92	5/16	2952697		
RCGX120700T20015	RCGV45T8015	12,70	1/2	7,92	5/16	2952698		

INDEXABLE MILLING

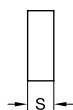
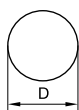
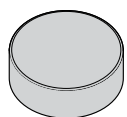
SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

Ceramic Inserts • RNGN/RNG



- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		S		CW2015	CW3020	CW5025
		mm	in	mm	in			
RNGN090300T01020	RNG32T0420	9,53	3/8	3,18	1/8		3869749	
RNGN090400T02020	RNG33T0820	9,53	3/8	4,76	3/16	2952615		
RNGN120400T01020	RNG43T0420	12,70	1/2	4,76	3/16		3869750	
RNGN120400T02020	RNG43T0820	12,70	1/2	4,76	3/16	2952616		2952131
RNGN120700T01020	RNG45T0420	12,70	1/2	7,94	5/16		3869751	
RNGN120700T02020	RNG45T0820	12,70	1/2	7,94	5/16	2952617		
RNGN120700T10015	RNG45T4015	12,70	1/2	7,94	5/16	2952618		
RNGN120700T20015	RNG45T8015	12,70	1/2	7,94	5/16	2952619		

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

INDEXABLE MILLING

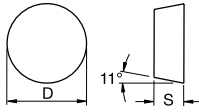
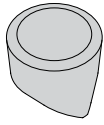
SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

## Ceramic Inserts • RPGX/RPGV

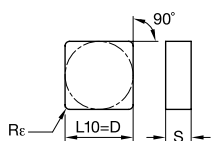
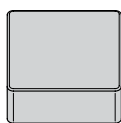


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		S		CW2015	CW3020	CW5025
		mm	in	mm	in			
RPGX060400T01020	RPGV23T0420	6,35	1/4	4,78	3/16		3869753	
RPGX090700T01020	RPGV35T0420	9,53	3/8	7,92	5/16		3869754	
RPGX120700T01020	RPGV45T0420	12,70	1/2	7,94	5/16		3869755	

Ceramic Inserts • SNGN/SNG



- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		CW2015	CW3020	CW5025
		mm	in	mm	in	mm	in	mm	in			
SNGN120408T00520	SNG432T0220	12,70	1/2	12,70	.500	4,76	3/16	0,8	.031	2952750		
SNGN120408T02020	SNG432T0820	12,70	1/2	12,70	.500	4,76	3/16	0,8	.031	2952751		
SNGN120412T01020	SNG433T0420	12,70	1/2	12,70	.500	4,76	3/16	1,2	.047		3869756	
SNGN120412T02020	SNG433T0820	12,70	1/2	12,70	.500	4,76	3/16	1,2	.047	2952752		2952136
SNGN120708T02020	SNG452T0820	12,70	1/2	12,70	.500	7,94	5/16	0,8	.031	2952825		
SNGN120712T02020	SNG453T0820	12,70	1/2	12,70	.500	7,94	5/16	1,2	.047	2952826		
SNGN120716T00520	SNG454T0220	12,70	1/2	12,70	.500	7,94	5/16	1,6	.063	2953340		
SNGN190720K20015	SNG655K8015	19,05	3/4	19,05	.750	7,94	5/16	2,0	.079	2952832		

INDEXABLE MILLING

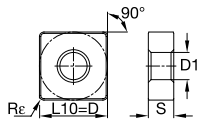
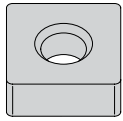
SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

## Ceramic Inserts • SNGA

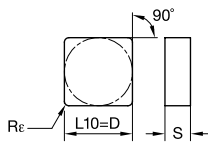
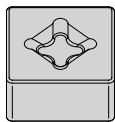


- first choice
- alternate choice

P				
M				
K	●			●
N				
S				
H	●			

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		CW2015	CW3020	CW5025
		mm	in	mm	in	mm	in	mm	in	mm	in			
SNGA120408T02020	SNGA432T0820	12,70	1/2	12,70	.500	4,76	3/16	0,8	.031	5,16	.203	2952538	●	●
SNGA120412T02020	SNGA433T0820	12,70	1/2	12,70	.500	4,76	3/16	1,2	.047	5,16	.203	2952539	●	●

## Ceramic Inserts • SNGX

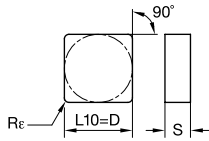
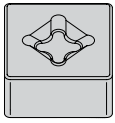


- first choice
- alternate choice

P				
M				
K	●			●
N				
S				
H	●			

ISO catalog number	ANSI catalog number	D		L10		S		Rε		CW2015	CW3020	CW5025
		mm	in	mm	in	mm	in	mm	in			
SNGX120712T02020	SNGX453T0820	12,70	1/2	12,70	.500	7,94	5/16	1,2	.047	●	●	2952142

Ceramic Inserts • SNMX

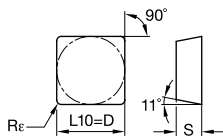
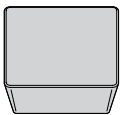


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		CW2015	CW3020	CW5025
		mm	in	mm	in	mm	in	mm	in			
SNMX120712T02020	SNMX453T0820	12,70	1/2	12,70	.500	7,94	5/16	1,2	.047	■	■	2952069
SNMX120716T02020	SNMX454T0820	12,70	1/2	12,70	.500	7,94	5/16	1,6	.063	■	■	2952070

Ceramic Inserts • SPGN/SPG

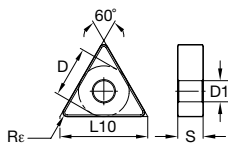
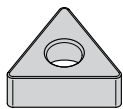


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		CW2015	CW3020	CW5025
		mm	in	mm	in	mm	in	mm	in			
SPGN120308T01020	SPG422T0420	12,70	1/2	12,70	.500	3,18	1/8	0,8	.031	2952702	■	■

## Ceramic Inserts • TNGA

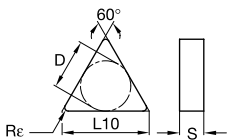
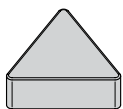


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		CW2015	CW3020	CW5025
		mm	in	mm	in	mm	in	mm	in	mm	in			
TNGA160408T02020	TNGA332T0820	9,53	3/8	16,50	.650	4,76	3/16	0,8	.031	3,81	.150	2952541	2952542	2952195
TNGA160412T02020	TNGA333T0820	9,53	3/8	16,50	.650	4,76	3/16	1,2	.047	3,81	.150	2952544		
TNGA220408T02020	TNGA432T0820	12,70	1/2	22,00	.866	4,76	3/16	0,8	.031	5,16	.203			

## Ceramic Inserts • TNGN/TNG

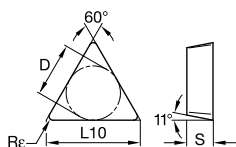
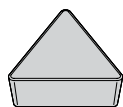


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Re		CW2015	CW3020	CW5025
		mm	in	mm	in	mm	in	mm	in			
TNGN160404T02020	TNG331T0820	9,53	3/8	16,50	.650	4,76	3/16	0,4	.016	2952835		
TNGN160408T01020	TNG332T0420	9,53	3/8	16,50	.650	4,76	3/16	0,8	.031		3869761	
TNGN160408T02020	TNG332T0820	9,53	3/8	16,50	.650	4,76	3/16	0,8	.031	2952836		
TNGN160712T02020	TNG353T0820	9,53	3/8	16,50	.650	7,94	5/16	1,2	.047	2952840		
TNGN220408T02020	TNG432T0820	12,70	1/2	22,00	.866	4,76	3/16	0,8	.031	2952841		

Ceramic Inserts • TPGN/TPG



- first choice
- alternate choice

P				
M				
K	●			●
N				
S			●	
H	●			

ISO catalog number	ANSI catalog number	D		L10		S		Rε		CW2015	CW3020	CW5025
		mm	in	mm	in	mm	in	mm	in			
TPGN110304T01020	TPG221T0420	6,35	1/4	11,00	.433	3,18	1/8	0,4	.016	2952706		
TPGN110308T01020	TPG222T0420	6,35	1/4	11,00	.433	3,18	1/8	0,8	.031	2952707		
TPGN160304T00520	TPG321T0220	9,53	3/8	16,50	.650	3,18	1/8	0,4	.016	2952709		
TPGN160304T01020	TPG321T0420	9,53	3/8	16,50	.650	3,18	1/8	0,4	.016	2952710		
TPGN160308T00520	TPG322T0220	9,53	3/8	16,50	.650	3,18	1/8	0,8	.031	2952711		
TPGN160308T01020	TPG322T0420	9,53	3/8	16,50	.650	3,18	1/8	0,8	.031	2952712		

INDEXABLE MILLING

SOLID END MILLING

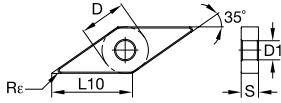
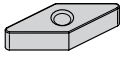
HOLE/MAKING

TAPPING

TURNING



## Ceramic Inserts • VNGA

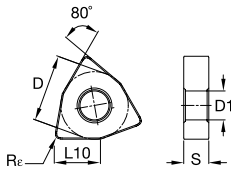
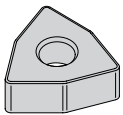


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		CW2015	CW3020	CW5025
		mm	in	mm	in	mm	in	mm	in	mm	in			
VNGA160404T02020	VNGA331T0820	9,53	3/8	16,61	.654	4,76	3/16	0,4	.016	3,81	.150	2952545	■	■
VNGA160408T02020	VNGA332T0820	9,53	3/8	16,61	.654	4,76	3/16	0,8	.031	3,81	.150	2952546	■	■
VNGA160412T02020	VNGA333T0820	9,53	3/8	16,61	.654	4,76	3/16	1,2	.047	3,81	.150	2952547	■	■

## Ceramic Inserts • WNGA

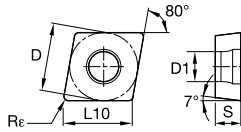
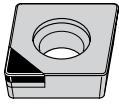


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		CW2015	CW3020	CW5025
		mm	in	mm	in	mm	in	mm	in	mm	in			
WNGA080408T02020	WNGA432T0820	12,70	1/2	8,69	.342	4,76	3/16	0,8	.031	5,16	.203	■	■	2952199
WNGA080412T02020	WNGA433T0820	12,70	1/2	8,69	.342	4,76	3/16	1,2	.047	5,16	.203	■	■	2952200

Polycrystalline Diamond Inserts (PCD) • CCGW-FST

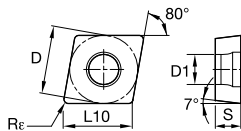
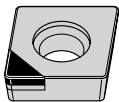


- first choice
- alternate choice

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

ISO catalog number	D		L10		S		Rε		D1		WDN00U	WDN25U
	mm	in	mm	in	mm	in	mm	in	mm	in		
CCGW060204FST	6,35	1/4	6,45	.254	2,38	3/32	0,4	.016	2,80	.110	5885722	3898746
CCGW09T304FST	9,53	3/8	9,67	.381	3,97	5/32	0,4	.016	4,40	.173	5885723	3898749
CCGW09T308FST	9,53	3/8	9,67	.381	3,97	5/32	0,8	.031	4,40	.173	5885724	3898750

Polycrystalline Diamond Inserts (PCD) • CCMW-FST

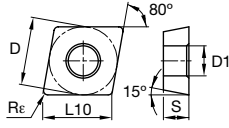
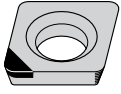


- first choice
- alternate choice

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

ISO catalog number	D		L10		S		Rε		D1		WDN00U	WDN25U
	mm	in	mm	in	mm	in	mm	in	mm	in		
CCMW09T304FST	9,53	3/8	9,67	.381	3,97	5/32	0,4	.016	4,40	.173	3883134	
CCMW09T308FST	9,53	3/8	9,67	.381	3,97	5/32	0,8	.031	4,40	.173	3883136	

## Polycrystalline Diamond Inserts (PCD) • CDHB-FST

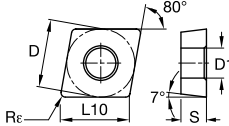
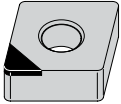


- first choice
- alternate choice

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

ISO catalog number	D		L10		S		Rε		D1		WDN00U	WDN25U
	mm	in	mm	in	mm	in	mm	in	mm	in		
CDHBS4T0X0FST	3,97	5/32	4,03	.159	1,02	.040	0,1	.002	2,13	.084	■	3898745
CDHBS4T002FST	3,97	.1562	4,03	.159	1,02	.040	0,2	.007	2,13	.084	■	3898744

## Polycrystalline Diamond Inserts (PCD) • CNGA-FST

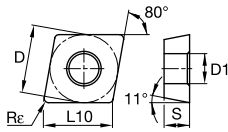
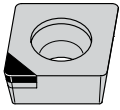


- first choice
- alternate choice

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

ISO catalog number	D		L10		S		Rε		D1		WDN00U	WDN25U
	mm	in	mm	in	mm	in	mm	in	mm	in		
CNGA120404FST	12,70	1/2	12,90	.508	4,76	3/16	0,4	.016	5,16	.203	■	3898726
CNGA120408FST	12,70	1/2	12,90	.508	4,76	3/16	0,8	.031	5,16	.203	■	3898727

Polycrystalline Diamond Inserts (PCD) • CPGW-FWST

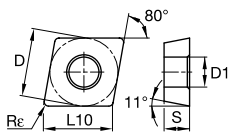
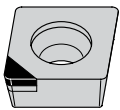


- first choice
- alternate choice

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

ISO catalog number	D		L10		S		Rε		D1		WDN00U	WDN25U
	mm	in	mm	in	mm	in	mm	in	mm	in		
CPGW060204FWST	6,35	1/4	6,45	.254	2,38	3/32	0,4	.016	2,80	.110	5885758	1

Polycrystalline Diamond Inserts (PCD) • CPGW-FST

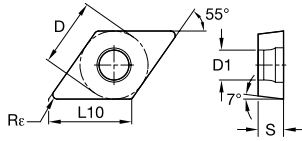
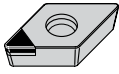


- first choice
- alternate choice

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

ISO catalog number	D		L10		S		Rε		D1		WDN00U	WDN25U
	mm	in	mm	in	mm	in	mm	in	mm	in		
CPGW060204FST	6,35	1/4	6,45	.254	2,38	3/32	0,4	.016	2,80	.110	3898752	1
CPGW060208FST	6,35	1/4	6,45	.254	2,38	3/32	0,8	.031	2,80	.110	3898753	1

## Polycrystalline Diamond Inserts (PCD) • DCGW-FST

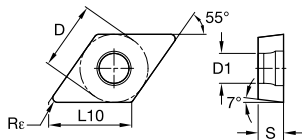
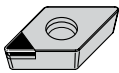


- first choice
- alternate choice

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

ISO catalog number	D		L10		S		Rε		D1		WDN00U	WDN25U
	mm	in	mm	in	mm	in	mm	in	mm	in		
DCGW070204FST	6,35	1/4	7,75	.305	2,38	3/32	0,4	.016	2,80	.110	■	3898761
DCGW11T304FST	9,53	3/8	11,63	.458	3,97	5/32	0,4	.016	4,40	.173	■	3898762

## Polycrystalline Diamond Inserts (PCD) • DCMW-FST

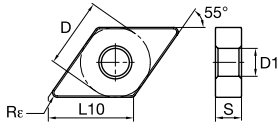
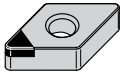


- first choice
- alternate choice

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

ISO catalog number	D		L10		S		Rε		D1		WDN00U	WDN25U
	mm	in	mm	in	mm	in	mm	in	mm	in		
DCMW070204FST	6,35	1/4	7,75	.305	2,38	3/32	0,4	.016	2,80	.110	■	3883142
DCMW11T304FST	9,53	3/8	11,63	.458	3,97	5/32	0,4	.016	4,40	.173	■	3883122
DCMW11T308FST	9,53	3/8	11,63	.458	3,97	5/32	0,8	.031	4,40	.173	■	3883143

Polycrystalline Diamond Inserts (PCD) • DNGA-FST

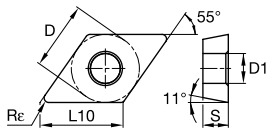
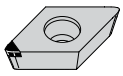


- first choice
- alternate choice

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

ISO catalog number	D		L10		S		Rε		D1		WDN00U	WDN25U
	mm	in	mm	in	mm	in	mm	in	mm	in		
DNGA150408FST	12,70	1/2	15,50	.610	4,76	3/16	0,8	.031	5,16	.203	5885775	3898731

Polycrystalline Diamond Inserts (PCD) • DPGW-FST

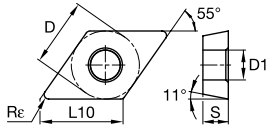
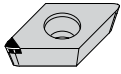


- first choice
- alternate choice

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

ISO catalog number	D		L10		S		Rε		D1		WDN00U	WDN25U
	mm	in	mm	in	mm	in	mm	in	mm	in		
DPGW070202FST	6,35	1/4	7,75	.305	2,38	3/32	0,2	.008	2,80	.110	5885778	1

## Polycrystalline Diamond Inserts (PCD) • DPGW-FWST

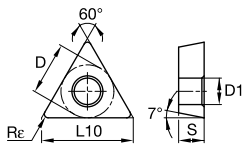
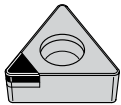


- first choice
- alternate choice

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

ISO catalog number	D		L10		S		Rε		D1		WDN00U	WDN25U
	mm	in	mm	in	mm	in	mm	in	mm	in		
DPGW11T304FWST	9,53	3/8	11,63	.458	3,97	5/32	0,4	.016	4,40	.173	5885791	1

## Polycrystalline Diamond Inserts (PCD) • TCGW-FST



- first choice
- alternate choice

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

ISO catalog number	D		L10		S		Rε		D1		WDN00U	WDN25U
	mm	in	mm	in	mm	in	mm	in	mm	in		
TCGW110204FST	6,35	1/4	11,00	.433	2,38	3/32	0,4	.016	2,80	.110	3898768	1
TCGW16T304FST	9,53	3/8	16,50	.650	3,97	5/32	0,4	.016	4,40	.173	3898769	1

INDEXABLE MILLING

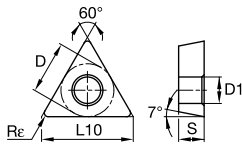
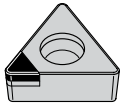
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Polycrystalline Diamond Inserts (PCD) • TCMW-FST

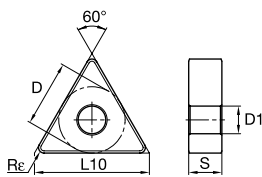
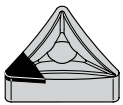


- first choice
- alternate choice

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

ISO catalog number	D		L10		S		Rε		D1		WDN00U	WDN25U
	mm	in	mm	in	mm	in	mm	in	mm	in		
TCMW110204FST	6,35	1/4	11,00	.433	2,38	3/32	0,4	.016	2,80	.110	■	3883144

Polycrystalline Diamond Inserts (PCD) • TNMS-FST



- first choice
- alternate choice

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

ISO catalog number	D		L10		S		Rε		D1		WDN00U	WDN25U
	mm	in	mm	in	mm	in	mm	in	mm	in		
TNMS160404FST	9,53	3/8	16,50	.650	4,76	3/16	0,4	.016	3,81	.150	■	3698734

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

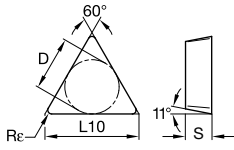
TAPPING

TURNING



INDEXABLE MILLING

## Polycrystalline Diamond Inserts (PCD) • TPGN/TPG



- first choice
- alternate choice

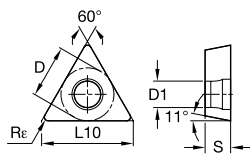
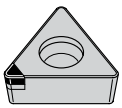
P	■	■	■
M	■	■	■
K	■	■	■
N	■	●	●
S	■	●	■
H	■	■	■

SOLID END MILLING

ISO catalog number	ANSI catalog number	D		L10		S		Re		WDN00U	WDN25U
		mm	in	mm	in	mm	in	mm	in		
TPGN160304F	TPG321F	9,53	3/8	16,50	.650	3,18	1/8	0,4	.016	I	3898721

HOLE/MAKING

## Polycrystalline Diamond Inserts (PCD) • TPGW-FST



- first choice
- alternate choice

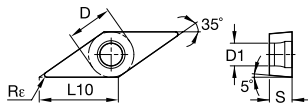
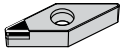
P	■	■	■
M	■	■	■
K	■	■	■
N	■	●	●
S	■	●	■
H	■	■	■

TAPPING

ISO catalog number	D		L10		S		Re		D1		WDN00U	WDN25U
	mm	in	mm	in	mm	in	mm	in	mm	in		
TPGW16T304FST	9,53	3/8	16,50	.650	3,97	5/32	0,4	.016	4,40	.173	I	3898772

TURNING

Polycrystalline Diamond Inserts (PCD) • VBGW-FST

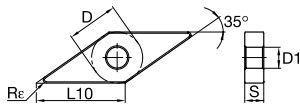
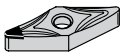


- first choice
- alternate choice

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

ISO catalog number	D		L10		S		Rε		D1		WDN00U	WDN25U
	mm	in	mm	in	mm	in	mm	in	mm	in		
VBGW110304FST	6,35	1/4	11,07	.436	3,18	1/8	0,4	.016	2,80	.110	■	3898774
VBGW160404FST	9,53	3/8	16,61	.654	4,76	3/16	0,4	.016	4,40	.173	■	3898775

Polycrystalline Diamond Inserts (PCD) • VNMS-FST

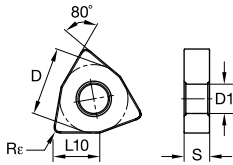
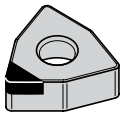


- first choice
- alternate choice

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

ISO catalog number	D		L10		S		Rε		D1		WDN00U	WDN25U
	mm	in	mm	in	mm	in	mm	in	mm	in		
VNMS160408FST	9,53	3/8	16,61	.654	4,76	3/16	0,8	.031	3,81	.150	■	3898739

## Polycrystalline Diamond Inserts (PCD) • WNGA-FST

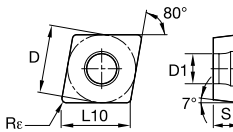
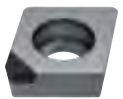


- first choice
- alternate choice

P				
M				
K				
N			●	●
S			●	
H				

ISO catalog number	D		L10		S		Rε		D1		WDN00U	WDN25U
	mm	in	mm	in	mm	in	mm	in	mm	in		
WNGA080408FST	12,70	1/2	8,69	.342	4,76	3/16	0,8	.031	5,16	.203	I	3898741

## Cubic Boron Nitride (CBN) Inserts • CCGW-M

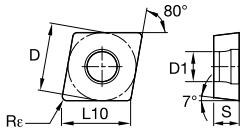
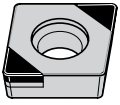


- first choice
- alternate choice

P				
M				
K				
N				
S			●	●
H			●	●

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WBH10P	WBH20P	WBH30P	WBK40U
		mm	in	mm	in	mm	in	mm	in	mm	in				
CCGW09T308S01015M	CCGW3252S0415M	9,53	3/8	9,67	.381	3,99	.157	0,8	.031	4,40	.173	I	6904774	I	I

Cubic Boron Nitride (CBN) Inserts • CCGW-MT

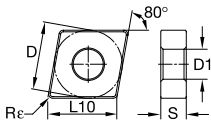
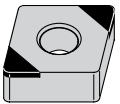


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WBH10P	WBH20P	WBH30P	WBK40U
		mm	in	mm	in	mm	in	mm	in	mm	in				
CCGW09T304S01015MT	CCGW3251S0415MT	9,53	3/8	9,67	.381	3,99	.157	0,4	.016	4,40	.173	3883507	6904777	●	●
CCGW09T308S01015MT	CCGW3252S0415MT	9,53	3/8	9,67	.381	3,99	.157	0,8	.031	4,40	.173	3883508	6904776	●	●
CCGW120408S01015MT	CCGW432S0415MT	12,70	1/2	12,90	.508	4,78	.1883	0,8	.031	5,50	.216	6904775	6018004	●	●

Cubic Boron Nitride (CBN) Inserts • CNGA-EMT

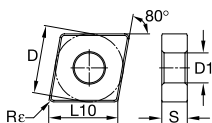
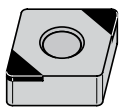


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WBH10P	WBH20P	WBH30P	WBK40U
		mm	in	mm	in	mm	in	mm	in	mm	in				
CNGA120408EMT	CNGA432EMT	12,70	1/2	12,90	.508	4,76	3/16	0,8	.031	5,16	.203	6904778	6018004	●	●

## Cubic Boron Nitride (CBN) Inserts • CNGA-MT



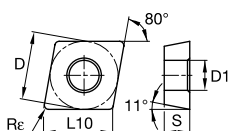
● first choice

○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WBH10P	WBH20P	WBH30P	WBK40U
		mm	in	mm	in	mm	in	mm	in	mm	in				
CNGA120404S01025MT	CNGA431S0425MT	12,70	1/2	12,90	.508	4,78	.1883	0,4	.016	5,16	.203	3883509	6904779		
CNGA120408S01025MT	CNGA432S0425MT	12,70	1/2	12,90	.508	4,78	.1883	0,8	.031	5,16	.203	3883510	6904780	6018008	
CNGA120412S01020MT	CNGA433S0420MT	12,70	1/2	12,90	.508	4,78	.1883	1,2	.047	5,16	.203			6018009	
CNGA120412S01025MT	CNGA433S0425MT	12,70	1/2	12,90	.508	4,78	.1883	1,2	.047	5,16	.203		6904821	6018010	

## Cubic Boron Nitride (CBN) Inserts • CPGW-C



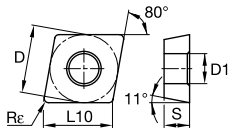
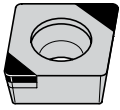
● first choice

○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WBH10P	WBH20P	WBH30P	WBK40U
		mm	in	mm	in	mm	in	mm	in	mm	in				
CPGW060204S01015C	CPGW2151S0415C	6,35	1/4	6,45	.254	2,38	3/32	0,4	.016	2,80	.110			6018082	

Cubic Boron Nitride (CBN) Inserts • CPGW-MT

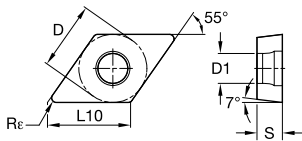
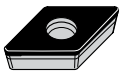


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WBH10P	WBH20P	WBH30P	WBK40U
		mm	in	mm	in	mm	in	mm	in	mm	in				
CPGW09T308S01015MT	CPGW3252S0415MT	9,53	3/8	9,67	.381	3,99	.157	0,8	.031	4,40	.173	■	■	6018085	■

Cubic Boron Nitride (CBN) Inserts • DCGW-C

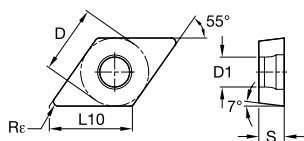
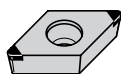


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WBH10P	WBH20P	WBH30P	WBK40U
		mm	in	mm	in	mm	in	mm	in	mm	in				
DCGW070202S01015C	DCGW21505S0415C	6,35	1/4	7,75	.305	2,38	3/32	0,2	.008	2,80	.110	3883528	■	■	■
DCGW070204S01015C	DCGW2151S0415C	6,35	1/4	7,75	.305	2,38	3/32	0,4	.016	2,80	.110	3883529	■	■	■

## Cubic Boron Nitride (CBN) Inserts • DCGW-MT

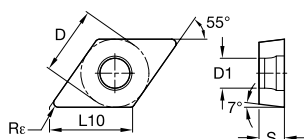
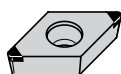


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WBH10P	WBH20P	WBH30P	WBK40U
		mm	in	mm	in	mm	in	mm	in	mm	in				
DCGW11T304S01015MT	DCGW3251S0415MT	9,53	3/8	11,63	.458	3,99	.157	0,4	.016	4,40	.173	3883530	6904823	6018088	■
DCGW11T308S01015MT	DCGW3252S0415MT	9,53	3/8	11,63	.458	3,99	.157	0,8	.031	4,40	.173	3883531	6904824	■	■

## Cubic Boron Nitride (CBN) Inserts • DCMW-MT

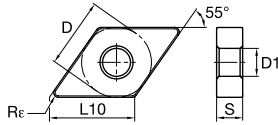
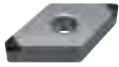


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WBH10P	WBH20P	WBH30P	WBK40U
		mm	in	mm	in	mm	in	mm	in	mm	in				
DCMW070204S01020MT	DCMW2151S0420MT	6,35	1/4	7,74	.305	2,38	3/32	0,4	.016	2,80	.110	■	6904822	■	■

Cubic Boron Nitride (CBN) Inserts • DNGA-EMT

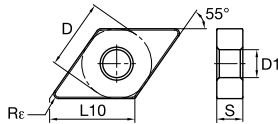
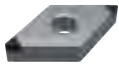


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WBH10P	WBH20P	WBH30P	WBK40U
		mm	in	mm	in	mm	in	mm	in	mm	in				
DNGA150408EMT	DNGA432EMT	12,70	1/2	15,50	.610	4,76	3/16	0,8	.031	5,16	.203	■	■	■	■
DNGA150412EMT	DNGA433EMT	12,70	1/2	15,50	.610	4,76	3/16	1,2	.047	5,16	.203	■	■	■	■

Cubic Boron Nitride (CBN) Inserts • DNGA-MT



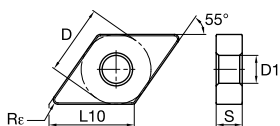
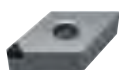
- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WBH10P	WBH20P	WBH30P	WBK40U
		mm	in	mm	in	mm	in	mm	in	mm	in				
DNGA150404S01025MT	DNGA431S0425MT	12,70	1/2	15,50	.610	4,78	.1883	0,4	.016	5,16	.203	■	■	■	■
DNGA150408S01025MT	DNGA432S0425MT	12,70	1/2	15,50	.610	4,78	.1883	0,8	.031	5,16	.203	■	■	■	■
DNGA150608S01225MT	DNGA442S0525MT	12,70	1/2	15,50	.610	6,37	—	0,8	.031	5,16	.203	■	■	■	■



## Cubic Boron Nitride (CBN) Inserts • DNMA-ST

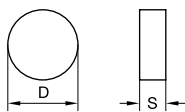


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WBH10P	WBH20P	WBH30P	WBK40U
		mm	in	mm	in	mm	in	mm	in	mm	in				
DNMA150604S01020ST	DNMA441S0420ST	12,70	1/2	15,50	.610	6,35	1/4	0,4	.016	5,16	.203	■	6904827	■	■

## Cubic Boron Nitride (CBN) Inserts • RNGN/RNG

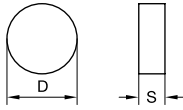
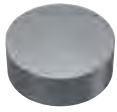


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		S		WBH10P	WBH20P	WBH30P	WBK40U
		mm	in	mm	in				
RNGN120400S01020	RNG43S0420	12,70	1/2	4,76	3/16	■	6904851	■	■

Cubic Boron Nitride (CBN) Inserts • RNMN/RNM

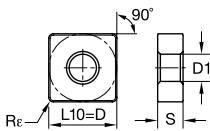
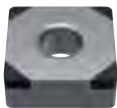


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		S		WBH10P	WBH20P	WBH30P	WBK40U
		mm	in	mm	in				
RNMN090300S02020	RNM32S0820	9,53	3/8	3,18	1/8	●	●	●	3883315
RNMN120300S02020	RNM42S0820	12,70	1/2	3,18	1/8	●	●	●	3883316
RNMN120400S02020	RNM43S0820	12,70	1/2	4,76	3/16	●	●	●	3883317

Cubic Boron Nitride (CBN) Inserts • SNGA-MT

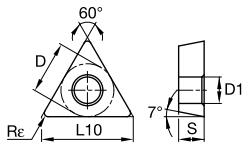


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WBH10P	WBH20P	WBH30P	WBK40U
		mm	in	mm	in	mm	in	mm	in	mm	in				
SNGA120408S01025MT	SNGA432S0425MT	12,70	1/2	12,70	.500	4,78	.1883	0,8	.031	5,16	.203	●	6904852	●	●

## Cubic Boron Nitride (CBN) Inserts • TCGW-MT

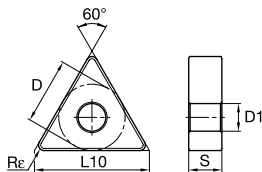
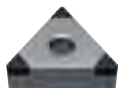


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WBH10P	WBH20P	WBH30P	WBK40U
		mm	in	mm	in	mm	in	mm	in	mm	in				
TCGW110204S01015MT	TCGW2151S0415MT	6,35	1/4	11,00	.433	2,40	.0945	0,4	.016	2,80	.110	■	■	■	■
TCGW110208S01015MT	TCGW2152S0415MT	6,35	1/4	11,00	.433	2,40	.0945	0,8	.031	2,80	.110	■	■	■	■
TCGW16T308S01015MT	TCGW3252S0415M	9,53	3/8	16,50	.650	3,99	.157	0,8	.031	4,40	.173	■	■	■	■

## Cubic Boron Nitride (CBN) Inserts • TNGA-MT

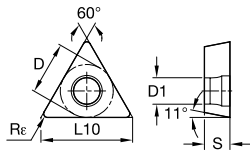


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WBH10P	WBH20P	WBH30P	WBK40U
		mm	in	mm	in	mm	in	mm	in	mm	in				
TNGA160404S01025MT	TNGA331S0425MT	9,53	3/8	16,50	.650	4,78	.1883	0,4	.016	3,81	.150	■	■	■	■
TNGA160408S01025MT	TNGA332S0425MT	9,53	3/8	16,50	.650	4,78	.1883	0,8	.031	3,81	.150	■	■	■	■
TNGA160412S01225MT	TNGA333S0525MT	9,53	3/8	16,50	.650	4,78	.1883	1,2	.047	3,81	.150	■	■	■	■

Cubic Boron Nitride (CBN) Inserts • TPGW-C

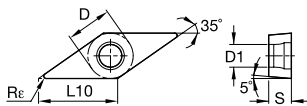
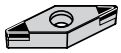


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		R <sub>ε</sub>		D1		WBH10P	WBH20P	WBH30P	WBK40U
		mm	in	mm	in	mm	in	mm	in	mm	in				
TPGW110204S01015C	TPGW2151S0415C	6,35	1/4	11,00	.433	2,38	3/32	0,4	.016	2,80	.110	●	●	●	●
TPGW110208S01015C	TPGW2152S0415C	6,35	1/4	11,00	.433	2,38	3/32	0,8	.031	2,80	.110	●	●	●	●

Cubic Boron Nitride (CBN) Inserts • VBGW-MT

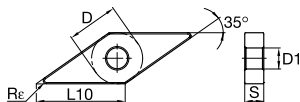


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		R <sub>ε</sub>		D1		WBH10P	WBH20P	WBH30P	WBK40U
		mm	in	mm	in	mm	in	mm	in	mm	in				
VBGW160404S01015MT	VBGW331S0415MT	9,53	3/8	16,61	.654	4,78	.1883	0,4	.016	4,40	.173	●	●	●	●
VBGW160408S01015MT	VBGW332S0415MT	9,53	3/8	16,61	.654	4,78	.1883	0,8	.031	4,40	.173	●	●	●	●

## Cubic Boron Nitride (CBN) Inserts • VNGA-MT



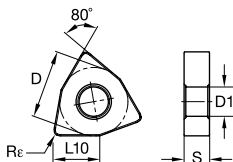
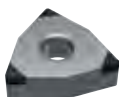
● first choice

○ alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WBH10P	WBH20P	WBH30P	WBK40U
		mm	in	mm	in	mm	in	mm	in	mm	in				
VNGA160404S01025MT	VNGA331S0425MT	9,53	3/8	16,61	.654	4,78	.1883	0,4	.016	3,81	.150	3883538	6904868	6018096	■
VNGA160408S01025MT	VNGA332S0425MT	9,53	3/8	16,61	.654	4,78	.1883	0,8	.031	3,81	.150	■	■	6018097	■
VNGA160408S01225MT	VNGA332S0525MT	9,53	3/8	16,61	.654	4,78	.1883	0,8	.031	3,81	.150	■	6904869	■	■

## Cubic Boron Nitride (CBN) Inserts • WNGA-MT



● first choice

○ alternate choice

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

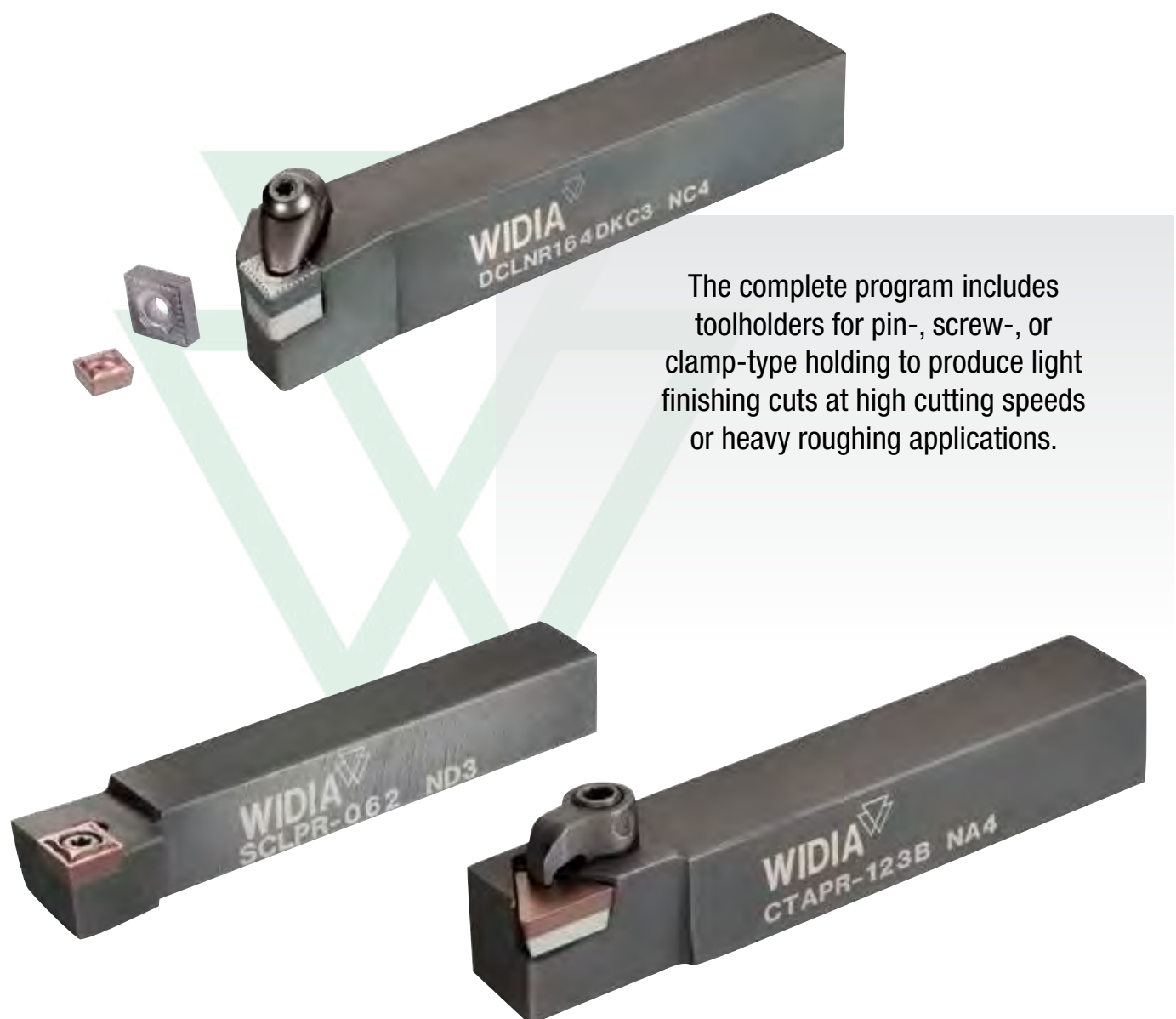
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WBH10P	WBH20P	WBH30P	WBK40U
		mm	in	mm	in	mm	in	mm	in	mm	in				
WNGA080404S01015MT	WNGA4310415MT	12,70	1/2	8,69	.342	4,78	.1883	0,4	.016	5,16	.203	■	6904870	■	■
WNGA080408S01225MT	WNGA4320525MT	12,70	1/2	8,69	.342	4,78	.1883	0,8	.031	5,16	.203	■	6904871	■	■



# Tools for External Turning

## External Toolholder

WIDIA™ offers an extensive range of toolholders for external turning to meet even the most exacting production demands across a broad spectrum of workpieces, shapes, and sizes.



# TOOLS FOR EXTERNAL TURNING

## D-STYLE CLAMPING

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

## P-STYLE CLAMPING

- Lever-type clamping system for negative indexable inserts.
- No interference to chip flow.
- Fast insert changes.
- P-style available in metric sizes only.

## S-STYLE CLAMPING

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

## C-STYLE CLAMPING

- Height-adjustable clamp permits use of additional chipbreakers.
- Universal clamping system for positive and negative flat top inserts.
- Robust engineering makes it easy to handle.
- Carbide shim for extra tool protection.

## APPLICATIONS



TURNING



FACING



PROFILING



CHAMFERING

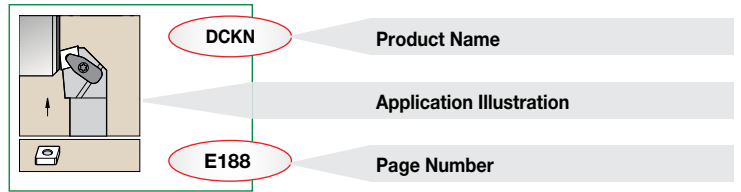
## INDUSTRY





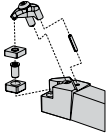
# Toolholder Selection Guide

Each unique clamping system offers product options to fill your specific toolholder needs. Find the illustration that fits your application and navigate to the corresponding page to get the correct solution.

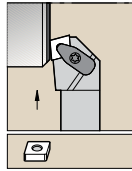


## D-Style Clamping

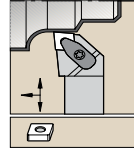
**D**



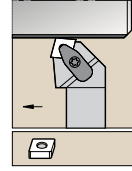
One-piece clamp assembly holder for use with negative style inserts. An extremely rigid clamping system. The tool is protected by a carbide shim.



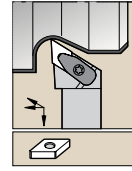
**DCKN**  
15°  
Page:  
**E188**



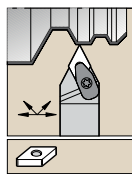
**DCLN**  
-5°  
Page:  
**E188**



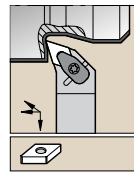
**DCRN**  
15°  
Page:  
**E189**



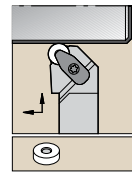
**DDJN**  
-3°  
Page:  
**E189**



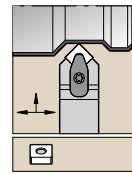
**DDPN**  
27.5°  
Page:  
**E190**



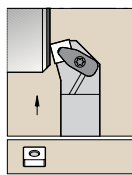
**DDQN**  
-17.5°  
Page:  
**E190**



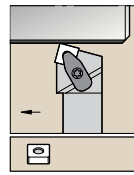
**DRGN**  
Page:  
**E191**



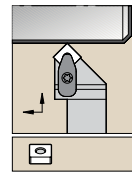
**DSDN**  
45°  
Page:  
**E191**



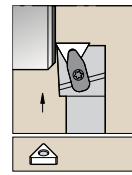
**DSKN**  
15°  
Page:  
-



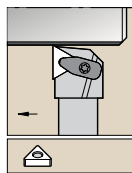
**DSRN**  
15°  
Page:  
**E192**



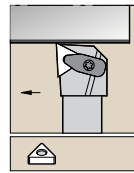
**DSSN**  
45°  
Page:  
**E192**



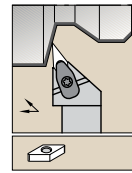
**DTFN**  
0°  
Page:  
-



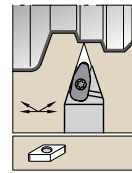
**DTGN**  
0°  
Page:  
**E193**



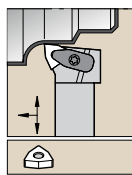
**DTJN**  
-3°  
Page:  
-



**DVJN**  
3°  
Page:  
**E193**



**DVVN**  
17.5°  
Page:  
**E194**



**DWLN**  
-5°  
Page:  
**E195**

INDEXABLE MILLING

SOLID END MILLING

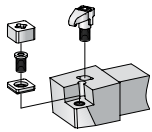
HOLEMAKING

TAPPING

TURNING

## C-Style Clamping

**C**



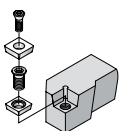
Top clamping system for negative and positive indexable inserts to DIN 4968. This universal clamping system is robust and easy to handle. Some height-adjustable clamps enable the use of additional chipbreakers. A carbide shim provides additional tool protection. Toolholders with cutting edge heights upwards of .625" and insert iCs greater than .250".

	<b>CCLN-MX</b> -5° Page: —		<b>CSDN-MX</b> 45° Page: E199		<b>CSKN-MX</b> 15° Page: —		<b>CWLN-MX</b> -5° Page: —
	<b>CSDP</b> 45° Page: E200		<b>CTAP</b> 0° Page: —		<b>CTCP</b> 0° Page: —		<b>CTEP</b> 30° Page: —
	<b>CTGP</b> 0° Page: —		<b>CRDP*</b> 0° Page: —		<b>CRGP*</b> 45° Page: —		

\*Exact Clamping System not shown.

## S-Style Clamping

**S**

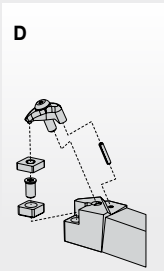

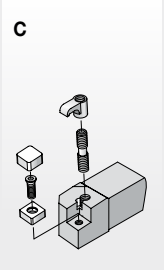
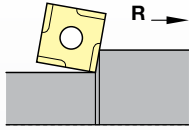
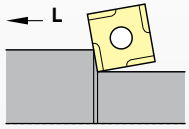
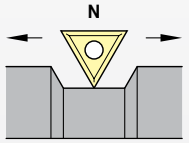
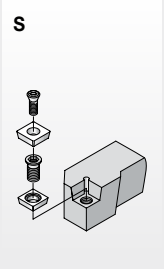


Screw clamping system for positive indexable inserts with countersunk hole to DIN 4967. Compact design using a minimum of spare parts for high reliability and cost efficiency. A carbide shim provides additional tool protection. Toolholders with cutting edge heights upwards of .625" and insert iCs from .375" are secured by means of a threaded bushing.

	<b>SCGP</b> 0° Page: E201		<b>SCLC</b> -5° Page: E201		<b>SCLP</b> -5° Page: E202		<b>SCRP</b> 15° Page: —
	<b>SDJC</b> -3° Page: E202		<b>SSDC</b> 45° Page: E203		<b>STFP</b> 0° Page: E233		<b>STGP</b> 0° Page: E203
	<b>SVJB</b> -3° Page: E204		<b>SVVB</b> 17.5° Page: E204				

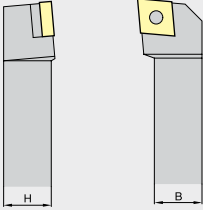
## Catalog Numbering System

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.

D	C	L	N	R	
Insert Holding Method	Insert Shape	Tool Style or Lead Angle	Insert Clearance Angle	Hand of Tool	Additional Information
<p><b>D</b></p> 	<p><b>A</b> 85°</p> <p><b>B</b> 82°</p> <p><b>C</b> 80°</p> <p><b>D</b> 55°</p> <p><b>E</b> 75°</p> <p><b>H</b> 120°</p> <p><b>K</b> 55°</p> <p><b>L</b> 90°</p> <p><b>M</b> 86°</p> <p><b>O</b> 135°</p> <p><b>P</b> 108°</p> <p><b>R</b> </p> <p><b>S</b> 90°</p> <p><b>T</b> 60°</p> <p><b>V</b> 35°</p> <p><b>W</b> 80°</p>	<p><b>A</b> 0°    <b>L</b> 5°</p> <p><b>B</b> 15°    <b>P</b> 27.5°</p> <p><b>C</b> 0°    <b>Q</b> 27.5°</p> <p><b>D</b> 45°    <b>R</b> 15°</p> <p><b>E</b> 30°    <b>S</b> 45°</p> <p><b>F</b> 0°    <b>U</b> 3°</p> <p><b>G</b> 0°    <b>V</b> 17.5°</p> <p><b>Y</b> 5°</p>	<p><b>N</b> 0°</p> <p><b>B</b> 5°</p> <p><b>C</b> 7°</p> <p><b>P</b> 11°</p> <p><b>D</b> 15°</p> <p><b>E</b> 20°</p> <p><b>F</b> 25°</p>	<p><b>R =</b></p> <p>Right hand</p> <p><b>L =</b></p> <p>Left hand</p> <p><b>N =</b></p> <p>Neutral</p>	<p><b>C =</b></p> <p>Deep pocket for ceramic insert</p> <p><b>S =</b></p> <p>Single pocket locating wall</p> <p><b>F =</b></p> <p>Straight shank, no offset</p>
<p><b>C</b></p> 				  	
<p><b>S</b></p> 					

## Catalog Numbering System

(continued)

1	6	4	D	KC	3
Shank Dimensions		Insert Size	Qualified Surface and Length	Additional Information	Insert Thickness (optional)
		<p><b>Insert iC</b></p> <p>Number of 1/8ths of "D"</p>	<p><b>A</b> = Qualified back and end, 4" long  <b>B</b> = Qualified back and end, 4.5" long  <b>C</b> = Qualified back and end, 5" long  <b>D</b> = Qualified back and end, 6" long  <b>E</b> = Qualified back and end, 7" long  <b>F</b> = Qualified back and end, 8" long  <b>G*</b> = Qualified back and end, 5.5" long  <b>H*</b> = Qualified back and end, 5.625" long  <b>I*</b> = Qualified back and end, 3" long  <b>J*</b> = Qualified back and end, 5.3" long  <b>K*</b> = Qualified back and end, 14" long  <b>L*</b> = Qualified back and end, 6.8" long  <b>M</b> = Qualified front and end, 4" long  <b>N</b> = Qualified front and end, 4.5" long  <b>P</b> = Qualified front and end, 5" long  <b>R</b> = Qualified front and end, 6" long  <b>S</b> = Qualified front and end, 7" long  <b>T</b> = Qualified front and end, 8" long  <b>U*</b> = Qualified front and end, 5.5" long  <b>V*</b> = Qualified back and end, 3.5" long  <b>W*</b> = Qualified front and end, 3.5" long  <b>Y*</b> = Qualified back and end, 3.75" long  <b>Z*</b> = Qualified back and end, 3.250" long</p> <p>* WIDIA™ standard only.</p>	<p><b>R =</b> Radial clearance for 4" minimum bore</p> <p><b>S =</b> 3.00 minimum bore</p> <p><b>KC =</b> D-Style Clamping</p>	<p><b>3</b> = .188"  <b>4</b> = .250"</p>
<p>This two-digit number indicates the holder cross section.</p> <ul style="list-style-type: none"> <li>For shanks 5/8" square and larger, the number represents the number of sixteenths of width and height.</li> <li>For shanks under 5/8" square, the number of sixteenths of cross-section are preceded by zero.</li> <li>For rectangular holders, the first digit represents the number of eighths of width "B" and the second digit the number of quarters of height "H", except for a toolholder 1-1/4" x 1-1/2", which is given the number 91.</li> </ul>					

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

# External Machining • D-Style Toolholders for Negative Inserts

INDEXABLE MILLING

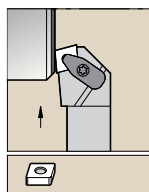
SOLID END MILLING

HOLEMAKING

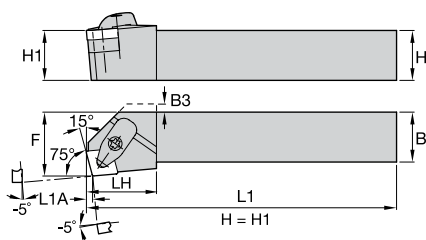
TAPPING

TURNING

## DCKN 15°

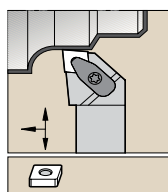


See pages E28-E42, E148, E171-E172 for inserts.

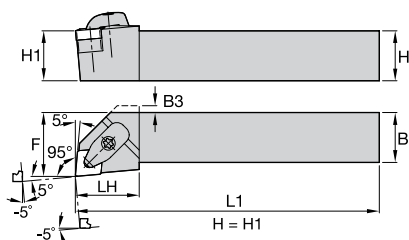


order number	catalog number	H	B	F	L1	LH	L1A	gage insert
<b>right hand</b>								
5696522	DCKNR164DKC3	1.00	1.00	1.250	6.00	1.25	.122	CN..432
5696524	DCKNR205DKC4	1.25	1.25	1.500	6.00	1.25	.150	CN..543
<b>left hand</b>								
5696308	DCKNL164DKC3	1.00	1.00	1.250	6.00	1.25	.122	CN..432

## DCLN -5°

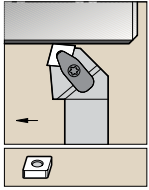


See pages E28-E42, E148, E171-E172 for inserts.

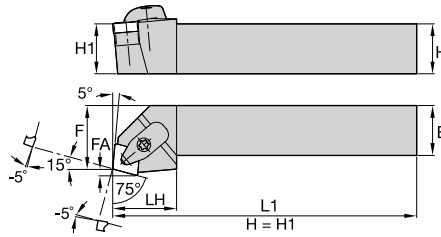


order number	catalog number	H	B	F	L1	LH	B3	gage insert
<b>right hand</b>								
5564319	DCLNR124BKC3	.75	.75	1.000	4.50	1.25	.15	CN..432
5564321	DCLNR164DKC3	1.00	1.00	1.250	6.00	1.25	—	CN..432
5564322	DCLNR165DKC4	1.00	1.00	1.250	6.00	1.38	—	CN..543
5564323	DCLNR166DKC4	1.00	1.00	1.250	6.00	1.38	—	CN..643
5564324	DCLNR204DKC3	1.25	1.25	1.500	6.00	1.25	—	CN..432
5564325	DCLNR205DKC4	1.25	1.25	1.500	6.00	1.38	—	CN..543
5564326	DCLNR206DKC4	1.25	1.25	1.500	6.00	1.63	—	CN..643
5564327	DCLNR244DKC3	1.50	1.50	2.000	6.00	1.25	—	CN..432
5564328	DCLNR245DKC4	1.50	1.50	2.000	6.00	1.38	—	CN..543
<b>left hand</b>								
5564295	DCLNL123BKC3	.75	.75	1.000	4.50	1.12	.06	CN..322
5564296	DCLNL124BKC3	.75	.75	1.000	4.50	1.25	.15	CN..432
5564298	DCLNL164DKC3	1.00	1.00	1.250	6.00	1.25	—	CN..432
5564299	DCLNL165DKC4	1.00	1.00	1.250	6.00	1.38	—	CN..543
5564310	DCLNL166DKC4	1.00	1.00	1.250	6.00	1.63	—	CN..643
5564311	DCLNL204DKC3	1.25	1.25	1.500	6.00	1.25	—	CN..432
5564312	DCLNL205DKC4	1.25	1.25	1.500	6.00	1.38	—	CN..543
5564313	DCLNL206DKC4	1.25	1.25	1.500	6.00	1.63	—	CN..643
5564315	DCLNL244DKC3	1.50	1.50	2.000	6.00	1.25	—	CN..432
5564316	DCLNL245DKC4	1.50	1.50	2.000	6.00	1.38	—	CN..543

## DCRN 15°

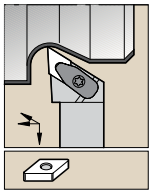


See pages E28-E42,  
E148, E171-E172  
for inserts.

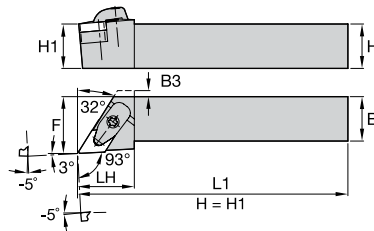


order number	catalog number	H	B	F	L1	LH	FA	gage insert
<b>right hand</b>								
5696532	DCRNR164DKC3	1.00	1.00	1.128	6.00	1.25	.12	CN..432

## DDJN -3°

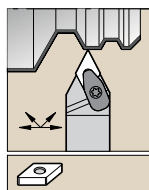


See pages E49-E60,  
E150, E165,  
E175-E176  
for inserts.

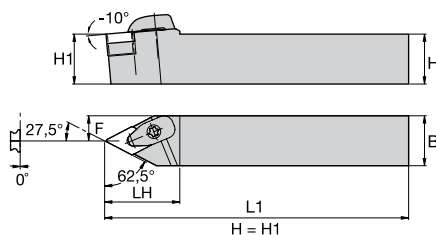


order number	catalog number	H	B	F	L1	LH	B3	gage insert
<b>right hand</b>								
5696544	DDJNR123BKC3	.75	.75	1.000	4.50	1.25	.06	DN..332
5696545	DDJNR163DKC3	1.00	1.00	1.250	6.00	1.25	—	DN..332
5696546	DDJNR164DKC3	1.00	1.00	1.250	6.00	1.25	—	DN..432
5696549	DDJNR204DKC3	1.25	1.25	1.500	6.00	1.25	—	DN..432
<b>left hand</b>								
5696538	DDJNL164DKC3	1.00	1.00	1.250	6.00	1.25	—	DN..432
5696541	DDJNL204DKC3	1.25	1.25	1.500	6.00	1.25	—	DN..432

## DDPN 27.5°

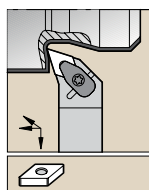


See pages E49-E60,  
E150, E165,  
E175-E176  
for inserts.

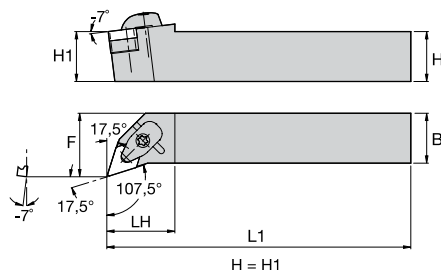


order number	catalog number	H	B	F	L1	LH	gage insert
neutral hand 5696552	DDPNN164DKC3	1.00	1.00	.497	6.00	1.62	DN..432

## DDQN -17.5°

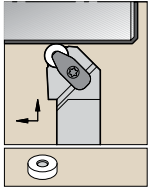


See pages E49-E60,  
E150, E165,  
E175-E176  
for inserts.

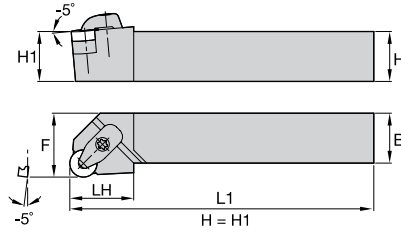


order number	catalog number	H	B	F	L1	LH	gage insert
right hand 5564339	DDQNR164CKC3	1.00	1.00	1.250	5.00	1.38	DN..432
left hand 5564337	DDQNL164DKC3	1.00	1.00	1.250	6.00	1.38	DN..432
5564338	DDQNL204DKC3	1.25	1.25	1.500	6.00	1.38	DN..432

## DRGN

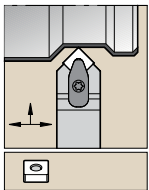


See page E63 for inserts.

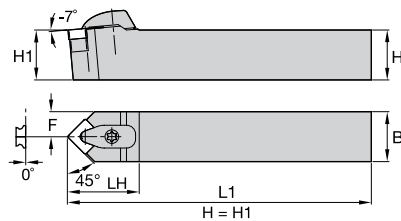


order number	catalog number	H	B	F	L1	LH	gage insert
<b>left hand</b>							
5697731	DRGNL164DKC3	1.00	1.00	1.250	6.00	1.25	RN..43
5697733	DRGNL204DKC3	1.25	1.25	1.500	6.00	1.25	RN..43

## DSDN 45°



See pages E67-E78, E156, E177 for inserts.



order number	catalog number	H	B	F	L1	LH	gage insert
<b>neutral hand</b>							
5697740	DSDNN124KC3	.75	.75	.375	4.50	1.44	SN..432
5697741	DSDNN164KC3	1.00	1.00	.500	6.00	1.44	SN..432
5697742	DSDNN204KC3	1.25	1.25	.625	6.00	1.44	SN..432



# External Machining • D-Style Toolholders for Negative Inserts

INDEXABLE MILLING

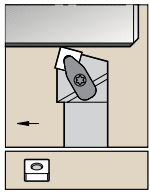
SOLID END MILLING

HOLEMAKING

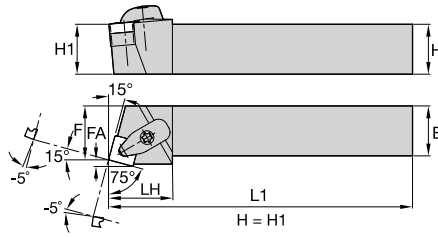
TAPPING

TURNING

## DSRN 15°

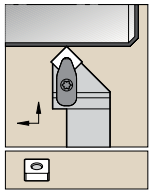


See pages E67-E78, E156, E177 for inserts.

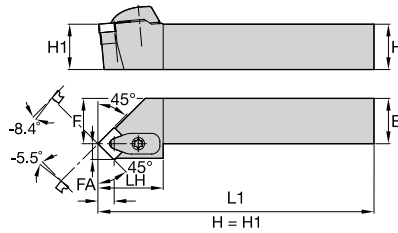


order number	catalog number	H	B	F	L1	LH	FA	gage insert
left hand								
5564342	DSRNL206DKC4	1.25	1.25	1.321	6.00	1.50	.18	SN..643

## DSSN 45°

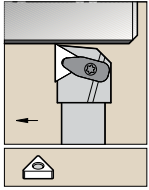


See pages E67-E78, E156, E177 for inserts.

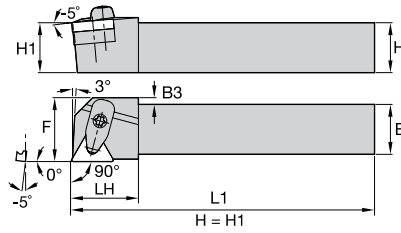


order number	catalog number	H	B	F	L1	LH	FA	gage insert
right hand								
5697754	DSSNR164DKC3	1.00	1.00	.912	6.00	1.50	.34	SN..432
left hand								
5697753	DSSNL164DKC3	1.00	1.00	.912	6.00	1.50	.34	SN..432

## DTGN 0°

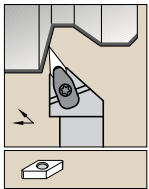


See pages E86-E95, E158, E167, E178 for inserts.

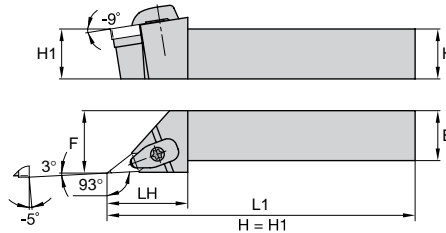


order number	catalog number	H	B	F	L1	LH	B3	gage insert
<b>right hand</b>								
5697764	DTGNR123BKC3	.75	.75	1.000	4.50	1.12	.25	TN..332
5697766	DTGNR164DKC3	1.00	1.00	1.250	6.00	1.25	.09	TN..432
<b>left hand</b>								
5697763	DTGNL164DKC3	1.00	1.00	1.250	6.00	1.25	.09	TN..432

## DVJN 3°

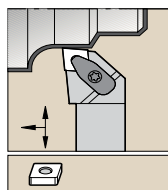


See pages E102-E108, E160, E169, E180 for inserts.

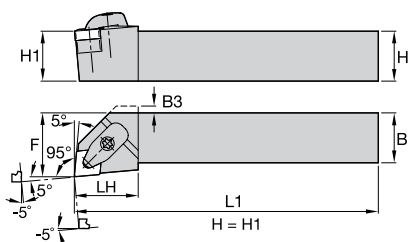


order number	catalog number	H	B	F	L1	LH	gage insert	
<b>right hand</b>								
5697781	DVJNR123CKC3	.75	.75	1.000	5.00	1.82	VN..332	
5564346	DVJNR163DKC3	1.00	1.00	1.250	6.00	1.82	VN..332	
5564347	DVJNR164DKC3	1.00	1.00	1.250	6.00	2.15	VN..432	
5697782	DVJNR853DKC3	1.25	1.00	1.250	6.00	1.82	VN..332	
5697783	DVJNR854DKC3	1.25	1.00	1.250	6.00	2.15	VN..432	
<b>left hand</b>								
5697768	DVJNL123CKC3	.75	.75	1.000	5.00	1.82	VN..332	
5564344	DVJNL163DKC3	1.00	1.00	1.250	6.00	1.82	VN..332	
5564345	DVJNL164DKC3	1.00	1.00	1.250	6.00	2.15	VN..432	
5697769	DVJNL853DKC3	1.25	1.00	1.250	6.00	1.82	VN..332	
5697780	DVJNL854DKC3	1.25	1.00	1.250	6.00	2.15	VN..432	

## DCLN 5°

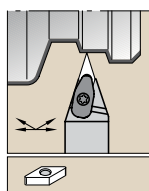


See pages E28-E42, E148, E171-E172 for inserts.

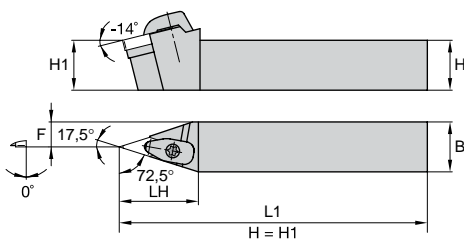


order number	catalog number	H	B	F	L1	LH	B3	gage insert
<b>right hand</b>								
5564319	DCLNR124BKC3	.75	.75	1.000	4.50	1.25	.15	CN..432
5564321	DCLNR164DKC3	1.00	1.00	1.250	6.00	1.25	—	CN..432
5564322	DCLNR165DKC4	1.00	1.00	1.250	6.00	1.38	—	CN..543
5564323	DCLNR166DKC4	1.00	1.00	1.250	6.00	1.38	—	CN..643
5564324	DCLNR204DKC3	1.25	1.25	1.500	6.00	1.25	—	CN..432
5564325	DCLNR205DKC4	1.25	1.25	1.500	6.00	1.38	—	CN..543
5564326	DCLNR206DKC4	1.25	1.25	1.500	6.00	1.63	—	CN..643
5564333	DCLNR3225P12KC04	1.26	.98	1.260	6.69	1.26	—	CN..120408
5564327	DCLNR244DKC3	1.50	1.50	2.000	6.00	1.25	—	CN..432
5564328	DCLNR245DKC4	1.50	1.50	2.000	6.00	1.38	—	CN..543
<b>left hand</b>								
5564295	DCLNL123BKC3	.75	.75	1.000	4.50	1.12	.06	CN..322
5564296	DCLNL124BKC3	.75	.75	1.000	4.50	1.25	.15	CN..432
5564298	DCLNL164DKC3	1.00	1.00	1.250	6.00	1.25	—	CN..432
5564299	DCLNL165DKC4	1.00	1.00	1.250	6.00	1.38	—	CN..543
5564310	DCLNL166DKC4	1.00	1.00	1.250	6.00	1.63	—	CN..643
5564311	DCLNL204DKC3	1.25	1.25	1.500	6.00	1.25	—	CN..432
5564312	DCLNL205DKC4	1.25	1.25	1.500	6.00	1.38	—	CN..543
5564313	DCLNL206DKC4	1.25	1.25	1.500	6.00	1.63	—	CN..643
5564315	DCLNL244DKC3	1.50	1.50	2.000	6.00	1.25	—	CN..432
5564316	DCLNL245DKC4	1.50	1.50	2.000	6.00	1.38	—	CN..543

## DVWN 17.5°

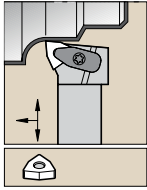


See pages E102-E108, E160, E169, E180 for inserts.

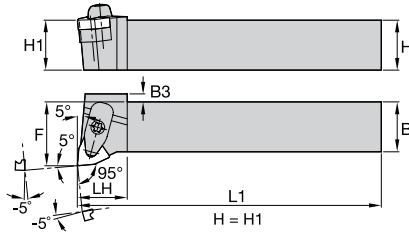


order number	catalog number	H	B	F	L1	LH	gage insert
<b>neutral hand</b>							
5564348	DVWNN163DKC3	1.00	1.00	.496	6.00	1.97	VN..332

## DWLN -5°



See pages  
E108-E116, E160,  
E170, E180  
for inserts.



order number	catalog number	H	B	F	L1	LH	B3	gage insert
<b>right hand</b>								
5697789	DWLN123BKC3	.75	.75	1.000	4.50	1.00	.28	WN..332
5697790	DWLN163DKC3	1.00	1.00	1.250	6.00	1.00	.06	WN..332
5697791	DWLN164CKC3	1.00	1.00	1.250	5.00	1.00	.15	WN..432
5697792	DWLN164DKC3	1.00	1.00	1.250	6.00	1.00	.15	WN..432
<b>left hand</b>								
5697787	DWLN164DKC3	1.00	1.00	1.250	6.00	1.00	.15	WN..432

INDEXABLE MILLING

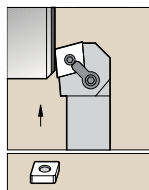
SOLID END MILLING

HOLEMAKING

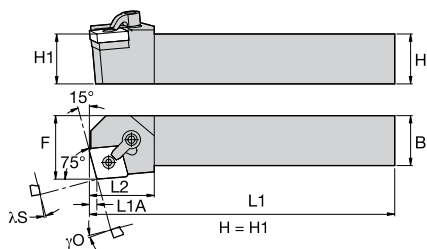
TAPPING

TURNING

## MCKN 15°

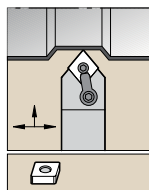


See pages E28-E42, E148, E171-E172 for inserts.

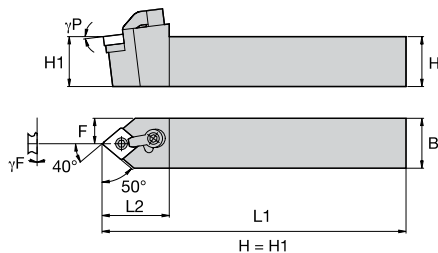


order number	catalog number	H	B	F	L1	L2	L1A	λS°	γO°	gage insert
<b>right hand</b>										
2951294	MCKNR164C	1.00	1.00	1.250	5.00	1.21	.12	-5.00	-5.0	CN..432

## MCMN 40°

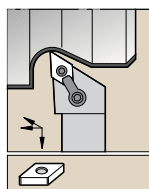


See pages E28-E42, E148, E171-E172 for inserts.

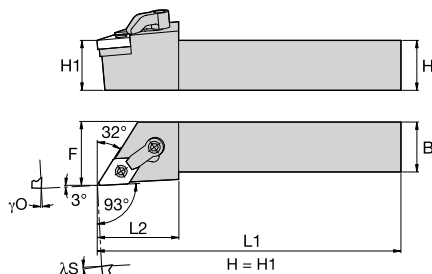


order number	catalog number	H	B	F	L1	L2	γP°	γF°	gage insert
<b>neutral hand</b>									
3851318	MCMNN124B	.75	.75	.375	4.50	1.39	-7.0	.0 deg	CN..432
3851319	MCMNN164D	1.00	1.00	.500	6.00	1.39	-7.0	.0 deg	CN..432

## MDJN -3°

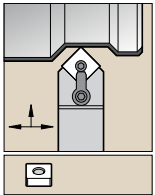


See pages E49-E60, E150, E165, E175-E176 for inserts.

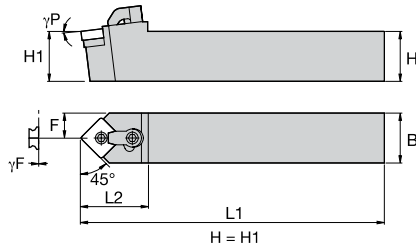


order number	catalog number	H	B	F	L1	L2	λS°	γO°	gage insert
<b>right hand</b>									
2953464	MDJNR124B	.75	.75	1.000	4.50	1.38	-5.00	-5.00	DN..432
2953465	MDJNR164C	1.00	1.00	1.250	5.00	1.24	-5.00	-5.00	DN..432

## MSDN 45°

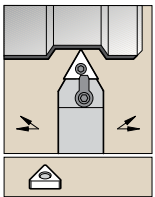


See pages E67-E78,  
E156, E177 for inserts.

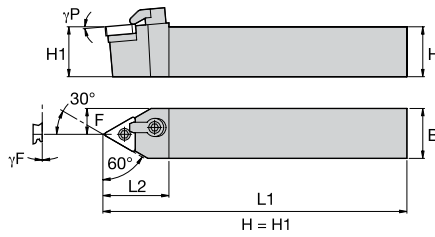


order number	catalog number	H	B	F	L1	L2	$\gamma_P^\circ$	$\gamma_F^\circ$	gage insert
neutral hand 2953473	MSDNN083	.50	.50	.250	4.50	1.14	-7.0	.0	SN..322

## MTEN-S 30°



See pages E86-E95,  
E158, E167, E178  
for inserts.



order number	catalog number	H	B	F	L1	L2	$\gamma_P^\circ$	$\gamma_F^\circ$	gage insert
neutral hand 2951327	MTENNS164	1.00	1.00	.500	6.00	1.50	-10.0	.0	TN..432

INDEXABLE MILLING

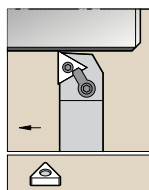
SOLID END MILLING

HOLE/MAKING

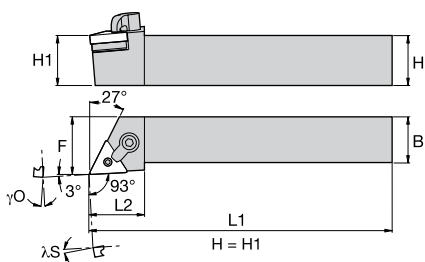
TAPPING

TURNING

## MTJN-S -3°

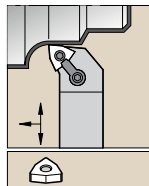


See pages E86-E95, E158, E167, E178 for inserts.

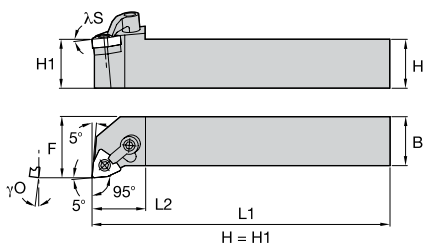


order number	catalog number	H	B	F	L1	L2	$\lambda S^\circ$	$\gamma O^\circ$	gage insert
<b>right hand</b>									
2951340	MTJNRS123	.75	.75	1.000	4.50	1.12	-5.00	-5.00	TN..332
2951341	MTJNRS163	1.00	1.00	1.250	6.00	1.12	-5.00	-5.00	TN..332
2951342	MTJNRS164	1.00	1.00	1.250	6.00	1.32	-5.00	-5.00	TN..432
<b>left hand</b>									
2951335	MTJNLS123	.75	.75	1.000	4.50	1.12	-5.00	-5.00	TN..332
2951337	MTJNLS164	1.00	1.00	1.250	6.00	1.32	-5.00	-5.00	TN..432

## MWLN -5°

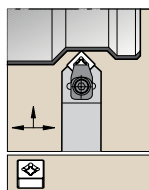


See pages E108-E116, E160, E170, E180 for inserts.

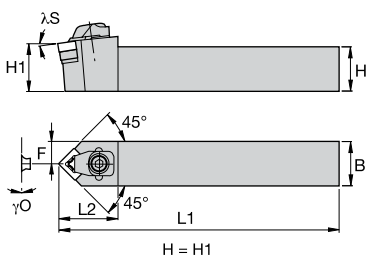


order number	catalog number	H	B	F	L1	L2	$\lambda S^\circ$	$\gamma O^\circ$	gage insert
<b>right hand</b>									
2951347	MWLN124B	.75	.75	1.000	4.50	1.12	-5.00	-5.00	WN..432
<b>left hand</b>									
2951344	MWLN124B	.75	.75	1.000	4.50	1.12	-5.00	-5.00	WN..432

## CSDN-MX 45°



See pages E156-E157 for inserts.



order number	catalog number	H	B	F	L1	L2	gage insert
neutral hand 3093609	CSDNN164DMX5	1.00	1.00	.500	6.00	1.38	SN.X452

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING



INDEXABLE MILLING

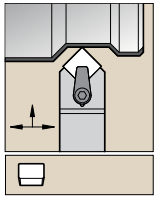
SOLID END MILLING

HOLEMAKING

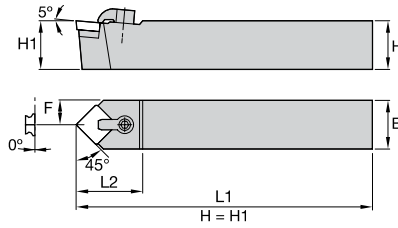
TAPPING

TURNING

## CSDP 45°

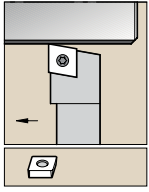


Steel shank with through coolant. See pages E79, E81-E82, E157 for inserts.

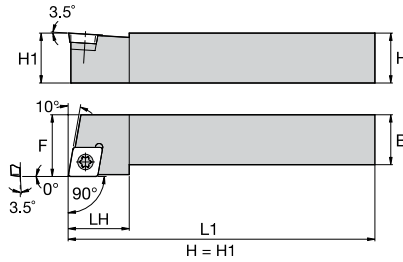


order number	catalog number	H	B	F	L1	L2	gage insert
neutral hand 2951285	CSDPN164	1.00	1.00	.500	6.00	1.38	SP.422

## SCGP 0°

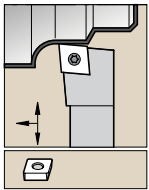


See pages E43, E163,  
E172-E173  
for inserts.

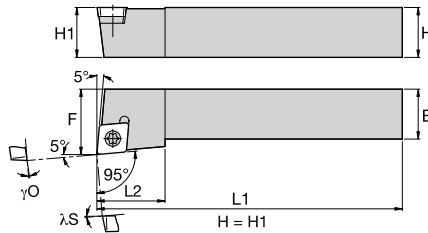


order number	catalog number	H	B	F	L1	L2	gage insert
<b>right hand</b>							
5094166	SCGPR083V	.50	.50	.625	3.50	.62	CP..3252

## SCLC -5°



See pages E22-E27,  
E122, E161-E162,  
E170-E171  
for inserts.



order number	catalog number	H	B	F	L1	L2	λS°	γO°	gage insert
<b>right hand</b>									
2951363	SCLCR083	.50	.50	.625	3.50	.63	.00	.00	CC..3252
2951364	SCLCR103	.63	.63	.750	4.00	.62	.00	.00	CC..3252
2951365	SCLCR123	.75	.75	1.000	4.50	.62	.00	.00	CC..3252
2951366	SCLCR164D	1.00	1.00	1.250	6.00	.75	.00	.00	CC..432
<b>left hand</b>									
2951350	SCLCL062	.38	.38	.500	2.50	.50	.00	.00	CC..2151
2951351	SCLCL083	.50	.50	.625	3.50	.63	.00	.00	CC..3252

INDEXABLE MILLING

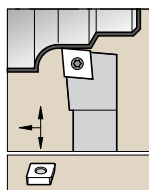
SOLID END MILLING

HOLE/MAKING

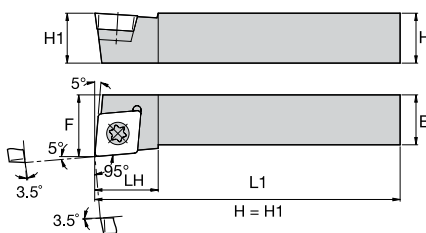
TAPPING

TURNING

## SCLP -5°

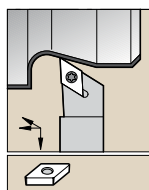


See pages E43, E163, E172-E173 for inserts.

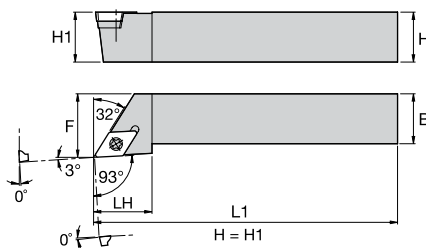


order number	catalog number	H	B	F	L1	L2	gage insert
<b>right hand</b>							
5094214	SCLPR062	.38	.38	.500	2.50	.44	CP..2151

## SDJC -3°

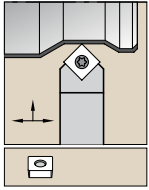


See pages E44-E48, E123, E164, E173-E174 for inserts.

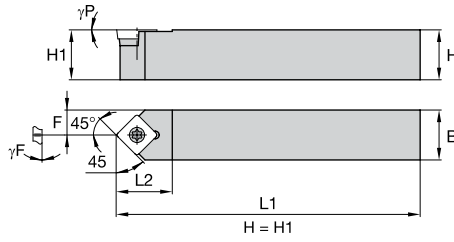


order number	catalog number	H	B	F	L1	L2	$\lambda_S^\circ$	$\gamma_0^\circ$	gage insert
<b>right hand</b>									
2951370	SDJCR123	.75	.75	1.000	4.50	.88	.00	.00	DC..3252
2951371	SDJCR163	1.00	1.00	1.250	6.00	.88	.00	.00	DC..3252
<b>left hand</b>									
2951367	SDJCL102	.63	.63	.750	4.00	.62	.00	.00	DC..2151

## SSDC 45°

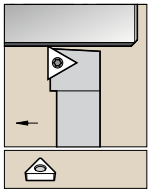


See pages E64-E67 for inserts.

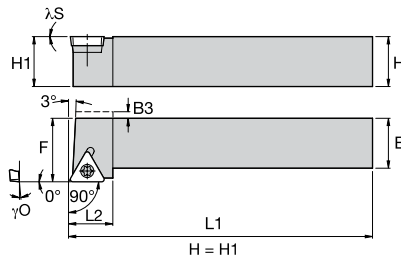


order number	catalog number	H	B	F	L1	L2	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert
neutral hand 2951372	SSDCN083	.50	.50	.250	3.50	.63	0.0	0.0	SC..3252

## STGP 0°

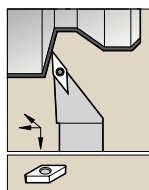


See pages E97, E168, E179 for inserts.

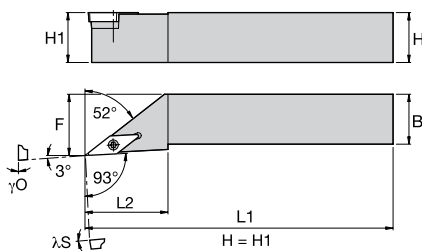


order number	catalog number	H	B	F	L1	L2	$\lambda_S^\circ$	$\gamma_O^\circ$	gage insert
right hand 5094259	STGPR082V	.50	.50	.625	3.50	.56	5.00 deg	.00 deg	TP..2151

## SVJB -3°

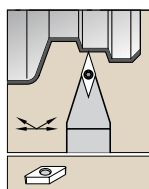


See pages  
E99-E101, E125,  
E169, E179  
for inserts.

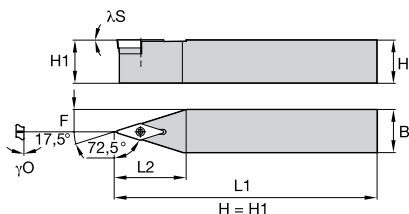


order number	catalog number	H	B	F	L1	L2	$\lambda S^\circ$	$\gamma O^\circ$	gage insert
<b>right hand</b>									
2951375	SVJBR123	.75	.75	1.000	4.50	1.38	.00	.00	VB..332
2951376	SVJBR163	1.00	1.00	1.250	6.00	1.38	.00	.00	VB..332
<b>left hand</b>									
2951373	SVJBL123	.75	.75	1.000	4.50	1.38	.00	.00	VB..332
2951374	SVJBL163	1.00	1.00	1.250	6.00	1.38	.00	.00	VB..332

## SVVB 17.5°



See pages  
E99-E101, E125,  
E169, E179  
for inserts.



order number	catalog number	H	B	F	L1	L2	$\lambda S^\circ$	$\gamma O^\circ$	gage insert
<b>neutral hand</b>									
2951377	SVVBN163	1.00	1.00	.500	6.00	1.31	.00	.00	VB..332



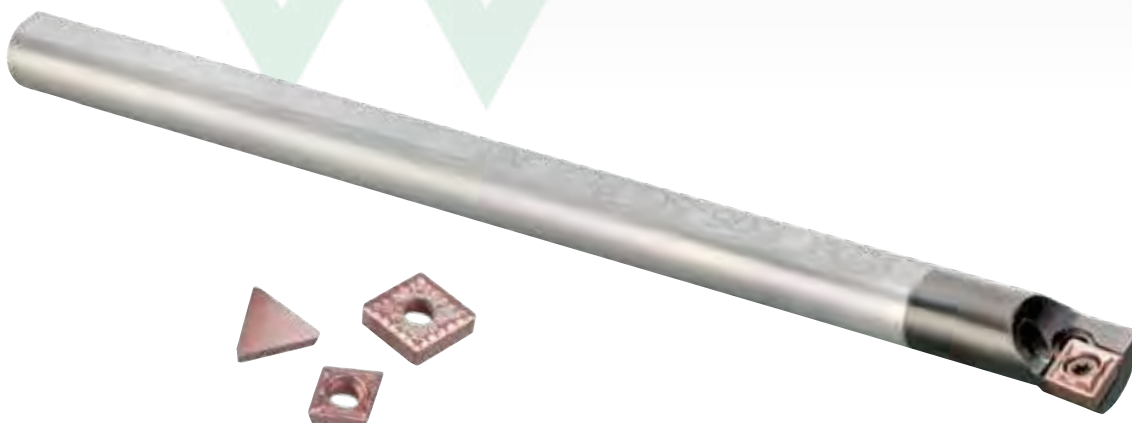
# Tools for Internal Boring

## Boring Bars

WIDIA™ offers an extensive range of toolholders for internal boring to meet even the most precise production demands across a broad spectrum of workpiece shapes and sizes.



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



## TOOLS FOR INTERNAL BORING

### D-STYLE CLAMPING

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

### P-STYLE CLAMPING

- Lever-type clamping system for negative indexable inserts.
- No interference to chip flow.
- Fast insert changes.
- P-style available in metric sizes only.

### S-STYLE CLAMPING

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

### C-STYLE CLAMPING

- Height-adjustable clamp permits use of additional chipbreakers.
- Universal clamping system for positive and negative flat top inserts.
- Robust engineering makes it easy to handle.
- Carbide shim for extra tool protection.

## APPLICATIONS



BORING

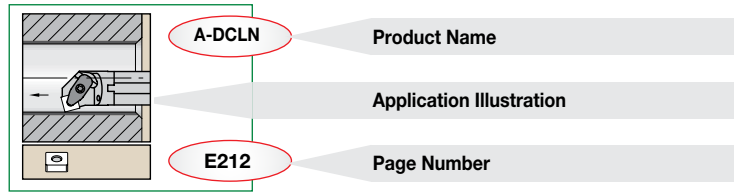
## INDUSTRY





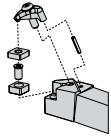
# Boring Bar Selection Guide

Each unique clamping system offers product options to fill your specific toolholder needs. Find the illustration that fits your application and navigate to the corresponding page to get the correct solution.

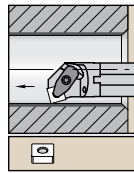


## D-Style Clamping

**D**



One-piece clamp assembly holder for use with negative style inserts. An extremely rigid clamping system. The tool is protected by a carbide shim.

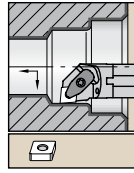


**A-DCFN**

0°

Page:

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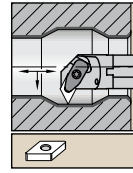


**A-DCLN**

-5°

Page:

**E212**

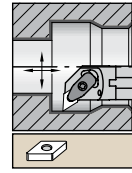


**A-DDPN**

27.5°

Page:

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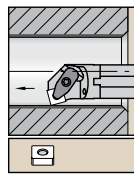


**A-DDUN**

-3°

Page:

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**A-DSKN**

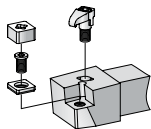
15°

Page:

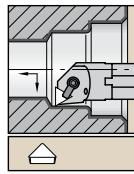
—

## C-Style Clamping

**C**



Top clamping system for negative and positive indexable inserts to DIN 4968. This universal clamping system is robust and easy to handle. Some height-adjustable clamps enable the use of additional chipbreakers. A carbide shim provides additional tool protection. Toolholders with cutting edge heights upwards of .625" and insert ICs greater than .250".



**A-CTFP**

0°

Page:

**E215**

INDEXABLE MILLING

SOLID END MILLING

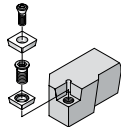
HOLEMAKING

TAPPING

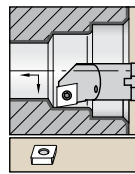
TURNING

## S-Style Clamping

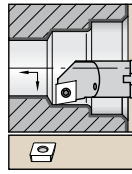
**S**



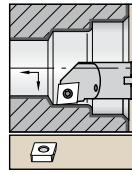
Screw clamping system for positive indexable inserts with countersunk hole to DIN 4967. Compact design using a minimum of spare parts for high reliability and cost efficiency. A carbide shim provides additional tool protection. Toolholders with cutting edge heights upwards of .625" and insert ICs from .375" are secured by means of a threaded bushing.



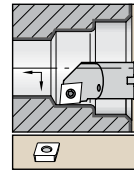
**A-SCFC**  
0°  
Page:  
**E216**



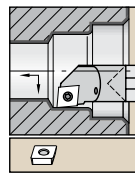
**A-SCFP**  
0°  
Page:  
**E216**



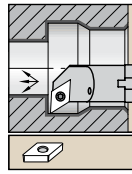
**A-SCLC**  
-5°  
Page:  
**E217**



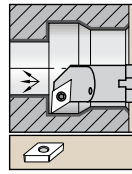
**A-SCLP**  
-5°  
Page:  
**E218**



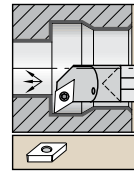
**E-SCLP**  
-5°  
Page:  
**E218**



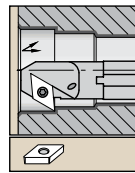
**A-SDUC**  
-3°  
Page:  
**E219**



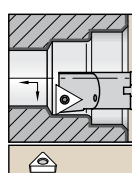
**A-SDUP**  
-3°  
Page:  
**E219**



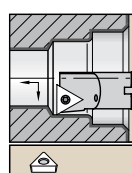
**E-SDUP**  
-3°  
Page:  
**E220**



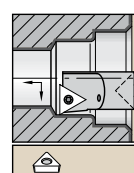
**A-SDXP**  
-5°  
Page:  
**E220**



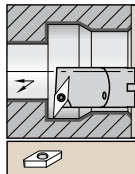
**A-STFC**  
0°  
Page:  
**E221**



**A-STFP**  
0°  
Page:  
**E221**



**E-STFP**  
0°  
Page:  
**E222**



**A-SVUB**  
-3°  
Page:  
**E222**

INDEXABLE MILLING

SOLID END MILLING



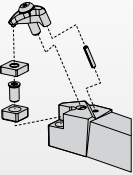



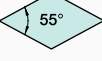


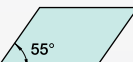
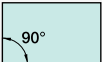
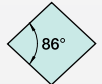








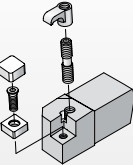

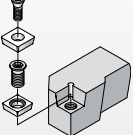






HOLEMAKING

TAPPING

TURNING


















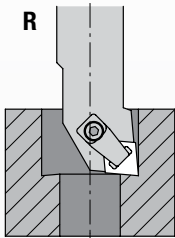
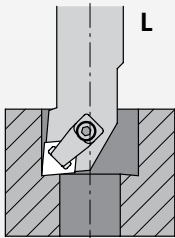
## Catalog Numbering System

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.

A	32	V	D	C
Bar Type	Bar Diameter	Bar Length**	Insert Holding Method	Insert Shape
<p><b>A</b> </p> <p>Steel bar with coolant</p>	<p></p> <p>Inch: A two-digit number indicates the bar diameter in 1/16" increments</p>	<p><b>3</b> = F  <b>3.5</b> = G  <b>4</b> = H  <b>4.5</b> = J  <b>5</b> = K  <b>5.5</b> = L  <b>6</b> = M  <b>6.5</b> = N  <b>7</b> = Q  <b>8</b> = R  <b>10</b> = S  <b>12</b> = T  <b>14</b> = U  <b>16</b> = V  <b>18</b> = W  <b>20</b> = Y</p> <p>**Used only when more than one length is available or a special length is required.</p>	<p><b>D</b> </p>	<p><b>A</b> </p> <p><b>B</b> </p> <p><b>C</b> </p> <p><b>D</b> </p> <p><b>E</b> </p> <p><b>H</b> </p> <p><b>K</b> </p> <p><b>L</b> </p> <p><b>M</b> </p> <p><b>O</b> </p> <p><b>P</b> </p> <p><b>R</b> </p> <p><b>S</b> </p> <p><b>T</b> </p> <p><b>V</b> </p> <p><b>W</b> </p>
<p><b>S</b> </p> <p>Steel bar without coolant</p>			<p><b>C</b> </p>	
<p><b>C</b> </p> <p>Carbide bar</p>			<p><b>S</b> </p>	
<p><b>D</b> </p> <p>DeVibrator bar with coolant</p>				
<p><b>D</b> </p> <p>Tunable bar with coolant</p>				
<p><b>E</b> </p> <p>Carbide bar with coolant</p>				
<p><b>B</b> </p> <p>DeVibrator</p>				
<p><b>H</b> </p> <p>Interchangeable head</p>				
<p><b>L</b> </p> <p>Heavy metal bar with coolant</p>				

## Catalog Numbering System

(continued)

<b>L</b>	<b>N</b>	<b>R</b>	<b>5</b>	<b>KC4</b>
Bar Style or Lead Angle	Insert Clearance Angle	Hand of Tool	Insert Size	Additional Information
<p><b>E</b> </p> <p><b>F</b> </p> <p><b>K</b> </p> <p><b>L</b> </p> <p>(E-style inserts)</p> <p><b>L</b> </p> <p><b>P</b> </p> <p><b>Q</b> </p> <p><b>S</b> </p> <p><b>U</b> </p> <p><b>X</b> </p>	<p><b>N</b> 0° </p> <p><b>B</b> 5° </p> <p><b>C</b> 7° </p> <p><b>P</b> 11° </p> <p><b>D</b> 15° </p> <p><b>E</b> 20° </p> <p><b>F</b> 25° </p>	<p><b>R</b> = Right-hand boring bar</p> <p></p> <p><b>L</b> = Left-hand boring bar</p> <p></p>	<p>Insert <b>iC</b></p> <p>Number of 1/8ths of "D"</p>	<p><b>M...</b> = TNT/MTS clamping systems for ceramic and PcBN inserts</p> <p><b>D</b> = Dual pocket</p> <p><b>AP5</b> = Axil positive</p> <p><b>KC</b> = D-Style</p> <p><b>+</b> = Insert thickness</p>

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

# Internal Machining • D-Style Boring Bars for Negative Inserts

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

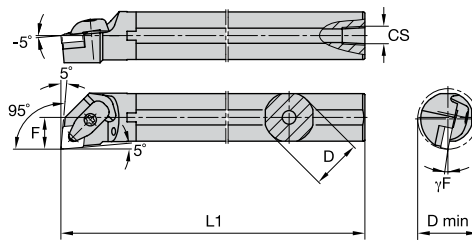
TAPPING

TURNING

## A-DCLN -5°

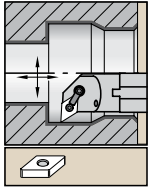


Steel shank with through coolant.  
See pages E28-E42, E148, E171-E172 for inserts.

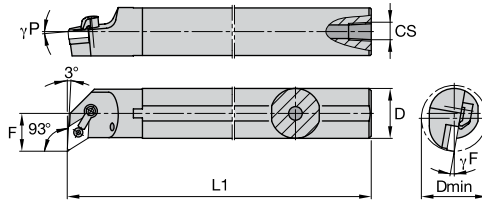


order number	catalog number	D	D min	F	L1	CS	$\gamma F^\circ$	gage insert
<b>right hand</b>								
5696297	A16TDCLNR4KC3	1.000	1.200	.640	12.00	1/4-18 NPT	-12.0	CN..432
5696298	A20UDCLNR4KC3	1.250	1.470	.765	14.00	1/4-18 NPT	-12.0	CN..432
5696299	A24UDCLNR4KC3	1.500	1.760	.890	14.00	1/4-18 NPT	-12.0	CN..432
5696300	A24UDCLNR5KC4	1.500	1.760	.890	14.00	1/4-18 NPT	-14.0	CN..543
5696302	A32VDCLNR4KC3	2.000	2.400	1.281	16.00	1/4-18 NPT	-12.0	CN..432
5696305	A40VDCLNR4KC3	2.500	3.030	1.531	16.00	1/4-18 NPT	-8.0	CN..432
5696306	A40VDCLNR6KC4	2.500	3.030	1.531	16.00	1/4-18 NPT	-10.0	CN..643
<b>left hand</b>								
5696286	A16TDCLNL4KC3	1.000	1.200	.640	12.00	1/4-18 NPT	-12.0	CN..432
5696287	A20UDCLNL4KC3	1.250	1.470	.765	14.00	1/4-18 NPT	-12.0	CN..432
5696288	A24UDCLNL4KC3	1.500	1.760	.890	14.00	1/4-18 NPT	-12.0	CN..432
5696291	A32VDCLNL4KC3	2.000	2.400	1.281	16.00	1/4-18 NPT	-12.0	CN..432

## A-MDUN -3°

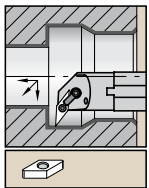


Steel shank with through coolant. See pages E49-E60, E150, E165, E175-E176 for inserts.

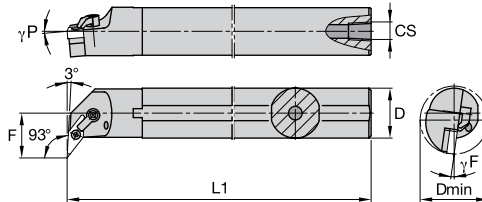


order number	catalog number	D	D min	F	L1	CS	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert
<b>right hand</b>									
2951412	A24UMDUNR4	1.500	2.000	1.120	14.00	1/4-18 NPT	-10.0	-5.0	DN..432
2951423	A32VMDUNR4	2.000	2.500	1.370	16.00	1/4-18 NPT	-8.0	-5.0	DN..432

## A-MVUN -3°

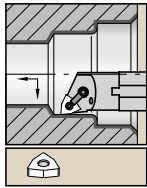


Steel shank with through coolant. See pages E102-E108, E160, E169, E180 for inserts.

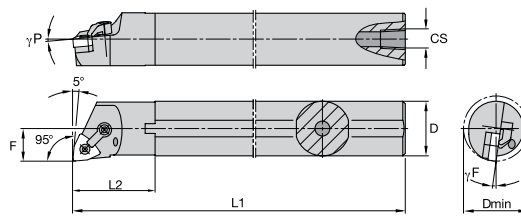


order number	catalog number	D	D min	F	L1	CS	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert
<b>right hand</b>									
3883412	A20UMVUNR3	1.250	1.705	1.000	14.00	1/4-18 NPT	-12.0	-5.0	VN..332

## A-MWLN -5°

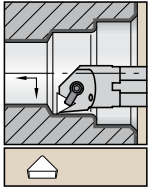


Steel shank with through coolant.  
See pages E108-E116, E160, E170, E180 for inserts.

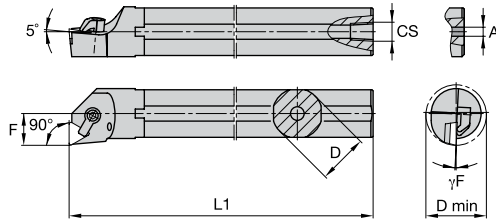


order number	catalog number	D	D min	F	L1	CS	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert
<b>right hand</b>									
2951390	A12SMWLN3	.750	.930	.500	10.00	1/8-27 NPT	-14.0	-5.0	WN.332
2951398	A16TMWLN4	1.000	1.220	.640	12.00	1/4-18 NPT	-12.0	-5.0	WN.432
2951407	A20UMWLN4	1.250	1.470	.765	14.00	1/4-18 NPT	-14.0	-5.0	WN.432

## A-CTFP 0°



Steel shank with through coolant. See pages E96-E98, E159, E168 for inserts.



order number	catalog number	D	D min	F	L1	A	CS	γF°	gage insert
right hand 2951400	A20UCTFPR3	1.250	1.470	.765	14.00	6,35	1/4-18 NPT	-3.0	TP.322

INDEXABLE MILLING

SOLID END MILLING

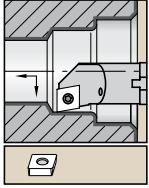
HOLEMAKING

TAPPING

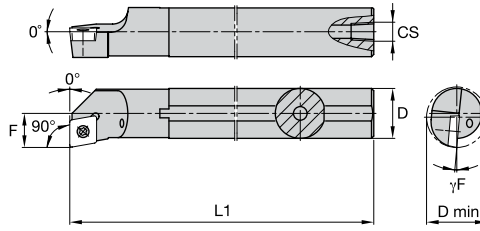
TURNING



## A-SCFC 0°

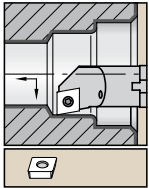


Steel shank with through coolant. See pages E22-E27, E122, E161-E162, E170-E171 for inserts.

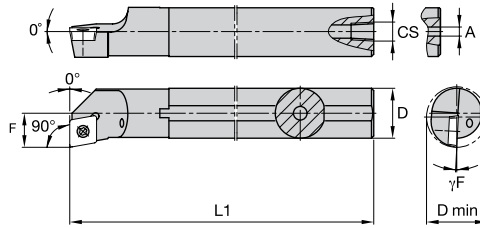


order number	catalog number	D	D min	F	L1	CS	γF°	gage insert
<b>right hand</b>								
3883416	A08RSCFCR2	.500	.600	.312	8.00	1/16-27 NPT	-7.0	CC..2151
3883421	A12SSFCR3	.750	.930	.500	10.00	1/8-27 NPT	-5.0	CC..3252

## A-SCFP 0°

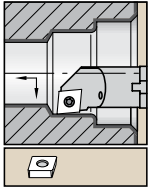


Steel shank with through coolant. See pages E43, E163, E172-E173 for inserts.

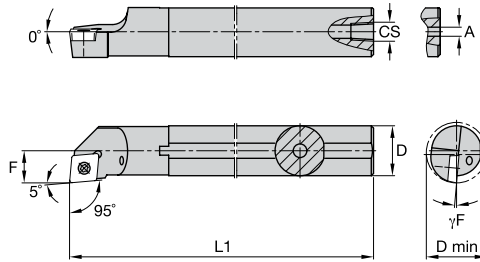


order number	catalog number	D	D min	F	L1	A	CS	γF°	gage insert
<b>right hand</b>									
5077440	A06MSCFPR2	.375	.480	.250	6.00	.13	—	-4.0	CP..2151
5077445	A08RSCFPR2	.500	.600	.312	8.00	—	1/16-27 NPT	-2.0	CP..2151
5077499	A12SSCFPR3	.750	.930	.500	10.00	—	1/8-27 NPT	-2.0	CP..3252

## A-SCLC -5°



Steel shank with through coolant. See pages E22-E27, E122, E161-E162, E170-E171 for inserts.



order number	catalog number	D	D min	F	L1	A	CS	γF°	gage insert
<b>right hand</b>									
2951383	A06MSCLCR2	.375	.480	.250	6.00	.13	—	-8.0	CC..2151
2951386	A08RSCLCR2	.500	.600	.312	8.00	—	1/16-27 NPT	-7.0	CC..2151
2951388	A10SSCLCR2	.625	.770	.406	10.00	—	1/8-27 NPT	-5.0	CC..2151
2951392	A12SSCLCR3	.750	.930	.500	10.00	—	1/8-27 NPT	-5.0	CC..3252
2951399	A16TSCLCR3	1.000	1.200	.640	12.00	—	1/4-18 NPT	-4.0	CC..3252
2951408	A20USCLCR4	1.250	1.470	.765	14.00	—	1/4-18 NPT	-5.0	CC..432
2951418	A24USCLCR4	1.500	1.760	.890	14.00	—	1/4-18 NPT	-4.0	CC..432
<b>left hand</b>									
2951391	A12SSCLCL3	.750	.930	.500	10.00	—	1/8-27 NPT	-5.0	CC..3252

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

# Internal Machining • S-Style Boring Bars for Positive Inserts

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

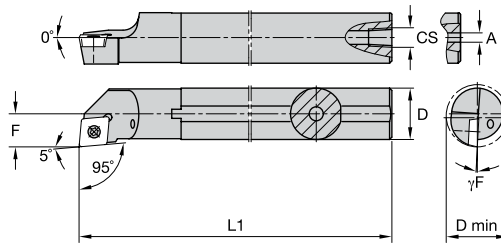
TAPPING

TURNING

## A-SCLP -5°



See pages E43, E163, E172-E173 for inserts.  
Steel shank with through coolant.

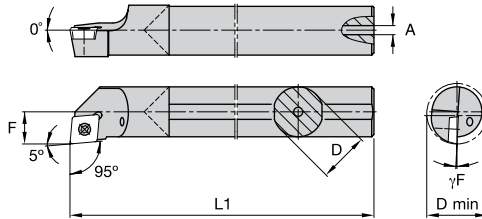


order number	catalog number	D	D min	F	L1	A	CS	γF°	gage insert
<b>right hand</b>									
5077618	A06MSCLPR2	.375	.480	.250	6.00	.13	—	-6.0	CP..2151
5077643	A08RSCLPR2	.500	.600	.312	8.00	.16	1/16-27 NPT	-3.0	CP..2151
5077648	A10SSCLPR2	.625	.770	.406	10.00	—	1/8-27 NPT	-2.0	CP..2151
5077649	A10SSCLPR3	.625	.770	.406	10.00	.16	1/8-27 NPT	-2.0	CPMT3252
5077686	A12SSCLPR3	.750	.930	.500	10.00	—	1/8-27 NPT	-2.0	CP..3252
5077699	A16TSCLPR3	1.000	1.200	.640	12.00	—	1/4-18 NPT	.0	CP..3252
<b>left hand</b>									
5077616	A06MSCLPL2	.375	.480	.250	6.00	.13	—	-6.0	CP..2151
5077682	A12SSCLPL3	.750	.930	.500	10.00	—	1/8-27 NPT	-2.0	CP..3252

## E-SCLP -5°

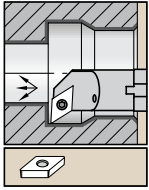


See pages E43, E163, E172-E173 for inserts.  
Carbide shank with through coolant.

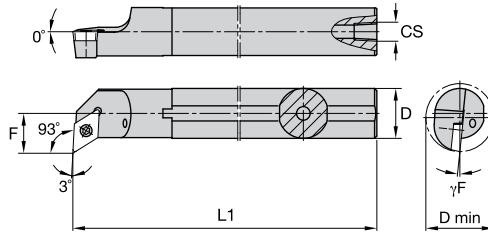


order number	catalog number	D	D min	F	L1	A	γF°	gage insert
<b>right hand</b>								
5093183	E16TSCLPR3	.312	1.200	.640	12.000	.281	.0	CP..3252
5093092	E06MSCLPR2	.375	.480	.250	6.000	.125	-6.0	CP..2151
5093096	E08RSCLPR2	.500	.600	.312	8.000	.187	-2.0	CP..2151
5093142	E10SSCLPR3	.625	.770	.406	10.000	.218	-3.0	CP..3252
5093148	E12SSCLPR3	.750	.930	.500	10.000	.281	-2.0	CP..3252
<b>left hand</b>								
5093095	E08RSCLPL2	.500	.600	.312	8.000	.187	-2.0	CP..2151

## A-SDUC -3°



Steel shank with through coolant. See pages E44-E48, E123, E164, E173-E174 for inserts.

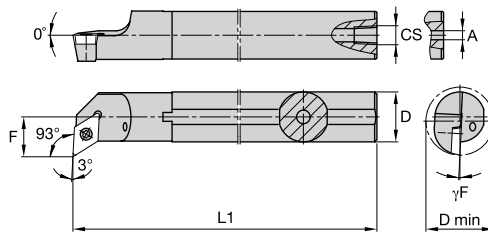


order number	catalog number	D	D min	F	L1	CS	γF°	gage insert
<b>right hand</b>								
2951394	A12SSDUCR3	.750	.980	.562	10.00	1/8-27 NPT	-5.0	DC..3252
<b>left hand</b>								
2951393	A12SSDUCL3	.750	.980	.562	10.00	1/8-27 NPT	-5.0	DC..3252

## A-SDUP -3°



See pages E165, E166 for inserts. Steel shank with through coolant.



order number	catalog number	D	D min	F	L1	A	CS	γF°	gage insert
<b>right hand</b>									
5078324	A06MSDUPR2	.375	.600	.375	6.000	.125	—	-3.0	DP..2151
5078326	A08RSDUPR2	.500	.730	.437	8.000	.156	1/16-27 NPT	.0	DP..2151
5078366	A16TSDUPR3	1.000	1.300	.750	12.000	.250	1/4-18 NPT	.0	DP..3252

INDEXABLE MILLING

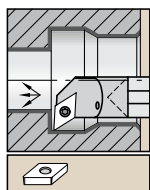
SOLID END MILLING

HOLE/MAKING

TAPPING

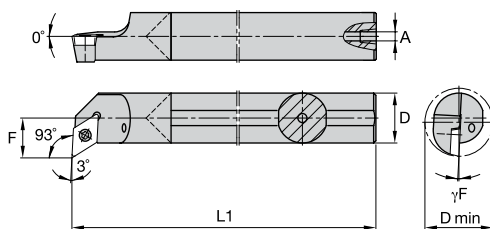
TURNING

## E-SDUP -3°



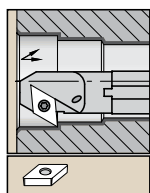
Carbide shank with through coolant.

See pages E165, E166 for inserts.



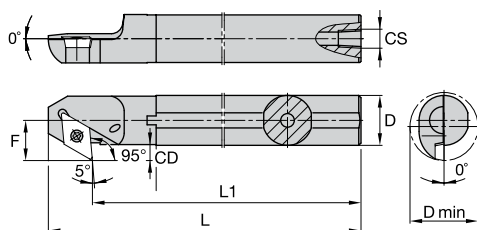
order number	catalog number	D	D min	F	L1	A	γF°	gage insert
right hand								
5093424	E08RSDUPR2	.500	.730	.437	8.000	.187	.0	DP..2151

## A-SDXP -5°



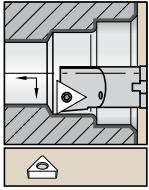
See pages E165, E166 for inserts.

Steel shank with through coolant.



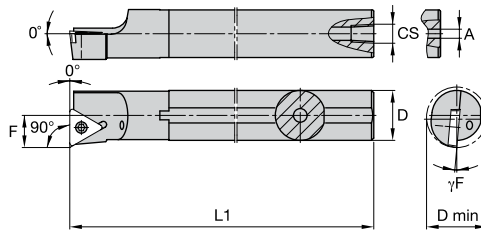
order number	catalog number	D	D min	F	L1	L	CD	CS	gage insert
left hand									
5078402	A12SSDXPL3	.750	.980	.562	10.00	10.63	.187	1/8-27 NPT	DP..3252

## A-STFC 0°



Steel shank with through coolant.

See pages E82-E85, E124, E166-E167, E178 for inserts.

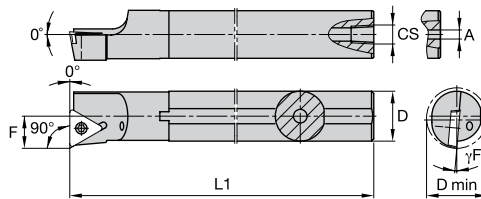


order number	catalog number	D	D min	F	L1	A	CS	γF°	gage insert
<b>right hand</b>									
2951385	A06MSTFCR2	.375	.480	.250	6.00	.13	—	-8.0	TC..2151
2951387	A08RSTFCR2	.500	.600	.312	8.00	.16	1/16-27 NPT	-7.0	TC..2151
2951389	A10SSTFCR2	.625	.770	.406	10.00	.16	1/8-27 NPT	-5.0	TC..2151
2951395	A12SSTFCR2	.750	.930	.500	10.00	.16	1/8-27 NPT	-5.0	TC..2151

## A-STFP -0°



See pages E97, E168, E179 for inserts.  
Steel shank with through coolant.



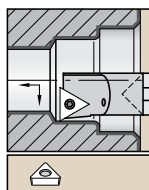
order number	catalog number	D	D min	F	L1	A	CS	γF°	gage insert
<b>right hand</b>									
5086723	A06MSTFPR2	.375	.480	.250	6.000	.125	—	-4.0	TP..2151
5086728	A08RSTFPR2	.500	.600	.312	8.000	.160	—	-2.0	TP..2151
5086804	A12SSTFPR3	.750	.930	.500	10.000	.156	1/8-27 NPT	-2.0	TPMT3252

# Internal Machining • S-Style Boring Bars for Positive Inserts

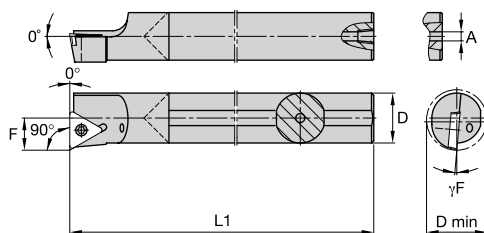
INDEXABLE MILLING

SOLID END MILLING

## E-STFP -0°



Carbide shank with through coolant.  
See pages E97, E168, E179 for inserts.



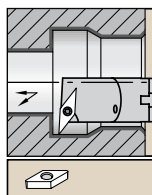
order number	catalog number	D	D min	F	L1	A	γF°	gage insert
<b>right hand</b>								
5093698	E08RSTFPR2	.500	.600	.312	8.000	.187	-2.0	TP..2151

HOLEMAKING

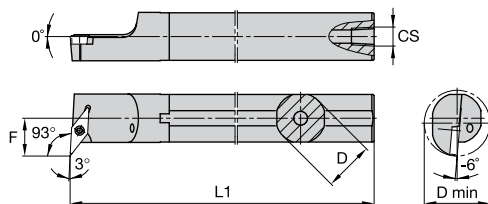
TAPPING

TURNING

## A-SVUB -3°



Steel shank with through coolant.  
See pages E99-E101, E125, E169, E179 for inserts.



order number	catalog number	D	D min	F	L1	CS	gage insert
<b>right hand</b>							
3883423	A12SSVUBR2	.750	.980	.562	10.00	1/8-27 NPT	VB..221
3883425	A16TSVUBR3	1.000	1.300	.750	12.00	1/4-18 NPT	VB..332
<b>left hand</b>							
3883422	A12SSVUBL2	.750	.980	.562	10.00	1/8-27 NPT	VB..221
3883424	A16TSVUBL3	1.000	1.300	.750	12.00	1/4-18 NPT	VB..332





# Cartridges

## Cartridges for Negative and Positive Inserts

Standard WIDIA™ cartridges are ideal for turning tools with one or several cutting edges. A wide range of cartridge sizes and styles provides numerous combinations and application possibilities.

Same clamping systems as standard turning toolholders. Overall sizes to DIN and ISO are ideal for single- and multi-tooth turning, boring, and spotting tools.

Precise axial and radial positioning by adjustment screws.



# CARTRIDGES

## P-STYLE CLAMPING

- Lever-type clamping system for negative indexable inserts with hole to DIN 4988 and positive round inserts more than 20mm in diameter.
- Inserts with one- and two-side chip control geometries have positive rakes from 6° to 18°.
- Advantages of this system are fast insert changes and no interference with chip flow.
- P-style available in metric sizes only.

## S-STYLE CLAMPING

- Screw clamping system for positive indexable inserts with countersunk hole to DIN 4967.
- Compact design using a minimum of spare parts for high reliability and cost efficiency.
- A carbide shim provides additional tool protection.
- Toolholders with cutting edge heights upwards of 16mm (.625") and insert iCs from 9,52mm (.375") are secured by means of a threaded bushing.

## APPLICATIONS



BORING

I. D.  
CHAMFERING

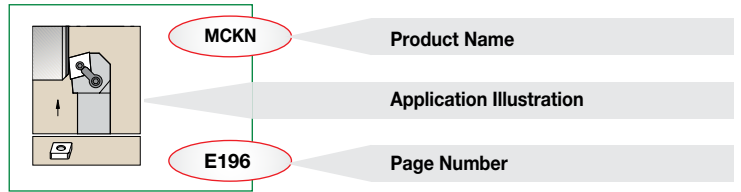
I. D. FACING

## INDUSTRY



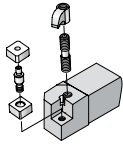
# Cartridges

Each unique clamping system offers product options to fill your specific toolholder needs. Find the illustration that fits your application and navigate to the corresponding page to get the correct solution.

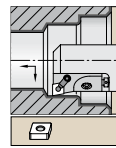


## Clamping System M

**M**



Combined pin/wedge clamp for negative inserts. An extremely sturdy clamping system, specially designed for interrupted cuts. The tool is protected by a carbide shim.

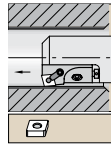


**MCFN**

0°

Page:

—

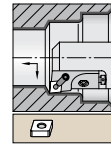


**MCKN**

15°

Page:

E196

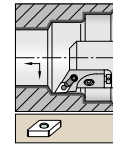


**MCLN**

-5°

Page:

—

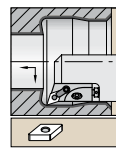


**MDJN**

-3°

Page:

E196

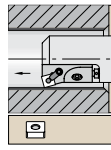


**MDQN**

-17.5°

Page:

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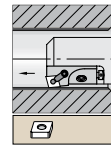


**MSKN**

15°

Page:

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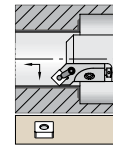


**MSRN**

15°

Page:

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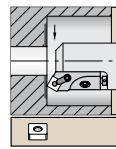


**MSSN**

45°

Page:

—



**MSTN**

30°

Page:

—

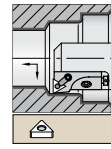


**MSYN**

5°

Page:

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**MTFN**

0°

Page:

—



**MTGN**

0°

Page:

—

INDEXABLE MILLING

SOLID END MILLING

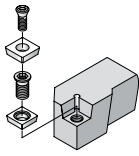
HOLEMAKING

TAPPING

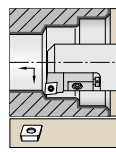
TURNING

## Clamping System S

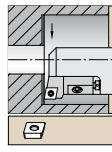
**S**



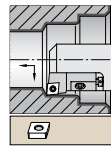
Combined pin/wedge clamp for negative inserts. An extremely sturdy clamping system, specially designed for interrupted cuts. The tool is protected by a carbide shim.



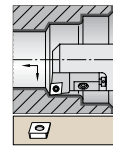
**SCFP**  
0°  
Page:  
**E230**



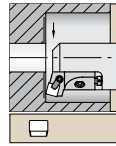
**SCGP**  
0°  
Page:  
**E201**



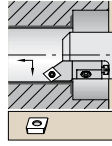
**SCLC**  
-5°  
Page:  
**E201**



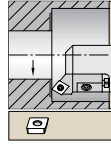
**SCLP**  
-5°  
Page:  
**E202**



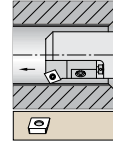
**SCRP**  
15°  
Page:  
—



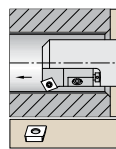
**SCSP**  
45°  
Page:  
—



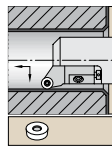
**SCTP**  
30°  
Page:  
—



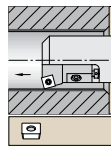
**SCWP**  
30°  
Page:  
—



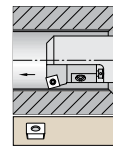
**SDJP**  
-3°  
Page:  
—



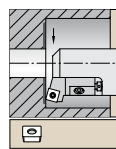
**SRGC**  
Page:  
—



**SSKC**  
15°  
Page:  
**E231**



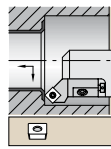
**SSKP**  
15°  
Page:  
—



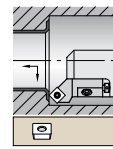
**SSRC**  
15°  
Page:  
**E231**



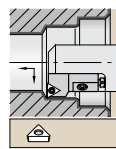
**SSRP**  
15°  
Page:  
—



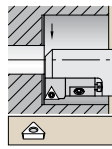
**SSSC**  
45°  
Page:  
**E232**



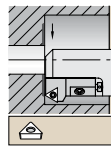
**SSSP**  
45°  
Page:  
**E232**



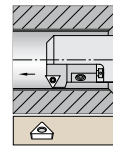
**STFP**  
0°  
Page:  
**E233**



**STGP**  
0°  
Page:  
**E203**



**STTP**  
30°  
Page:  
—



**STWP**  
30°  
Page:  
**E233**

INDEXABLE MILLING

SOLID END MILLING

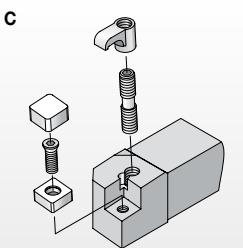
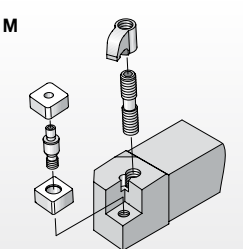
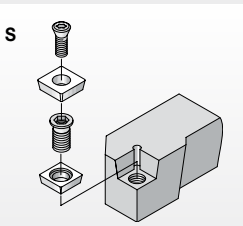














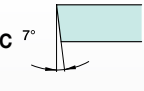
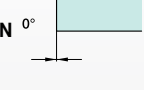

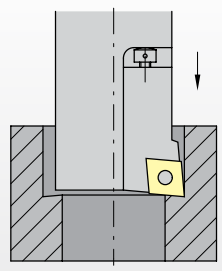
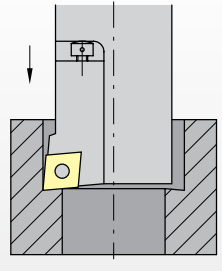
HOLEMAKING

TAPPING

TURNING

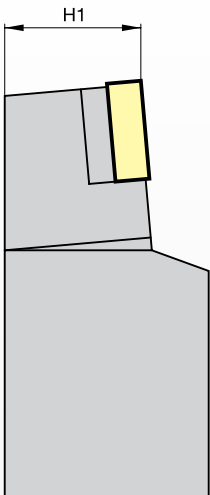
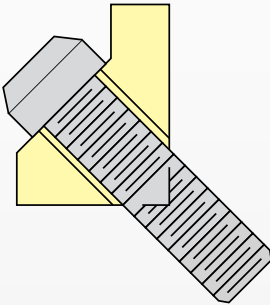
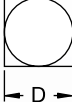
## Catalog Numbering System

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.

<b>M</b>	<b>C</b>	<b>F</b>	<b>N</b>	<b>R</b>
<p><b>Insert Clamping System</b></p>  <p><b>C</b></p> <p>Top clamping by clamping finger for inserts without hole.</p>  <p><b>M</b></p> <p>Top and hole clamping for inserts with hole.</p>  <p><b>S</b></p> <p>Center clamping by screw for inserts with hole.</p>	<p><b>Insert Shape</b></p>  <p><b>C</b> 80°</p>  <p><b>D</b> 55°</p>  <p><b>R</b></p>  <p><b>S</b> 90°</p>  <p><b>T</b> 60°</p>  <p><b>W</b> 80°</p>	<p><b>Cartridge Style</b></p>  <p><b>F</b> 0°</p>  <p><b>K</b> 15°</p>  <p><b>L</b> 5°</p>  <p><b>J</b> 3°</p>  <p><b>Q</b> 27.5°</p>  <p><b>R</b> 15°</p>  <p><b>S</b> 45°</p>  <p><b>G</b> 0°</p>	<p><b>Insert Clearance Angle</b></p>  <p><b>C</b> 7°</p>  <p><b>N</b> 0°</p>  <p><b>P</b> 11°</p>	<p><b>Hand of Tool</b></p> <p><b>Right-hand cartridge</b></p>  <p><b>R</b></p> <p><b>Left-hand cartridge</b></p>  <p><b>L</b></p>

## Catalog Numbering System

(continued)

10	C	A	3	
Cartridge Size	Identifying Code of Cartridge	Mounting Design of Cartridge	Insert Size	Additional Information
 <p>A technical drawing of a cartridge mounted on a tool holder. A horizontal dimension line above the cutting edge is labeled 'H1', indicating the cutting edge height of the cartridge in inches.</p>	<p><b>C</b> = Cartridge</p>	<p>A-design conforming to ISO 5611</p>  <p>A perspective view of an A-design cartridge, which is a long, tapered cylindrical tool with a cutting edge.</p>	 <p>A square diagram representing an insert. A circle is inscribed within the square, and a horizontal dimension line below the square is labeled 'D', representing the diameter of the insert.</p> <p><b>Insert iC</b> Number of 1/8ths of "D"</p>	

INDEXABLE MILLING

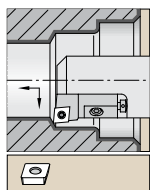
SOLID END MILLING

HOLEMAKING

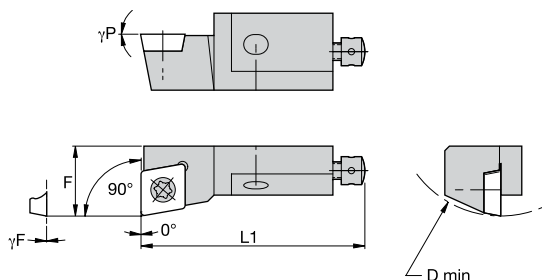
TAPPING

TURNING

## SCFP 0°

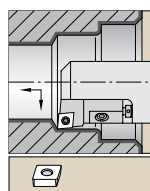


See pages E43, E163, E172-E173 for inserts.

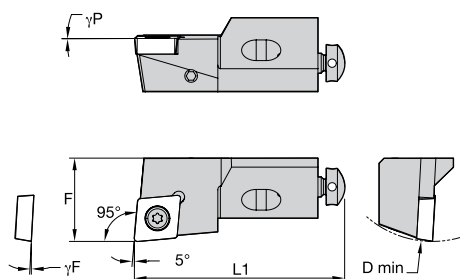


order number	catalog number	D min	F	L1	$\gamma^F$ °	$\gamma^P$ °	gage insert
<b>right hand</b>							
3871284	SCFPR06CA05	.787	.315	.98	.0	.0	CP..050204/CP..18151
3871283	SCFPR08CA06	.984	.394	1.26	.0	.0	CP..060204/CP..2151
3871272	SCFPR10CA09	1.575	.551	1.97	.0	.0	CP..09T308/CP..3252

## SCLC -5°

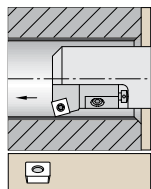


See pages E22-E27, E122, E161-E162, E170-E171 for inserts.

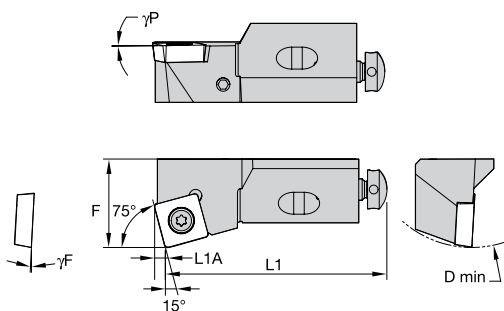


order number	catalog number	D min	F	L1	$\gamma^F$ °	$\gamma^P$ °	gage insert
<b>left hand</b>							
3871267	SCLCL12CA12	1.969	.787	2.17	-3.0	.0	CC..120408/CC..432

## SSKC 15°

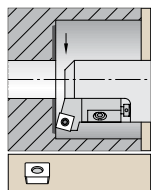


See pages E64-E67 for inserts.

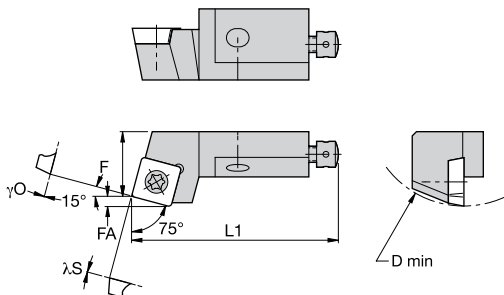


order number	catalog number	D min	F	L1	L1A	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert
<b>right hand</b> 3871191	SSKCR12CA12	1.969	.787	2.17	.12	-3.0	.0	SC..120408/SC..432

## SSRC 15°



See pages E64-E67 for inserts.

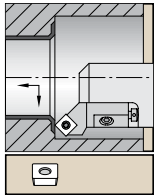


order number	catalog number	D min	F	L1	FA	$\lambda_S^\circ$	$\gamma_O^\circ$	gage insert
<b>left hand</b> 3870391	SSRCL12CA12	1.969	.787	2.17	.121	-3.0	.0	SC..120408/SC..432



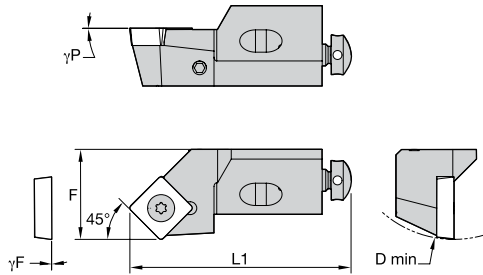
INDEXABLE MILLING

SOLID END MILLING



See pages E64-E67 for inserts.

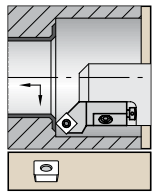
## SSSC 45°



order number	catalog number	D min	F	L1	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert
right hand							
3870385	SSSCR12CA12	1.969	.787	1.85	-3.0	.0	SC..120408/SC..432

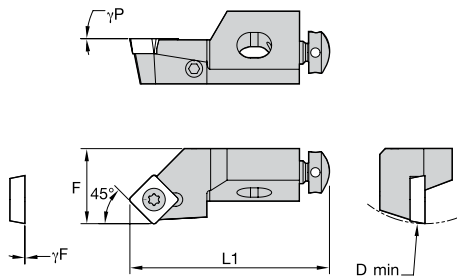
HOLEMAKING

TAPPING



See page E80 for inserts.

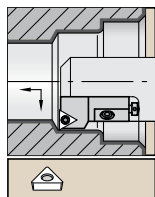
## SSSP 45°



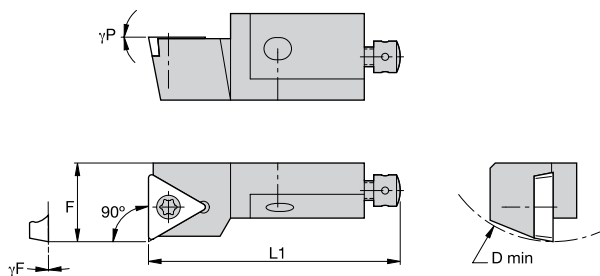
order number	catalog number	D min	F	L1	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert
right hand							
3870382	SSSPR10CA09	1.575	.551	1.73	.0	.0	SP..09T308/SP..3252

TURNING

## STFP 0°

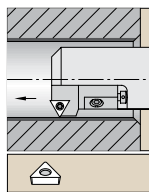


See pages E97, E168, E179 for inserts.

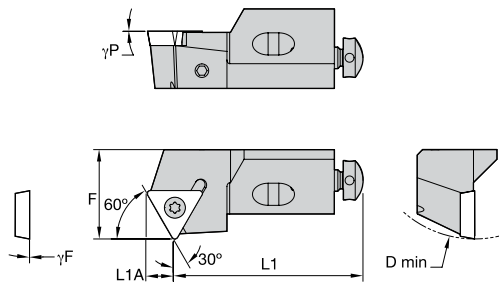


order number	catalog number	D min	F	L1	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert
right hand 3870378	STFPR08CA09	.984	.394	1.26	.0	.0	TP..090204/TP..18151

## STWP 30°



See pages E97, E168, E179 for inserts.



order number	catalog number	D min	F	L1	L1A	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert
right hand 3870364	STWPR08CA09	.984	.394	1.10	.17	.0	.0	TP..090204/TP..18151
left hand 3870365	STWPL12CA16	1.969	.787	1.85	.28	.0	.0	TP..16T308/TP..3252

# Railway Wheelset Reconditioning Tools

## Wheel Reprofilng/Wheelset Turning

Toolholders and indexable inserts for all types of wheel lathes used in the railroad industry.



### TOOLHOLDERS

- Robust lever clamping design with no top clamp to interfere with chip flow.
- Toolholders are made from heat-treated alloy steel, providing rigid support to the insert to withstand severe roughing cuts on work-hardened wheels.



### INSERTS

- Upended inserts are neutral and common for either hand of the toolholder.
- Multiple chipbreaker profiles and highly wear-resistant coated carbide grades
- Grades are available to machine the wheels in a range of wear conditions.

## WIDIA™ TOOLS FOR RAILWAY WHEEL MACHINING

WIDIA offers toolholders and indexable inserts for all types of wheel lathes being used in the Industry.

- The tooling for wheelset reprofiling/reconditioning has been developed in close cooperation with machine tool builders and railway workshops.
- The wheel profile wears during usage and also due to skidding, mismatched wheels, etc.
- Different chipbreaker profiles and grades are available to machine the wheels with different wear conditions.
- The upended design of inserts enhances the insert strength and the chipbreakers are designed to provide optimum performance with efficient chipbreaking while machining the profile.
- The toolholders adopt the robust lever clamping system.

WIDIA tooling solutions for heavy-duty turning have a proven history of success in these extremely demanding applications around the world. Customers looking for maximum material removal and improved productivity can rely on WIDIA to provide the right tool, inserts, and grades for their workpiece, machine tool, and applications.

### APPLICATIONS



TURNING



FACING



PROFILING

### INDUSTRY



TRANSPORTATION



INDEXABLE MILLING

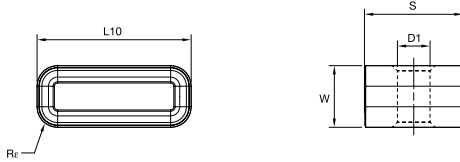
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## Railway Wheel Reprofilng Inserts • LNUX-16

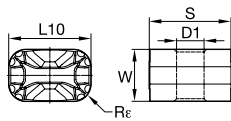
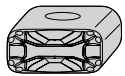


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	W		L10		S		R <sub>ε</sub>		D1		WK20CT	WP15CT
		mm	in	mm	in	mm	in	mm	in	mm	in		
LNUX30194016	LNUX30194016	12,00	.472	30,00	1.181	19,05	3/4	4,0	.158	6,35	.250	6128295	I

## Railway Wheel Reprofilng Inserts • LNUX-13

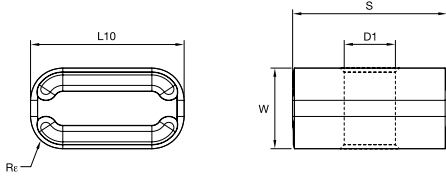


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	W		L10		S		R <sub>ε</sub>		D1		WK20CT	WP15CT
		mm	in	mm	in	mm	in	mm	in	mm	in		
LNUX19194013	LNUX19194013	10,00	.394	19,05	.750	19,05	3/4	4,0	.158	6,35	.250	4170966	I
LNUX30194013	LNUX30194013	12,00	.472	30,00	1.181	19,05	3/4	4,0	.158	6,35	.250	4170968	I

## Railway Wheel Reprofilng Inserts • LNUX-T



- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	W		L10		S		R <sub>r</sub>		D1		WK20CT 4170967 6128294	WP15CT 4170969 6128294
		mm	in	mm	in	mm	in	mm	in	mm	in		
LNUX191940T	LNUX191940T	10,00	.394	19,05	.750	19,05	3/4	4,0	.158	6,35	.250		
LNUX301940T	LNUX301940T	12,00	.472	30,00	1.181	19,05	3/4	4,0	.158	6,35	.250		

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

INDEXABLE MILLING

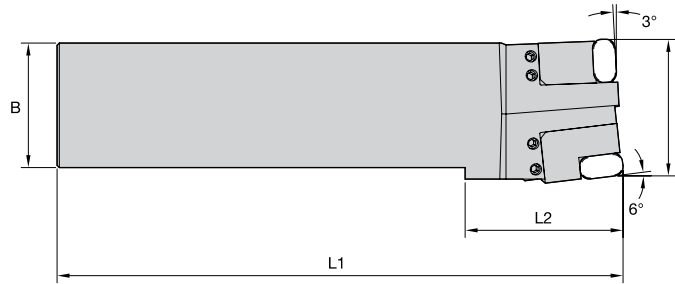
SOLID END MILLING

HOLEMAKING

TAPPING

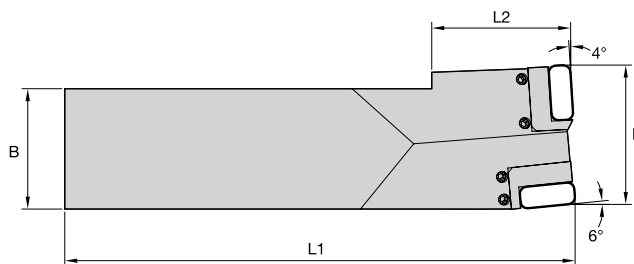
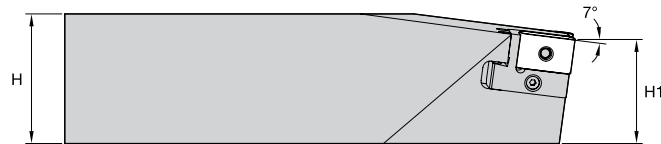
TURNING

## Railway Toolholder • Wheel Turning Lathe • Left Hand • LNUX19 Inserts



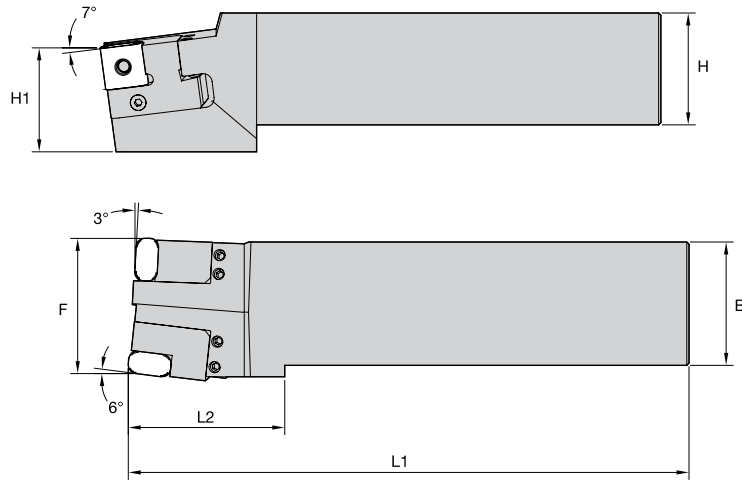
order number	catalog number	B		F		H		H1		L1		L2	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
left hand													
2552320	6939143120	55,00	2.161	60,00	2.362	50,00	1.969	46,00	1.339	250,00	9.843	70,00	2.756

## Railway Toolholder • Wheel Turning Lathe • Left Hand • LNUX30 Inserts



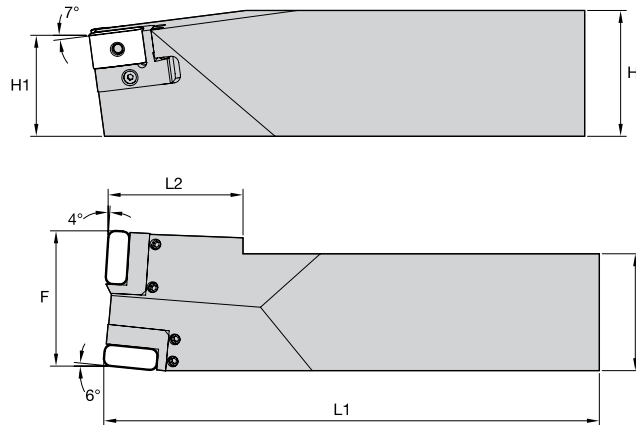
order number	catalog number	B		F		H		H1		L1		L2	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
left hand													
2552318	6939145820	65,00	2.559	75,00	2.953	70,00	2.756	56,00	2.205	276,00	10.866	77,78	3.062

## Railway Toolholder • Wheel Turning Lathe • Right Hand • LNUX19 Inserts



order number	catalog number	B		F		H		H1		L1		L2	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
right hand 2552321	6939143110	55,00	2.162	60,00	2.362	50,00	1.969	46,00	1.339	250,00	9.845	70,00	2.756

## Railway Toolholder • Wheel Turning Lathe • Right Hand • LNUX30 Inserts



order number	catalog number	B		F		H		H1		L1		L2	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
right hand 2552319	6939145810	65,00	2.559	75,00	2.953	70,00	2.760	56,00	2.205	276,00	10.866	77,78	3.062

INDEXABLE MILLING

SOLID END MILLING

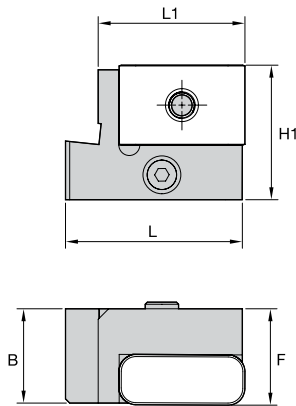
HOLE/MAKING

TAPPING

TURNING

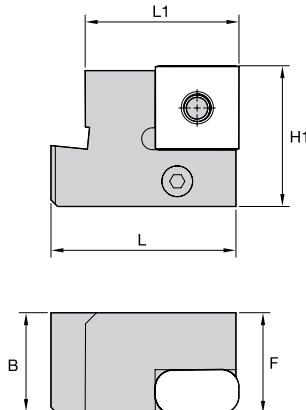


## Railway Turning Cassette • Wheel Turning Lathe • Left Hand • LNUX30 Inserts



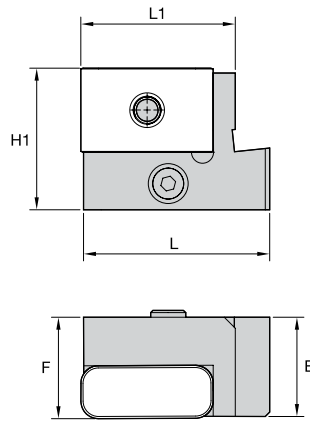
order number	catalog number	B		F		L		L1		H1		gage insert
		mm	in	mm	in	mm	in	mm	in	mm	in	
left hand												
2035331	6939318620	22,50	.886	23,00	.905	42,20	1.661	35,00	1.378	32,10	1.264	LNUX301940

## Railway Turning Cassette • Wheel Turning Lathe • Left Hand • LNUX30 Inserts



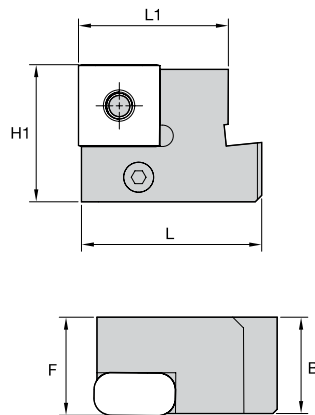
order number	catalog number	B		F		L		L1		H1		gage insert
		mm	in	mm	in	mm	in	mm	in	mm	in	
left hand												
2276948	6939318820	22,55	.888	23,00	.906	42,20	1.661	35,00	1.378	32,00	1.260	LNUX191940

## Railway Turning Cassette • Wheel Turning Lathe • Right Hand • LNUX19 Inserts



order number	catalog number	B		F		L		L1		H1		gage insert
		mm	in	mm	in	mm	in	mm	in	mm	in	
right hand 2039208	6939318610	22,50	.886	23,00	.905	42,20	1.661	35,00	1.378	32,00	1.264	LNUX301940

## Railway Turning Cassette • Wheel Turning Lathe • Right Hand • LNUX30 Inserts



order number	catalog number	B		F		L		L1		H1		gage insert
		mm	in	mm	in	mm	in	mm	in	mm	in	
right hand 2276947	6939318710	22,55	.888	23,00	.906	42,20	1.661	35,00	1.378	32,00	1.260	LNUX191940

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

INDEXABLE MILLING

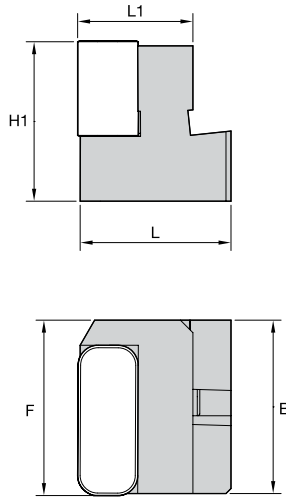
SOLID END MILLING

HOLE/MAKING

TAPPING

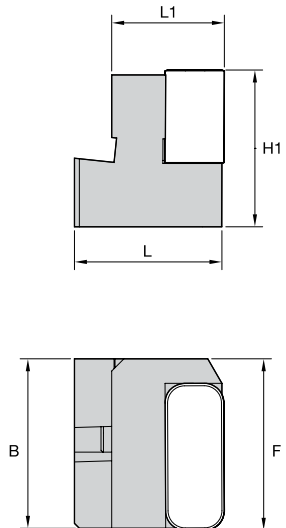
TURNING

## Railway Facing Cassette • Wheel Turning Lathe • Left Hand • LNUX19 Inserts



order number	catalog number	B		F		L		L1		H1		gage insert
		mm	in	mm	in	mm	in	mm	in	mm	in	
left hand												
2403738	6939322020	34,60	1.362	35,00	1.378	30,10	1.185	23,00	.906	32,00	1.260	LNUX301940

## Railway Facing Cassette • Wheel Turning Lathe • Right Hand • LNUX19 Inserts

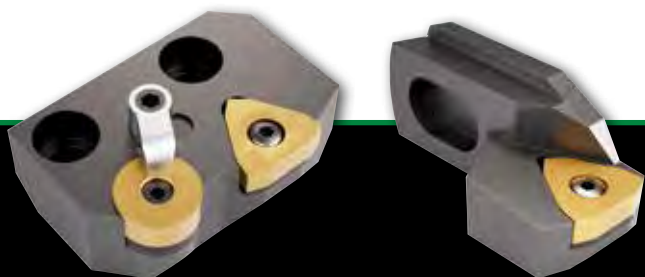


order number	catalog number	B		F		L		L1		H1		gage insert
		mm	in	mm	in	mm	in	mm	in	mm	in	
right hand												
2403739	6939322110	34,60	1.362	35,00	1.378	30,10	1.185	23,00	.906	32,00	1.260	LNUX301940

## WIDIA™ Tools for Bar Peeling Applications

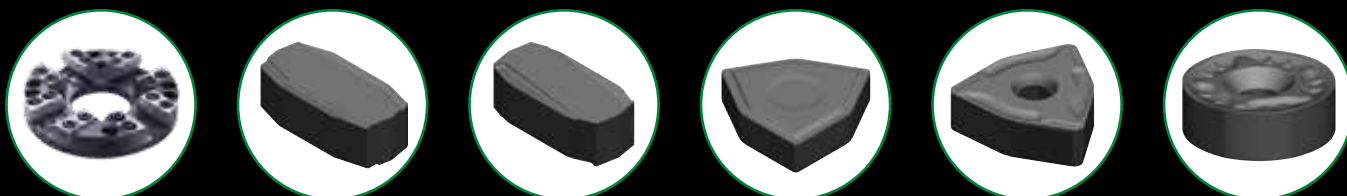
Bar peeling is a unique and economical machining operation for the production of cylindrical surfaces on blank bars (e.g., round bars, wires, blocks, and pipes) with high surface finishes and dimensional accuracies.

During the bar peeling process, scales, cracks, and sand inclusion are removed. Bar peeling is faster than conventional turning. It is used when high volumes, high quality, and high productivity with good surface finish are required.



New bar peeling machines demand high performance from cutting tools. WIDIA offers a wide variety of inserts in different grades for cost-effective bar peeling operations in different types of steels, stainless steels, etc. WIDIA also offers toolholders and cartridges for bar peeling as a custom solution.

- Ideal in high feed rate applications, WIDIA bar peeling tools enable economical machining operations for the production of cylindrical surfaces on bright bars.
- High surface finishes, dimensional accuracy, and most efficient removal of scales, cracks, sand enclosures, and other errors.



### Application Range of WIDIA Bar Peeling Tools

Bar peeling machines require a high level of utilization and demand high performance from the cutting tools. WIDIA offers specially developed tools with indexable inserts for bar peeling, which are capable of meeting these demands, making manufacturing more cost-efficient.

### WIDIA Victory™ CVD-Coated Grades

#### WP15CT

Coated carbide. MT-CVD/CVD — TiN-TiCN-Al<sub>2</sub>O<sub>3</sub>-ZrCN. Good balance of wear resistance and toughness properties. High productivity machining on smooth to lightly interrupted cuts. For steels.

#### WP25CT

Coated carbide. MT-CVD/CVD — TiN-TiCN-Al<sub>2</sub>O<sub>3</sub>-ZrCN. Good toughness properties. Excellent first choice for steel machining. Provides high-productivity metal removal for all but the harshest interrupted cuts.

#### WP35CT

Coated carbide. MT-CVD/CVD — TiN-TiCN-Al<sub>2</sub>O<sub>3</sub>-ZrCN. Proven on all roughing and heavy roughing operations, wet or dry, on interrupted and uninterrupted cuts.

#### WM25CT

Coated carbide. MT-CVD/CVD — TiN-TiCN-Al<sub>2</sub>O<sub>3</sub>-ZrCN. Good balance of wear resistance and toughness properties. Light and medium machining. For austenitic stainless steel AISI series.

*For more information on heavy-duty tooling, contact your local sales representative.*

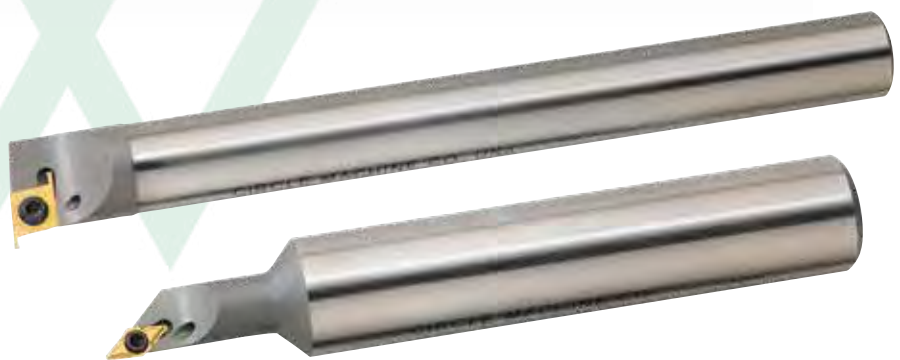
# Small Hole Boring

## Micro Boring Bars

The WIDIA™ line of micro boring bars provides accurate holemaking tooling in diameters as small as 4,57mm. These economical, indexable inserts are available in both steel and carbide shanks and are stocked in both metric and inch sizes. Ideal for a wide range of applications, including precision micro boring.



Inserts are available in multiple styles and grades, including polycrystalline diamond tipped, for all machining applications.



## I.D. INDEXABLE INSERT TOOLING



### 80° DIAMOND INSERT BORING BARS

- Available in shanks as small as 4mm to bore >4,57mm diameter.
- Positive rake geometry for free cutting.
- Superior, unobstructed chip evacuation.
- Stocked in multiple grades to bore a wide range of materials.



### THREADING AND GROOVING BORING BARS

- Easy insert changes for threading and grooving.
- Thread down to a 48 TPI, 1,3mm TP (pitch).
- Thread and groove capabilities to an inside bore diameter of 6,91mm.



### TRIANGLE INSERT BORING BARS

- Designed for less obstruction and greater chip evacuation.
- Positive rake geometry to bore holes >6,98mm diameter.
- Stocked in all grades, including diamond-tipped and borazon-tipped styles.
- Stocked in shanks as small as 6mm for 7,06mm minimum bore diameter.

## APPLICATIONS



BORING

## INDUSTRY



## Choosing the Correct Small Hole Boring Bar

**1 Check the Hole Size to be bored (D min) in the component.**  
(To check suitability of the product platform)

**2 Determine boring bar (D).**

- A** Select shank size (D) based on your machine's requirements.
- B** Determine bore depth (how far the boring bar extends from the holder). Multiply bar diameter by 4. If bore depth is less, use a steel bar. If bore depth exceeds 4:1 ratio, use a carbide bar. Use L1 or L4 depending on bar selected. (See recommended maximum overhang chart on page E296.) For indexable tooling, go to step 3. For all other tooling systems, go directly to step 4.
- C** Determine lead angle (KRA). Zero degree lead angle is used when maximum stability is required. Lead angle may vary based on changing conditions, such as boring in a blind hole.

### Small Hole Boring Bars for Turning

Order Number	Marketing Number	KRA	D	D min	F	L1	A	IP	SP	UPSP
2631949	CCB1H01N60T	-1	150	150	150	1,000	140	3.0°	0.2	CD, 120000
2632081	CCB1H01E45R	-1	150	150	154	1,000	140	5.0°	3.0	CD, 120000
2632079	CCB1H01E45R	-1	150	150	154	1,000	140	5.0°	3.0	CD, 120000
2632163	CCB1H01E45R	-1	140	140	148	1,111	130	5.0°	3.0	CD, 120000
2632084	CCB1H01E50	-1	150	150	154	1,000	140	0.2°	3.0	CD, 120000
2632049	CCB1E05045R	-1	250	250	254	1,000	240	0.0°	3.0	CD, 120000
2632029	CCB1E05045R	-1	250	250	254	1,000	240	0.0°	3.0	CD, 120000
2632270	CCB1E05045R	-1	250	250	254	1,000	240	0.0°	3.0	CD, 120000
2632190	CCB1E04545R	-1	200	200	204	1,111	190	0.0°	3.0	CD, 120000
2632062	CCB1E05045R	-1	250	250	254	1,000	240	3.0°	3.0	CD, 120000

**3 Determine which chipbreaker is best for the material to be machined.**

Consult the Small Hole Boring Chipbreaker Geometry charts on pages E254.

### Small Hole Boring

#### Chipbreaker Geometries • Single-Sided, Positive Inserts

**HB** Full form: Balanced insert for best surface quality and reduced cutting resistance. Very stable.

**JT** Balanced gradient insert: Maximum drill chip control. Geometry for general purpose.

**HB-31** HB-Semi-Nose (31°) in Polyethylene Oxide (PEO) for high-temperature and dry.

**4 Determine which grade is best for the material to be machined.**

Consult the Grades and Grade Descriptions charts on pages E256–E257.

### Grades and Grade Descriptions

#### Small Hole Boring Inserts

Coatings provide high-speed capability and are engineered for finishing to light roughing.

Coating: CCB1  
Grade Description: HW-525

Uncoated inserts. A very tough, ultra-fine grain uncoated substrate. For general-purpose machining of most steels, stainless steels, high-temperature alloys, titanium, zircon, and non-ferrous materials. Performs best at low speeds and will handle interruptions and high feed rates. Use when C2, C2, or C2. Not due to tapping or finishing.

Legend:

- B** Steel
- M** Stainless Steel
- A** Cast Iron
- N** Non-Ferrous
- H** High-Temp Alloys
- G** Hardened Materials

Coating	Grade Description	Wear Resistance → Roughness							
		05	10	15	20	25	30	35	40
C									
M									
B									
N									
H									
G									

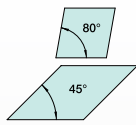
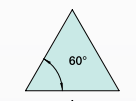
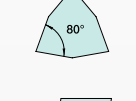
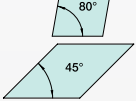
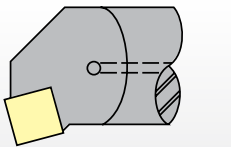
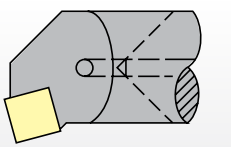



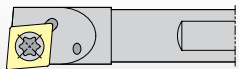
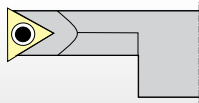


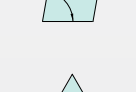
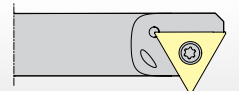
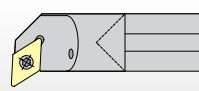
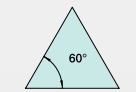
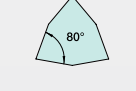
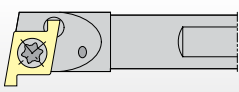
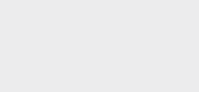
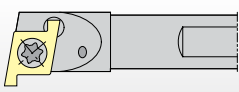






## Catalog Numbering System

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.

<b>C</b>	<b>S</b>	<b>B</b>	<b>I</b>	
Series Type	Bar Type	Bar Style Designation	Units	Insert Shape (optional)
<p><b>C</b></p>  <p><b>F</b></p>  <p><b>G</b></p>  	<p><b>S</b> = Steel (with coolant)</p>  <p><b>C</b> = Carbide (with coolant)</p> 		<p><b>I</b> = Inch <b>M</b> = Metric</p>	<p><b>C</b></p>  <p><b>W</b></p> 
<p><b>L</b></p> 	<p><b>B</b> Boring Bar</p> 	<p><b>O</b> Offset Boring Bar</p> 		
<p><b>Q</b></p>   	<p><b>C</b> External Chamfering Bar</p> 	<p><b>P</b> Profiling Bar</p> 		
<p><b>S</b></p>  	<p><b>I</b> Internal Threading Bar</p> 	<p><b>R</b> Reverse Chamfer or Back Chamfer Bar</p> 		
	<p><b>M</b> Offset Internal Grooving Bar</p> 			

Catalog Numbering System

(continued)

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

**180**

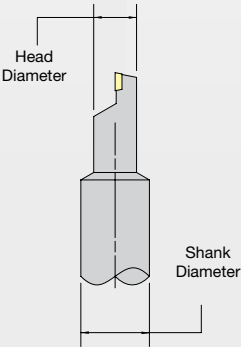
Head Diameter shown as "D2"

**Inch**

- 165 = .166"
- 180 = .180"/.189"
- 203 = .203"/.207"/.210"
- 250 = .260"/.258"
- 312 = .313"/.321"/.322"/.323"
- 322 = .322"
- 375 = .375"/.385"/.390"
- 500 = .510"

**Metric**

- 7 = 6,60mm
- 8 = 8,18mm/8,20mm
- 10 = 9,78mm
- 13 = 12,70mm/12,95mm
- 45 = 4,57mm
- 48 = 4,80mm
- 52 = 5,16mm
- 53 = 5,30mm
- 64 = 6,60mm
- 66 = 6,55mm/6,60mm
- 82 = 8,15mm
- 95 = 9,50mm
- 99 = 9,91mm
- 159 = 15,88mm



NOTE: Only shown on stepped-style bars.

**187**

Shank Diameter shown as "D"

**Inch**

- 156 = .156"
- 187 = .187"/.188"
- 250 = .250"
- 312 = .312"/.313"
- 375 = .375"
- 500 = .500"
- 625 = .625"
- 750 = .750"
- 875 = .875"
- 1000 = 1.000"
- 1250 = 1.250"

**Metric**

- 4 = 4,00mm
- 5 = 5,00mm
- 6 = 6,00mm
- 8 = 8,00mm
- 10 = 10,00mm
- 12 = 12,00mm
- 16 = 16,00mm

**25**

Length/Depth shown as "L1/L4"

Bore Length for Step Bars  
Thread Depth for Threading Bars  
Overall Length for Straight Shank Bars

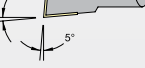
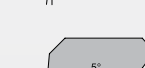
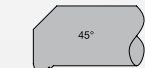
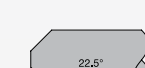
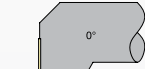
Inch	Metric
1 = 1.000"	12 = 12,70mm
1125 = 1.125"	19 = 19,05mm
125 = 1.250"	22 = 22,23mm
15 = 1.500"	25 = 25,40mm
1875 = 1.875"	32 = 31,75mm
2 = 2.000"	38 = 38,10mm
25 = 2.500"	48 = 47,63mm
3125 = 3.125"	51 = 50,80mm
35 = 3.500"	63 = 63,50mm
4 = 4.000"	64 = 64,00mm
45 = 4.500"	76 = 76,00mm
5 = .500"/5.000"	79 = 79,38mm
6 = 6.000"	100 = 100,58mm/101,50mm/101,60mm
7 = 7.000"/7.085"	102 = 101,60mm
75 = .750"	127 = 127,00mm
8 = 8.000"	152 = 152,00mm/152,40mm
90 = .900"	
10 = 10.000"	178 = 177,80mm/179,90mm
12 = 12.000"	
	203 = 203,20mm
	254 = 254,00mm

**7**

Lead Angle\*

0 = 0°  
Used for Threading/Grooving Bars

- 3 = 3°
- 5 = 5°
- 7 = 7°
- 225 = 22.5°
- 30 = 30°
- 45 = 45°
- 60 = 60°

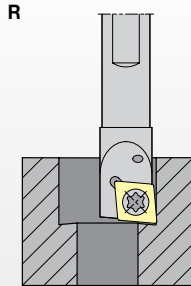


**R**

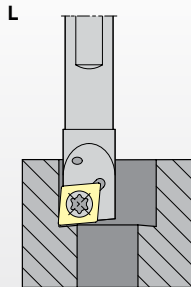
Hand of Tool

R = Right hand  
L = Left hand

Right hand boring bar



Left hand boring bar



\*NOTE: Shown as "KRI" for metric bars and "KRA" for inch bars.

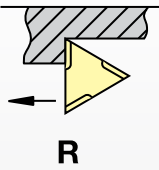
## Catalog Numbering System

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<b>C</b>	<b>D</b>	<b>H</b>	<b>B</b>	<b>12</b>																																			
Insert Shape	Insert Clearance Angle	Tolerance Class	Insert Features	Size																																			
<p>T 60° </p> <p>C 80° </p> <p>G 45° </p> <p>W 80° </p>	<p>B 5° </p> <p>C 7° </p> <p>D 15° </p> <p>P 11° </p>	<p>Tolerances apply prior to edge prep and coating.</p> <p><b>D</b> = Theoretical diameter of the insert inscribed circle  <b>S</b> = Thickness  <b>B</b> = See figures below</p>	<p>Partly cylindrical hole, 40–60° countersink, single-sided</p> <p>W </p> <p>T </p>	<p>Code for inch cutting edge length "L10"</p> <table border="1" style="margin: 0 auto;"> <thead> <tr> <th>"D" inch</th> <th>C</th> <th>G</th> <th>T</th> <th>W</th> </tr> </thead> <tbody> <tr> <td>5/32</td> <td>12</td> <td>12</td> <td>-</td> <td>-</td> </tr> <tr> <td>.160</td> <td>-</td> <td>-</td> <td>13</td> <td>-</td> </tr> <tr> <td>3/16</td> <td>-</td> <td>15</td> <td>-</td> <td>15</td> </tr> <tr> <td>1/4</td> <td>2</td> <td>-</td> <td>2</td> <td>2</td> </tr> <tr> <td>3/8</td> <td>3</td> <td>-</td> <td>3</td> <td>3</td> </tr> <tr> <td>.386</td> <td>-</td> <td>-</td> <td>31</td> <td>-</td> </tr> </tbody> </table>	"D" inch	C	G	T	W	5/32	12	12	-	-	.160	-	-	13	-	3/16	-	15	-	15	1/4	2	-	2	2	3/8	3	-	3	3	.386	-	-	31	-
"D" inch	C	G	T	W																																			
5/32	12	12	-	-																																			
.160	-	-	13	-																																			
3/16	-	15	-	15																																			
1/4	2	-	2	2																																			
3/8	3	-	3	3																																			
.386	-	-	31	-																																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>tolerance class</th> <th>tolerance on "D"</th> <th>tolerance on "B"</th> <th>tolerance on "S"</th> </tr> </thead> <tbody> <tr> <td>C</td> <td>±.0010"</td> <td>±.0005"</td> <td>±.001"</td> </tr> <tr> <td>H</td> <td>±.0005"</td> <td>±.0005"</td> <td>±.001"</td> </tr> <tr> <td>E</td> <td>±.0010"</td> <td>±.0010"</td> <td>±.001"</td> </tr> <tr> <td>G</td> <td>±.0010"</td> <td>±.0010"</td> <td>±.005"</td> </tr> <tr> <td>M</td> <td colspan="2">See tables on next page</td> <td>±.005"</td> </tr> <tr> <td>U</td> <td colspan="2">See tables on next page</td> <td>±.005"</td> </tr> </tbody> </table>	tolerance class	tolerance on "D"	tolerance on "B"	tolerance on "S"	C	±.0010"	±.0005"	±.001"	H	±.0005"	±.0005"	±.001"	E	±.0010"	±.0010"	±.001"	G	±.0010"	±.0010"	±.005"	M	See tables on next page		±.005"	U	See tables on next page		±.005"	<p>Partly cylindrical hole, 70–90° countersink, single-sided</p> <p>B </p> <p>H </p>										
tolerance class	tolerance on "D"	tolerance on "B"	tolerance on "S"																																				
C	±.0010"	±.0005"	±.001"																																				
H	±.0005"	±.0005"	±.001"																																				
E	±.0010"	±.0010"	±.001"																																				
G	±.0010"	±.0010"	±.005"																																				
M	See tables on next page		±.005"																																				
U	See tables on next page		±.005"																																				

## Catalog Numbering System

(continued)

06		05				
Thickness		Corner Radius "Re"		Hand of Insert <i>(optional)</i>	Cutting Edge Condition or Chip Control Features <i>(optional)</i>	Tip Style <i>(optional)</i>
symbol inch	thickness inch	symbol inch	corner radius inch	R = Right hand L = Left hand	HP = High positive LF = Light finishing	Symbol M Usage Mini tip
06	.040	X0	.0015			
1	.0625	0	.004			
12	.0781	05	.008			
15	.0938	1	.0156			
2	.1250	13	.021			
25	.1563	2	.0313			
		24	.037			
		3	.0469			
		4	.0625			

"D"	± Tolerance on "D"				"D"	± Tolerance on "B"			
	Class M Tolerance			Class U Tolerance		Class M Tolerance			Class U Tolerance
	Shapes S, T, C, R, & W	Shape D	Shape V	Shapes S, T, & C		Shapes S, T, C, R, & W	Shape D	Shape V	Shapes S, T, & C
inch	inch	inch	inch	inch	inch	inch	inch	inch	
5/32	.002	-	-	-	5/32	.003	-	-	-
3/16	.002	-	-	.003	3/16	.003	-	-	.005
7/32	.002	.002	.002	.003	7/32	.003	.004	-	.005
1/4	.002	.002	.002	.003	1/4	.003	.004	-	.005
5/16	.002	.002	.002	.003	5/16	.003	.004	-	.005
3/8	.002	.002	.002	.003	3/8	.003	.004	.007	.005
7/16	.003	.003	.003	.005	7/16	.005	.006	-	-
1/2	.003	.003	.003	.005	1/2	.005	.006	.010	.008
9/16	.003	.003	.003	.005	9/16	.005	.006	-	-
5/8	.004	.004	.004	.007	5/8	.006	.007	-	.011
11/16	.004	.004	.004	.007	11/16	.006	.007	-	.011
3/4	.004	.004	.004	.007	3/4	.006	.007	-	.011
7/8	.005	-	-	.010	7/8	.006	-	-	.015
1	.005	-	-	.010	1	.007	-	-	.015
1 1/4	.006	-	-	.010	1 1/4	.008	-	-	.015

# Small Hole Boring • Insert Selection Guide

INDEXABLE MILLING

The WIDIA™ three-step insert selection system makes choosing and applying the most productive tool easy. Tool recommendations are based on six workpiece material groups.

- 1 Select the Insert Geometry:**  
Based on the needed depth of cut and feed rate, choose the geometry that best matches your needs.
- 2 Select the Grade:**  
Determine your cutting conditions, and choose the proper grade.

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## TN7–CM1 for Steel

ISO 513	P				
	01	10	20	30	40
Hard Metal Coated	TN7				
	ALO				
	CG6				
	CG55				
				CG5	
				CM1	

wear resistance = harder

- TN7** — High edge strength and wear-resistant cermet. Finishing to semi-finishing of carbon, alloy, and stainless steels at medium to high speeds.
- ALO** — Can withstand light interruptions. Alumina coating enables higher cutting speeds.
- CG6** — High-speed, general-purpose grade for all kinds of steel and cast iron.
- CG55** — High edge strength and wear resistance. Reduces problems with built-up edge. Superior thermal deformation resistance and depth-of-cut notch resistance.
- CG5** — Best at low speeds. Will handle interruptions and high feed rates.
- CM1** — For heavy turning and heavily interrupted cuts.

toughness = softer

## ALO–CM1 for Stainless Steel

ISO 513	M				
	01	10	20	30	40
Hard Metal Coated	ALO				
	C3 and C25				
	C2				
	CG6				
	CG55				
				CG5	
				CM1	

wear resistance = harder

- ALO** — Can withstand light interruptions. Alumina coating enables higher cutting speeds.
- C3 and C25** — Good wear resistance with some toughness.
- C2** — Excellent abrasion resistance for machining cast irons, austenitic stainless steels, non-ferrous metals, non-metals, and most high-temperature alloys.
- CG6** — High-speed, general-purpose grade for all kinds of steel and cast iron.
- CG55** — High edge strength and wear-resistance. Reduces problems with built-up edge. Superior thermal deformation resistance and depth-of-cut notch resistance.
- CG5** — Best at low speeds. Will handle interruptions and high feed rates.
- CM1** — For heavy turning and heavily interrupted cuts.

toughness = softer

### 3 Select the Cutting Speed:

In the foldout speed and feed chart, establish your cutting speed and obtain your optimal starting conditions and range.

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

## TN7–CM1 for Cast Iron

ISO 513	K				
	01	10	20	30	40
Hard Metal Coated	TN7				
	ALO				
	CG6				
	CG55				
	C3 and C25				
	C2				
	CG5				
	CM1				
	wear resistance = harder				

**TN7** — High edge strength and wear-resistant cermet.

**ALO** — Can withstand light interruptions. Alumina coating enables higher cutting speeds.

**CG6** — High-speed, general-purpose grade for all kinds of steel and cast iron.

**CG55** — High edge strength and wear resistance. Reduces problems with built-up edge. Superior thermal deformation resistance and depth-of-cut notch resistance.

**C3 and C25** — Good wear resistance with some toughness.

**C2** — Excellent abrasion resistance for machining cast irons, austenitic stainless steels, non-ferrous metals, non-metals, and most high-temperature alloys.

**CG5** — Best at low speeds. Will handle interruptions and high feed rates.

**CM1** — For heavy turning and heavily interrupted cuts.

toughness = softer

## C3–CM1 for High-Temperature Alloys

ISO 513	S				
	01	10	20	30	40
Hard Metal Coated	C3 and C25				
	C2				
	CG5				
	CM1				
	wear resistance = harder				

**C3 and C25** — Good wear resistance with some toughness.

**C2** — Excellent abrasion resistance for machining cast irons, austenitic stainless steels, non-ferrous metals, non-metals, and most high-temperature alloys.

**CG5** — Best at low speeds. Will handle interruptions and high feed rates.

**CM1** — For heavy turning and heavily interrupted cuts.

toughness = softer

## Chipbreaker Geometries • Single-Sided, Positive Inserts

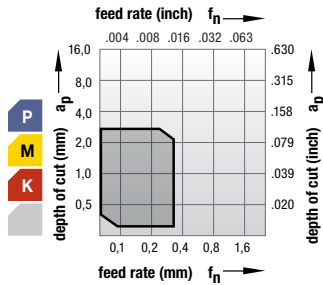
INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

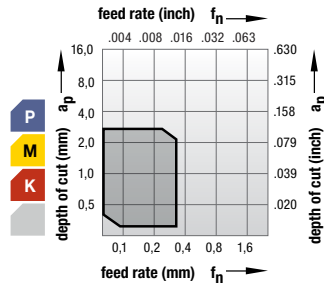
TAPPING

TURNING



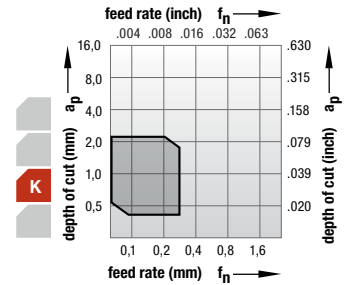
**..HB**

Flat inserts. Peripheral ground for best surface quality and reduced cutting pressure. Very stable cutting edge offers maximum rigidity.



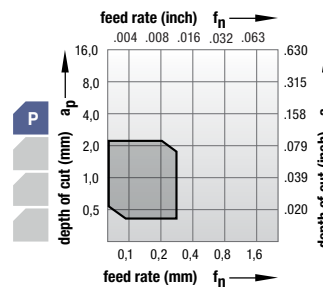
**..HT**

Peripheral ground insert chipbreaker. Good chip control. Geometry for general-purpose applications.



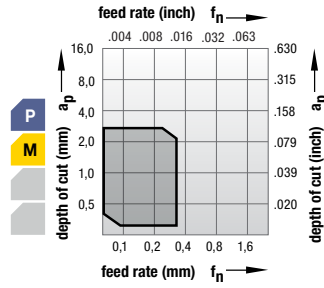
**..HB-M**

Cubic Boron Nitride (CBN) or Polycrystalline Diamond (PCD) tip for high-temp alloys and non-ferrous machining. Very stable cutting edge offers maximum rigidity.



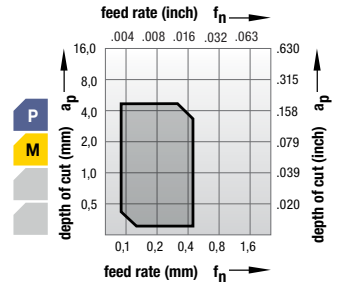
**..LF**

Geometry for general-purpose applications. Very good chip control. Recommended for general finish machining.



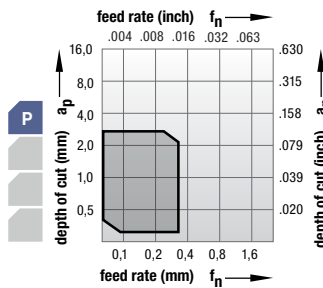
**..HH**

Peripheral ground for best surface quality and reduced cutting pressure. For fine to medium finishes.



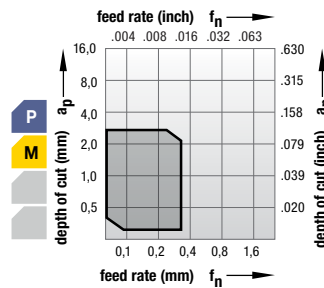
**HP**

High positive-type chipbreaker. Peripheral ground for best surface quality and reduced cutting pressure. Recommended for high-temp alloys and non-ferrous machining.



**..HH-R/L**

Ground-in chipbreaker. Peripheral ground for best surface quality and reduced cutting pressure. \*Right-hand inserts used in left-hand bars ONLY. Left-hand inserts used in right-hand bars ONLY.



**..HW**

Flat insert for profiling. Very stable cutting edge offers maximum rigidity.

## Chipbreaker Geometries • Geometry Selection Criteria

### Flat Top-Type Inserts

Chipbreaker Geometry ..HB, ..HB-M, ..HW

- Suitable for interrupted cuts.
- Use when chip control is not critical.

### Pressed Chipbreaker-Type Inserts

Chipbreaker Geometry ..LF

- Suitable for moderate interruption of cuts.
- Use when chip control is a concern.

### Pressed Chipbreaker-Type Inserts with Ground Periphery

Chipbreaker Geometry ..HH, ..HT, HP

- Suitable for light to moderate interruption of cuts.
- Use when chip control is a concern.
- Superior surface finish and closer tolerance on workpiece.

### Ground-In Chipbreaker-Type Inserts

Chipbreaker Geometry ..HH-R/L

- Suitable for smooth cuts.
- Use when chip control is a concern.
- Superior surface finish and closer tolerance on workpiece.

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SOLID END MILLING

HOLEMAKING

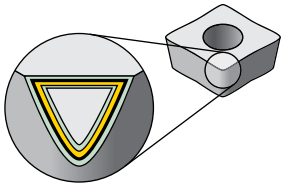
TAPPING

TURNING



# Grades and Grade Descriptions

## Small Hole Boring Inserts



Coatings provide high-speed capability and are engineered for finishing to light roughing.

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

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

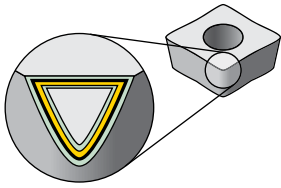
TAPPING

TURNING

wear resistance ← → toughness

Coating		Grade Description		05	10	15	20	25	30	35	40	45		
Grade CM1	 HW-S25	Uncoated carbide. A very tough, ultra-fine grain unalloyed substrate. For general-purpose machining of most steels, stainless steels, high-temperature alloys, titanium, irons, and non-ferrous materials. Performs best at low speeds and will handle interruptions and high feed rates. Use when C2, C3, or C25 fail due to chipping or breaking.	P											
			M											
			K											
			N											
			S											
Grade C2	 HW-N15	Uncoated carbide. A hard, low binder content, unalloyed WC/Co fine-grained grade. General-purpose grade for non-ferrous materials. Has excellent abrasion resistance for machining cast irons, austenitic stainless steels, non-ferrous metals, non-metals, and most high-temperature alloys.	M											
			K											
			N											
			S											
Grade C3 and C25	 HW-K15	Uncoated carbide. Has excellent abrasion resistance for machining cast irons, aluminum, and non-ferrous metals. Good wear resistance with some toughness. Harder than C2, resulting in greater edge wear resistance. Suitable for finishing operations.	M											
			K											
			N											
			S											
Grade TN7	 HT-P15	A highly wear-resistant (TiC/TiN-based) cermet grade. High edge strength and wear-resistant cermet offers improved tool life over uncoated/coated carbides and resists material build-up on cutting edge. Finishing to semi-finishing of carbon, alloy, and stainless steels at medium to high speeds. Can also be used on non-ferrous materials.	P											
			M											
			K											
Grade ALO	 HC-K15	Coated carbide. CVD — TiCN-TiC-Al <sub>2</sub> O <sub>3</sub> . A thin alumina coating over a hard, deformation-resistant substrate. High-speed finishing of gray cast irons and medium-speed finishing of alloy steels that are in a hardness range of 35–50 HRC. Can withstand light interruptions. Alumina coating enables higher cutting speeds.	P											
			M											
			K											

## Small Hole Boring Inserts



Coatings provide high-speed capability and are engineered for finishing to light roughing.

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

Grade	Coating	Grade Description	wear resistance ← → toughness																			
			05	10	15	20	25	30	35	40	45											
CG6		Coated carbide. CVD — TiC-TiCN-TiN. Tri-phase coating on a hard, low binder content, fine-grained grade. High-speed, general-purpose grade for all kinds of steel. Gold in color.	P																			
	M																					
CG5		A PVD-TiN-coated grade. Straight 9.5% Co substrate. Submicron grain. For general-purpose machining of most steels, stainless steels, high-temperature alloys, titanium, irons, and non-ferrous materials. Performs best at low speeds and will handle interruptions and high feed rates.	P																			
	M																					
CG55		A PVD-TiN coating over a very wear-resistant, unalloyed carbide substrate. For general-purpose machining of most steels, stainless steels, high-temperature alloys, titanium, irons, and non-ferrous materials. Grade provides combination of high edge strength and wear resistance. Coating increases wear resistance and reduces problems with built-up edge. The substrate offers superior thermal deformation resistance and depth-of-cut notch resistance.	P																			
	M																					
CBN6		PcBN tip brazed onto a carbide insert. Recommended for machining hardened steel (45–65 HRC). Use on bearing steel, hot and cold work tool steels, high-speed steels, die steels, case-hardened steels, carburized and nitrided irons, and some hard coatings. Can be run both dry and wet.	P																			
	M																					
CPD1		Polycrystalline diamond (PCD) compact grade provides exceptional hardness and abrasion resistance. CPD1 is a superior finish boring grade that will significantly improve workpiece tolerances, surface finishes, and insert tool life in high-silicon aluminum, copper, aluminum carbon graphite, hard rubber, plastics, and/or wood.	H																			
	N																					

INDEXABLE MILLING

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# Speed and Feed Chart

## Positive Inserts • Inch

Material Group		Cutting Speed – vc SFM																	
		C2			C25			C3			CG5			CG55			CG6		
		min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
P	ap [inch]	-	-	-	-	-	-	-	-	-	.002	-	.012	.002	-	.012	.002	-	.012
	f [inch]	-	-	-	-	-	-	-	-	-	.012	-	.001	.012	-	.001	.012	-	.001
	0/1	-	-	-	-	-	-	0/1	-	-	305	<b>380</b>	460	340	<b>420</b>	505	415	<b>515</b>	620
	2	-	-	-	-	-	-	-	-	-	200	<b>250</b>	300	220	<b>275</b>	330	270	<b>335</b>	405
	3	-	-	-	-	-	-	-	-	-	200	<b>250</b>	300	220	<b>275</b>	330	270	<b>335</b>	405
	4	-	-	-	-	-	-	-	-	-	155	<b>195</b>	235	170	<b>215</b>	260	210	<b>260</b>	315
	5	-	-	-	-	-	-	-	-	-	200	<b>250</b>	300	220	<b>275</b>	330	270	<b>335</b>	405
6	-	-	-	-	-	-	-	-	-	135	<b>165</b>	200	150	<b>185</b>	225	180	<b>220</b>	265	
M	ap [inch]	.002	-	.012	.002	-	.012	.002	-	.012	.002	-	.012	.002	-	.012	.002	-	.012
	f [inch]	.001	-	.012	.001	-	.012	.001	-	.012	.001	-	.012	.001	-	.012	.001	-	.012
	1	180	<b>225</b>	270	205	<b>255</b>	310	205	<b>255</b>	310	240	<b>300</b>	360	265	<b>330</b>	400	305	<b>380</b>	460
	2	165	<b>205</b>	250	185	<b>230</b>	280	185	<b>230</b>	280	220	<b>270</b>	325	240	<b>300</b>	360	280	<b>345</b>	415
3	120	<b>150</b>	185	140	<b>170</b>	210	140	<b>170</b>	210	160	<b>200</b>	245	180	<b>220</b>	270	205	<b>255</b>	310	
K	ap [inch]	.002	-	.012	.002	-	.012	.002	-	.012	.002	-	.012	.002	-	.012	.002	-	.012
	f [inch]	.001	-	.012	.001	-	.012	.001	-	.012	.001	-	.012	.001	-	.012	.001	-	.012
	1	170	<b>213</b>	255	190	<b>235</b>	285	190	<b>235</b>	285	195	<b>240</b>	295	220	<b>270</b>	325	240	<b>300</b>	360
	2	220	<b>270</b>	330	240	<b>300</b>	360	240	<b>300</b>	360	250	<b>310</b>	375	275	<b>345</b>	415	305	<b>380</b>	460
3	160	<b>200</b>	240	180	<b>220</b>	265	180	<b>220</b>	265	180	<b>225</b>	270	200	<b>250</b>	300	220	<b>275</b>	330	
N	ap [inch]	.002	-	.020	.002	-	.020	.002	-	.020	.002	-	.020	.002	-	.020	-	-	-
	f [inch]	.001	-	.012	.001	-	.012	.001	-	.012	.001	-	.012	.001	-	.012	-	-	-
	1	1320	<b>1650</b>	1980	1320	<b>1650</b>	1980	1320	<b>1650</b>	1980	1320	<b>1650</b>	1980	1455	<b>1815</b>	2180	-	-	-
	2	970	<b>1210</b>	1450	970	<b>1215</b>	1460	970	<b>1215</b>	1460	970	<b>1215</b>	1460	1070	<b>1335</b>	1600	-	-	-
	3	225	<b>280</b>	340	225	<b>280</b>	340	225	<b>280</b>	340	275	<b>340</b>	410	300	<b>375</b>	450	-	-	-
	4	1015	<b>1250</b>	1520	1010	<b>1270</b>	1520	1010	<b>1270</b>	1520	455	<b>570</b>	690	505	<b>630</b>	760	-	-	-
	5	480	<b>600</b>	720	480	<b>600</b>	720	480	<b>600</b>	720	580	<b>720</b>	865	640	<b>795</b>	955	-	-	-
	6	460	<b>575</b>	690	460	<b>575</b>	690	460	<b>575</b>	690	555	<b>690</b>	830	610	<b>765</b>	920	-	-	-
7	780	<b>975</b>	1170	780	<b>980</b>	1175	780	<b>980</b>	1175	800	<b>1000</b>	1200	875	<b>1100</b>	1320	-	-	-	
S	ap [inch]	.001	-	.008	.001	-	.008	.001	-	.008	.001	-	.008	.001	-	.008	-	-	-
	f [inch]	.001	-	.005	.001	-	.005	.001	-	.005	.001	-	.005	.001	-	.005	-	-	-
	1	95	<b>120</b>	145	95	<b>120</b>	145	95	<b>120</b>	145	95	<b>120</b>	145	108	<b>133</b>	163	-	-	-
	2	75	<b>95</b>	115	75	<b>95</b>	120	75	<b>95</b>	120	75	<b>95</b>	120	87	<b>107</b>	130	-	-	-
	3	75	<b>95</b>	115	75	<b>95</b>	120	75	<b>95</b>	120	105	<b>130</b>	160	120	<b>145</b>	175	-	-	-
4	80	<b>100</b>	120	80	<b>100</b>	120	80	<b>100</b>	120	-	-	-	-	-	-	-	-	-	
H	ap [inch]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	f [inch]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

NOTE: Speed and feed rates and depth of cut may vary depending on materials and machining conditions including, but not limited to, tool overhang, tool size, and finished surface requirements.

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

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## Positive Inserts • Inch

Material Group		Cutting Speed – vc SFM														
		CM1			ALO			TN7			CBN6			CPD1		
		min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
P	ap [inch]	.002	–	.012	.002	–	.012	.002	–	.012	–	–	–	–	–	–
	f [inch]	.012	–	.001	.012	–	.001	.012	–	.001	–	–	–	–	–	–
	0/1	180	<b>220</b>	265	540	<b>675</b>	810	650	<b>810</b>	975	–	–	–	–	–	–
	2	115	<b>140</b>	175	350	<b>440</b>	530	420	<b>525</b>	630	–	–	–	–	–	–
	3	115	<b>140</b>	175	350	<b>440</b>	530	420	<b>525</b>	630	–	–	–	–	–	–
	4	90	<b>110</b>	135	275	<b>340</b>	410	330	<b>410</b>	495	–	–	–	–	–	–
	5	115	<b>140</b>	175	350	<b>440</b>	525	420	<b>520</b>	628	–	–	–	–	–	–
6	80	<b>95</b>	115	235	<b>290</b>	350	280	<b>350</b>	420	–	–	–	–	–	–	
M	ap [inch]	.002	–	.012	.002	–	.012	.002	–	.012	–	–	–	–	–	–
	f [inch]	.001	–	.012	.001	–	.012	.001	–	.012	–	–	–	–	–	–
	1	180	<b>220</b>	265	345	<b>430</b>	520	340	<b>420</b>	505	–	–	–	–	–	–
	2	160	<b>200</b>	240	315	<b>390</b>	470	305	<b>380</b>	460	–	–	–	–	–	–
3	120	<b>150</b>	180	235	<b>295</b>	355	225	<b>280</b>	340	–	–	–	–	–	–	
K	ap [inch]	.002	–	.012	.002	–	.012	.002	–	.012	–	–	–	–	–	–
	f [inch]	.001	–	.012	.001	–	.012	.001	–	.012	–	–	–	–	–	–
	1	150	<b>190</b>	230	410	<b>510</b>	615	270	<b>340</b>	410	–	–	–	–	–	–
	2	190	<b>240</b>	290	520	<b>650</b>	780	345	<b>430</b>	520	–	–	–	–	–	–
3	140	<b>175</b>	210	380	<b>470</b>	565	255	<b>315</b>	380	–	–	–	–	–	–	
N	ap [inch]	.002	–	.020	–	–	–	.002	–	.020	–	–	–	.002	–	.020
	f [inch]	.001	–	.012	–	–	–	.001	–	.012	–	–	–	.001	–	.012
	1	1320	<b>1650</b>	1980	–	–	–	1320	<b>1650</b>	1980	–	–	–	2800	<b>3500</b>	4200
	2	970	<b>1215</b>	1460	–	–	–	970	<b>1210</b>	1455	–	–	–	2130	<b>2665</b>	3200
	3	225	<b>280</b>	340	–	–	–	265	<b>330</b>	400	–	–	–	1200	<b>1500</b>	1800
	4	330	<b>410</b>	490	–	–	–	635	<b>790</b>	955	–	–	–	1065	<b>1330</b>	1600
	5	480	<b>600</b>	720	–	–	–	640	<b>800</b>	960	–	–	–	1120	<b>1400</b>	1680
	6	460	<b>575</b>	690	–	–	–	580	<b>725</b>	870	–	–	–	1100	<b>1375</b>	1650
7	780	<b>975</b>	1175	–	–	–	795	<b>990</b>	1195	–	–	–	1730	<b>2170</b>	2600	
S	ap [inch]	.001	–	.008	–	–	–	–	–	–	.001	–	.008	–	–	–
	f [inch]	.001	–	.005	–	–	–	–	–	–	.001	–	.005	–	–	–
	1	85	<b>105</b>	130	–	–	–	–	–	–	290	<b>360</b>	435	–	–	–
	2	65	<b>80</b>	100	–	–	–	–	–	–	230	<b>280</b>	340	–	–	–
	3	90	<b>110</b>	135	–	–	–	–	–	–	320	<b>400</b>	480	–	–	–
4	75	<b>90</b>	110	–	–	–	–	–	–	–	–	–	–	–	–	
H	ap [inch]	–	–	–	–	–	–	–	–	–	.001	–	.008	–	–	–
	f [inch]	–	–	–	–	–	–	–	–	–	.001	–	.005	–	–	–
	1	–	–	–	–	–	–	–	–	–	360	<b>450</b>	540	–	–	–
	2	–	–	–	–	–	–	–	–	–	340	<b>420</b>	505	–	–	–
	3	–	–	–	–	–	–	–	–	–	320	<b>400</b>	480	–	–	–
4	–	–	–	–	–	–	–	–	–	290	<b>360</b>	435	–	–	–	

NOTE: Speed and feed rates and depth of cut may vary depending on materials and machining conditions including, but not limited to, tool overhang, tool size, and finished surface requirements.

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## Positive Inserts • Metric

Material Group		Cutting Speed – vc m/min																	
		C2			C25			C3			CG5			CG55			CG6		
		min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
P	ap [mm]	-	-	-	-	-	-	-	-	-	0,051	-	0,300	0,051	-	0,300	0,051	-	0,300
	f [mm/rev]	-	-	-	-	-	-	-	-	-	0,025	-	0,300	0,025	-	0,300	0,025	-	0,300
	0/1	-	-	-	-	-	-	-	-	-	95	115	140	105	130	155	125	155	190
	2	-	-	-	-	-	-	-	-	-	60	75	90	65	85	100	80	100	125
	3	-	-	-	-	-	-	-	-	-	60	75	90	65	85	100	80	100	125
	4	-	-	-	-	-	-	-	-	-	45	60	70	50	65	80	65	80	95
	5	-	-	-	-	-	-	-	-	-	60	75	90	65	85	100	80	100	125
6	-	-	-	-	-	-	-	-	-	40	50	60	45	55	70	55	65	80	
M	ap [mm]	0,051	-	0,300	0,051	-	0,300	0,051	-	0,300	0,051	-	0,300	0,051	-	0,300	0,051	-	0,300
	f [mm/rev]	0,025	-	0,300	0,025	-	0,300	0,025	-	0,300	0,025	-	0,300	0,025	-	0,300	0,025	-	0,300
	1	55	70	80	60	80	95	60	80	95	75	90	110	80	100	120	95	115	140
	2	50	60	75	55	70	85	55	70	85	65	80	100	75	90	110	85	105	125
3	35	45	55	45	50	65	45	50	65	50	60	75	55	65	80	60	80	95	
K	ap [mm]	0,051	-	0,300	0,051	-	0,300	0,051	-	0,300	0,051	-	0,300	0,051	-	0,300	0,051	-	0,300
	f [mm/rev]	0,025	-	0,300	0,025	-	0,300	0,025	-	0,300	0,025	-	0,300	0,025	-	0,300	0,025	-	0,300
	1	50	65	80	60	70	85	60	70	85	60	75	90	65	80	100	75	90	110
	2	65	80	100	75	90	110	75	90	110	75	95	115	85	105	125	95	115	140
3	50	60	75	55	65	80	55	65	80	55	70	80	60	75	90	65	85	100	
N	ap [mm]	0,051	-	0,300	0,051	-	0,300	0,051	-	0,300	0,051	-	0,300	0,051	-	0,300	-	-	-
	f [mm/rev]	0,025	-	0,300	0,025	-	0,300	0,025	-	0,300	0,025	-	0,300	0,025	-	0,300	-	-	-
	1	400	505	605	400	505	605	400	505	605	400	505	605	445	555	665	-	-	-
	2	295	370	440	295	370	445	295	370	445	295	370	445	325	405	490	-	-	-
	3	70	85	105	70	85	105	70	85	105	85	105	125	90	115	135	-	-	-
	4	310	380	465	310	385	465	310	385	465	140	175	210	155	190	230	-	-	-
	5	145	185	220	145	185	220	145	185	220	175	220	265	195	240	290	-	-	-
	6	140	175	210	140	175	210	140	175	210	170	210	255	185	235	280	-	-	-
7	240	295	355	240	300	360	240	300	360	245	305	365	265	335	400	-	-	-	
S	ap [mm]	0,025	-	0,200	0,025	-	0,200	0,025	-	0,200	0,025	-	0,200	0,025	-	0,200	-	-	-
	f [mm/rev]	0,025	-	0,127	0,025	-	0,127	0,025	-	0,127	0,025	-	0,127	0,025	-	0,127	-	-	-
	1	30	35	45	30	35	45	30	35	45	30	35	45	35	40	50	-	-	-
	2	25	30	35	25	30	35	25	30	35	25	30	35	25	35	40	-	-	-
	3	25	30	35	25	30	35	25	30	35	30	40	50	35	45	55	-	-	-
4	25	30	35	25	30	35	25	30	35	-	-	-	-	-	-	-	-	-	
H	ap [mm]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	f [mm/rev]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

NOTE: Speed and feed rates and depth of cut may vary depending on materials and machining conditions including, but not limited to, tool overhang, tool size, and finished surface requirements.

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## Positive Inserts • Metric

Material Group		Cutting Speed – vc m/min														
		CM1			ALO			TN7			CBN6			CPD1		
		min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
P	ap [mm]	0,051	–	0,300	0,051	–	0,300	0,051	–	0,300	–	–	–	–	–	–
	f [mm/rev]	0,025	–	0,300	0,025	–	0,300	0,025	–	0,300	–	–	–	–	–	–
	0/1	55	<b>65</b>	80	165	<b>205</b>	245	200	<b>245</b>	295	–	–	–	–	–	–
	2	35	<b>45</b>	55	105	<b>135</b>	160	130	<b>160</b>	190	–	–	–	–	–	–
	3	35	<b>45</b>	55	105	<b>135</b>	160	130	<b>160</b>	190	–	–	–	–	–	–
	4	25	<b>35</b>	40	85	<b>105</b>	125	100	<b>125</b>	150	–	–	–	–	–	–
	5	35	<b>45</b>	55	105	<b>135</b>	160	130	<b>160</b>	190	–	–	–	–	–	–
6	25	<b>30</b>	35	70	<b>90</b>	105	85	<b>105</b>	130	–	–	–	–	–	–	
M	ap [mm]	0,051	–	0,300	0,051	–	0,300	0,051	–	0,300	–	–	–	–	–	–
	f [mm/rev]	0,025	–	0,300	0,025	–	0,300	0,025	–	0,300	–	–	–	–	–	–
	1	55	<b>65</b>	80	105	<b>130</b>	160	105	<b>130</b>	155	–	–	–	–	–	–
	2	50	<b>60</b>	75	95	<b>120</b>	145	95	<b>115</b>	140	–	–	–	–	–	–
K	ap [mm]	0,051	–	0,300	0,051	–	0,300	0,051	–	0,300	–	–	–	–	–	–
	f [mm/rev]	0,025	–	0,300	0,025	–	0,300	0,025	–	0,300	–	–	–	–	–	–
	1	45	<b>60</b>	70	125	<b>155</b>	185	80	<b>105</b>	125	–	–	–	–	–	–
	2	60	<b>75</b>	90	160	<b>200</b>	240	105	<b>130</b>	160	–	–	–	–	–	–
N	ap [mm]	0,051	–	0,300	–	–	–	0,051	–	0,300	–	–	–	0,051	–	0,300
	f [mm/rev]	0,025	–	0,300	–	–	–	0,025	–	0,300	–	–	–	0,025	–	0,300
	1	400	<b>505</b>	605	–	–	–	400	<b>505</b>	605	–	–	–	855	<b>1065</b>	1280
	2	295	<b>370</b>	445	–	–	–	295	<b>370</b>	445	–	–	–	650	<b>810</b>	975
	3	70	<b>85</b>	105	–	–	–	80	<b>100</b>	120	–	–	–	365	<b>455</b>	550
	4	100	<b>125</b>	150	–	–	–	195	<b>240</b>	290	–	–	–	325	<b>405</b>	490
	5	145	<b>185</b>	220	–	–	–	195	<b>245</b>	295	–	–	–	340	<b>425</b>	510
	6	140	<b>175</b>	210	–	–	–	175	<b>220</b>	265	–	–	–	335	<b>420</b>	505
7	240	<b>295</b>	360	–	–	–	240	<b>300</b>	365	–	–	–	525	<b>660</b>	790	
S	ap [mm]	0,025	–	0,200	–	–	–	–	–	–	0,025	–	0,200	–	–	–
	f [mm/rev]	0,025	–	0,127	–	–	–	–	–	–	0,025	–	0,127	–	–	–
	1	25	<b>30</b>	40	–	–	–	–	–	–	90	<b>110</b>	135	–	–	–
	2	20	<b>25</b>	30	–	–	–	–	–	–	70	<b>85</b>	105	–	–	–
	3	25	<b>35</b>	40	–	–	–	–	–	–	100	<b>120</b>	145	–	–	–
4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
H	ap [mm]	–	–	–	–	–	–	–	–	–	0,025	–	0,200	–	–	–
	f [mm/rev]	–	–	–	–	–	–	–	–	–	0,025	–	0,127	–	–	–
	1	–	–	–	–	–	–	–	–	–	110	<b>135</b>	165	–	–	–
	2	–	–	–	–	–	–	–	–	–	105	<b>130</b>	155	–	–	–
	3	–	–	–	–	–	–	–	–	–	100	<b>120</b>	145	–	–	–
4	–	–	–	–	–	–	–	–	–	90	<b>110</b>	135	–	–	–	

NOTE: Speed and feed rates and depth of cut may vary depending on materials and machining conditions including, but not limited to, tool overhang, tool size, and finished surface requirements.

INDEXABLE MILLING

SOLID END MILLING

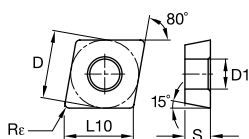
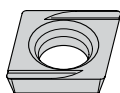
HOLEMAKING

TAPPING

TURNING



## CDHH • R/L



● first choice

○ alternate choice

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

ISO catalog number right hand	ANSI catalog number	D		L10		S		Rε		D1		C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1	
		mm	in	mm	in	mm	in	mm	in	mm	in												
CDHHS4T002R	CDHH120605R	3,97	5/32	4,03	.159	1,02	.040	0,18	.007	2,13	.084				2830731			2830706					
CDHHS4T004R	CDHH12061R	3,97	5/32	4,03	.159	1,02	.040	0,38	.015	2,13	.084				2830682								
left hand																							
CDHHS4T002L	CDHH120605L	3,97	5/32	4,03	.159	1,02	.040	0,18	.007	2,13	.084				2830724			2830712	2830700				
CDHHS4T004L	CDHH12061L	3,97	5/32	4,03	.159	1,02	.040	0,38	.015	2,13	.084				2830678								

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

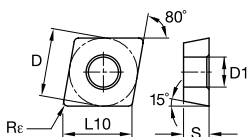
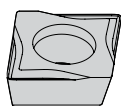
TURNING



# Small Hole Boring • Positive Inserts

INDEXABLE MILLING

## CDHH



- first choice
- alternate choice

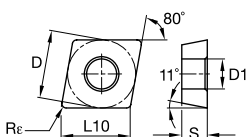
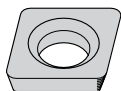
P	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
M	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

SOLID END MILLING

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1	
		mm	in	mm	in	mm	in	mm	in	mm	in												
<b>CDHHS4T002</b>	<b>CDHH120605</b>	3,97	5/32	4,03	.159	1,02	.040	0,18	.007	2,13	.084	○	○	○	○	○	○	○	○	○	○	○	○
<b>CDHHS4T004</b>	<b>CDHH12061</b>	3,97	5/32	4,10	.161	1,02	.040	0,38	.015	2,13	.084	○	○	○	○	○	○	○	○	○	○	○	○

HOLEMAKING

## CPHB



- first choice
- alternate choice

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

TAPPING

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1	
		mm	in	mm	in	mm	in	mm	in	mm	in												
<b>CPHB06T102</b>	<b>CPHB21205</b>	6,35	1/4	6,45	.254	1,90	.075	0,18	.007	2,79	.110	○	○	○	○	○	○	○	○	○	○	○	○
<b>CPHB06T104</b>	<b>CPHB2121</b>	6,35	1/4	6,45	.254	1,90	.075	0,38	.015	2,79	.110	○	○	○	○	○	○	○	○	○	○	○	○

TURNING

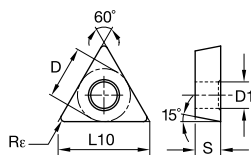
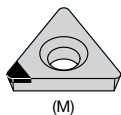








## TDHB



- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		R <sub>ε</sub>		D1		max DOC		C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in											
TDHB07S102M	TDHB130805M	4,06	.160	7,04	.277	1,19	.047	0,18	.007	2,39	.095	1,27	.050	•	•	•	•	•	•	•	•	•	•	•
TDHB07S104M	TDHB13081M	4,06	.160	7,04	.277	1,19	.047	0,38	.015	2,39	.094	1,27	.050	•	•	•	•	•	•	•	•	•	•	•
TDHB07S1X0	TDHB1308X0	4,06	.160	7,04	.277	1,19	.047	0,05	.002	2,41	.095	—	—	•	•	•	•	•	•	•	•	•	•	•
TDHB07S102	TDHB130805	4,06	.160	7,04	.277	1,19	.047	0,18	.007	2,41	.095	—	—	•	•	•	•	•	•	•	•	•	•	•
TDHB07S104	TDHB13081	4,06	.160	7,04	.277	1,19	.047	0,38	.015	2,41	.095	—	—	•	•	•	•	•	•	•	•	•	•	•
TDHB07S108	TDHB13082	4,06	.160	7,04	.277	1,19	.047	0,79	.031	2,41	.095	—	—	•	•	•	•	•	•	•	•	•	•	•

NOTE: Max DOC only applies to tipped inserts, which are designated with an "M" at the end of the catalog number.

INDEXABLE MILLING

SOLID END MILLING

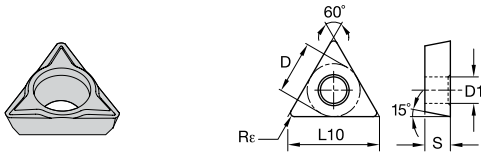
HOLE/MAKING

TAPPING

TURNING

# Small Hole Boring • Positive Inserts

## TDHH



- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		max DOC		C2	C25	C3	CG5	CG55	CG6	CM1	ALO	TN7	CBN6	CPD1
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in											
TDHH07S102	TDHH130805	4,06	.160	7,04	.277	1,19	.047	0,18	.007	2,41	.095	—	—	○	○	○	○	○	○	○	○	○	○	○
TDHH07S102L	TDHH130805L	4,06	.160	7,04	.277	1,19	.047	0,18	.007	2,41	.095	4,52	.178	○	○	○	●	○	○	○	○	○	○	○
TDHH07S102R	TDHH130805R	4,06	.160	7,04	.277	1,19	.047	0,18	.007	2,41	.095	4,52	.178	○	○	○	○	○	○	○	○	○	○	○
TDHH07S104L	TDHH13081L	4,06	.160	7,04	.277	1,19	.047	0,38	.015	2,41	.095	4,36	.172	○	○	○	○	○	○	○	○	○	○	○
TDHH07S104R	TDHH13081R	4,06	.160	7,04	.277	1,19	.047	0,38	.015	2,41	.095	4,36	.172	○	○	○	○	○	○	○	○	○	○	○
TDHH07S104	TDHH13081	4,06	.160	7,18	.283	1,19	.047	0,38	.015	2,41	.095	—	—	○	○	○	○	○	○	○	○	○	○	○

NOTE: Max DOC only applies to tipped inserts, which are designated with an "M" at the end of the catalog number.

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING











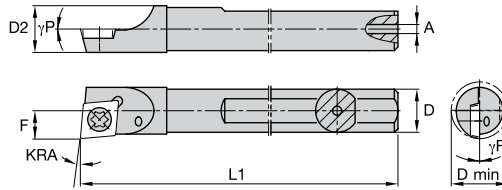








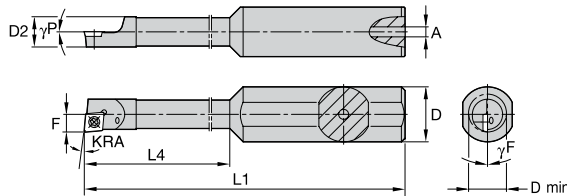
## CSBI



NOTE: KRA shown as -5°.

order number	catalog number	KRA	D	D min	D2	F	L1	A	γF°	γP°	gage insert
<b>right hand</b>											
2832371	CSBI16518757R	-7	.188	.180	.166	.095	2.500	.040	0.0°	0.0°	CD..120605
2832617	CSBI180187255R	-5	.188	.204	.180	.104	2.500	.040	0.0°	5.0°	CD..120605
2832553	CSBI187255R	-5	.188	.228	.203	.228	2.500	.040	0.0°	5.0°	CD..120605
2832442	CSBI25035R	-5	.250	.285	.260	.145	3.000	.040	0.0°	5.0°	CD..120605
2832566	CSBI187250R	0	.188	.244	.203	.122	2.500	.040	0.0°	5.0°	CD..120605
2832454	CSBI25030R	0	.250	.292	.260	.152	3.000	.040	0.0°	5.0°	CD..120605
<b>left hand</b>											
2832365	CSBI16518757L	-7	.188	.180	.166	.095	2.500	.040	0.0°	0.0°	CD..120605
2832623	CSBI180187255L	-5	.188	.204	.180	.104	2.500	.040	0.0°	5.0°	CD..120605
2832559	CSBI187255L	-5	.188	.228	.203	.116	2.500	.040	0.0°	5.0°	CD..120605
2832448	CSBI25035L	-5	.250	.285	.260	.145	3.000	.040	0.0°	5.0°	CD..120605

## CSBI • STEPPED



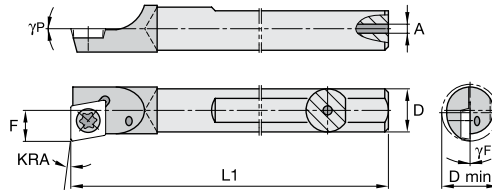
NOTE: KRA shown as -5°.

order number	catalog number	KRA	D	D min	D2	F	L1	L4	A	γF°	γP°	gage insert
<b>right hand</b>												
2832607	CSBI18037515R	-5	.375	.204	.180	.104	2.500	1.000	.040	0.0°	5.0°	CD..120605
2832596	CSBI18037555R	-5	.375	.204	.180	.104	2.500	.500	.040	0.0°	5.0°	CD..120605
2832535	CSBI20337515R	-5	.375	.228	.203	.116	2.500	1.000	.040	0.0°	5.0°	CD..120605
2832429	CSBI2503751255R	-5	.375	.285	.260	.145	2.500	1.250	.040	0.0°	5.0°	CD..120605
2832414	CSBI250375755R	-5	.375	.285	.260	.145	2.500	.750	.040	0.0°	5.0°	CD..120605
2832589	CSBI18050015R	-5	.500	.204	.180	.104	2.750	1.000	.040	0.0°	5.0°	CD..120605
2832577	CSBI18050055R	-5	.500	.204	.180	.104	2.750	.500	.040	0.0°	5.0°	CD..120605
2832488	CSBI20350015R	-5	.500	.228	.203	.116	2.750	1.000	.040	0.0°	5.0°	CD..120605
2832467	CSBI20350055R	-5	.500	.228	.203	.116	2.750	.500	.040	0.0°	5.0°	CD..120605
2832398	CSBI2505001255R	-5	.500	.285	.260	.145	2.750	1.250	.040	0.0°	5.0°	CD..120605
2832374	CSBI250500755R	-5	.500	.285	.260	.145	2.750	.750	.040	0.0°	5.0°	CD..120605
2832547	CSBI20337510R	0	.375	.234	.203	.122	2.500	1.000	.040	0.0°	5.0°	CD..120605
<b>left hand</b>												
2832602	CSBI18037555L	-5	.375	.204	.180	.104	2.500	.500	.040	0.0°	5.0°	CD..120605
2832419	CSBI250375755L	-5	.375	.285	.260	.145	2.500	.750	.040	0.0°	5.0°	CD..120605
2832583	CSBI18050055L	-5	.500	.204	.180	.104	2.750	.500	.040	0.0°	5.0°	CD..120605
2832494	CSBI20350015L	-5	.500	.228	.203	.116	2.750	1.000	.040	0.0°	5.0°	CD..120605



# Small Hole Boring Bars for Turning

## CCBI



NOTE: KRA shown as  $-5^\circ$ .

order number	catalog number	KRA	D	D min	F	L1	A	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert
<b>right hand</b>										
2831949	CCBI16515667R	-7	.156	.180	.095	6.000	.040	0.0°	0.0°	CD..120605
2832281	CCBI18018745R	-5	.188	.208	.104	4.000	.040	0.0°	5.0°	CD..120605
2832276	CCBI18018765R	-5	.188	.208	.104	6.000	.040	0.0°	5.0°	CD..120605
2832183	CCBI18745R	-5	.188	.218	.111	4.000	.040	0.0°	5.0°	CD..120605
2832164	CCBI18765R	-5	.188	.218	.111	6.000	.040	0.0°	5.0°	CD..120605
2832049	CCBI25045R	-5	.250	.285	.145	4.000	.047	0.0°	5.0°	CD..120605
2832029	CCBI25065R	-5	.250	.285	.145	6.000	.047	0.0°	5.0°	CD..120605
2832270	CCBI31265R	-5	.312	.356	.185	6.000	.093	0.0°	5.0°	CD..120605
2832195	CCBI18740R	0	.187	.224	.117	4.000	.040	0.0°	5.0°	CD..120605
2832062	CCBI25040R	0	.250	.292	.152	4.000	.047	0.0°	5.0°	CD..120605
2832234	CCBI31260R	0	.313	.356	.185	6.000	.093	0.0°	5.0°	CD..120605
<b>left hand</b>										
2831945	CCBI16515667L	-7	.156	.180	.095	6.000	.040	0.0°	0.0°	CD..120605
2832287	CCBI18018745L	-5	.188	.208	.104	4.000	.040	0.0°	5.0°	CD..120605
2832190	CCBI18745L	-5	.188	.218	.111	4.000	.040	0.0°	5.0°	CD..120605
2832172	CCBI18765L	-5	.188	.218	.111	6.000	.040	0.0°	5.0°	CD..120605
2832057	CCBI25045L	-5	.250	.285	.145	4.000	.047	0.0°	5.0°	CD..120605
2832033	CCBI25065L	-5	.250	.285	.145	6.000	.047	0.0°	5.0°	CD..120605
2832265	CCBI31265L	-5	.313	.356	.185	6.000	.093	0.0°	5.0°	CD..120605
2832200	CCBI18740L	0	.188	.224	.117	4.000	.040	0.0°	5.0°	CD..120605

INDEXABLE MILLING

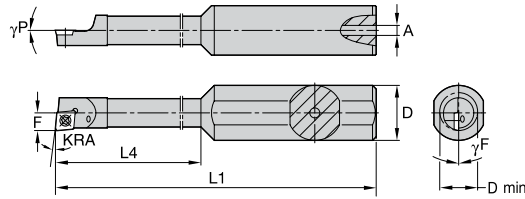
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

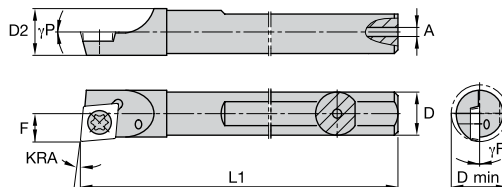
## CCBI • STEPPED



NOTE: KRA shown as -5°.

order number	catalog number	KRA	D	D min	F	L1	L4	A	γF°	γP°	gage insert
<b>right hand</b>											
2832254	CCBI18050018755R	-5	.500	.208	.104	3.375	1.875	.125	0.0°	5.0°	CD..120605
2832241	CCBI1805008755R	-5	.500	.208	.104	2.375	.875	.040	0.0°	5.0°	CD..120605
2832141	CCBI20350015R	-5	.500	.234	.119	2.500	1.000	.040	0.0°	5.0°	CD..S4T002
2832120	CCBI20350025R	-5	.500	.234	.119	3.500	2.000	.125	0.0°	5.0°	CD..120605
2832006	CCBI2505001255R	-5	.500	.285	.145	2.750	1.250	.125	0.0°	5.0°	CD..120605
2832205	CCBI1806258755R	-5	.625	.208	.104	3.375	.875	.125	0.0°	5.0°	CD..120605
2832101	CCBI20362515R	-5	.625	.234	.119	3.500	1.000	.125	0.0°	5.0°	CD..S4T002
2831976	CCBI2506251255R	-5	.625	.285	.145	3.750	1.250	.125	0.0°	5.0°	CD..120605
2832152	CCBI20350010R	0	.500	.234	.125	2.500	1.000	.125	0.0°	5.0°	CD..S4T002
3337598	CCBI2505001250R	0	.500	.292	.152	2.750	1.250	.125	0.0°	5.0°	CD..120605
<b>left hand</b>											
2832247	CCBI1805008755L	-5	.500	.208	.104	2.375	.875	.125	0.0°	5.0°	CD..120605
2832147	CCBI20350015L	-5	.500	.234	.119	2.500	1.000	.125	0.0°	5.0°	CD..S4T002
2832012	CCBI2505001255L	-5	.500	.285	.145	2.750	1.250	.125	0.0°	5.0°	CD..120605
2832211	CCBI1806258755L	-5	.625	.208	.104	3.375	.875	.125	0.0°	5.0°	CD..120605

## QSMI



NOTE: KRA shown as -5°.

order number	catalog number	KRA	D	D min	D2	F	L1	A	γF°	γP°	gage insert
<b>right hand</b>											
2825394	QSMI62565R	-5	.625	.670	.635	.343	6.000	.156	0.0°	0.0°	CP..2....
2825464	QSMI37545R	0	.375	.481	.385	.278	3.997	.125	0.0°	0.0°	CP..2....
2825455	QSMI50055R	0	.500	.605	.510	.340	4.997	.156	0.0°	0.0°	CP..2....
<b>left hand</b>											
2825457	QSMI37545L	0	.375	.481	.385	.278	3.997	.125	0.0°	0.0°	CP..2....

NOTE: D min and F calculated using the CPG grooving-style insert.

# Small Hole Boring Bars for Turning

INDEXABLE MILLING

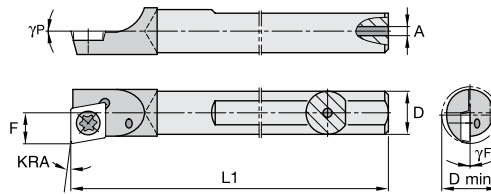
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## QCM1

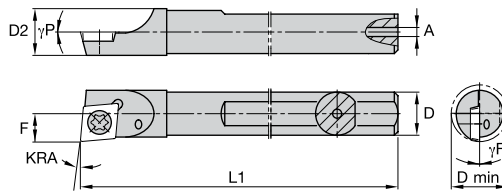


NOTE: KRA shown as  $-5^\circ$ .

order number	catalog number	KRA	D	D min	F	L1	A	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert
<b>right hand</b>										
2825117	QCM137565R	-5	.375	.420	.218	6.000	.125	0.0°	0.0°	CPHB21205
2825105	QCM150085R	-5	.500	.545	.280	8.000	.188	0.0°	0.0°	CP..21205
<b>left hand</b>										
2825112	QCM137565L	-5	.375	.420	.218	6.000	.125	0.0°	0.0°	CP..2..

NOTE: F calculated using the CPG-style insert.

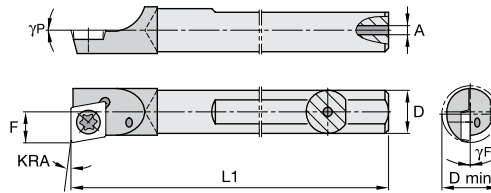
## SSBIC



NOTE: KRA shown as  $-5^\circ$ .

order number	catalog number	KRA	D	D min	D2	F	L1	A	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert
<b>right hand</b>											
2822637	SSBIC62575R	-5	.625	.680	.635	.353	7.000	.156	0.0°	0.0°	CP..3252

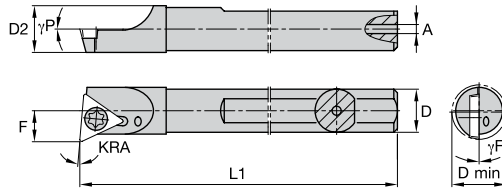
## SDBIC



NOTE: KRA shown as  $-5^\circ$ .

order number	catalog number	KRA	D	D min	F	L1	A	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert
<b>right hand</b>										
2822301	SDBIC62565R	-5	.625	.680	.353	6.000	.218	-5.0°	0.0°	CPMT3252
2822289	SDBIC625105R	-5	.625	.680	.353	10.000	.218	-5.0°	0.0°	CPMT3252

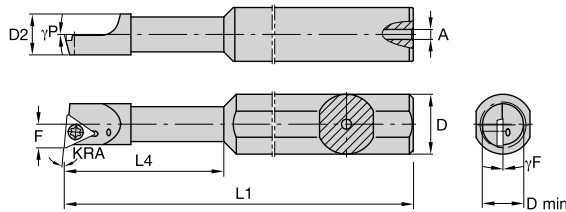
## FSBI



NOTE: KRA shown as -5°.

order number	catalog number	KRA	D	D min	D2	F	L1	A	γF°	γP°	gage insert
<b>right hand</b>											
2830455	FSBI187355R	-5	.188	.275	.197	.123	3.500	.040	0.0°	5.0°	TD..130805
2830358	FSBI25045R	-5	.250	.296	.260	.156	4.000	.040	0.0°	5.0°	TD..130805
2830260	FSBI31245R	-5	.313	.358	.322	.187	4.000	.060	0.0°	5.0°	TD..130805
<b>left hand</b>											
2830270	FSBI31245L	-5	.313	.358	.322	.187	4.000	.060	0.0°	5.0°	TD..130805

## FSBI • STEPPED



NOTE: KRA shown as -5°.

order number	catalog number	KRA	D	D min	D2	F	L1	L4	A	γF°	γP°	gage insert
<b>right hand</b>												
2830430	FSBI20350015R	-5	.500	.275	.203	.126	3.000	1.000	.040	0.0°	5.0°	TD..130805
2830405	FSBI20350055R	-5	.500	.275	.203	.126	3.000	.500	.040	0.0°	5.0°	TD..130805
2830335	FSBI2505001255R	-5	.500	.296	.259	.156	3.000	1.250	.040	0.0°	5.0°	TD..130805
2830312	FSBI250500755R	-5	.500	.296	.259	.156	3.000	.750	.040	0.0°	5.0°	TD..130805
2830245	FSBI312500155R	-5	.500	.358	.321	.187	3.000	1.500	.060	0.0°	5.0°	TD..130805
2830212	FSBI31250015R	-5	.500	.358	.321	.187	3.000	1.000	.060	0.0°	5.0°	TD..130805
2830380	FSBI20362555R	-5	.625	.275	.203	.126	4.000	.500	.040	0.0°	5.0°	TD..130805
2830284	FSBI250625755R	-5	.625	.296	.259	.156	4.000	.750	.040	0.0°	5.0°	TD..130805
2830189	FSBI312625155R	-5	.625	.358	.321	.187	4.000	1.500	.060	0.0°	5.0°	TD..130805
2830185	FSBI31262515R	-5	.625	.358	.321	.187	4.000	1.000	.060	0.0°	5.0°	TD..130805
2830417	FSBI20350050R	0	.500	.275	.203	.134	3.000	.500	.040	0.0°	5.0°	TD..130805
2830329	FSBI250500750R	0	.500	.296	.259	.156	3.000	.750	.040	0.0°	5.0°	TD..130805
<b>left hand</b>												
2830324	FSBI250500755L	-5	.500	.296	.259	.156	3.000	.750	.040	0.0°	5.0°	TD..130805
3383045	FSBI2506251250L	0	.625	.296	.259	.156	4.000	1.250	.040	0.0°	5.0°	TD..130805

# Small Hole Boring Bars for Turning

INDEXABLE MILLING

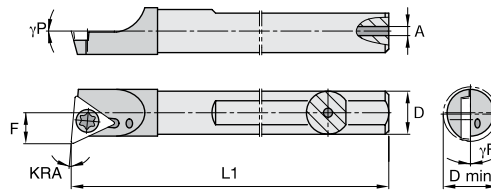
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

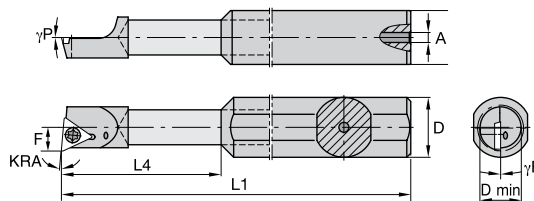
## FCBI



NOTE: KRA shown as  $-5^\circ$ .

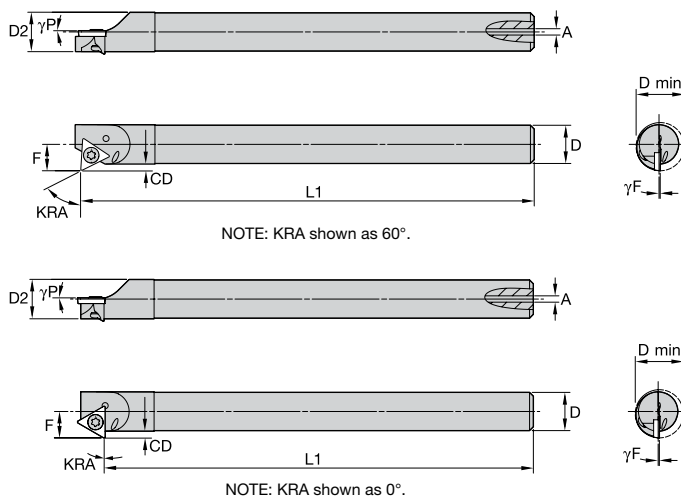
order number	catalog number	KRA	D	D min	F	L1	A	$\gamma F^\circ$	$\gamma P^\circ$	gage insert
<b>right hand</b>										
2830020	FCBI18745R	-5	.188	.275	.126	4.000	.040	0.0°	5.0°	TD..130805
2829995	FCBI18765R	-5	.188	.275	.126	6.000	.040	0.0°	5.0°	TD..130805
2829897	FCBI25045R	-5	.250	.296	.156	4.000	.047	0.0°	5.0°	TD..130805
2829764	FCBI31265R	-5	.312	.358	.187	6.000	.093	0.0°	5.0°	TD..130805
2829881	FCBI25065R	-5	.250	.296	.156	6.000	.047	0.0°	5.0°	TDHB130805
2829787	FCBI31245R	-5	.312	.358	.187	4.000	.093	0.0°	5.0°	TDHB130805
2830032	FCBI18740R	0	.188	.275	.134	4.000	.040	0.0°	5.0°	TD..130805
2829908	FCBI25040R	0	.250	.296	.156	4.000	.047	0.0°	5.0°	TD..130805
2829892	FCBI25060R	0	.250	.296	.156	6.000	.047	0.0°	5.0°	TD..130805
2829799	FCBI31240R	0	.313	.358	.187	4.000	.093	0.0°	5.0°	TD..130805
2829777	FCBI31260R	0	.313	.358	.187	6.000	.093	0.0°	5.0°	TD..130805
<b>left hand</b>										
2830027	FCBI18745L	-5	.187	.275	.126	4.000	.040	0.0°	5.0°	TD..130805
2829903	FCBI25045L	-5	.250	.296	.156	4.000	.047	0.0°	5.0°	TD..130805
2829793	FCBI31245L	-5	.312	.358	.187	4.000	.093	0.0°	5.0°	TD..130805
2829770	FCBI31265L	-5	.312	.358	.187	6.000	.093	0.0°	5.0°	TD..130805

## FCBI • STEPPED



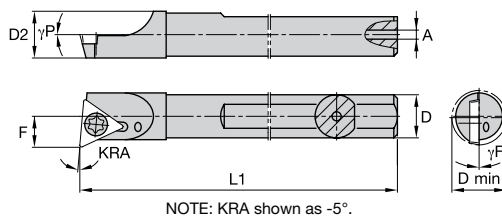
order number	catalog number	KRA	D	D min	F	L1	L4	A	$\gamma F^\circ$	$\gamma P^\circ$	gage insert
<b>right hand</b>											
2829979	FCBI20350015R	-5	.500	.275	.126	2.500	1.000	.125	0.0°	5.0°	TD..130805
2829857	FCBI2505001255R	-5	.500	.296	.156	2.750	1.250	.250	0.0°	5.0°	TD..130805
2829740	FCBI312500155R	-5	.500	.358	.187	3.000	1.500	.125	0.0°	5.0°	TD..130805
2829942	FCBI20362515R	-5	.625	.275	.126	3.500	1.000	.125	0.0°	5.0°	TD..130805
2829828	FCBI2506251255R	-5	.625	.296	.156	3.750	1.250	.250	0.0°	5.0°	TD..130805
2829704	FCBI312625155R	-5	.625	.358	.187	4.000	1.500	.125	0.0°	5.0°	TD..130805
2829751	FCBI312500150R	0	.500	.358	.187	3.000	1.500	.125	0.0°	5.0°	TD..130805
<b>left hand</b>											
2829835	FCBI2506251255L	-5	.625	.296	.156	3.750	1.250	.125	0.0°	5.0°	TD..130805

## FSRI



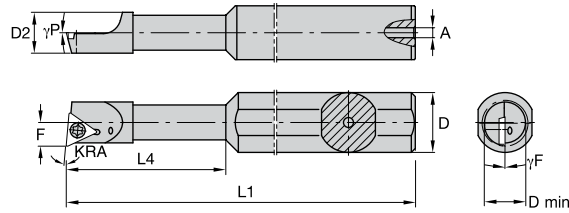
order number	catalog number	KRA	D	D min	D2	F	L1	CD	A	γF°	γP°	gage insert
right hand												
2830138	FSRI312350R	0	.313	.394	.322	.223	3.500	.062	.040	0.0°	0.0°	TD..130805
2830120	FSRI3123560R	30	.313	.407	.322	.236	3.500	.075	.040	0.0°	0.0°	TD..130805

## QSBI



order number	catalog number	KRA	D	D min	D2	F	L1	A	γF°	γP°	gage insert
right hand											
2825910	QSBI37555R	-5	.375	.438	.385	.221	5.000	.125	0.0°	5.0°	TP..21505
2825774	QSBI50065R	-5	.500	.563	.510	.296	6.000	.156	0.0°	5.0°	TP..21505
2825923	QSBI37550R	0	.375	.438	.385	.221	5.000	.125	0.0°	5.0°	TP..21505
2825788	QSBI50060R	0	.500	.563	.510	.296	6.000	.156	0.0°	5.0°	TP..21505
left hand											
2825917	QSBI37555L	-5	.375	.438	.385	.221	5.000	.125	0.0°	5.0°	TP..21505
2825781	QSBI50065L	-5	.500	.563	.510	.296	6.000	.156	0.0°	5.0°	TP..21505

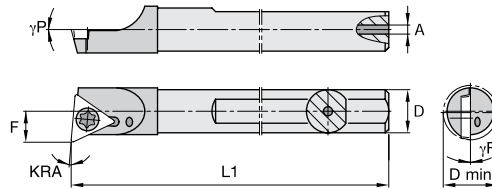
## QSBI • STEPPED



NOTE: KRA shown as  $-5^\circ$ .

order number	catalog number	KRA	D	D min	D2	F	L1	L4	A	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert
<b>right hand</b>												
2825884	QSBI37550011255R	-5	.500	.438	.390	.221	3.750	1.125	.080	0.0°	5.0°	TP..21505
2825854	QSBI37550018755R	-5	.500	.438	.390	.221	3.750	1.875	.080	0.0°	5.0°	TP..21505
2825832	QSBI37562511255R	-5	.625	.438	.390	.221	4.250	1.125	.080	0.0°	5.0°	TP..21505
2825816	QSBI37562518755R	-5	.625	.438	.390	.221	4.250	1.875	.080	0.0°	5.0°	TP..21505
2825753	QSBI500625155R	-5	.625	.563	.510	.296	4.250	1.500	.156	0.0°	5.0°	TP..21505
2825801	QSBI375750155R	-5	.750	.438	.390	.221	4.000	1.500	.080	0.0°	5.0°	TP..21505
2825720	QSBI625750255R	-5	.750	.688	.625	.353	4.500	2.500	.098	0.0°	5.0°	TP..21505
2825897	QSBI37550011250R	0	.500	.438	.390	.221	3.750	1.125	.080	0.0°	5.0°	TP..21505
<b>left hand</b>												
2825760	QSBI500625155L	-5	.625	.563	.510	.296	4.250	1.500	.156	0.0°	5.0°	TP..21505
3783153	QSBI500625255L	-5	.625	.563	.510	.296	4.250	2.500	.156	0.0°	5.0°	TP..21505

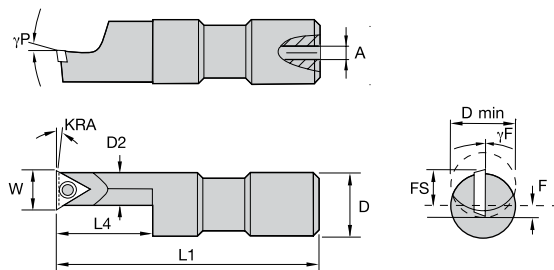
## QCB1



NOTE: KRA shown as  $-5^\circ$ .

order number	catalog number	KRA	D	D min	F	L1	A	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert
<b>right hand</b>										
2825290	QCB137565R	-5	.375	.438	.228	6.000	.125	0.0°	5.0°	TP..21505
2825265	QCB1375105R	-5	.375	.438	.228	10.000	.125	0.0°	5.0°	TP..21505
2825272	QCB150085R	-5	.500	.563	.296	8.000	.188	0.0°	5.0°	TP..21505
2825232	QCB1500105R	-5	.500	.563	.296	10.000	.188	0.0°	5.0°	TP..21505
2825304	QCB137560R	0	.375	.438	.228	6.000	.125	0.0°	5.0°	TP..21505
2825285	QCB150080R	0	.500	.563	.296	8.000	.188	0.0°	5.0°	TP..21505
<b>left hand</b>										
2825297	QCB137565L	-5	.375	.438	.228	6.000	.125	0.0°	5.0°	TP..21505
2825278	QCB150085L	-5	.500	.563	.296	8.000	.188	0.0°	5.0°	TP..21505

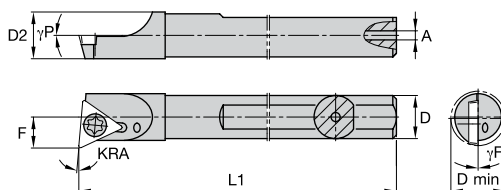
## QSOI



NOTE: KRA shown as -5°.

order number	catalog number	KRA	D	D min	D2	F	L1	L4	FS	W	A	γF°	γP°	gage insert
<b>right hand</b>														
2825640	QSOI375750155R	-5	.750	.750	.375	.023	3.750	1.500	—	—	.080	0.0°	5.0°	TP..21505
2825660	QSOI3126251250R	0	.625	.606	.312	.055	3.125	1.250	.156	.422	.060	0.0°	5.0°	TP..21505
2825647	QSOI375750150R	0	.750	.750	.375	.024	3.750	1.500	.188	.423	.080	0.0°	5.0°	TP..21505

## SSBI



NOTE: KRA shown as -5°.

order number	catalog number	KRA	D	D min	D2	F	L1	A	γF°	γP°	gage insert
<b>right hand</b>											
2823053	SSBI500255R	-5	.500	.668	.572	.339	2.500	.156	0.0°	5.0°	TP..3205
2823025	SSBI50065R	-5	.500	.668	.572	.339	6.000	.156	0.0°	5.0°	TP..3205
2822980	SSBI62545R	-5	.625	.720	.635	.393	4.000	.156	0.0°	5.0°	TP..3205
2822947	SSBI62575R	-5	.625	.720	.635	.393	7.000	.156	0.0°	5.0°	TP..3205
2822921	SSBI75045R	-5	.750	.850	.760	.460	4.000	.156	0.0°	5.0°	TP..3205
2822898	SSBI75085R	-5	.750	.850	.760	.460	8.000	.156	0.0°	5.0°	TP..3205
2823121	SSBI1000105R	-5	1.000	1.100	1.010	.585	10.000	.250	0.0°	5.0°	TP..3205
2823096	SSBI100055R	-5	1.000	1.100	1.010	.585	5.000	.250	0.0°	5.0°	TP..3205
2822935	SSBI75040R	0	.750	.850	.760	.460	4.000	.156	0.0°	5.0°	TP..3205
<b>left hand</b>											
2823032	SSBI50065L	-5	.500	.668	.572	.339	6.000	.156	0.0°	5.0°	TP..3205
2822987	SSBI62545L	-5	.625	.720	.635	.393	4.000	.156	0.0°	5.0°	TP..3205
2822954	SSBI62575L	-5	.625	.720	.635	.393	7.000	.156	0.0°	5.0°	TP..3205
2822901	SSBI75085L	-5	.750	.850	.760	.460	8.000	.156	0.0°	5.0°	TP..3205



# Small Hole Boring Bars for Turning

INDEXABLE MILLING

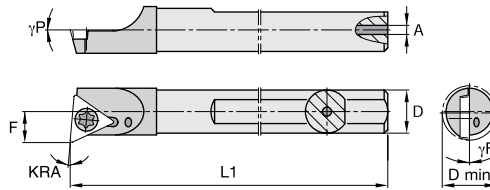
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

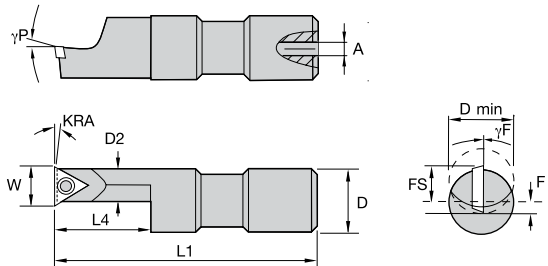
## SCBI



NOTE: KRA shown as  $-5^\circ$ .

order number	catalog number	KRA	D	D min	F	L1	A	$\gamma F^\circ$	$\gamma P^\circ$	gage insert
<b>right hand</b>										
2822500	SCBI62565R	-5	.625	.720	.393	6.000	.218	0.0°	5.0°	TP..3205
2822515	SCBI625105R	-5	.625	.720	.393	10.000	.218	0.0°	5.0°	TP..3205
2822454	SCBI75065R	-5	.750	.850	.460	6.000	.281	0.0°	5.0°	TP..3205
2822479	SCBI750105R	-5	.750	.850	.460	10.000	.281	0.0°	5.0°	TP..3205
2822561	SCBI1000125R	-5	1.000	1.100	.585	12.000	.312	0.0°	5.0°	TP..3205
<b>left hand</b>										
2822503	SCBI62565L	-5	.625	.720	.393	6.000	.218	0.0°	5.0°	TP..3205
2822460	SCBI75065L	-5	.750	.850	.460	6.000	.281	0.0°	5.0°	TP..3205

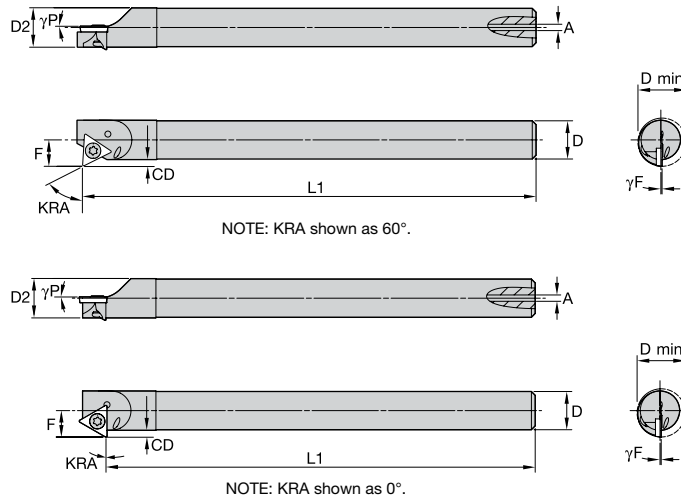
## SSOI



NOTE: KRA shown as  $-5^\circ$ .

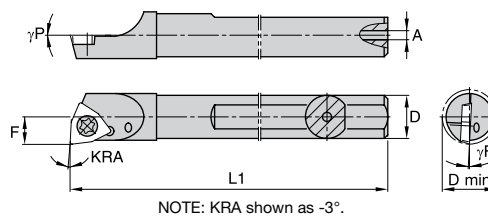
order number	catalog number	KRA	D	D min	D2	F	L1	L4	FS	W	A	$\gamma F^\circ$	$\gamma P^\circ$	gage insert
<b>right hand</b>														
2822843	SSOI5001000255R	-5	1.000	.969	.500	.070	4.750	2.500	—	—	.118	0.0°	5.0°	TP..3205
2822857	SSOI5001000150R	0	1.000	.969	.500	.070	3.750	1.500	.250	.640	.118	0.0°	5.0°	TP..3205
2822850	SSOI5001000250R	0	1.000	.969	.500	.070	4.750	2.500	.250	.640	.118	0.0°	5.0°	TP..3205

## QSRI



order number	catalog number	KRA	D	D min	D2	F	L1	CD	A	γF°	γP°	gage insert
right hand												
2825633	QSRI375450R	0	.375	.492	.370	.287	4.500	.102	.125	0.0°	0.0°	TP..21505
2825605	QSRI50050R	0	.500	.645	.510	.380	5.000	.125	.156	0.0°	0.0°	TP..21505
2825614	QSRI375560R	30	.375	.525	.390	.320	5.000	.125	.125	0.0°	0.0°	TP..21505
2825587	QSRI500660R	30	.500	.645	.510	.380	6.000	.125	.156	0.0°	0.0°	TP..21505
2825621	QSRI375545R	45	.375	.525	.390	.320	5.000	.125	.125	0.0°	0.0°	TP..21505
2825594	QSRI500645R	45	.500	.645	.510	.380	6.000	.125	.156	0.0°	0.0°	TP..21505

## GSBIW



order number	catalog number	KRA	D	D min	D2	F	L1	A	γF°	γP°	gage insert
right hand											
2828170	GSBIW18743R	-3	.188	.260	.228	.126	4.000	.040	-3.0°	0.0°	WP..1511
2828161	GSBIW25043R	-3	.250	.285	.260	.142	4.000	.040	-3.0°	0.0°	WP..1511
2828145	GSBIW31243R	-3	.313	.347	.322	.174	4.000	.040	-3.0°	0.0°	WP..1511

# Small Hole Boring Bars for Turning

INDEXABLE MILLING

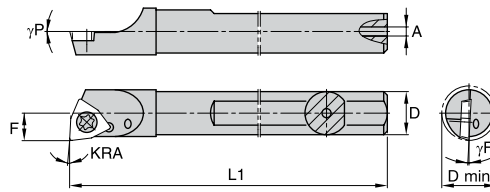
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

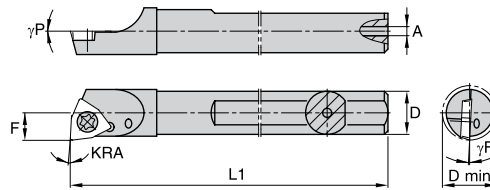
## QSB IW



NOTE: KRA shown as  $-3^\circ$ .

order number	catalog number	KRA	D	D min	D2	F	L1	A	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert
right hand											
2825364	QSB IW37553R	-3	.375	.413	.385	.211	5.000	.093	$-3.0^\circ$	$0.0^\circ$	WP..2151
2825351	QSB IW50063R	-3	.500	.538	.510	.272	6.000	.156	$-3.0^\circ$	$0.0^\circ$	WP..2151

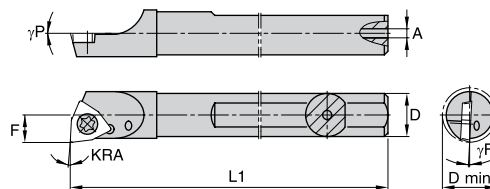
## SSB IW



NOTE: KRA shown as  $-3^\circ$ .

order number	catalog number	KRA	D	D min	D2	F	L1	A	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert
right hand											
2823167	SSB IW62573R	-3	.625	.673	.635	.345	7.000	.156	$-3.0^\circ$	$0.0^\circ$	WP..3251
2823155	SSB IW75083R	-3	.750	.797	.760	.407	8.000	.156	$-3.0^\circ$	$0.0^\circ$	WP..321

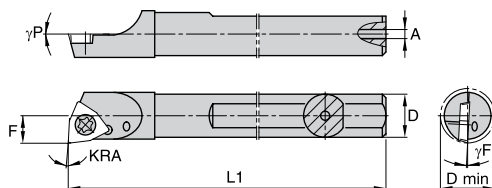
## SCB IW



NOTE: KRA shown as  $-3^\circ$ .

order number	catalog number	KRA	D	D min	F	L1	A	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert	
right hand											
2822603	SCB IW625103R	-3	.625	.673	.345	10.000	.218	$-3.0^\circ$	$0.0^\circ$	WP..3251	
2822591	SCB IW750103R	-3	.750	.797	.407	10.000	.281	$-3.0^\circ$	$0.0^\circ$	WP..321	

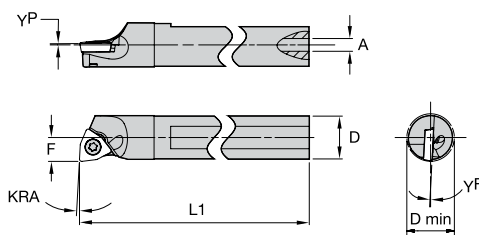
## QCBIW



NOTE: KRA shown as  $-3^\circ$ .

order number	catalog number	KRA	D	D min	F	L1	A	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert
<b>right hand</b>										
2825335	QCBIW37563R	-3	.375	.413	.211	6.000	.125	$-3.0^\circ$	$0.0^\circ$	WP..2151
2825324	QCBIW50083R	-3	.500	.538	.273	8.000	.188	$0.0^\circ$	$0.0^\circ$	WP..2151
<b>left hand</b>										
2825327	QCBIW37563L	-3	.375	.413	.211	6.000	.125	$-3.0^\circ$	$0.0^\circ$	WP..2151
2825318	QCBIW50083L	-3	.500	.538	.273	8.000	.188	$0.0^\circ$	$0.0^\circ$	WP..2151

## GCB IW

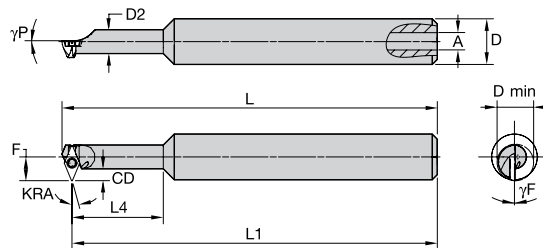


NOTE: KRA shown as  $-3^\circ$ .

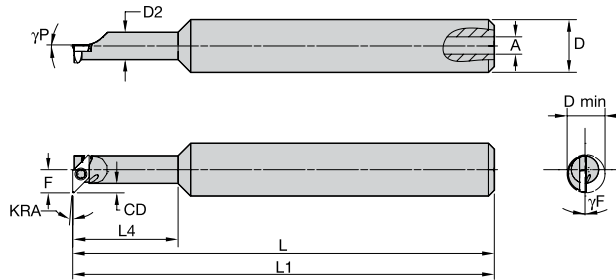
order number	catalog number	KRA	D	D min	F	L1	A	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert
<b>right hand</b>										
2827756	GCB IW18763R	-3	.188	.260	.126	6.000	.040	$-3.0^\circ$	$0.0^\circ$	WP..1511
2827743	GCB IW25063R	-3	.250	.285	.143	6.000	.047	$-3.0^\circ$	$0.0^\circ$	WP..1511
2827734	GCB IW31263R	-3	.312	.347	.174	6.000	.093	$-3.0^\circ$	$0.0^\circ$	WP..1511
<b>left hand</b>										
2827727	GCB IW31263L	-3	.312	.347	.174	6.000	.093	$-3.0^\circ$	$0.0^\circ$	WP..1511

# Small Hole Boring Bars for Profiling

## CSPI



NOTE: KRA shown as 22.5°.



NOTE: KRA shown as -5°.

order number	catalog number	KRA	D	D min	D2	F	CD	L	L1	L4	A	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert
<b>right hand</b>														
2832344	CSPI25050015R	-5.0	.500	.360	.260	.220	.090	4.000	4.000	1.000	.040	0.0°	0.0°	GP..12105
2832334	CSPI3125001255R	-5.0	.500	.423	.323	.251	.090	4.000	4.000	1.250	.040	0.0°	0.0°	GP..12105
2832297	CSPI25050010R	.0	.500	.360	.260	.220	.090	4.000	4.000	1.000	.040	0.0°	0.0°	GPHW12105
2832319	CSPI2505001225R	22.5	.500	.400	.260	.260	.130	4.080	4.000	1.000	.040	0.0°	0.0°	GP..12105
<b>left hand</b>														
2832326	CSPI3125001255L	-5.0	.500	.423	.323	.251	.090	4.000	4.000	1.250	.040	0.0°	0.0°	GP..12105

INDEXABLE MILLING

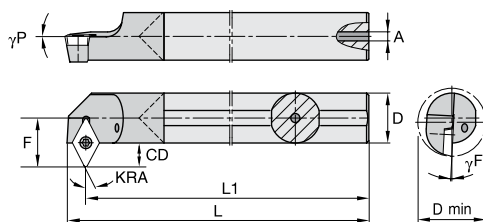
SOLID END MILLING

HOLEMAKING

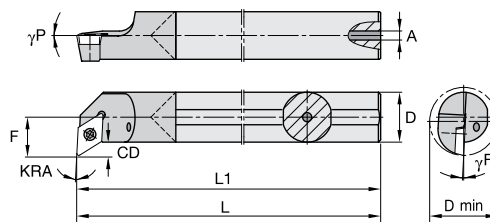
TAPPING

TURNING

## CCPI



NOTE: KRA shown as 22.5°.



NOTE: KRA shown as -5°.

order number	catalog number	KRA	D	D min	F	CD	L	L1	A	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert
<b>right hand</b>												
2831774	CCPI25065R	-5.0	.250	.360	.220	.091	6.000	6.000	.047	0.0°	0.0°	GP..12105
2831762	CCPI31265R	-5.0	.313	.423	.251	.091	6.000	6.000	.093	0.0°	0.0°	GP..12105
2831727	CCPI25060R	.0	.250	.360	.220	.091	6.000	6.000	.047	0.0°	0.0°	GP..12105
2831739	CCPI3126225R	22.5	.313	.448	.276	.116	6.101	6.000	.093	0.0°	0.0°	GP..12105
<b>left hand</b>												
2831767	CCPI25065L	-5.0	.250	.360	.220	.091	6.000	6.000	.047	0.0°	0.0°	GP..12105

INDEXABLE MILLING

SOLID END MILLING

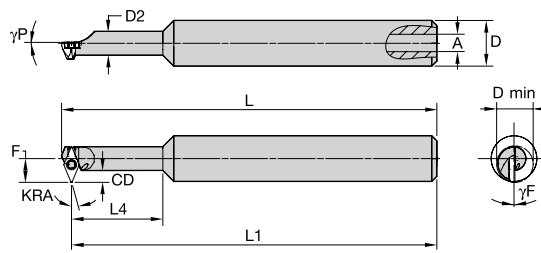
HOLE/MAKING

TAPPING

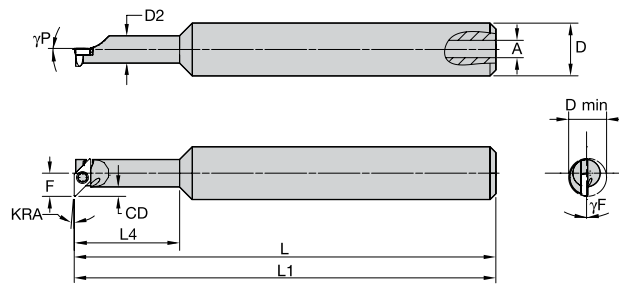
TURNING

# Small Hole Boring Bars for Profiling

## GSPI



NOTE: KRA shown as 22.5°.



NOTE: KRA shown as -5°.

order number	catalog number	KRA	D	D min	D2	F	CD	L	L1	L4	A	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert
<b>right hand</b>														
2828281	GSPI375625155R	-5.0	.625	.515	.385	.312	.120	4.500	4.500	1.500	.098	0.0°	0.0°	GC..151505
2828269	GSPI50075025R	-5.0	.750	.630	.510	.374	.119	5.000	5.000	2.000	.098	0.0°	0.0°	GC..151505
2828203	GSPI50075020R	.0	.750	.630	.510	.374	.119	5.000	5.000	2.000	.098	0.0°	0.0°	GC..151505
2828310	GSPI37562515225R	22.5	.625	.540	.385	.338	.146	4.134	4.000	1.500	.098	0.0°	0.0°	GC..151505
<b>left hand</b>														
2828275	GSPI375625155L	-5.0	.625	.515	.385	.312	.120	4.500	4.500	1.500	.098	0.0°	0.0°	GC..151505

INDEXABLE MILLING

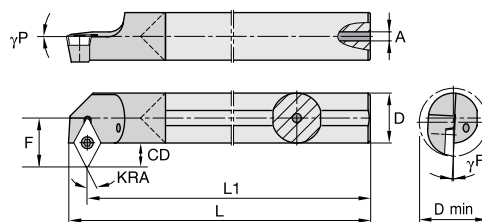
SOLID END MILLING

HOLEMAKING

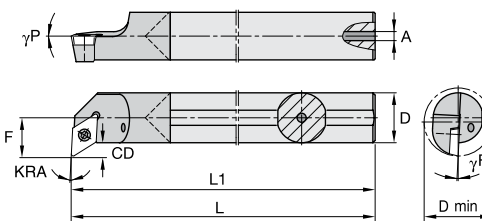
TAPPING

TURNING

## GCPI



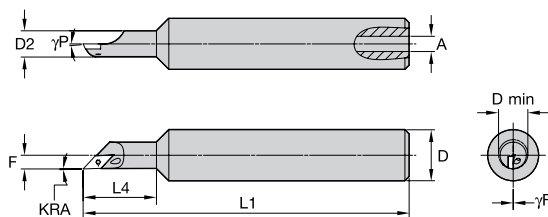
NOTE: KRA shown as 22.5°.



NOTE: KRA shown as -5°.

order number	catalog number	KRA	D	D min	F	CD	L	L1	A	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert
right hand												
2827811	GCPI50085R	-5.0	.500	.640	.374	.120	8.000	8.000	.188	0.0°	0.0°	GC..151505
2827800	GCPI625105R	-5.0	.625	.765	.437	.121	10.000	10.000	.218	0.0°	0.0°	GC..151505
2827775	GCPI37560R	.0	.375	.515	.312	.121	6.000	6.000	.125	0.0°	0.0°	GC..151505
2827825	GCPI37565R	.0	.375	.515	.312	.121	6.000	6.000	.125	0.0°	0.0°	GC..151505
2827767	GCPI50080R	.0	.500	.640	.374	.120	8.000	8.000	.188	0.0°	0.0°	GC..151505
2827845	GCPI3756225R	22.5	.375	5.400	.338	.147	6.134	6.000	.125	0.0°	0.0°	GC..151505

## CTPI

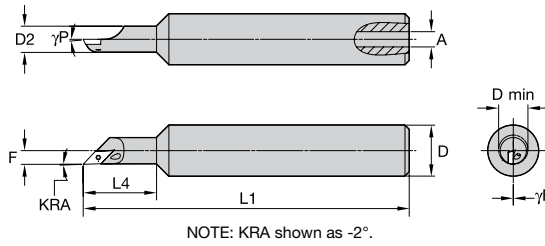


NOTE: KRA shown as -2°.

order number	catalog number	KRA	D	D min	D2	F	L1	L4	A	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert
right hand												
2828101	CTPI32262590647R	-2.0	.625	.339	.322	.168	4.000	.900	.187	0.0°	0.0°	GP..12105



## GTPI



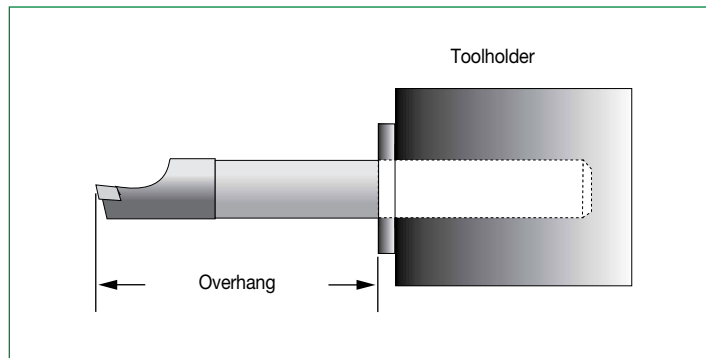
order number	catalog number	KRA	D	D min	D2	F	L1	L4	A	$\gamma F^\circ$	$\gamma P^\circ$	gage insert
right hand 2828184	GTPI37562590647R	-2.0	.625	.625	.375	.236	4.000	.900	.187	0.0°	-3.0°	GC..151505

## Setup Recommendations

### Setup Recommendations for Bar Overhang

WIDIA-CIRCLE<sup>®</sup> cutting tools are the finest quality boring, grooving, profiling, and threading tools available. For more than 50 years, WIDIA-CIRCLE has been the industry leader in solving small-diameter hole machining problems in major manufacturing plants worldwide.

A common problem associated with any cutting tool is extending the tool beyond its support point. This condition of excessive overhang can cause chatter, poor finishes, or inadequate tool life.



We recommend a 4:1 ratio (4 times bar diameter) overhang when using steel shank bars and up to a 10:1 (10 times bar diameter) overhang when using carbide shank bars. The overhang ratios are affected by many factors:

- Type(s) of material(s) being machined.
- Depth of cut(s).
- Feed rate(s).

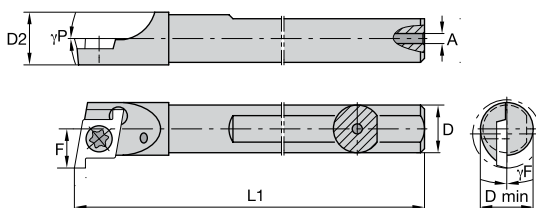
Recommended conditions may still be unsatisfactory because of chatter. Chatter can be induced by non-rigid setups or harmonics from the machine or machining conditions. In many cases, changing the RPM of the machine can reduce chatter.

shank diameter (inch)	steel shank ratio 4:1 (inch)	carbide shank ratio 10:1 (inch)
0.156"	0.625"	1.560"
0.187"	0.748"	1.187"
0.250"	1.000"	2.500"
0.375"	1.500"	3.750"
0.500"	2.000"	5.000"
0.625"	2.500"	6.250"
0.750"	3.000"	7.500"
0.875"	3.500"	8.750"
1.000"	4.000"	10.000"
1.250"	5.000"	12.500"

shank diameter (mm)	steel shank ratio 4:1 (mm)	carbide shank ratio 10:1 (mm)
4,00mm	16,00mm	40,00mm
5,00mm	20,00mm	50,00mm
6,00mm	24,00mm	60,00mm
8,00mm	32,00mm	80,00mm
10,00mm	40,00mm	100,00mm
12,00mm	48,00mm	120,00mm
16,00mm	64,00mm	160,00mm
20,00mm	80,00mm	200,00mm
25,00mm	100,00mm	250,00mm
32,00mm	128,00mm	320,00mm

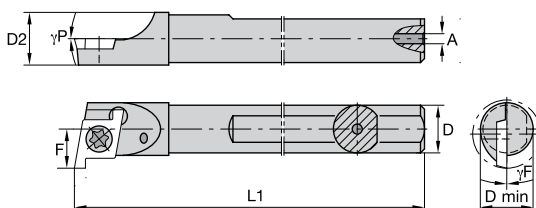
# Small Hole Boring Bars for Grooving and Threading

## CSMI



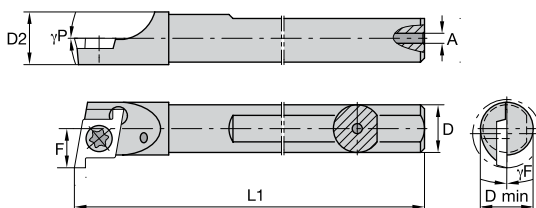
order number	catalog number	D	D min	D2	F	L1	A	γF°	γP°	gage insert
<b>right hand</b>										
2832353	CSMI187250R	.188	.272	.219	.154	2.500	.040	0.0°	0.0°	CD.5..
2832348	CSMI25030R	.250	.312	.260	.175	3.000	.040	0.0°	0.0°	CD.5..

## CCMI



order number	catalog number	D	D min	D2	F	L1	A	γF°	γP°	gage insert
<b>right hand</b>										
2831841	CCMI18740R	.187	.272	.208	.154	4.000	.040	0.0°	0.0°	CD.5..
2831838	CCMI25040R	.250	.312	.258	.175	4.000	.047	0.0°	0.0°	CD.5..

## QSMI



order number	catalog number	KRA	D	D min	D2	F	L1	A	γF°	γP°	gage insert
<b>right hand</b>											
2825394	QSMI62565R	-5	.625	.670	.635	.343	6.000	.156	0.0°	0.0°	CP..2....
2825464	QSMI37545R	0	.375	.481	.385	.278	3.997	.125	0.0°	0.0°	CP..2....
2825455	QSMI50055R	0	.500	.605	.510	.340	4.997	.156	0.0°	0.0°	CP..2....
<b>left hand</b>											
2825457	QSMI37545L	0	.375	.481	.385	.278	3.997	.125	0.0°	0.0°	CP..2....

NOTE: D min and F calculated using the CPG grooving-style insert.  
Refer to insert design for cutting depth, cutting width, and blind hole limitations.

# Small Hole Boring Bars for Grooving and Threading

INDEXABLE MILLING

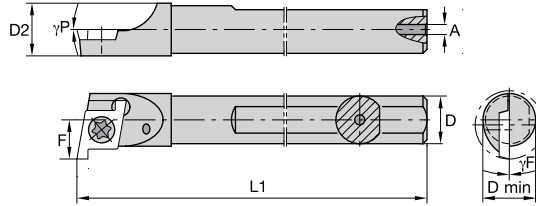
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

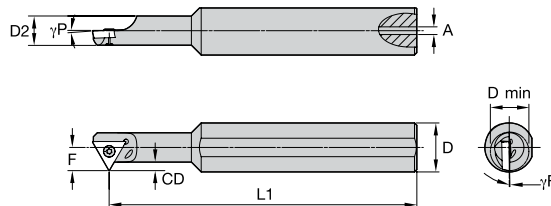
## QCM1



order number	catalog number	KRA	D	D min	F	L1	A	$\gamma F^\circ$	$\gamma P^\circ$	gage insert
<b>right hand</b>										
2825117	QCM137565R	-5	.375	.420	.218	6.000	.125	0.0°	0.0°	CPHB21205
2825105	QCM150085R	-5	.500	.545	.280	8.000	.188	0.0°	0.0°	CP..21205
<b>left hand</b>										
2825112	QCM137565L	-5	.375	.420	.218	6.000	.125	0.0°	0.0°	CP..2..

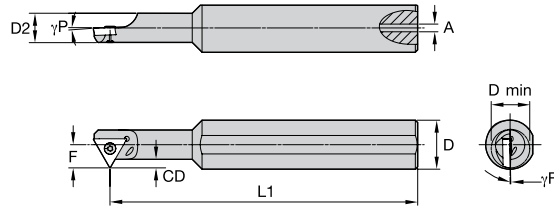
NOTE: F calculated using the CPG-style insert.  
Refer to insert design for cutting depth, cutting width, and blind hole limitations.

## FSII



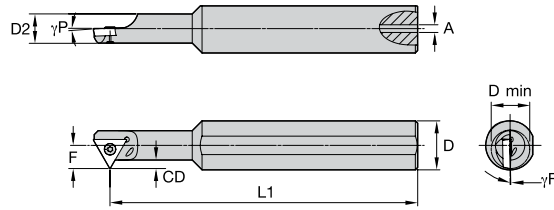
order number	catalog number	D	D min	D2	F	L1	CD	A	$\gamma F^\circ$	$\gamma P^\circ$	gage insert
<b>right hand</b>											
2830177	FSII25062512560R	.625	.322	.250	.155	4.000	.060	.040	0.0°	-2.0°	TB..1308X0
2830171	FSII2506257560R	.625	.322	.250	.155	4.000	.060	.040	0.0°	-2.0°	TB..1308X0

## QSII



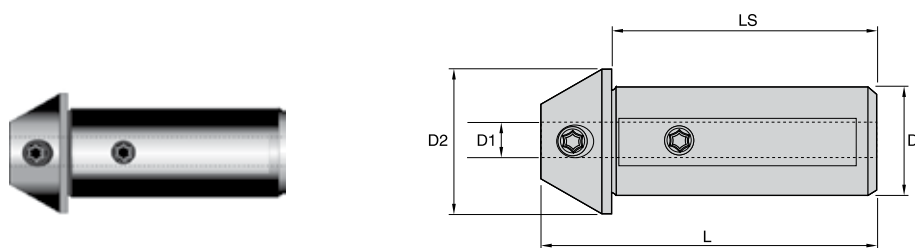
order number	catalog number	D	D min	D2	F	L1	CD	A	γF°	γP°	gage insert
right hand											
2825707	QSII375625187560R	.625	.468	.375	.234	4.000	.093	.098	0.0°	-2.0°	TB..2150
2825693	QSII375625112560R	.625	.478	.375	.234	4.000	.093	.098	0.0°	-2.0°	TB..2150
2825679	QSII5006251560R	.625	.603	.501	.297	4.000	.093	.098	0.0°	-2.0°	TB..2150

## SSII



order number	catalog number	D	D min	D2	F	L1	CD	A	γF°	γP°	gage insert
right hand											
2822864	SSII750860R	.750	.935	.760	.548	8.000	.168	.156	0.0°	-2.0°	TP..3205

## CSI



order number	catalog number	D1	D	D2	LS	L
2832898	CSI750187	.188	.750	1.100	2.000	2.500
2832795	CSI1000187	.188	1.000	1.100	2.000	2.500
2832893	CSI750250	.250	.750	1.100	2.000	2.500
2832790	CSI1000250	.250	1.000	1.100	2.000	2.500
2832885	CSI750312	.313	.750	1.100	2.000	2.500
2832785	CSI1000312	.313	1.000	1.100	2.000	2.500
2832844	CSI625375	.375	.625	1.100	2.000	2.500
2832879	CSI750375	.375	.750	1.100	2.000	2.500
2832780	CSI1000375	.375	1.000	1.100	2.000	2.500
2832874	CSI750500	.500	.750	1.100	2.000	2.500
2832775	CSI1000500	.500	1.000	1.100	2.000	2.500

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING



The most versatile tool in the market for grooving, profiling, and cut-off operations.



## 4 BENEFITS IN 1

### VERSATILITY

Single-sided versatile grooving, cut-off, and profiling solution for all materials.

### STABILITY

Secure seating and clamping for reliability in demanding groove-turn applications.

### PRODUCTIVITY

Higher speeds and feeds due to better chip evacuation and low cutting forces. Optimized chip breaker design and through coolant capability.

### SIMPLICITY

Easy to select and apply for all grooving, cut-off, and profiling applications.

#### GROOVING

PRECISION MOLDED AND GROUND



**P M N S**

PT-Positive Rake

PRECISION MOLDED



**P M K H**

PN-Negative Rake

#### CUT-OFF

PRECISION MOLDED AND GROUND



**P M N S**

F-Fine

PRECISION MOLDED



**P K**

M-Medium



**P M**

R-Rough

#### PROFILING

PRECISION GROUND






**P M N S**

PC-Full Radius

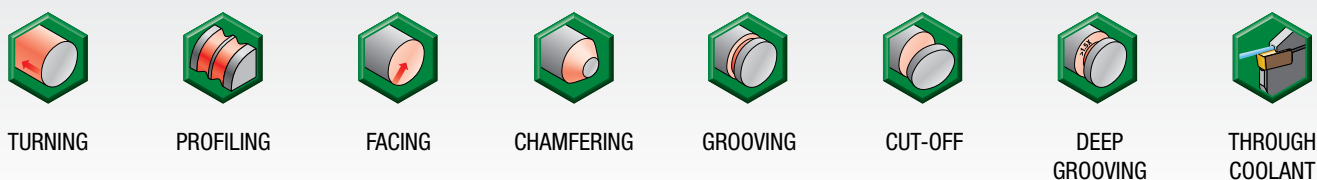
NOTE: Use the NOVO™ software to select appropriate toolholder and insert.

# WIDIA GROOVING AND CUT-OFF

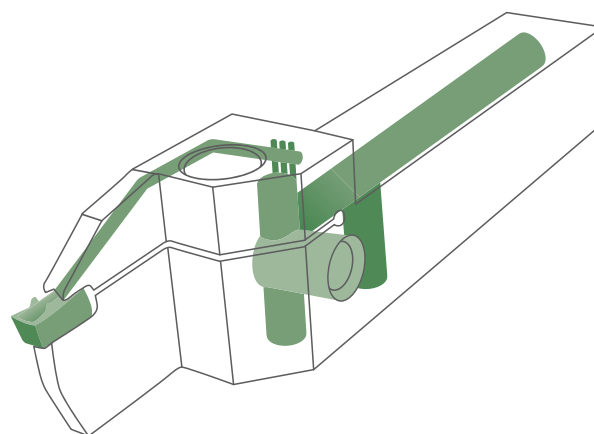
## INSERTS

APPLICATION	TYPES	GROOVE WIDTH	INSERT GEOMETRY	MATERIALS
<b>GROOVING</b>		2.00–10.13mm (0.084–0.399")	PT-Positive Rake	<b>P M K N S</b>
			PN-Negative Rake	<b>P M K S</b>
<b>CUT-OFF</b>		1.4–8.0mm (0.055–0.315")	F-Fine	<b>P M K N S</b>
			M-Medium	<b>P M K S</b>
			R-Rough	<b>P M K S</b>
<b>PROFILING</b>		2.0–8.0mm (0.079–0.315")	PC-Full Radius	<b>P M K N S</b>

## APPLICATIONS

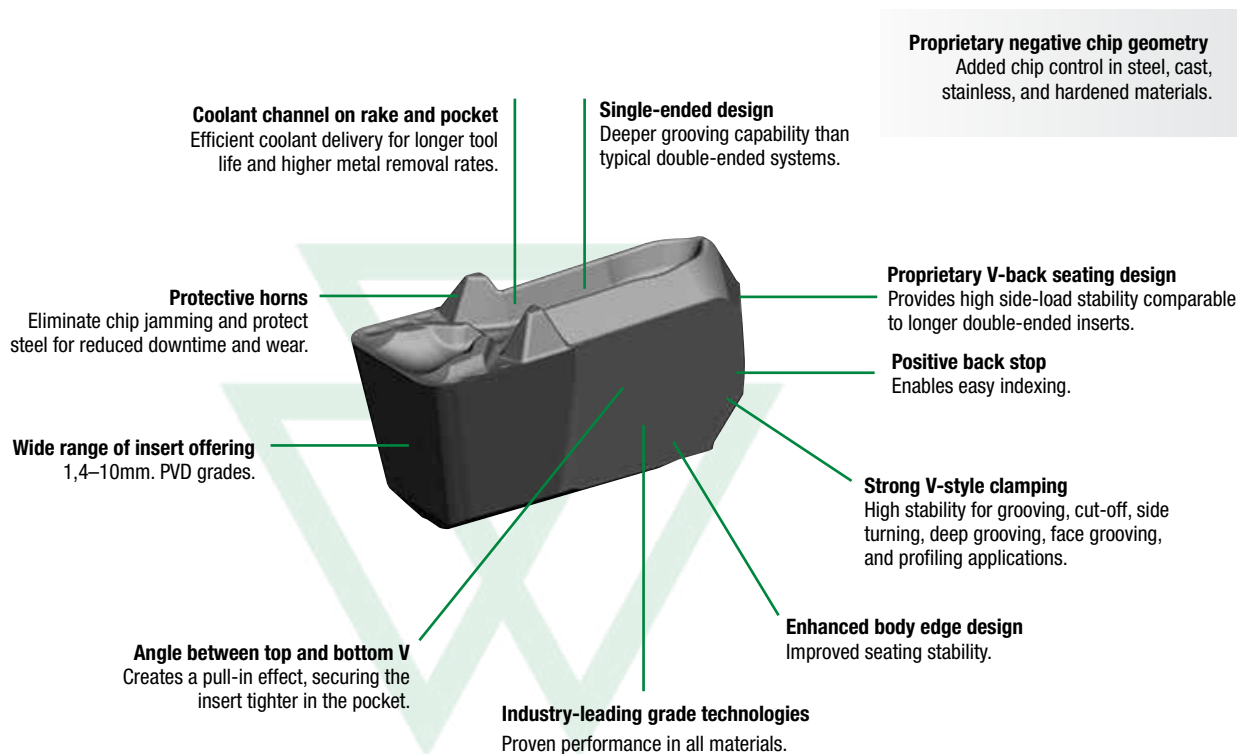


## INDUSTRY





## Grooving and Cut-Off • WGC



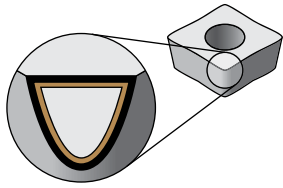
## Catalog Numbering System

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.

<b>W</b>	<b>G</b>	<b>0312</b>	<b>M</b>	<b>03</b>	<b>U</b>	<b>02</b>	<b>PT</b>																																																										
Family Name	Insert Type	Groove Width	Unit	Seat Size	Tolerance	Corner Radius	Chipbreaker/ Edge Condition																																																										
WGC	<b>G</b> = Square  <b>R</b> = Full Radius	<b>Metric</b> = 1/100mm  <b>Inch</b> = 1/1000"	<b>M</b> = Metric  <b>I</b> = Inch	<table border="1"> <thead> <tr> <th rowspan="2">seat size (SSC)</th> <th colspan="2">groove width</th> </tr> <tr> <th>mm</th> <th>inch</th> </tr> </thead> <tbody> <tr><td>1B</td><td>1,40</td><td>.055</td></tr> <tr><td>1F</td><td>1,60-1,99</td><td>.063-.078</td></tr> <tr><td>02</td><td>2,00-2,99</td><td>.079-.117</td></tr> <tr><td>03</td><td>3,00-3,99</td><td>.118-.156</td></tr> <tr><td>04</td><td>4,00-4,99</td><td>.157-.196</td></tr> <tr><td>05</td><td>5,00-5,99</td><td>.197-.235</td></tr> <tr><td>06</td><td>6,00-7,99</td><td>.236-.314</td></tr> <tr><td>08</td><td>8,00-8,99</td><td>.315-.353</td></tr> <tr><td>10</td><td>9,00-10,12</td><td>.354-.398</td></tr> </tbody> </table> <p>*.312" = seat size 08</p>	seat size (SSC)	groove width		mm	inch	1B	1,40	.055	1F	1,60-1,99	.063-.078	02	2,00-2,99	.079-.117	03	3,00-3,99	.118-.156	04	4,00-4,99	.157-.196	05	5,00-5,99	.197-.235	06	6,00-7,99	.236-.314	08	8,00-8,99	.315-.353	10	9,00-10,12	.354-.398	<b>U</b> = Precision Molded  <b>P</b> = Precision Ground	<table border="1"> <thead> <tr> <th colspan="2">mm</th> </tr> </thead> <tbody> <tr><td>00</td><td>full radius</td></tr> <tr><td>01</td><td>0,1</td></tr> <tr><td>02</td><td>0,2</td></tr> <tr><td>04</td><td>0,4</td></tr> <tr><td>08</td><td>0,8</td></tr> <tr><td>12</td><td>1,2</td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">inch</th> </tr> </thead> <tbody> <tr><td>00</td><td>full radius</td></tr> <tr><td>05</td><td>.008</td></tr> <tr><td>1</td><td>.016</td></tr> <tr><td>2</td><td>.032</td></tr> <tr><td>3</td><td>.047</td></tr> </tbody> </table>	mm		00	full radius	01	0,1	02	0,2	04	0,4	08	0,8	12	1,2	inch		00	full radius	05	.008	1	.016	2	.032	3	.047	<b>PT</b> = Groove-Turn Universal Positive  <b>PN</b> = Groove-Turn Universal Negative
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<b>W</b>	<b>C</b>	<b>030</b>	<b>M</b>	<b>03</b>	<b>N</b>	<b>00</b>	<b>F</b>	<b>02</b>																																																																		
Family Name	Insert Type	Cutting Edge Width	Unit	Seat Size	Hand of Insert	Approach Angle	Chipbreaker	Corner Radius																																																																		
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### Grades and Grade Descriptions



Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

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

Coating	Grade Description	wear resistance ← → toughness									
			05	10	15	20	25	30	35	40	45
WU10PT	<p><b>Composition:</b> An advanced multilayer PVD coating over a very deformation-resistant unalloyed carbide substrate. The new and improved coating improves edge stability with wide range speed and feed capabilities.</p> <p><b>Application:</b> The WU10PT™ grade is ideal for finishing to general machining of most workpiece materials at a wide range of speed and feed capabilities. Excellent for machining most steels, stainless steels, cast irons, non-ferrous materials, and super alloys with improved edge toughness and higher cutting speed/feed capability.</p>	P									
		M									
		K									
		N									
		S									
		H									
WU25PT	<p><b>Composition:</b> An advanced PVD-TiAlN-coated grade with a tough, ultra-fine grain, unalloyed substrate.</p> <p><b>Application:</b> For general-purpose machining of most steels, stainless steels, high-temperature alloys, titanium, irons, and non-ferrous materials. Speeds may vary from low to medium and will handle interruptions and high feed rates.</p>	P									
		M									
		K									
		N									
		S									
		H									
WU35PT	<p><b>Composition:</b> A multilayer PVD-coated carbide grade with an advanced AlTiN-TiN coating over a super-tough substrate.</p> <p><b>Application:</b> WU35PT is an excellent grade for machining stainless steels, all types of steels, super alloys in turning, and cut-off applications. The substrate provides improved toughness while the coating layers offer excellent abrasion resistance and dependability at a wide range of speeds and feeds. Improved edge toughness provides security in interrupted cuts.</p>	P									
		M									
		K									
		N									
		S									
		H									

### Plunge Feed Rates

- first choice
- alternate choice

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

Chip Control	Description	Insert Geometry	Seat Size (SSC)	Corner Radius	Starting Conditions	Plunge Feed Rates inch/rev (mm/rev)								
				in (mm)	in (mm)	.0020 (0,05)	.0040 (0,10)	.0060 (0,15)	.0080 (0,20)	.0100 (0,25)	.0120 (0,30)	.0140 (0,35)		
-PT	Positive rake angle for lower cutting forces.		1F	.008 (0,2)	.0024 (0,06)	◊								
			2	.008 (0,2)	.0031 (0,08)		◊							
			3	.008 (0,2)	.0035 (0,09)			◊						
				.016 (0,4)	.0043 (0,11)				◊					
			4	.016 (0,4)	.0047 (0,12)					◊				
				.031 (0,8)	.0059 (0,15)						◊			
			5	.016 (0,4)	.0059 (0,15)							◊		
				.031 (0,8)	.0059 (0,16)								◊	
			6	.016 (0,4)	.0059 (0,15)									◊
				.031 (0,8)	.0071 (0,18)									
8	.031 (0,8)	.0079 (0,20)												
	.047 (1,2)	.0087 (0,22)												
10	.047 (1,2)	.0094 (0,24)												
-PN	Stable negative cutting edge allowing for more aggressive applications.		1F	.008 (0,2)	.0024 (0,06)	◊								
			2	.008 (0,2)	.0031 (0,08)		◊							
			3	.008 (0,2)	.0035 (0,09)			◊						
				.016 (0,4)	.0043 (0,11)				◊					
			4	.016 (0,4)	.0047 (0,12)					◊				
				.031 (0,8)	.0059 (0,15)						◊			
			5	.016 (0,4)	.0059 (0,15)							◊		
				.031 (0,8)	.0059 (0,16)								◊	
			6	.016 (0,4)	.0059 (0,15)									◊
				.031 (0,8)	.0071 (0,18)									
8	.031 (0,8)	.0079 (0,20)												
	.047 (1,2)	.0087 (0,22)												
10	.047 (1,2)	.0094 (0,24)												

### Cut-Off Feed Rates

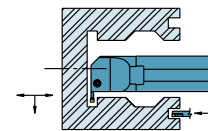
Chip Control	Description	Insert Geometry	Seat Size (SSC)	Starting Conditions	Cut-Off Feed Rates inch/rev (mm/rev)							
				in (mm)	.0020 (0,05)	.0040 (0,10)	.0060 (0,15)	.0080 (0,20)	.0100 (0,25)	.0120 (0,30)	.0140 (0,35)	.0160 (0,40)
-F	Positive geometry for reduced cutting forces.		1B	.0024 (0,06)	◊							
			2	.0028 (0,07)		◊						
			3	.0035 (0,09)			◊					
			4	.0043 (0,11)				◊				
			5	.0051 (0,13)					◊			
-M	Stable cutting edge for aggressive feed rates. Primarily in cast iron.		1B	.0024 (0,06)	◊							
			2	.0028 (0,07)		◊						
			3	.0035 (0,09)			◊					
			4	.0043 (0,11)				◊				
			5	.0055 (0,14)					◊			
			6	.0063 (0,16)						◊		
-R	Most stable cutting edge for steel.		2	.0039 (0,10)			◊					
			3	.0055 (0,14)				◊				
			4	.0063 (0,16)					◊			
			5	.0075 (0,19)						◊		
			6	.0083 (0,21)							◊	
8	.0090 (0,23)								◊			

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

#### Maximum Feed Rate Values

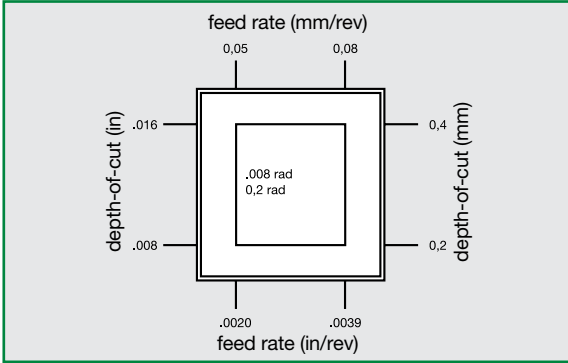
Data above is for P and K material groups. <b>Maximum</b> feed rates should be adjusted by multiplying max feed rate values by following factors for shown material groups.	Material Group	Feed Factor
	<b>M</b>	0.8
	<b>N</b>	1.2
	<b>S</b>	0.8
	<b>H</b>	0.5

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

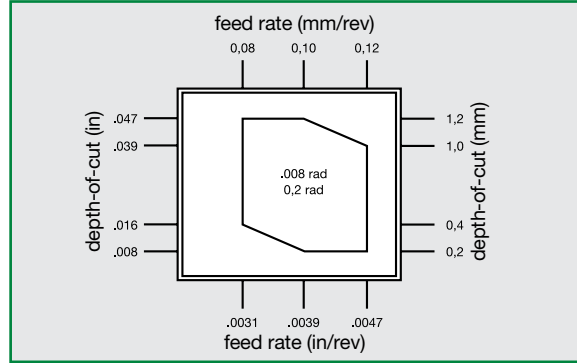


Turn and Profile Feed Rates

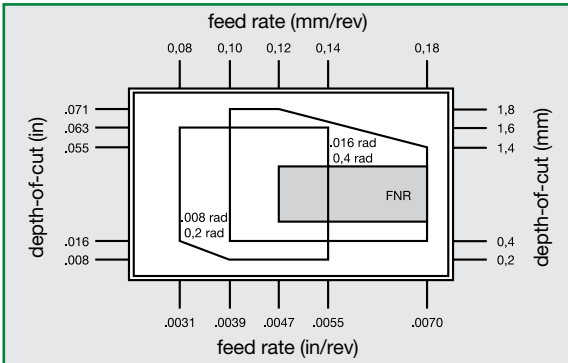
Seat Size 1F



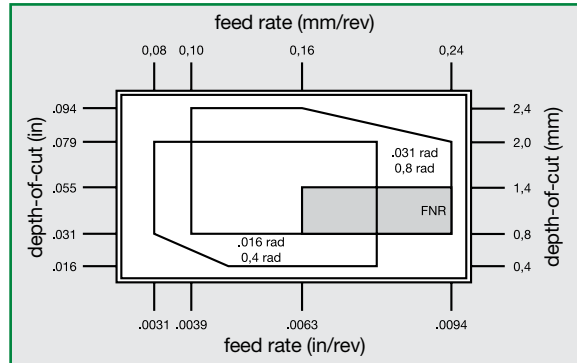
Seat Size 2



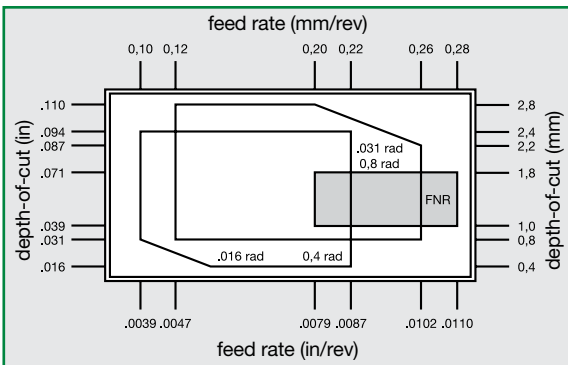
Seat Size 3



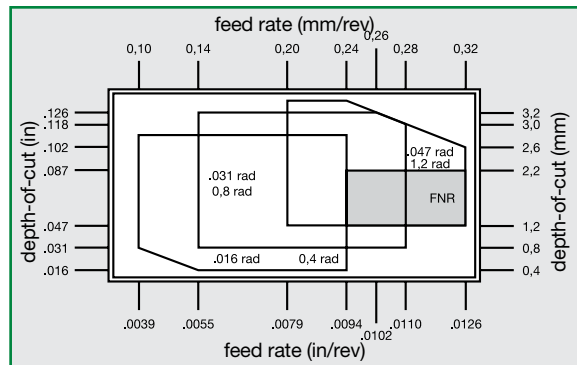
Seat Size 4



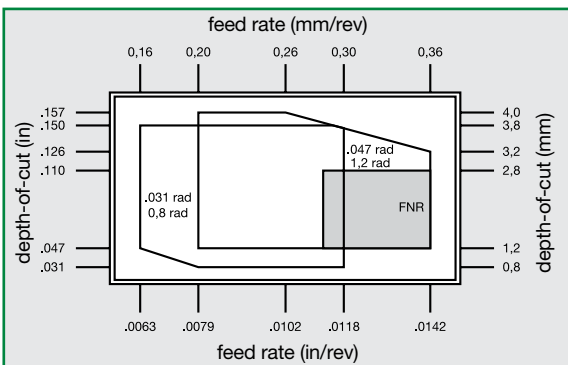
Seat Size 5



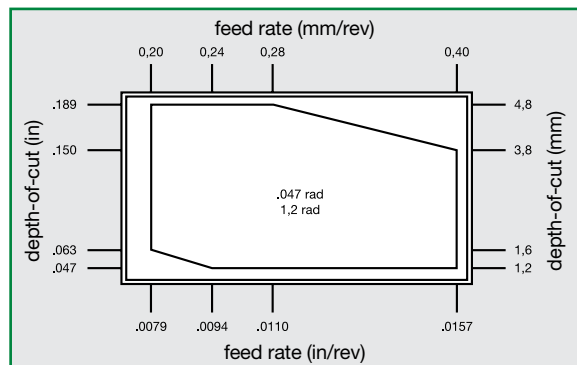
Seat Size 6



Seat Size 8



Seat Size 10



\* FNR = Full Nose Radius

### Recommended Starting Speeds [SFM]

Material Group		WU10PT			WU25PT			WU35PT		
P	0-1	450	<b>450</b>	450	360	<b>740</b>	880	290	<b>590</b>	700
	2	450	<b>450</b>	450	360	<b>520</b>	880	290	<b>420</b>	510
	3	450	<b>450</b>	450	360	<b>410</b>	800	290	<b>330</b>	510
	4	250	<b>250</b>	250	200	<b>290</b>	540	160	<b>230</b>	350
	5	400	<b>400</b>	400	320	<b>530</b>	680	260	<b>420</b>	540
	6	350	<b>350</b>	350	280	<b>400</b>	600	220	<b>320</b>	480
M	1	450	<b>450</b>	450	300	<b>550</b>	800	250	<b>400</b>	450
	2	400	<b>400</b>	400	300	<b>500</b>	800	250	<b>350</b>	450
	3	400	<b>400</b>	400	300	<b>450</b>	700	250	<b>300</b>	450
K	1	400	<b>400</b>	400	320	<b>480</b>	760	-	-	-
	2	300	<b>300</b>	300	240	<b>400</b>	560	-	-	-
	3	200	<b>200</b>	200	160	<b>280</b>	400	-	-	-
N	1-2	500	<b>500</b>	500	400	<b>1440</b>	2560	-	-	-
	3	-	-	-	-	-	-	-	-	-
	4	400	<b>400</b>	400	320	<b>960</b>	1600	-	-	-
	5	300	<b>300</b>	300	240	<b>440</b>	640	-	-	-
	6	400	<b>400</b>	400	320	<b>560</b>	800	-	-	-
	7	400	<b>400</b>	400	320	<b>560</b>	800	-	-	-
S	1	50	<b>50</b>	50	25	<b>125</b>	200	25	<b>125</b>	200
	2	50	<b>50</b>	50	25	<b>100</b>	250	25	<b>100</b>	200
	3	50	<b>50</b>	50	50	<b>125</b>	250	50	<b>125</b>	200
	4	50	<b>50</b>	50	25	<b>175</b>	350	50	<b>150</b>	300
H	1	100	<b>100</b>	100	-	-	-	-	-	-
	2	50	<b>50</b>	50	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-

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

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

## WGC Cut-Off Inserts • F Precision Molded • Metric



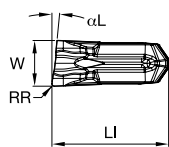
Left Hand



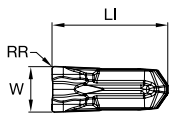
Neutral



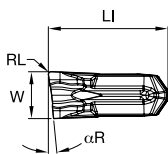
Right Hand



Left Hand



Neutral



Right Hand

● first choice

○ alternate choice

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

catalog number	SSC	W		W tol ±		LI		αR	αL	RR		RL		WU10PT	WU25PT	WU35PT
		mm	in	mm	in	mm	in			mm	in	mm	in			
WC014M1BL06F01	1B	1,40	.055	0,050	.002	9,00	.355	—	6	0,15	.006	—	—	●	○	○
WC014M1BN00F01	1B	1,40	.055	0,050	.002	9,00	.355	—	—	0,15	.006	0,15	.006	○	○	○
WC014M1BR06F01	1B	1,40	.055	0,050	.002	9,02	.355	6	—	—	—	0,15	.006	○	○	○
WC020M02L06F02	2	2,00	.079	0,050	.002	9,00	.353	—	6	0,20	.008	—	—	○	○	○
WC020M02N00F02	2	2,00	.079	0,050	.002	9,00	.353	—	—	0,20	.008	0,20	.008	○	○	○
WC020M02R06F02	2	2,00	.079	0,050	.002	9,00	.353	6	—	—	—	0,20	.008	○	○	○
WC030M03L06F02	3	3,00	.118	0,075	.003	9,60	.378	—	6	0,20	.008	—	—	○	○	○
WC030M03N00F02	3	3,00	.118	0,075	.003	9,63	.379	—	—	0,20	.008	0,20	.008	○	○	○
WC030M03R06F02	3	3,00	.118	0,075	.003	9,60	.378	6	—	—	—	—	—	○	○	○
WC040M04L06F02	4	4,00	.157	0,075	.003	10,19	.401	—	6	0,20	.008	—	—	○	○	○
WC040M04N00F02	4	4,00	.157	0,075	.003	10,19	.401	—	—	0,20	.008	0,20	.008	○	○	○
WC040M04R06F02	4	4,00	.157	0,075	.003	10,19	.401	6	—	—	—	0,20	.008	○	○	○
WC050M05N00F03	5	5,00	.197	0,075	.003	12,24	.482	—	—	0,30	.012	0,30	.012	○	○	○

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

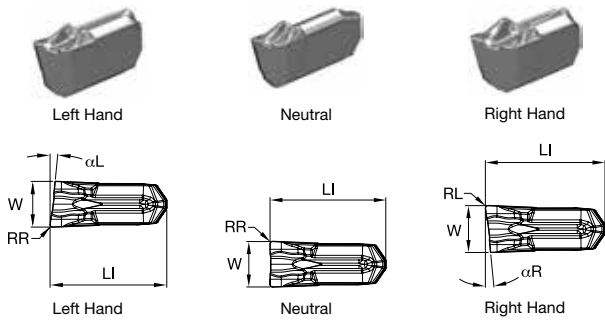
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

WGC Cut-Off Inserts • F Precision Ground • Inch



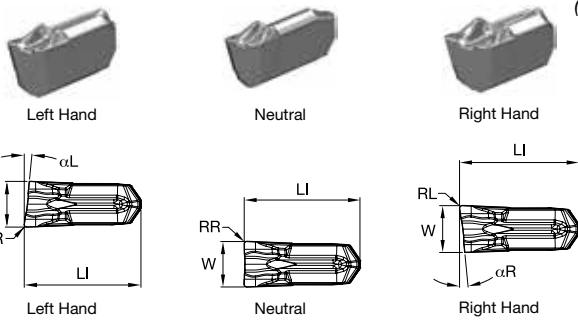
● first choice  
○ alternate choice

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

catalog number	SSC	W		W tol ±		LI		αR	αL	RR		RL		WU10PT	WU25PT	WU35PT
		mm	in	mm	in	mm	in			mm	in	mm	in			
WC014M1BPR06F00	1B	1,40	.055	0,025	.001	9,00	.355	6	—	—	—	—	—	—	—	—
WC014M1BPR12F00	1B	1,40	.055	0,025	.001	9,00	.355	12	—	—	—	—	—	—	—	—
WC094I02PL06F00	2	2,39	.094	0,025	.001	8,95	.352	—	6	—	—	—	—	—	—	—
WC094I02PL12F00	2	2,39	.094	0,025	.001	8,95	.352	—	12	—	—	—	—	—	—	—
WC094I02PN00F00	2	2,39	.094	0,025	.001	8,95	.352	—	—	—	—	—	—	—	—	—
WC094I02PR06F00	2	2,39	.094	0,025	.001	8,95	.352	6	—	—	—	—	—	—	—	—
WC094I02PR12F00	2	2,39	.094	0,025	.001	8,95	.352	—	12	—	—	—	—	—	—	—
WC094I02PL06F0	2	2,39	.094	0,025	.001	9,04	.360	—	6	0,10	.004	0,10	.004	—	—	—
WC094I02PN00F0	2	2,39	.094	0,025	.001	9,04	.356	—	—	0,10	.004	0,10	.004	—	—	—
WC094I02PN00F05	2	2,39	.094	0,025	.001	9,04	.356	—	—	0,20	.008	0,20	.008	—	—	—
WC094I02PR06F0	2	2,39	.094	0,025	.001	9,04	.356	6	—	0,10	.004	0,10	.004	—	—	—
WC094I02PR06F05	2	2,39	.094	0,025	.001	9,04	.356	6	—	0,20	.008	0,20	.008	—	—	—



WGC Cut-Off Inserts • F Precision Ground • Inch



● first choice  
○ alternate choice

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

catalog number	SSC	W		W tol ±		LI		αR	αL	RR		RL		WU10PT	WU25PT	WU35PT
		mm	in	mm	in	mm	in			mm	in	mm	in			
WC025M02PR06F01	2	2,50	.098	0,025	.001	9,04	.356	6	—	0,15	.006	0,15	.006	●	○	●
WC030M03PN00F02	3	3,00	.118	0,075	.003	9,63	.379	—	—	0,20	.008	0,20	.008	○	○	○
WC125I03PL06F00	3	3,18	.125	0,025	.001	9,48	.373	—	6	—	—	—	—	○	○	○
WC125I03PL12F00	3	3,18	.125	0,025	.001	9,48	.373	—	12	—	—	—	—	○	○	○
WC125I03PN00F00	3	3,18	.125	0,025	.001	9,48	.373	—	—	—	—	—	—	○	○	○
WC125I03PR06F00	3	3,18	.125	0,025	.001	9,48	.373	6	—	—	—	—	—	○	○	○
WC125I03PL06F0	3	3,18	.125	0,025	.001	9,63	.379	—	6	0,10	.004	0,10	.004	○	○	○
WC125I03PL06F05	3	3,18	.125	0,025	.001	9,63	.379	—	6	0,20	.008	0,20	.008	○	○	○
WC125I03PN00F0	3	3,18	.125	0,025	.001	9,63	.379	—	—	0,10	.004	0,10	.004	○	○	○
WC125I03PN00F05	3	3,18	.125	0,025	.001	9,63	.379	—	—	0,20	.008	0,20	.008	○	○	○
WC125I03PR06F0	3	3,18	.125	0,025	.001	9,63	.379	6	—	0,10	.004	0,10	.004	○	○	○
WC125I03PR06F05	3	3,18	.125	0,025	.001	9,63	.379	6	—	0,20	.008	0,20	.008	○	○	○

INDEXABLE MILLING

SOLID END MILLING

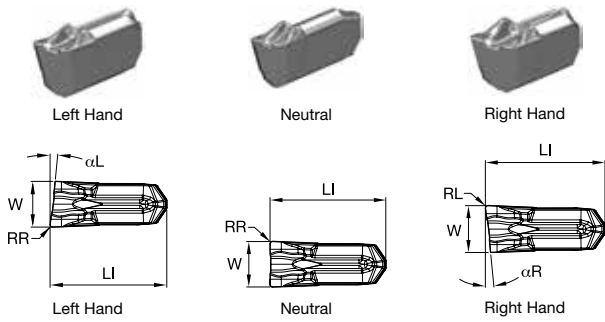
HOLEMAKING

TAPPING

TURNING

WGC Cut-Off Inserts • F Precision Ground • Inch

(continued)



- first choice
- alternate choice

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

catalog number	SSC	W		W tol ±		LI		αR	αL	RR		RL		WU10PT	WU25PT	WU55PT
		mm	in	mm	in	mm	in			mm	in	mm	in			
WC125I03PR12F00	3	3,18	.125	0,025	.001	9,75	.373	12	—	—	—	—	—	●	●	●
WC040M04PR06F00	4	4,00	.158	0,025	.001	10,01	.394	6	—	—	—	—	—	●	●	●
WC040M04PR12F00	4	4,00	.158	0,025	.001	10,01	.394	12	—	—	—	—	—	●	●	●
WC188I04PR12F00	4	4,75	.187	0,025	.001	10,01	.394	12	—	—	—	—	—	●	●	●
WC188I04PR06F00	4	4,76	.188	0,025	.001	10,01	.394	6	—	—	—	—	—	○	○	○
WC188I04PL06F00	4	4,76	.188	0,025	.001	10,02	.395	—	6	—	—	—	—	○	○	○
WC188I04PN00F00	4	4,76	.188	0,025	.001	10,02	.395	—	—	—	—	—	—	○	○	○
WC188I04PN00F05	4	4,76	.188	0,025	.001	10,16	.400	—	—	0,20	.008	0,20	.008	○	○	○
WC188I04PR06F05	4	4,76	.188	0,025	.001	10,17	.400	6	—	0,20	.008	0,20	.008	○	○	○

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## WGC Cut-Off Inserts • M Precision Molded • Metric



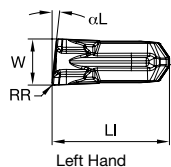
Left Hand



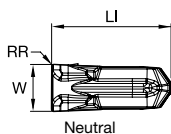
Neutral



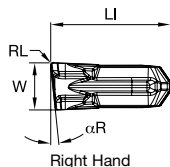
Right Hand



Left Hand



Neutral



Right Hand

- first choice
- alternate choice

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

catalog number	SSC	W		W tol ±		LI		αR	αL	RR		RL		WU10PT	WU25PT	WU35PT
		mm	in	mm	in	mm	in			mm	in	mm	in			
WC014M1BL06M02	1B	1,40	.055	0,050	.002	9,02	.355	—	6	—	—	0,20	.008	●	○	○
WC014M1BN00M01	1B	1,40	.055	0,050	.002	9,01	.355	—	—	0,15	.006	0,15	.006	○	○	○
WC014M1BR06M02	1B	1,40	.055	0,050	.002	9,02	.355	6	—	—	—	0,20	.008	○	○	○
WC020M02L06M02	2	2,00	.079	0,050	.002	8,97	.353	—	6	—	—	0,20	.008	○	○	○
WC020M02N00M02	2	2,00	.079	0,050	.002	8,98	.353	—	—	0,20	.008	0,20	.008	○	○	○
WC020M02R06M02	2	2,00	.079	0,050	.002	9,00	.353	6	—	—	—	0,20	.009	○	○	○
WC030M03L06M02	3	3,00	.118	0,075	.003	9,61	.378	—	6	—	—	0,20	.008	○	○	○
WC030M03N00M02	3	3,00	.118	0,075	.003	9,60	.378	—	—	0,20	.008	0,20	.008	○	○	○
WC030M03R06M02	3	3,00	.118	0,075	.003	9,61	.378	6	—	—	—	0,20	.008	○	○	○
WC040M04L06M02	4	4,00	.157	0,075	.003	10,19	.401	—	6	0,20	.008	—	—	○	○	○
WC040M04N00M02	4	4,00	.157	0,075	.003	10,20	.402	—	—	0,20	.008	0,20	.008	○	○	○
WC040M04R06M02	4	4,00	.158	0,050	.002	10,20	.401	6	—	—	—	0,20	.008	○	○	○

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

WGC Cut-Off Inserts • M Precision Molded • Metric



Left Hand

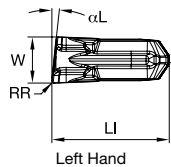


Neutral

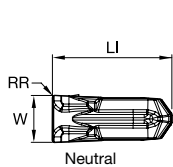


Right Hand

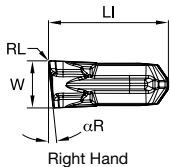
(continued)



Left Hand



Neutral



Right Hand

- first choice
- alternate choice

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

catalog number	SSC	W		W tol ±		LI		αR	αL	RR		RL		WU10PT	WU25PT	WU35PT
		mm	in	mm	in	mm	in			mm	in	mm	in			
WC050M05N00M03	5	5,00	.197	0,075	.003	12,25	.482	—	—	0,30	.012	0,30	.012	—	—	—
WC060M06N00M03	6	6,00	.236	0,075	.003	14,59	.574	—	—	0,30	.012	0,30	.012	—	—	—
WC080M08N00M04	8	8,00	.315	0,075	.003	17,46	.688	—	—	0,40	.016	0,40	.016	—	—	—

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

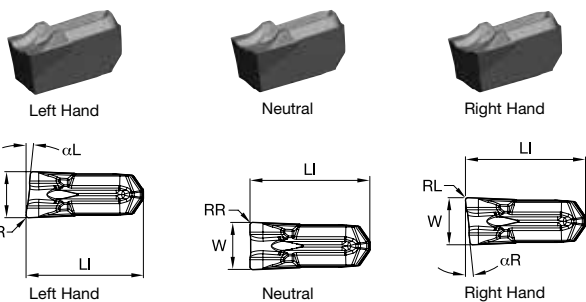
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## WGC Cut-Off Inserts • R Precision Molded • Metric



● first choice  
○ alternate choice

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

catalog number	SSC	W		W tol ±		LI		αR	αL	RR		RL		WU10PT	WU25PT	WU35PT
		mm	in	mm	in	mm	in			mm	in	mm	in			
WC020M02L06R02	2	2,00	.079	0,050	.002	8,97	.353	—	6	0,20	.008	—	—	●	○	○
WC020M02N00R02	2	2,00	.079	0,050	.002	8,98	.353	—	—	0,20	.008	0,20	.008	○	○	○
WC020M02R06R02	2	2,00	.079	0,050	.002	8,97	.353	6	—	—	—	0,20	.008	○	○	○
WC030M03L06R02	3	3,00	.118	0,075	.003	9,61	.378	—	6	0,20	.008	—	—	○	○	○
WC030M03N00R02	3	3,00	.118	0,075	.003	9,60	.378	—	—	0,20	.008	0,20	.008	○	○	○
WC030M03R06R02	3	3,00	.118	0,075	.003	9,61	.378	6	—	—	—	0,20	.008	○	○	○
WC040M04N00R02	4	4,00	.158	0,075	.003	10,20	.402	—	—	0,20	.008	0,20	.008	○	○	○
WC050M05N00R03	5	5,00	.197	0,075	.003	12,25	.482	—	—	0,30	.012	0,30	.012	○	○	○
WC060M06N00R03	6	6,00	.236	0,075	.003	14,59	.574	—	—	0,30	.012	0,30	.012	○	○	○
WC080M08N00R04	8	8,00	.315	0,075	.003	17,46	.687	—	—	0,40	.016	0,40	.016	○	○	○

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

SOLID END MILLING

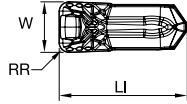
HOLEMAKING

TAPPING

TURNING

WGC Grooving Inserts • PT Precision Molded • Metric

● first choice  
○ alternate choice



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

catalog number	SSC	W		W tol ±		RR		LI		WU10PT	WU25PT	WU35PT
		mm	in	mm	in	mm	in	mm	in			
WG0212M02U02PT	2	2,13	.084	0,050	.002	0,20	.008	8,97	.353		6461734	
WG0251M02U02PT	2	2,51	.099	0,050	.002	0,20	.008	8,97	.353		6461735	
WG0312M03U02PT	3	3,13	.123	0,075	.003	0,20	.008	9,60	.378		6461736	
WG0312M03U04PT	3	3,13	.123	0,075	.003	0,40	.016	9,60	.378		6461737	
WG0412M04U04PT	4	4,13	.162	0,075	.003	0,40	.016	10,19	.401		6461738	
WG0412M04U08PT	4	4,13	.162	0,075	.003	0,80	.031	10,19	.401		6461739	
WG0512M05U04PT	5	5,13	.202	0,075	.003	0,40	.016	12,25	.482		6461740	
WG0512M05U08PT	5	5,13	.202	0,075	.003	0,80	.032	12,25	.482		6461821	
WG0612M06U04PT	6	6,13	.241	0,075	.003	0,40	.016	14,59	.575		6461822	
WG0612M06U08PT	6	6,13	.241	0,075	.003	0,80	.032	14,59	.574		6461823	
WG0712M06U08PT	6	7,13	.281	0,075	.003	0,80	.032	14,59	.574		6461824	
WG0812M08U08PT	8	8,13	.320	0,075	.003	0,80	.032	17,45	.687		6461825	
WG0812M08U12PT	8	8,13	.320	0,075	.003	1,20	.046	17,45	.687		6461826	
WG1012M10U12PT	10	10,13	.399	0,075	.003	1,20	.047	20,75	.817		6461827	

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

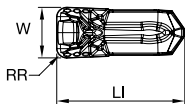
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## WGC Grooving Inserts • PT Precision Molded • Inch



● first choice

○ alternate choice

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

catalog number	SSC	W		W tol ±		RR		LI		WU10PT	WU25PT	WU35PT
		mm	in	mm	in	mm	in	mm	in			
WG130I03U1PT	3	3,30	.130	0,075	.003	0,40	.016	9,60	.378	●	●	●
WG130I03U05PT	3	3,30	.130	0,075	.003	0,20	.008	9,60	.378	○	○	○
WG192I04U1PT	4	4,88	.192	0,075	.003	0,40	.016	10,19	.401	●	●	●
WG192I04U2PT	4	4,88	.192	0,075	.003	0,78	.031	10,19	.401	○	○	○
WG255I06U1PT	6	6,48	.255	0,075	.003	0,40	.016	14,58	.574	●	●	●
WG255I06U2PT	6	6,48	.255	0,075	.003	0,80	.031	14,58	.574	○	○	○
WG317I08U3PT	8	8,05	.317	0,075	.003	1,19	.047	17,46	.687	●	●	●
WG380I10U3PT	10	9,65	.380	0,075	.003	1,19	.047	20,75	.817	○	○	○

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

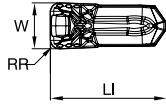
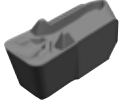
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

WGC Grooving Inserts • PT Precision Ground • Metric



● first choice  
○ alternate choice

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

catalog number	SSC	W		W tol ±		RR		LI		WU10PT	WU25PT	WU35PT
		mm	in	mm	in	mm	in	mm	in			
WG0200M02P02PT	2	2,00	.079	0,025	.001	0,20	.079	8,92	.351	●	●	●
WG0300M03P02PT	3	3,00	.118	0,025	.001	0,20	.008	9,55	.376	●	●	●
WG0300M03P04PT	3	3,00	.118	0,025	.001	0,40	.016	9,55	.376	○	○	○
WG0400M04P04PT	4	4,00	.158	0,025	.001	0,40	.016	10,15	.399	○	○	○
WG0400M04P08PT	4	4,00	.158	0,025	.001	0,80	.032	10,15	.399	○	○	○
WG0500M05P04PT	5	5,00	.197	0,025	.001	0,40	.016	12,18	.480	○	○	○
WG0500M05P08PT	5	5,00	.197	0,025	.001	0,08	.032	12,20	.480	○	○	○
WG0600M06P04PT	6	6,00	.236	0,025	.001	0,40	.016	14,53	.572	○	○	○
WG0600M06P08PT	6	6,00	.236	0,025	.001	0,80	.032	14,54	.573	○	○	○

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

SOLID END MILLING

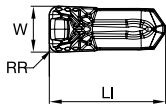
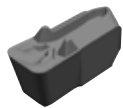
HOLEMAKING

TAPPING

TURNING



## WGC Grooving Inserts • PT Precision Ground • Inch



● first choice

○ alternate choice

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

catalog number	SSC	W		W tol ±		RR		LI		WU10PT	WU25PT	WU35PT
		mm	in	mm	in	mm	in	mm	in			
WG125I03P05PT	3	3,18	.125	0,075	.003	0,20	.008	9,55	.376		6686432	
WG188I04P08PT	4	4,76	.188	0,025	.001	0,32	.013	10,14	.399		6686433	
WG250I06P08PT	6	6,35	.250	0,075	.001	0,32	.013	14,53	.572		6686434	

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

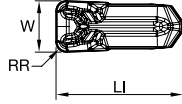
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

WGC Grooving Inserts • PN Precision Molded • Metric



- first choice
- alternate choice

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

catalog number	SSC	W		W tol ±		RR		LI		WU10PT	WU25PT	WU35PT
		mm	in	mm	in	mm	in	mm	in			
WG0212M02U02PN	2	2,13	.084	0,050	.002	0,20	.008	8,97	.353	●	●	●
WG0251M02U02PN	2	2,51	.099	0,050	.002	0,20	.008	8,97	.353	●	●	●
WG0312M03U02PN	3	3,13	.123	0,075	.003	0,20	.008	9,60	.378	●	●	●
WG0312M03U04PN	3	3,13	.123	0,075	.003	0,40	.016	9,60	.378	●	●	●
WG0412M04U04PN	4	4,13	.162	0,075	.003	0,40	.016	10,20	.401	●	●	●
WG0412M04U08PN	4	4,13	.162	0,075	.003	0,80	.031	10,20	.401	●	●	●
WG0512M05U04PN	5	5,13	.202	0,075	.003	0,40	.016	12,24	.482	●	●	●
WG0512M05U08PN	5	5,13	.202	0,075	.003	0,80	.031	12,24	.482	●	●	●
WG0612M06U04PN	6	6,13	.241	0,075	.003	0,40	.016	14,59	.575	●	●	●
WG0612M06U08PN	6	6,13	.241	0,075	.003	0,80	.031	14,59	.574	●	●	●
WG0812M08U08PN	8	8,13	.320	0,075	.003	0,80	.031	17,46	.687	●	●	●
WG0812M08U12PN	8	8,13	.320	0,075	.003	1,20	.047	17,46	.687	●	●	●
WG1012M10U12PN	10	10,13	.399	0,075	.003	1,20	.047	20,75	.817	●	●	●

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

INDEXABLE MILLING

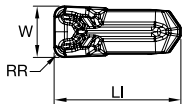
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## WGC Grooving Inserts • PN Precision Molded • Inch



● first choice

○ alternate choice

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

catalog number	SSC	W		W tol ±		RR		LI		WU10PT	WU25PT	WU35PT
		mm	in	mm	in	mm	in	mm	in			
WG125I03U1PN	3	3,18	.125	0,075	.003	0,40	.016	9,60	.378	●	●	●
WG125I03U05PN	3	3,18	.125	0,075	.003	0,20	.008	9,60	.378	○	○	○
WG130I03U1PN	3	3,30	.130	0,075	.003	0,40	.016	9,60	.378	●	●	●
WG130I03U05PN	3	3,30	.130	0,075	.003	0,20	.008	9,60	.378	○	○	○
WG187I04U1PN	4	4,75	.187	0,075	.003	0,40	.016	10,19	.401	●	●	●
WG187I04U2PN	4	4,75	.187	0,075	.003	0,80	.032	10,20	.401	○	○	○
WG192I04U1PN	4	4,88	.192	0,075	.003	0,40	.016	10,20	.401	●	●	●
WG192I04U2PN	4	4,88	.192	0,075	.003	0,80	.031	10,20	.401	○	○	○
WG250I06U1PN	6	6,35	.250	0,075	.003	0,40	.016	14,58	.574	●	●	●
WG250I06U2PN	6	6,35	.250	0,075	.003	0,80	.032	14,58	.574	○	○	○
WG255I06U1PN	6	6,48	.255	0,075	.003	0,40	.016	14,58	.574	●	●	●
WG255I06U2PN	6	6,48	.255	0,075	.003	0,80	.031	14,58	.574	○	○	○

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

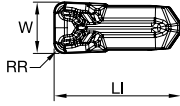
TAPPING

TURNING

WGC Grooving Inserts • PN Precision Molded • Inch

(continued)

- first choice
- alternate choice



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

catalog number	SSC	W		W tol ±		RR		LI		WU10PT	WU25PT	WU35PT
		mm	in	mm	in	mm	in	mm	in			
WG312108U3PN	8	7,93	.312	0,075	.003	1,20	.047	17,46	.687			
WG317108U3PN	8	8,05	.317	0,075	.003	1,19	.047	17,46	.687			
WG375110U3PN	10	9,53	.375	0,075	.003	1,20	.047	20,75	.817			
WG380110U3PN	10	9,65	.380	0,075	.003	1,20	.047	20,70	.815			

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

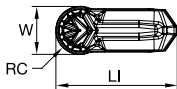
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## WGC Grooving Inserts • PC Full Radius Precision Ground • Metric



● first choice

○ alternate choice

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

catalog number	SSC	W		W tol ±		RC		LI		WU10PT	WU25PT	WU35PT
		mm	in	mm	in	mm	in	mm	in			
WR0200M02P00PC	2	2,00	.079	0,025	.001	1,00	.039	8,91	.351	✓	6470467	✓
WR0300M03P00PC	3	3,00	.118	0,025	.001	1,50	.059	9,54	.376	✓	6470468	✓
WR0400M04P00PC	4	4,00	.158	0,025	.001	2,00	.079	10,13	.399	✓	6470469	✓
WR0500M05P00PC	5	5,00	.197	0,025	.001	2,50	.098	12,18	.480	✓	6470470	✓
WR0600M06P00PC	6	6,00	.236	0,025	.001	3,00	.118	14,52	.572	✓	6470481	✓
WR0800M08P00PC	8	8,00	.315	0,025	.001	4,00	.158	17,41	.685	✓	6470482	✓

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

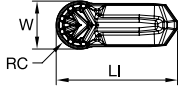
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

WGC Grooving Inserts • PC Full Radius Precision Ground • Inch



● first choice  
○ alternate choice

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

catalog number	SSC	W		W tol ±		RC		LI		WU10PT	WU25PT	WU35PT
		mm	in	mm	in	mm	in	mm	in			
WR125I03P00PC	3	3,18	.125	0,025	.001	1,59	.062	9,54	.376		6470263	
WR187I04P00PC	4	4,76	.188	0,025	.001	2,38	.094	10,13	.399		6470264	
WR250I06P00PC	6	6,35	.250	0,025	.001	3,18	.125	14,54	.572		6470265	
WR312I08P00PC	8	7,92	.312	0,025	.001	3,96	.156	17,40	.685		6470266	

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

## Catalog Numbering System • Grooving

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.

WGC	S	M	R	10	02	08	C
Family Name	Tool Style	Support Type	Hand	Shank Size	Seat Size	Max Groove Depth	Coolant
WIDIA™ Grooving and Cut-Off	<b>S = Straight mount</b>	<b>M</b> = Maximum support for specific groove width and straight clearance for unlimited workpiece diameter <b>A</b> = Face grooving – inboard sweep <b>B</b> = Face grooving – outboard sweep	<b>L</b> = Left hand <b>R</b> = Right hand	<b>Metric</b> = Height x Width in mm letter indicates tool length according to ISO  <b>Inch</b> = Height x Width in 1/16" increments	1B 1F 02 03 04 05 06 08 10	in millimetres	<b>C</b> = Through the pocket coolant capable





**Catalog Numbering System • Modular Toolholders**

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.

WGC	M	S	R	16	50	C
Family Name	Modular	Tool Style	Hand	Shank Size	Blade Size	Coolant
WIDIA™ Grooving and Cut-Off		<b>S</b> = Straight Mount <b>E</b> = End Mount (90°)	<b>L</b> = Left hand <b>R</b> = Right hand	<b>Metric</b> = Height x Width in mm letter indicates tool length according to ISO  <b>Inch</b> = Height x Width in 1/16" increments	<b>50</b> <b>65</b>	<b>C</b> = Through coolant capable

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

**Catalog Numbering System • Modular Blades**

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.

<b>WGC</b>	<b>M</b>	<b>50</b>	<b>R</b>	<b>03</b>	<b>12</b>	<b>M</b>	<b>C</b>
Family Name	Modular	Blade Size	Hand	Seat Size	Max Groove Depth	Support Type	Coolant
WIDIA™ Grooving and Cut-Off		50 65	L = Left hand R = Right hand	1B 1F 02 03 04 05 06 08 10	in millimeters	M = Maximum support for specific groove width and straight clearance for unlimited diameter	C = Through the pocket coolant capable

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

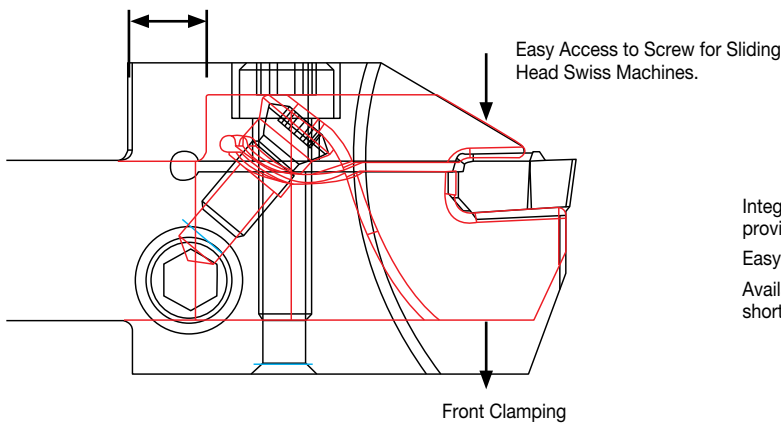
## WGC • Integral Reinforced Front Clamp Toolholders

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.

<b>WGC</b>	<b>S</b>	<b>C</b>	<b>F</b>	<b>L</b>	<b>2020K</b>	<b>3</b>	<b>16</b>	<b>C</b>
<b>WGC</b>	<b>S</b>	<b>C</b>	<b>F</b>	<b>L</b>	<b>12</b>	<b>3</b>	<b>16</b>	<b>C</b>
Family Name	Tool Style	Support Type	Clamping Screw Position	Hand	Shank Size	Seat Size	Cut-Off Depth	Coolant
Widia Grooving and Cut-Off	S: Straight Mount	C: Reinforced maximum support width circular clearance	F: Front	L: Left Hand R: Right Hand	Metric: Height x Width in mm  Letter Indicates Tool Length according to ISO  Inch: Height x Width in 1/16 inch increment	1B 1F 2 3 4 5 6 8 10	in Millimeters	Through Coolant Capability

### Benefits of Front Clamp Compared to Top Clamp

Reduced Head Length for Added Stability.

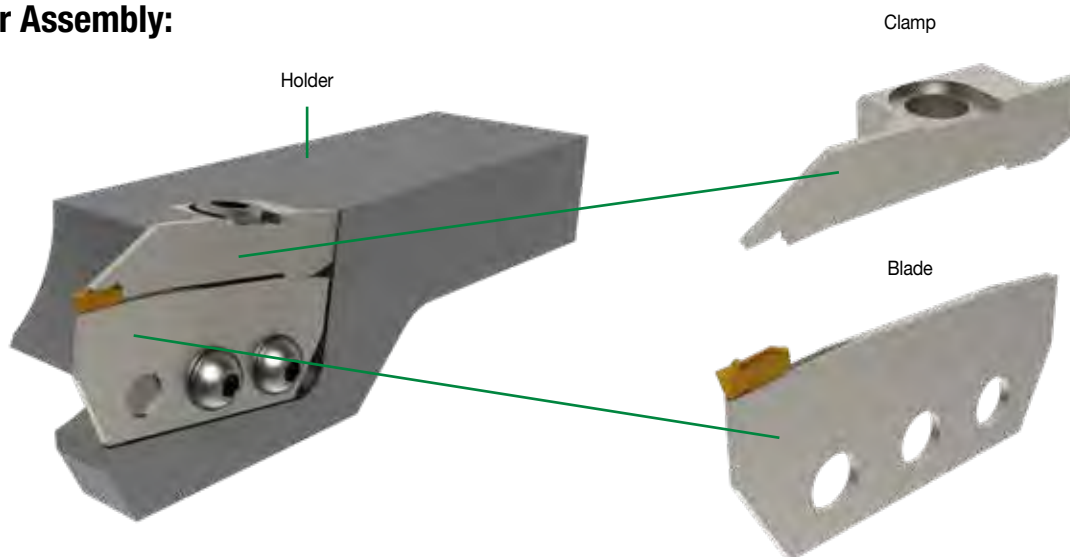


Integral reinforced Front Clamp Holders provide greater rigidity and stability. Easy access to clamp and unclamp screw. Available in small shank sizes and suitable for shorter CDs.

## WGC Separator Blades and Clamps for Universal Style Holders

- Cut-off up to 3" bar capacity.
- Insert widths .094-.188" (2,38-4,76mm).
- Quick, reliable insert indexing.
- Positive mechanical clamping.
- Common blade for RH and LH holders.
- Inserts in proven PVD grades WU10PT, WU25PT, and WU35PT.

### Toolholder Assembly:



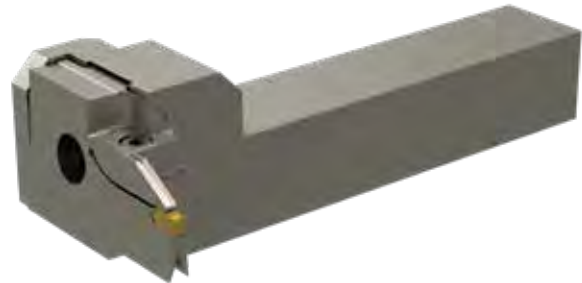
## WGC Separator Blades and Clamps for Universal Style Holders

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.

WGC	SU	N	02	28	B
Platform (WIDIA™ Grooving and Cut-Off)	Separator Universal	Hand	Pocket Seat Size	CD (mm)	
		N: Neutral R: Right L: Left			B: Blade K: Clamp

## WIDIA™ WGC Ranger Adjustable Face Grooving System

WGC Ranger is the industry's only fully adjustable face grooving platform. The system can produce face groove diameters from 2.25–16" (57,2–406mm).



### Square Shank Toolholders

- Compact, right angle design with full 1" depth of cut capability when using .188"- and .250"-wide inserts.
- Versatile selection of curve-out cartridges, featuring .125", .188", and .250" widths.
- Inserts in grades for steels, stainless steels, non-ferrous materials, and cast iron.



### Round Shank Bars

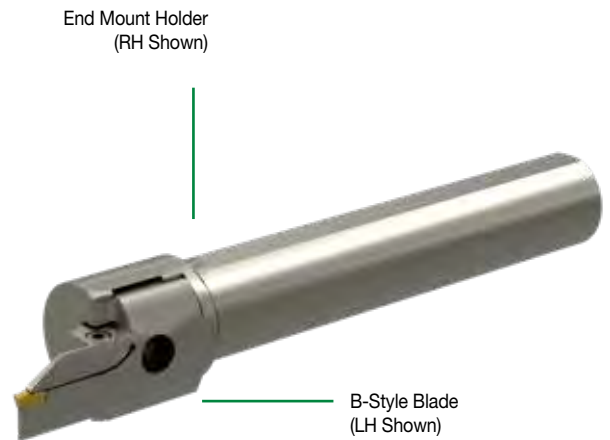
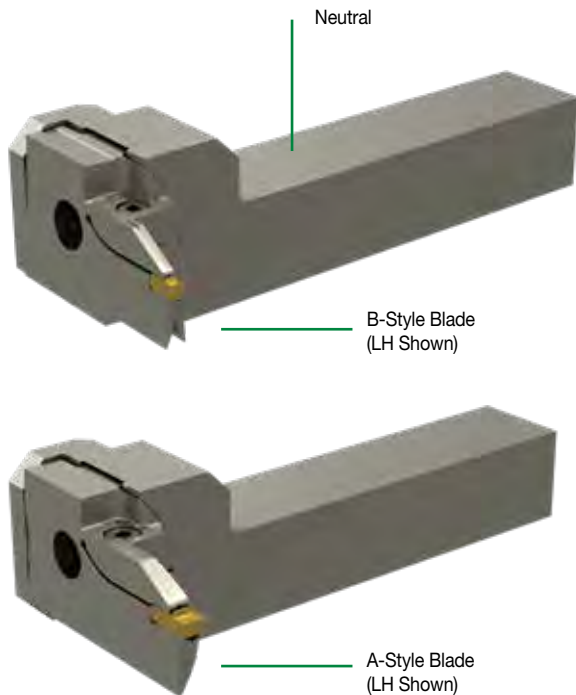
- Available in 1", 1.25", and 1.50" round shanks with added flexibility to use both right-hand and left-hand cartridges in the same shank.
- Versatile selection of both curve-in and curve-out cartridges to produce external and internal (through the bore) face groove styles.
- Insert widths of .125", .188", and .250" with choice of square front inserts for plunge and groove, or full nose radii for plunge, groove, and profile.



### WGC Ranger • Nomenclature

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.

WGC	M	RA	L	3	19	B	317
Platform (WIDIA™ Grooving and Cut-Off)	Modular	Ranger	Hand	Pocket Seat Size	CD [mm]	Style	Minimum Insert Width
			L: Left Hand R: Right Hand	3 4 6		A: Inboard B: Outboard	317: 3.17 [0.125] 476: 4.76 [0.187] 635: 6.35 [0.250]
							Use only recommended insert width or higher for a particular pocket seat size.



Use LH Blade for RH Holder and vice versa.

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

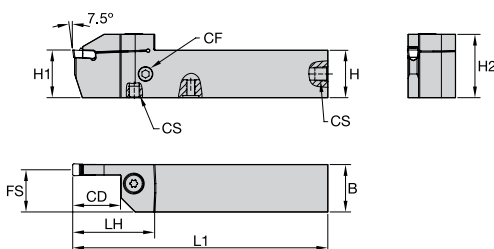
TAPPING

TURNING

WGC Integral Toolholders • Straight • Inch



Left hand



order number	catalog number	SSC	CD	H1	H	B	H2	L1	FS	LH	CF	CS
right hand												
6461884	WGCSMR120216	2	.63	.750	.750	.750	1.03	4.50	.71	1.22	—	—
6461885	WGCSMR160216	2	.63	1.000	1.000	1.000	1.28	6.00	.96	1.22	—	—
6461886	WGCSMR120222	2	.87	.750	.750	.750	1.10	4.50	.71	1.50	—	—
6461887	WGCSMR160226	2	1.02	1.000	1.000	1.000	1.35	6.00	.96	1.65	—	—
6461922	WGCSMR120316C	3	.63	.750	.750	.750	—	4.50	.69	1.46	M8X1	M8X1
6461923	WGCSMR160316C	3	.63	1.000	1.000	1.000	1.35	6.00	.94	1.46	G1/8-28	G1/8-28
6461924	WGCSMR120322C	3	.87	.750	.750	.750	1.12	4.50	.69	1.69	M8X1	M8X1
6461925	WGCSMR160326C	3	1.02	1.000	1.000	1.000	1.39	6.00	.94	1.85	G1/8-28	G1/8-28
6461926	WGCSMR120416C	4	.63	.750	.750	.750	1.10	4.50	.68	1.46	M8X1	M8X1
6461927	WGCSMR160416C	4	.63	1.000	1.000	1.000	1.34	6.00	.93	1.46	G 1/8	G 1/8
6461928	WGCSMR120422C	4	.87	.750	.750	.750	1.10	4.50	.68	1.69	M8X1	M8X1
6461929	WGCSMR160426C	4	1.02	1.000	1.000	1.000	1.38	6.00	.93	1.85	G 1/8	G 1/8
6461930	WGCSMR200426C	4	1.02	1.250	1.250	1.250	1.60	6.00	1.18	1.85	G1/8-28	G1/8-28
6461941	WGCSMR200432C	4	1.26	1.250	1.250	1.250	1.70	6.00	1.18	2.09	G 1/8	G 1/8
6461942	WGCSMR160516C	5	.63	1.000	1.000	1.000	1.40	6.00	.91	1.46	G 1/8	G 1/8
6461943	WGCSMR160526C	5	1.02	1.000	1.000	1.000	1.40	6.00	.91	1.85	G 1/8	G 1/8
6461944	WGCSMR200526C	5	1.02	1.250	1.250	1.250	1.60	6.00	1.16	1.85	G1/8-28	G1/8-28
6461945	WGCSMR200532C	5	1.26	1.250	1.250	1.250	1.70	6.00	1.16	2.09	G 1/8	G 1/8
6461947	WGCSMR160616C	6	.63	1.000	1.000	1.000	1.40	6.00	.89	1.46	G 1/8	G 1/8
6461949	WGCSMR160626C	6	1.02	1.000	1.000	1.000	1.40	6.00	.89	1.85	G 1/8	G 1/8
6461951	WGCSMR200626C	6	1.02	1.250	1.250	1.250	1.60	6.00	1.14	1.85	G1/8-28	G1/8-28
6461953	WGCSMR200632C	6	1.26	1.250	1.250	1.250	1.70	6.00	1.14	2.17	G 1/8	G 1/8
6461955	WGCSMR240640C	6	1.58	1.500	1.500	1.500	2.00	7.00	1.39	2.48	G 1/8	G 1/8
6461957	WGCSMR160826C	8	1.02	1.000	1.000	1.000	1.40	6.00	.86	1.93	G 1/8	G 1/8
6461959	WGCSMR200826C	8	1.02	1.250	1.250	1.250	1.70	6.00	1.11	1.93	G1/8-28	G1/8-28
6461961	WGCSMR200832C	8	1.26	1.250	1.250	1.250	1.70	6.00	1.11	2.17	G 1/8	G 1/8
6461962	WGCSMR240840C	8	1.58	1.500	1.500	1.500	2.00	7.00	1.36	2.48	G 1/8	G 1/8
6461963	WGCSMR201032C	10	1.26	1.250	1.250	1.250	1.70	6.00	1.08	2.17	G 1/8	G 1/8
6461964	WGCSMR241040C	10	1.58	1.500	1.500	1.500	2.00	7.00	1.33	2.48	G 1/8	G 1/8
left hand												
6461888	WGCSML120216	2	.63	.750	.750	.750	—	4.50	.71	1.22	—	—
6461889	WGCSML160216	2	.63	1.000	1.000	1.000	1.28	6.00	.96	1.22	—	—
6461890	WGCSML120222	2	.87	.750	.750	.750	1.10	4.50	.71	1.50	—	—
6461921	WGCSML160226	2	1.02	1.000	1.000	1.000	1.35	6.00	.96	1.65	—	—
6461965	WGCSML120316C	3	.63	.750	.750	.750	1.10	4.50	.69	1.46	M8X1	M8X1
6461966	WGCSML160316C	3	.63	1.000	1.000	1.000	1.35	6.00	.94	1.46	G 1/8	G 1/8
6461967	WGCSML120322C	3	.87	.750	.750	.750	1.12	4.50	.69	1.69	M8X1	M8X1
6461968	WGCSML160326C	3	1.02	1.000	1.000	1.000	1.39	6.00	.94	1.85	G 1/8	G 1/8
6461969	WGCSML120416C	4	.63	.750	.750	.750	1.10	4.50	.68	1.46	M8X1	M8X1
6461970	WGCSML160416C	4	.63	1.000	1.000	1.000	1.34	6.00	.93	1.46	G1/8-28	G1/8-28
6461971	WGCSML120422C	4	.87	.750	.750	.750	1.10	4.50	.68	1.69	M8X1	M8X1
6461972	WGCSML160426C	4	1.02	1.000	1.000	1.000	1.38	6.00	.93	1.85	G 1/8	G 1/8
6461973	WGCSML200426C	4	1.02	1.250	1.250	1.250	1.60	6.00	1.18	1.85	G 1/8	G 1/8
6461974	WGCSML200432C	4	1.26	1.250	1.250	1.250	1.70	6.00	1.18	2.09	G 1/8	G 1/8
6461975	WGCSML160516C	5	.63	1.000	1.000	1.000	1.40	6.00	.91	1.46	G 1/8	G 1/8
6461976	WGCSML160526C	5	1.02	1.000	1.000	1.000	1.10	6.00	.91	1.85	G 1/8	G 1/8
6461977	WGCSML200526C	5	1.02	1.250	1.250	1.250	1.60	6.00	1.16	1.85	G 1/8	G 1/8
6461978	WGCSML200532C	5	1.26	1.250	1.250	1.250	1.70	6.00	1.16	2.09	G 1/8	G 1/8
6461979	WGCSML160616C	6	.63	1.000	1.000	1.000	1.40	6.00	.89	1.46	G 1/8	G 1/8
6461980	WGCSML160626C	6	1.02	1.000	1.000	1.000	1.40	6.00	.89	1.85	G1/8-28	G1/8-28
6461991	WGCSML200626C	6	1.02	1.250	1.250	1.250	1.60	6.00	1.14	1.85	G1/8-28	G1/8-28
6461992	WGCSML200632C	6	1.26	1.250	1.250	1.250	1.70	6.00	1.14	2.17	G 1/8	G 1/8
6461993	WGCSML240640C	6	1.58	1.500	1.500	1.500	2.00	7.00	1.39	2.48	G 1/8	G 1/8
6461994	WGCSML160826C	8	1.02	1.000	1.000	1.000	1.40	6.00	.86	1.93	G 1/8	G 1/8
6461995	WGCSML200826C	8	1.02	1.250	1.250	1.250	1.70	6.00	1.11	1.93	G 1/8	G 1/8
6461996	WGCSML200832C	8	1.26	1.250	1.250	1.250	1.70	6.00	1.11	2.17	G 1/8	G 1/8
6461997	WGCSML240840C	8	1.58	1.500	1.500	1.500	2.00	7.00	1.36	2.48	G 1/8	G 1/8
6461998	WGCSML201032C	10	1.26	1.250	1.250	1.250	1.70	6.00	1.08	2.17	G 1/8	G 1/8
6461999	WGCSML241040C	10	1.58	1.500	1.500	1.500	2.00	7.00	1.33	2.48	G 1/8	G 1/8

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

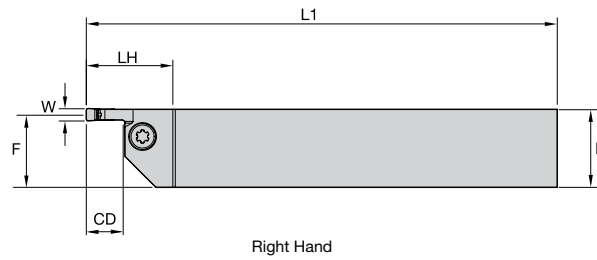
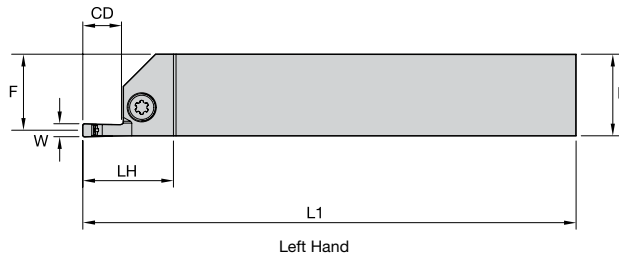
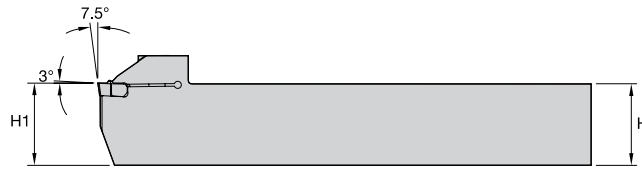
WGCSM-Non Through Coolant Integral Toolholders • Integral Straight Shank



Left Hand



Right Hand



order number	catalog number	SSC	CD	H1	H	B	F	L1	W	LH
<b>right hand</b>										
6949739	WGCSMR100208	2	.32	.625	.625	.625	.63	4.50	.08	.91
6949740	WGCSMR120208	2	.32	.750	.750	.625	.75	4.50	.08	.91
6949791	WGCSMR160208	2	.32	1.000	1.000	1.000	1.00	6.00	.08	.91
6949792	WGCSMR120310	3	.39	.750	.750	.750	.75	4.50	.12	1.02
6949793	WGCSMR160310	3	.39	1.000	1.000	1.000	1.00	6.00	.12	1.02
6949794	WGCSMR120316	3	.63	.750	.750	.750	.75	4.50	.12	1.26
6949795	WGCSMR160316	3	.63	1.000	1.000	1.000	1.00	6.00	.12	1.26
6949796	WGCSMR120412	4	.47	.750	.750	.750	.75	4.50	.16	1.10
6949797	WGCSMR160412	4	.47	1.000	1.000	1.000	1.00	6.00	.16	1.10
<b>left hand</b>										
6949798	WGCSML100208	2	.32	.625	.625	.625	.63	4.50	.08	.91
6949799	WGCSML120208	2	.32	.750	.750	.750	.75	4.50	.08	.91
6949800	WGCSML160208	2	.32	1.000	1.000	1.000	1.00	6.00	.08	.91
6949801	WGCSML120310	3	.39	.750	.750	.750	.75	4.50	.12	1.02
6949802	WGCSML160310	3	.39	.985	.985	1.000	1.00	6.00	.12	1.02
6949803	WGCSML120316	3	.63	.750	.750	.750	.75	4.50	.12	1.26
6949804	WGCSML160316	3	.63	.985	.985	1.000	1.00	6.00	.12	1.26
6949805	WGCSML120412	4	.47	.750	.750	.750	.75	4.50	.16	1.10
6949806	WGCSML160412	4	.47	1.000	1.000	1.000	1.00	6.00	.16	1.10

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



WGC Integral Toolholders • Reinforced Front Clamp • Inch

INDEXABLE MILLING

SOLID END MILLING

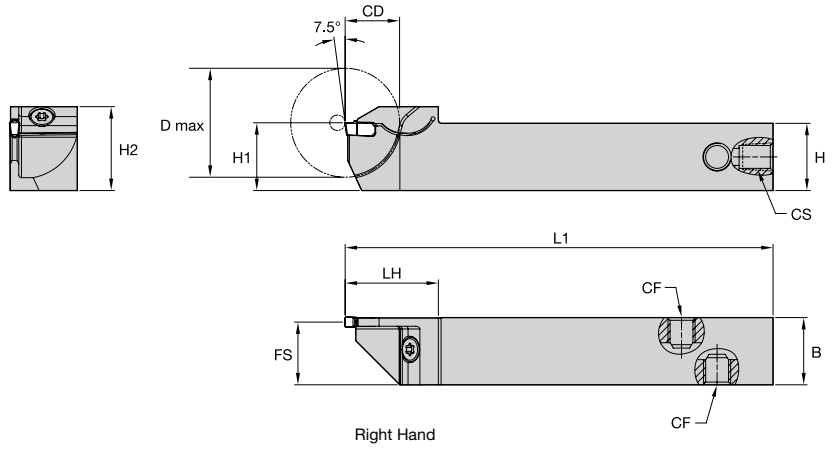
HOLEMAKING

TAPPING

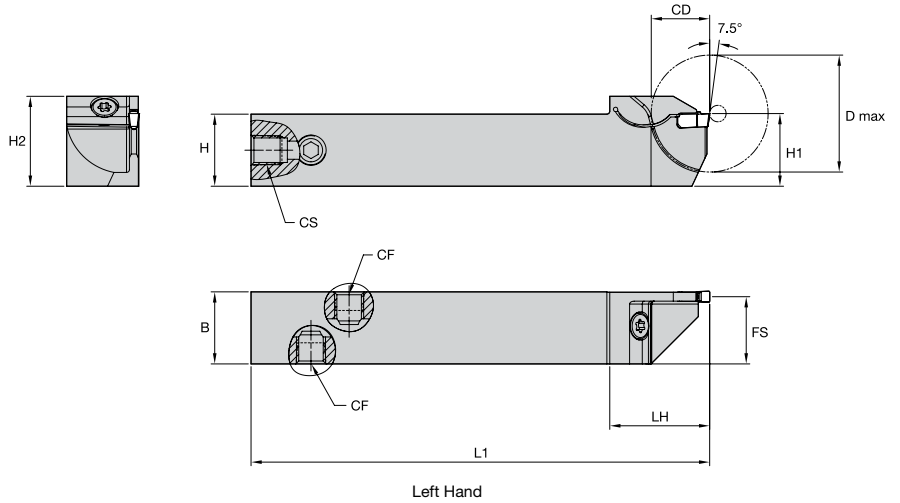
TURNING



Right Hand



Left Hand



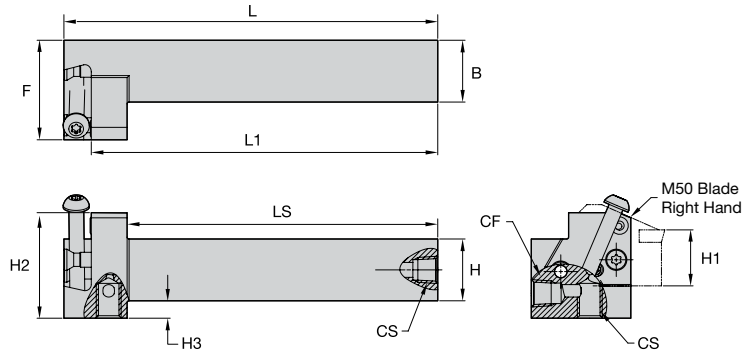
order number	catalog number	SSC	CD	D max	H1	H	B	H2	L1	FS	LH	CF
<b>right hand</b>												
6765342	WGCSCFR060210	2	.39	.787	.375	.375	.375	.53	4.50	.34	.81	—
6765348	WGCSCFR080216	2	.63	1.260	.500	.500	.500	.66	4.50	.46	1.04	—
6765350	WGCSCFR100216	2	.63	1.260	.625	.625	.625	.80	4.50	.59	1.04	—
6765402	WGCSCFR120216	2	.63	1.260	.750	.750	.750	.93	4.50	.71	1.04	—
6765349	WGCSCFR080316C	3	.63	1.260	.500	.500	.500	.69	4.50	.44	1.08	M8X1
6765401	WGCSCFR100316C	3	.63	1.260	.625	.625	.625	.81	4.50	.57	1.08	M8X1
6765403	WGCSCFR120316C	3	.63	1.260	.750	.750	.750	.94	4.50	.69	1.08	M8X1
<b>left hand</b>												
6765325	WGCSCFL060210	2	.39	.787	.375	.375	.375	.53	4.50	.34	.81	—
6765326	WGCSCFL080216	2	.63	1.260	.500	.500	.500	.66	4.50	.46	1.04	—
6765327	WGCSCFL100216	2	.63	1.260	.625	.625	.625	.82	4.50	.59	1.04	—
6765330	WGCSCFL120216	2	.63	1.260	.750	.750	.750	.93	4.50	.71	1.04	—
6656188	WGCSCFL080316C	3	.63	1.260	.500	.500	.500	.69	4.50	.44	1.08	M8X1
6765329	WGCSCFL100316C	3	.63	1.260	.625	.625	.625	.81	4.50	.57	1.08	M8X1
6765341	WGCSCFL120316C	3	.63	1.260	.750	.750	.750	.94	4.50	.69	1.08	M8X1

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

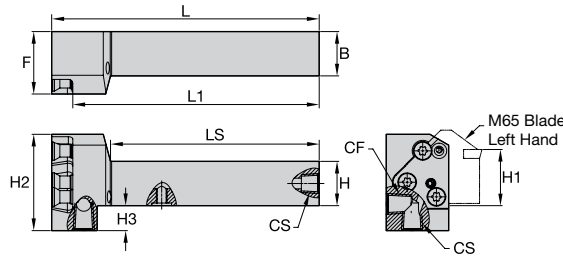
WGC • Modular Toolholders • Endmount • with Coolant • Inch



M50 Blade Right Hand



M65 Blade Left Hand



order number	catalog number	B	H	H1	L	L1	LS	F	CS	CF	H2	H3	blade size
<b>right hand</b>													
6498941	WGCMER1650C	1.00	1.00	1.00	6.0	5.5	4.96	.47	G 1/8-28	G 1/8-28	1.67	.25	50
6498942	WGCMER1665C	1.00	1.00	1.00	6.0	5.5	4.70	1.38	G 1/8-28	G 1/8-28	2.09	.50	65
6498943	WGCMER2050C	1.25	1.25	1.25	6.0	5.5	4.96	.47	G 1/8-28	G 1/8-28	1.67	—	50
6498944	WGCMER2065C	1.25	1.25	1.25	6.0	5.5	4.70	1.38	G 1/8-28	G 1/8-28	2.09	.25	65
6498945	WGCMER2450C	1.50	1.50	1.50	6.0	5.5	4.96	.47	G 1/8-28	G 1/8-28	1.92	—	50
6498946	WGCMER2465C	1.50	1.50	1.50	7.0	6.5	5.70	1.49	G 1/8-28	G 1/8-28	2.09	—	65
<b>left hand</b>													
6498947	WGCME1650C	1.00	1.00	1.00	6.0	5.5	4.96	.47	G 1/8-28	G 1/8-28	1.67	.25	50
6498948	WGCME1665C	1.00	1.00	1.00	6.0	5.5	4.70	1.38	G 1/8-28	G 1/8-28	2.09	.50	65
6498949	WGCME12050C	1.25	1.25	1.25	6.0	5.5	4.96	.47	G 1/8-28	G 1/8-28	1.67	—	50
6498950	WGCME12065C	1.25	1.25	1.25	6.0	5.5	4.70	1.38	G 1/8-28	G 1/8-28	2.09	.25	65
6498951	WGCME12450C	1.50	1.50	1.50	6.0	5.5	4.96	.47	G 1/8-28	G 1/8-28	1.92	—	50
6498952	WGCME12465C	1.50	1.50	1.50	7.0	6.5	5.70	1.49	G 1/8-28	G 1/8-28	2.09	—	65

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

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

## WGC • Modular Toolholders • Endmount • with Coolant • Inch

INDEXABLE MILLING

SOLID END MILLING

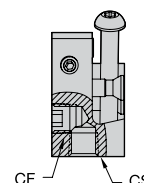
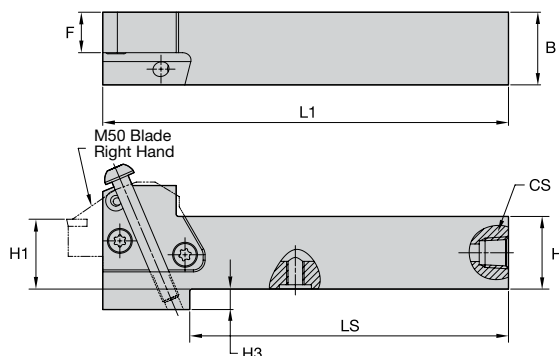
HOLEMAKING

TAPPING

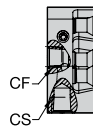
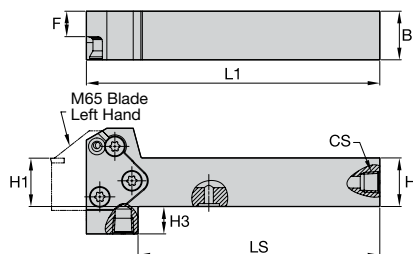
TURNING



M50 Blade Right Hand



M65 Blade Left Hand

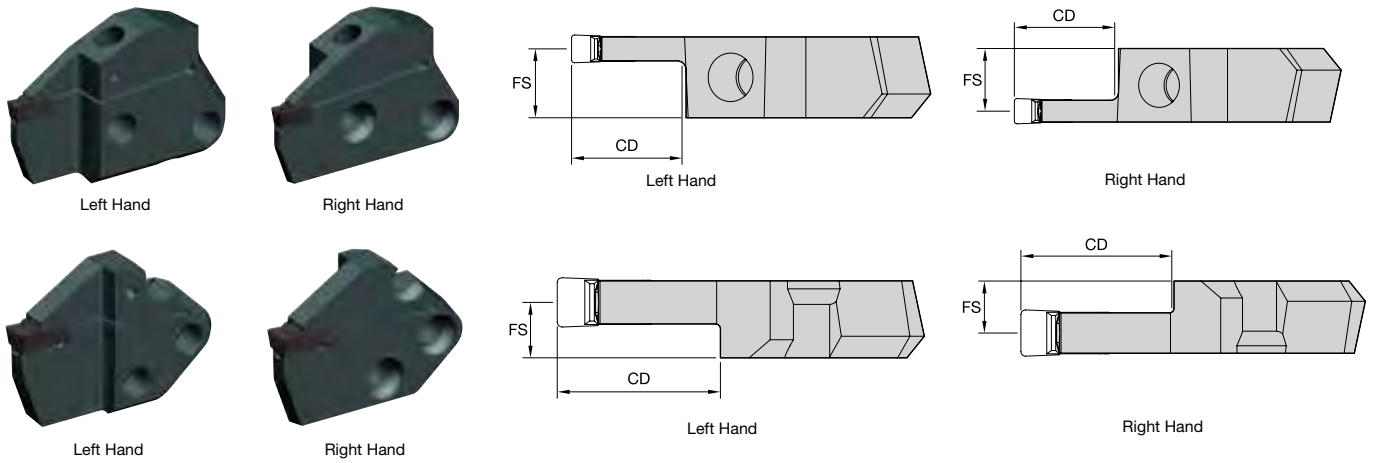


order number	catalog number	H	H1	B	L1	LS	F	CS	CF	H3	blade size
<b>right hand</b>											
6499230	WGCMR1650C	1.00	1.00	1.00	5.5	4.33	.56	G 1/8-28	G 1/8-28	.25	50
6499271	WGCMR1665C	1.00	1.00	1.00	6.0	4.90	.53	G 1/8-28	G 1/8-28	—	65
6499272	WGCMR2050C	1.25	1.25	1.25	5.5	4.52	.81	G 1/8-28	G 1/8-28	—	50
6499273	WGMSR2065C	1.25	1.25	1.25	6.0	4.90	.78	G 1/8-28	G 1/8-28	—	65
6499274	WGCMR2450C	1.50	1.50	1.50	5.5	4.52	1.06	G 1/8-28	G 1/8-28	—	50
6499275	WGCMR2465C	1.50	1.50	1.50	7.0	5.90	1.03	G 1/8-28	G 1/8-28	—	65
<b>left hand</b>											
6499276	WGMSL1650C	1.00	1.00	1.00	5.5	4.33	.56	G 1/8-28	G 1/8-28	.25	50
6499277	WGMSL1665C	1.00	1.00	1.00	6.0	4.90	.53	G 1/8-28	G 1/8-28	—	65
6499278	WGMSL2050C	1.25	1.25	1.25	5.5	4.52	.81	G 1/8-28	G 1/8-28	—	50
6499279	WGMSL2065C	1.25	1.25	1.25	6.0	4.90	.78	G 1/8-28	G 1/8-28	—	65
6499280	WGMSL2450C	1.50	1.50	1.50	5.5	4.52	1.06	G 1/8-28	G 1/8-28	—	50
6499281	WGMSL2465C	1.50	1.50	1.50	7.0	5.90	1.03	G 1/8-28	G 1/8-28	—	65

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

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

WGCM-S-C • WGC Modular Straight Blade with Coolant



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

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

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

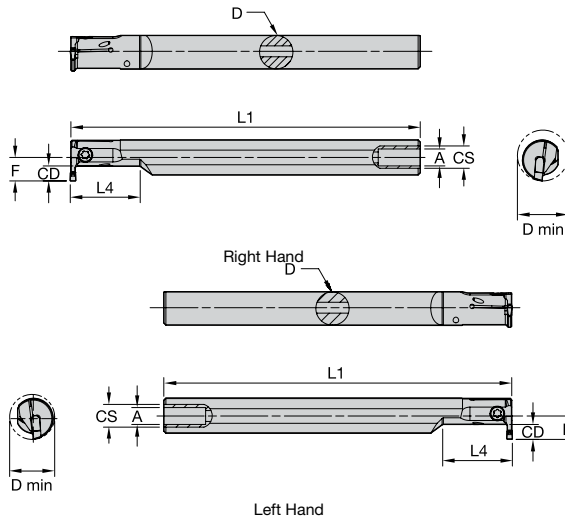
WGC • Integral I.D. Grooving Boring Bars • Inch



Right Hand



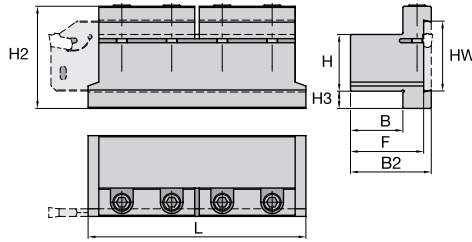
Left Hand



order number	catalog number	SSC	D	D min	CD	L1	F	L4	A	CS
<b>right hand</b>										
6949807	A08KWGCEMR0205I	2	.500	.625	.197	5.000	.336	1.000	.156	1/16 - 27 NPT
6949808	A10MWGCEMR0207I	2	.625	.787	.276	6.000	.436	1.250	.156	1/8 - 27 NPT
6949809	A12QWGCEMR0207I	2	.750	.984	.276	7.000	.550	1.500	.156	1/8 - 27 NPT
6949810	A16RWGCEMR0210I	2	1.000	1.250	.394	8.000	.681	2.000	.156	1/4 - 18 NPT
6949811	A10MWGCEMR0307I	3	.625	.787	.276	6.000	.436	1.250	.156	1/8 - 27 NPT
6949812	A12QWGCEMR0307I	3	.750	.984	.276	7.000	.549	1.500	.156	1/8 - 27 NPT
6949813	A16RWGCEMR0310I	3	1.000	1.250	.394	8.000	.681	2.000	.156	1/4 - 18 NPT
6949814	A16RWGCEMR0410I	4	1.000	1.250	.394	8.000	.681	2.500	.156	1/4 - 18 NPT
<b>left hand</b>										
6949815	A08KWGCEML0205I	2	.500	.625	.197	5.000	.336	1.000	.156	1/16 - 27 NPT
6949816	A10MWGCEML0207I	2	.625	.787	.276	6.000	.436	1.250	.156	1/8 - 27 NPT
6949817	A12QWGCEML0207I	2	.750	.984	.276	7.000	.550	1.500	.156	1/8 - 27 NPT
6949818	A16RWGCEML0210I	2	1.000	1.250	.394	8.000	.681	2.000	.156	1/4 - 18 NPT
6949819	A10MWGCEML0307I	3	.625	.787	.276	6.000	.436	1.250	.156	1/8 - 27 NPT
6949820	A12QWGCEML0307I	3	.750	.984	.276	7.000	.549	1.500	.156	1/8 - 27 NPT
6949821	A16RWGCEML0310I	3	1.000	1.250	.394	8.000	.681	2.000	.156	1/4 - 18 NPT
6949822	A16RWGCEML0410I	4	1.000	1.250	.394	8.000	.681	2.500	.156	1/4 - 18 NPT

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

WGC • Blade Holders • Inch

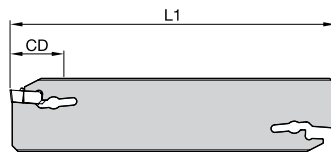


order number	catalog number	HW	H	B	F	H2	B2	H3	L
<b>neutral hand</b>									
2968845	32251221200	1.024	.750	.750	1.161	1.57	1.34	.32	3.39
2968846	32251221600	1.260	1.000	1.000	1.417	1.89	1.63	.30	4.33
2968847	32251222000	1.260	1.250	1.250	1.673	1.97	1.89	.13	4.33

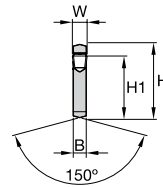
WGC • Double-Ended Cut-Off Blade



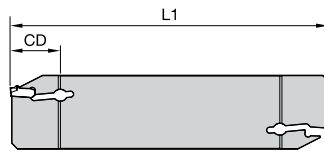
Straight



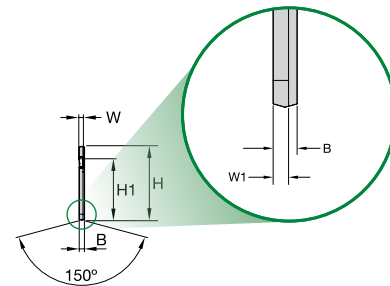
Straight



Reinforced



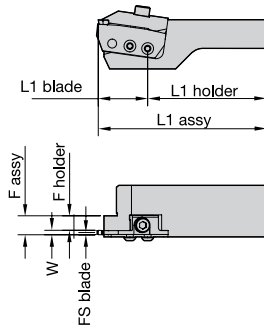
Reinforced



order number	catalog number	SSC	H	W	W1	H1	L1	B	CD
<b>neutral hand</b>									
6498987	WGCBSN19G1B14	1B	19	1,4	1,15	15,5	90	1,80	14
6498988	WGCBSN26J1B15	1B	26	1,4	1,15	21,5	110	1,80	15
6498989	WGCBSN19G1F16	1F	19	1,6	1,30	15,5	90	1,80	16
6498990	WGCBSN26J1F17	1F	26	1,6	1,30	21,5	110	1,80	17
6499211	WGCBSN19G0220	2	19	2,0	—	15,5	90	1,65	20
6499212	WGCBSN26J0230	2	26	2,0	—	21,5	110	1,65	30
6499213	WGCBSN32M0250	2	32	2,0	—	25,1	150	1,65	50
6499214	WGCBSN26J0340	3	26	3,0	2,40	21,5	110	2,40	40
6499215	WGCBSN32M0350	3	32	3,0	2,40	25,1	150	2,40	50
6499216	WGCBSN26J0440	4	26	4,0	3,40	21,5	110	3,40	40
6499217	WGCBSN32M0450	4	32	4,0	3,40	25,1	150	3,40	50
6499218	WGCBSN32M0560	5	32	5,0	4,40	25,1	150	4,40	60
6499219	WGCBSN32M0660	6	32	6,0	5,40	25,1	150	5,40	60
6499220	WGCBSN32M0860	8	32	8,0	7,00	25,1	150	7,00	60
6499221	WGCBSN52X08120	8	53	8,0	7,00	45,3	260	7,00	120

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

WGC Separator Universal Style Toolholder • 2¼" Bar Capacity



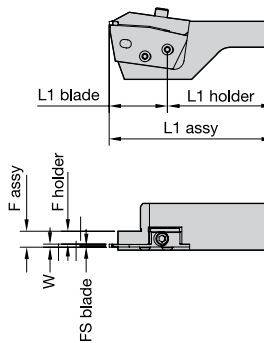
order number	catalog number	B	H	H2	F	L1	L
<b>right hand</b>							
3538667	206128	.812	.750	1.719	1.334	2.747	4.270
3538658	206113	1.062	1.000	1.719	1.584	4.247	5.770
3538665	206123	1.062	1.000	1.719	1.584	3.247	4.770
<b>left hand</b>							
3538662	206118	.812	.750	1.719	1.334	2.747	4.270
3538668	206136	1.062	1.000	1.719	1.584	3.247	4.770

W	L1	FS	left hand clamp	clamp for toolholder 206118 only	support blade	clamp for toolholder 206128 only	right hand clamp
.094	1.752	.036	435149	435151	310109	435150	435148
.125	1.752	.050	435104	435110	310102	435116	435101
.188	1.752	.072	435105	435109	310108	435117	435102

NOTE: Ships with blade and clamp screws.  
 Support blade requires two screws.  
 .750" shank holders 206118 and 206128 use different clamps.  
 Please use right hand clamp with right hand holder or left hand clamp with left hand holder.

WGC Separator Universal Style Toolholder • 3" Bar Capacity



order number	catalog number	B	H	H2	F	L1	L
<b>right hand</b>							
3538660	206115	.964	1.000	2.219	1.454	3.754	5.640
3538661	206116	1.064	1.000	2.219	1.554	3.754	5.640
3587587	206121	1.194	1.250	2.219	1.684	4.004	5.890
<b>left hand</b>							
3563799	206110	1.074	1.000	2.219	1.564	3.304	5.190
3538663	206119	1.104	1.000	2.219	1.594	3.754	5.640

W	L1	FS	left hand clamp	support blade	right hand clamp
.125	2.246	.050	435137	309111	435136
.188	2.246	.072	435106	309105	435103
.250	2.246	.094	435107	309106	435108

NOTE: Ships with blade and clamp screws.  
 Support blade requires two screws.  
 Please use right hand clamp with right hand holder or left hand clamp with left hand holder.

INDEXABLE MILLING

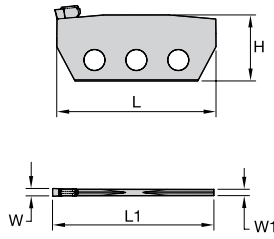
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

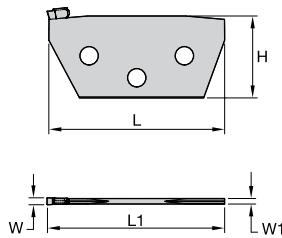
**WGCMSU-B • WGC Separator Universal Blade • for 2¼" Bar Capacity**



order number	catalog number	SSC	H	FS	L	LPR
<b>neutral hand</b>						
6788445	WGCSUN0228B	2	25,40	,825	60,325	60,325
6788446	WGCSUN0328B	3	25,00	1,200	60,325	60,325
6788447	WGCSUN0428B	4	24,70	1,700	60,325	60,325

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

**WGCMSU-B • WGC Separator Universal Blade • for 3" Bar Capacity**



order number	catalog number	SSC	H	FS	L	LPR
<b>neutral hand</b>						
6788453	WGCSUN0338B	3	35,50	1,200	76,200	76,200
6788454	WGCSUN0438B	4	35,20	1,700	76,200	76,200

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

INDEXABLE MILLING

SOLID END MILLING

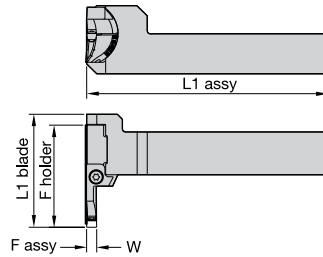
HOLE/MAKING

TAPPING

TURNING



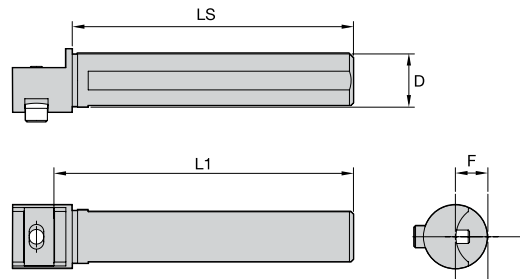
### WGC Ranger Toolholder • Square Shank



order number	catalog number	B	B3	F	H	H2	L1	LS
<b>right hand</b>								
3538797	235104	1.06	.44	-.19	1.00	1.69	5.963	4.475
<b>left hand</b>								
3538800	235107	1.06	.44	-.19	1.00	1.69	5.963	4.475
3538801	235108	1.06	.44	-.19	1.25	1.94	5.963	4.475

NOTE: The toolholder shank is supplied with the support blade mounting screw, 606218, and nut, 61317. Order the insert and cartridge separately. Select left-hand cartridge for right-hand toolholder. Select right-hand cartridge for left-hand toolholder.

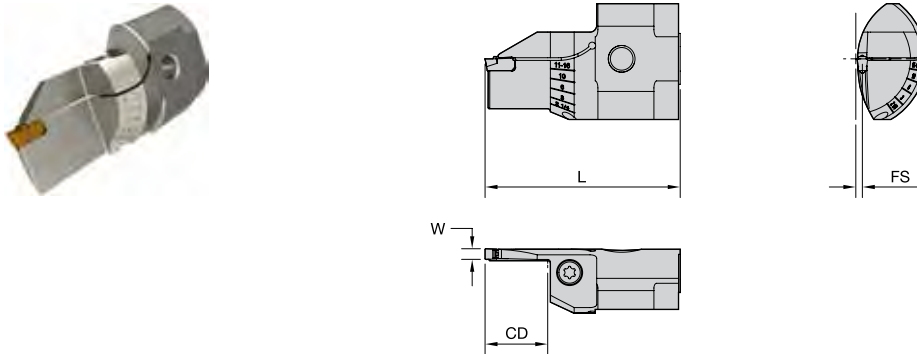
### WGC Ranger Toolholder • Round Shank • Universal Shank for RH and LH Assemblies



order number	catalog number	D	L1	LS	F
<b>neutral hand</b>					
3538803	235110	1.000	6.750	6.600	.763
3538802	235109	1.250	6.750	6.600	.763
3538794	235101	1.500	6.750	6.500	.763

NOTE: Select right-hand cartridge for right-hand assembly. Select left-hand cartridge for left-hand assembly. Round shank bars are supplied with the support blade mounting screw, 619155, and washer, 613135. Order the insert and cartridge separately.

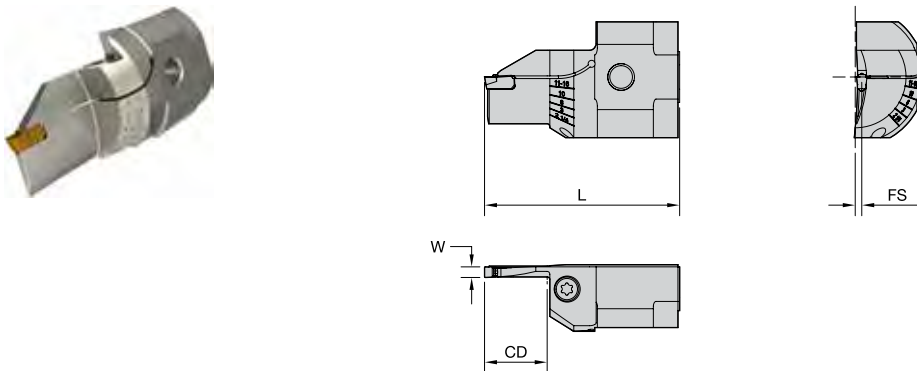
WGCRM-A • WGC Ranger Single-Ended Modular Blades



order number	catalog number	SSC	W	CD	D min	D max	FS	L
<b>right hand</b>								
6740385	WGCMRAR0319A317	3	.125	19,1	2,25	16,00	-1,63	2,30
6740386	WGCMRAR0425A476	4	.188	25,4	2,25	16,00	-2,42	2,55
6740387	WGCMRAR0625A635	6	.250	25,4	2,25	16,00	-3,23	2,55
<b>left hand</b>								
6740382	WGCMRAL0319A317	3	.125	19,1	2,25	16,00	-1,63	2,30
6740383	WGCMRAL0425A476	4	.188	25,4	2,25	16,00	-2,42	2,55
6740384	WGCMRAL0625A635	6	.250	25,4	2,25	16,00	-3,23	2,55

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

WGCRM-B • WGC Ranger Single-Ended Modular Blades



order number	catalog number	SSC	W	CD	D min	D max	FS	L
<b>right hand</b>								
6740411	WGCMRAR0319B317	3	.125	19,1	2,25	16,00	-1,55	2,30
6740412	WGCMRAR0425B476	4	.188	25,4	2,25	16,00	-2,34	2,55
6740413	WGCMRAR0625B635	6	.250	25,4	2,25	16,00	-3,13	2,55
<b>left hand</b>								
6740388	WGCMRAL0319B317	3	.125	19,1	2,25	16,00	-1,55	2,30
6740389	WGCMRAL0425B476	4	.188	25,4	2,25	16,00	-2,34	2,55
6740390	WGCMRAL0625B635	6	.250	25,4	2,25	16,00	-,31	2,55

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

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

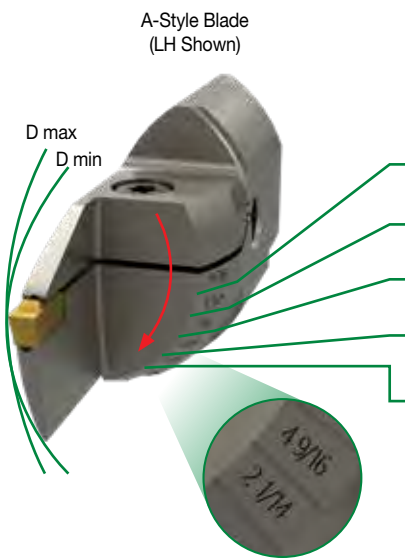
TAPPING

TURNING

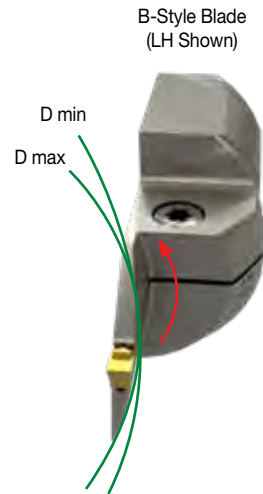
## WGC Ranger™ - Technical Information

### Application Information:

- When changing inserts, be sure the new insert locates against the positive stop on the blade.
- Never tighten the insert clamping screw without an insert in the pocket. Permanent damage to the clamp could occur.
- Toolholder projection length out of the tool block should be as short as possible to maintain rigidity.
- Slower speeds and feeds are recommended compared to O.D. grooving.

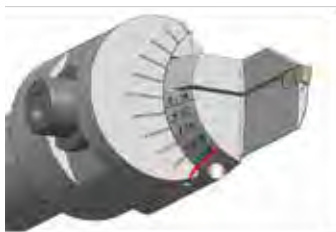


Blade Marking	D min	D max
	[Inch]	[Inch]
	Metric	Metric
9-16	[9] 228.6	[16] 406.4
9 1/2	[8] 203.2	[11] 279.4
7 1/4	[5] 127	[9.5] 241.3
4 9/16	[3.375] 85.725	[5.75] 146.05
2 1/4	[2.25] 57.15	[3.5] 88.9



NOTE: Align Each Blade Marking Against Holder Marking to get the Right D min-D max. Tool Pre-setting recommended after each setting.

### WGC Ranger™ Blade Setting positions



Mark = 2 1/4 setting,  
D min = 2.25" D max = 3.5"



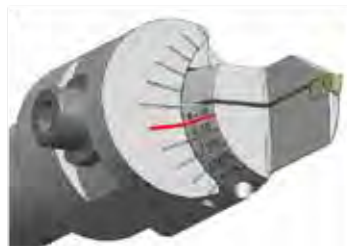
Mark = 4 9/16 setting,  
D min = 3.375" D max = 5.75"



Mark = 7 1/4 setting,  
D min = 5" D max = 9.5"



Mark = 9 1/2 setting,  
D min = 8" D max = 11"



Mark = 9-16 setting,  
D min = 9" D max = 16"

WGC Ranger™ Blade vs Old Ranger Blade Cross-Reference

WGC Ranger Blade mm#	ANSI Catalog #	ISO Catalog #	Ranger Blade mm#	Ranger Blade Catalog #
6740382	WGCMRAL0319A317	WGCMRAL0319A317	3539537	338-123
6740383	WGCMRAL0425A476	WGCMRAL0425A476	3539538	338-124
6740384	WGCMRAL0625A635	WGCMRAL0625A635	3539546	338-132
6740385	WGCMRAR0319A317	WGCMRAR0319A317	3539535	338-121
6740386	WGCMRAR0425A476	WGCMRAR0425A476	3539536	338-122
6740387	WGCMRAR0625A635	WGCMRAR0625A635	3539545	338-131
6740388	WGCMRAL0319B317	WGCMRAL0319B317	3539539	338-125
6740389	WGCMRAL0425B476	WGCMRAL0425B476	3539540	338-126
6740390	WGCMRAL0625B635	WGCMRAL0625B635	3539541	338-127
6740411	WGCMRAR0319B317	WGCMRAR0319B317	3539542	338-128
6740412	WGCMRAR0425B476	WGCMRAR0425B476	3539543	338-129
6740413	WGCMRAR0625B635	WGCMRAR0625B635	3539544	338-130

Coolant Kit

Kit Description	Order Number	Shank Size	Coolant Pressure	Component Description												
				Component Order Number												
				1/16 NPTF MALE TO JIC MALE	1/8 NPTF MALE TO JIC MALE	M8 X 1.25 MALE TO JIC MALE	M8 X 1.0 MALE TO JIC MALE	G1/8 MALE TO JIC MALE	M10 MALE TO JIC MALE	MALE JIC TO FEMALE JIC ELBOW	HEAVY-DUTY 200MM COOLANT HOSE	HEAVY-DUTY 300MM COOLANT HOSE	UNIV 200MM FLEX COOLANT HOSE	UNIV 300MM FLEX COOLANT HOSE	M8X1.0 BANJO 200MM FLEX HOSE	G1/8 BANJO 200MM FLEX HOSE
6145374	6145375	6145378	6475041	6145376	6145377	6145379	6145380	6145381	6432549	6432550	6475043	6475045	6475047	6475049		
<i>Universal 200mm flex hose coolant kit</i>	<b>6475019</b>	12-40mm 1/2-1-1/2"	200 Bar 2901 psi		•	•	•	•	•	•		•				
<i>Universal 300mm flex hose coolant kit</i>	<b>6475021</b>	12-40mm 1/2-1-1/2"	200 Bar 2901 psi	•	•	•	•	•	•			•				
<i>M8x1.0 banjo 200mm flex hose coolant kit</i>	<b>6475023</b>	12-20mm 1/2-3/4"	200 Bar 2901 psi					•	•	•			•			
<i>M8x1.0 banjo 300mm flex hose coolant kit</i>	<b>6475025</b>	12-20mm 1/2-3/4"	200 Bar 2901 psi					•	•	•				•		
<i>G 1/8 banjo 200mm flex hose coolant kit</i>	<b>6475027</b>	25-40mm 1-1-1/2"	200 Bar 2901 psi					•	•	•				•		
<i>G 1/8 banjo 300mm flex hose coolant kit</i>	<b>6475029</b>	25-40mm 1-1-1/2"	200 Bar 2901 psi					•	•	•					•	
<i>Universal 200mm heavy-duty coolant kit</i>	<b>6145372</b>	25-40mm 1-1-1/2"	350 Bar* 5076 psi*	•	•			•	•	•	•					
<i>Universal 300mm heavy-duty coolant kit</i>	<b>6145373</b>	25-40mm 1-1-1/2"	350 Bar* 5076 psi*	•	•			•	•	•	•					

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

### Individual Kit Component List



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

### Individual Kit Component List



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

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

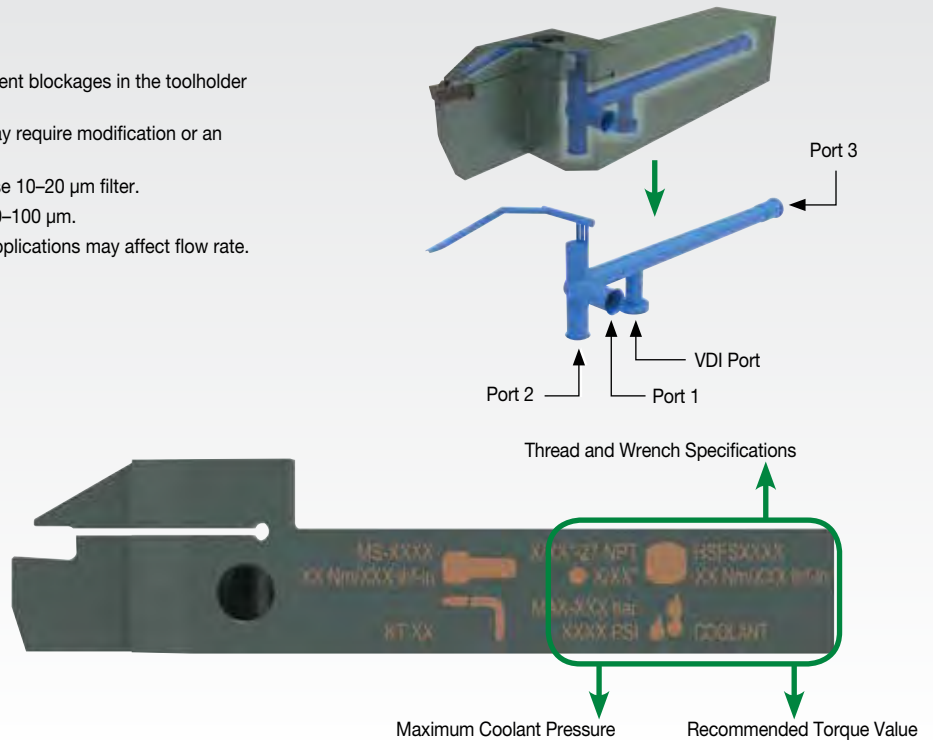
### Coolant Spare Parts

Included in kits; part of components.

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

## Internal Coolant Delivery Guidelines

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



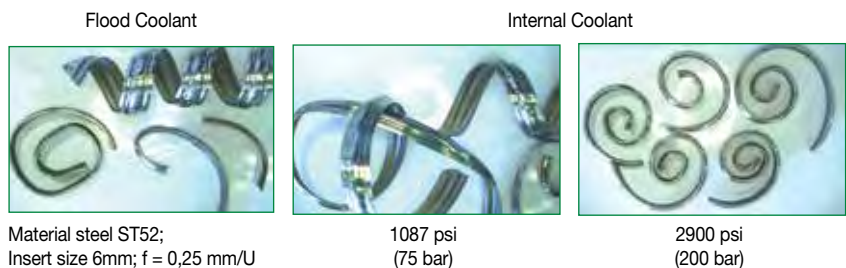
## General Safety Guidelines

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

## Internal Coolant Delivery Performance

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

*Example: Chipbreaking in plunging of steel.*



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

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

### VDI Assemblies

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

The WMT platform is the economical and reliable option for grooving, cut-off, turning, and profiling applications.

The WMT system, with its extra-long clamping area and precise insert positioning, ensures exceptionally fast and accurate machining, and is an all-in-one tool for demanding operations.

- Specifically designed to increase speeds and feeds.
- Versatile geometry for even your most demanding deep-grooving applications.
- The WMT system enables heavy stock removal in turning applications.
- Ensures finer surface finishes and a long, reliable tool life.
- Extra-long clamping area for unsurpassed grooving and turning stability.
- Interchangeable grooving and cut-off inserts designed for excellent chip control.



## FIVE AVAILABLE CHIPBREAKER STYLES

### CM

Cut-Off Medium

### CM-W

Cut-Off Medium  
with Wiper

### PT

Groove, Plunge,  
and Turn

### PC

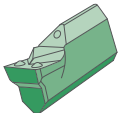






Plunge and Contour

### PH

Groove, Plunge,  
and Turn

# RELIABLE ACCURACY WITH WMT™

## INSERTS

APPLICATION	TYPES	GROOVE WIDTH	INSERT GEOMETRY	GRADE	MATERIALS
<b>GROOVING</b>		2,0–8,0mm (0.081–0.317")	PT, PH	WU10PT, WU25PT	
<b>FACE GROOVING</b>		3,0–6,35mm (0.125–0.250")	PT, PH	WU10HT	
<b>CUT-OFF</b>		1,5–4,0mm (0.059–0.157")	CM CM-W	WP10CT, WP25CT	
<b>PROFILING</b>		3,0–8,0mm (0.118–0.317")	PC - Full Radius		

## APPLICATIONS



TURNING



GROOVING



I.D. GROOVING



FACE  
GROOVING

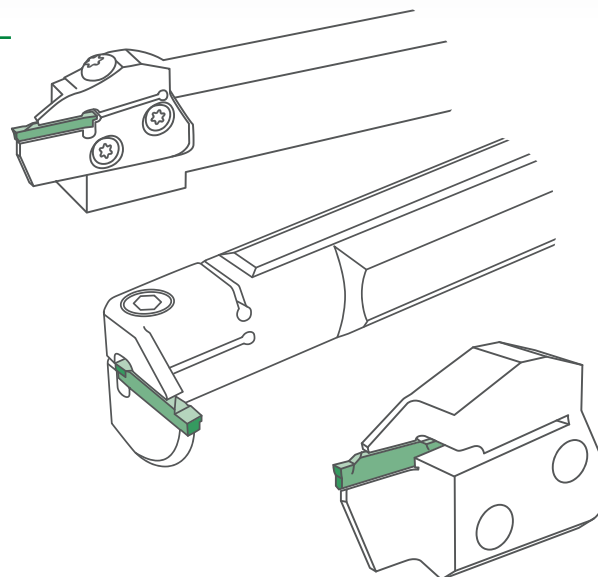


CUT-OFF



PROFILING

## INDUSTRY





## Choosing the Correct WMT Tooling

### The Most Advanced Turning Solutions in the Industry

For unsurpassed quality, value, and performance, look no further than the WIDIA™ comprehensive line of specially engineered and dependable grooving and cut-off solutions. All the tools you need from the reliable name you can trust!

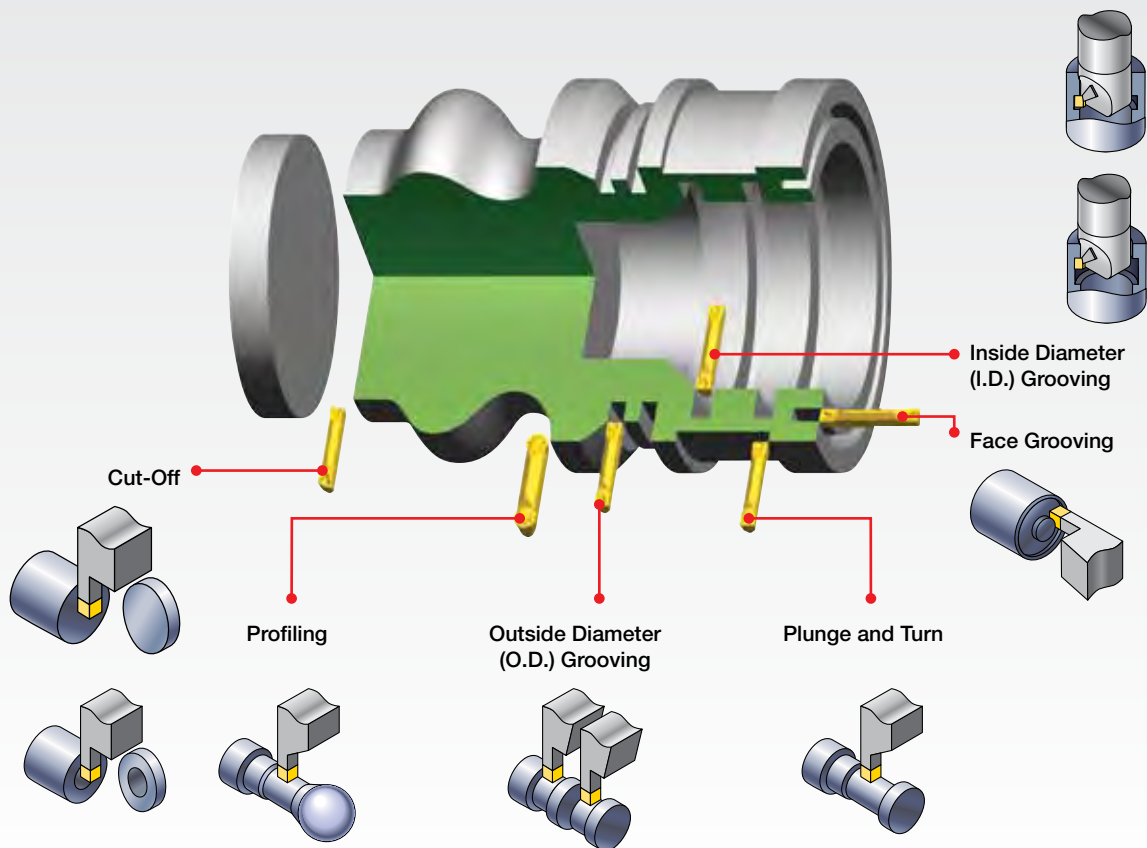
The WMT system, with its extra-long clamping area and precise insert positioning, ensures exceptionally fast and accurate machining, all-in-one tool, for your most demanding grooving, cut-off, turning, and profiling applications.

It is perfect for all general-purpose operations, including both shallow and deep grooving.

Utilize this handy, easy-to-use guide to identify and select the appropriate grooving and cut-off tools for your specific needs.

### 1 Choose the application to be performed:

Groove depth, width, and profile.



### 2 Identify the material to be machined:

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

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

### Choosing the Correct WMT Tooling

#### 3 Select your toolholder based on the application:

- A Choose the appropriate width “W” required for the application.
- B Choose the shortest cutting depth “CD” dimension for increased tool rigidity.
- C Select the largest toolholder shank “H” and “B” dimensions for maximum rigidity.

Grooving and Cut-Off • WMT™

WMT Integral Toolholders • Inch

order number	catalog number	SSC	W	H	B	CD	D max	F	HG	L1	L2
365437	WMT SR11005	1	1.00	1.00	1.00	0.10	—	0.91	—	1.200	4.025
365438	WMT CR12053	2	0.75	0.75	0.75	—	1.062	0.75	1.00	4.500	3.010
365440	WMT CR12002	2	0.75	0.75	0.75	—	1.125	0.75	1.00	4.500	3.010
365442	WMT SR112005	2	0.75	0.75	0.75	0.05	—	0.80	—	3.000	3.000
365444	WMT SR12005	2	0.75	0.75	0.75	0.05	—	0.80	—	3.000	3.000
365446	WMT SR12005	2	0.75	0.75	0.75	0.05	—	0.80	—	3.000	3.000
365482	WMT CR12002	2	0.75	0.75	0.75	—	1.250	0.75	1.00	4.500	3.010
365484	WMT SR11005	2	0.75	0.75	0.75	—	—	0.80	—	3.000	3.000
365486	WMT SR1228542	2	0.75	0.75	0.75	—	—	0.80	—	3.000	3.000
365488	WMT SR1228575	2	0.75	0.75	0.75	—	—	0.80	—	3.000	3.000
365490	WMT SR11005	2	0.75	0.75	0.75	—	—	0.80	—	3.000	3.000
365492	WMT SR11005	2	0.75	0.75	0.75	—	—	0.80	—	3.000	3.000
365494	WMT SR11005	2	0.75	0.75	0.75	—	—	0.80	—	3.000	3.000
365496	WMT SR11005	2	0.75	0.75	0.75	—	—	0.80	—	3.000	3.000
365498	WMT SR11005	2	0.75	0.75	0.75	—	—	0.80	—	3.000	3.000
365499	WMT SR11005	2	0.75	0.75	0.75	—	—	0.80	—	3.000	3.000
365500	WMT SR11005	2	0.75	0.75	0.75	—	—	0.80	—	3.000	3.000
365501	WMT SR11005	2	0.75	0.75	0.75	—	—	0.80	—	3.000	3.000
365502	WMT SR11005	2	0.75	0.75	0.75	—	—	0.80	—	3.000	3.000
365503	WMT SR11005	2	0.75	0.75	0.75	—	—	0.80	—	3.000	3.000
365504	WMT SR11005	2	0.75	0.75	0.75	—	—	0.80	—	3.000	3.000
365505	WMT SR11005	2	0.75	0.75	0.75	—	—	0.80	—	3.000	3.000
365506	WMT SR11005	2	0.75	0.75	0.75	—	—	0.80	—	3.000	3.000
365507	WMT SR11005	2	0.75	0.75	0.75	—	—	0.80	—	3.000	3.000
365508	WMT SR11005	2	0.75	0.75	0.75	—	—	0.80	—	3.000	3.000
365509	WMT SR11005	2	0.75	0.75	0.75	—	—	0.80	—	3.000	3.000
365510	WMT SR11005	2	0.75	0.75	0.75	—	—	0.80	—	3.000	3.000
365511	WMT SR11005	2	0.75	0.75	0.75	—	—	0.80	—	3.000	3.000
365512	WMT SR11005	2	0.75	0.75	0.75	—	—	0.80	—	3.000	3.000

	application	conventional toolholders	modular blades
	O.D. Grooving and Cut-Off	pages E375–E376	page E382
	Face Grooving	page E377	page E381
	I.D. Grooving	page E379	—
	Plunge and Turn	pages E375–E376	page E382

## Choosing the Correct WMT Tooling

### 4 Select chipbreaker style for the application:

- CM** Cut-Off Medium
- CM-W** Cut-Off Medium with Wiper
- PT** Groove, Plunge, and Turn
- PC** Plunge and Contour
- PH** Groove, Plunge, and Turn

NOTE: Chart shows recommended starting feed rates.

### Grooving and Cut-Off • WMT™

#### Feed Values for Grooving Inserts

**CM Cut-Off Medium**

- Double-vented, V-shaped and long mechanically sheared.
- Neutral, right, and left hand lead angles up to 12°.
- Designed to increase speed and feed.
- Chip geometry designed for consistent chip control and increased cutting pressure on various materials.
- Ideal for 300 Series stainless steel, tool steel, titanium, INCONEL™, and other nickel-based alloys at moderate speeds and feeds.

**CM-W Cut-Off Medium with Wiper**

- Aligner face where wiper face is critical.
- Double-vented, V-shaped, and long mechanically sheared.
- Neutral, right, and left hand lead angles up to 12°.
- Designed to increase speed and feed.
- Chip geometry designed for excellent chip control and increased cutting pressure on various materials.

**PT Plunge, Groove, and Turn Inserts**

- High positive rake geometry for low cutting force, especially in soft materials.
- Deep grooving tool for plunge and turn O.D. and face grooving operations.
- Deluxe chip control over full range of DOC when turning.
- Cut in both axial and radial directions.

**PC Grooving and Profiling Inserts**

- Deep rake chip control.
- Full nose radius geometry for sharp and corner operations.
- Oblique cutting edge geometry rewards DOC for increased productivity.

**PH Plunge, Groove, and Turn Inserts**

- Excellent performance to greater than 30 HRC.
- Deep grooving tool for plunge and turn O.D. and face grooving operations.
- Deluxe chip control over full range of DOC when turning.
- Deluxe wiper chip control in interrupted cuts.

- A** Choose the appropriate insert width “W” for your specific application.
- B** Select the required corner radius value “RR”.

### Grooving and Cut-Off • WMT™

#### WMT Cut-Off Inserts • F Precision Molded

Right hand

F Precision Molded insert

Left hand

**A**      **B**

W

RR

Tooling number	ESC	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
WMT020R120CM	1	12	0.472	2.00	0.079	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Choosing the Correct WMT Tooling

5 Select grade:

Grooving cutting condition		Recommended Grades					
		steel	stainless steel	cast iron	non-ferrous metals	high-temp alloys	hardened materials
heavily interrupted cut		WU25PT	WU25PT	WU25PT	WU25PT	WU25PT	-
lightly interrupted cut		WP25CT/ WU25PT	WU25PT	WP25CT/ WU25PT	WU25PT	WU25PT	-
varying depth of cut, casting, or forging skin		WU10PT	WU10PT	WP10CT/ WU10PT	WU10PT	WU10HT/ WU10PT	WU10PT
smooth cut, pre-turned surface		WP10CT/ WU10PT	WU10PT	WP10CT/ WU10PT	WU10PT	WU10HT/ WU10PT	WU10PT

Cut-Off cutting condition		Recommended Grades					
		steel	stainless steel	cast iron	non-ferrous metals	high-temp alloys	hardened materials
heavily interrupted cut		WU25PT	WU25PT	WU25PT	WU25PT	WU25PT	-
lightly interrupted cut		WU25PT	WU25PT	WU25PT	WU25PT	WU25PT	-
varying depth of cut, casting, or forging skin		WU25PT	WU25PT	WU25PT	WU25PT	WU25PT	WU25PT
smooth cut, pre-turned surface		WU25PT	WU25PT	WU25PT	WU25PT	WU25PT	WU25PT

NOTE: See page E357 for Grades and Grade Descriptions.

6 Determine cutting data:

- A Based on material group and grade, identify starting speed (vc).
- B First choice starting speed is in bold.

NOTE: See pages E359–E360 for cutting data.

Grooving and Cut-Off • WMT™

Recommended Cutting Speeds • Inch

Material Group	Cutting Speed — vc — SFM															
	WU10HT			WU10PT			WU25PT			WP10CT			WP25CT			
	min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max	
P	0.1	390	300	320	620	650	680	520	<b>550</b>	580	470	700	740	590	625	660
	2	370	325	345	570	600	630	500	545	575	460	720	760	580	625	655
	3	350	325	345	570	600	630	500	545	575	460	720	760	580	625	655
	4	330	305	320	520	545	575	475	485	520	445	470	485	580	405	430
M	5	265	275	290	520	550	580	480	500	530	580	615	645	510	540	565
	6	250	225	230	480	500	530	430	450	475	260	275	290	240	250	260
	1	340	250	280	430	450	470	400	420	450	—	—	—	—	—	—
K	2	140	150	160	310	320	340	290	300	320	—	—	—	—	—	—
	3	155	165	170	310	320	340	290	300	320	—	—	—	—	—	—
	1	240	250	260	540	620	660	520	570	600	480	720	760	600	625	655
N	2	225	225	245	610	640	670	560	585	615	480	700	730	570	600	630
	3	240	250	260	620	660	680	480	500	530	710	750	790	620	650	680
	1	340	350	360	680	700	720	580	600	620	—	—	—	—	—	—
S	2	240	250	260	480	500	520	280	300	320	—	—	—	—	—	—
	3	260	260	280	480	500	520	280	300	320	—	—	—	—	—	—
	1	340	350	360	680	700	720	580	600	620	—	—	—	—	—	—

## 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.

### Cut-Off

<b>WMT</b>	<b>C</b>	<b>015</b>	<b>N</b>	<b>00</b>	<b>CM</b>	<b>08</b>
Tooling System	Cut-Off	W in mm* 10 inch* 1000	Hand of Insert	Main Cutting Edge Lead Angle	Chipbreaker Geometry  <b>CM</b> = Cut-Off Medium <b>CM-W</b> = Cut-Off Medium with Wiper	Corner Radius in mm* 10

### Groove, Plunge, Turn, and Contour Inserts

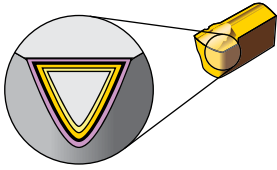
<b>WMT</b>	<b>S</b>	<b>205</b>	<b>M</b>	<b>2</b>	<b>U</b>	<b>02</b>	<b>PT</b>
Tooling System	Square	mm* 10 inch* 1000	Unit of Measurement for Width  <b>M</b> = mm <b>I</b> = inch	Seat Size	Insert Tolerance	Corner Radius in mm* 10	Chipbreaker Geometry  <b>PT</b> = Groove, Plunge, and Turn <b>PH</b> = Groove, Plunge, and Turn <b>PC</b> = Plunge and Contour

**P** = Precision ground grooving width tolerance:  
± .001" (0,025mm)

**U** = Utility molded grooving width tolerance:

3,05–4,05:	$\frac{+.006''}{-0}$	$\frac{(+0,15\text{mm})}{-0}$
5,05–10,05:	$\frac{+.010''}{-0}$	$\frac{(+0,25\text{mm})}{-0}$

### Grades and Grade Descriptions



Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

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

wear resistance ← → toughness

Grade	Coating	Grade Description	Material Group																			
			P	M	K	N	S	H	P	M	K	N	S	H								
WU10PT		An advanced PVD-TiAlN coating over a very deformation-resistant unalloyed carbide substrate. The WU10PT™ grade's new and improved coating enables speeds to be increased by 50-100%. The WU10PT grade is ideal for finishing to general machining of most workpiece materials at higher speeds. Excellent for machining most steels, stainless steels, cast irons, non-ferrous materials, and super alloys under stable conditions. It also performs well machining hardened and short chipping materials.																				
	HC-P15																					
WU25PT		An advanced PVD-TiAlN-coated grade with a tough, ultra-fine-grain, unalloyed substrate. For general-purpose machining of most steels, stainless steels, high-temperature alloys, titanium, irons, and non-ferrous materials. Speeds may vary from low to medium and will handle interruptions and high feed rates.																				
	HC-P30																					
WU10HT		A hard, low binder content, unalloyed WC/Co fine-grained uncoated grade. Exceptional edge wear resistance combined with very high strength for machining titanium, cast irons, austenitic stainless steels, non-ferrous metals, non-metals, and most high-temperature alloys. Superior thermal deformation and depth-of-cut notch resistance. The grain structure is well controlled for minimal pits and flaws, which contributes to long, reliable service.																				
	HW-K15																					
WP10CT		A specially engineered, proprietary, cobalt-enriched carbide grade with thick K-MTCVD-TiCN coating layer, an Al <sub>2</sub> O <sub>3</sub> layer of controlled grain size, and outer layers of TiCN and TiN for maximum wear resistance. An excellent finishing to medium machining grade for a variety of workpiece materials including most steels, ferritic and martensitic stainless steels, and cast irons. The specially engineered cobalt-enriched substrate offers a balanced combination of deformation resistance and edge toughness, while the thick coating layers offer outstanding abrasion resistance and crater wear resistance for high-speed machining. The smooth coating provides good resistance to edge build-up and microchipping and produces excellent surface finishes.																				
	HC-P10																					
WP25CT		A tough cobalt-enriched carbide grade with a newly designed multilayer K-MTCVD TiCN-Al <sub>2</sub> O <sub>3</sub> -TiCN/TiN coating with superior interlayer adhesion. This is the industry's best general-purpose turning grade for most steels and ferritic and martensitic stainless steels. The substrate design, with cobalt-enrichment, ensures adequate deformation resistance along with excellent bulk toughness and insert edge strength. The coating layers offer good wear resistance over a wide range of machining conditions. The smoothness of the coating leads to reduced frictional heat, minimizes microchipping, and improves workpiece surface finishes.																				
	HC-P25																					

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING



## Feed Values for Grooving Inserts

### CM Cut-Off Medium

- Double-ended, V-bottom and top, mechanically clamped.
- Neutral, right-, and left-hand lead angles up to 12°.
- Designed to increase speed and feed.
- Chip geometry designed for excellent chip control and minimized cutting pressure on various materials.
- Ideal for 300 Series stainless steel, tool steel, titanium, INCONEL®, and other nickel-based alloys at moderate speeds and feeds.



### CM-W Cut-Off Medium with Wiper

- Wiper flats where surface finish is critical.
- Double-ended, V-bottom, and top, mechanically clamped.
- Neutral, right-, and left-hand lead angles up to 12°.
- Designed to increase speed and feed.
- Chip geometry designed for excellent chip control and minimized cutting pressure on various materials.



### PT Plunge, Groove, and Turn Inserts

- High positive rake geometry for low cutting force, especially in soft materials.
- Deep grooving tool for plunge and turn O.D. and face grooving operations.
- Deliver chip control over full range of DOC when turning.
- Cut in both axial and radial directions.



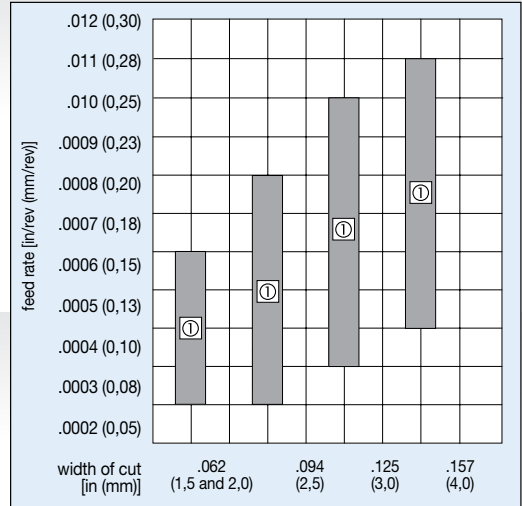
### PC Grooving and Profiling Inserts

- Superior chip control.
- Full nose radius geometry for plunge and contour operations.
- Effective cutting edge geometry exceeds 180° for increased versatility.

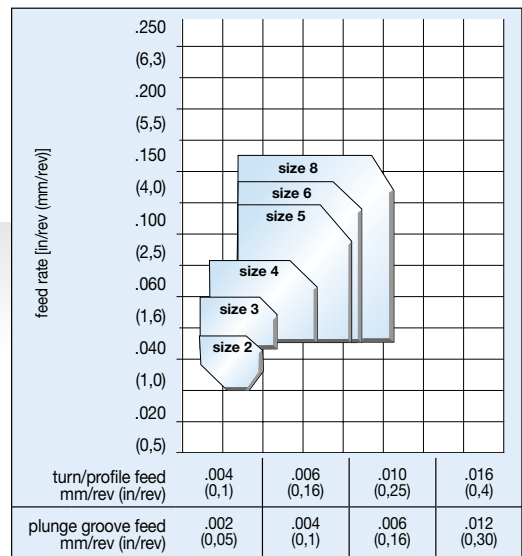
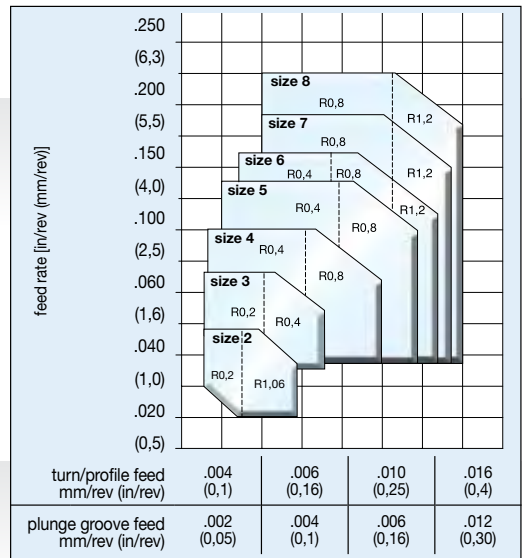


### PH Plunge, Groove, and Turn Inserts

- Excellent performance in greater than 35 HRC.
- Deep grooving tool for plunge and turn O.D. and face grooving operations.
- Deliver chip control over full range of DOC when turning.
- Deliver superior chip control in interrupted cuts.



① Recommended Starting Feed



Recommended Cutting Speeds • Metric

Material Group		Cutting Speed – vc m/min														
		WU10HT			WU10PT			WU25PT			WP10CT			WP25CT		
		min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
P	0/1	100	<b>100</b>	110	190	<b>200</b>	210	170	<b>175</b>	180	210	<b>225</b>	240	170	<b>175</b>	180
	2	95	<b>95</b>	105	180	<b>185</b>	190	150	<b>160</b>	170	210	<b>220</b>	230	185	<b>195</b>	205
	3	95	<b>95</b>	105	180	<b>185</b>	190	150	<b>160</b>	170	210	<b>220</b>	230	185	<b>195</b>	205
	4	70	<b>70</b>	75	165	<b>170</b>	175	135	<b>145</b>	155	140	<b>145</b>	155	125	<b>125</b>	135
	5	85	<b>90</b>	95	170	<b>175</b>	180	140	<b>150</b>	160	180	<b>190</b>	195	155	<b>165</b>	170
	6	50	<b>50</b>	50	140	<b>150</b>	160	120	<b>125</b>	130	70	<b>75</b>	80	70	<b>75</b>	80
M	1	70	<b>75</b>	80	120	<b>125</b>	130	120	<b>125</b>	130	-	-	-	-	-	-
	2	50	<b>50</b>	50	100	<b>100</b>	110	70	<b>75</b>	80	-	-	-	-	-	-
	3	50	<b>50</b>	50	95	<b>100</b>	105	85	<b>90</b>	95	-	-	-	-	-	-
K	1	85	<b>90</b>	95	190	<b>200</b>	210	155	<b>165</b>	170	215	<b>225</b>	235	180	<b>190</b>	195
	2	75	<b>75</b>	80	185	<b>190</b>	200	155	<b>165</b>	175	205	<b>215</b>	225	175	<b>185</b>	195
	3	70	<b>75</b>	80	170	<b>175</b>	180	140	<b>150</b>	160	210	<b>225</b>	240	190	<b>200</b>	210
N	1	70	<b>75</b>	80	140	<b>150</b>	160	110	<b>120</b>	130	-	-	-	-	-	-
	2	70	<b>75</b>	80	140	<b>150</b>	80	110	<b>120</b>	80	-	-	-	-	-	-
	3	70	<b>75</b>	80	140	<b>150</b>	80	110	<b>120</b>	80	-	-	-	-	-	-
	4	70	<b>75</b>	80	140	<b>150</b>	80	110	<b>120</b>	80	-	-	-	-	-	-
	5	70	<b>75</b>	80	140	<b>150</b>	80	110	<b>120</b>	80	-	-	-	-	-	-
	6	70	<b>75</b>	80	140	<b>150</b>	80	110	<b>120</b>	80	-	-	-	-	-	-
	7	70	<b>75</b>	80	140	<b>150</b>	120	110	<b>120</b>	105	-	-	-	-	-	-
S	1	20	<b>25</b>	30	70	<b>75</b>	80	60	<b>65</b>	65	-	-	-	-	-	-
	2	20	<b>25</b>	30	65	<b>65</b>	70	50	<b>50</b>	50	-	-	-	-	-	-
	3	50	<b>50</b>	50	100	<b>100</b>	110	70	<b>75</b>	80	-	-	-	-	-	-
	4	-	-	-	70	<b>75</b>	80	50	<b>50</b>	50	-	-	-	-	-	-
H	1	-	-	-	15	<b>30</b>	60	15	<b>30</b>	60	-	-	-	-	-	-
	2	-	-	-	15	<b>30</b>	60	15	<b>30</b>	60	-	-	-	-	-	-
	3	-	-	-	15	<b>30</b>	60	15	<b>30</b>	60	-	-	-	-	-	-
	4	-	-	-	15	<b>30</b>	60	15	<b>30</b>	60	-	-	-	-	-	-

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING



INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

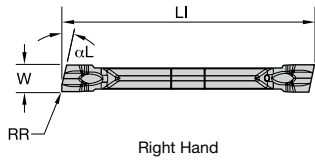
TAPPING

TURNING

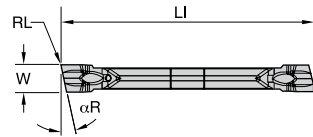
## Recommended Cutting Speeds • Inch

Material Group		Cutting Speed – vc SFM														
		WU10HT			WU10PT			WU25PT			WP10CT			WP25CT		
		min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
P	0/1	290	<b>300</b>	320	620	<b>650</b>	680	520	<b>550</b>	580	670	<b>700</b>	740	590	<b>625</b>	660
	2	310	<b>325</b>	345	570	<b>600</b>	630	520	<b>545</b>	575	680	<b>720</b>	760	595	<b>625</b>	655
	3	310	<b>325</b>	345	570	<b>600</b>	630	520	<b>545</b>	575	680	<b>720</b>	760	595	<b>625</b>	655
	4	195	<b>205</b>	220	520	<b>545</b>	575	475	<b>495</b>	520	445	<b>470</b>	495	385	<b>405</b>	430
	5	265	<b>275</b>	290	520	<b>550</b>	580	480	<b>500</b>	530	580	<b>615</b>	645	510	<b>540</b>	565
	6	120	<b>125</b>	130	480	<b>500</b>	530	430	<b>450</b>	470	260	<b>275</b>	290	240	<b>250</b>	260
M	1	240	<b>250</b>	260	430	<b>450</b>	470	400	<b>425</b>	450	-	-	-	-	-	-
	2	140	<b>150</b>	160	310	<b>325</b>	340	290	<b>300</b>	320	-	-	-	-	-	-
	3	155	<b>165</b>	170	310	<b>325</b>	340	285	<b>300</b>	315	-	-	-	-	-	-
K	1	240	<b>250</b>	265	595	<b>625</b>	660	550	<b>575</b>	605	690	<b>725</b>	760	595	<b>625</b>	655
	2	225	<b>235</b>	245	610	<b>640</b>	675	555	<b>585</b>	615	665	<b>700</b>	735	570	<b>600</b>	630
	3	240	<b>250</b>	260	520	<b>550</b>	580	480	<b>500</b>	530	710	<b>750</b>	790	620	<b>650</b>	680
N	1	240	<b>250</b>	260	480	<b>500</b>	530	380	<b>400</b>	420	-	-	-	-	-	-
	2	240	<b>250</b>	260	480	<b>500</b>	530	380	<b>400</b>	420	-	-	-	-	-	-
	3	240	<b>250</b>	260	480	<b>500</b>	530	380	<b>400</b>	420	-	-	-	-	-	-
	4	240	<b>250</b>	260	480	<b>500</b>	530	380	<b>400</b>	420	-	-	-	-	-	-
	5	240	<b>250</b>	260	480	<b>500</b>	530	380	<b>400</b>	420	-	-	-	-	-	-
	6	240	<b>250</b>	260	480	<b>500</b>	530	380	<b>400</b>	420	-	-	-	-	-	-
	7	240	<b>250</b>	260	480	<b>500</b>	530	380	<b>400</b>	420	-	-	-	-	-	-
S	1	110	<b>115</b>	120	235	<b>250</b>	265	215	<b>225</b>	235	-	-	-	-	-	-
	2	55	<b>60</b>	60	195	<b>210</b>	220	195	<b>210</b>	220	-	-	-	-	-	-
	3	190	<b>200</b>	210	310	<b>325</b>	340	290	<b>300</b>	320	-	-	-	-	-	-
	4	100	<b>100</b>	110	-	-	-	-	-	-	-	-	-	-	-	-
H	1	-	-	-	60	<b>100</b>	200	60	<b>100</b>	200	-	-	-	-	-	-
	2	-	-	-	60	<b>100</b>	200	60	<b>100</b>	200	-	-	-	-	-	-
	3	-	-	-	60	<b>100</b>	200	60	<b>100</b>	200	-	-	-	-	-	-
	4	-	-	-	60	<b>100</b>	200	60	<b>100</b>	200	-	-	-	-	-	-

WMT Cut-Off Inserts • F Precision Molded

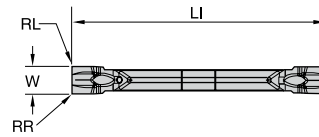


Right Hand



Neutral

RR = RL on neutral inserts



Left Hand

● first choice  
○ alternate choice

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

catalog number	SSC	W		RR		RL		LI		alpha L	alpha R	WU10PT	WU25PT	WP10CT	WP25CT	WU10HT	
		mm	in	mm	in	mm	in	mm	in								
WMTTC015R12CM08	1	1,50	.059	0,08	.003	0,08	.003	19,28	.759	—	12	●	○	○	○	○	○
WMTTC015N00CM08	1	1,50	.059	0,08	.003	0,08	.003	19,30	.760	—	—	○	○	○	○	○	○
WMTTC015R05CM08	1	1,50	.059	0,08	.003	0,08	.003	19,31	.760	—	5	○	○	○	○	○	○
WMTTC015L05CM08	1	1,50	.059	0,08	.003	0,08	.003	19,31	.760	5	—	○	○	○	○	○	○
WMTTC020L05CM08	2	1,99	.079	0,08	.003	0,08	.003	19,21	.756	5	—	○	○	○	○	○	○
WMTTC020R05CM08	2	1,99	.079	0,08	.003	0,08	.003	19,21	.756	—	5	○	○	○	○	○	○
WMTTC020N00CM08	2	2,00	.079	0,08	.003	0,08	.003	19,21	.756	—	—	○	○	○	○	○	○
WMTTC020L12CM08	2	2,00	.079	0,08	.003	0,08	.003	19,25	.758	12	—	○	○	○	○	○	○
WMTTC020R12CM08	2	2,00	.079	0,08	.003	0,08	.003	19,26	.758	—	12	○	○	○	○	○	○
WMTTC094R12CM13	2B	2,39	.094	0,13	.005	0,13	.005	22,28	.877	—	12	○	○	○	○	○	○
WMTTC094N00CM13	2B	2,39	.094	0,13	.005	0,13	.005	22,32	.879	—	—	○	○	○	○	○	○
WMTTC094R05CM13	2B	2,39	.094	0,13	.005	0,13	.005	22,32	.879	—	5	○	○	○	○	○	○

INDEXABLE MILLING

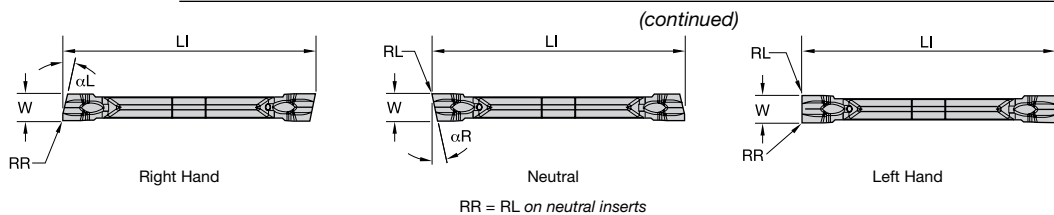
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

WMT Cut-Off Inserts • F Precision Molded



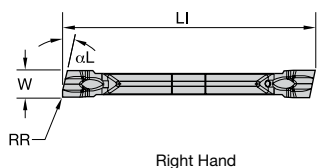
● first choice  
○ alternate choice

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

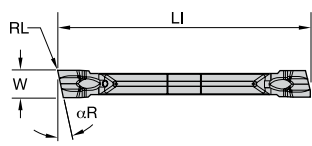
catalog number	SSC	W		RR		RL		LI		αL	αR	WU10PT	WU25PT	WP10CT	WP25CT	WU10HT	
		mm	in	mm	in	mm	in	mm	in								
WMTC030R05CM17	3	3,00	.118	0,17	.007	0,17	.007	25,40	1.000	—	5	○	○	○	○	○	○
WMTC030R12CM17	3	3,00	.118	0,17	.007	0,17	.007	25,40	1.000	—	12	○	○	○	○	○	○
WMTC030L12CM17	3	3,00	.118	0,17	.007	0,17	.007	25,40	1.000	12	—	○	○	○	○	○	○
WMTC030N00CM17	3	3,00	.118	0,17	.007	0,17	.007	25,40	1.000	—	—	○	○	○	○	○	○
WMTC030L05CM17	3	3,00	.118	0,17	.007	0,17	.007	25,40	1.000	5	—	○	○	○	○	○	○
WMTC125R05CM17	3	3,17	.125	0,17	.007	0,17	.007	25,40	1.000	—	5	○	○	○	○	○	○
WMTC125N00CM17	3	3,17	.125	0,17	.007	0,17	.007	25,41	1.000	—	—	○	○	○	○	○	○
WMTC125R12CM17	3	3,18	.125	0,17	.007	0,17	.007	25,40	1.000	—	12	○	○	○	○	○	○
WMTC040L12CM17	4	4,00	.157	0,17	.007	0,17	.007	25,40	1.000	12	—	○	○	○	○	○	○
WMTC040N00CM17	4	4,00	.157	0,17	.007	0,17	.007	25,40	1.000	—	—	○	○	○	○	○	○
WMTC040R12CM17	4	4,00	.157	0,17	.007	0,17	.007	25,40	1.000	—	12	○	○	○	○	○	○
WMTC040R05CM17	4	4,00	.157	0,17	.007	0,17	.007	25,40	1.000	—	5	○	○	○	○	○	○
WMTC040L05CM17	4	4,00	.157	0,17	.007	0,17	.007	25,40	1.000	5	—	○	○	○	○	○	○

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

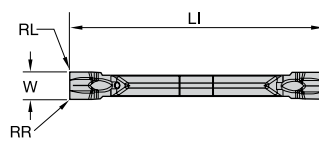
WMT Cut-Off Inserts • F Precision Molded



Right Hand



Neutral  
RR = RL on neutral inserts



Left Hand

● first choice

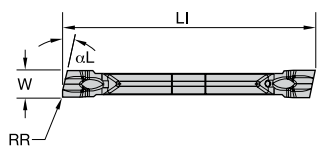
○ alternate choice

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

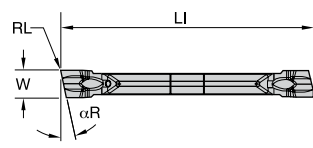
catalog number	SSC	W		RR		RL		LI		αL	αR	WU10PT	WU25PT	WP10CT	WP25CT	WU10HT
		mm	in	mm	in	mm	in	mm	in							
WMTC015N00CMW08	1	1,50	.059	0,08	.003	0,08	.003	19,30	.760	—	—	●	○	○	○	○
WMTC020R05CMW08	2	2,00	.079	0,08	.003	0,08	.003	19,20	.756	—	5	●	○	○	○	○
WMTC020N00CMW08	2	2,00	.079	0,08	.003	0,08	.003	19,21	.756	—	—	○	○	○	○	○
WMTC020L12CMW08	2	2,00	.079	0,08	.003	0,08	.003	19,27	.759	12	—	○	○	○	○	○
WMTC020R12CMW08	2	2,00	.079	0,08	.003	0,08	.003	19,27	.758	—	12	○	○	○	○	○
WMTC094R12CMW13	2B	2,39	.094	0,13	.005	0,13	.005	22,29	.877	—	12	○	○	○	○	○
WMTC094N00CMW13	2B	2,39	.094	0,13	.005	0,13	.005	22,32	.879	—	—	○	○	○	○	○
WMTC094R05CMW13	2B	2,39	.094	0,13	.005	0,13	.005	22,32	.879	—	5	○	○	○	○	○
WMTC030R05CMW17	3	3,00	.118	0,17	.007	0,17	.007	25,40	1.000	—	5	○	○	○	○	○
WMTC030R12CMW17	3	3,00	.118	0,17	.007	0,17	.007	25,40	1.000	—	12	○	○	○	○	○
WMTC030L12CMW17	3	3,00	.118	0,17	.007	0,17	.007	25,40	1.000	12	—	○	○	○	○	○
WMTC030N00CMW17	3	3,00	.118	0,17	.007	0,17	.007	25,40	1.000	—	—	○	○	○	○	○

## WMT Cut-Off Inserts • F Precision Molded

(continued)

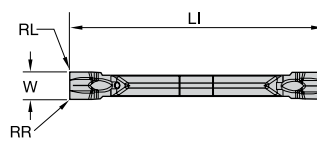


Right Hand



Neutral

RR = RL on neutral inserts



Left Hand

● first choice

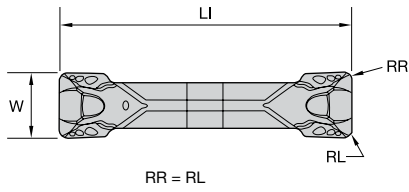
○ alternate choice

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

catalog number	SSC	W		RR		RL		LI		$\alpha L$	$\alpha R$	WU10PT	WU25PT	WP10CT	WP25CT	WU10HT
		mm	in	mm	in	mm	in	mm	in							
WMTC030L05CMW17	3	3,00	.118	0,17	.007	0,17	.007	25,40	1.000	5	—	●	○	○	○	○
WMTC125R05CMW17	3	3,17	.125	0,17	.007	0,17	.007	25,41	1.000	—	5	○	○	○	○	○
WMTC125R12CMW17	3	3,17	.125	0,17	.007	0,17	.007	25,41	1.000	—	12	○	○	○	○	○
WMTC125N00CMW17	3	3,18	.125	0,17	.007	0,17	.007	25,41	1.000	—	—	○	○	○	○	○
WMTC040N00CMW17	4	4,00	.157	0,17	.007	0,17	.007	25,40	1.000	—	—	○	○	○	○	○

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

WMT Grooving Inserts • PT Precision Molded



- first choice
- alternate choice

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

catalog number	SSC	W		RR		LI		WU10PT	WU25PT	WP10CT	WP25CT	WU10HT			
		mm	in	mm	in	mm	in								
WMTS205M2U02PT	2	2,13	.084	0,15	.006	19,23	.757	4113568	4116131	4113569	4116132	4169566	4169564	4169565	4169567
WMTS305M3U03PT	3	3,13	.123	0,31	.012	25,81	1.016	4113570	4113571	4169568	4169565	4169566	4169567	4169568	4169569
WMTS305M3U06PT	3	3,13	.123	0,61	.024	25,78	1.015	4113577	4113578	4169560	4169561	4169562	4169563	4169564	4169565
WMTS405M4U03PT	4	4,13	.163	0,31	.012	25,53	1.005	4113579	4113580	4169566	4169567	4169568	4169569	4169570	4169571
WMTS405M4U06PT	4	4,13	.163	0,61	.024	25,53	1.005	4116148	4116149	4169564	4169565	4169566	4169567	4169568	4169569
WMTS505M5U03PT	5	5,13	.202	0,30	.012	28,76	1.320	4117253	4117254	4169566	4169567	4169568	4169569	4169570	4169571
WMTS505M5U06PT	5	5,13	.202	0,61	.024	28,76	1.320	4117255	4117256	4169572	4169573	4169574	4169575	4169576	4169577
WMTS605M6U03PT	6	6,13	.241	0,30	.012	28,76	1.320	4117261	4117262	4169572	4169573	4169574	4169575	4169576	4169577
WMTS605M6U06PT	6	6,13	.241	0,59	.023	28,76	1.320	4117263	4117264	4169574	4169575	4169576	4169577	4169578	4169579
WMTS805M8U06PT	8	8,13	.320	0,61	.024	28,70	1.130	4117265	4117266	4169576	4169577	4169578	4169579	4169580	4169581
WMTS805M8U15PT	8	8,13	.320	1,50	.059	28,71	1.130	4117267	4117268	4169578	4169579	4169580	4169581	4169582	4169583

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

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

INDEXABLE MILLING

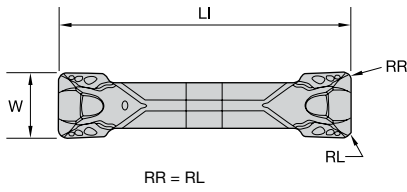
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## WMT Grooving Inserts • PT Precision Ground



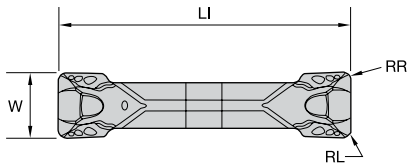
- first choice
- alternate choice

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

catalog number	SSC	W		RR		LI		WU10PT	WU25PT	WP10CT	WP25CT	WU10HT
		mm	in	mm	in	mm	in					
WMTS200M2P02PT	2	2,00	.079	0,15	.006	19,10	.752	4116129	4116130	●	●	○
WMTS094I2BP02PT	2B	2,38	.094	0,15	.006	22,15	.872	4118451	4118452	●	●	○
WMTS094I2BP04PT	2B	2,38	.094	0,38	.015	22,14	.872	4118583	4118584	●	●	○
WMTS300M3P03PT	3	3,00	.118	0,31	.012	25,65	1.010	4113563	4113564	●	●	○
WMTS300M3P06PT	3	3,00	.118	0,61	.024	25,65	1.010	4113565	4113567	●	●	○
WMTS125I3P03PT	3	3,17	.125	0,23	.009	25,40	1.000	4118585	4118586	●	●	○
WMTS125I3P08PT	3	3,17	.125	0,76	.030	25,40	1.000	4118587	4118588	●	●	○
WMTS400M4P03PT	4	4,00	.157	0,31	.012	25,40	1.000	4113572	4113574	●	●	○
WMTS400M4P06PT	4	4,00	.157	0,60	.024	25,40	1.000	4113575	4113576	●	●	○
WMTS188I5P03PT	5	4,76	.188	0,26	.010	28,63	1.127	4118589	4118590	●	●	○
WMTS188I5P08PT	5	4,77	.188	0,76	.030	28,63	1.127	4118591	4118592	●	●	○
WMTS500M5P03PT	5	5,00	.197	0,30	.012	28,63	1.127	4116143	4116144	●	●	○
												4113566
												4113573
												4116145

WMT Grooving Inserts • PT Precision Ground

(continued)



- first choice
- alternate choice

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

catalog number	SSC	W		RR		LI		WU10PT	WU25PT	WP10CT	WP25CT	WU10HT
		mm	in	mm	in	mm	in					
WMTS500M5P06PT	5	5,00	.197	0,61	.024	28,63	1.127	4116146	4116147			
WMTS600M6P03PT	6	6,00	.236	0,30	.012	28,63	1.127	4117239	4117240			
WMTS600M6P06PT	6	6,00	.236	0,58	.022	28,63	1.127	4117241	4117242			
WMTS250I6P08PT	6	6,34	.250	0,76	.030	28,63	1.127	4118595	4118596			
WMTS250I6P03PT	6	6,35	.250	0,25	.010	28,63	1.127	4118593	4118594			
WMTS800M8P06PT	8	8,00	.315	0,61	.024	28,57	1.125	4117258				
WMTS800M8P15PT	8	8,00	.315	1,50	.059	28,57	1.125	4117259	4117260			

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

INDEXABLE MILLING

SOLID END MILLING

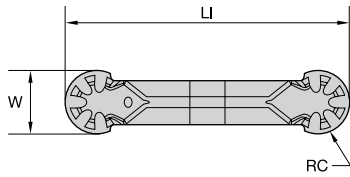
HOLEMAKING

TAPPING

TURNING



WMT Grooving Inserts • PC Full Radius Precision Molded



- first choice
- alternate choice

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

catalog number	SSC	W		RC		LI		WU10PT	WU25PT	WP10CT	WP25CT	WU10HT
		mm	in	mm	in	mm	in					
WMTR305M3UPC	3	3,13	.123	1,53	.060	25,53	1.005	4170172	4170173	4170174		
WMTR405M4UPC	4	4,13	.163	2,03	.080	25,58	1.007	4170177	4170178	4170179		
WMTR505M5UPC	5	5,13	.202	2,53	.099	29,01	1.142	4170182	4170183	4170184		
WMTR605M6UPC	6	6,12	.241	3,03	.119	28,77	1.133	4170187	4170188	4170189		
WMTR805M8UPC	8	8,13	.320	4,03	.159	29,22	1.150	4170192	4170193	4170194		

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

INDEXABLE MILLING

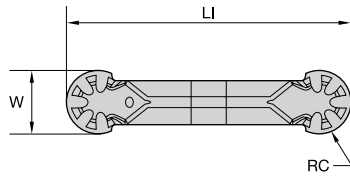
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

WMT Grooving Inserts • PC Full Radius Precision Ground



- first choice
- alternate choice

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

catalog number	SSC	W		RC		LI		WU10PT	WU25PT	WP10CT	WP25CT	WU10HT
		mm	in	mm	in	mm	in					
WMTR300M3PPC	3	3,00	.118	1,50	.059	25,40	1.000	4170170	4170171	■	■	4170195
WMTR400M4PPC	4	4,00	.158	2,00	.079	25,45	1.002	4170175	4170176	■	■	4170196
WMTR188I5PPC	5	4,78	.188	2,39	.094	28,65	1.128	4170119	4170120	■	■	■
WMTR500M5PPC	5	5,00	.197	2,50	.098	28,88	1.137	4170180	4170181	■	■	■
WMTR600M6PPC	6	6,00	.236	3,00	.118	28,65	1.128	4170185	4170186	■	■	■
WMTR250I6PPC	6	6,36	.250	3,18	.125	29,01	1.142	4170121	4170122	■	■	■
WMTR312I8PPC	8	7,94	.312	3,96	.156	29,00	1.142	4170163	4170164	■	■	■
WMTR800M8PPC	8	8,00	.315	4,00	.158	29,08	1.145	4170190	4170191	■	■	■

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

INDEXABLE MILLING

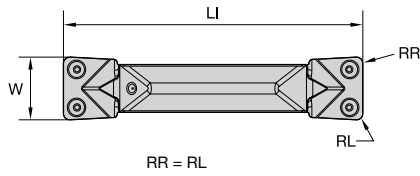
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## WMT Grooving Inserts • PH Precision Molded



- first choice
- alternate choice

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

catalog number	SSC	W		RR		LI		WU10PT	WU25PT	WP10CT	WP25CT	WU10HT
		mm	in	mm	in	mm	in					
WMTS305M3U03PH	3	3,13	.123	0,30	.012	25,81	1.016	5346392	5346393	●	●	○
WMTS305M3U06PH	3	3,13	.123	0,60	.024	25,81	1.016	5346394	5346395	●	●	○
WMTS405M4U03PH	4	4,13	.163	0,30	.012	25,53	1.005	5346396	5346397	●	●	○
WMTS405M4U06PH	4	4,13	.163	0,60	.024	25,53	1.005	5346398	5346399	●	●	○
WMTS505M5U03PH	5	5,13	.202	0,30	.012	28,76	1.320	5346400	5346401	●	●	○
WMTS505M5U06PH	5	5,13	.202	0,60	.024	28,76	1.320	5346402	5346403	●	●	○
WMTS605M6U03PH	6	6,13	.241	0,30	.012	28,76	1.320	5346404	5346405	●	●	○
WMTS605M6U06PH	6	6,13	.241	0,60	.024	28,76	1.320	5346406	5346407	●	●	○
WMTS805M8U03PH	8	8,13	.320	0,30	.012	28,70	1.130	5346410	5346411	●	●	○
WMTS805M8U06PH	8	8,13	.320	0,60	.024	28,70	1.130	5346408	5346409	●	●	○

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

INDEXABLE MILLING

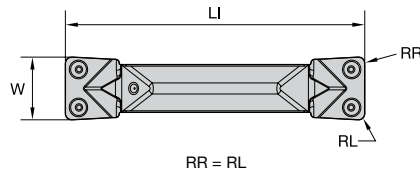
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

WMT Grooving Inserts • PH Precision Ground



- first choice
- alternate choice

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

catalog number	SSC	W		RR		LI		WU10PT	WU25PT	WP10CT	WP25CT	WU10HT
		mm	in	mm	in	mm	in					
WMTS300M3P03PH	3	3,00	.118	0,30	.012	25,65	1.010	5346412	5346413	●	○	○
WMTS300M3P06PH	3	3,00	.118	0,60	.024	25,65	1.010	5346415	5346416	○	○	○
WMTS125I3P03PH	3	3,18	.125	0,25	.010	25,40	1.000	5345914	5291300	○	○	○
WMTS125I3P08PH	3	3,18	.125	0,75	.030	25,40	1.000	5345915	5331093	○	○	○
WMTS156I4P03PH	4	3,95	.156	0,30	.012	25,40	1.000	5345916	5345917	○	○	○
WMTS156I4P08PH	4	3,96	.156	0,75	.030	25,40	1.000	5345918	5345919	○	○	○
WMTS400M4P03PH	4	4,00	.157	0,30	.012	25,40	1.000	5346418	5346419	○	○	○
WMTS400M4P06PH	4	4,00	.157	0,60	.024	25,40	1.000	5346421	5346422	○	○	○
WMTS188I5P03PH	5	4,77	.188	0,25	.010	28,63	1.127	5345980	5331095	○	○	○
WMTS188I5P08PH	5	4,77	.188	0,75	.030	28,63	1.127	5345981	5331097	○	○	○
WMTS500M5P03PH	5	5,00	.197	0,30	.012	28,63	1.127	5346427	5346425	○	○	○
WMTS500M5P06PH	5	5,00	.197	0,60	.024	28,63	1.127	5346428	5346426	○	○	○

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

INDEXABLE MILLING

SOLID END MILLING

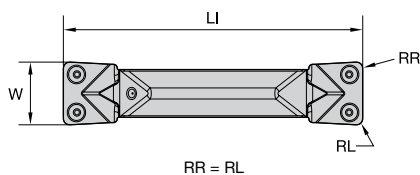
HOLEMAKING

TAPPING

TURNING

WMT Grooving Inserts • PH Precision Ground

(continued)



● first choice

○ alternate choice

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

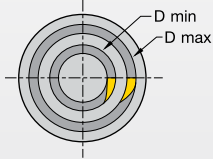
catalog number	SSC	W		RR		LI		WU10PT	WU25PT	WP10CT	WP25CT	WU10HT
		mm	in	mm	in	mm	in					
WMTS600M6P03PH	6	6,00	.236	0,30	.012	28,63	1.127	5346430	5346431			
WMTS600M6P06PH	6	6,00	.236	0,60	.024	28,63	1.127	5346432	5346433			
WMTS250I6P08PH	6	6,32	.249	0,75	.030	28,63	1.127	5345984	5327621			
WMTS250I6P03PH	6	6,35	.250	0,25	.010	28,63	1.127	5345983	5327620			
WMTS312I8P03PH	8	7,92	.312	0,25	.010	28,57	1.125	5345985	5345986			
WMTS312I8P08PH	8	7,92	.312	0,75	.030	28,57	1.125	5345987	5345988			
WMTS800M8P03PH	8	8,00	.315	0,30	.012	28,57	1.125		5346437			
WMTS800M8P06PH	8	8,00	.315	0,60	.024	28,57	1.125	5346435				

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

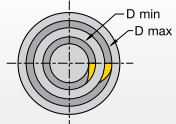
## Catalog Numbering System

Our WMT Toolholders now have a smart new naming system. Here are some examples of the improved nomenclature for our WMT Toolholders.

### Integral Toolholders

<b>WMT</b> Tooling System	<b>B</b> Tool Style	<b>R</b> Hand	<b>16</b> Shank Size	<b>3</b> Seat Size	<b>050</b> Max Grooving Depth	<b>—</b>	<b>150-200</b> Face Grooving Diameter
<b>WMT</b> = Groove and Turn (WMT Insert)	<b>S</b> = Straight <b>C</b> = Straight with circular support <b>E</b> = End mount <b>A</b> = Straight, face grooving, curve in <b>B</b> = Straight, face grooving, curve out	<b>R</b> = Right hand <b>L</b> = Left hand	For square shanks, the number indicates the height and width in 1/16" increments. For rectangular shanks, the first digit indicates the number of eighths of width "B" and the second digit indicates the number of quarters of height "H".	<b>1</b> <b>2</b> <b>2B</b> <b>3</b> <b>4</b> <b>5</b> <b>6</b> <b>8</b>	CD max in 1/100"  NOTE: Values <1.00" use a preceding zero (e.g., 075 = .75" max groove depth)	D min – D max in 1/100" e.g., 275-400 = 2.75" D min 4.00" D max	Diameters are min and max for outer face groove diameter 999 = unlimited D max  

### Modular Blades

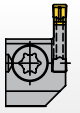
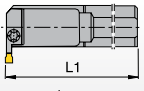
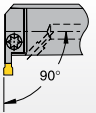
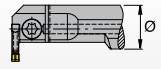
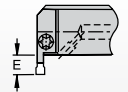
<b>WMT</b> Tooling System	<b>WGM</b> Connection Type	<b>R</b> Hand	<b>3</b> Seat Size	<b>16</b> Max Grooving Depth	<b>B</b> Tool Style	<b>070-100</b> Face Grooving Diameter
		<b>R</b> = Right hand <b>L</b> = Left hand			<b>A</b> = Curve In <b>B</b> = Curve Out	

## Catalog Numbering System

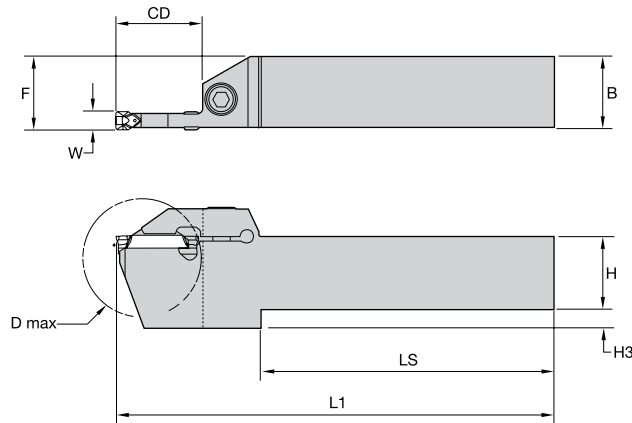
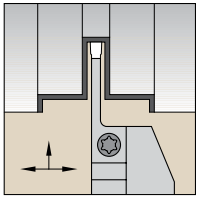
### Modular Toolholders

<b>WGM</b>	<b>S</b>	<b>R</b>	<b>16</b>
Tooling System	Tool Style	Hand	Shank Size
<p><b>MDG</b> = Modular Deep Grooving</p> <p><b>WGM</b> = Modular Serrated Locking System</p>	<p><b>S</b> = Straight</p> <p><b>E</b> = End mount</p>	<p><b>R</b> = Right hand</p> <p><b>L</b> = Left hand</p>	<p>For square shanks, the number indicates the height and width in 1/16" increments. For rectangular shanks, the first digit indicates the number of eighths of width "B" and the second digit indicates the number of quarters of height "H".</p>

### Integral Boring Bars

<b>A</b>	<b>16</b>	<b>R</b>	<b>WMT</b>	<b>E</b>	<b>R</b>	<b>03</b>	<b>16</b>	<b>N</b>																		
Steel Bar with Coolant	Bar Diameter	Bar Length	WMT Groove and Turn System	Tool Style	Hand	Seat Size	Max Grooving Depth	Tool Units																		
					<p><b>R</b> = Right hand</p> <p><b>L</b> = Left hand</p>			<p><b>N</b> = Inch</p> <p><b>M</b> = Metric</p>																		
		<table border="1"> <tr> <th>inch bars:</th> <th>metric bars:</th> </tr> <tr> <td>R = 8"</td> <td>R = 200mm</td> </tr> <tr> <td>S = 10"</td> <td>S = 150mm</td> </tr> <tr> <td>T = 12"</td> <td>T = 300mm</td> </tr> </table>	inch bars:	metric bars:	R = 8"	R = 200mm	S = 10"	S = 150mm	T = 12"	T = 300mm		<b>E</b> = End mounted (90°)														
inch bars:	metric bars:																									
R = 8"	R = 200mm																									
S = 10"	S = 150mm																									
T = 12"	T = 300mm																									
																										
	<table border="1"> <tr> <th>inch bars:</th> <th>metric bars:</th> </tr> <tr> <td>A two-digit number which indicates the bar diameter in 1/16" increments.</td> <td>Bar diameter in millimeters</td> </tr> </table>	inch bars:	metric bars:	A two-digit number which indicates the bar diameter in 1/16" increments.	Bar diameter in millimeters																					
inch bars:	metric bars:																									
A two-digit number which indicates the bar diameter in 1/16" increments.	Bar diameter in millimeters																									
						<table border="1"> <tr> <th>pocket seat size</th> <th>cutting width (mm)</th> </tr> <tr> <td>02</td> <td>2,00-2,62</td> </tr> <tr> <td>2B</td> <td>2,39-2,62</td> </tr> <tr> <td>03</td> <td>3,0-3,05</td> </tr> <tr> <td>04</td> <td>4,0-4,05</td> </tr> <tr> <td>05</td> <td>5,0-5,05</td> </tr> <tr> <td>06</td> <td>6,0-6,05</td> </tr> <tr> <td>08</td> <td>8,0-8,05</td> </tr> <tr> <td>10</td> <td>10,0-10,05</td> </tr> </table>	pocket seat size	cutting width (mm)	02	2,00-2,62	2B	2,39-2,62	03	3,0-3,05	04	4,0-4,05	05	5,0-5,05	06	6,0-6,05	08	8,0-8,05	10	10,0-10,05		
pocket seat size	cutting width (mm)																									
02	2,00-2,62																									
2B	2,39-2,62																									
03	3,0-3,05																									
04	4,0-4,05																									
05	5,0-5,05																									
06	6,0-6,05																									
08	8,0-8,05																									
10	10,0-10,05																									
																										
							<p><b>conversions:</b></p> <table border="1"> <tr> <th>mm</th> <th>inch</th> </tr> <tr> <td>7mm</td> <td>.28"</td> </tr> <tr> <td>10mm</td> <td>.39"</td> </tr> <tr> <td>12mm</td> <td>.47"</td> </tr> <tr> <td>16mm</td> <td>.63"</td> </tr> </table>	mm	inch	7mm	.28"	10mm	.39"	12mm	.47"	16mm	.63"									
mm	inch																									
7mm	.28"																									
10mm	.39"																									
12mm	.47"																									
16mm	.63"																									

WMT Integral Toolholders • Inch



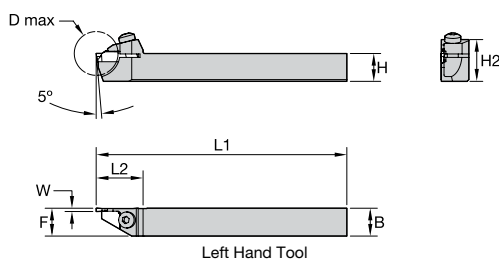
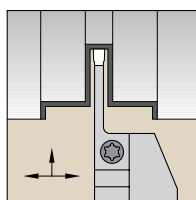
Right Hand Tool

order number	catalog number	SSC	W	H	B	CD	D max	F	H3	L1	LS
<b>right hand</b>											
3656137	WMTSR161065	1	.059	1.000	1.000	.650	—	.991	—	6.000	4.679
3655938	WMTCR62053	2	.079	.375	.375	—	1.062	.375	.125	4.500	3.410
3655940	WMTCR82062	2	.079	.500	.500	—	1.125	.500	.188	4.500	3.410
3655942	WMTSR102065	2	.079	.625	.625	.650	—	.625	.250	5.000	3.680
3655944	WMTSR122065	2	.079	.750	.750	.650	—	.750	—	5.000	3.680
3655946	WMTSR162065	2	.079	1.000	1.000	.650	—	1.000	—	6.000	4.680
3655892	WMTCR82B062	2B	.094	.500	.500	—	1.250	.500	.190	4.500	3.310
3655894	WMTSR102B075	2B	.094	.625	.625	.750	—	.625	.250	5.000	3.500
3655934	WMTSR122B042	2B	.094	.750	.750	.420	—	.750	—	5.000	3.695
3655896	WMTSR122B075	2B	.094	.750	.750	.750	—	.750	.250	5.000	3.500
3539156	WMTSR162B042	2B	.094	1.000	1.000	.420	—	1.000	—	6.000	4.700
3655936	WMTSR162B075	2B	.094	1.000	1.000	.750	—	1.000	—	6.000	4.500
3655898	WMTSR103044	3	.125	.625	.625	.440	—	.624	—	5.000	3.695
3655900	WMTSR103087	3	.125	.625	.625	.875	—	.624	.250	5.000	3.375
3655906	WMTSR123044	3	.125	.750	.750	.440	—	.750	—	5.000	3.695
3655908	WMTSR123087	3	.125	.750	.750	.875	—	.750	.250	5.000	3.355
3655916	WMTSR163044	3	.125	1.000	1.000	.440	—	1.000	—	6.000	4.695
3655918	WMTSR163087	3	.125	1.000	1.000	.875	—	1.000	—	6.000	4.375
3655932	WMTSR124044	4	.156	.750	.750	.440	—	.750	—	5.000	3.695
3655920	WMTSR164087	4	.156	1.000	1.000	.875	—	1.000	—	6.000	4.375
3655902	WMTSR105056	5	.188	.625	.625	.560	—	.629	—	5.000	3.562
3655904	WMTSR105100	5	.188	.625	.625	1.000	—	.629	.250	5.500	3.675
3655910	WMTSR125056	5	.188	.750	.750	.560	—	.750	—	5.000	3.562
3655912	WMTSR125100	5	.188	.750	.750	1.000	—	.750	.250	5.500	3.655
3655922	WMTSR165056	5	.188	1.000	1.000	.560	—	1.000	—	6.000	4.562
3655924	WMTSR165100	5	.188	1.000	1.000	1.000	—	1.000	—	6.000	4.175
3655914	WMTSR126056	6	.250	.750	.750	.560	—	.754	—	5.000	3.562
3655926	WMTSR166056	6	.250	1.000	1.000	.560	—	1.004	—	6.000	4.562
3655928	WMTSR166100	6	.250	1.000	1.000	1.000	—	1.002	—	6.000	4.174
3539139	WMTSR168056	8	.312	1.000	1.000	.560	—	1.000	—	6.000	4.553
3539141	WMTSR168100	8	.312	1.000	1.000	1.000	—	1.000	—	6.000	4.174
3539145	WMTSR208100	8	.312	1.250	1.250	1.000	—	1.250	—	6.000	4.174
<b>left hand</b>											
3656138	WMTSL161065	1	.059	1.000	1.000	.650	—	.991	—	6.000	4.679
3655939	WMTCL62053	2	.079	.375	.375	—	1.062	.375	.125	4.500	3.410
3655941	WMTCL82062	2	.079	.500	.500	—	1.125	.500	.188	4.500	3.410
3655945	WMTSL122065	2	.079	.750	.750	.650	—	.750	—	5.000	3.680
3655947	WMTSL162065	2	.079	1.000	1.000	.650	—	1.000	—	6.000	4.680
3655893	WMTCL82B062	2B	.094	.500	.500	—	1.250	.500	.190	4.500	3.310
3655895	WMTSL102B075	2B	.094	.625	.625	.750	—	.625	.250	5.000	3.500
3655935	WMTSL122B042	2B	.094	.750	.750	.420	—	.750	—	5.000	3.700
3655897	WMTSL122B075	2B	.094	.750	.750	.750	—	.750	.250	5.000	3.500
3655937	WMTSL162B075	2B	.094	1.000	1.000	.750	—	1.000	—	6.000	4.500
3655899	WMTSL103044	3	.125	.625	.625	.440	—	.624	—	5.000	3.695
3655901	WMTSL103087	3	.125	.625	.625	.875	—	.624	.250	5.000	3.375
3655907	WMTSL123044	3	.125	.750	.750	.440	—	.750	—	5.000	3.695
3655909	WMTSL123087	3	.125	.750	.750	.875	—	.750	.250	5.000	3.355
3655917	WMTSL163044	3	.125	1.000	1.000	.440	—	1.000	—	6.000	4.695
3655919	WMTSL163087	3	.125	1.000	1.000	.875	—	1.000	—	6.000	4.375
3655933	WMTSL124044	4	.156	.750	.750	.440	—	.750	—	5.000	3.697
3655921	WMTSL164087	4	.156	1.000	1.000	.875	—	1.000	—	6.000	4.375
3655923	WMTSL165056	5	.188	1.000	1.000	.560	—	1.000	—	6.000	4.562
3655925	WMTSL165100	5	.188	1.000	1.000	1.000	—	1.000	—	6.000	4.175
3655915	WMTSL126056	6	.250	.750	.750	.560	—	.754	—	5.000	3.562
3655927	WMTSL166056	6	.250	1.000	1.000	.560	—	1.004	—	6.000	4.562
3655929	WMTSL166100	6	.250	1.000	1.000	1.000	—	1.004	—	6.000	4.174
3539146	WMTSL208100	8	.312	1.250	1.207	1.000	—	1.250	—	6.000	4.174

NOTE: SSC = To correspond with the SSC on the insert.



## WMT Integral Toolholders • Swiss Style • Inch



order number	catalog number	SSC	W	H	B	D max	F	H2	L1	L2
<b>right hand</b>										
3655949	WMTCR081039	1	.059	.500	.500	.787	.500	.750	4.500	.842
3656135	WMTCR121051	1	.059	.750	.750	1.024	.750	1.050	5.000	.952
3656133	WMTCR101051	1	.059	.625	.625	1.024	.626	.925	5.000	.952
3656141	WMTCR082039	2	.079	.500	.500	.787	.500	.750	4.500	.843
3656143	WMTCR102051	2	.079	.625	.625	1.024	.625	.925	5.000	.953
3656139	WMTCR062039	2	.079	.375	.375	.787	.375	.625	4.500	.843
3656145	WMTCR122051	2	.079	.750	.750	1.024	.750	1.050	5.000	.953
<b>left hand</b>										
3656186	WMTCL061039	1	.059	.375	.375	.787	.375	.625	4.500	.842
3656101	WMTCL081039	1	.059	.500	.500	.787	.500	.750	4.500	.842
3656136	WMTCL121051	1	.059	.750	.750	1.024	.750	1.050	5.000	.952
3656140	WMTCL062039	2	.079	.375	.375	.787	.375	.625	4.500	.843
3656142	WMTCL082039	2	.079	.500	.500	.787	.500	.750	4.500	.843
3656144	WMTCL102051	2	.079	.625	.625	1.024	.625	.925	5.000	.953
3656146	WMTCL122051	2	.079	.750	.750	1.024	.750	1.050	5.000	.953

NOTE: Insert exterior edge in line with toolholder edge for .375" and .500" shank toolholders.  
SSC = To correspond with the SSC on the insert.

INDEXABLE MILLING

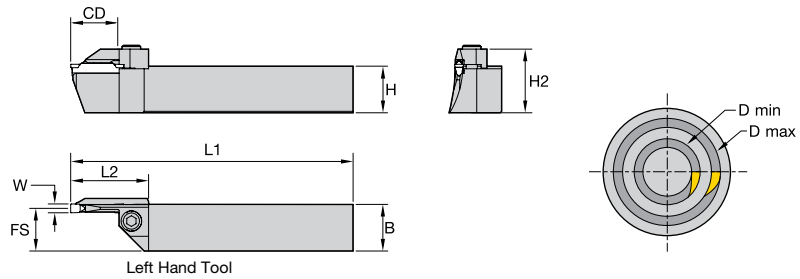
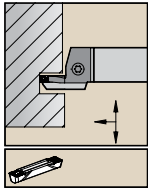
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

WMT Integral Toolholders • Face Grooving • Inch



Left Hand Tool

order number	catalog number	SSC	W	H	B	CD	D max	D min	FS	H2	L1	L2
<b>right hand</b>												
3656151	WMTBR163063-275-400	3	.125	.990	.990	.625	4.000	2.750	.937	1.280	6.000	1.343
<b>left hand</b>												
3656152	WMTBL163063-275-400	3	.125	.990	.990	.625	4.000	2.750	.937	1.280	6.000	1.343
3656169	WMTBL166100-400-800	6	.250	.990	.990	1.000	8.000	4.000	.875	1.372	6.000	1.655

NOTE: Initial cut of tool must be between D min and D max. Due to the insert being positioned .030" above center, minimum diameter after initial cut is .850".  
 Toolholders that accept .125" width inserts have an integral clamp.  
 Toolholders that accept .187" and .250" width inserts are supplied with a detachable clamp.  
 SSC = To correspond with the SSC on the insert.

Blade Style	Part Shape		Left Hand	Right Hand
Curve Out				

INDEXABLE MILLING

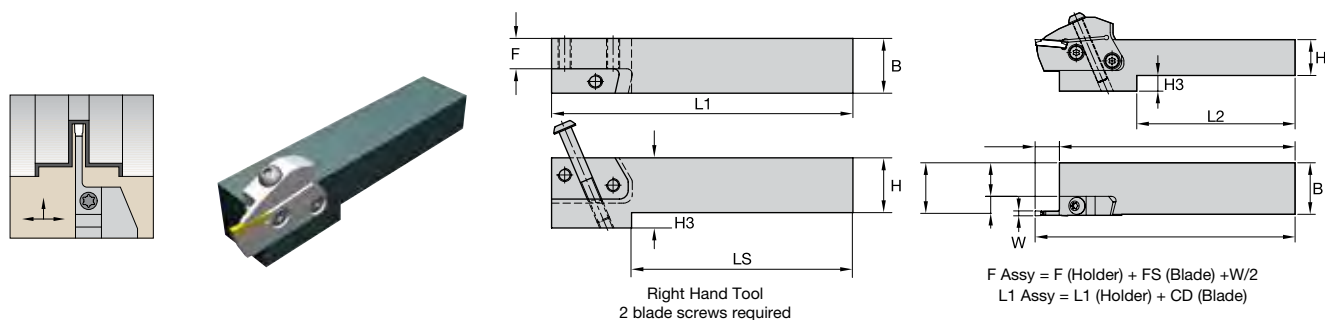
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

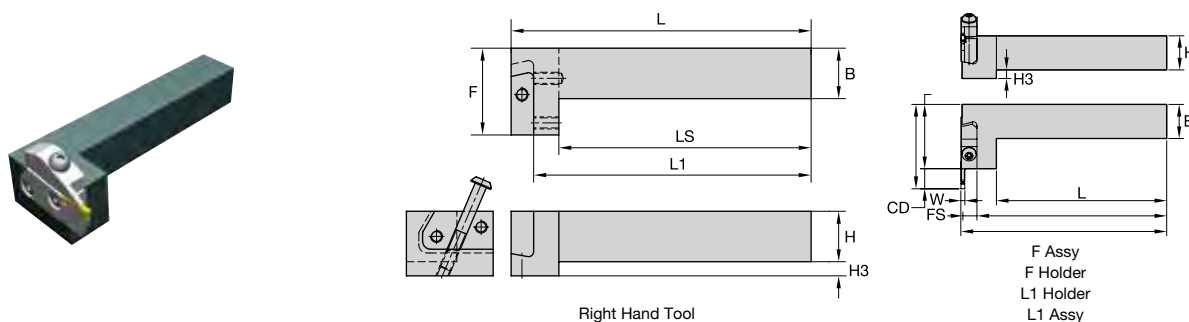
WMT Modular Toolholders • Straight Mount • Grooving, Cut-Off, Face Grooving • Inch



order number	catalog number	H	B	L1	LS	F	H3
<b>right hand</b>							
5349621	WGMSR12	.75	.75	4.30	2.75	.31	.49
5349622	WGMSR16	1.00	1.00	5.05	3.86	.56	.24
5349624	WGMSR20	1.25	1.25	5.05	—	.81	—
<b>left hand</b>							
5349609	WGMSL12	.75	.75	4.30	2.75	.31	.49
5349620	WGMSL16	1.00	1.00	5.05	3.86	.56	.24
5349623	WGMSL20	1.25	1.25	5.05	—	.81	—

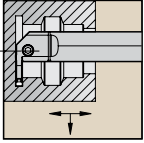
NOTE: Use the larger seat size toolholder for optimal performance.  
Blade screws and clamp screw included with holder.

WMT Modular Toolholders • End Mount • Grooving, Cut-Off, Face Grooving • Inch

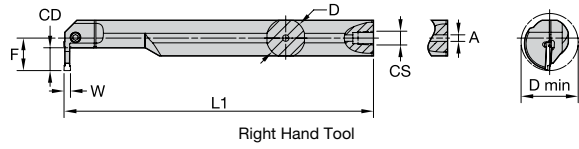


order number	catalog number	H	B	L	L1	LS	F	H3
<b>right hand</b>								
5514977	WGMER16	1.00	1.00	5.96	5.53	4.96	1.70	.24
5515022	WGMER2050	1.25	1.25	5.96	5.53	4.96	1.70	—
<b>left hand</b>								
5514976	WGME16	1.00	1.00	5.96	5.53	4.96	1.70	.24
5515023	WGME16	1.25	1.25	5.96	5.53	4.96	1.70	—

WMT Integral I.D. Grooving Boring Bars • Inch



Steel shank with through coolant.



order number	catalog number	SSC	W	CD	D min	D	L1	F	A	CS
<b>right hand</b>										
5423448	A16RWMTER0316N	3	.125	.630	1.59	1.00	8.00	1.024	.25	1/4-18 NPT
5423449	A20SWMTER0319N	3	.125	.748	1.85	1.25	10.00	1.142	.25	1/4-18 NPT
5423840	A16RWMTER0416N	4	.156	.630	1.59	1.00	8.00	1.024	.25	1/4-18 NPT
5423841	A20SWMTER0419N	4	.156	.748	1.85	1.25	10.00	1.142	.25	1/4-18 NPT
5423842	A20SWMTER0519N	5	.188	.748	1.85	1.25	10.00	1.142	.25	1/4-18 NPT
5423843	A24TWMTER0522N	5	.188	.866	2.13	1.50	12.00	1.260	.25	1/4-18 NPT
5423844	A20SWMTER0619N	6	.250	.748	1.85	1.25	10.00	1.142	.25	1/4-18 NPT
5423845	A24TWMTER0622N	6	.250	.866	2.13	1.50	12.00	1.260	.25	1/4-18 NPT
<b>left hand</b>										
5423846	A16RWMTEL0316N	3	.125	.630	1.59	1.00	8.00	1.024	.25	1/4-18 NPT
5423847	A20SWMTEL0319N	3	.125	.748	1.85	1.25	10.00	1.142	.25	1/4-18 NPT
5423848	A16RWMTEL0416N	4	.156	.630	1.59	1.00	8.00	1.024	.25	1/4-18 NPT
5423870	A20SWMTEL0519N	5	.188	.748	1.85	1.25	10.00	1.142	.25	1/4-18 NPT
5423872	A20SWMTEL0619N	6	.250	.748	1.85	1.25	10.00	1.142	.25	1/4-18 NPT
5423873	A24TWMTEL0622N	6	.250	.866	2.13	1.50	12.00	1.260	.25	1/4-18 NPT

SSC = To correspond with the SSC on the insert.

INDEXABLE MILLING

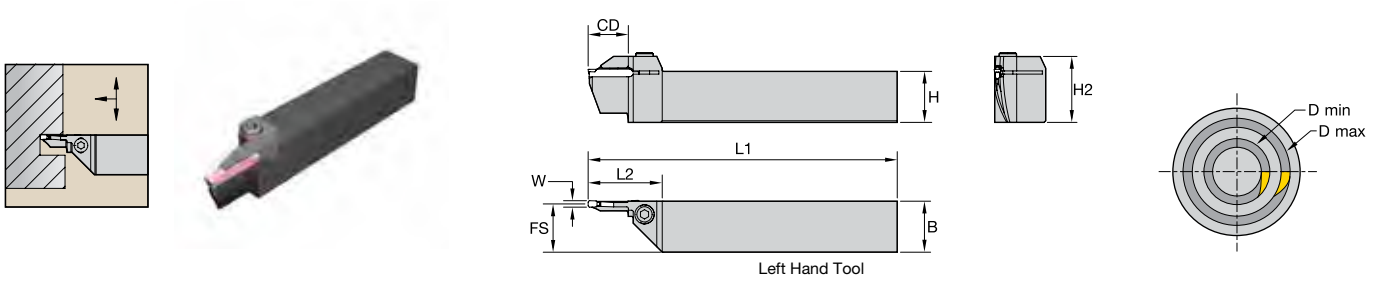
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

WMT Integral Toolholders • Face Grooving • Inch



order number	catalog number	SSC	W	H	B	CD	D max	D min	FS	H2	L1	L2
right hand												
3539331	WMTAR166100-400-800	6	.250	.990	.990	1.000	8.000	4.000	.875	1.336	6.000	1.655

NOTE: Initial cut of tool must be between D min and D max. Due to the insert being positioned .030" above center, minimum diameter after initial cut is .850".  
 Toolholders that accept .125" width inserts have an integral clamp.  
 Toolholders that accept .187" and .250" width inserts are supplied with a detachable clamp.  
 SSC = To correspond with the SSC on the insert.

Blade Style	Part Shape		Left Hand	Right Hand
Curve In				

INDEXABLE MILLING

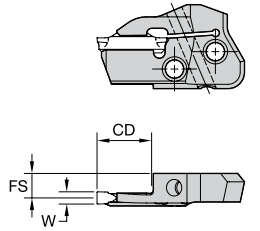
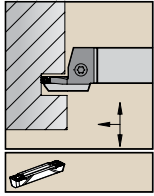
SOLID END MILLING

HOLEMAKING

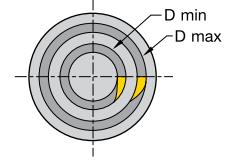
TAPPING

TURNING

WMT Modular Blades • Face Grooving • Metric



Right Hand Tool



order number	catalog number	SSC	D min		D max		CD		W		FS	
			mm	in	mm	in	mm	in	mm	in	mm	in
<b>right hand</b>												
5359150	WMTWGMR313B038-052	3	38,00	1.496	52,00	2.047	12,70	.500	3,00	.118	11,00	.433
5359151	WMTWGMR316B052-070	3	52,00	2.047	70,00	2.756	15,88	.625	3,00	.118	11,00	.433
5359152	WMTWGMR316B070-100	3	70,00	2.756	100,00	3.937	15,88	.625	3,00	.118	11,00	.433
5359153	WMTWGMR319B100-205	3	100,00	3.937	205,00	8.071	19,05	.750	3,00	.118	11,00	.433
5359154	WMTWGMR416B052-070	4	52,00	2.047	70,00	2.756	15,88	.625	4,00	.157	10,50	.413
5359155	WMTWGMR416B070-100	4	70,00	2.756	100,00	3.937	15,88	.625	4,00	.157	10,50	.413
5359156	WMTWGMR419B100-205	4	100,00	3.937	205,00	8.071	19,05	.750	4,00	.157	10,50	.413
5359157	WMTWGMR522B100-205	5	100,00	3.937	205,00	8.071	22,00	.866	5,00	.197	10,00	.394
5359158	WMTWGMR622B100-205	6	100,00	3.937	205,00	8.071	22,00	.866	6,00	.236	10,00	.394
<b>left hand</b>												
5359134	WMTWGML313B038-052	3	38,00	1.496	52,00	2.047	12,70	.500	3,00	.118	11,00	.433
5359135	WMTWGML316B052-070	3	52,00	2.047	70,00	2.756	15,88	.625	3,00	.118	11,00	.433
5359136	WMTWGML316B070-100	3	70,00	2.756	100,00	3.937	15,88	.625	3,00	.118	11,00	.433
5359137	WMTWGML319100-205	3	100,00	3.937	205,00	8.071	19,05	.750	3,00	.118	11,00	.433
5359138	WMTWGML413B038-052	4	38,00	1.496	52,00	2.047	12,70	.500	4,00	.157	10,50	.413
5359139	WMTWGML416B052-070	4	52,00	2.047	70,00	2.756	15,88	.625	4,00	.157	10,50	.413
5359141	WMTWGML419B100-205	4	100,00	3.937	205,00	8.071	19,05	.750	4,00	.157	10,50	.413
5359142	WMTWGML516B038-052	5	38,00	1.496	52,00	2.047	15,88	.625	5,00	.197	10,00	.394
5359143	WMTWGML519B052-070	5	52,00	2.047	70,00	2.756	19,05	.750	5,00	.197	10,00	.394
5359144	WMTWGML519B070-100	5	70,00	2.756	100,00	3.937	19,05	.750	5,00	.197	10,00	.394
5359145	WMTWGML522B100-205	5	100,00	3.937	205,00	8.071	22,00	.866	5,00	.197	10,00	.394
5359147	WMTWGML619B052-070	6	52,00	2.047	70,00	2.756	19,05	.750	6,00	.236	10,00	.394
5359148	WMTWGML619B070-100	6	70,00	2.756	100,00	3.937	19,05	.750	6,00	.236	10,00	.394
5359149	WMTWGML622B100-205	6	100,00	3.937	205,00	8.071	22,00	.866	6,00	.236	10,00	.394

NOTE: Blade and clamp screw torque equals 71–88 in. lbs. (8–10 Nm).  
SSC = To correspond with the SSC on the insert.

INDEXABLE MILLING

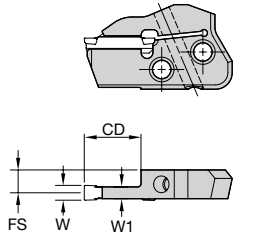
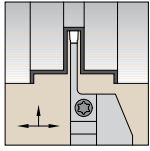
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

WMT Modular Blades • Metric



Right Hand Blade



order number	catalog number	SSC	CD		W		FS		W1	
			mm	in	mm	in	mm	in	mm	in
<b>right hand</b>										
5359127	WMTWGMR114S	1	14,00	.551	1,50	.059	11,04	.435	1,22	.048
5359128	WMTWGMR213S	2	13,00	.512	2,00	.079	10,81	.426	1,68	.066
5359129	WMTWGMR2B16S	2B	16,50	.650	2,39	.094	10,71	.422	1,88	.074
5359130	WMTWGMR319S	3	19,00	.748	3,00	.118	10,38	.409	2,54	.100
5359131	WMTWGMR419S	4	19,00	.748	4,00	.157	10,00	.394	3,30	.130
5359132	WMTWGMR522S	5	22,00	.866	5,00	.197	9,82	.387	3,66	.144
5359133	WMTWGMR622S	6	22,00	.866	6,00	.236	9,26	.365	4,78	.188
<b>left hand</b>										
5359121	WMTWGML213S	2	13,00	.512	2,00	.079	10,81	.426	1,68	.066
5359122	WMTWGML2B16S	2B	16,50	.650	2,39	.094	10,71	.422	1,88	.074
5359123	WMTWGML319S	3	19,00	.748	3,00	.118	10,38	.409	2,54	.100
5359124	WMTWGML419S	4	19,00	.748	4,00	.157	10,00	.394	3,30	.130
5359125	WMTWGML522S	5	22,00	.866	5,00	.197	9,82	.387	3,66	.144
5359126	WMTWGML622S	6	22,00	.866	6,00	.236	9,26	.365	4,78	.188

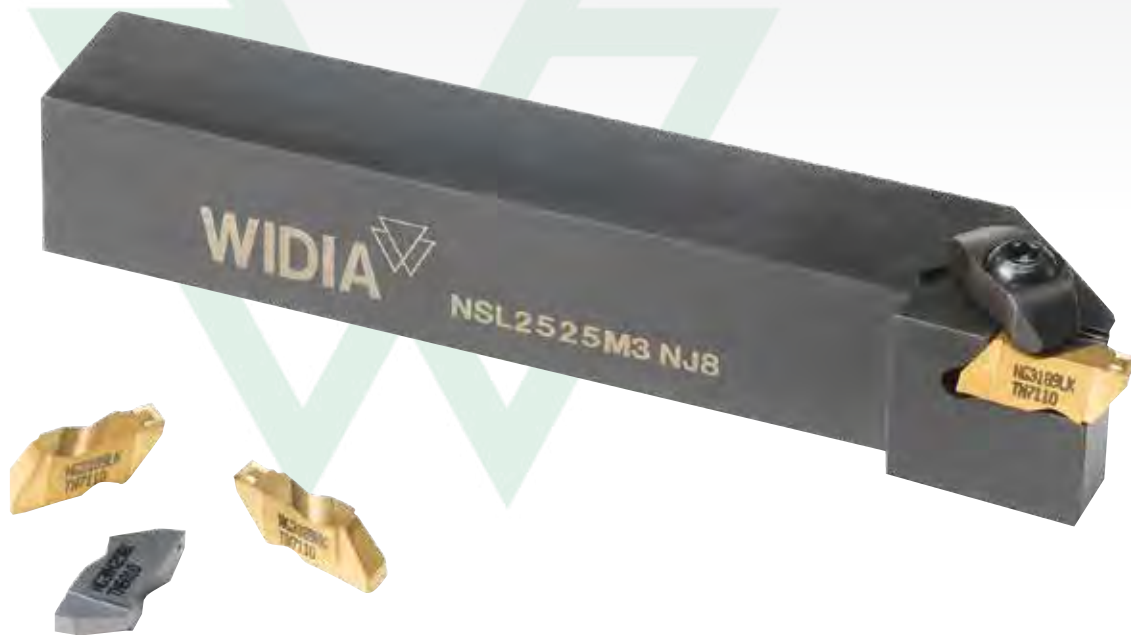
NOTE: Blade and clamp screw torque equals 8–10 Nm (71–88 in. lbs.).  
SSC = To correspond with the SSC on the insert.





The WIDIA™ TopGroove clamping system is perfect for shallow grooving operations and features an extensive carbide grade selection to meet the most demanding application requirements. With maximum clamping rigidity and superior versatility, TopGroove inserts employ a unique top rake chip control geometry that efficiently evacuates chips and produces better quality parts.

- TopGroove clamping design features a rugged bridge clamp, which locates in a groove molded into the insert, to provide superior resistance to side and radial cutting forces.
- TopGroove inserts are available for shallow grooving, deep grooving, light turning, profiling, shallow and deep face grooving, back turning, undercutting, and Poly-Vee grooving.
- The proprietary WIDIA chip control design works in multidirectional turning as well as radial feed applications to provide excellent chip evacuation in deep grooving applications.



### RIGID



















Inserts feature a top rake chip control geometry for maximum clamping rigidity.

### VERSATILE

The TopGroove clamping system provides a complete line of grooving geometries and an extensive grade selection to meet even the most demanding application requirements.

# SHALLOW GROOVING CLAMPING SYSTEM

## INSERTS

INSERT STYLE	APPLICATION	RAKE ANGLE	INSERT STYLE	APPLICATION	RAKE ANGLE
<b>NG</b> 	<ul style="list-style-type: none"> <li>• General-purpose grooving.</li> <li>• O-ring grooving.</li> <li>• Circlip grooving.</li> </ul>	Neutral	<b>NFD-KI*</b> 	<ul style="list-style-type: none"> <li>• Internal deep face grooving with chip control.</li> <li>• For use in boring bars for internal face grooves.</li> </ul>	10° positive
<b>NG-K</b> 	<ul style="list-style-type: none"> <li>• Chip control geometry.</li> <li>• General-purpose grooving.</li> <li>• O-ring grooving.</li> <li>• Circlip grooving.</li> <li>• Light turning.</li> </ul>	10° positive	<b>NP-K</b> 	<ul style="list-style-type: none"> <li>• Turning.</li> <li>• Back turning positive.</li> <li>• Profiling with chip control.</li> </ul>	10° positive
<b>NGC-K*</b> 	<ul style="list-style-type: none"> <li>• Combined groove and chamfered edge break in one positive plunge with chip control.</li> <li>• Designed for DIN 471/472 standard circlip grooves.</li> </ul>	10° positive	<b>NR</b> 	<ul style="list-style-type: none"> <li>• Full radius grooving.</li> <li>• Turning and profiling.</li> </ul>	Neutral
<b>NGD*</b> 	<ul style="list-style-type: none"> <li>• Deep grooving.</li> </ul>	Neutral	<b>NR-K</b> 	<ul style="list-style-type: none"> <li>• Chip control geometry.</li> <li>• Full radius grooving, turning, and profiling.</li> </ul>	10° positive
<b>NGD-K</b> 	<ul style="list-style-type: none"> <li>• Chip control geometry.</li> <li>• Deep grooving.</li> <li>• Light turning.</li> </ul>	10° positive	<b>NRD</b> 	<ul style="list-style-type: none"> <li>• Deep grooving.</li> <li>• Full radius end-form.</li> </ul>	Neutral
<b>NGP</b> 	<ul style="list-style-type: none"> <li>• General-purpose grooving.</li> <li>• O-ring grooving.</li> <li>• Circlip grooving.</li> </ul>	5° positive	<b>NRP*</b> 	<ul style="list-style-type: none"> <li>• Full radius grooving.</li> <li>• Light-turning profiling.</li> </ul>	5° positive
<b>NF*</b> 	<ul style="list-style-type: none"> <li>• Face grooving.</li> <li>• Additional side clearance.</li> </ul>	Neutral	<b>NU*</b> 	<ul style="list-style-type: none"> <li>• Undercutting.</li> </ul>	Neutral
<b>NF-K</b> 	<ul style="list-style-type: none"> <li>• Face grooving with chip control.</li> <li>• Additional side clearance.</li> </ul>	10° positive	<b>NV*</b> 	<ul style="list-style-type: none"> <li>• Poly-Vee grooving.</li> </ul>	Neutral
<b>NFD-K</b> 	<ul style="list-style-type: none"> <li>• Deep face grooving with chip control.</li> <li>• Additional side clearance.</li> </ul>	10° positive	<b>NB/NBD</b> 	<ul style="list-style-type: none"> <li>• Blanks.</li> <li>• Blanks for deep grooving.</li> <li>• Available in uncoated grades only.</li> </ul>	—

\*Inserts are available as custom solutions.

### INDUSTRY



### APPLICATIONS



FACE GROOVING



GROOVING



I.D. GROOVING

## Choosing the Correct TopGroove Cutter

### The Most Advanced Turning Solutions in the Industry

Perfect for shallow grooving operations, the WIDIA™ TopGroove clamping system provides a complete line of grooving geometries and an extensive grade selection to meet even the most demanding application requirements. For increased rigidity, versatility, chip control, and carbide grade options, the TopGroove clamping system is the proven solution.

With maximum clamping rigidity and superior versatility, TopGroove inserts employ a unique top rake chip control geometry that efficiently evacuates chips and produces better quality parts, faster than ever before.

Use this comprehensive, easy-to-use guide for the information necessary to identify, choose, and select the appropriate cutting tools for your specific needs.

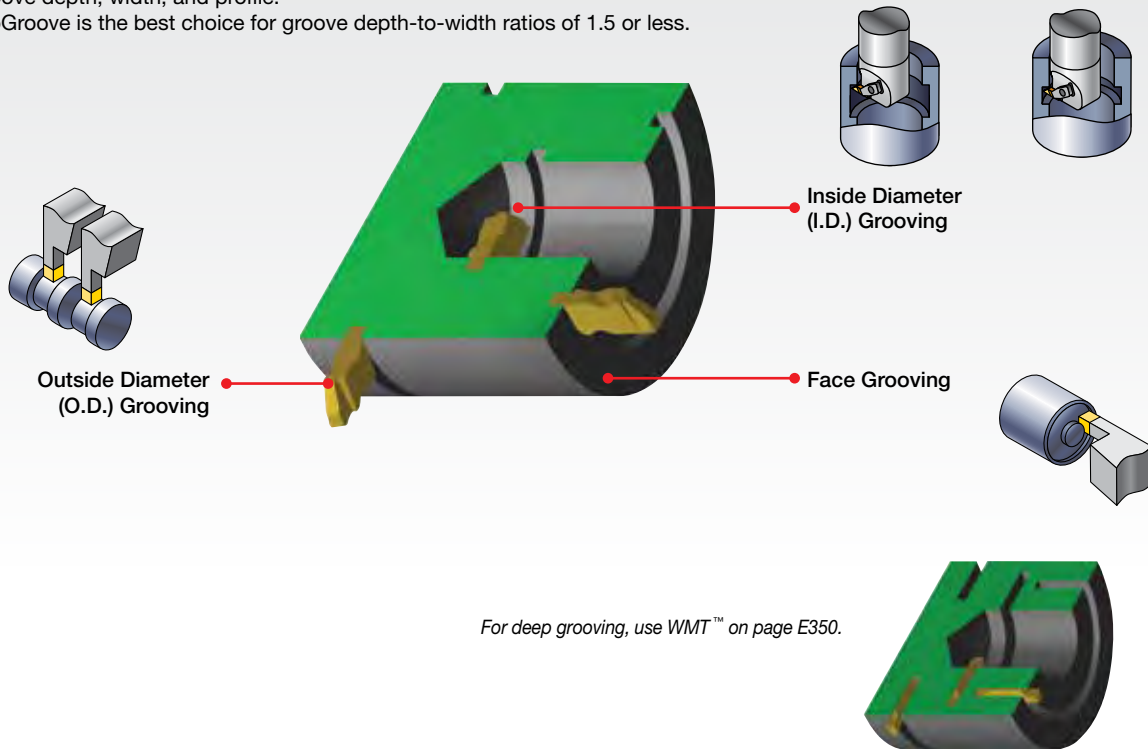
### What you need to know:

- Material being machined.
- Groove depth, width, and profile.
- Application to be performed (face, O.D., or I.D. grooving).
- Toolholder requirements (e.g., KM™, ERICKSON™, square shank, right/left).

### 1 Choose the application to be performed:

Groove depth, width, and profile.

TopGroove is the best choice for groove depth-to-width ratios of 1.5 or less.



### TopGroove for Internal, External, and Face Grooving Applications

system capabilities			minimum	maximum
	O.D./I.D. Grooving	width	.020" (0,50mm)	.375" (9,53mm)
		depth	—	.500" (12,7mm)
	Face Grooving	width	.125" (3,2mm)	.250" (6,35mm)
		depth	—	.500" (12,7mm)
	Internal Grooving	diameter	.440" (11,2mm)	—
	Face Grooving Diameter	standard	.940" (23,9mm)	—
		deep	—	—
	Deep O.D./I.D. Grooving	width	.059" (1,50mm)	.250" (6,35mm)
		depth	—	.500" (12,7mm)
	Deep Face Grooving	width	.125" (3,18mm)	.250" (6,35mm)
		depth	—	.500" (12,7mm)

## Choosing the Correct TopGroove Cutter

### 2 Identify the material to be machined:

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

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

### 3 Select your toolholder based on the application:

- A Choose the appropriate gage insert (width) required for the application.
- B Choose the shortest cutting depth "CD" dimension for increased tool rigidity.
- C Select the largest toolholder shank "H" and "B" dimensions for maximum rigidity.

Grooving and Cut-Off • TopGroove™

Integral Toolholders • NS

Order number	Catalog number	H	B	F	L1	L2	Ø4	CD	gage insert
3403147	NSP042	3175	2775	1500	2.50	25	35	150	4.25
3404235	NSP052V	3225	3030	1500	1.50	75	35	150	4.25
3404236	NSP1222R	3300	3000	1500	1.50	75	35	150	4.25
3404237	NSP1225A	3350	3050	1500	4.00	125	35	200	4.25
3404238	NSP1225R	3350	3050	1500	4.00	125	35	200	4.25
3404239	NSP1225L	3350	3050	1500	4.00	125	35	200	4.25
3404240	NSP1420C	3350	3050	1500	1.25	75	35	150	4.25
3404241	NSP1420C	3350	3050	1500	1.25	75	35	150	4.25
3404242	NSP1420C	3350	3050	1500	1.25	75	35	150	4.25
3404243	NSP1420C	3350	3050	1500	1.25	75	35	150	4.25
3404244	NSP1420C	3350	3050	1500	1.25	75	35	150	4.25
3404245	NSP1420C	3350	3050	1500	1.25	75	35	150	4.25
3404246	NSP1420C	3350	3050	1500	1.25	75	35	150	4.25
3404247	NSP1420C	3350	3050	1500	1.25	75	35	150	4.25
3404248	NSP1420C	3350	3050	1500	1.25	75	35	150	4.25
3404249	NSP1420C	3350	3050	1500	1.25	75	35	150	4.25
3404250	NSP1420C	3350	3050	1500	1.25	75	35	150	4.25

NOTE: Flattening measured under long point of insert.

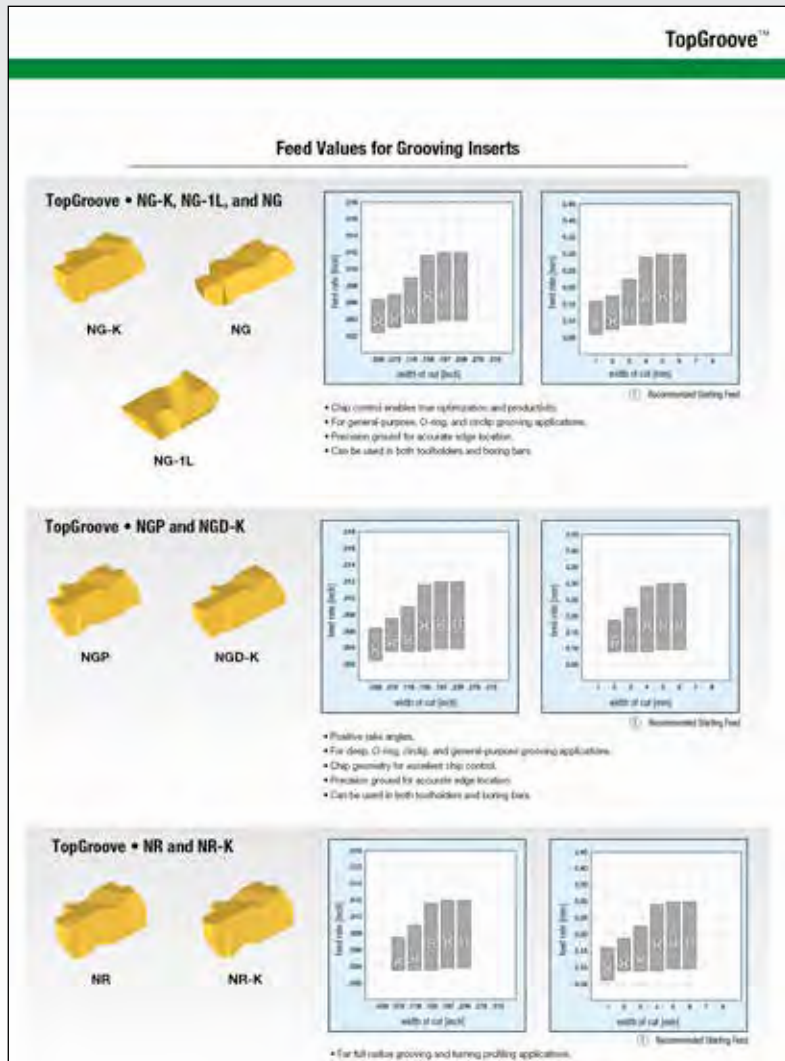
		application	conventional toolholders	modular blades
		O.D. Grooving and Plunge and Turn	E375-E376	E382
		I.D. Grooving	E379	—

## Choosing the Correct TopGroove Cutter

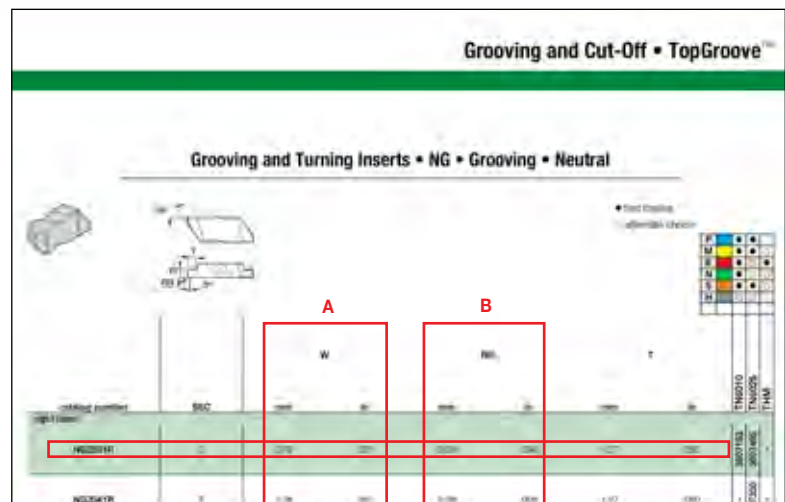
### 4 Select chipbreaker style for the application:

See application guide on page E392 for a complete list of insert styles.

NOTE: Chart shows recommended starting feed rates.






- A Choose the appropriate insert width “W” for your specific application.
- B Select the required corner radius value “RR”.



## Choosing the Correct TopGroove Cutter

### 5 Select grade:

cutting condition		Recommended Grades					
		steel	stainless steel	cast iron	non-ferrous metals	high-temp alloys	hardened materials
smooth cut, pre-turned surface		TN7110	TN6010	TN7110	TN6010/THM	TN6010	TN6010
varying depth of cut, casting, or forging skin		TN6010	TN6010	TN6010	TN6010/THM	TN6010	TN6010
lightly interrupted cut		TN6025	TN6025	TN6025	TN6010/THM	TN6010	TN6025
heavily interrupted cut		TN6025	TN6025	TN6025	TN6010/THM	TN6010	TN6025

See page E357 for Grades and Grade Descriptions.

### 6 Determine cutting data:

- A Based on material group and grade, identify starting speed (vc).
- B First choice starting speed is in bold.

See page E359–E360 for cutting data.

**Grooving and Cut-Off • WMT™**

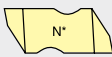
**Recommended Cutting Speeds • Inch**

Material Group	Cutting Speed – vc – SFM														
	WU13HT			WU13PT			WU55PT			WP10CT			WP25CT		
	min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
A	0/1	290	300	320	470	450	520	<b>500</b>	500	610	700	740	500	625	640
	2	310	325	340	570	550	630	545	575	680	790	740	600	725	665
	3	310	325	340	570	550	630	545	575	680	790	740	600	725	665
	4	190	205	220	320	345	375	<b>400</b>	420	445	470	495	500	405	430
M	1	240	250	260	430	450	470	400	425	450	—	—	—	—	—
	2	140	150	160	310	325	340	300	320	—	—	—	—	—	—
	3	150	165	175	310	325	340	300	315	—	—	—	—	—	—
R	1	240	250	260	430	450	470	400	425	450	380	395	405	425	440
	2	225	235	245	410	440	475	550	565	610	660	700	730	570	600
H	1	240	250	260	430	450	470	400	425	450	—	—	—	—	—
	2	240	250	260	430	450	470	400	425	—	—	—	—	—	—
	3	240	250	260	430	450	470	400	425	—	—	—	—	—	—
	4	240	250	260	430	450	470	400	425	—	—	—	—	—	—
	5	240	250	260	430	450	470	400	425	—	—	—	—	—	—
	6	240	250	260	430	450	470	400	425	—	—	—	—	—	—
	7	240	250	260	430	450	470	400	425	—	—	—	—	—	—
O	1	110	115	120	230	230	230	210	225	230	—	—	—	—	—
	2	55	60	65	115	110	105	105	110	110	—	—	—	—	—
	3	190	200	210	310	325	340	290	300	320	—	—	—	—	—
	4	190	190	190	—	—	—	—	—	—	—	—	—	—	—
G	1	—	—	—	60	100	200	60	100	200	—	—	—	—	—
	2	—	—	—	60	100	200	60	100	200	—	—	—	—	—
	3	—	—	—	60	100	200	60	100	200	—	—	—	—	—
	4	—	—	—	60	100	200	60	100	200	—	—	—	—	—



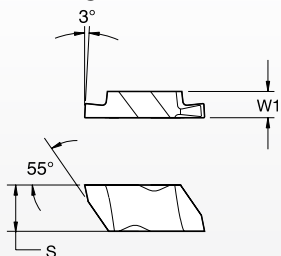
## Catalog Numbering System

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.

N	G	D	2	M	150	R		K																		
Type of Insert	Insert Style	Additional Information	Insert Size	Size Identification	Groove Size**	Hand of Insert	Cutting Depth	Chipbreaker Design	Definition of Inserts																	
<p><b>N</b> – TopGroove</p> 	<p><b>D</b> – Deep grooving</p> <p><b>P</b> – Positive</p> <p><b>C</b> – Groove and chamfer</p>	<p><b>D</b> – Deep grooving</p> <p><b>P</b> – Positive</p> <p><b>C</b> – Groove and chamfer</p>	<p><b>Blank</b> – Indicates inch width insert</p>	<p><b>M</b> – Metric insert groove width</p> <p><b>C</b> – Circlip groove insert width is nominal circlip size</p> <p><b>Blank</b> – Indicates inch width insert</p>	<p><b>150</b> – Groove Size**</p>	<p><b>L</b> – Left hand</p> <p><b>R</b> – Right hand</p>	<p>Shown for groove and chamfer inserts in .0004" increments.</p>	<p><b>K</b> – Standard chip control</p> <p><b>E</b> – Hone only</p>	<p><b>Groove size</b></p> <p><b>J or L</b> – Poly-Vee inserts</p> <p><b>I</b> – Internal face grooving</p>																	
<p><b>B</b> – Blank (for special forms)</p> <p><b>F</b> – Face grooving</p> <p><b>G</b> – Grooving</p> <p><b>P</b> – Back turning</p> <p><b>R</b> – Full radius</p> <p><b>U</b> – Undercutting (or relieving)</p> <p><b>V</b> – Poly-Vee</p>	<table border="1"> <thead> <tr> <th rowspan="2">insert number</th> <th colspan="2">W1</th> </tr> <tr> <th>mm</th> <th>inch</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2,54</td> <td>.100</td> </tr> <tr> <td>2</td> <td>3,81</td> <td>.150</td> </tr> <tr> <td>3</td> <td>4,95</td> <td>.195</td> </tr> <tr> <td>4</td> <td>6,98</td> <td>.255</td> </tr> <tr> <td>5</td> <td>9,65</td> <td>.380</td> </tr> <tr> <td>6</td> <td>9,73</td> <td>.383</td> </tr> </tbody> </table>		insert number	W1		mm	inch	1	2,54	.100	2	3,81	.150	3	4,95	.195	4	6,98	.255	5	9,65	.380	6	9,73	.383	<p>Position pertains to groove width for F-, G-, and U-style inserts, radii for R-style grooving inserts, and circlip size for groove and chamfer inserts. Dimension in .001" or 0,01mm.</p> <p><b>Inch example:</b> 1/32" width groove or radius equals "031" catalog position number.</p> <p><b>Metric example:</b> 3,25mm width groove or radius equals "325" catalog position number.</p> <p><b>Width Tolerance:</b> ±.001" (±0,025mm) unless otherwise specified.</p>
insert number	W1																									
	mm	inch																								
1	2,54	.100																								
2	3,81	.150																								
3	4,95	.195																								
4	6,98	.255																								
5	9,65	.380																								
6	9,73	.383																								

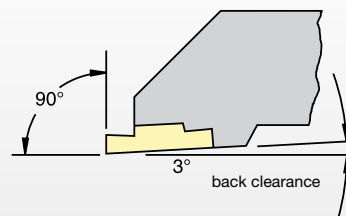
\*\*Omit position for TopGroove NB-style blanks.

### TopGroove/TopThread Threading and Grooving Insert Dimensions



insert size	S		W1	
	mm	inch	mm	Inch
1	2,54	.100	2,54	.100
2	5,56	.219	3,81	.150
3	8,74	.344	4,95	.195
4	11,51	.453	6,48	.255
5	17,48	.688	9,65	.380
6	11,51	.453	9,73	.383
8	7,93	.312	11,13	.438

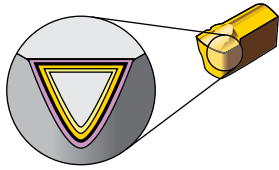
### TopGroove/TopThread Holder Design



NOTE: Holders are designed to locate insert inclined to 3° to provide back clearance down open side.

WIDIA™ TopGroove and TopThread™ tooling technology combine to bring you the very best threading and grooving system available in the world today.

## Grades and Grade Descriptions



Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

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

Grade	Coating	Grade Description	wear resistance ← → toughness																					
				05	10	15	20	25	30	35	40	45												
TN6010	HC-S10	An advanced PVD TiAlN coating over a very deformation-resistant unalloyed carbide substrate. TN6010 is ideal for finishing to general machining of most workpiece materials at higher speeds. Excellent for machining most steels, stainless steels, cast irons, non-ferrous materials, and super alloys under stable conditions. It also performs well machining hardened and short chipping materials.	P																					
			M																					
			K																					
			N																					
			S																					
			H																					
TN6025	HC-S25	An advanced PVD TiAlN-coated grade with a tough, ultra-fine-grain unalloyed substrate. For general-purpose machining of most steels, stainless steels, high-temp alloys, titanium, irons, and non-ferrous materials. Speeds may vary from low to medium and will handle interruptions and high feed rates.	P																					
			M																					
			K																					
			N																					
			S																					
			H																					
THM	HW-K15	Uncoated carbide. Extraordinarily good balance of hardness, wear resistance, edge stability, and toughness. Light and medium machining. For cast iron and all non-ferrous metals and non-metals. Useful in unfavorable conditions.	P																					
			M																					
			K																					
			N																					
			S																					
			H																					

INDEXABLE MILLING

SOLID END MILLING




HOLE/MAKING

TAPPING

TURNING



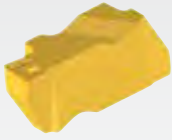
## Application Guide

insert style	application	rake angle	page(s)	insert style	application	rake angle	page(s)
<b>NG</b> 	<ul style="list-style-type: none"> <li>General-purpose grooving.</li> <li>O-ring grooving.</li> <li>Circlip grooving.</li> </ul>	neutral	<b>E397–E399</b>	<b>NFD-KI*</b> 	<ul style="list-style-type: none"> <li>Internal deep face grooving with chip control.</li> <li>For use in boring bars for internal face grooves.</li> </ul>	10° positive	—
<b>NG-K</b> 	<ul style="list-style-type: none"> <li>Chip control geometry.</li> <li>General-purpose grooving.</li> <li>O-ring grooving.</li> <li>Circlip grooving.</li> <li>Light turning.</li> </ul>	10° positive	<b>E400–E408</b>	<b>NP-K</b> 	<ul style="list-style-type: none"> <li>Turning.</li> <li>Back turning positive.</li> <li>Profiling with chip control.</li> </ul>	10° positive	<b>E415</b>
<b>NGC-K*</b> 	<ul style="list-style-type: none"> <li>Combined groove and chamfered edge break in one positive plunge with chip control.</li> <li>Designed for DIN 471/472 standard circlip grooves.</li> </ul>	10° positive	—	<b>NR</b> 	<ul style="list-style-type: none"> <li>Full radius grooving.</li> <li>Turning and profiling.</li> </ul>	neutral	<b>E416–E417</b>
<b>NGD*</b> 	<ul style="list-style-type: none"> <li>Deep grooving.</li> </ul>	neutral	—	<b>NR-K</b> 	<ul style="list-style-type: none"> <li>Chip control geometry.</li> <li>Full radius grooving, turning, and profiling.</li> </ul>	10° positive	<b>E420</b>
<b>NGD-K</b> 	<ul style="list-style-type: none"> <li>Chip control geometry.</li> <li>Deep grooving.</li> <li>Light turning.</li> </ul>	10° positive	<b>E409–E411</b>	<b>NRD</b> 	<ul style="list-style-type: none"> <li>Deep grooving.</li> <li>Full radius end-form.</li> </ul>	neutral	<b>E421</b>
<b>NGP</b> 	<ul style="list-style-type: none"> <li>General-purpose grooving.</li> <li>O-ring grooving.</li> <li>Circlip grooving.</li> </ul>	5° positive	<b>E412</b>	<b>NRP*</b> 	<ul style="list-style-type: none"> <li>Full radius grooving.</li> <li>Light-turning profiling.</li> </ul>	5° positive	—
<b>NF*</b> 	<ul style="list-style-type: none"> <li>Face grooving.</li> <li>Additional side clearance.</li> </ul>	neutral	—	<b>NU*</b> 	<ul style="list-style-type: none"> <li>Undercutting.</li> </ul>	neutral	—
<b>NF-K</b> 	<ul style="list-style-type: none"> <li>Face grooving with chip control.</li> <li>Additional side clearance.</li> </ul>	10° positive	<b>E413</b>	<b>NV*</b> 	<ul style="list-style-type: none"> <li>Poly-Vee grooving.</li> </ul>	neutral	—
<b>NFD-K</b> 	<ul style="list-style-type: none"> <li>Deep face grooving with chip control.</li> <li>Additional side clearance.</li> </ul>	10° positive	<b>E414</b>	<b>NB/NBD</b> 	<ul style="list-style-type: none"> <li>Blanks.</li> <li>Blanks for deep grooving.</li> <li>Available in uncoated grades only.</li> </ul>	—	<b>E396</b>

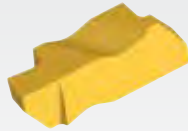
\*Inserts are available as custom solutions.

## Feed Values for Grooving Inserts

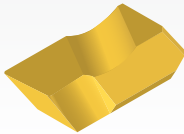
### TopGroove • NG-K, NG-1L, and NG



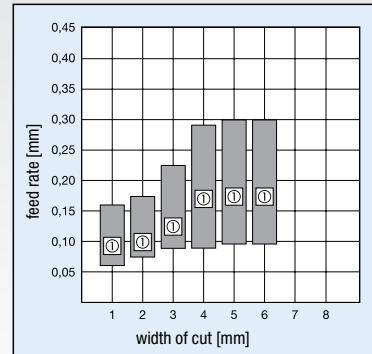
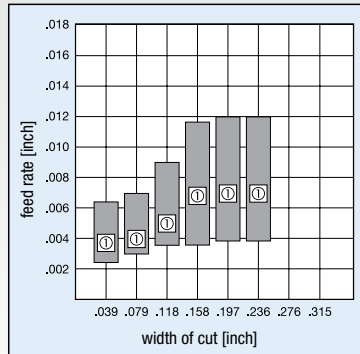
NG-K



NG



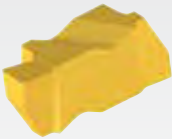
NG-1L



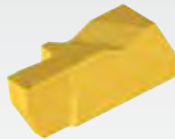
① Recommended Starting Feed

- Chip control enables true optimization and productivity.
- For general-purpose, O-ring, and circlip grooving applications.
- Precision ground for accurate edge location.
- Can be used in both toolholders and boring bars.

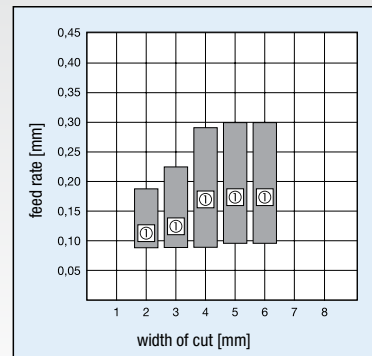
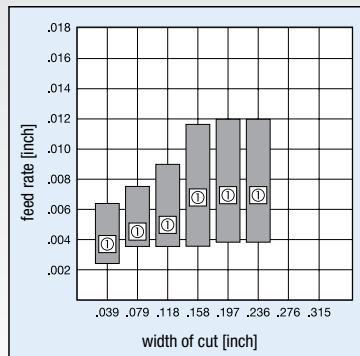
### TopGroove • NGP and NGD-K



NGP



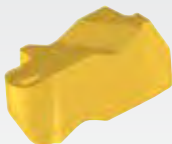
NGD-K



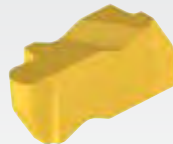
① Recommended Starting Feed

- Positive rake angles.
- For deep, O-ring, circlip, and general-purpose grooving applications.
- Chip geometry for excellent chip control.
- Precision ground for accurate edge location.
- Can be used in both toolholders and boring bars.

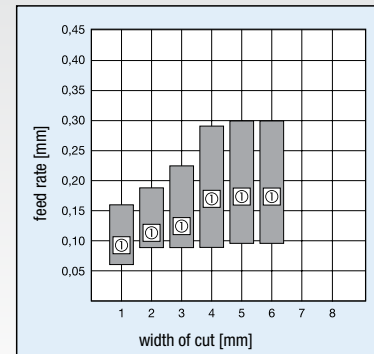
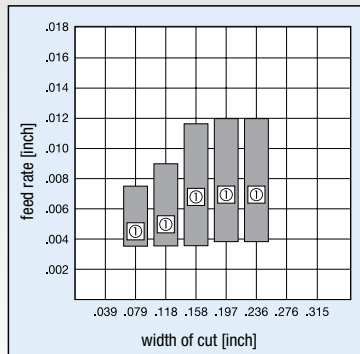
### TopGroove • NR and NR-K



NR



NR-K



① Recommended Starting Feed

- For full radius grooving and turning profiling applications.
- Chip geometry for excellent chip control.
- Precision ground for accurate edge location.
- Can be used in both toolholders and boring bars.

Recommended Cutting Speeds • Metric

Material Group		Cutting Speed – vc m/min								
		TN6010			TN6025			THM		
		min	Start	max	min	Start	max	min	Start	max
P	0/1	140	175	210	130	140	150	90	95	100
	2	115	145	175	110	145	175	75	100	125
	3	115	145	175	110	145	175	75	100	125
	4	75	100	120	75	95	115	55	65	80
	5	105	140	170	100	125	145	70	85	100
	6	45	60	75	40	55	65	30	40	45
M	1	90	115	140	60	75	90	60	75	90
	2	55	70	90	40	50	55	50	60	75
	3	60	80	95	40	50	60	40	50	55
K	1	120	150	180	60	80	90	70	90	100
	2	120	150	180	60	75	85	50	65	80
	3	110	140	170	60	75	90	60	70	80
N	1	600	750	900	600	750	900	600	750	900
	2	535	685	835	535	685	835	500	650	800
	3	230	300	370	230	300	370	600	750	900
	4	135	180	225	135	180	225	500	650	800
	5	70	90	110	70	90	110	230	300	370
	6	445	565	690	445	565	690	150	200	250
	7	550	700	850	550	700	850	150	200	250
S	1	35	40	50	25	35	40	25	35	45
	2	20	20	30	15	20	20	20	30	35
	3	60	70	80	40	60	70	15	25	30
	4	30	35	45	20	30	35	10	15	20
H	1	15	30	60	15	30	60	10	20	35
	2	15	30	60	15	30	60	10	20	35
	3	15	30	60	15	30	60	10	20	35
	4	15	30	60	15	30	60	10	20	35

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

### Recommended Cutting Speeds • Inch

Material Group		Cutting Speed – vc SFM								
		TN6010			TN6025			THM		
		min	Start	max	min	Start	max	min	Start	max
P	0/1	455	570	685	425	455	490	295	310	325
	2	380	475	575	360	465	575	245	320	405
	3	380	475	575	360	465	575	245	320	405
	4	245	320	390	235	300	365	170	210	260
	5	345	450	555	325	400	475	230	280	330
	6	145	195	245	130	180	210	95	130	145
M	1	295	390	490	195	245	295	180	220	270
	2	180	245	310	130	160	180	115	145	165
	3	195	260	320	130	165	195	225	295	325
K	1	390	490	590	195	255	295	195	255	295
	2	390	490	590	195	240	280	195	240	280
	3	360	455	555	195	245	295	195	245	295
N	1	1965	2460	2950	1965	2460	2950	1805	2295	2785
	2	1750	2240	2730	1750	2240	2730	1805	2295	2785
	3	750	980	1210	750	980	1210	1805	2295	2785
	4	445	590	730	445	590	730	1195	1555	1915
	5	230	295	360	230	295	360	620	820	1015
	6	1450	1855	2260	1450	1855	2260	490	655	820
	7	1805	2295	2785	1805	2295	2785	425	555	690
S	1	110	130	165	75	110	130	75	110	130
	2	55	65	90	40	55	65	60	85	105
	3	195	235	260	135	195	235	45	60	75
	4	-	-	-	-	-	-	35	50	55
H	1	60	100	200	60	100	200	35	70	115
	2	60	100	200	60	100	200	35	70	115
	3	60	100	200	60	100	200	35	70	115
	4	60	100	200	60	100	200	35	70	115

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

INDEXABLE MILLING

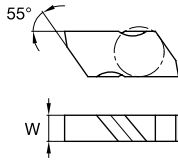
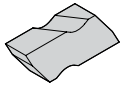
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## Grooving and Turning Inserts • NB • Blanks



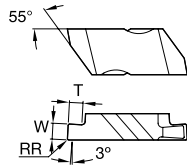
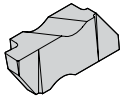
- first choice
- alternate choice

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

	catalog number	SSC	mm	in	TN6010	TN6025	THM
right hand							
	NB2R	2	3,84	.151	●	○	3607064
left hand							
	NB2L	2	3,84	.151	○	○	3607016
	NB3L	3	4,95	.195	○	○	3607017

NOTE: Right-hand insert shown; left-hand insert is mirror image.  
SSC = To correspond with the SSC on the toolholder.

Grooving and Turning Inserts • NG • Grooving • Neutral



- first choice
- alternate choice

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

catalog number	SSC	W		RR		T		TN6010	TN6025	THM
		mm	in	mm	in	mm	in			
<b>right hand</b>										
NG2031R	2	0,79	.031	0,09	.004	1,27	.050	3607153	3607495	—
NG2041R	2	1,04	.041	0,09	.004	1,27	.050	—	3607330	—
NG2058R	2	1,47	.058	0,19	.008	1,27	.050	—	3607450	—
NG2062R	2	1,58	.062	0,19	.008	2,79	.110	3607167	3607453	—
NG3047R	3	1,19	.047	0,19	.008	1,91	.075	3607157	3607416	—
NG3062R	3	1,58	.062	0,19	.008	2,39	.094	3607109	3607403	3607014
NG3094R	3	2,39	.094	0,19	.008	3,81	.150	3607137	3607406	3607018
NG3125R	3	3,18	.125	0,19	.008	3,81	.150	3607110	3607375	3607020
NG4250R	4	6,35	.250	0,57	.023	6,35	.250	—	3607382	—
<b>left hand</b>										
NG2031L	2	0,79	.031	0,09	.004	1,27	.050	—	3607482	—
NG2058L	2	1,47	.058	0,19	.008	1,27	.050	—	3607498	—
NG2062L	2	1,58	.062	0,19	.008	2,79	.110	—	3607481	—
NG3047L	3	1,19	.047	0,19	.008	1,91	.075	3607179	3607501	—
NG3062L	3	1,57	.062	0,19	.008	2,38	.094	3607158	3607459	—

INDEXABLE MILLING

SOLID END MILLING

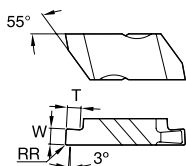
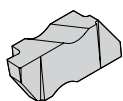
HOLE/MAKING

TAPPING

TURNING

## Grooving and Turning Inserts • NG • Grooving • Neutral

(continued)



- first choice
- alternate choice

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

catalog number	SSC	W		RR		T		THM
		mm	in	mm	in	mm	in	
NG3094L	3	2,39	.094	0,19	.008	3,81	.150	TN6010 3607160 3607323 3607445
NG3125L	3	3,18	.125	0,19	.008	3,81	.150	3607152 3607445
NG4250L	4	6,35	.250	0,57	.023	6,35	.250	3607513

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

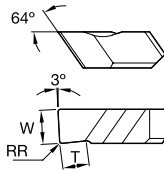
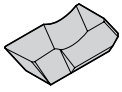
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Grooving and Turning Inserts • NG-1L • Grooving



- first choice
- alternate choice

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

catalog number	SSC	W		RR		T		cutting edges	TN6010	TN6025	THM
		mm	in	mm	in	mm	in				
left hand											
NG1047L	1	1,19	.047	0,19	.008	1,91	.075	1		3636571	
NG1062L	1	1,58	.062	0,19	.008	1,91	.075	1		3636569	
NG1094L	1	2,39	.094	0,19	.008	1,91	.075	1		3636570	

NOTE: SSC = To correspond with the SSC on the toolholder.  
Width tolerance is +/- .003" (+/- 0,076mm) on NG-1L inserts.

INDEXABLE MILLING

SOLID END MILLING

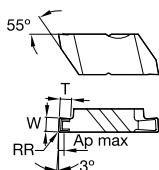
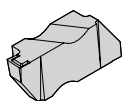
HOLE/MAKING

TAPPING

TURNING



## Grooving and Turning Inserts • NG-K • Grooving with Chip Breaker



- first choice
- alternate choice

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

catalog number	SSC	W		Ap max		RR		T		TN6010	TN6025	THM
		mm	in	mm	in	mm	in	mm	in			
right hand												
NG2M050RK	2	0,50	.020	0,64	.025	0,09	.004	0,64	.025	3606991	3607394	■
NG2031RK	2	0,79	.031	0,76	.030	0,09	.004	1,27	.050	3607090	3607313	■
NG2M080RK	2	0,80	.032	0,76	.030	0,09	.004	1,27	.050	3606903	3607291	■
NG2M100RK	2	1,00	.039	0,76	.030	0,09	.004	1,28	.050	3607129	3607218	■
NG2M120RK	2	1,20	.047	0,76	.030	0,09	.004	1,27	.050	3606679	3607299	■
NG2047RK	2	1,19	.047	0,76	.030	0,09	.004	1,27	.050	3607123	3607404	■
NG2M140RK	2	1,40	.055	0,76	.030	0,09	.004	1,28	.050	3607151	3607318	■
NG2M150RK	2	1,50	.059	1,09	.043	0,19	.008	2,81	.110	■	3607234	■
NG2062RK	2	1,56	.062	1,09	.043	0,19	.008	2,79	.110	3607089	3607215	■
NG2M170RK	2	1,70	.067	1,09	.043	0,19	.008	2,81	.110	■	3607242	■
NG2M175RK	2	1,75	.069	1,09	.043	0,19	.008	2,81	.110	■	3607379	■

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

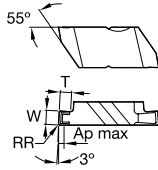
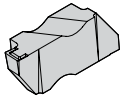
TURNING

Grooving and Turning Inserts • NG-K • Grooving with Chip Breaker

(continued)

- first choice
- alternate choice

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



catalog number	SSC	W		Ap max		RR		T		TN6010	TN6025	THM
		mm	in	mm	in	mm	in	mm	in			
NG2M195RK	2	1,95	.077	1,09	.043	0,19	.008	2,81	.110	3606829	3607417	●
NG2M200RK	2	2,00	.079	1,09	.043	0,19	.008	2,81	.110	3607100	3607071	●
NG2M220RK	2	2,20	.087	1,09	.043	0,19	.008	2,81	.110	●	3607521	●
NG2M225RK	2	2,25	.089	1,09	.043	0,19	.008	2,81	.110	3606828	3607411	●
NG2094RK	2	2,39	.094	1,09	.043	0,19	.008	2,79	.110	3607146	3607317	●
NG2M250RK	2	2,50	.098	1,09	.043	0,19	.008	2,81	.110	●	3607324	●
NG2M275RK	2	2,75	.108	1,09	.043	0,19	.008	2,81	.110	3606916	3607409	●
NG2M300RK	2	3,00	.118	1,09	.043	0,19	.008	2,81	.110	3606676	3607340	●
NG2125RK	2	3,18	.125	1,09	.043	0,19	.008	2,79	.110	3607155	3607361	●
NG2M325RK	2	3,25	.128	1,09	.043	0,19	.008	2,79	.110	●	3607533	●
NG3M100RK	3	1,00	.039	0,76	.030	0,20	.008	1,91	.075	●	3607219	●
NG3M120RK	3	1,20	.047	0,76	.030	0,19	.008	1,91	.075	3607412	●	●

INDEXABLE MILLING

SOLID END MILLING

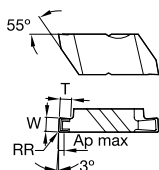
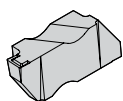
HOLEMAKING

TAPPING

TURNING

## Grooving and Turning Inserts • NG-K • Grooving with Chip Breaker

(continued)



- first choice
- alternate choice

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

catalog number	SSC	W		Ap max		RR		T		TN6010	TN6025	THM
		mm	in	mm	in	mm	in	mm	in			
NG3047RK	3	1,19	.047	0,76	.030	0,19	.008	1,91	.075	3607084	3607238	●
NG3M150RK	3	1,50	.059	1,02	.040	0,19	.008	2,39	.094	3607221	3607238	○
NG3062RK	3	1,57	.062	1,02	.040	0,19	.008	2,39	.094	3607055	3607070	○
NG3M175RK	3	1,75	.069	1,02	.040	0,19	.008	2,39	.094	3607418	3607238	○
NG3072RK	3	1,83	.072	1,02	.040	0,19	.008	2,39	.094	3607332	3607332	○
NG3078RK	3	1,98	.078	1,02	.040	0,19	.008	2,39	.094	3607111	3607309	○
NG3M200RK	3	2,00	.079	1,02	.040	0,19	.008	2,39	.094	3607208	3607208	○
NG3M220RK	3	2,20	.087	1,02	.040	0,19	.008	2,39	.094	3607336	3607336	○
NG3M225RK	3	2,24	.088	1,02	.040	0,19	.008	2,39	.094	3606674	3607310	○
NG3094RK	3	2,39	.094	1,02	.040	0,19	.008	3,81	.150	3606660	3607069	○
NG3M250RK	3	2,50	.098	1,02	.040	0,19	.008	3,81	.150	3607217	3607217	○
NG3M275RK	3	2,75	.108	1,02	.040	0,19	.008	3,81	.150	3606677	3607337	○

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

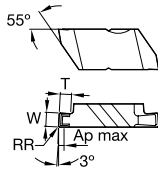
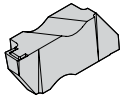
TURNING

Grooving and Turning Inserts • NG-K • Grooving with Chip Breaker

(continued)

- first choice
- alternate choice

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



catalog number	SSC	W		Ap max		RR		T		TN6010	TN6025	THM
		mm	in	mm	in	mm	in	mm	in			
NG3M300RK	3	3,00	.118	1,02	.040	0,19	.008	3,81	.150	3607138	3607072	●
NG3125RK	3	3,18	.125	1,02	.040	0,19	.008	3,81	.150	3607057	3607068	○
NG3M320RK	3	3,20	.126	1,02	.040	0,19	.008	3,81	.150	●	3607365	○
NG3M350RK	3	3,50	.138	2,92	.115	0,32	.013	3,81	.150	●	3607302	○
NG3156RK	3	3,96	.156	2,92	.115	0,19	.008	3,81	.150	3607127	3607456	○
NG3M400RK	3	4,00	.158	2,92	.115	0,32	.013	3,81	.150	3606678	3607235	○
NG3M425RK	3	4,25	.167	2,92	.115	0,32	.013	3,81	.150	3606914	●	○
NG3M450RK	3	4,50	.177	2,92	.115	0,32	.013	3,81	.150	●	3607362	○
NG3189RK	3	4,80	.189	2,92	.115	0,57	.023	3,81	.150	3607108	3607305	○
NG4M300RK	4	3,00	.118	1,02	.040	0,19	.008	3,81	.150	●	3607388	○
NG4125RK	4	3,18	.125	1,06	.040	0,19	.008	3,81	.150	3607163	3607449	○
NG4M350RK	4	3,50	.138	2,92	.115	0,57	.023	6,35	.250	●	3607370	○

INDEXABLE MILLING

SOLID END MILLING

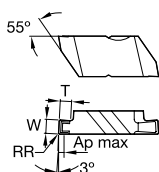
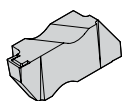
HOLEMAKING

TAPPING

TURNING

## Grooving and Turning Inserts • NG-K • Grooving with Chip Breaker

(continued)



- first choice
- alternate choice

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

catalog number	SSC	W		Ap max		RR		T		TN6010	TN6025	THM
		mm	in	mm	in	mm	in	mm	in			
NG4M400RK	4	4,00	.158	2,92	.115	0,57	.023	6,35	.250	3606908	●	●
NG4M450RK	4	4,50	.177	2,92	.115	0,57	.023	6,35	.250	3607390	○	●
NG4189RK	4	4,80	.189	2,92	.115	0,57	.023	6,35	.250	3607103	○	●
NG4M550RK	4	5,50	.217	3,81	.150	0,58	.023	6,35	.250	3607383	○	●
NG4250RK	4	6,35	.250	3,81	.150	0,57	.023	6,35	.250	3607304	○	●
left hand												
NG2M050LK	2	0,50	.020	0,64	.025	0,09	.004	0,64	.025	3607463	○	●
NG2031LK	2	0,79	.031	0,76	.030	0,09	.004	1,27	.050	3607112	○	●
NG2M080LK	2	0,80	.032	0,76	.030	0,09	.004	1,27	.050	3606911	○	●
NG2M100LK	2	1,00	.039	0,76	.030	0,09	.004	1,27	.050	3607239	○	●
NG2M120LK	2	1,20	.047	0,76	.030	0,09	.004	1,27	.050	3606827	○	●
NG2047LK	2	1,19	.047	0,76	.030	0,09	.004	1,27	.050	3607376	○	●

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

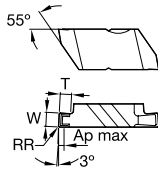
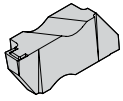
TURNING

Grooving and Turning Inserts • NG-K • Grooving with Chip Breaker

(continued)

- first choice
- alternate choice

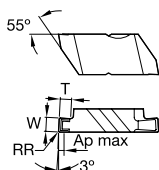
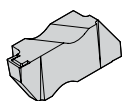
P	●	●	●	●
M	●	●	●	○
K	●	○	○	●
N	●	○	○	○
S	○	○	○	○
H	○	○	○	○



catalog number	SSC	W		Ap max		RR		T		TN6010	TN6025	THM
		mm	in	mm	in	mm	in	mm	in			
NG2M140LK	2	1,40	.055	0,76	.030	0,09	.004	1,27	.050	3606904	3607338	●
NG2M150LK	2	1,50	.059	1,09	.043	0,19	.008	2,79	.110	3607294	3607338	○
NG2062LK	2	1,58	.062	1,09	.043	0,19	.008	2,79	.110	3607126	3607307	○
NG2M170LK	2	1,70	.067	1,09	.043	0,19	.008	2,79	.110	3606905	3607327	○
NG2M175LK	2	1,75	.069	1,09	.043	0,19	.008	2,79	.110	3607421	3607421	○
NG2M195LK	2	1,95	.077	1,09	.043	0,19	.008	2,79	.110	3607420	3607421	○
NG2M200LK	2	2,00	.079	1,09	.043	0,19	.008	2,79	.110	3607144	3607207	○
NG2M220LK	2	2,20	.087	1,09	.043	0,19	.008	2,79	.110	3607367	3607367	○
NG2M225LK	2	2,25	.089	1,09	.043	0,19	.008	2,79	.110	3607149	3607413	○
NG2094LK	2	2,39	.094	1,09	.043	0,19	.008	2,79	.110	3607380	3607413	○
NG2M250LK	2	2,50	.098	1,09	.043	0,19	.008	2,79	.110	3607518	3607518	○
NG2M275LK	2	2,75	.108	1,09	.043	0,19	.008	2,80	.110	3607292	3607292	○

## Grooving and Turning Inserts • NG-K • Grooving with Chip Breaker

(continued)



- first choice
- alternate choice

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

catalog number	SSC	W		Ap max		RR		T		TN6010	TN6025	THM
		mm	in	mm	in	mm	in	mm	in			
NG2M300LK	2	3,00	.118	1,09	.043	0,19	.008	2,80	.110	●	●	●
NG2125LK	2	3,18	.125	1,09	.043	0,19	.008	2,79	.110	○	○	○
NG2M325LK	2	3,25	.128	1,09	.043	0,19	.008	2,79	.110	●	●	●
NG3M100LK	3	1,00	.039	0,76	.030	0,20	.008	1,91	.075	○	○	○
NG3M120LK	3	1,20	.047	0,76	.030	0,19	.008	1,91	.075	●	●	●
NG3047LK	3	1,19	.047	0,76	.030	0,19	.008	1,90	.075	○	○	○
NG3M150LK	3	1,50	.059	1,02	.040	0,19	.008	2,39	.094	●	●	●
NG3062LK	3	1,58	.062	1,02	.040	0,19	.008	2,39	.094	○	○	○
NG3M175LK	3	1,75	.069	1,02	.040	0,19	.008	2,39	.094	●	●	●
NG3072LK	3	1,83	.072	1,02	.040	0,19	.008	2,39	.094	○	○	○
NG3078LK	3	1,98	.078	1,02	.040	0,19	.008	2,39	.094	○	○	○
NG3M200LK	3	2,00	.079	1,02	.040	0,19	.008	2,39	.094	●	●	●

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

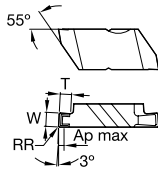
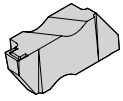
TURNING

Grooving and Turning Inserts • NG-K • Grooving with Chip Breaker

(continued)

- first choice
- alternate choice

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

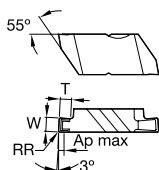
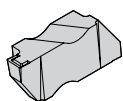


catalog number	SSC	W		Ap max		RR		T		TN6010	TN6025	THM
		mm	in	mm	in	mm	in	mm	in			
NG3M220LK	3	2,20	.087	1,02	.040	0,19	.008	2,39	.094	●	●	●
NG3M225LK	3	2,25	.089	1,02	.040	0,19	.008	2,39	.094	●	●	●
NG3094LK	3	2,39	.094	1,02	.040	0,19	.008	3,81	.150	●	●	●
NG3M250LK	3	2,50	.098	1,02	.040	0,19	.008	3,81	.150	●	●	●
NG3M275LK	3	2,75	.108	1,02	.040	0,19	.008	3,81	.150	●	●	●
NG3M300LK	3	3,00	.118	1,02	.040	0,19	.008	3,81	.150	●	●	●
NG3125LK	3	3,18	.125	1,02	.040	0,19	.008	3,81	.150	●	●	●
NG3M320LK	3	3,20	.126	1,02	.040	0,19	.008	3,81	.150	●	●	●
NG3M325LK	3	3,25	.128	1,02	.040	0,19	.008	3,81	.150	●	●	●
NG3M350LK	3	3,50	.138	2,92	.115	0,32	.013	3,81	.150	●	●	●
NG3156LK	3	3,96	.156	2,92	.115	0,19	.008	3,81	.150	●	●	●
NG3M400LK	3	4,00	.158	2,92	.115	0,32	.013	3,81	.150	●	●	●



## Grooving and Turning Inserts • NG-K • Grooving with Chip Breaker

(continued)



- first choice
- alternate choice

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

catalog number	SSC	W		Ap max		RR		T		TN6010	TN6025	THM
		mm	in	mm	in	mm	in	mm	in			
NG3M450LK	3	4,50	.177	2,92	.115	0,32	.013	3,81	.150	●	●	○
NG3189LK	3	4,80	.189	2,92	.115	0,57	.023	3,81	.150	○	○	○
NG4125LK	4	3,18	.125	1,06	.400	0,19	.008	3,81	.150	○	○	○
NG4M400LK	4	4,00	.158	2,92	.115	0,57	.023	6,35	.250	○	○	○
NG4189LK	4	4,80	.189	2,92	.115	0,57	.023	6,35	.250	○	○	○
NG4M600LK	4	6,00	.236	3,81	.150	0,57	.023	6,34	.250	○	○	○
NG4250LK	4	6,35	.250	3,81	.150	0,57	.023	6,35	.250	○	○	○

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

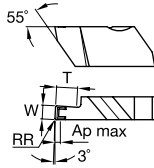
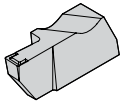
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Grooving and Turning Inserts • NGD-K • Deep Grooving with Chip Breaker



- first choice
- alternate choice

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

catalog number right hand	SSC	W		Ap max		RR		T		cutting edges	TN6010	TN6025	THM
		mm	in	mm	in	mm	in	mm	in				
NGD2M150RK	2	1,50	.059	1,09	.043	0,19	.008	4,06	.160	1	●	○	○
NGD2M200RK	2	2,00	.079	1,09	.043	0,19	.008	5,08	.200	1	○	○	○
NGD2M250RK	2	2,50	.098	1,09	.043	0,19	.008	5,08	.200	1	○	○	○
NGD3062RK	3	1,58	.062	1,02	.040	0,19	.008	3,18	.125	2	○	○	○
NGD3M200RK	3	2,00	.079	1,02	.040	0,19	.008	4,06	.160	1	○	○	○
NGD3094RK	3	2,39	.094	1,02	.040	0,19	.008	6,35	.250	1	○	○	○
NGD3M250RK	3	2,50	.098	1,02	.040	0,19	.008	6,35	.250	1	○	○	○
NGD3M300RK	3	3,00	.118	1,02	.040	0,19	.008	6,35	.250	1	○	○	○
NGD3125RK	3	3,18	.125	1,02	.040	0,19	.008	6,35	.250	1	○	○	○
NGD3M350RK	3	3,50	.138	2,92	.115	0,32	.013	6,35	.250	1	○	○	○
NGD3M400RK	3	4,00	.158	2,92	.115	0,32	.013	6,35	.250	1	○	○	○

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

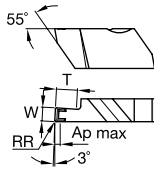
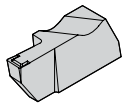
TURNING

Grooving and Turning Inserts • NGD-K • Deep Grooving with Chip Breaker

(continued)

- first choice
- alternate choice

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



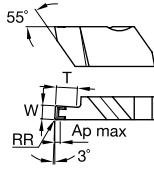
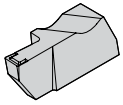
catalog number	SSC	W		Ap max		RR		T		cutting edges	TN6010	TN6025	THM
		mm	in	mm	in	mm	in	mm	in				
NGD3189RK	3	4,80	.189	2,92	.115	0,58	.023	6,35	.250	1	3607170	3607373	●
NGD4125RK	4	3,18	.125	1,02	.040	0,19	.008	6,35	.250	2	3607133	3607312	●
NGD4M400RK	4	4,00	.157	2,92	.115	0,57	.023	9,53	.375	1	●	3607507	●
NGD4M450RK	4	4,50	.177	2,92	.115	0,57	.023	12,70	.500	1	●	3607508	●
NGD4189RK	4	4,80	.189	2,92	.115	0,57	.023	9,53	.375	1	3607161	3607321	●
NGD4M500RK	4	5,00	.197	2,92	.115	0,57	.023	12,70	.500	1	3606988	●	●
NGD4250RK	4	6,35	.250	3,81	.150	0,57	.023	12,70	.500	1	3607134	3607414	●
left hand													
NGD2M150LK	2	1,50	.059	1,09	.043	0,19	.008	4,06	.160	1	3606935	3607402	●
NGD2M200LK	2	2,00	.079	1,09	.043	0,19	.008	5,08	.200	1	3606936	3607399	●
NGD2M250LK	2	2,50	.098	1,09	.043	0,19	.008	5,08	.200	1	3606992	3607391	●
NGD3062LK	3	1,57	.062	1,02	.040	0,19	.008	3,18	.125	2	3607098	3607451	●

Grooving and Turning Inserts • NGD-K • Deep Grooving with Chip Breaker

(continued)

- first choice
- alternate choice

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



catalog number	SSC	W		Ap max		RR		T		cutting edges	TN6010	TN6025	THM
		mm	in	mm	in	mm	in	mm	in				
NGD3M200LK	3	2,00	.079	1,02	.040	0,19	.008	4,06	.160	1	3606941	3607487	3607035
NGD3094LK	3	2,39	.094	1,02	.040	0,19	.008	6,34	.250	1	3607096	3607240	3607035
NGD3M250LK	3	2,50	.098	1,02	.040	0,19	.008	6,35	.250	1	3606942	3607423	
NGD3M300LK	3	3,00	.118	1,02	.040	0,19	.008	6,35	.250	1	3606943	3607400	
NGD3125LK	3	3,18	.125	1,02	.040	0,19	.008	6,35	.250	1	3607097	3607209	
NGD3M350LK	3	3,50	.138	2,92	.115	0,32	.013	6,35	.250	1	3607488	3607424	
NGD3M400LK	3	4,00	.158	2,92	.115	0,32	.013	6,35	.250	1	3607148	3607410	
NGD3189LK	3	4,80	.189	2,92	.115	0,57	.023	6,35	.250	1	3607410	3607410	
NGD4125LK	4	3,18	.125	1,02	.040	0,19	.008	6,35	.250	2	3607489	3607316	
NGD4M400LK	4	4,00	.158	2,92	.115	0,58	.023	9,52	.375	1	3607489	3607490	
NGD4M450LK	4	4,50	.177	2,92	.115	0,57	.023	12,70	.500	1	3607147	3607314	
NGD4189LK	4	4,80	.189	2,92	.115	0,57	.023	9,53	.375	1	3607314	3607314	
NGD4M500LK	4	5,00	.197	2,92	.115	0,58	.023	12,70	.500	1	3607422	3607491	
NGD4250LK	4	6,35	.250	3,80	.150	0,57	.023	12,70	.500	1	3607422	3607491	

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

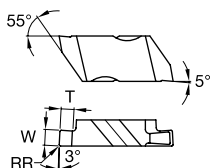
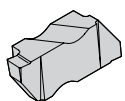
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## Grooving and Turning Inserts • NGP • Grooving • Positive



● first choice

○ alternate choice

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

catalog number	SSC	W		RR		T		TN6010	TN6025	THM
		mm	in	mm	in	mm	in			
<b>right hand</b>										
NGP2M150R	2	1,50	.059	0,19	.008	2,79	.110	●	●	3607045
NGP2062R	2	1,58	.062	0,19	.008	2,79	.110	○	○	3607128
NGP2M200R	2	2,00	.079	0,19	.008	2,79	.110	○	○	3607046
NGP2M300R	2	3,00	.118	0,19	.008	2,79	.110	○	○	3606978
NGP3M150R	3	1,50	.059	0,19	.008	1,90	.075	○	○	3606979
<b>left hand</b>										
NGP2062L	2	1,57	.062	0,19	.008	2,79	.110	○	○	3607182
NGP2M200L	2	2,00	.079	0,19	.008	2,79	.110	○	○	3606968
NGP3M250L	3	2,50	.098	0,19	.008	3,81	.150	○	○	3606973

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

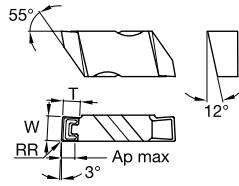
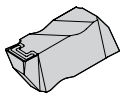
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Grooving and Turning Inserts • NF-K • Face Grooving with Chip Breaker



- first choice
- alternate choice

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

catalog number	SSC	W		Ap max		RR		T		TN6010	TN6025	THM
		mm	in	mm	in	mm	in	mm	in			
<b>right hand</b>												
NF3M200RK	3	2,00	.079	1,02	.040	0,19	.008	1,78	.070		3607511	
NF3M300RK	3	3,00	.118	1,02	.040	0,19	.008	3,81	.150		3607512	
NF3125RK	3	3,18	.125	1,02	.040	0,19	.008	3,81	.150		3607241	
<b>left hand</b>												
NF3M200LK	3	2,00	.079	1,02	.040	0,19	.008	1,78	.070		3607428	
NF3M300LK	3	3,00	.118	1,02	.040	0,19	.008	3,81	.150		3607429	
NF3125LK	3	3,18	.125	1,02	.040	0,19	.008	3,81	.150		3607322	
NF3156LK	3	3,96	.156	2,92	.115	0,19	.008	3,81	.150		3607333	

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

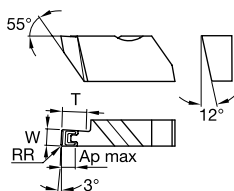
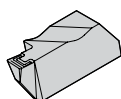
SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

## Grooving and Turning Inserts • NFD-K • Deep Face Grooving with Chip Breaker



- first choice
- alternate choice

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

catalog number	SSC	W		Ap max		RR		T		cutting edges	TN6010	TN6025	THM
		mm	in	mm	in	mm	in	mm	in				
<b>right hand</b>													
NFD3M300RK	3	3,00	.118	1,02	.040	0,19	.008	6,35	.250	1		3607523	
NFD3125RK	3	3,18	.125	1,02	.040	0,19	.008	6,35	.250	1		3607296	
NFD4189RK	4	4,80	.189	2,92	.115	0,57	.023	9,53	.375	1		3607325	
<b>left hand</b>													
NFD3M300LK	3	3,00	.118	1,02	.040	0,19	.008	6,35	.250	1		3607464	
NFD3125LK	3	3,18	.125	1,02	.040	0,19	.008	6,35	.250	1		3607293	
NFD4189LK	4	4,80	.189	2,92	.115	0,57	.023	9,53	.375	1		3607415	

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

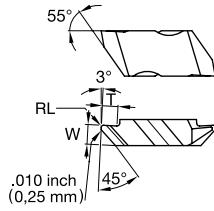
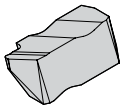
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Grooving and Turning Inserts • NP-K • Profiling with Chip Control



- first choice
- alternate choice

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

catalog number	SSC	W		Ap max		RL		T		TN6010	TN6025	THM
		mm	in	mm	in	mm	in	mm	in			
<b>right hand</b>												
NP2002RK	2	3,73	.147	2,75	.108	0,09	.004	2,81	.110	3607136	3607477	-
NP3002RK	3	4,88	.192	3,84	.151	0,09	.004	5,08	.200	3607154	3607493	-
NP3012RK	3	4,90	.193	3,86	.152	0,34	.014	5,08	.200	-	3607328	-

NOTE: SSC = To correspond with the SSC on the toolholder.  
 Right-hand insert shown; left-hand insert is mirror image.  
 Width tolerance is +/- .005" (+/- 0,13mm).

INDEXABLE MILLING

SOLID END MILLING

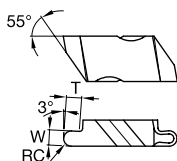
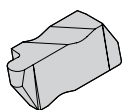
HOLE/MAKING

TAPPING

TURNING



## Grooving and Turning Inserts • NR • Full Radius



● first choice

○ alternate choice

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

catalog number	SSC	W		RC		T		TN6010	TN6025	THM
		mm	in	mm	in	mm	in			
right hand										
NR2M050R	2	1,00	.039	0,50	.020	1,27	.050	3606957	3607993	—
NR2M075R	2	1,50	.059	0,75	.030	2,79	.110	3606929	3607469	—
NR2031R	2	1,58	.062	0,79	.031	2,79	.110	3607174	3607301	—
NR2M100R	2	2,00	.079	1,00	.039	2,79	.110	3606930	3607470	—
NR2047R	2	2,39	.094	1,19	.047	2,79	.110	—	3607494	—
NR2M150R	2	3,00	.118	1,50	.059	2,79	.110	—	3607472	—
NR2M175R	2	3,50	.138	1,75	.069	2,79	.110	—	3607483	—
NR3031R	3	1,58	.062	0,79	.031	2,39	.094	3607125	3607475	—
NR3M100R	3	2,00	.079	1,00	.039	2,39	.094	3606958	3607997	—
NR3047R	3	2,39	.094	1,19	.047	3,81	.150	3607093	3607502	—
NR3M125R	3	2,50	.098	1,25	.049	3,81	.150	—	3607439	—

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

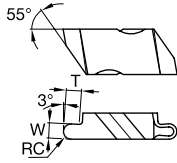
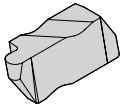
TURNING

Grooving and Turning Inserts • NR • Full Radius

(continued)

- first choice
- alternate choice

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



catalog number	SSC	W		RC		T		TN6010	TN6025	THM
		mm	in	mm	in	mm	in			
NR3M150R	3	3,00	.118	1,50	.059	3,81	.150	3606960	3607440	●
NR3062R	3	3,18	.125	1,59	.063	3,81	.150	3607131	3607473	○
NR3M175R	3	3,50	.138	1,75	.069	3,81	.150	●	3607441	○
NR3M200R	3	4,00	.157	2,00	.079	3,81	.150	●	3607398	○
NR3M225R	3	4,50	.177	2,25	.089	3,81	.150	●	3607442	○
NR3094R	3	4,78	.188	2,39	.094	3,81	.150	3607180	3607476	○
NR4M200R	4	4,00	.157	2,00	.079	6,35	.250	●	3607484	○
NR4M250R	4	5,00	.197	2,50	.098	6,35	.250	●	3607486	○
NR4125R	4	6,35	.250	3,18	.125	6,35	.250	3607130	3607500	○
left hand										
NR2M050L	2	1,00	.039	0,50	.020	1,27	.050	3606924	3606948	○
NR2M075L	2	1,50	.059	0,75	.030	2,79	.110	3607430	3607401	○

INDEXABLE MILLING

SOLID END MILLING

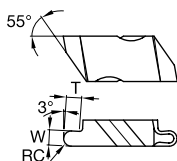
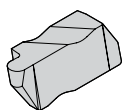
HOLEMAKING

TAPPING

TURNING

## Grooving and Turning Inserts • NR • Full Radius

(continued)



● first choice

○ alternate choice

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

catalog number	SSC	W		RC		T		TN6010	TN6025	THM
		mm	in	mm	in	mm	in			
NR2031L	2	1,58	.062	0,79	.031	2,79	.110	3607176	3607319	■
NR2M100L	2	2,00	.079	1,00	.039	2,79	.110	3607431	3607431	■
NR2047L	2	2,39	.094	1,19	.047	2,79	.110	3607446	3607446	■
NR2M125L	2	2,50	.098	1,25	.049	2,79	.110	3607432	3607432	■
NR2M150L	2	3,00	.118	1,50	.059	2,79	.110	3606927	3607433	■
NR2M175L	2	3,50	.138	1,75	.069	2,79	.110	3607434	3607434	■
NR3031L	3	1,58	.062	0,79	.031	2,39	.094	3607139	3607478	■
NR3M100L	3	2,00	.079	1,00	.039	2,39	.094	3606949	3607478	■
NR3047L	3	2,39	.094	1,19	.047	3,81	.150	3607135	3607479	■
NR3M125L	3	2,50	.098	1,25	.049	3,81	.150	3607435	3607479	■
NR3M150L	3	3,00	.118	1,50	.059	3,81	.150	3607436	3607436	■
NR3062L	3	3,18	.125	1,59	.063	3,81	.150	3607171	3607497	■
								3607032	3607032	■

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

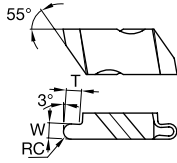
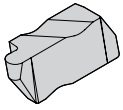
TURNING

Grooving and Turning Inserts • NR • Full Radius

(continued)

- first choice
- alternate choice

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



catalog number	SSC	W		RC		T		TN6010	TN6025	THM
		mm	in	mm	in	mm	in			
NR3M175L	3	3,50	.138	1,75	.069	3,81	.150	●	●	●
NR3M200L	3	4,00	.157	2,00	.079	3,81	.150	●	●	●
NR3M225L	3	4,50	.177	2,25	.089	3,81	.150	●	●	●
NR3094L	3	4,78	.188	2,39	.094	3,81	.150	●	●	●
NR4M250L	4	5,00	.197	2,50	.098	6,35	.250	●	●	●
NR4125L	4	6,35	.250	3,18	.125	6,35	.250	●	●	●

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

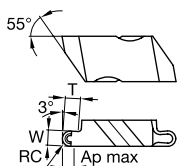
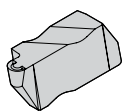
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## Grooving and Turning Inserts • NR-K • Full Radius with Chip Breaker



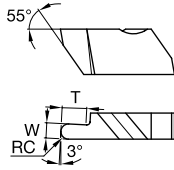
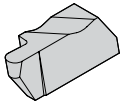
- first choice
- alternate choice

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

catalog number	SSC	W		Ap max		RC		T		TN6010	TN6025	THM
		mm	in	mm	in	mm	in	mm	in			
<b>right hand</b>												
NR3031RK	3	1,57	.062	1,97	.078	0,79	.031	2,39	.094	3607062	3607206	■
NR3047RK	3	2,39	.094	1,91	.075	1,19	.047	3,81	.150	3607086	3607214	■
NR3062RK	3	3,18	.125	2,92	.115	1,59	.063	3,81	.150	3607056	3607236	■
NR3078RK	3	3,97	.156	2,54	.100	1,98	.078	3,81	.150	3607407	3607407	■
NR4062RK	4	3,18	.125	2,92	.115	1,59	.063	3,81	.150	3607461	3607461	■
NR4125RK	4	6,35	.250	3,81	.150	3,18	.125	6,35	.250	3607303	3607303	■
<b>left hand</b>												
NR3031LK	3	1,58	.062	1,98	.078	0,79	.031	2,39	.094	3607095	3607222	■
NR3047LK	3	2,39	.094	3,81	.150	1,20	.047	3,81	.150	3607102	3607408	■
NR3062LK	3	3,18	.125	2,92	.115	1,59	.063	3,81	.150	3607091	3607216	■
NR3078LK	3	3,96	.156	2,54	.100	1,98	.078	3,81	.150	3607172	3607306	■
NR4062LK	4	3,18	.125	2,92	.115	1,59	.063	3,81	.150	3607156	3607156	■
NR4094LK	4	4,79	.188	3,81	.150	2,39	.094	6,35	.250	3607150	3607452	■
NR4125LK	4	6,36	.250	3,81	.150	3,18	.125	6,35	.250	3607458	3607458	■

NOTE: SSC = To correspond with the SSC on the toolholder.

Grooving and Turning Inserts • NRD • Deep Grooving • Full Radius



- first choice
- alternate choice

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

catalog number	SSC	W		RC		T		cutting edges	TN6010	TN6025	THM
		mm	in	mm	in	mm	in				
<b>right hand</b>											
NRD3031R	3	1,58	.062	0,79	.031	3,18	.125	2	3607087	3607457	1
NRD3062R	3	3,17	.125	1,59	.063	6,35	.250	1	3607099	3607474	1
NRD4062R	4	3,18	.125	1,59	.063	6,35	.250	2	3607499	3607499	1
NRD4125R	4	6,35	.250	3,18	.125	12,70	.500	1	3607496	3607496	1
<b>left hand</b>											
NRD3031L	3	1,58	.062	0,79	.031	3,18	.125	2	3607085	3607455	1
NRD3062L	3	3,17	.125	1,59	.063	6,35	.250	1	3607124	3607462	1
NRD4062L	4	3,18	.125	1,59	.063	6,35	.250	2	3607295	3607295	1

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

TopGroove Holder • Catalog Numbering System

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

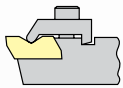
TAPPING

TURNING

**N**

Insert Holding Method

**N** – TopGroove\*

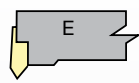


\*Proprietary standard only.

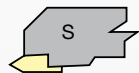
**S**

Insert Mounting Location

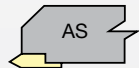
End mount



Side mount Offset



Side mount No offset for swiss machining



NRR undercut

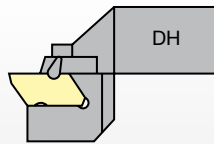


**R**

Hand of Tool

**Drop Head**

Drop Head



**16**

Shank Size

**Inch:**  
For shanks 5/8" square and larger, the number represents the number of sixteenths of width and height. For shanks under 5/8" square, the number of sixteenths of cross section is preceded by a zero. For rectangular holders, the first digit represents the number of eighths of width and the second digit the number of quarters of height, except for a toolholder 1-1/4" x 1-1/2", which is given the number 91.

**3**

Insert Size

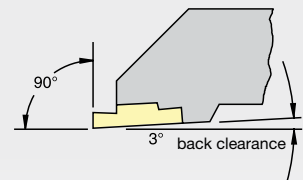


insert size	W1
2	.150"
3	.195"
4	.255"
5	.380"
6	.383"
8	.438"

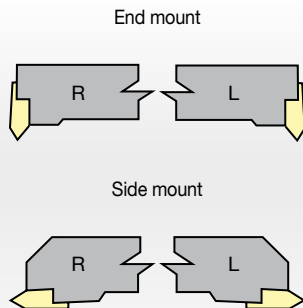
**D**

Qualified Surface and Length

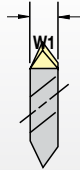
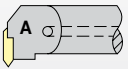
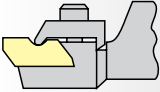
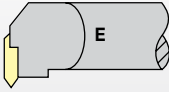
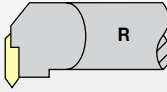
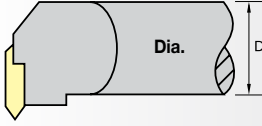
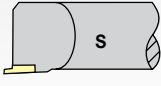

- A** – Qualified back and end, 4" long
- B** – Qualified back and end, 4.5" long
- C** – Qualified back and end, 5" long
- D** – Qualified back and end, 6" long
- E** – Qualified back and end, 7" long



NOTE: Holders are designed to locate insert inclined to 3° to provide back clearance down open side.



TopGroove Boring Bar • Catalog Numbering System

A	32	N	E	R	3																
Bar Type	Bar Diameter	Insert Holding Method	Insert Location	Hand of Tool	Insert Size																
Steel with coolant		N – TopGroove	End mount	Right hand																	
					<table border="1"> <thead> <tr> <th>insert size</th> <th>W1</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>.100"</td> </tr> <tr> <td>2</td> <td>.150"</td> </tr> <tr> <td>3</td> <td>.195"</td> </tr> <tr> <td>4</td> <td>.255"</td> </tr> <tr> <td>5</td> <td>.380"</td> </tr> <tr> <td>6</td> <td>.383"</td> </tr> <tr> <td>8</td> <td>.438"</td> </tr> </tbody> </table>	insert size	W1	1	.100"	2	.150"	3	.195"	4	.255"	5	.380"	6	.383"	8	.438"
insert size	W1																				
1	.100"																				
2	.150"																				
3	.195"																				
4	.255"																				
5	.380"																				
6	.383"																				
8	.438"																				
A two-digit number that indicates the bar diameter in 1/16" increments.			Side mount	Left hand																	
																					

INDEXABLE MILLING

SOLID END MILLING

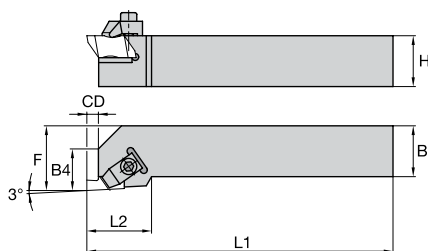
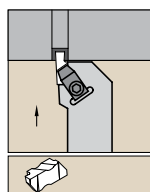
HOLE/MAKING

TAPPING

TURNING



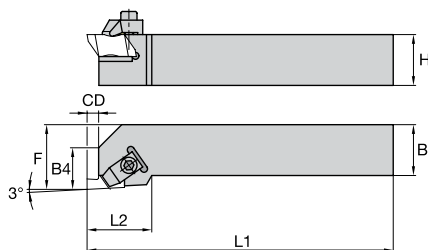
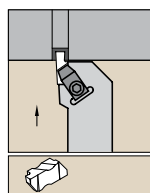
## Integral Toolholders • NS



order number	catalog number	H	B	F	L1	L2	B4	CD	gage insert
<b>right hand</b>									
3632147	NSR062	.375	.375	.562	2.50	.75	.35	.138	N.2R
3639035	NSR082V	.500	.500	.750	3.50	.75	.35	.138	N.2R
3639026	NSR122B	.750	.750	1.000	4.50	.75	.35	.138	N.2R
3639027	NSR123A	.750	.750	1.000	4.00	1.25	.50	.210	N.3R
3639023	NSR123B	.750	.750	1.000	4.50	1.25	.50	.210	N.3R
3639025	NSR162C	1.000	1.000	1.250	5.00	.75	.35	.138	N.2R
3638592	NSR163C	1.000	1.000	1.250	5.00	1.25	.50	.210	N.3R
3638591	NSR163D	1.000	1.000	1.250	6.00	1.25	.50	.210	N.3R
3639028	NSR203D	1.250	1.250	1.500	6.00	1.25	.50	.210	N.3R
<b>left hand</b>									
3632145	NSL122B	.750	.750	1.000	4.50	.75	.35	.138	N.2L
3632152	NSL123A	.750	.750	1.000	4.00	1.25	.50	.210	N.3L
3639032	NSL123B	.750	.750	1.000	4.50	1.25	.50	.210	N.3L
3632138	NSL162C	1.000	1.000	1.250	5.00	.75	.35	.138	N.2L
3639029	NSL163C	1.000	1.000	1.250	5.00	1.25	.50	.210	N.3L
3639024	NSL163D	1.000	1.000	1.250	6.00	1.25	.50	.210	N.3L
3639037	NSL203D	1.250	1.250	1.500	6.00	1.25	.50	.210	N.3L

NOTE: F dimension measured over sharp point of insert.

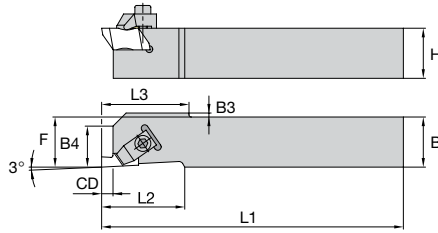
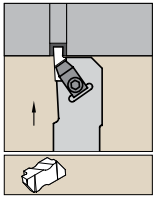
## Integral Toolholders • NS • with Shim



order number	catalog number	H	B	F	L1	L2	B4	CD	gage insert
<b>right hand</b>									
3639031	NSR164C	1.000	1.000	1.250	5.00	1.38	.54	.294	N.4R
3639033	NSR164D	1.000	1.000	1.250	6.00	1.38	.54	.294	N.4R
3632153	NSR166D	1.000	1.000	1.250	6.00	1.38	.67	.334	N.6R
3637539	NSR168D	1.000	1.000	1.250	6.00	1.25	.72	.225	N.8R
3637472	NSR206D	1.250	1.250	1.500	6.00	1.38	.67	.334	N.6R
3637526	NSR854D	1.250	1.000	1.250	6.00	1.38	.54	.294	N.4R
<b>left hand</b>									
3639040	NSL164D	1.000	1.000	1.250	6.00	1.38	.54	.294	N.4L
3639036	NSL204D	1.250	1.250	1.500	6.00	1.38	.54	.294	N.4L

NOTE: SSC = To correspond with the SSC on the insert.

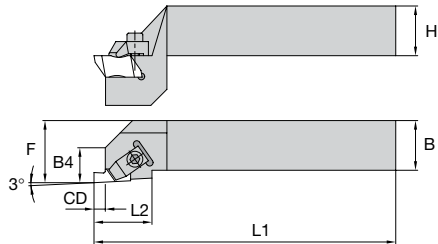
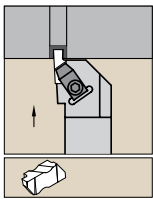
Integral Toolholders • NAS



order number	catalog number	H	B	F	L1	L2	B4	CD	B3	L3	gage insert
<b>right hand</b>											
3636529	NASR082D	.500	.500	.500	6.00	.75	.35	.138	—	—	N.2R
3639042	NASR083D	.500	.500	.500	6.00	1.25	.50	.210	.13	1.32	N.3R
3639039	NASR102B	.625	.625	.625	4.50	.75	.35	.138	—	—	N.2R
3636532	NASR103B	.625	.625	.625	4.50	1.25	—	.210	—	—	N.3R
<b>left hand</b>											
3636534	NASL082D	.500	.500	.500	6.00	.75	.35	.138	—	—	N.2L
3636524	NASL103B	.625	.625	.625	4.50	1.25	—	.210	—	—	N.3L

NOTE: F dimension measured over sharp point of insert.  
Insert exterior edge in line with toolholder edge.

Integral Toolholders • NS-DH



order number	catalog number	H	B	F	L1	L2	B4	CD	gage insert
<b>right hand</b>									
3637528	NSRDH163D	1.000	1.000	1.250	6.00	1.25	.58	.210	N.3R

NOTE: SSC = To correspond with the SSC on the insert.

INDEXABLE MILLING

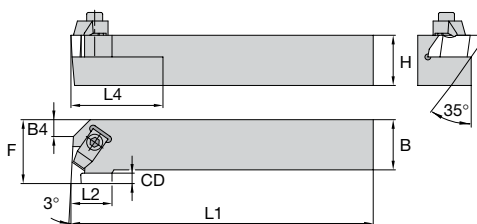
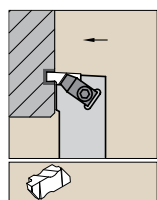
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## Integral Toolholders • NE

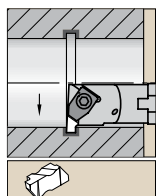


Right-hand toolholder shown.

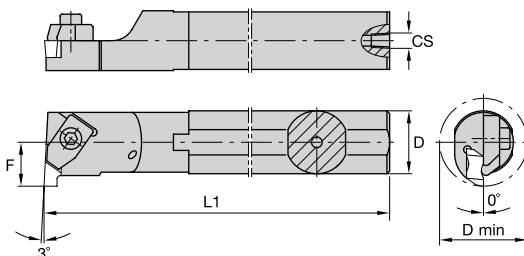
order number	catalog number	H	B	F	L1	L2	B4	CD	gage insert
<b>right hand</b>									
3632133	NER123B	.750	.750	1.125	4.50	.75	—	.210	N.3L
3637486	NER162C	1.000	1.000	1.250	5.00	.50	.41	.138	N.2L
3639038	NER163C	1.000	1.000	1.250	5.00	.75	—	.210	N.3L
3639030	NER163D	1.000	1.000	1.250	6.00	.75	—	.210	N.3L
3639043	NER164D	1.000	1.000	1.375	6.00	.75	—	.294	N.4L
3637522	NER244D	1.500	1.500	2.000	6.00	.75	.65	.294	N.4L
<b>left hand</b>									
3637503	NEL122B	.750	.750	1.000	4.50	.50	.29	.138	N.2R
3637500	NEL162C	1.000	1.000	1.250	5.00	.50	.41	.138	N.2R
3632155	NEL163C	1.000	1.000	1.250	5.00	.75	—	.210	N.3R
3639041	NEL163D	1.000	1.000	1.250	6.00	.75	—	.210	N.3R
3632159	NEL204D	1.250	1.250	1.625	6.00	.75	.27	.294	N.4R

NOTE: F dimension measured over sharp point of insert.

## Integral I.D. Grooving Boring Bars • A-NE



Steel shank with through coolant.

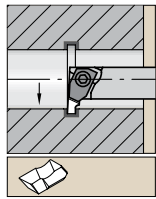


Right-hand toolholder shown.

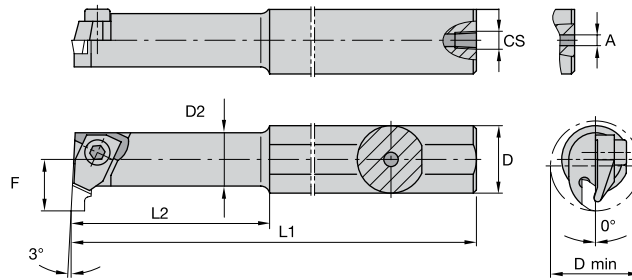
order number	catalog number	D	D min	L1	F	CS	gage insert
<b>right hand</b>							
3632117	A08NER2	.500	.730	8.000	.437	1/16-27 NPT	N.2L
3632114	A10SNER2	.625	1.000	10.000	.500	1/8-27 NPT	N.2L
3632118	A12SNER2	.750	1.125	10.000	.562	1/8-27 NPT	N.2L
3632113	A16NER3	1.000	1.375	12.000	.688	1/4-18 NPT	N.3L
3632130	A16TNER2	1.000	1.375	12.000	.688	1/4-18 NPT	N.2L
3632116	A20NER3	1.250	1.750	14.000	.875	1/4-18 NPT	N.3L
3632115	A24NER3	1.500	2.000	14.000	1.000	1/4-18 NPT	N.3L
3632123	A28NER4	1.750	2.500	14.000	1.250	1/4-18 NPT	N.4L
3632122	A32NER3	2.000	2.500	16.000	1.250	1/4-18 NPT	N.3L
<b>left hand</b>							
3632131	A08NEL2	.500	.730	8.000	.437	1/16-27 NPT	N.2R
3632127	A10SNEL2	.625	1.000	10.000	.500	1/8-27 NPT	N.2R
3632126	A12SNEL2	.750	1.125	10.000	.562	1/8-27 NPT	N.2R
3632142	A16NEL2	1.000	1.375	12.000	.688	1/4-18 NPT	N.2R
3632120	A16NEL3	1.000	1.375	12.000	.688	1/4-18 NPT	N.3R
3632124	A20NEL3	1.250	1.750	14.000	.875	1/4-18 NPT	N.3R
3632128	A24NEL3	1.500	2.000	14.000	1.000	1/4-18 NPT	N.3R
3632141	A28NEL4	1.750	2.500	14.000	1.250	1/4-18 NPT	N.4R
3632149	A32NEL4	2.000	2.750	16.000	1.375	1/4-18 NPT	N.4R

NOTE: Minimum bore capability varies with depth of groove. See page E430 for details.  
F dimension measured over sharp point of insert.

**Integral I.D. Grooving Boring Bars • A-NE-1**



Necked steel shank with through coolant.

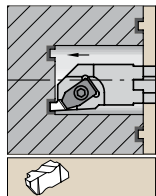


Right-hand toolholder shown.

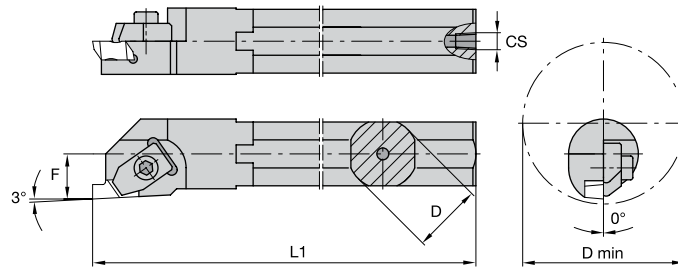
order number	catalog number	D	D min	D2	L1	L2	F	A	CS	gage insert
<b>right hand</b>										
3632121	A06NER1	.375	.440	.312	6	1.250	.258	.125	—	N.1L
3632119	A08NER1	.500	.440	.310	8	1.290	.258	.094	1/16-27 NPT	N.1L

NOTE: Minimum bore capability varies with depth of groove. See page E430 for details.  
F dimension measured over sharp point of insert.

**Integral I.D. Grooving Boring Bars • A-NS**



Steel shank with through coolant.



Right-hand tool holder shown.

order number	catalog number	D	D min	L1	F	CS	gage insert
<b>right hand</b>							
3632129	A16TNSR3	1.000	2.250	12.000	.640	1/4-18 NPT	N.3R
3632135	A20UNSR3	1.250	2.250	14.000	.765	1/4-18 NPT	N.3R
<b>left hand</b>							
3632137	A16TNSL3	1.000	2.250	12.000	.640	1/4-18 NPT	N.3L
3637502	A32VNSL3	2.000	2.375	16.000	1.281	1/4-18 NPT	N.3L

NOTE: Minimum bore capability varies with depth of groove. See page E430 for details.  
F dimension measured over sharp point of insert.

INDEXABLE MILLING

SOLID END MILLING

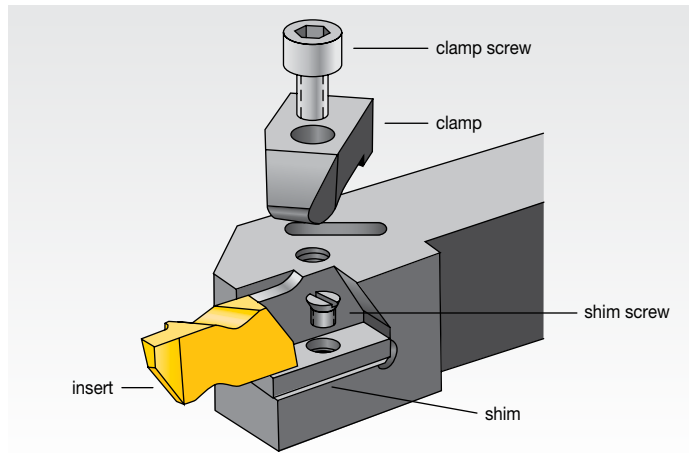
HOLE/MAKING











TAPPING

TURNING

## Hardware

### TopGroove Toolholders and Boring Bars



insert size and style	 clamp	 clamp screw	 shim	 shim screw
NG-1L 	CM-109	S-304	–	–
NG-2R	CM-182	S-310	–	–
NG-2L	CM-183	S-310	–	–
NG-2R 	CM-74	S-310	–	–
NG-2L	CM-75	S-310	–	–
NG-3R	CM-184	S-412	–	–
NG-3L	CM-185	S-412	–	–
NG-3R	CM-72	S-412	–	–
NG-3L 	CM-73	S-412	–	–
NG-3R*	CM-78	S-412	–	–
NG-3L*	CM-70	S-412	–	–
NG-4R	CM-72	S-412	SM-420	SL-344
NG-4L 	CM-73	S-412	SM-420	SL-344
NG-5R	CM-80	S-352	–	–
NG-5L 	CM-81	S-352	–	–
NG-6R	CM-120	S-412	SM-416	S-111
NG-6L 	CM-121	S-412	SM-416	S-111
<b>TopGroove relief grooving</b>				
NU-3125R	CM-72	S-412	–	–
NU-3125L	CM-73	S-412	–	–
NU-3125R**	CM-72	S-618	–	–
NU-3125L**	CM-73	S-618	–	–
<b>Utility threading</b>				
NTU-4R	CM-72	S-412	–	–
NTU-4L	CM-73	S-412	–	–

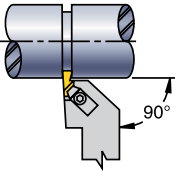
\*25mm diameter boring head.

\*\*Boring head.

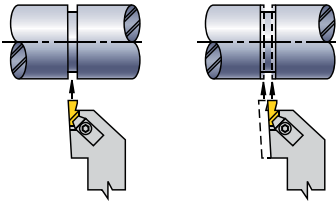
## Grooving Tool Failure and Solution Guide

Practical Solutions to Common Grooving Problems

### Holder Position for Grooving Operation

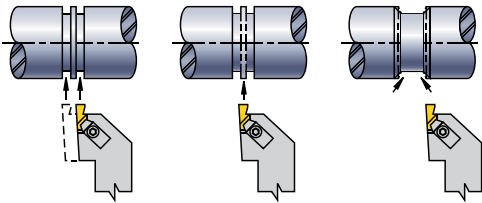


### How to Cut a Groove Slightly Wider than the Groove Tool



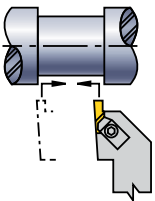
1. Plunge the center of the groove.
2. Plunge each side of the groove to get the specified width. Use a slower feed rate when cutting groove sides.

### How to Cut Wider Grooves



1. Plunge out both sides of groove width.
2. Plunge center area to remove web of material remaining.
3. Plunge both sides of groove at the required angle, using approximately one-half the width of the grooving tool for maximum width of cut.

### Finish Turning the Groove



1. Follow recommendations explained above.
2. To avoid insert chipping and to achieve groove wall perpendicularity, follow the tool path outlined here.
3. Use the lightest depth of cut that still enables good chip surface finishing.

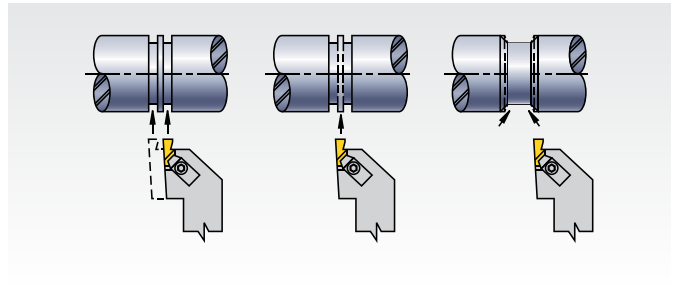
problem	solution
bur	<ol style="list-style-type: none"> <li>1. Ensure tool center height.</li> <li>2. Use sharp tool (index more often).</li> <li>3. Use positive rake PVD-coated insert.</li> <li>4. Use correct grade for workpiece material.</li> <li>5. Use correct geometry (e.g., positive rake for work-hardening material).</li> <li>6. Chamfer before grooving.</li> <li>7. Change tool path.</li> </ol>
poor surface finish	<ol style="list-style-type: none"> <li>1. Increase speed.</li> <li>2. Use sharp tool (index more often).</li> <li>3. Dwell tool in bottom 1–3 revolutions (max).</li> <li>4. Use proper chip control geometry.</li> <li>5. Increase coolant flow/concentration.</li> <li>6. Ensure proper setup (overhang, shank size).</li> <li>7. Use correct geometry (e.g., positive rake for work-hardening material).</li> </ol>
groove bottom that is not flat	<ol style="list-style-type: none"> <li>1. Use sharp tool (index more often).</li> <li>2. Dwell tool in bottom 1–3 revolutions (max).</li> <li>3. Reduce tool overhang (increase rigidity).</li> <li>4. Ensure correct tool alignment.</li> <li>5. Reduce feed rate at groove bottom.</li> <li>6. Use a wider insert.</li> <li>7. Ensure tool center height.</li> </ol>
poor chip control	<ol style="list-style-type: none"> <li>1. Use “K” chip control geometry insert.</li> <li>2. Use sharp tool (index more often).</li> <li>3. Increase coolant concentration.</li> <li>4. Adjust feed rate (usually increase first).</li> </ol>
chatter	<ol style="list-style-type: none"> <li>1. Reduce tool and workpiece overhang.</li> <li>2. Adjust speed and feed (usually increase first).</li> <li>3. Ensure center height.</li> </ol>
insert chipping	<ol style="list-style-type: none"> <li>1. Use correct grade for workpiece material.</li> <li>2. Increase speed.</li> <li>3. Reduce feed.</li> <li>4. Use a stronger grade.</li> <li>5. Increase tool and setup rigidity.</li> </ol>
side walls not straight	<ol style="list-style-type: none"> <li>1. Check tool alignment for square.</li> <li>2. Use correct insert hand.</li> <li>3. Reduce workpiece and tool overhang.</li> <li>4. Use sharp insert (index more often).</li> </ol>

## Machining Guidelines

### Machining Guidelines for Chip Control • Grooving

When the proper cutter diameter is not available, proper cutter positioning will provide positive results.

- Center height of insert should be positioned at the center of the workpiece or up to .005" (0,13mm) above.
- Dwell time in the bottom of the groove (more than three revolutions) is not recommended.
- Chip control is feed rate related and should be adjusted to fit the particular situation.  
Recommended feed range is .003-.012 IPR (0,08-0,3 mm/rev).

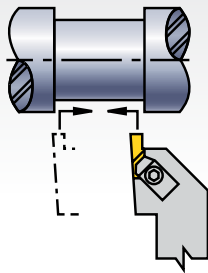


### Machining Guidelines for Chip Control • Turning/Profiling

Maximum depth of cut for side cutting (turning/profiling) depends on the material being cut and the width of the tool.

- .031-.062" (0,79-1,6mm) wide insert can cut up to .025" (0,6mm) deep.
- .067-.128" (1,7-3,3mm) wide insert can cut up to .040" (1mm) deep.
- .138-.189" (3,5-4,8mm) wide insert can cut up to .080" (2mm) deep.
- .197-.250" (5-6,35mm) wide insert can cut up to .120" (3mm) deep.

#### Finish Turning the Groove



1. Plunge both sides of groove width.
2. Plunge center area to remove web of material remaining.
3. To avoid insert chipping and to achieve groove wall perpendicularity, follow the tool path outlined.
4. Use the lightest depth of cut that still allows good chipbreaking, tool life, and surface finish.

Groove Limits

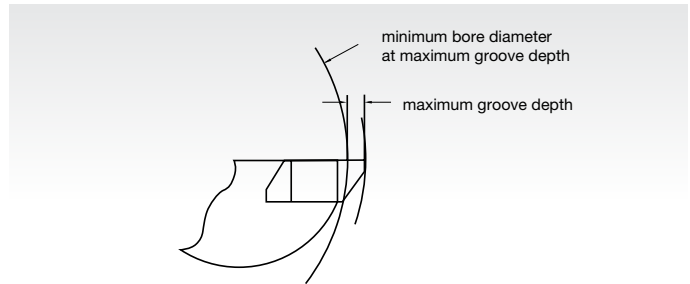
insert catalog number	maximum internal groove depth		minimum bore diameter	
	inch	mm	inch	mm
NG-1094L	.075	1,91	.800	20,32
—	.040	1,02	.440	11,18
NG-2031R/L	.050	1,27	.730	18,54
NG-2041R/L	—	—	—	—
NG-2047R/L	—	—	—	—
NG-2058R/L	—	—	—	—
—	.110	2,79	2.500	63,50
NG-2062R/L	.102	2,59	1.750	44,45
NG-2094R/L	.098	2,49	1.500	38,10
NG-2125R/L	.080	2,03	1.000	25,40
—	.055	1,40	.730	18,54
NG-3047R/L	—	—	—	—
NG-3062R/L	.094	2,39	1.750	44,45
NG-3072R/L	.090	2,29	1.625	41,28
NG-3078R/L	.075	1,91	1.375	34,93
NG-3088R/L	—	—	—	—
NG-3094R/L	—	—	—	—
NG-3097R/L	.150	3,81	2.375	60,33
NG-3105R/L	—	—	—	—
NG-3110R/L	.145	3,68	2.125	53,98
NG-3122R/L	—	—	—	—
NG-3125R/L	.138	3,51	1.875	47,63
NG-3142R/L	—	—	—	—
NG-3156R/L	.125	3,18	1.625	41,28
NG-3178R/L	—	—	—	—
NG-3185R/L	.110	2,79	1.375	34,93
NG-3189R/L	—	—	—	—
NG-4125R/L	.150	3,81	2.750	69,85
—	.250	6,35	5.750	146,05
NG-4189R/L	.245	6,22	5.000	127,00
NG-4213R/L	.240	6,10	4.500	114,30
NG-4219R/L	.218	5,54	3.250	82,55
NG-4250R/L	.200	5,08	2.500	63,50

NOTE: The same maximum groove depth and minimum bore diameter values also apply to metric, NG-K (chip control), and NR (full radius) inserts of similar size.  
The same internal grooving depth limits are a function of bar clearance versus bore diameters.

## Machining Guidelines

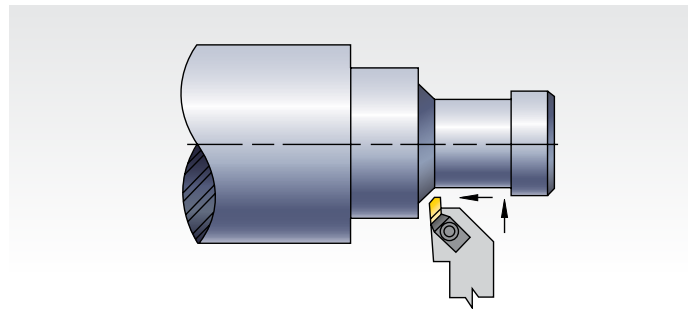
### Internal Groove Depth versus Bar Interference

NOTE: Internal grooving depth limits are a function of bar clearance versus bore diameters.



### Machining Guidelines for Back Turning/ Turning/Profiling

The NP-K-style TopGroove inserts were engineered specifically for back turning on small automatic lathes, but they also find applications for other light turning and profiling operations. For general applications, maximum depth of cut should not exceed .108" (2,74mm) for size 2 inserts or .151" (3,84mm) for size 3 inserts.



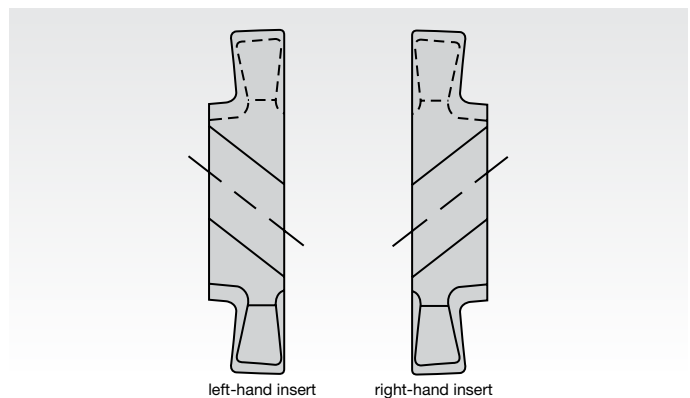
### Machining Guidelines for Using TopGroove Deep Grooving Inserts (NGD)

Typically, those NGD- and NRD-style inserts with two cutting edges require no machine offset changes. However, those inserts with only one cutting edge do require offset changes. Refer to the chart here to ensure proper offset adjustments.

insert catalog number	add to C dimension		add to F dimension	
	inch	mm	inch	mm
NGD-3062	.000	0,00	.000	0,00
NGD-3094	.100	2,54	.100	2,54
NGD-3125	.100	2,54	.100	2,54
NGD-3189	.100	2,54	.100	2,54
NGD-4125	.000	0,00	.000	0,00
NGD-4189	.125	3,18	.125	3,18
NGD-4250	.250	6,35	.250	6,35
NRD-3031	.000	0,00	.000	0,00
NRD-3062	.100	2,54	.100	2,54
NRD-4062	.000	0,00	.000	0,00
NRD-4094	.250	6,35	.250	6,35
NRD-4125	.250	6,35	.250	6,35

### TopGroove Insert Selection Guide

- All TopGroove inserts are precision ground to provide accurate edge location and secure locking of the insert in the toolholder pocket.
- TopGroove inserts can be used in either toolholders or boring bars.
- Right-hand TopGroove toolholders use right-hand inserts. Left-hand TopGroove toolholders use left-hand inserts.
- Right-hand TopGroove boring bars use left-hand inserts. Left-hand TopGroove boring bars use right-hand inserts.

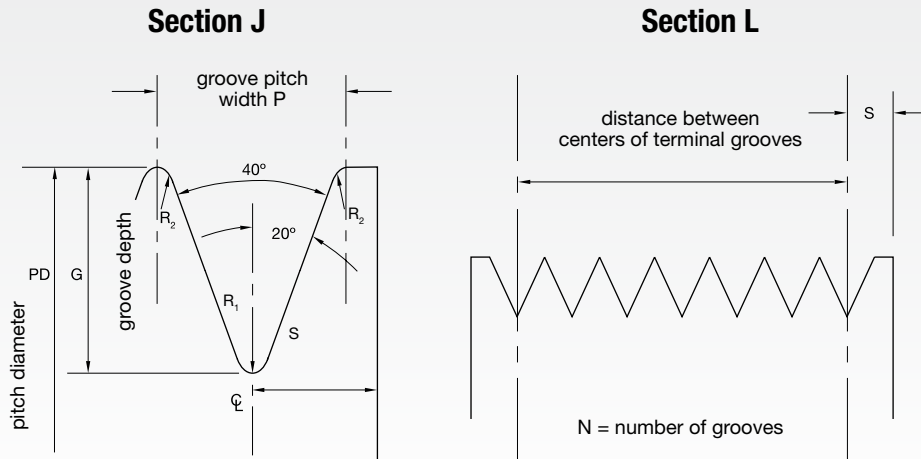




## Machining Guidelines

### Machining Guidelines for Poly-Vee Grooving with Custom Solution and TopGroove NV Inserts (NV3-J and NV4-L)

- To machine cross section “J”, use insert NV3-J.
- To machine cross section “L”, use insert NV4-L.

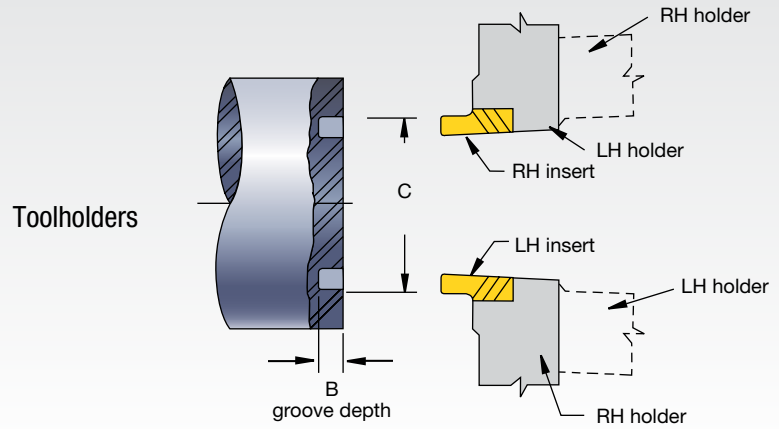


### Groove Dimensions and Tolerances for Sheaves

groove cross section	pitch width (P)	groove depth (G)	minimum radius (R2)	radius (R1)	terminal distance	distance between centers of terminal grooves and maximum accumulated tolerance
J	.092 ±.001	.087 ±.005	.008	.0125 ±.0025	1/8	(N-1).092 ±.010
L	.185 ±.002	.201 ±.005	.015	.0125 ±.0025	3/8	(N-1).185 ±.010

## Machining Guidelines

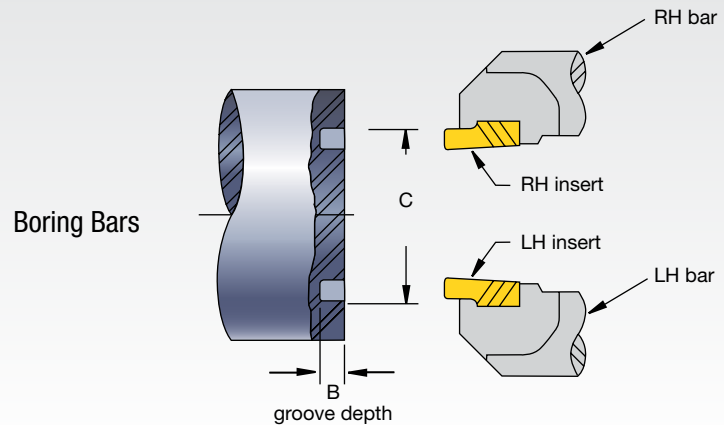
### Machining Guidelines for Face Grooving Operations • External



Standard NF/NDF Inserts

insert family	maximum groove depth B		minimum groove diameter C	
	inch	mm	inch	mm
NF-3	.060	1,52	.94	23,9
NF-3	.094	2,39	1.20	30,5
NF-3	.125	3,18	1.42	36,1
NF-3	.150	3,81	1.63	41,3
NFD-3	.250	6,35	1.88	47,6
NFD-4	.375	9,53	2.25	57,2
NFD-4	.500	12,70	2.25	57,2

### Machining Guidelines for Face Grooving Operations • External

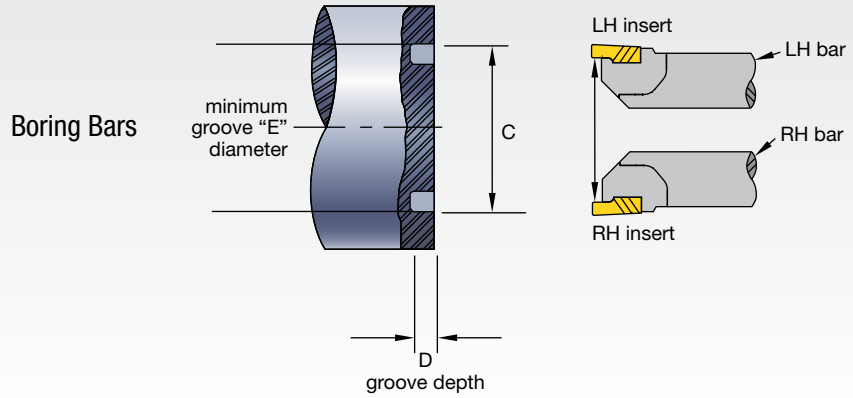


Standard NG/NGD Inserts

insert family	maximum groove depth B		minimum groove diameter C	
	inch	mm	inch	mm
NG-2	.050	1,27	2.13	54,0
NG-2	.110	2,79	3.50	88,9
NG-3	.094	2,39	4.00	101,6
NG-3	.125	3,18	5.00	127,0
NG-3	.150	3,81	5.50	139,7
NGD-3	.250	6,35	6.88	174,6
NG-4	.150	3,81	6.00	152,4
NG-4	.250	6,35	8.25	209,6
NGD-4	.375	9,53	8.75	222,3
NGD-4	.500	12,70	8.75	222,3

## Machining Guidelines

### Machining Guidelines for Face Grooving Operations • Internal



Standard NG/NGD Inserts

insert family	maximum groove depth B		minimum groove diameter C	
	inch	mm	inch	mm
NFD-3-KI	.250	6,35	2.250	63,5

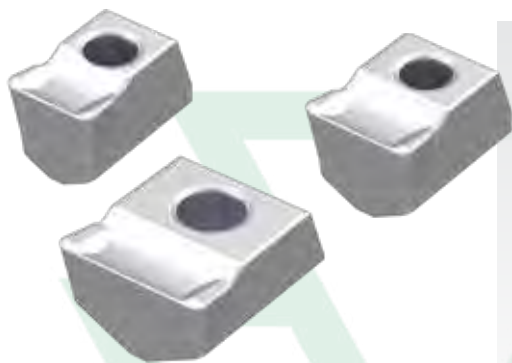
*NOTE: Also check minimum bore diameter of boring bar. See page E430.*



# LG Grooving

## Large-Width Grooving

The LG Grooving platform is designed for large-width grooving using periphery ground inserts for close tolerances. (+/- .05mm)



- Inserts available from 8.15–16.20mm.
- Inserts feature a bottom 'V' for secure seating on the pocket seat.
- Grade WU35CT with easy-wear identification.
- The chip groove design with positive rake enables good chip control and reduced forces.



Primarily used in the Energy segment for grooving operations on turbine rotors.

## BENEFITS

### VERSATILITY

Single-sided, versatile grooving and cut-off solution with smooth surface finish.

### STABILITY

Insert seating and clamping mechanism ensures stability and reliability in heavy-duty applications.

## APPLICATIONS



O.D.  
GROOVING



DEEP  
GROOVING



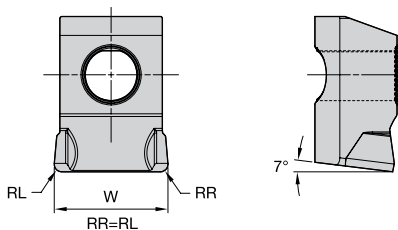
## Recommended Cutting Speeds • Metric

Material Group		Cutting Speed – vc m/min		
		WU35CT		
		min	Start	max
P	0/1	140	175	210
	2	115	145	175
	3	115	145	175
	4	75	100	120
	5	105	140	170
	6	45	60	75
M	1	-	-	-
	2	-	-	-
	3	-	-	-
K	1	-	-	-
	2	-	-	-
	3	-	-	-
N	1	-	-	-
	2	-	-	-
	3	-	-	-
	4	-	-	-
	5	-	-	-
	6	-	-	-
	7	-	-	-
S	1	-	-	-
	2	-	-	-
	3	-	-	-
	4	-	-	-
H	1	-	-	-
	2	-	-	-
	3	-	-	-
	4	-	-	-

## Recommended Cutting Speeds • Inch

Material Group		Cutting Speed – vc SFM		
		WU35CT		
		min	Start	max
P	0 / 1	455	570	685
	2	380	475	575
	3	380	475	575
	4	245	320	390
	5	345	450	555
	6	145	195	245
M	1	-	-	-
	2	-	-	-
	3	-	-	-
K	1	-	-	-
	2	-	-	-
	3	-	-	-
N	1	-	-	-
	2	-	-	-
	3	-	-	-
	4	-	-	-
	5	-	-	-
	6	-	-	-
	7	-	-	-
S	1	-	-	-
	2	-	-	-
	3	-	-	-
	4	-	-	-
H	1	-	-	-
	2	-	-	-
	3	-	-	-
	4	-	-	-

Grooving Inserts • LG LGNO



- first choice
- alternate choice

P	●
M	○
K	○
N	○
S	○
H	○
	○

catalog number	W		RR		WU35CT
	mm	in	mm	in	
123568080	8,15	0.32	0,80	0.03	6909025
123568100	10,15	0.40	0,80	0.03	6909026
123568120	12,20	0.48	0,80	0.03	6909027
123568140	14,20	0.56	0,80	0.03	6909028
123568160	16,20	0.64	0,80	0.03	6909029

INDEXABLE MILLING

SOLID END MILLING

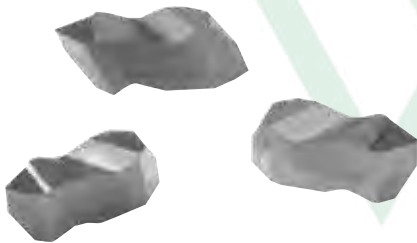
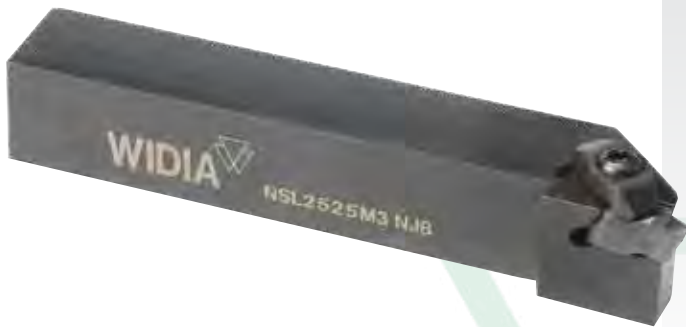
HOLE/MAKING

TAPPING

TURNING



Count on the WIDIA™ TopThread system for when high heat, high edge-line load concentrated to a small nose radius, and high feed rates combine to place tremendous demands on carbide threading inserts. TopThread insert technology brings superior chip control to high-demand applications like machining Acme, Buttress, and API threads.



### TOOLHOLDERS

- Reduced inconsistencies and better workpiece finish.
- TopThread inserts are precision-ground to provide accurate edge location and secure locking of the insert in the toolholder pocket.
- Excellent choice for special thread forms and toolholder designs.
- TopThread inserts are available in TN6010™ and TN6025™ grades to withstand the demands placed on the cutting edge of the threading insert.

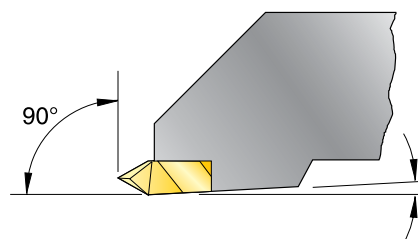
### INSERTS

- Rigid design for increased stability during threading applications.
- Good quality threads, improved tool life, and improved surface finishes.
- Locking forces in three directions for superior resistance to tangential force.
- Unique 3° insert relief angle for back clearance.
- Available in partial profile inserts for 60° thread forms.

## THE SIMPLE SOLUTION

### VERSATILE






The versatility of the TopThread steel enables you to use both threading and grooving inserts in the same toolholder.



*NOTE: Holders are designed to locate inserts inclined to 3° to provide back clearance down open side.*

# TOP THREAD DEMANDING THREADING APPLICATIONS

## TopThread™

INSERT STYLE	OPTIMUM CUTTING CONDITIONS	FIRST CHOICE	MATERIALS
Chip control or neutral 	<b>TN6010</b> 160–750	<b>TN6025</b> 130–650	<b>P</b>
Chip control or positive 	<b>TN6010</b> 160–600	<b>TN6025</b> 130–450	<b>M</b>
Neutral 	<b>TN6010</b> 230–700	<b>TN6025</b> 200–475	<b>K</b>
Positive 	–	<b>TN6025</b> 160–1150	<b>N</b>
Positive 	<b>TN6010</b> 65–400	<b>TN6025</b> 35–330	<b>S</b>

## INDUSTRY



## Threading Selection Guide

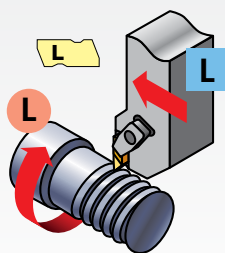
### Step 1 • Select Threading Method and Hand of Tooling

**Required Information:**

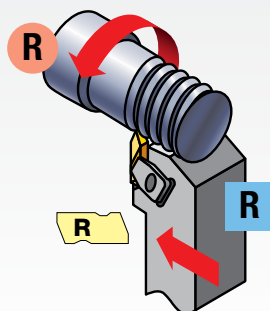
- External/internal operation.
- Spindle rotation/hand of thread.
- Feed direction.



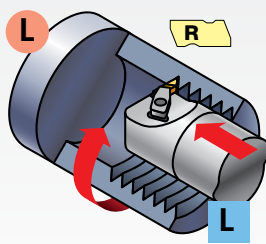
**Feed direction toward the chuck • RECOMMENDED**



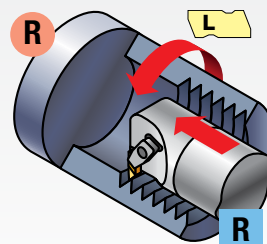
external left-hand thread



external right-hand thread

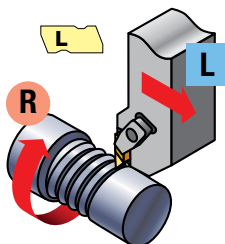


internal left-hand thread

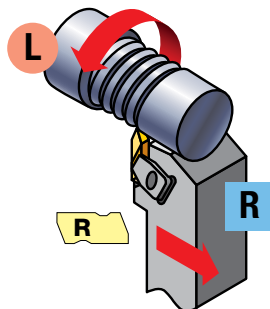


internal right-hand thread

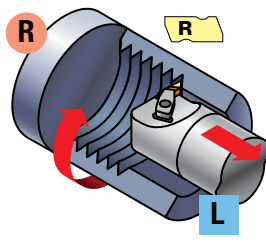
**Feed direction away from the chuck**



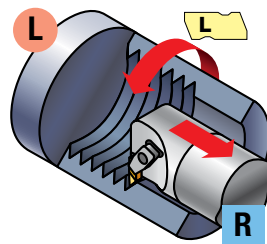
external right-hand thread



external left-hand thread



internal right-hand thread



internal left-hand thread

### Step 2 • Select Holder from Catalog Page

The insert size must match the gage insert size of your toolholder selection:

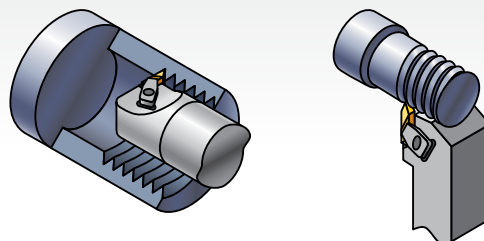
**Required Information:**

- External/internal operation.
- Minimum bore diameter (for internal operations).
- Hand of tool.
- Insert size (gage insert).

catalog number	gage insert
NSR-163D	N.3R
NSR-164D	N.4R

NOTE: TopThread toolholders and boring bars are listed with a gage insert to indicate the size and hand required. They are compatible with both grooving and threading inserts of the same size.

**Select the appropriate holder for the insert size and hand:**



NOTE: Optimize your threading operation by using the proper infeed method and the recommended infeed values.

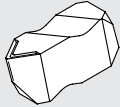
See the Technical section on pages E506–E507 of this catalog.

For internal threading, minimum bore varies depending on thread type. See page E430 for details.

## Threading Selection Guide






### Step 3 • Choose Insert for Application

- See threading insert overview on page E444.
- Select cresting inserts for fully controlled thread form including diameter control. Cresting inserts eliminate the need for deburring.
- Non-cresting partial profile inserts can cut a variety of thread pitches.
- Note insert size for toolholder selection.

	insert size	catalog number	TN6025	TN6010
	2	NT-2RK	•	•
	3	NT-3RK	•	•
	4	NT-4RK	•	•

### Step 4 • Select Grade and Speed

Recommendations for Grade and Speed Selection — m/min (SFM)

workpiece material	steel	stainless steel	cast iron	non-ferrous metals	high-temp alloys
insert style	chip control or neutral 	chip control or positive 	neutral 	positive 	positive 
optimum cutting conditions	<b>TN6010</b> 50–230n (160–750)	<b>TN6010</b> 50–185 (160–600)	<b>TN6010</b> 70–210 (230–700)	—	<b>TN6010</b> 20–120 (65–400)
first choice	<b>TN6025</b> 40–200 (130–650)	<b>TN6025</b> 40–135 (130–450)	<b>TN6025</b> 60–145 (200–475)	<b>TN6025</b> 50–360 (160–1150)	<b>TN6025</b> 10–100 (35–330)

Examples:

Chip Control: NT-K or NT-CK (partial profile only)

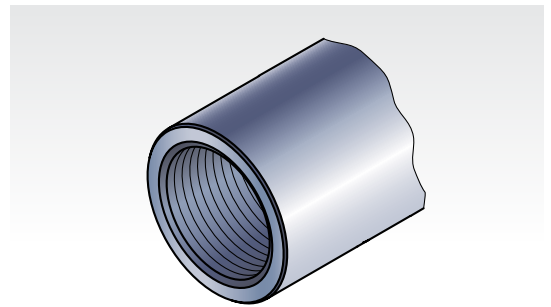
Neutral: NT, NT-C, NTF, NTC, NJ, NJF, NDC-V, NA, NDC, NTB-A/B

Positive: NTP, NTK, NJP, NJK

### TopThread Threading Example:








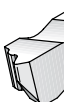




**application:** 8 TPI Acme internal right-hand thread  
**material:** alloy steel  
**workpiece diameter:** 4.5" (114,3mm)  
 good cutting conditions  
 feed towards the chuck

Recommendation:  
**insert:** NA3L8  
**grade:** TN6010  
**insert size:** 3  
**boring bar:** A40NER3  
**gage insert:** N.3L  
**speed:** 500 SFM (150 m/min)  
**infeed passes\*:** 12 passes



\* Infeed recommendations provided in technical data section on pages E506–E507.

## Insert Overview

chip control — K		style			thread profile	standard	tolerance class	cresting	application	page(s)
		neutral	positive							
NT-K		NT		NTP	Partial Profile 60°	-	-	N	General use for 60° thread forms, such as ISO and UN, where non-cresting inserts are desired to cut a variety of pitches.	E449–E451
NT-CK					Partial Profile 60° — coarse pitch	-	-	N	Coarse pitch 60° thread forms, such as ISO and UN, where non-cresting inserts are desired to cut a variety of pitches.	E452
		NTF		NTK	Partial Profile 60° — fine pitch	-	-	N	Fine pitch 60° thread forms, such as ISO and UN, where non-cresting inserts are desired to cut a variety of pitches — able to thread close to shoulders.	E452–E453
		NTC			American UN	ANSI B1.1:74	2A/2B	Y	Widely used inch-based 60° V-form for all industries.	E454
				NJP	UNJ	SAEA588791	3A/3B	N	Controlled root radius on external threads for military and aerospace industries.	E455
				NJK	UNJ — fine pitch	SAEA588790	3A/3B	N	Controlled root radius on external threads for military and aerospace industries — able to thread close to shoulders.	E455
		NDC-V			NPT	ANSI/ACME B1.201:1983	Standard NPT	Y	National Pipe Thread standard forms for pipe fittings.	custom solution
		NDC-V-M			NPT — multi-tooth	ANSI/ACME B1.201:1983	Standard NPT	Y	High-productivity multi-tooth threading inserts for NPT threads.	custom solution
		NWC-E			Whitworth, BSW, BSP	BS 84:1956, ISO 228/1:1982, DIN 259	Medium Class A	Y	Widely used 55° form for gas and water connections.	E456
		NDC-RD			API Round	API STD. 5B:1979	Standard API RD	Y	60° V-form with large radius for casing, tubing, and line pipe in the oil and gas industry, including 8 and 10 round forms.	E456
		NA			Acme	ANSI B1.5:1988	3G	N	29° truncated thread form for motion applications in a wide variety of industries.	E457
		NAS			Stub Acme	ANSI B1.8:1988	2G	N	Shallow depth 29° truncated thread form for motion applications in a wide variety of industries.	E458
		NTB-B			American Buttress — 45° clearance flank leading (Pull)	ANSI B1.9:1973	Class 2	N	Sawtooth form for axial load bearing applications in a variety of industries — use the “B” style when the 45° clearance flank is the leading flank.	E458

INDEXABLE MILLING

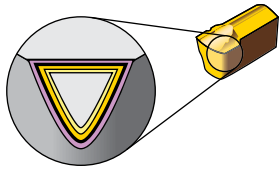
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## Grades and Grade Descriptions

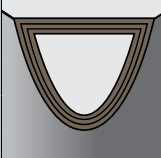
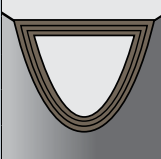
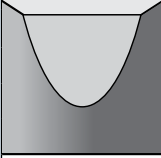


Coatings provide high-speed capability and are engineered for finishing to light roughing.

- Reduce cycle times — high-speed capability.
- Longer tool life — new multilayer coating provides better wear resistance.

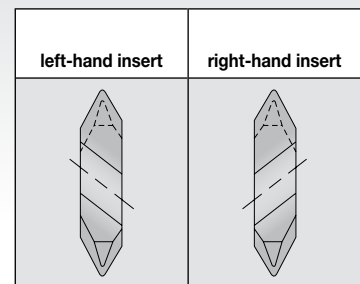
<b>P</b>	Steel
<b>M</b>	Stainless Steel
<b>K</b>	Cast Iron
<b>N</b>	Non-Ferrous
<b>S</b>	High-Temp Alloys
<b>H</b>	Hardened Materials

wear resistance ← → toughness

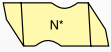
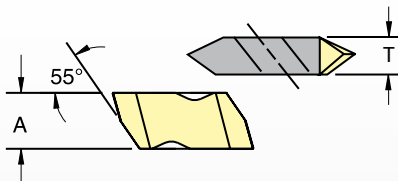


Coating		Grade Description		05	10	15	20	25	30	35	40	45		
Grade <b>TN6010</b>	 <b>HC-P10</b>	An advanced PVD TiAlN coating over a very deformation-resistant unalloyed carbide substrate. TN6010 is ideal for finishing to general machining of most workpiece materials at higher speeds. Excellent for machining most steels, stainless steels, cast irons, non-ferrous materials, and super alloys under stable conditions. It also performs well machining hardened and short chipping materials.	<b>P</b>											
			<b>M</b>											
			<b>K</b>											
			<b>N</b>											
			<b>S</b>											
			<b>H</b>											
Grade <b>TN6025</b>	 <b>HC-P25</b>	An advanced PVD TiAlN-coated grade with a tough, ultra-fine-grain unalloyed substrate. For general-purpose machining of most steels, stainless steels, high-temp alloys, titanium, irons, and non-ferrous materials. Speeds may vary from low to medium and will handle interruptions and high feed rates.	<b>P</b>											
			<b>M</b>											
			<b>K</b>											
			<b>N</b>											
			<b>S</b>											
			<b>H</b>											
Grade <b>THM</b>	 <b>HW-K15</b>	Uncoated carbide for light and medium machining. For cast iron, all non-ferrous metals, and non-metals. Also capable of machining hardened materials at low cutting speeds.	<b>P</b>											
			<b>M</b>											
			<b>K</b>											
			<b>N</b>											
			<b>S</b>											
			<b>H</b>											

- All TopThread inserts are precision-ground to provide accurate edge location and secure locking of the insert in the toolholder pocket.
- TopThread inserts can be used in either toolholders or boring bars.
- All non-cresting-type threading inserts can be used for either external or internal applications. All cresting-type inserts are designated specifically for external or internal use.
- Right-hand TopThread toolholders use right-hand inserts. Left-hand TopThread toolholders use left-hand inserts.

- Right-hand TopThread boring bars use left-hand inserts. Left-hand TopThread boring bars use right-hand inserts.
- See this page for carbide grade selection and more technical information.



## Catalog Numbering System

<b>N</b>	<b>D</b>	<b>C</b>	<b>3</b>	<b>8RD</b>	<b>R</b>	<b>75</b>																									
Type of Insert	Insert	Additional Information	Insert Size	Industry Thread Identification	Hand of Insert	Definition of Insert	Additional Information																								
<p><b>N</b> – TopThread</p> 		<p><b>B</b> – Buttress</p> <p><b>F</b> – Fine pitch</p> <p><b>S</b> – Stub Acme</p> <p><b>C</b> – Cresting</p> <p><b>P</b> – Positive rake</p> <p><b>K</b> – Fine pitch, positive</p>		<p>Indicates API or drilling industry form designation (e.g., 10RD, 8RD, .038) or controlled root radius threading inserts indicate the root radius in .001" increments (NJ, NJF, NJP, NJK) or M indicates metric ISO thread</p>	<p><b>R</b> – Right hand</p> <p><b>L</b> – Left hand</p>																										
<p><b>A</b> – Acme</p> <p><b>D</b> – API or NPT</p> <p><b>J</b> – UNJ thread</p> <p><b>T</b> – 60° V thread</p> <p><b>W</b> – 55° V Whitworth</p>	 <p>TopThread insert dimensions</p> <table border="1"> <thead> <tr> <th>insert size</th> <th>A mm</th> <th>T mm</th> </tr> </thead> <tbody> <tr><td>1</td><td>2,54</td><td>2,54</td></tr> <tr><td>2</td><td>5,56</td><td>3,81</td></tr> <tr><td>3</td><td>8,74</td><td>4,95</td></tr> <tr><td>4</td><td>11,51</td><td>6,48</td></tr> <tr><td>5</td><td>17,48</td><td>9,65</td></tr> <tr><td>6</td><td>11,51</td><td>9,73</td></tr> <tr><td>8</td><td>7,93</td><td>11,13</td></tr> </tbody> </table>		insert size	A mm	T mm	1	2,54	2,54	2	5,56	3,81	3	8,74	4,95	4	11,51	6,48	5	17,48	9,65	6	11,51	9,73	8	7,93	11,13		<ul style="list-style-type: none"> <li>• Threads per inch or pitch (for metric)</li> <li>• "A" or "B" type Buttress insert</li> <li>• Taper per foot – API threads</li> </ul>			
insert size	A mm	T mm																													
1	2,54	2,54																													
2	5,56	3,81																													
3	8,74	4,95																													
4	11,51	6,48																													
5	17,48	9,65																													
6	11,51	9,73																													
8	7,93	11,13																													
							<p><b>I</b> – Internal thread</p> <p><b>E</b> – External thread (used only if internal and external thread forms are different)</p> <p><b>M</b> – Multiple tooth</p> <p><b>K</b> – Standard chip control</p> <p><b>C</b> – Coarse pitch</p> <p><b>D</b> – Dryseal</p>																								
							<p style="text-align: center;">NJF      NDC-V-M      NTC</p>  <p style="text-align: center;">NA      NT      NT-K</p> 																								

Recommended Cutting Speeds • Metric

Material Group		Cutting Speed – vc m/min								
		TN6010			TN6025			THM		
		min	Start	max	min	Start	max	min	Start	max
P	0/1	140	175	210	130	140	150	90	95	100
	2	115	145	175	110	145	175	75	100	125
	3	115	145	175	110	145	175	75	100	125
	4	75	100	120	75	95	115	55	65	80
	5	105	140	170	100	125	145	70	85	100
	6	45	60	75	40	55	65	30	40	45
M	1	90	115	140	60	75	90	60	75	90
	2	55	70	90	40	50	55	50	60	75
	3	60	80	95	40	50	60	40	50	55
K	1	120	150	180	60	80	90	70	90	100
	2	120	150	180	60	75	85	50	65	80
	3	110	140	170	60	75	90	60	70	80
N	1	600	750	900	600	750	900	600	750	900
	2	535	685	835	535	685	835	500	650	800
	3	230	300	370	230	300	370	600	750	900
	4	135	180	225	135	180	225	500	650	800
	5	70	90	110	70	90	110	230	300	370
	6	445	565	690	445	565	690	150	200	250
	7	550	700	850	550	700	850	150	200	250
S	1	35	40	50	25	35	40	25	35	45
	2	20	20	30	15	20	20	20	30	35
	3	60	70	80	40	60	70	15	25	30
	4	30	35	45	20	30	35	10	15	20
H	1	15	30	60	-	-	-	-	-	-
	2	15	30	60	-	-	-	-	-	-
	3	15	30	60	-	-	-	-	-	-
	4	15	30	60	-	-	-	-	-	-

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

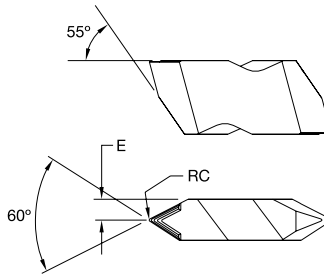
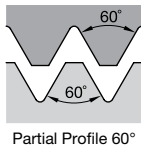
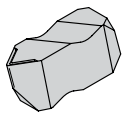
TURNING



## Recommended Cutting Speeds • Inch

Material Group		Cutting Speed – vc SFM								
		TN6010			TN6025			THM		
		min	Start	max	min	Start	max	min	Start	max
<b>P</b>	0/1	455	570	685	425	455	490	295	310	325
	2	380	475	575	360	465	575	245	320	405
	3	380	475	575	360	465	575	245	320	405
	4	245	320	390	235	300	365	170	210	260
	5	345	450	555	325	400	475	230	280	330
	6	145	195	245	130	180	210	95	130	145
<b>M</b>	1	295	390	490	195	245	295	180	220	270
	2	180	245	310	130	160	180	115	145	165
	3	195	260	320	130	165	195	225	295	325
<b>K</b>	1	390	490	590	195	255	295	195	255	295
	2	390	490	590	195	240	280	195	240	280
	3	360	455	555	195	245	295	195	245	295
<b>N</b>	1	1965	2460	2950	1965	2460	2950	1805	2295	2785
	2	1750	2240	2730	1750	2240	2730	1805	2295	2785
	3	750	980	1210	750	980	1210	1805	2295	2785
	4	445	590	730	445	590	730	1195	1555	1915
	5	230	295	360	230	295	360	620	820	1015
	6	1450	1855	2260	1450	1855	2260	490	655	820
	7	1805	2295	2785	1805	2295	2785	425	555	690
<b>S</b>	1	110	130	165	75	110	130	75	110	130
	2	55	65	90	40	55	65	60	85	105
	3	195	235	260	135	195	235	45	60	75
	4	95	115	145	65	95	115	35	50	55
<b>H</b>	1	60	100	200	-	-	-	-	-	-
	2	60	100	200	-	-	-	-	-	-
	3	60	100	200	-	-	-	-	-	-
	4	60	100	200	-	-	-	-	-	-

### Threading Inserts • NT-K



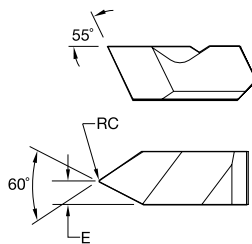
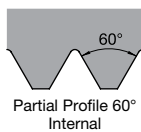
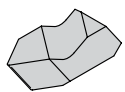
- first choice
- alternate choice

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

catalog number	RC		E		SSC	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI	TN6010	TN6025	THM
	mm	in	mm	in								
<b>right hand</b>												
NT2RK	0,10	.004	1,90	.075	2	0,70-3,0	1,25-3,5	8-36	7-20	3607651	3607837	—
NT4RK	0,16	.007	3,24	.128	4	1,25-6,25	2,0-6,25	4-20	4-12	—	3607846	—
NT3RK	0,17	.007	2,49	.098	3	1,25-4,0	2,0-5,0	6-20	5-12	3607643	3607824	—
<b>left hand</b>												
NT2LK	0,10	.004	1,90	.075	2	0,70-3,0	1,25-3,5	8-36	7-20	3607674	3607833	—
NT3LK	0,17	.007	2,49	.098	3	1,25-4,0	2,0-5,0	6-20	5-12	3607645	3607828	—

NOTE: SSC = To correspond with the SSC on the toolholder.

### Threading Inserts • NT-1L



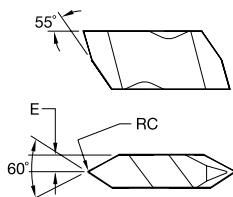
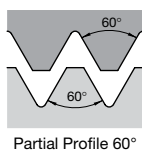
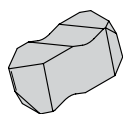
- first choice
- alternate choice

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

catalog number	RC		E		SSC	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI	TN6010	TN6025	THM
	mm	in	mm	in								
NT1L	0,08	.003	1,09	.043	1	—	1,0-2,0	—	12-24	3636551	3636555	—

NOTE: SSC = To correspond with the SSC on the toolholder.

## Threading Inserts • NT



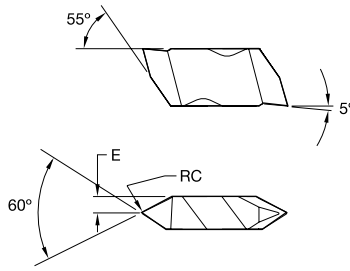
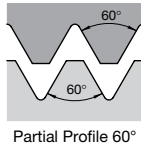
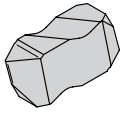
- first choice
- alternate choice

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

catalog number	RC		E		SSC	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI	TN6010	TN6025	THM
	mm	in	mm	in						3607647	3607647	3607647
<b>right hand</b>												
NT2R	0,10	.004	1,90	.075	2	0,70-3,0	1,25-3,5	8-36	7-20	3607647	3607647	3607647
NT3R	0,17	.007	2,49	.098	3	1,25-4,0	2,0-5,0	6-20	5-12	3607630	3607825	3607825
NT4R	0,17	.007	3,25	.128	4	1,25-6,25	2,0-6,25	4-20	4-12	3607676	3607834	3607834
<b>left hand</b>												
NT2L	0,10	.004	1,90	.075	2	0,70-3,0	1,25-3,5	8-36	7-20	3607675	3607835	3607835
NT3L	0,17	.007	2,49	.098	3	1,25-4,0	2,0-5,0	6-20	5-12	3607532	3607826	3607826
NT4L	0,17	.007	3,25	.128	4	1,25-6,25	2,0-6,25	4-20	4-12	3607849	3607849	3607849

NOTE: SSC = To correspond with the SSC on the toolholder.

Threading Inserts • NTP



- first choice
- alternate choice

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

catalog number	RC		E		SSC	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI	TN6010	TN6025	THM
	mm	in	mm	in								
<b>right hand</b>												
NTP2R	0,10	.004	1,91	.075	2	0,70-3,0	1,25-3,5	8-36	7-20	3607677	3607841	●
NTP3R	0,17	.007	2,49	.098	3	1,25-4,0	2,0-5,0	6-20	5-12	3607644	3607823	●
NTP4R	0,17	.007	3,25	.128	4	1,25-6,25	2,0-6,25	4-20	4-12	3607839	3607841	○
<b>left hand</b>												
NTP2L	0,10	.004	1,91	.075	2	0,70-3,0	1,25-3,5	8-36	7-20	3607678	3607840	●
NTP3L	0,17	.007	2,49	.098	3	1,25-4,0	2,0-5,0	6-20	5-12	3607650	3607831	○

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

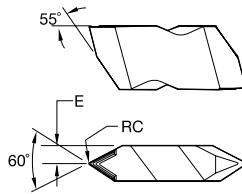
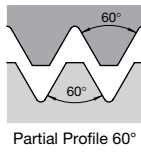
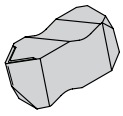
SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

## Threading Inserts • NT-CK



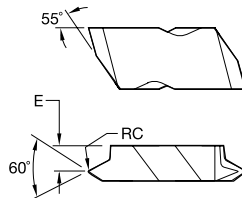
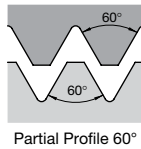
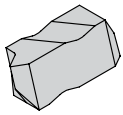
- first choice
- alternate choice

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

catalog number	RC		E		SSC	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI	TN6010	TN6025	THM
	mm	in	mm	in								
<b>NT3RCK</b>	0,34	.014	2,46	.097	3	2,5-4,0	4,0	6-11	6	3607838		

NOTE: SSC = To correspond with the SSC on the toolholder.

## Threading Inserts • NTF



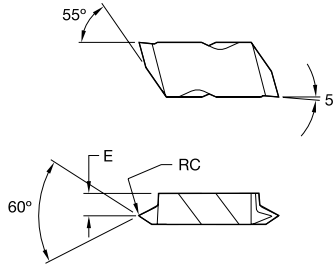
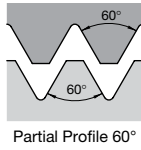
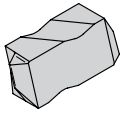
- first choice
- alternate choice

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

catalog number	RC		E		SSC	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI	TN6010	TN6025	THM
	mm	in	mm	in								
<b>NTF2R</b>	0,08	.003	2,79	.110	2	0,60-1,75	1,0-2,0	14-44	12-24	3607673	3607852	
<b>NTF3R</b>	0,08	.003	3,58	.141	3	0,60-2,5	1,0-2,5	10-44	9-24	3607531	3607830	
<b>NTF3L</b>	0,08	.003	3,58	.141	3	0,60-2,5	1,0-2,5	10-44	9-24	3607652	3607832	

NOTE: SSC = To correspond with the SSC on the toolholder.

### Threading Inserts • NTK



- first choice
- alternate choice

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

catalog number	RC		E		SSC	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI	TN6010	TN6025	THM
	mm	in	mm	in						TN6010	TN6025	THM
<b>right hand</b>												
NTK2R	0,08	.003	2,79	.110	2	0,60-1,75	1,0-2,0	14-44	12-24	●	●	●
NTK3R	0,08	.003	3,58	.141	3	0,60-2,50	1,0-2,5	10-44	9-24	●	●	●
<b>left hand</b>												
NTK3L	0,08	.003	3,58	.141	3	0,60-2,50	1,0-2,5	10-44	9-24	●	●	●

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

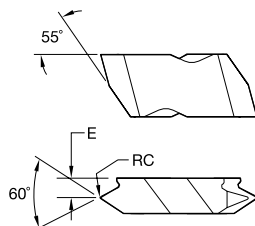
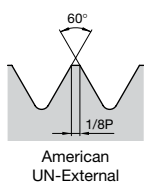
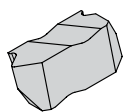
SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

## Threading Inserts • NTC-E



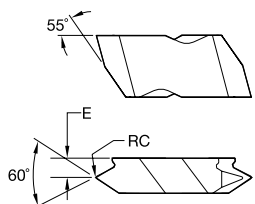
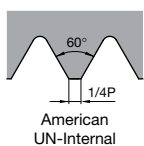
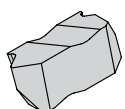
- first choice
- alternate choice

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

catalog number	RC		E		SSC	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI	TN6010	TN6025	THM
	mm	in	mm	in								
<b>right hand</b>												
<b>NTC3R16E</b>	0,19	.008	3,76	.148	3	—	—	16	—	—	3636557	—
<b>NTC3R14E</b>	0,22	.009	3,76	.148	3	—	—	14	—	3636554	—	—
<b>NTC3R12E</b>	0,25	.010	3,76	.148	3	—	—	12	—	3636549	3636562	—

NOTE: SSC = To correspond with the SSC on the toolholder.

## Threading Inserts • NTC-I



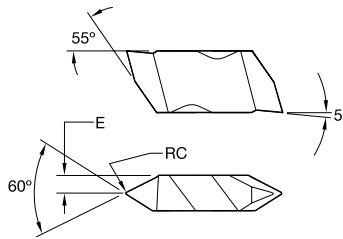
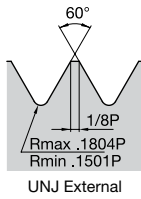
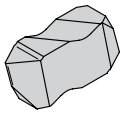
- first choice
- alternate choice

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

catalog number	RC		E		SSC	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI	TN6010	TN6025	THM
	mm	in	mm	in								
<b>left hand</b>												
<b>NTC3L12I</b>	0,10	.004	3,76	.148	3	—	—	—	12	—	3636556	—

NOTE: SSC = To correspond with the SSC on the toolholder.

### Threading Inserts • NJP



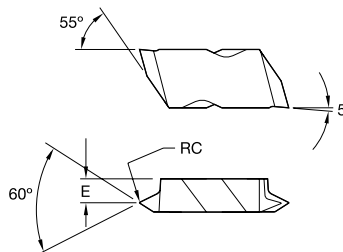
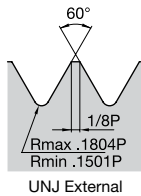
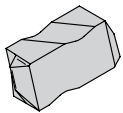
- first choice
- alternate choice

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

catalog number right hand	RC		E		SSC	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI	TN6010	TN6025	THM
	mm	in	mm	in								
NJP3014R12	0,33	.013	2,49	.098	3	—	—	12	—	3607850	—	—

NOTE: SSC = To correspond with the SSC on the toolholder.

### Threading Inserts • NJK



- first choice
- alternate choice

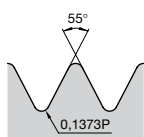
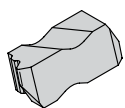
P	●	●	●	●
M	●	●	●	●
K	●	●	○	●
N	●	●	○	○
S	●	●	●	○
H	○	○	○	○

catalog number right hand	RC		E		SSC	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI	TN6010	TN6025	THM
	mm	in	mm	in								
NJK3008R20	0,20	.008	3,58	.141	3	—	—	20	—	3607648	—	—

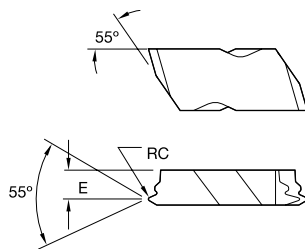
NOTE: SSC = To correspond with the SSC on the toolholder.



## Threading Inserts • NWC-E



Whitworth BSW,  
BSP-External



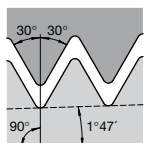
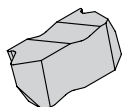
- first choice
- alternate choice

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

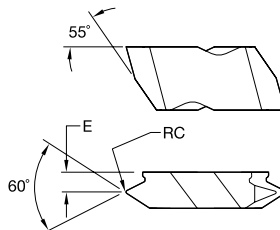
catalog number	RC		E		SSC	TPI	TPF	TN6010	TN6025	THM
	mm	in	mm	in						
<b>right hand</b>										
NWC3R14E	0,24	.009	3,43	.135	3	14	—	—	—	—
NWC3R11E	0,30	.012	3,43	.135	3	11	—	—	—	—

NOTE: SSC = To correspond with the SSC on the toolholder.

## Threading Inserts • NDC-RD



API Round



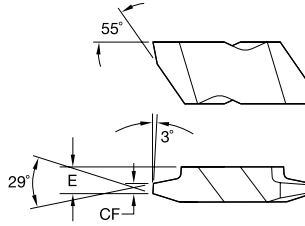
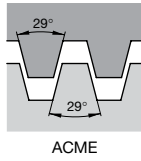
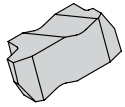
- first choice
- alternate choice

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

catalog number	RC		E		SSC	TPI	TPF	TN6010	TN6025	THM
	mm	in	mm	in						
<b>right hand</b>										
NDC38RDR75	0,43	.017	3,18	.125	3	8	.750	—	—	—
<b>left hand</b>										
NDC310RDL75	0,36	.014	3,18	.125	3	10	.750	—	—	—
NDC38RDL75	0,43	.017	3,18	.125	3	8	.750	—	—	—

NOTE: SSC = To correspond with the SSC on the toolholder.

Threading Inserts • NA



- first choice
- alternate choice

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

catalog number	CF		E		SSC	TPI	TN6010	TN6025	THM
	mm	in	mm	in					
<b>right hand</b>									
NA3R8	1,04	.041	3,79	.149	3	8	●	●	●
NA3R6	1,44	.057	3,79	.149	3	6	●	●	●
NA3R4	2,22	.088	3,38	.133	3	4	●	●	●
NA4R4	2,22	.088	5,13	.202	4	4	●	●	●
NA6R3	3,01	.118	7,19	.283	6	3	●	●	●
NA6R2	4,58	.180	7,19	.283	6	2	●	●	●
<b>left hand</b>									
NA3L8	1,04	.041	3,79	.149	3	8	●	●	●
NA3L6	1,44	.057	3,79	.149	3	6	●	●	●
NA3L4	2,22	.088	3,38	.133	3	4	●	●	●
NA4L4	2,22	.088	5,13	.202	4	4	●	●	●
NA6L3	3,01	.118	7,19	.283	6	3	●	●	●
NA6L2	4,58	.180	7,19	.283	6	2	●	●	●

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

INDEXABLE MILLING

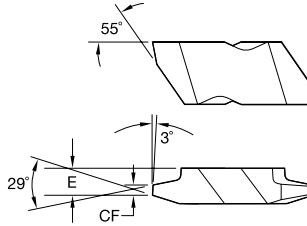
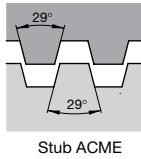
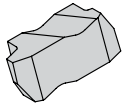
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## Threading Inserts • NAS



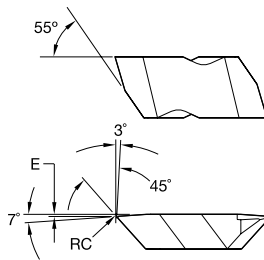
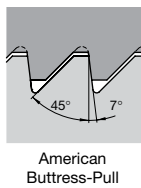
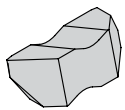
- first choice
- alternate choice

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

catalog number	CF		E		SSC	TPI	TN6010	TN6025	THM
	mm	in	mm	in					
<b>right hand</b>									
NAS3R8	1,21	.048	3,79	.149	3	8		3607856	
<b>left hand</b>									
NAS3L8	1,21	.048	3,79	.149	3	8		3607845	
NAS3L6	1,66	.065	3,79	.149	3	6		3607829	

NOTE: SSC = To correspond with the SSC on the toolholder.

## Threading Inserts • NTB-B



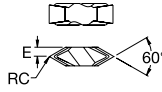
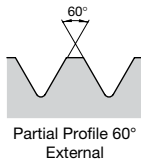
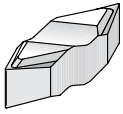
- first choice
- alternate choice

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

catalog number	RC		E		SSC	TPI	TPF	TN6010	TN6025	THM
	mm	in	mm	in						
<b>left hand</b>										
NTB3LB	0,17	.007	0,31	.012	3	8-16	—		3638563	

NOTE: SSC = To correspond with the SSC on the toolholder.

### Threading Inserts • NTU



- first choice
- alternate choice

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

catalog number right hand	RC		E		SSC	external thread pitch mm	internal thread pitch mm	external TPI	internal TPI	TN6010	TN6025	THM
	mm	in	mm	in								
NTU4R	0,11	.005	3,18	.125	4U	1,25-6,25	—	4-20	—	—	3811640	—

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

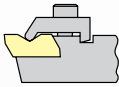

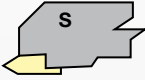
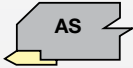
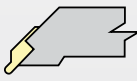
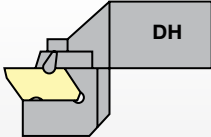

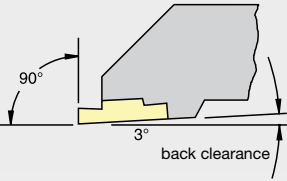
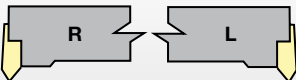
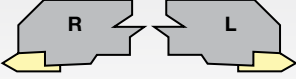
SOLID END MILLING

HOLE/MAKING

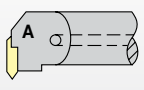
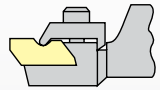


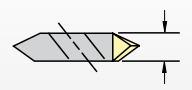
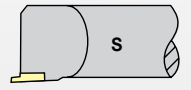

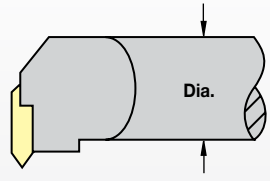
TAPPING

TURNING

## TopThread • Catalog Numbering System

N	S	R		16	3	D														
<b>Insert Holding Method</b>	<b>Insert Mounting Location</b>	<b>Hand of Tool</b>	<b>Drop Head</b>	<b>Shank Size</b>	<b>Insert Size</b>	<b>Qualified Surface and Length</b>														
<p><b>N – TopThread</b></p> 	<p><b>End mount</b></p>  <p><b>Side mount Offset</b></p>  <p><b>Side mount No offset for swiss machining</b></p>  <p><b>NRR undercut</b></p> 	<p><b>Hand of Tool</b></p>	<p><b>Drop Head</b></p> 	<p><b>Shank Size</b></p> <p>Inch: For shanks 5/8" square and larger, the number represents the number of sixteenths of width and height. For shanks under 5/8" square, the number of sixteenths of cross section is preceded by a zero. For rectangular holders, the first digit represents the number of eighths of width and the second digit the number of quarters of height, except for a toolholder 1-1/4" x 1-1/2", which is given the number 91.</p>	<p><b>Insert Size</b></p>  <table border="1"> <thead> <tr> <th>insert size</th> <th>W1</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>.150"</td> </tr> <tr> <td>3</td> <td>.195"</td> </tr> <tr> <td>4</td> <td>.255"</td> </tr> <tr> <td>5</td> <td>.380"</td> </tr> <tr> <td>6</td> <td>.383"</td> </tr> <tr> <td>8</td> <td>.438"</td> </tr> </tbody> </table>	insert size	W1	2	.150"	3	.195"	4	.255"	5	.380"	6	.383"	8	.438"	<p><b>Qualified Surface and Length</b></p> <p><b>A – Qualified back and end, 4" long</b></p> <p><b>B – Qualified back and end, 4.5" long</b></p> <p><b>C – Qualified back and end, 5" long</b></p> <p><b>D – Qualified back and end, 6" long</b></p> <p><b>E – Qualified back and end, 7" long</b></p>  <p><b>NOTE:</b> Holders are designed to locate insert inclined to 3° to provide back clearance down open side.</p>
insert size	W1																			
2	.150"																			
3	.195"																			
4	.255"																			
5	.380"																			
6	.383"																			
8	.438"																			
<p><b>End mount</b></p>  <p><b>Side mount</b></p> 																				

TopThread • Catalog Numbering System

<b>A</b>	<b>32</b>	<b>N</b>	<b>E</b>	<b>R</b>	<b>3</b>																
Bar Type	Bar Diameter	Insert Holding Method	Insert Location	Hand of Tool	Insert Size																
Steel with coolant		N – TopThread*	End mount	Right hand	W1																
																					
			Side mount	Left hand																	
																					
A two-digit number that indicates the bar diameter in 1/16" increments.		*Proprietary standard only.																			
																					
					<table border="1"> <thead> <tr> <th>insert size</th> <th>W1</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>.100"</td> </tr> <tr> <td>2</td> <td>.150"</td> </tr> <tr> <td>3</td> <td>.195"</td> </tr> <tr> <td>4</td> <td>.255"</td> </tr> <tr> <td>5</td> <td>.380"</td> </tr> <tr> <td>6</td> <td>.383"</td> </tr> <tr> <td>8</td> <td>.438"</td> </tr> </tbody> </table>	insert size	W1	1	.100"	2	.150"	3	.195"	4	.255"	5	.380"	6	.383"	8	.438"
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1	.100"																				
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INDEXABLE MILLING

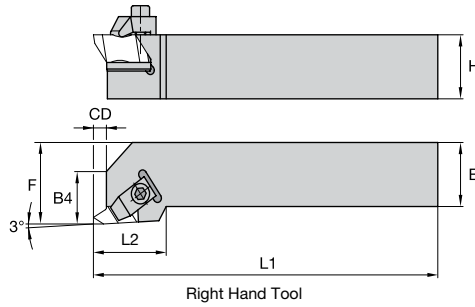
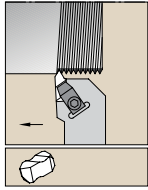
SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

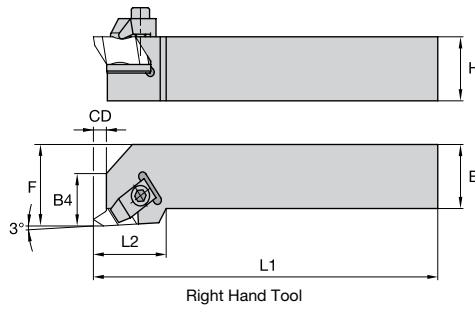
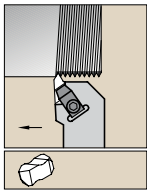
Integral Toolholders • NS



order number	catalog number	SSC	H	B	F	L1	L2	B4	CD	gage insert
<b>right hand</b>										
3632147	NSR062	2	.375	.375	.562	2.50	.75	.35	.138	N.2R
3641660	NSR1212F2	2	.472	.474	.630	3.15	.75	.35	.138	N.2R
3639035	NSR082V	2	.500	.500	.750	3.50	.75	.35	.138	N.2R
3636542	NSR1616H2	2	.630	.630	.787	3.94	.75	.35	.138	N.2R
3639026	NSR122B	2	.750	.750	1.000	4.50	.75	.35	.138	N.2R
3638589	NSR2020K2	2	.787	.787	.984	4.92	.75	.35	.138	N.2R
3638590	NSR2525M2	2	.984	.984	1.260	5.91	.75	.35	.138	N.2R
3639025	NSR162C	2	1.000	1.000	1.250	5.00	.75	.35	.138	N.2R
3639027	NSR123A	3	.750	.750	1.000	4.00	1.25	.50	.210	N.3R
3639023	NSR123B	3	.750	.750	1.000	4.50	1.25	.50	.210	N.3R
3638588	NSR2020K3	3	.787	.787	.984	4.92	1.26	.50	.210	N.3R
3636536	NSR2525M3	3	.984	.984	1.260	5.91	1.26	.50	.210	N.3R
3638592	NSR163C	3	1.000	1.000	1.250	5.00	1.25	.50	.210	N.3R
3638591	NSR163D	3	1.000	1.000	1.250	6.00	1.25	.50	.210	N.3R
3639028	NSR203D	3	1.250	1.250	1.500	6.00	1.25	.50	.210	N.3R
3641666	NSR3232P3	3	1.260	1.260	1.575	6.69	1.26	.50	.210	N.3R
3636540	NSR2525M4	4	.984	.984	1.260	5.91	1.38	.54	.294	N.4R
3641669	NSR3232P4	4	1.260	1.260	1.575	6.69	1.38	.54	.294	N.4R
<b>left hand</b>										
3632145	NSL122B	2	.750	.750	1.000	4.50	.75	.35	.138	N.2L
3639045	NSL2020K2	2	.787	.787	.984	4.92	.75	.35	.138	N.2L
3639047	NSL2525M2	2	.984	.984	1.260	5.91	.75	.35	.138	N.2L
3632138	NSL162C	2	1.000	1.000	1.250	5.00	.75	.35	.138	N.2L
3632152	NSL123A	3	.750	.750	1.000	4.00	1.25	.50	.210	N.3L
3639032	NSL123B	3	.750	.750	1.000	4.50	1.25	.50	.210	N.3L
3639046	NSL2020K3	3	.787	.787	1.260	4.92	1.26	.50	.210	N.3L
3636539	NSL2525M3	3	.984	.984	1.260	5.91	1.26	.50	.210	N.3L
3639029	NSL163C	3	1.000	1.000	1.250	5.00	1.25	.50	.210	N.3L
3639024	NSL163D	3	1.000	1.000	1.250	6.00	1.25	.50	.210	N.3L
3639037	NSL203D	3	1.250	1.250	1.500	6.00	1.25	.50	.210	N.3L
3636544	NSL2525M4	4	.984	.984	1.260	5.91	1.38	.54	.294	N.4L

NOTE: F dimension measured over sharp point of insert.  
SSC = To correspond with the SSC on the insert.

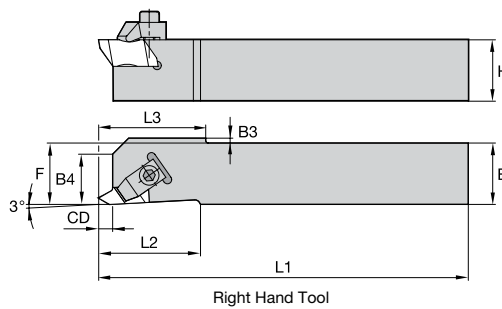
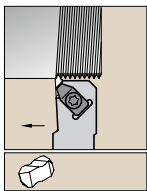
Integral Toolholders • NS • with Shim



order number	catalog number	SSC	H	B	F	L1	L2	B4	CD	gage insert
<b>right hand</b>										
3639031	NSR164C	2	1.000	1.000	1.250	5.00	1.38	.54	.294	N.4R
3639033	NSR164D	2	1.000	1.000	1.250	6.00	1.38	.54	.294	N.4R
3632153	NSR166D	3	1.000	1.000	1.250	6.00	1.38	.67	.334	N.6R
3637472	NSR206D	3	1.250	1.250	1.500	6.00	1.38	.67	.334	N.6R
3637539	NSR168D	4	1.000	1.000	1.250	6.00	1.25	.72	.225	N.8R
3637526	NSR854D	4	1.250	1.000	1.250	6.00	1.38	.54	.294	N.4R
<b>left hand</b>										
3639036	NSL204D	1	1.250	1.250	1.500	6.00	1.38	.54	.294	N.4L
3639040	NSL164D	6	1.000	1.000	1.250	6.00	1.38	.54	.294	N.4L

NOTE: F dimension measured over sharp point of insert.  
SSC = To correspond with the SSC on the insert.

Integral Toolholders • NAS



order number	catalog number	SSC	H	B	F	L1	L2	B4	CD	B3	L3	gage insert
<b>right hand</b>												
3636529	NASR082D	2	.500	.500	.500	6.00	.75	.35	.138	—	—	N.2R
3639039	NASR102B	2	.625	.625	.625	4.50	.75	.35	.138	—	—	N.2R
3639042	NASR083D	3	.500	.500	.500	6.00	1.25	.50	.210	.125	1.32	N.3R
3636532	NASR103B	3	.625	.625	.625	4.50	1.25	—	.210	—	—	N.3R
<b>left hand</b>												
3636534	NASL082D	2	.500	.500	.500	6.00	.75	.35	.138	—	—	N.2L
3636524	NASL103B	3	.625	.625	.625	4.50	1.25	—	.210	—	—	N.3L

NOTE: F dimension measured over sharp point of insert.  
SSC = To correspond with the SSC on the insert.

INDEXABLE MILLING

SOLID END MILLING

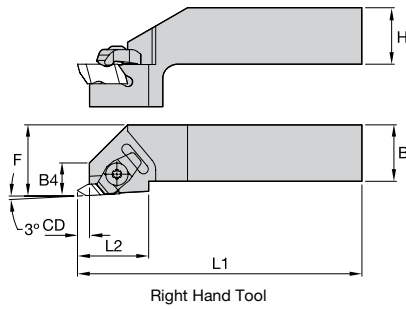
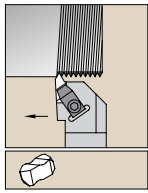
HOLEMAKING

TAPPING

TURNING



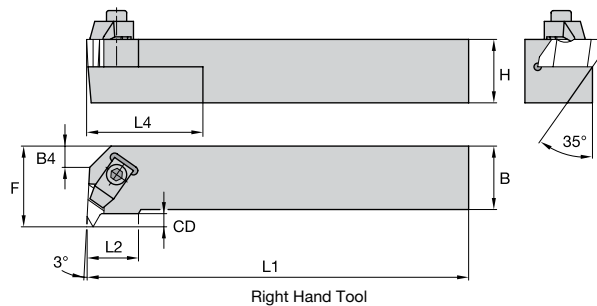
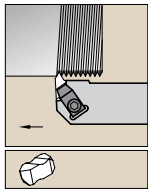
### Integral Toolholders • NS-DH



order number	catalog number	SSC	H	B	F	L1	L2	B4	CD	gage insert
<b>right hand</b>										
3637528	NSRDH163D	3	1.000	1.000	1.250	6.00	1.25	.58	.210	N.3R

NOTE: F dimension measured over sharp point of insert.  
SSC = To correspond with the SSC on the insert.

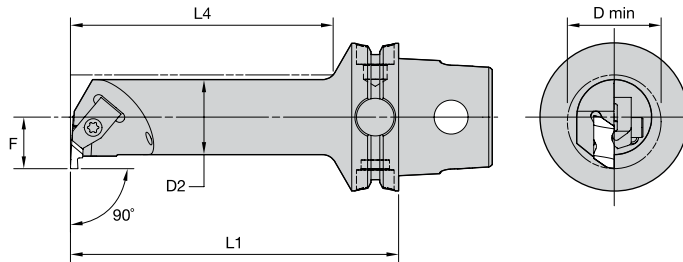
### Integral Toolholders • NE



order number	catalog number	SSC	H	B	F	L1	L2	L4	B4	CD	gage insert
<b>right hand</b>											
3637486	NER162C	2	1.000	1.000	1.250	5.00	.50	1.00	.41	.138	N.2L
3632133	NER123B	3	.750	.750	1.125	4.50	.75	2.00	—	.210	N.3L
3639038	NER163C	3	1.000	1.000	1.250	5.00	.75	2.00	—	.210	N.3L
3639030	NER163D	3	1.000	1.000	1.250	6.00	.75	2.00	—	.210	N.3L
3639043	NER164D	4	1.000	1.000	1.375	6.00	.75	2.00	—	.294	N.4L
3637522	NER244D	4	1.500	1.500	2.000	6.00	.75	2.00	.65	.294	N.4L
<b>left hand</b>											
3637503	NEL122B	2	.750	.750	1.000	4.50	.50	1.00	.29	.138	N.2R
3637500	NEL162C	2	1.000	1.000	1.250	5.00	.50	1.00	.41	.138	N.2R
3632155	NEL163C	3	1.000	1.000	1.250	5.00	.75	2.00	—	.210	N.3R
3639041	NEL163D	3	1.000	1.000	1.250	6.00	.75	2.00	—	.210	N.3R
3632159	NEL204D	4	1.250	1.250	1.625	6.00	.75	2.00	.27	.294	N.4R

NOTE: F dimension measured over sharp point of insert.  
SSC = To correspond with the SSC on the insert.

Cutting Units • KM40TS • Steel • NE90° • Metric



order number	catalog number	D2		D min		F		L4		L1		gage insert	kg	lbs
		mm	in	mm	in	mm	in	mm	in	mm	in			
<b>right hand</b>														
3955481	KM40TSS12ENER2	12	.472	19	.73	11	.433	42	1.65	70	2.756	NG2L	0,27	.58
3955483	KM40TSS16FNER2	16	.630	20	.79	11	.433	56	2.21	80	3.150	NG2L	0,28	.62
3955485	KM40TSS20GNER2	20	.787	25	.98	13	.512	70	2.76	90	3.543	NG2L	0,35	.76
3955487	KM40TSS25ENER2	25	.984	32	1.26	17	.669	55	2.17	70	2.756	NG2L	0,34	.75
3955491	KM40TSS25ENER3	25	.984	34	1.34	17	.669	55	2.17	70	2.756	NG3L	0,35	.77
3955489	KM40TSS25HNER2	25	.984	32	1.26	17	.669	75	2.95	100	3.937	NG2L	0,49	1.08
3955493	KM40TSS25HNER3	25	.984	34	1.34	17	.669	75	2.95	100	3.937	NG3L	0,49	1.09
3955497	KM40TSS32GNER3	32	1.260	40	1.57	22	.866	76	2.99	90	3.543	NG3L	0,55	1.21
3955495	KM40TSS32JNER3	32	1.260	40	1.57	22	.866	96	3.78	110	4.331	NG3L	0,67	1.48
<b>left hand</b>														
3955480	KM40TSS12ENEL2	12	.472	19	.73	11	.433	42	1.65	70	2.756	NG2R	0,27	.59
3955482	KM40TSS16FNEL2	16	.630	20	.79	11	.433	56	2.21	80	3.150	NG2R	0,28	.62
3955484	KM40TSS20GNEL2	20	.787	25	.98	13	.512	70	2.76	90	3.543	NG2R	0,35	.76
3955486	KM40TSS25ENEL2	25	.984	32	1.26	17	.669	55	2.17	70	2.756	NG2R	0,34	.75
3955490	KM40TSS25ENEL3	25	.984	34	1.34	17	.669	55	2.17	70	2.756	NG3R	0,35	.77
3955488	KM40TSS25HNEL2	25	.984	32	1.26	17	.669	75	2.95	100	3.937	NG2R	0,49	1.08
3955492	KM40TSS25HNEL3	25	.984	34	1.34	17	.669	75	2.95	100	3.937	NG3R	0,49	1.09
3955496	KM40TSS32GNEL3	32	1.260	40	1.57	22	.866	76	2.99	90	3.543	NG3R	0,55	1.21
3955494	KM40TSS32JNEL3	32	1.260	40	1.57	22	.866	96	3.78	110	4.331	NG3R	0,67	1.48

INDEXABLE MILLING

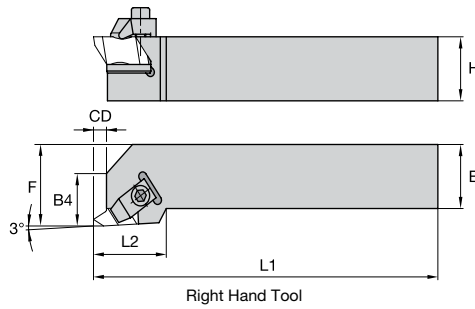
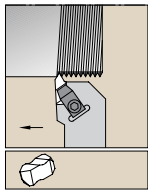
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

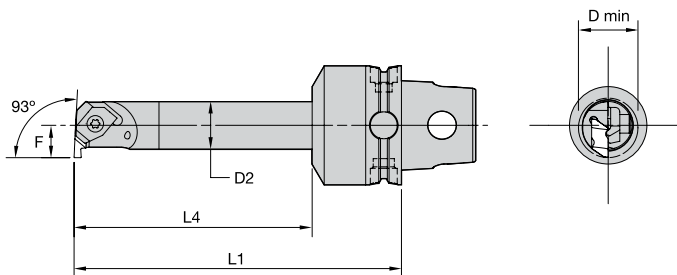
## Integral Toolholders • NS



order number	catalog number	SSC	H	B	F	L1	L2	B4	CD	gage insert
<b>right hand</b>										
3632147	NSR062	2	10	10	14	64	19	9	3,5	N.2R
3639035	NSR082V	2	13	13	19	89	19	9	3,5	N.2R
3639026	NSR122B	2	19	19	25	114	19	9	3,5	N.2R
3639025	NSR162C	2	25	25	32	127	19	9	3,5	N.2R
3639027	NSR123A	3	19	19	25	102	32	13	5,3	N.3R
3639023	NSR123B	3	19	19	25	114	32	13	5,3	N.3R
3638592	NSR163C	3	25	25	32	127	32	13	5,3	N.3R
3638591	NSR163D	3	25	25	32	152	32	13	5,3	N.3R
3639028	NSR203D	3	32	32	38	152	32	13	5,3	N.3R
<b>left hand</b>										
3632145	NSL122B	2	19	19	25	114	19	9	3,5	N.2L
3632138	NSL162C	2	25	25	32	127	19	9	3,5	N.2L
3632152	NSL123A	3	19	19	25	102	32	13	5,3	N.3L
3639032	NSL123B	3	19	19	25	114	32	13	5,3	N.3L
3639029	NSL163C	3	25	25	32	127	32	13	5,3	N.3L
3639024	NSL163D	3	25	25	32	152	32	13	5,3	N.3L
3639037	NSL203D	3	32	32	38	152	32	13	5,3	N.3L

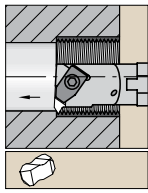
NOTE: F dimension measured over sharp point of insert.  
SSC = To correspond with the SSC on the insert.

## Cutting Units • KM40TS • Carbide • NE90° • Metric

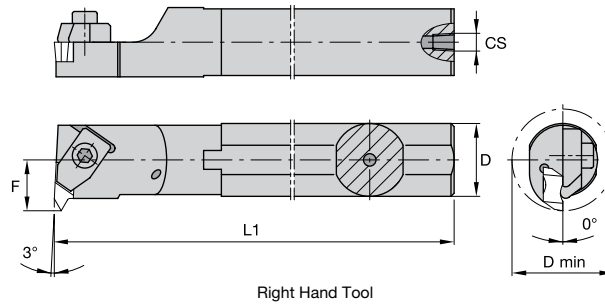


order number	catalog number	D2		D min		F		L4		L1		gage insert	kg	lbs
		mm	in	mm	in	mm	in	mm	in	mm	in			
<b>right hand</b>														
3951836	KM40TSE16JNER2	16	.630	20	.79	11	.433	80	3.15	110	4.331	NG2L	0,41	.90
<b>left hand</b>														
3951835	KM40TSE16JNEL2	16	.630	20	.79	11	.433	80	3.15	110	4.331	NG2R	0,41	.90

Integral I.D. Threading Boring Bars • A-NE



Steel shank with through coolant.

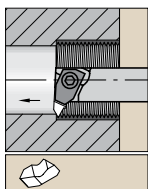


Right Hand Tool

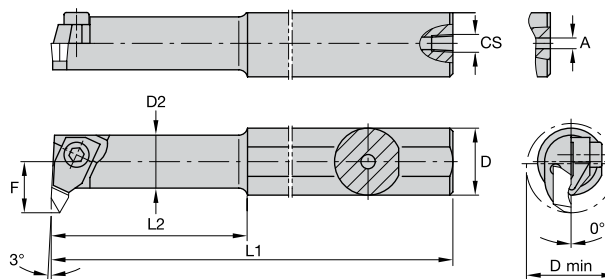
order number	catalog number	SSC	D	D min	F	L1	CS	gage insert
<b>right hand</b>								
3632117	A08NER2	2	.500	.730	.437	8	1/16-27 NPT	N.2L
3632114	A10SNER2	2	.625	1.000	.500	10	1/8-27 NPT	N.2L
3632118	A12SNER2	2	.750	1.125	.562	10	1/8-27 NPT	N.2L
3632130	A16TNER2	2	1.000	1.375	.688	12	1/4-18 NPT	N.2L
3632113	A16NER3	3	1.000	1.375	.688	12	1/4-18 NPT	N.3L
3632116	A20NER3	3	1.250	1.750	.875	14	1/4-18 NPT	N.3L
3632115	A24NER3	3	1.500	2.000	1.000	14	1/4-18 NPT	N.3L
3632122	A32NER3	3	2.000	2.500	1.250	16	1/4-18 NPT	N.3L
3632123	A28NER4	4	1.750	2.500	1.250	14	1/4-18 NPT	N.4L
<b>left hand</b>								
3632131	A08NEL2	2	.500	.730	.437	8	1/16-27 NPT	N.2R
3632127	A10SNEL2	2	.625	1.000	.500	10	1/8-27 NPT	N.2R
3632126	A12SNEL2	2	.750	1.125	.562	10	1/8-27 NPT	N.2R
3632142	A16NEL2	2	1.000	1.375	.688	12	1/4-18 NPT	N.2R
3632120	A16NEL3	3	1.000	1.375	.688	12	1/4-18 NPT	N.3R
3632124	A20NEL3	3	1.250	1.750	.875	14	1/4-18 NPT	N.3R
3632128	A24NEL3	3	1.500	2.000	1.000	14	1/4-18 NPT	N.3R
3632141	A28NEL4	4	1.750	2.500	1.250	14	1/4-18 NPT	N.4R
3632149	A32NEL4	4	2.000	2.750	1.375	16	1/4-18 NPT	N.4R

NOTE: F dimension measured over sharp point of insert.  
SSC = To correspond with the SSC on the insert.

Integral I.D. Threading Boring Bars • A-NE-1



Necked steel shank with through coolant.



Right Hand Tool

order number	catalog number	SSC	D	D min	D2	L1	L2	F	A	CS	gage insert
<b>right hand</b>											
3632121	A06NER1	1	.375	.440	.312	6	1	.258	.125	—	N.1L
3632119	A08NER1	1	.500	.440	.310	8	1	.258	.094	1/16-27 NPT	N.1L

NOTE: F dimension measured over sharp point of insert.  
SSC = To correspond with the SSC on the insert.

# Laydown Threading

## External and Internal Threading

The Laydown Threading System offers an extensive range of inserts and toolholders, the ideal for all of threading requirements.

- Four insert sizes available to cover a wide range of thread-making operations.
- Ideal for high-helix/multi-start threads and single-point threading in small-diameter bores.
- Maximized tool life and low-profile design for unhindered chip flow and superior performance.
- Precision ground inserts to provide accurate thread forms and indexing.
- TN6025™ premium PVD TiAlN-coated grade outperforms conventional PVD grades.
- Partial- and full-profile insert options available for all common thread forms.



## LAYDOWN THREADING

### RELIABLE


With the WIDIA™ Laydown Threading System, you experience reliable countersunk screw locking for unhindered chip flow and precise insert positioning accuracy.

### PRODUCTIVE

Laydown insert technology, with its wide range of available tools and inserts, guarantees increased tool life, minimized built-up edges, and precise cuts of most common materials.

# EXTERNAL AND INTERNAL THREADING

## INSERTS

FIRST CHOICE	INSERT STYLE	SPEED SELECTION — M/MIN	MATERIALS
TN6025	 Precision ground	40–200 (130–650)	<b>P</b>
		40–135 (130–450)	<b>M</b>
		60–145 (200–475)	<b>K</b>
		50–360 (160–1150)	<b>N</b>
		10–100 (35–330)	<b>S</b>

## APPLICATIONS



THREADING

I.D. INTERNAL  
THREADING

## INDUSTRY

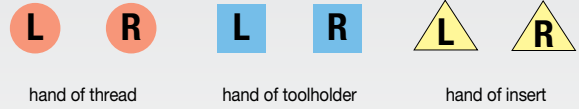


## Insert Selection Guide

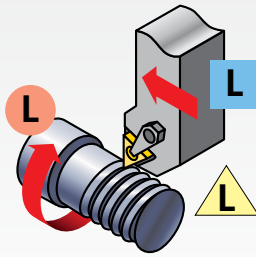
### Step 1 • Select Threading Method and Hand of Tooling

**Required Information:**

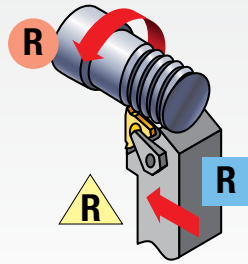
- External/internal operation.
- Spindle rotation/hand of thread.
- Feed direction.



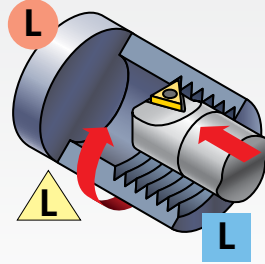
**Feed direction toward the chuck • standard helix • RECOMMENDED**



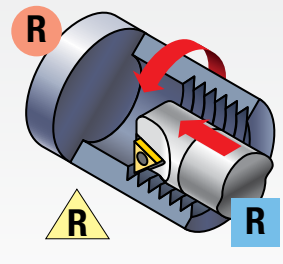
external left-hand thread



external right-hand thread

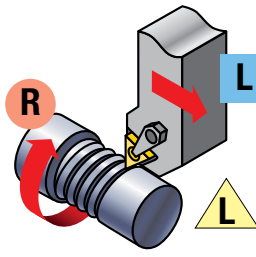


internal left-hand thread

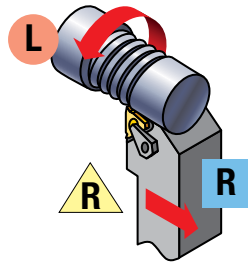


internal right-hand thread

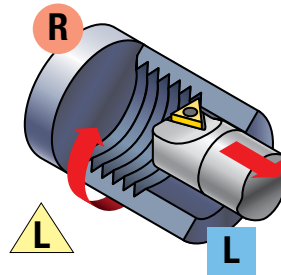
**Feed direction away from the chuck • reverse helix\***



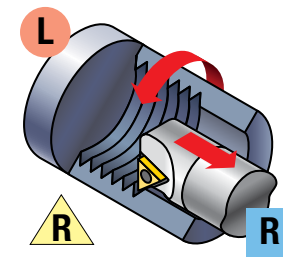
external right-hand thread



external left-hand thread



internal right-hand thread



internal left-hand thread

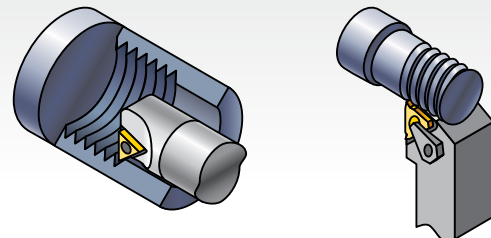
\*Negative shim required

### Step 2 • Select Holder from Catalog Page

**Required Information:**

- External/internal operation.
- Minimum bore diameter (for internal operations).
- Hand of tool.
- Insert size (gage insert).

Select the appropriate holder for the insert size and hand:



The insert size must match the gage insert size of your toolholder selection:

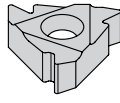
catalog number	gage insert	minimum bore diameter	shim
S0812LSER2	2IRA60	.650"	—
S2020LSER3	3IR...	1.45"	SM-Y13



## Insert Selection Guide

### Step 3 • Choose Insert for Application

- Select cresting inserts for fully controlled thread form including diameter.
- Cresting inserts eliminate the need for deburring and are optimized for the best tool life at that pitch.
- Non-cresting partial profile inserts offer the flexibility to cut a variety of thread pitches with one insert.
- Note insert size for toolholder selection.

	insert size	catalog number	TN6025
	11	2IRA60	•
	16	3IRAG60	•

See threading insert overview on page E444.

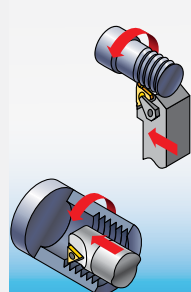
### Step 4 • Select Appropriate Shim

#### Required Information:

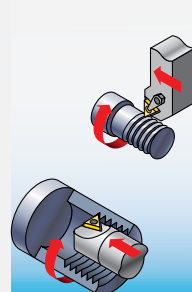
- Thread form (TPI or pitch).
- Pitch diameter.
- Helix method (hand of tool, feed direction, hand of thread).
- Number of starts.

Select the proper shim: SMYE... for external RH or internal LH  
SMYI... for internal RH or external LH

**RH thread/RH tooling**



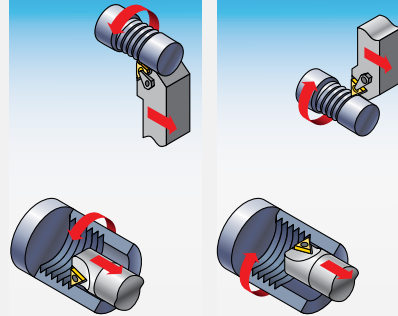
**LH thread/LH tooling**



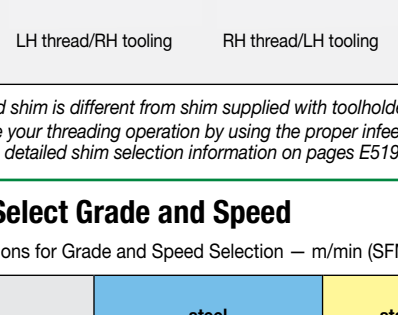
**Laydown Threading Shim Selection Table • Inch**

insert size	external		internal		external		internal	
	SMYE	SMYI	SMYE	SMYI	SMYE	SMYI	SMYE	SMYI
TPI	pitch (mm)		pitch diameter (mm)		pitch diameter (mm)		pitch diameter (mm)	
11	1.1811	1.1811	1.1811	1.1811	1.1811	1.1811	1.1811	1.1811
16	1.5775	1.5775	1.5775	1.5775	1.5775	1.5775	1.5775	1.5775

**Feed direction toward the chuck • standard helix • RECOMMENDED**



**Feed direction away from the chuck • reverse helix**




If recommended shim is different from shim supplied with toolholder, order shim separately.

NOTE: Optimize your threading operation by using the proper infeed angle and the recommended infeed values. See the Technical Section on pages E506–E507. Also see detailed shim selection information on pages E519–E520.

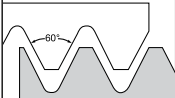
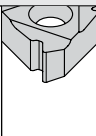
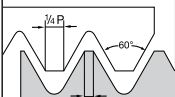
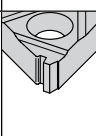
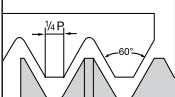
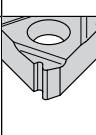
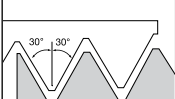
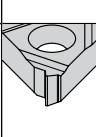
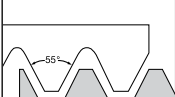
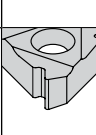
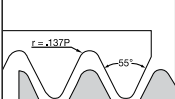
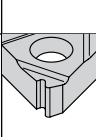
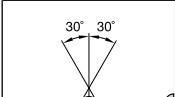
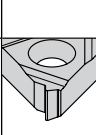
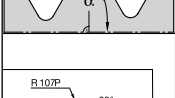
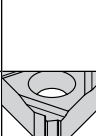
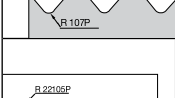
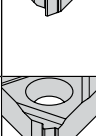
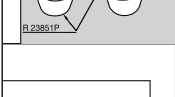
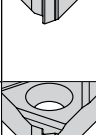
### Step 5 • Select Grade and Speed

Recommendations for Grade and Speed Selection — m/min (SFM)

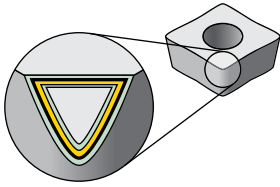
workpiece material	steel	stainless steel	cast iron	non-ferrous metals	high-temp alloys
insert style	 precision ground				
first choice	TN6025 40–200 (130–650)	TN6025 40–135 (130–450)	TN6025 60–145 (200–475)	TN6025 50–360 (160–1150)	TN6025 10–100 (35–330)



## Insert Overview

style		thread profile	standard	tolerance class	cresting	application	page(s)
	flat top						
		Partial profile 60°	—	—	N	General use for 60° thread forms, such as ISO and UN, where non-cresting inserts are desired to cut a variety of pitches.	E477–E478
		Metric ISO	ISO R262, DIN 13	6g/6H	Y	Widely used metric 60° V-form for all industries.	E479–E482
		American UN	ANSI B1.1:74	2A/2B	Y	Widely used inch-based 60° V-form for all industries.	E483–E484
		NPT	ANSI/ASME B1.20.1S1983	Standard NPT	N	National Pipe Thread standard 60° thread form for pipe fittings.	E485
		Partial profile 55°	—	—	N	General use for 55° thread forms such as Whitworth, BSW, and BSP where non-cresting inserts are desired to cut a variety of pitches.	E486–E487
		Whitworth, BSW, BSF, BSP	BS 84:1956, ISO 228/1:1982, DIN 259	Medium Class A	Y	Widely used 55° form for gas and water connections.	E488–E489
		API round	API STD. 5B:1979	Standard API RD	Y	60° V-form with large radius for casing, tubing, and line pipe in the oil and gas industry, including 8 and 10 round forms.	custom solution
		PG	DIN 404B0		Y	80° steel conduit thread.	custom solution
		Round	DIN 405	7e/7H	Y	Round thread form for tube fittings in the chemical and food industries.	E489–E490
		Trapez	DIN 103	7e/7H	N	30° truncated metric thread form for motion applications.	E491–E492

## Grades and Grade Descriptions

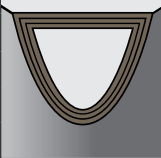


Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

- Reduce cycle times — high speed capability.
- Longer tool life — new multilayer coating provides better wear resistance.

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

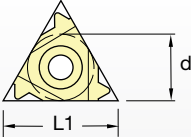
wear resistance ← → toughness

Grade	Coating	Grade Description	Performance Index													
				05	10	15	20	25	30	35	40	45				
TN6025	 HC-P25	PVD-TiAlN nano-multilayer coated carbide. General-purpose machining for steels, stainless steels, cast irons, non-ferrous materials, and difficult-to-machine materials. Recommended at low to medium cutting speeds when higher toughness is required.	P													
			M													
			K													
			N													
			S													

### Laydown Threading Thread Form Guide

- All Laydown Threading inserts are precision ground to provide accurate thread forms and indexing.
- Both cresting and non-cresting partial profile inserts are specifically designed for either external or internal threading operations.
- Cresting inserts provide a fully controlled thread form, including major, minor, root, and crest for a given pitch. The need for deburring is eliminated and the inserts are optimized for the best tool life at that pitch.
- Non-cresting partial profile inserts offer the flexibility to cut a variety of thread pitches with one insert.
- Right-hand Laydown Threading toolholders use right-hand inserts. Left-hand Laydown Threading toolholders use left-hand inserts.
- Right-hand Laydown Threading boring bars use right-hand inserts. Left-hand Laydown Threading boring bars use left-hand inserts.

## Catalog Numbering System

3	E	R	A	ISO															
Insert Size	Insert Type	Hand of Insert	Thread Pitch	Thread Profile	Number of Teeth														
	<p><b>E</b> – External thread</p> <p><b>I</b> – Internal thread</p>	<p><b>R</b> – Right-hand thread</p> <p><b>L</b> – Left-hand thread</p>			<p>Single tooth profile – No symbol</p> <p>Multi-tooth profile – Number of teeth (cutting edge and symbol)</p> <p>Multi-tooth profile with two teeth – 2M</p>														
					<p><b>55</b> Partial Profile 55°</p> <p><b>60</b> Partial Profile 60°</p> <p><b>ISO</b> ISO Metric 60°</p> <p><b>TR</b> Trapez DIN 103°</p> <p><b>UN</b> ISO Inch/American UN 60°</p> <p><b>W</b> Whitworth 55°</p> <p><b>NPT</b> American National Pipe Thread 60°</p> <p><b>RD</b> Round</p> <p><b>PG</b> Steel Conduit</p> <p><b>APIRD</b> API Round</p>														
		Partial profile inserts																	
		<table border="1"> <thead> <tr> <th>symbol</th> <th>mm</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>0,5–1,5</td> </tr> <tr> <td>AG</td> <td>0,5–3,0</td> </tr> <tr> <td>G</td> <td>1,7–3,0</td> </tr> <tr> <td>N</td> <td>3,5–5,0</td> </tr> <tr> <td>Q</td> <td>5,5–6,0</td> </tr> </tbody> </table>	symbol	mm	A	0,5–1,5	AG	0,5–3,0	G	1,7–3,0	N	3,5–5,0	Q	5,5–6,0					
symbol	mm																		
A	0,5–1,5																		
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Q	5,5–6,0																		
		Full profile inserts																	
		<table border="1"> <thead> <tr> <th>symbol</th> <th>mm</th> </tr> </thead> <tbody> <tr> <td>Actual TPI</td> <td>0,5–0,4</td> </tr> </tbody> </table>	symbol	mm	Actual TPI	0,5–0,4													
symbol	mm																		
Actual TPI	0,5–0,4																		
																			
	<table border="1"> <thead> <tr> <th>symbol</th> <th>d</th> <th>L1</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>0.250</td> <td>11</td> </tr> <tr> <td>3</td> <td>0.375</td> <td>16</td> </tr> <tr> <td>4</td> <td>0.500</td> <td>22</td> </tr> <tr> <td>5</td> <td>0.625</td> <td>27</td> </tr> </tbody> </table>	symbol	d	L1	2	0.250	11	3	0.375	16	4	0.500	22	5	0.625	27			
symbol	d	L1																	
2	0.250	11																	
3	0.375	16																	
4	0.500	22																	
5	0.625	27																	

## Recommended Cutting Speeds • Metric

		Cutting Speed – vc m/min		
Material Group		TN6025		
		min	Start	max
P	0/1	130	140	150
	2	110	145	175
	3	110	145	175
	4	75	95	115
	5	100	125	145
	6	40	55	65
M	1	60	75	90
	2	40	50	55
	3	40	50	60
K	1	60	80	90
	2	60	75	85
	3	60	75	90
N	1	600	750	900
	2	535	685	835
	3	230	300	370
	4	135	180	225
	5	70	90	110
	6	445	565	690
	7	550	700	850
S	1	25	35	40
	2	15	20	20
	3	40	60	70
	4	20	30	35

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

## Recommended Cutting Speeds • Inch

Material Group		Cutting Speed – vc SFM		
		TN6025		
		min	Start	max
P	0/1	425	455	490
	2	360	465	575
	3	360	465	575
	4	235	300	365
	5	325	400	475
	6	130	180	210
M	1	195	245	295
	2	130	160	180
	3	130	165	195
K	1	195	255	295
	2	195	240	280
	3	195	245	295
N	1	1965	2460	2950
	2	1750	2240	2730
	3	750	980	1210
	4	445	590	730
	5	230	295	360
	6	1450	1855	2260
	7	1805	2295	2785
S	1	75	110	130
	2	40	55	65
	3	135	195	235
	4	65	95	115

INDEXABLE MILLING

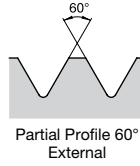
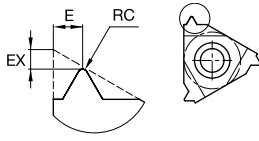
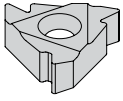
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

Threading Inserts • ER/L-60



- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	●
H	○

catalog number	RC		EX		E		SSC	thread pitch mm	TPI	TPF	TN6025
	mm	in	mm	in	mm	in					
<b>right hand</b>											
<b>3ERA60</b>	0,05	.002	0,8	.031	0,9	.035	3	0,50-1,50	16-48	—	2018214
<b>2ERA60</b>	0,05	.002	0,9	.035	0,8	.032	2	0,50-1,50	16-48	—	2007404
<b>3ERAG60</b>	0,08	.003	1,2	.047	1,7	.067	3	0,50-3,0	8-48	—	2018246
<b>3ERG60</b>	0,28	.011	1,2	.047	1,7	.067	3	1,75-3,0	8-14	—	2018222
<b>4ERN60</b>	0,53	.021	1,7	.067	2,5	.098	4	3,5-5,0	5-7	—	2018252
<b>left hand</b>											
<b>3ELAG60</b>	0,08	.003	1,2	.047	1,7	.067	3	0,50-3,0	8-48	—	2071904

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

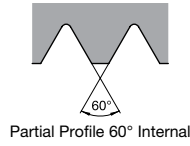
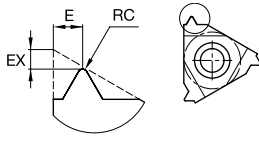
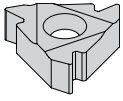
SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

## Threading Inserts • IR/L-60



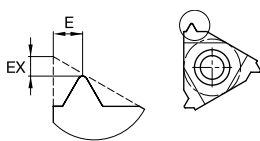
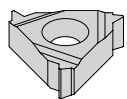
- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	●
H	○

catalog number	RC		EX		E		SSC	thread pitch mm	TPI	TPF	TN6025
	mm	in	mm	in	mm	in					
<b>right hand</b>											
<b>2IRA60</b>	0,05	.002	0,8	.031	0,9	.035	2	0,50-1,50	16-48	—	2018262
<b>3IRA60</b>	0,05	.002	0,8	.031	0,9	.035	3	0,50-1,50	16-48	—	2018272
<b>3IRAG60</b>	0,05	.002	1,2	.047	1,7	.067	3	0,50-3,0	8-48	—	2018284
<b>3IRG60</b>	0,15	.006	1,2	.047	1,7	.067	3	1,75-3,0	8-14	—	2018278
<b>5IRQ60</b>	0,30	.012	1,8	.071	2,7	.106	5	5,5-6,0	4-4.5	—	2018295
<b>4IRN60</b>	0,31	.012	1,7	.067	2,5	.098	4	3,5-5,0	5-7	—	2018290
<b>left hand</b>											
<b>2ILA60</b>	0,05	.002	0,8	.031	0,9	.035	2	0,50-1,50	16-48	—	2021656
<b>3ILAG60</b>	0,05	.002	1,2	.047	1,7	.067	3	0,50-3,0	8-48	—	2008275
<b>4ILN60</b>	0,31	.012	1,7	.067	2,5	.098	4	3,5-5,0	5-7	—	2100489

NOTE: SSC = To correspond with the SSC on the toolholder.

Threading Inserts • ER/L-ISO



- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	○
H	○

catalog number right hand	EX		E		SSC	thread pitch mm	TPI	TPF	TN6025
	mm	in	mm	in					
3ER05ISO	0,6	.024	0,4	.016	3	0,50	—	—	2018377
3ER07ISO	0,6	.024	0,6	.024	3	0,70	—	—	2018389
3ER075ISO	0,6	.024	0,6	.024	3	0,75	—	—	2018395
3ER08ISO	0,6	.024	0,6	.024	3	0,80	—	—	2018403
3ER10ISO	0,7	.027	0,7	.027	3	1,00	—	—	2018411
3ER125ISO	0,8	.031	0,9	.035	3	1,25	—	—	2018421
3ER15ISO	0,8	.031	1,0	.039	3	1,50	—	—	2018429
3ER175ISO	0,9	.035	1,2	.047	3	1,75	—	—	2018445
3ER20ISO	1,0	.039	1,3	.051	3	2,00	—	—	2018460
3ER25ISO	1,1	.043	1,5	.059	3	2,50	—	—	2018472
3ER30ISO	1,2	.047	1,6	.063	3	3,00	—	—	2008256

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

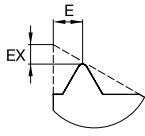
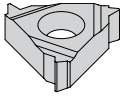
TAPPING

TURNING



## Threading Inserts • ER/L-ISO

(continued)



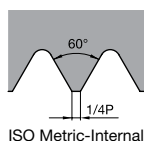
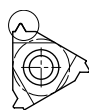
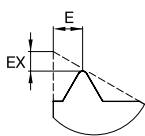
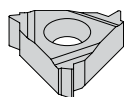
- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	●
H	○

catalog number	EX		E		SSC	thread pitch mm	TPI	TPF	2018495	2018501	2018508	2018517	2018522	2018528	2008187	3122015	2018435	2018466	
	mm	in	mm	in															
4ER35ISO	1,6	.063	2,3	.090	4	3,50	—	—	●	●	●	●	●	●	●	●	●	●	●
4ER40ISO	1,6	.063	2,3	.090	4	4,00	—	—	●	●	●	●	●	●	●	●	●	●	●
4ER45ISO	1,7	.067	2,4	.094	4	4,50	—	—	●	●	●	●	●	●	●	●	●	●	●
4ER50ISO	1,7	.067	2,5	.098	4	5,00	—	—	●	●	●	●	●	●	●	●	●	●	●
5ER55ISO	2,7	.106	1,9	.075	5	5,50	—	—	●	●	●	●	●	●	●	●	●	●	●
5ER60ISO	2,9	.114	2,0	.079	5	6,00	—	—	●	●	●	●	●	●	●	●	●	●	●
left hand																			
3EL10ISO	0,7	.027	0,7	.027	3	1,00	—	—	●	●	●	●	●	●	●	●	●	●	●
3EL035ISO	0,8	.031	0,4	.016	3	0,35	—	—	●	●	●	●	●	●	●	●	●	●	●
3EL15ISO	0,8	.031	1,0	.039	3	1,50	—	—	●	●	●	●	●	●	●	●	●	●	●
3EL20ISO	1,3	.051	1,0	.039	3	2,00	—	—	●	●	●	●	●	●	●	●	●	●	●

NOTE: SSC = To correspond with the SSC on the toolholder.

Threading Inserts • IR/L-ISO



- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	●
H	○

catalog number right hand	EX		E		SSC	thread pitch mm	TPI	TPF	TN6025
	mm	in	mm	in					
3IR05ISO	0,6	.024	0,6	.024	3	0,50	—	—	2018582
3IR075ISO	0,6	.024	0,6	.024	3	0,75	—	—	2018596
3IR10ISO	0,6	.024	0,7	.028	3	1,00	—	—	2018612
3IR125ISO	0,8	.032	0,9	.035	3	1,25	—	—	2018626
2IR15ISO	0,8	.032	1,0	.039	2	1,50	—	—	2018550
3IR15ISO	0,8	.032	1,0	.039	3	1,50	—	—	2018636
3IR175ISO	0,9	.035	1,2	.047	3	1,75	—	—	2018652
3IR20ISO	1,0	.039	1,3	.051	3	2,00	—	—	2018663
3IR25ISO	1,1	.043	1,5	.059	3	2,50	—	—	2018674
3IR30ISO	1,1	.043	1,5	.059	3	3,00	—	—	2018684
4IR35ISO	1,6	.063	2,3	.091	4	3,50	—	—	2018695

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

INDEXABLE MILLING

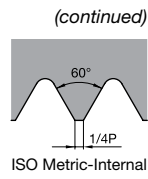
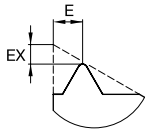
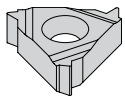
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## Threading Inserts • IR/L-ISO



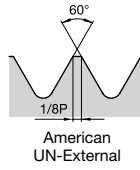
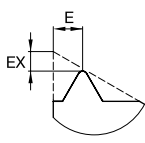
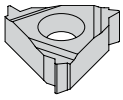
- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	●
H	○

catalog number	EX		E		SSC	thread pitch mm	TPI	TPF	TN6025
	mm	in	mm	in					
4IR40ISO	1,6	.063	2,3	.091	4	4,00	—	—	2018702
4IR50ISO	1,6	.063	2,3	.091	4	5,00	—	—	2018714
5IR55ISO	1,6	.063	2,3	.091	5	5,50	—	—	2021597
4IR45ISO	1,6	.063	2,4	.095	4	4,50	—	—	2018708
5IR60ISO	1,8	.071	2,5	.098	5	6,00	—	—	2018720
left hand									
3IL075ISO	0,6	.024	0,6	.024	3	0,75	—	—	2018598
3IL15ISO	0,8	.032	1,0	.039	3	1,50	—	—	2018642
3IL30ISO	1,1	.043	1,5	.059	3	3,00	—	—	2018688

NOTE: SSC = To correspond with the SSC on the toolholder.

Threading Inserts • ER/L-UN



- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	●
H	○

catalog number right hand	EX		E		SSC	thread pitch mm	TPI	TPF	TN6025
	mm	in	mm	in					
3ER32UN	0,6	.024	0,6	.024	3	—	32	—	2018752
3ER28UN	0,6	.024	0,7	.028	3	—	28	—	2018756
3ER24UN	0,7	.028	0,8	.032	3	—	24	—	2018766
3ER20UN	0,8	.032	0,9	.035	3	—	20	—	2018772
3ER18UN	0,8	.032	1,0	.039	3	—	18	—	2018778
3ER16UN	0,9	.035	1,1	.043	3	—	16	—	2018782
3ER14UN	1,0	.039	1,2	.047	3	—	14	—	2018790
3ER12UN	1,1	.043	1,4	.055	3	—	12	—	2018802
3ER11UN	1,1	.043	1,5	.059	3	—	11	—	2018808
3ER10UN	1,1	.043	1,5	.059	3	—	10	—	2018814
3ER8UN	1,2	.047	1,6	.063	3	—	8	—	2018824
3ER13UN	1,3	.051	1,0	.039	3	—	13	—	2018796

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

INDEXABLE MILLING

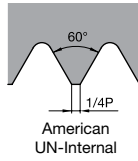
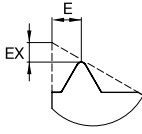
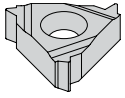
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## Threading Inserts • IR/L-UN



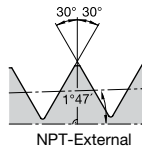
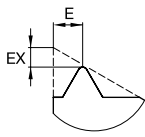
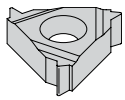
- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	●
H	○

catalog number	EX		E		SSC	thread pitch mm	TPI	TPF	TN6025
	mm	in	mm	in					
<b>right hand</b>									
3IR20UN	0,8	.032	0,9	.035	3	—	20	—	2018938
3IR18UN	0,8	.032	1,0	.039	3	—	18	—	2018944
2IR18UN	0,8	.031	1,0	.039	2	—	18	—	2018882
3IR16UN	0,9	.035	1,1	.043	3	—	16	—	2018950
2IR16UN	0,9	.035	1,1	.043	2	—	16	—	2018886
3IR12UN	1,1	.043	1,4	.055	3	—	12	—	2018966
3IR8UN	1,1	.043	1,5	.059	3	—	8	—	2018990
<b>left hand</b>									
3IL12UN	1,1	.043	1,4	.055	3	—	12	—	2102749

NOTE: SSC = To correspond with the SSC on the toolholder.

Threading Inserts • ER/L-NPT



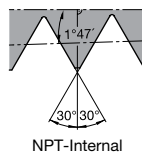
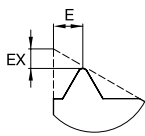
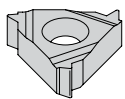
- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	○
H	○

catalog number right hand	EX		E		SSC	thread pitch mm	TPI	TPF	TN6025
	mm	in	mm	in					
3ER18NPT	0,8	.032	1,0	.039	3	—	18	.7500	2019278
3ER14NPT	0,9	.035	1,2	.047	3	—	14	.7500	2019288
3ER115NPT	1,1	.043	1,5	.059	3	—	11.5	.7500	2019298
3ER8NPT	1,3	.051	1,8	.071	3	—	8	.7500	2019305

NOTE: SSC = To correspond with the SSC on the toolholder.

Threading Inserts • IR/L-NPT



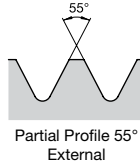
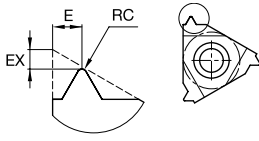
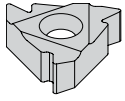
- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	○
H	○

catalog number right hand	EX		E		SSC	thread pitch mm	TPI	TPF	TN6025
	mm	in	mm	in					
3IR14NPT	0,9	.035	1,2	.047	3	—	14	.7500	2019329
3IR115NPT	1,1	.043	1,5	.059	3	—	11.5	.7500	2019335

NOTE: SSC = To correspond with the SSC on the toolholder.

## Threading Inserts • ER/L-55



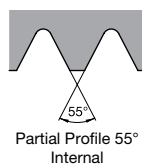
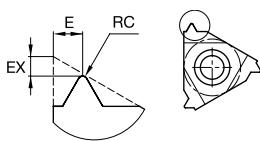
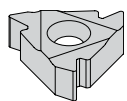
- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	●
H	○

catalog number	RC		EX		E		SSC	thread pitch mm	TPI	TPF	TN6025
	mm	in	mm	in	mm	in					
<b>right hand</b>											
<b>3ERAG55</b>	0,08	.003	1,2	.047	1,7	.067	3	0,50-3,0	8-48	—	2018314
<b>3ERG55</b>	0,20	.008	1,2	.047	1,7	.067	3	1,75-3,0	8-14	—	2018308
<b>4ERN55</b>	0,43	.017	1,7	.067	2,5	.098	4	3,5-5,0	5-7	—	2018320
<b>left hand</b>											
<b>3ELG55</b>	0,20	.008	1,2	.047	1,7	.067	3	1,75-3,0	8-14	—	2008190

NOTE: SSC = To correspond with the SSC on the toolholder.

Threading Inserts • IR/L-55



- first choice
- alternate choice

P	●
M	○
K	○
N	○
S	○
H	○

catalog number	RC		EX		E		SSC	thread pitch mm	TPI	TPF	TN6025
	mm	in	mm	in	mm	in					
<b>right hand</b>											
2IRA55	0,05	.002	0,8	.031	0,9	.035	2	0,50-1,50	16-48	—	2018328
3IRA55	0,05	.002	0,8	.031	0,9	.035	3	0,50-1,50	16-48	—	2018334
3IRAG55	0,07	.003	1,2	.047	1,7	.067	3	0,50-3,0	8-48	—	2018346
3IRG55	0,21	.008	1,2	.047	1,7	.067	3	1,75-3,0	8-14	—	2018340
4IRN55	0,43	.017	1,7	.067	2,5	.098	4	3,5-5,0	5-7	—	2018354
<b>left hand</b>											
3ILA55	0,05	.002	0,8	.031	0,9	.035	3	0,50-1,50	16-48	—	3122449

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING



INDEXABLE MILLING

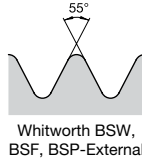
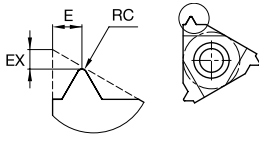
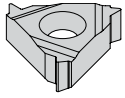
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## Threading Inserts • ER/L-W



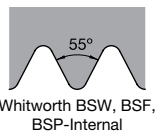
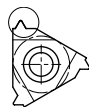
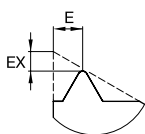
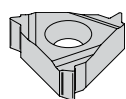
- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	●
H	○

catalog number right hand	RC		EX		E		SSC	thread pitch mm	TPI	TPF	TN6025
	mm	in	mm	in	mm	in					
<b>3ER32W</b>	0,08	.003	0,6	.024	0,6	.024	3	—	32	—	2019023
<b>3ER28W</b>	—	—	0,6	.024	0,7	.028	3	—	28	—	2019029
<b>3ER19W</b>	—	—	0,8	.032	1,0	.039	3	—	19	—	2019055
<b>3ER14W</b>	—	—	1,0	.039	1,2	.047	3	—	14	—	2019071
<b>3ER10W</b>	—	—	1,1	.043	1,5	.059	3	—	10	—	2019089
<b>3ER11W</b>	—	—	1,1	.043	1,5	.059	3	—	11	—	2019083
<b>3ER8W</b>	—	—	1,2	.047	1,5	.059	3	—	8	—	2019101

NOTE: SSC = To correspond with the SSC on the toolholder.

### Threading Inserts • IR/L-W



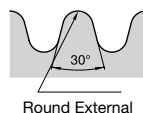
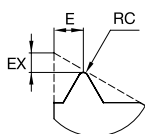
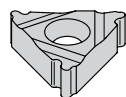
- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	●
H	○

catalog number right hand	EX		E		SSC	thread pitch mm	TPI	TPF	TN6025
	mm	in	mm	in					
2IR14W	0,9	.035	1,1	.043	2	—	14	—	2019136
3IR14W	1,0	.039	1,2	.047	3	—	14	—	2019189
3IR11W	1,1	.043	1,5	.059	3	—	11	—	2019205

NOTE: SSC = To correspond with the SSC on the toolholder.

### Threading Inserts • ER/L-RD



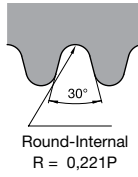
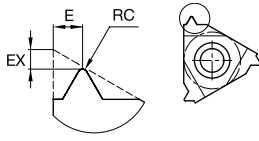
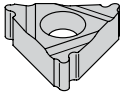
- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	●
H	○

catalog number right hand	RC		EX		E		SSC	thread pitch mm	TPI	TPF	TN6025
	mm	in	mm	in	mm	in					
3ER8RD	0,76	.030	1,4	.055	1,3	.051	3	—	8	—	2019347

NOTE: SSC = To correspond with the SSC on the toolholder.

## Threading Inserts • IR/L-RD



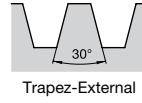
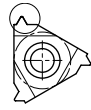
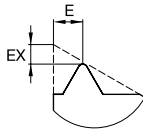
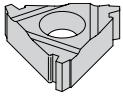
- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	●
H	○

catalog number right hand	RC		EX		E		SSC	thread pitch mm	TPI	TPF	TN6025
	mm	in	mm	in	mm	in					
<b>3IR8RD</b>	0,70	.028	1,4	.055	1,4	.055	3	—	8	—	2019381
<b>4IR4RD</b>	1,40	.055	2,3	.091	2,2	.087	4	—	4	—	2019400

NOTE: SSC = To correspond with the SSC on the toolholder.

## Threading Inserts • ER/L-TR



- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	○
H	○

catalog number	EX		E		SSC	thread pitch mm	TPI	TPF	TN16025
	mm	in	mm	in					
<b>right hand</b>									
<b>3ER2TR</b>	1,1	.043	1,3	.051	3	2,00	—	—	2019453
<b>3ER3TR</b>	1,3	.051	1,5	.059	3	3,00	—	—	2019461
<b>4ER4TR</b>	1,7	.067	1,9	.075	4	4,00	—	—	2019469
<b>4ER5TR</b>	2,1	.083	2,5	.098	4	5,00	—	—	2019479
<b>5ER6TR</b>	2,3	.091	2,7	.106	5	6,00	—	—	2019487
<b>left hand</b>									
<b>3EL3TR</b>	1,3	.051	1,5	.059	3	3,00	—	—	2019463

NOTE: SSC = To correspond with the SSC on the toolholder.

INDEXABLE MILLING

SOLID END MILLING

HOLE/MAKING

TAPPING

TURNING

INDEXABLE MILLING

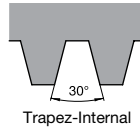
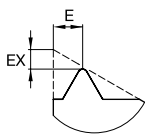
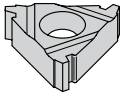
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## Threading Inserts • IR/L-TR



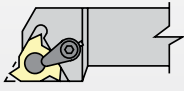
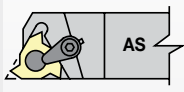
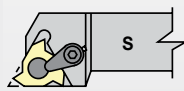
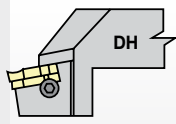
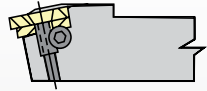
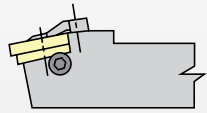
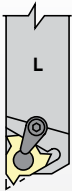
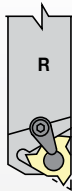
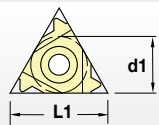
- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	●
H	○

catalog number right hand	EX		E		SSC	thread pitch mm	TPI	TPF	TN6025
	mm	in	mm	in					
3IR3TR	1,3	.051	1,5	.059	3	3,00	—	—	2019511
4IR4TR	1,7	.067	1,9	.075	4	4,00	—	—	2019520
4IR5TR	2,1	.083	2,5	.098	4	5,00	—	—	2019528
5IR6TR	2,3	.091	2,7	.106	5	6,00	—	—	2019534

NOTE: SSC = To correspond with the SSC on the toolholder.

## Laydown Threading Toolholder • Catalog Numbering System

<b>L</b>	<b>S</b>	<b>AS</b>	<b>R</b>		<b>16</b>	<b>3</b>																					
Insert Style	Insert Holding Method	Tool Style	Hand of Tool	Drop Head	Shank Size	Insert Size	Qualified Surface and Length																				
<p><b>L</b> – Laydown triangle</p> 		<p>Straight shank</p>  <p>Offset shank</p> 					<p><b>C</b> – qualified back and end, 5" long</p> <p><b>D</b> – qualified back and end, 6" long</p> <p><b>E</b> – qualified back and end, 7" long</p> <p><b>T</b> – qualified back and end, 3.25" long</p> <p><b>Q</b> – qualified metric holder</p>																				
<p><b>S</b> – Insert screw or clamp only</p>  		<p>Left hand</p>  <p>Right hand</p> 		<p><b>Inch:</b> This shows a two-digit number that indicates the holder cross section. For shanks 5/8" square and over, the number will represent the number of sixteenths of width and height. For shanks under 5/8" square, the number of sixteenths of cross section will be preceded by a zero. For rectangular holders, the first digit represents the number of eighths of width, and the second digit the number of quarters of height, except for a toolholder 1-1/4" x 1-1/2", which is given the number 91.</p>																							
							<p>Size equals number of 1/8" increments of iC.</p> 																				
							<table border="1"> <thead> <tr> <th>inch insert size</th> <th>metric insert size</th> <th>d1 inch</th> <th>L1 mm</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>11</td> <td>1/4</td> <td>11,0</td> </tr> <tr> <td>3</td> <td>16</td> <td>3/8</td> <td>16,5</td> </tr> <tr> <td>4</td> <td>22</td> <td>1/2</td> <td>22,0</td> </tr> <tr> <td>5</td> <td>27</td> <td>5/8</td> <td>27,0</td> </tr> </tbody> </table>	inch insert size	metric insert size	d1 inch	L1 mm	2	11	1/4	11,0	3	16	3/8	16,5	4	22	1/2	22,0	5	27	5/8	27,0
inch insert size	metric insert size	d1 inch	L1 mm																								
2	11	1/4	11,0																								
3	16	3/8	16,5																								
4	22	1/2	22,0																								
5	27	5/8	27,0																								

INDEXABLE MILLING

SOLID END MILLING

HOLEMAKING

TAPPING

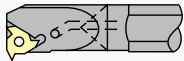
TURNING

## Laydown Threading Boring Bar • Catalog Numbering System

**S**

Bar Type

**E** – Carbide with coolant



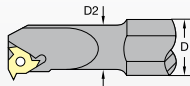
**S** – Steel shank without coolant



**10**

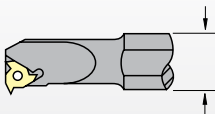
Primary Necked Shank Bar Diameter

Indicates the primary bar diameter in 1/16" increments.



NOTE: Boring bars with primary bar diameters larger than 5/8" are supplied with clamp and insert screw. Secure the insert with either the clamp or insert screw. **Do not use both.**

Indicates the secondary bar diameter in 1/16" increments.



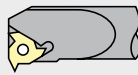
**12**

Secondary (mounting) Bar Diameter

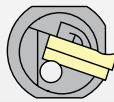
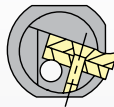
**L**

Insert Style

**L** – Laydown triangle



**S** – Insert screw or clamp only



**S**

Insert Holding Method

**E**

Bar Style

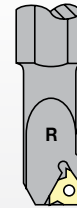
End cutting edge mount



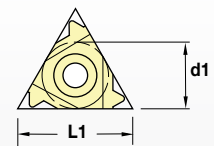
Left hand



Right hand



Size equals number of 1/8" increments of iC.



inch insert size	metric insert size	d1 inch	L1 mm
2	11	1/4	11,0
3	16	3/8	16,5
4	22	1/2	22,0

INDEXABLE MILLING

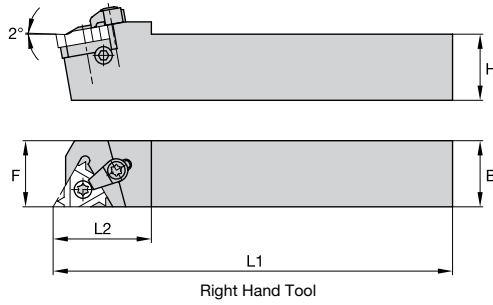
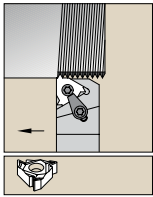
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

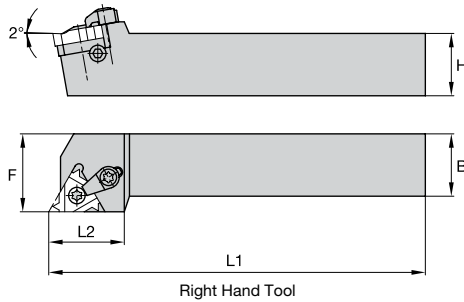
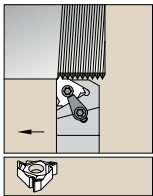
Integral Toolholders • LSAS



order number	catalog number	SSC	H	B	F	L1	L2	gage insert
<b>right hand</b>								
2968567	LSASR83	3	.500	.500	.500	3.25	.87	LT16ER
2968584	LSASR123	3	.750	.750	.750	5.00	1.20	LT16ER
2968585	LSASR163	3	1.000	1.000	1.000	6.00	1.20	LT16ER
2968586	LSASR164	4	1.000	1.000	1.000	6.00	1.42	LT22ER
<b>left hand</b>								
2968570	LSASL163	3	1.000	1.000	1.000	6.00	1.20	LT16EL

NOTE: SSC = To correspond with the SSC on the insert.

Integral Toolholders • LSS



order number	catalog number	SSC	H	B	F	L1	L2	gage insert
<b>right hand</b>								
2968591	LSSR123D	3	.750	.750	1.000	6.00	1.00	LT16ER
2968592	LSSR163D	3	1.000	1.000	1.250	6.00	1.00	LT16ER
2968593	LSSR164D	4	1.000	1.000	1.250	6.00	1.20	LT22ER

NOTE: SSC = To correspond with the SSC on the insert.

INDEXABLE MILLING

SOLID END MILLING

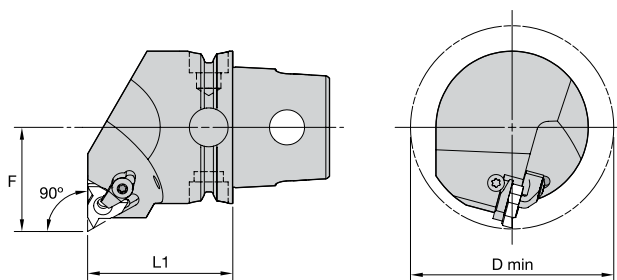
HOPEMAKING

TAPPING

TURNING



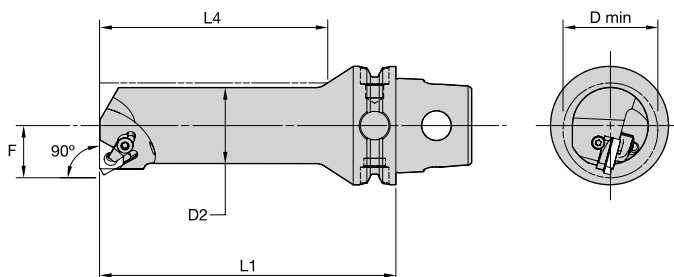
## Cutting Units • KM40TS • LSE-N 90° • Internal Only • Metric



order number	catalog number	L1		F		D min		gage insert	kg	lbs
		mm	in	mm	in	mm	in			
<b>right hand</b>										
3950832	KM40TSLSER16N	40	1.575	27	1.063	54	2.126	LT16NR	0,35	.78
3950854	KM40TSLSER22N	40	1.575	27	1.063	54	2.126	LT22NR	0,35	.77
<b>left hand</b>										
3950831	KM40TSLSEL16N	40	1.575	27	1.063	54	2.126	LT16NL	0,35	.78

NOTE: Cutting units are supplied with insert screw and clamp assembly.  
However, tools are designed to use either the insert screw or the clamp assembly, not both.

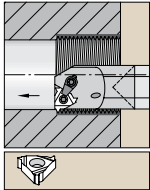
## Cutting Units • KM40TS • LSE 90° • Metric



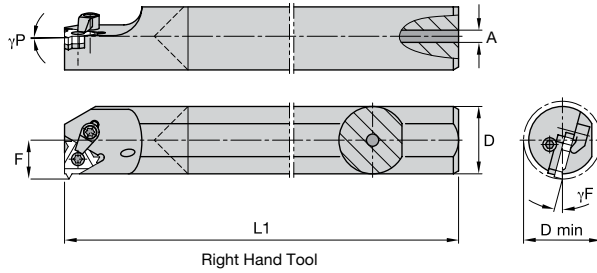
order number	catalog number	D2		D min		F		L4		L1		gage insert	kg	lbs
		mm	in	mm	in	mm	in	mm	in	mm	in			
<b>right hand</b>														
3955464	KM40TSS10DLSER11	10	.394	13	.51	7	.276	35	1.38	60	2.362	LT11NR	0,22	.49
3955466	KM40TSS12ELSER11	12	.472	16	.63	9	.354	42	1.66	70	2.756	LT11NR	0,25	.56
3955468	KM40TSS16FLSER16	16	.630	20	.79	11	.433	56	2.21	80	3.150	LT16NR	0,28	.61
3955470	KM40TSS20GLSER16	20	.787	25	.98	13	.512	70	2.76	90	3.543	LT16NR	0,34	.75
3955472	KM40TSS25HLSER16	25	.984	32	1.26	17	.669	75	2.95	100	3.937	LT16NR	0,50	1.11
3955474	KM40TSS32JLSER16	32	1.260	40	1.57	22	.866	96	3.78	110	4.331	LT16NR	0,72	1.58
3955476	KM40TSS32JLSER22	32	1.260	40	1.57	22	.866	96	3.78	110	4.331	LT22NR	0,71	1.56
<b>left hand</b>														
3955463	KM40TSS10DSEL11	10	.394	13	.51	7	.276	35	1.38	60	2.362	LT11NL	0,22	.49
3955465	KM40TSS12ELSEL11	12	.472	16	.63	9	.354	42	1.65	70	2.756	LT11NL	0,25	.55
3955469	KM40TSS20GLSEL16	20	.787	25	.98	13	.512	70	2.76	90	3.543	LT16NL	0,34	.75
3955471	KM40TSS25HLSSEL16	25	.984	32	1.26	17	.669	75	2.95	100	3.937	LT16NL	0,50	1.11
3955473	KM40TSS32JLSEL16	32	1.260	40	1.57	22	.866	96	3.78	110	4.331	LT16NL	0,72	1.58
3955475	KM40TSS32JLSEL22	32	1.260	40	1.57	22	.866	96	3.78	110	4.331	LT22NL	0,71	1.56

NOTE: Items listed without a shim are designed for a 1,5° inclination angle.  
Cutting units are supplied with insert screw and clamp assembly. However, tools are designed to use either the insert screw or the clamp assembly, not both.

Integral I.D. Threading Boring Bars • E-LSE



Carbide shank with through coolant.

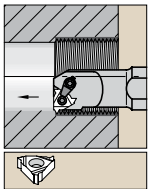


Right Hand Tool

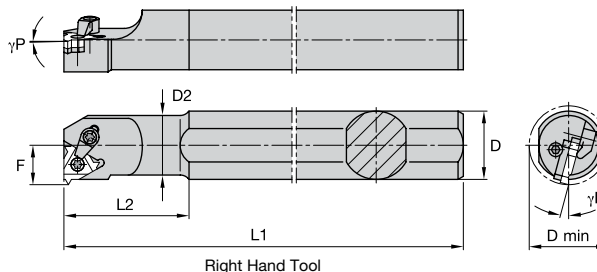
order number	catalog number	SSC	D	D min	F	L1	A	$\gamma F^\circ$	$\gamma P^\circ$	gage insert
<b>right hand</b>										
2892518	E06LSER2	2	.375	.500	.280	6.00	.13	-15.0	-1.50	LT11NR
<b>left hand</b>										
2892519	E06LSEL2	2	.375	.500	.280	6.00	.13	-15.0	-1.50	LT11NL
2892555	E12LSEL3	3	.750	.900	.510	10.00	.22	-15.0	-1.50	LT16NL

NOTE: Items listed without a shim are designed for a 1.5° inclination angle.  
SSC = To correspond with the SSC on the insert.

Integral I.D. Threading Boring Bars • S-LSE



Steel shank without coolant.



Right Hand Tool

order number	catalog number	SSC	D	D min	D2	F	L1	L2	$\gamma F^\circ$	$\gamma P^\circ$	gage insert
<b>right hand</b>											
2968597	S0612LSER2	2	.750	.500	.375	.280	7.00	1.00	-15.0	-1.50	LT11NR
2968601	S1012LSER3	3	.750	.800	.625	.460	7.00	1.50	-15.0	-1.50	LT16NR
2968763	S1212LSER3	3	.750	.900	—	.510	7.00	1.57	-15.0	-1.50	LT16NR
2968765	S1620LSER3	3	1.250	1.200	1.000	.650	10.00	2.50	-15.0	-1.50	LT16NR

NOTE: Items listed without a shim are designed for a 1.5° inclination angle.  
SSC = To correspond with the SSC on the insert.

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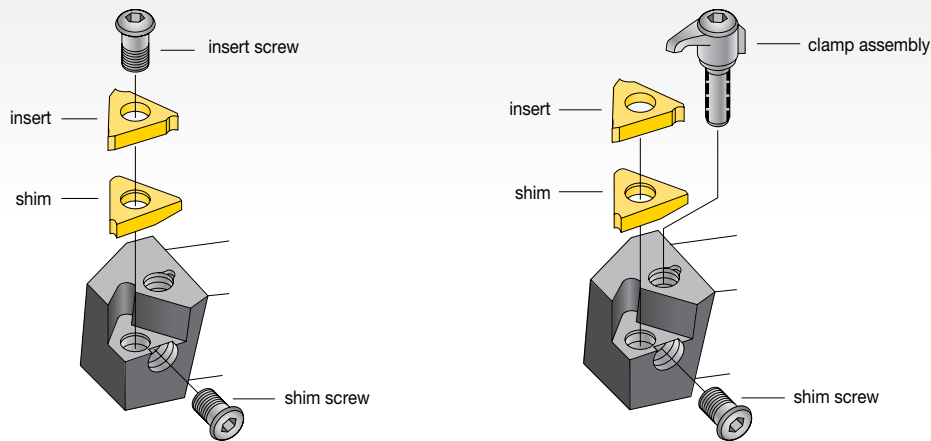
TURNING

## Hardware

### Laydown Threading Toolholders

In all cases, the proper shim selection is important.

WIDIA™ toolholders are supplied with a shim for a 1.5° lead angle. Change the shim if your thread is more than 1° different. For more details on proper shim selections, see pages E519–E520.



insert size and screw	insert screw	shim	shim screw and washer	clamp assembly
3ER	S-SA3T	SM-YIE3	S-SY3T	CK-C3
3EL	S-SA3T	SM-YI3	S-SY3T	CK-C3
4ER	S-SA4T	SM-YIE4	S-SY4T	CK-C4
4EL	S-SA4T	SM-YI4	S-SY4T	CK-C4
Laydown Threading boring bars				
2IR	S-SN2T	—	—	—
2IL	S-SN2T	—	—	—
3IR	S-SA3T	SM-YI3	S-SY3T	CK-C3
3IL	S-SA3T	SM-YIE3	S-SY3T	CK-C3
4IR	S-SA4T	SM-YI4	S-SY4T	CK-C4
4IL	S-SA4T	SM-YIE4	S-SY4T	CK-C4

<b>SM</b> Shim	<b>—</b>	<b>Y</b> Y-shim for Laydown standard inserts	<b>E</b> E — External I — Internal	<b>3</b> iC — 1/8"	<b>—</b>	<b>2N</b> Shim Angle											
<table border="1"> <tr> <td>2P</td> <td>2° positive</td> </tr> <tr> <td>1P</td> <td>1° positive</td> </tr> <tr> <td>—</td> <td>0°</td> </tr> <tr> <td>1N</td> <td>1° negative</td> </tr> <tr> <td>2N</td> <td>2° negative</td> </tr> <tr> <td>3N</td> <td>3° negative</td> </tr> </table>						2P	2° positive	1P	1° positive	—	0°	1N	1° negative	2N	2° negative	3N	3° negative
2P	2° positive																
1P	1° positive																
—	0°																
1N	1° negative																
2N	2° negative																
3N	3° negative																

### Screw Thread Definitions

resultant angle		3.5°	2.5°	1.5°	0.5°	-0.5°	-1.5°
insert size (iC)	toolholder	shim ordering code					
3/8"	ex. RH/in. LH ex. LH/in. RH	SM-YE3-2P SM-YI3-2P	SM-YE3-1P SM-YI3-1P	SM-YE3 SM-YI3	SM-YE3-1N SM-YI3-1N	SM-YE3-2N SM-YI3-2N	SM-YE3-3N SM-YI3-3N
1/2"	ex. RH/in. LH ex. LH/in. RH	SM-YE4-2P SM-YI4-2P	SM-YE4-1P SM-YI4-1P	SM-YE4 SM-YI4	SM-YE4-1N SM-YI4-1N	SM-YE4-2N SM-YI4-2N	SM-YE4-3N SM-YI4-3N

### Slanted Shim Kit

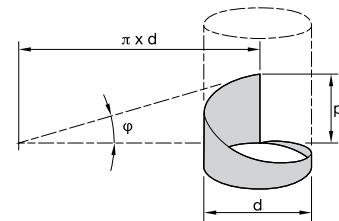
Because you might occasionally need different shims than those supplied with our standard toolholders, we strongly recommend that shim kits be readily available in every tool shop.

insert size	shim size (D)	ordering code	contains slanted shims
3x	3/8"	ABY3	SM-YE3-2P, 1P, 1N, 2N, 3N SM-YI3-2P, 1P, 1N, 2N, 3N
4x	1/2"	ABY4	SM-YE4-2P, 1P, 1N, 2N, 3N SM-YI4-2P, 1P, 1N, 2N, 3N

### The Helix Angle

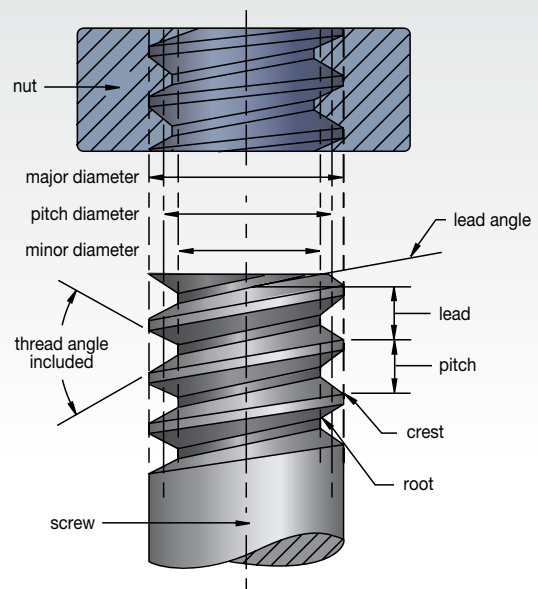
Example:  
 $d = 1.892"$  (48,06mm)  $\phi =$  Helix angle  
 $p = .125"$  (3,175mm)  $p =$  pitch  
 $d =$  pitch diameter

$$\phi = \arctan \left( \frac{p * \text{starts}}{\pi * \phi} \right) = 1.13^\circ$$



### Screw Thread Definitions

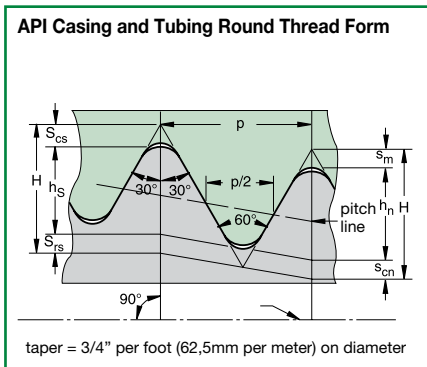
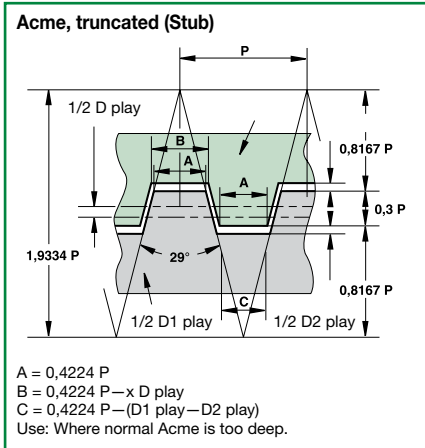
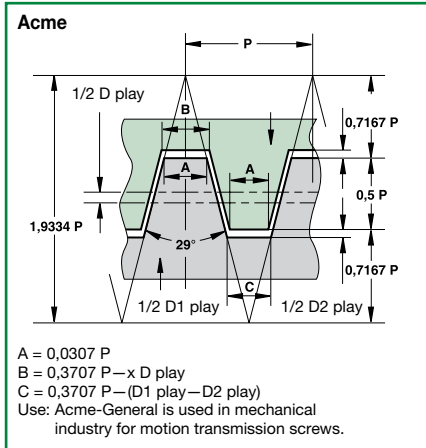
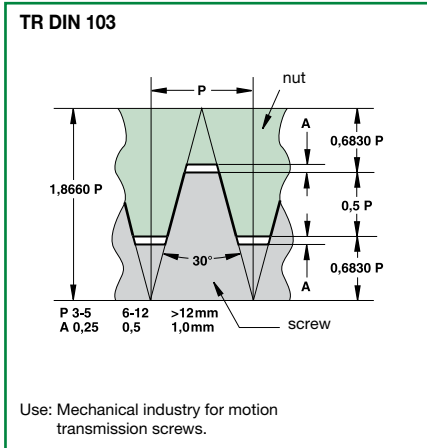
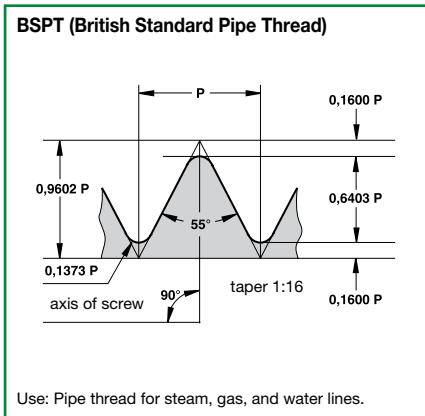
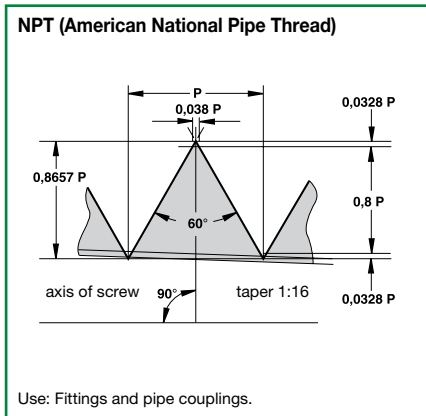
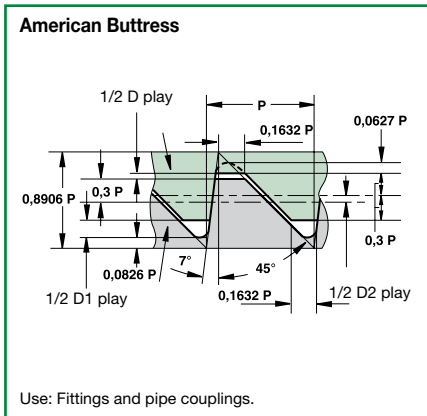
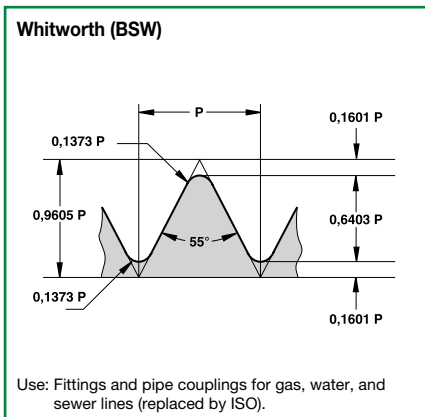
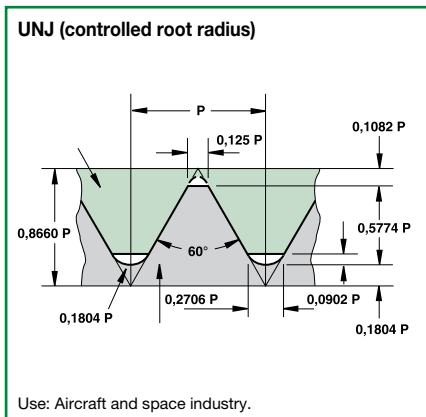
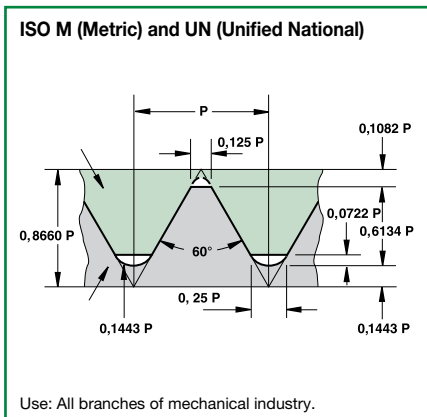
1. Major diameter — The largest diameter of a straight screw thread. This applies to both internal and external threads.
2. Pitch diameter — On a straight thread, it is the diameter which passes through the thread profiles at such points which make the thread width of the groove equal to one-half of the basic pitch. On a "perfect thread," this occurs at the point where the widths of the thread and groove are equal.
3. Thread angle (included) — The included angle between the individual flanks of the thread form.
4. Minor diameter — The smallest diameter of a straight screw thread. This applies to both internal and external threads.
5. Lead angle — On a straight thread, the lead angle is the angle created by the helix of the thread at the pitch diameter with a plane perpendicular to the axis.
6. Lead — The distance a screw thread advances axially in one revolution. On a single start, the pitch and lead are identical. The lead is equal to the pitch times the number of starts.
7. Pitch — The distance from a point on a screw thread to a corresponding point on the next thread measured parallel to the thread axis.
8. Crest — The outermost surface of the thread form which joins the flanks.
9. Root — The innermost surface of the thread form which joins the flanks.



NOTE: Threads per inch (TPI) not shown:  
 The number of threads per inch measured axially.  
 The terms pitch and TPI are often used interchangeably.  $TPI = 1/\text{pitch}$

## Common Thread Forms

NOTE: Taper shown exaggerated.



NOTE: Taper shown exaggerated.

Grade Selection Chart





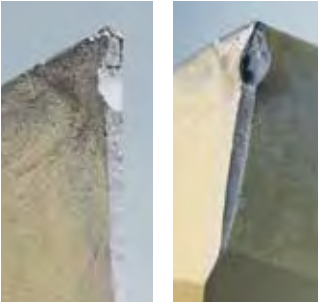


Suggested Grades and Speeds for Threading  
Various Workpiece Materials

workpiece group	workpiece material	recommended surface speed – SFM		
		uncoated	PVD coated	
		THM	TN6010	TN6025
free-machining carbon steel	10L18, 10L45, 1213, 12L13, 12L14, 1140, 1141, 11L44, 1151, 10L50	–	300–650	150–650
plain carbon steel	10063, 1008, 1010, 1015, 1018, 1020, 1025, 1026, 1108, 1117	–	250–650	150–575
alloy steels/tool steels 150–325 HB (up to 35 HRC)	1042, 1045, 1070, 1080, 1085, 1090, 1095, 1541, 1561, 1572, 5140, 8620, W1, O1, S1, P20, H13, D2, A6, H13, L6	–	250–650	125–550
alloy steels/tool steels 330–450 HB (36–47 HRC)		–	200–525	–
martensitic/ferritic stainless/precipitation hardening	416, 420F, 440F, 405, 409, 429, 430, 434, 436, 442, PH	–	150–525	100–400
austenitic stainless steel	201, 202, 301, 302, 303, 304, 304, 305, 321, 347, 348, 310, 314, 316, 316L, 330	200–350	200–650	150–450
gray cast iron 135–270 HB	class 20, 30, 35, 45	200–300	200–775	150–400
gray cast iron 275–450 HB	class 50, 55, 60	150–250	150–575	50–250
alloy/ductile iron	A536, J434C, 60-40-18, 80-55-06, 100-70-03	150–250	150–650	100–525
free-machining aluminum alloys	2024-T4, 2014-T6, 6061-T6 2011-T3, 3003-H18, A2, Alcan, Alcoa® 510, Duralumin	400–800	400–1200	–
high-silicon aluminum alloys	A380, A390, A380-1, A390-1, A380-2	–	–	–
copper/zinc/brass		250–600	250–1000	150–775
non-metallics	Graphite, Nylon, Plastics, Rubbers, Phenolics, Carbon	400–1500	400–1300	150–1000
high-temperature alloys 125–269 HB (up to 27 HRC)	Nickel 200, MONEL®, R405, MONEL K500, INCONEL® 600, INCONEL 625/901x750/718, Waspaloy®, Hastelloy® C	80–120	80–400	40–250
high-temperature alloys 260–450 HB (26–47 HRC)	Rene 95, Waspaloy A286, INCOLOY® 800, Haynes® 188, Stellite™ F, Haynes 25	80–100	100–250	20–200
titanium alloys	Ti-6Al-4V, Ti-5Al-2.5Sn	110–180	110–325	–

NOTE: When workpiece hardness levels are at the top of a range, starting SFM should be at the lower end. Regularly inspect insert clamps for worn flats.

Edge preparation:  
Uncoated – sharp  
PVD coated – light hone except positive top rake, top rake-sharp

## Failure and Solution Guide

problem	cause	possible solution
thread with torn finish 	<ul style="list-style-type: none"> <li>• Burs.</li> <li>• Torn finish.</li> <li>• Steps.</li> <li>• Improper shim.</li> <li>• Improper infeed.</li> </ul>	<ul style="list-style-type: none"> <li>• Use modified flank infeed.</li> <li>• Use full profile insert.</li> <li>• Increase coolant concentration.</li> <li>• Increases SFM.</li> <li>• Check machine "Z" travel axis.</li> <li>• Check insert form.</li> <li>• Check for correct shim in LT system.</li> <li>• Calculate flank clearance.</li> </ul>
chatter 	<ul style="list-style-type: none"> <li>• Poor rigidity.</li> <li>• Insert movement.</li> <li>• Improper infeed.</li> <li>• Off centerline.</li> </ul>	<ul style="list-style-type: none"> <li>• Use modified flank infeed.</li> <li>• Minimize tool overhang.</li> <li>• Check for workpiece deflection.</li> <li>• Check insert and clamp.</li> <li>• Verify that tool cutting position is at workpiece centerline.</li> <li>• Adjust number of passes. Fewer passes reduce chatter.</li> </ul>
built-up edge 	<ul style="list-style-type: none"> <li>• Speed too low.</li> <li>• Insufficient coolant.</li> <li>• Chip load.</li> </ul>	<ul style="list-style-type: none"> <li>• Increase SFM.</li> <li>• Increase coolant concentration and/or flow.</li> <li>• Adjust infeed angle.</li> <li>• Increase depth of cut per pass.</li> </ul>
deformation 	<ul style="list-style-type: none"> <li>• Wrong grade.</li> <li>• Speed too high.</li> <li>• Improper infeed angle.</li> <li>• Insufficient coolant.</li> </ul>	<ul style="list-style-type: none"> <li>• Use modified flank infeed.</li> <li>• Use a more wear-resistant grade (e.g., TN6010™).</li> <li>• Reduce SFM.</li> <li>• Increase coolant flow.</li> </ul>
chipping 	<ul style="list-style-type: none"> <li>• Improper infeed.</li> <li>• Chip load.</li> <li>• Wrong grade.</li> <li>• Incorrect speed.</li> <li>• Poor rigidity.</li> </ul>	<ul style="list-style-type: none"> <li>• Use modified flank infeed.</li> <li>• Increase or decrease number of passes.</li> <li>• Eliminate spring passes.</li> <li>• Use tougher grade (e.g., TN6025™).</li> <li>• Increase SFM if chipping on trailing edge.</li> <li>• Decrease SFM if chipping on leading edge.</li> <li>• Minimize tool overhang.</li> <li>• Check for insert movement/check clamp. Torque screw or clamp to correct value.</li> <li>• Check for possible part deflection.</li> <li>• Calculate flank clearance.</li> <li>• Ensure correct shim.</li> </ul>
broken nose 	<ul style="list-style-type: none"> <li>• Heavy chip load.</li> <li>• Small nose radius.</li> <li>• Wrong grade.</li> <li>• Improper infeed.</li> </ul>	<ul style="list-style-type: none"> <li>• Use modified flank infeed.</li> <li>• Decrease chip load.</li> <li>• Use large nose radius if possible.</li> <li>• Use tougher grade (e.g., TN6025).</li> </ul>
flank wear 	<ul style="list-style-type: none"> <li>• Improper shim.</li> <li>• Wrong grade.</li> <li>• Insufficient coolant.</li> <li>• Off centerline.</li> <li>• Insufficient flank clearance .</li> <li>• Improper infeed angle.</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure correct shim.</li> <li>• Use a more wear-resistant grade (e.g., TN6025).</li> <li>• Increase coolant flow.</li> <li>• Check the centerline height of the tool. (The smaller the diameter, the more critical the need for centerline accuracy.)</li> <li>• Calculate flank clearance and change shim to increase clearance on worn flank.</li> <li>• If wear is on trailing flank, increase infeed angle clearance.</li> </ul>

### Failure and Solution Guide

problem	possible solution																	
	increase SFM	reduce SFM	increase chip load	decrease chip load where failure occurs	use tougher carbide grade	use harder carbide grade	apply coolant	use coated carbide	use topping insert	change infeed angle	check for insert movement and reseat	reduce tool overhang	reselect shim	apply chipbreaker style	reduce DOC	adjust center height	begin cutting threads .472" before workpiece	change infeed method
chatter	•			•							•	•				•		•
bur on crest	•								•									•
short tool life		•	•	•		•		•										•
chipped leading edge			•	•	•													
chipped trailing edge					•					•								
broken nose (first pass)	•														•	•		
broken nose (after first pass)				•	•					•			•					•
built-up on cutting edge	•		•					•	•									•
premature topping													•					
splitting threads																	•	
poor chip evacuation														•				•

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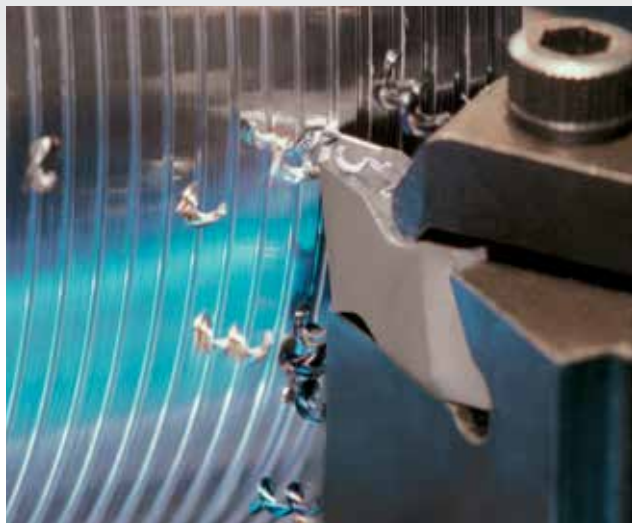


## General Machining Guidelines

WIDIA™ insert technology brings chip control to your threading operations with the TopThread™ platform. The proprietary WIDIA recessed chip groove, when used according to our recommendations, controls the chip in most applications. Our positive rake design lowers cutting pressures, which in turn lowers damaging heat generation thus providing better tool life. Long, stringy chips no longer mar the workpiece surface finish. The danger to operators when removing long chips from the workpiece and chuck is eliminated. All of these benefits combine to improve the productivity of your threading operations.

### The Last Pass

Some CNC controls require the last pass to be at a 0° infeed angle because the chip will not break on the last pass. On most carbon and alloy steels, the last pass can remain at .005" (0,127mm) depth of cut and produce an acceptable finish. For some materials, a .001" (0,025mm) to .003" (0,076mm) (spring) pass may be used to improve surface finish, however, chipbreaking action may be compromised.

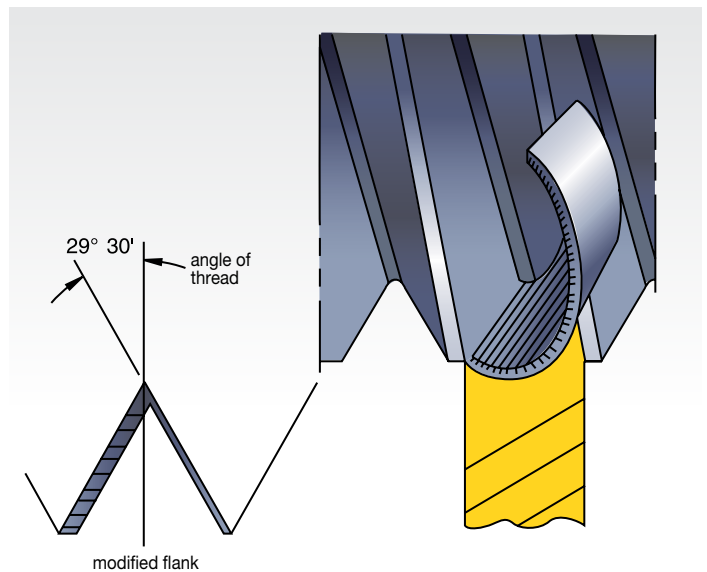


### Machine Programming

Modern CNC controls allow the programmer to easily adjust infeed angle, the number of passes, and depth of cut for each pass. The chip control threading insert performs best at an infeed angle of 29° 30', although 15° to 30° is acceptable. Also, it is important to maintain a minimum of .005" (0,127mm) depth of cut on every pass. In most applications, use of CNC canned cycles produce only marginally successful results. Custom written programs are better and are recommended.

### Infeed Angle

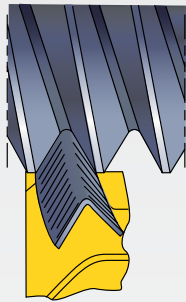
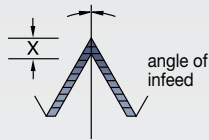
In order to effectively and consistently break the chip, it is important to use an infeed angle between 28° and 29° 30'. Do not apply chip control inserts at infeed angles less than 15°.



General Machining Guidelines

Radial

modified flank



Advantage –

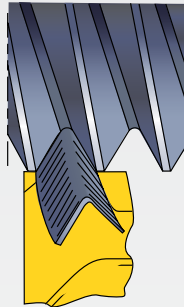
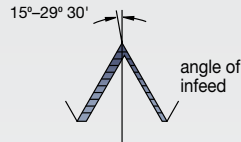
- Cutting on both sides of the thread form places all of the cutting edge in the cut and protects edge from chipping.
- Even wear on the insert.

Disadvantage –

- Tool develops a channel chip that may be difficult to handle.
- Tip chipping occurs when cutting high-tensile materials.
- Bur condition is increased.
- Entire cutting edge is engaged at finish of thread, causing increased tendency to chatter.

Modified flank

modified flank



Advantage –

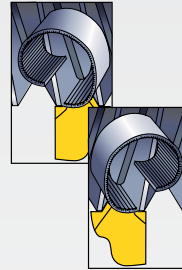
- Tool cuts both sides of thread form, so it is protected from chipping similar to 0° infeed. Channel-type chip develops, but uneven chip thickness helps remove the chip similar to flank infeed.
- This is the preferred method, especially when used with a chip control insert.
- Combined radial and/or alternating flank infeed.
- Results in good tool life, with wear evenly distributed over both flanks.

Disadvantage –

- Similar disadvantages as with 0° infeed, although reduced somewhat in magnitude as cutting forces are better equalized and chip flow is much less of a problem.

Alternating flank

alternating flank



Advantage –

- Increased tool life because both edges are used equally.

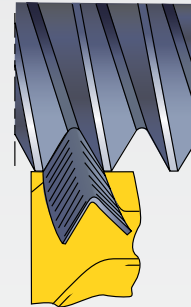
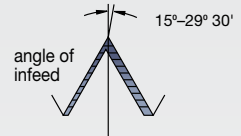
NOTE: Some machine tools may require special programming techniques to achieve this method of infeed.

Disadvantage –

- Difficult to cut on conventional machinery.

Reversed modified flank

modified flank



Advantage –

- Tool cuts both sides of thread form, so it is protected from chipping similar to 0° infeed. Channel-type chip develops, but uneven chip thickness helps remove the chip similar to flank infeed.
- This is the preferred method, especially when used with a chip control insert.
- Combined radial and/or alternating flank infeed.
- Results in good tool life, with wear evenly distributed over both flanks.
- As chip flow is the reversed feed direction, it is an excellent choice for internal threading.

Disadvantage –

- Programming needs to be done line by line.

INDEXABLE MILLING

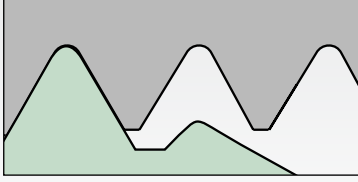
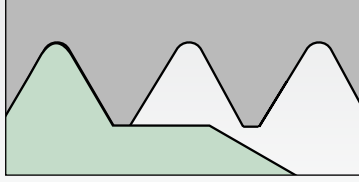
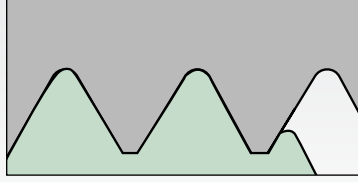
SOLID END MILLING

HOLEMAKING

TAPPING

TURNING

## Threading

 <p><b>Partial Profile</b></p> <p><b>Tooth profile with universal profile shape:</b></p> <ul style="list-style-type: none"> <li>• Reduced inventory.</li> <li>• For various pitches in a limited range.</li> <li>• Major/minor diameters must be accurately pre-turned.</li> </ul>	 <p><b>Full Profile</b></p> <p><b>Tooth profile with full profile shape including tooth height:</b></p> <ul style="list-style-type: none"> <li>• For bur-free, precise threads in the specified pitch.</li> <li>• General application.</li> <li>• Machining allowance for outside/core diameter around .004–.006".</li> </ul>	 <p><b>Multi-Tooth Profile</b></p> <p><b>Multi-tooth full profile generally with 2–3 teeth:</b></p> <ul style="list-style-type: none"> <li>• Highly productive threading with fewer passes and longer tool life.</li> <li>• Requires a rigid setup and long thread pass through.</li> </ul>
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## Formulas

Inch Formula		
to find	given	formula
SFM	D (inch) RPM	$SFM = \frac{\pi \times D}{12"} \times RPM$
RPM	D (inch) SFM	$RPM = \frac{SFM \times 12"}{D \times \pi}$

Metric Formula		
to find	given	formula
m/min	D (mm) RPM	$m/min = \frac{\pi \times D}{1000} \times RPM$
RPM	D (mm) m/min	$RPM = \frac{m/min \times 1000}{D \times \pi}$

## Legend

- IPM = inch per minute
- SFM = surface feet per minute
- m/min = meters per minute
- RPM = revolutions per minute
- D = part diameter
- $\pi$  = 3.1416

## Maximum Cutting Speeds

On older machines cutting speed is often limited by the maximum travel speed (IPM or mm/min) of the tool allowed by the machine. Check your maximum speed with the following formulas:

inch formula: maximum cutting speed (SFM) =  

$$\frac{\text{part diameter (inch)} \times 3.14 \times \text{TPI} \times \text{max IPM}}{12"}$$

metric formula: maximum cutting speed (m/min) =  

$$\frac{\text{part diameter (mm)} \times 3.14 \times (1/\text{pitch}) \times \text{max mm/min}}{1000\text{mm}}$$

## Flank Clearance

- $\gamma$  =  $\arctan(\sin(\beta/2) * \tan(\alpha))$
- g = side (flank) clearance
- $\beta$  = included angle of thread form
- $\alpha$  = radial inclination angle

Thread	Angle	External	Internal
<b>UN &amp; ISO</b>	60	5.3	8
<b>BSW</b>	55	4.8	7.3
<b>TR</b>	30	2.6	4
<b>ACME</b>	29	2.6	3.9
<b>AMBUT</b>	7	.6	.9
<b>AMBUT</b>	45	4	6

## Threading

### Recommendation for Threading Infeed Passes

TPI	48-32	28-24	20-16	14-12	11.5-9	8-6	5-4	3-2
metric pitch (mm)	0,50-0,75	0,80-1	1,25-1,5	1,75-2	2,5-3	3,5-4	4,5-6	8
<b>Thread Type</b>	<b>recommended number of passes</b>							
Common V-thread forms ISO, UN, UNJ, NPT, Whitworth, BSPT, API Rotary Shoulder	4-5	5-6	6-8	8-10	9-12	12-15	14-16	15-25
Acme, Trapez, Round, API Round	—	—	5-6	7-8	10-11	12-13	13-15	18-20
Stub Acme, API Buttress	—	—	5	5-6	7-8	8-10	10-12	14-16
American Buttress	—	—	7-8	9-10	11-12	13-15	17-19	22-24

Maintain minimum .002" (0,05mm) infeed on last passes to avoid work hardening and excessive abrasion of the threading tool.

### Constant Volume Infeed Values for Threading Operations

In most applications, use of CNC canned cycles produces only marginally successful results. For example, an 8-pitch external thread has a depth of .0789" (2mm).

Formula for constant chip load infeed

$\Delta a_p$	=	radial infeed
x	=	actual pass (from 1 to the nap)
nap	=	number of passes
$\phi$	=	1st pass, 0,3
		2nd pass, 1
		3rd pass and up, x-1

$$\Delta a_{p_x} = \frac{a_p}{\sqrt{\text{nap}-1}} \cdot \sqrt{\phi}$$

### Using Radial Infeed

Bending stress on the cutting edge caused by V-shaped chips from long-chipping steel workpiece materials.

High cutting forces with small cutting thicknesses require sharp edges with high strength.

### Using Flank Infeed

Lower bending stress and stabilized cutting edges produce more favorable chip shapes and larger cutting thicknesses.

Carbides with high hardness, good wear resistance, and temperature stability are advantageous.

## Guidelines for Infeeds —

### How to Determine the Number and the Size of Passes

The number of passes "s" per thread is decisive for successful threading and crest turning. The following tables give standard values for the application condition when machining steel. The proper number of passes must be determined empirically.

If insert breakage occurs, the number of passes must be increased. With increased wear, we recommend decreasing the number of passes. The chip thickness should not be less than .0019" (0,05mm). The allowance at the diameter should not exceed .0078" (0,2mm).

## Threading Infeed Tables

### Metric ISO, External Thread Cutting

thread pitch P (mm)	0,50	0,75	1,00	1,25	1,50	1,75	2,00	2,50	3,00	3,50	4,00	4,50	5,00
<b>T Ap (in)</b>	.012	.018	.024	.030	.036	.042	.048	.060	.072	.085	.097	.109	.121
<b>N Ap</b>	4	4	5	6	6	8	8	10	12	14	15	15	16
	values for flank infeed (X/Z)												
order of passes	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z
1	0.0038	0.0057	0.0066	0.0073	0.0088	0.0087	0.0099	0.0110	0.0119	0.0129	0.0142	0.0160	0.0171
2	0.0031	0.0047	0.0054	0.0061	0.0073	0.0072	0.0082	0.0090	0.0098	0.0107	0.0117	0.0132	0.0141
3	0.0029	0.0043	0.0050	0.0056	0.0067	0.0066	0.0075	0.0083	0.0090	0.0098	0.0107	0.0121	0.0129
4	0.0022	0.0033	0.0038	0.0043	0.0051	0.0050	0.0058	0.0064	0.0069	0.0075	0.0082	0.0093	0.0099
5			0.0032	0.0036	0.0043	0.0043	0.0049	0.0054	0.0058	0.0063	0.0069	0.0078	0.0084
6				0.0032	0.0038	0.0037	0.0043	0.0047	0.0051	0.0056	0.0061	0.0069	0.0074
7						0.0034	0.0039	0.0043	0.0046	0.0050	0.0055	0.0062	0.0067
8						0.0031	0.0036	0.0039	0.0043	0.0046	0.0051	0.0057	0.0061
9								0.0037	0.0040	0.0043	0.0047	0.0053	0.0057
10								0.0034	0.0037	0.0040	0.0044	0.0050	0.0054
11									0.0035	0.0038	0.0042	0.0047	0.0051
12									0.0034	0.0036	0.0040	0.0045	0.0048
13										0.0035	0.0038	0.0043	0.0046
14											0.0033	0.0037	0.0041
15												0.0035	0.0040
16													0.0041
<b>T Ap (in)</b>	0.012	0.018	0.024	0.030	0.036	0.042	0.048	0.060	0.072	0.085	0.097	0.109	0.121

NOTE: Always allow .003-.005" extra stock for full profile inserts.

### Metric ISO, Internal Thread Cutting

thread pitch P (mm)	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00	3.50	4.00	4.50	5.00
<b>T Ap</b>	0.011	0.016	0.021	0.027	0.032	0.037	0.043	0.053	0.064	0.075	0.085	0.096	0.107
<b>N Ap</b>	4	4	5	6	6	8	8	10	11	12	14	15	16
	values for flank infeed (X/Z)												
order of passes	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z
1	0.0035	0.0051	0.0058	0.0066	0.0078	0.0077	0.0089	0.0097	0.0111	0.0124	0.0129	0.0141	0.0151
2	0.0029	0.0042	0.0047	0.0055	0.0065	0.0063	0.0074	0.0080	0.0092	0.0102	0.0107	0.0116	0.0125
3	0.0026	0.0038	0.0043	0.0050	0.0059	0.0058	0.0067	0.0073	0.0084	0.0094	0.0098	0.0106	0.0114
4	0.0020	0.0029	0.0033	0.0038	0.0045	0.0044	0.0052	0.0056	0.0064	0.0072	0.0075	0.0082	0.0088
5			0.0028	0.0032	0.0038	0.0037	0.0044	0.0047	0.0054	0.0061	0.0063	0.0069	0.0074
6				0.0029	0.0034	0.0033	0.0038	0.0042	0.0048	0.0053	0.0056	0.0061	0.0065
7						0.0030	0.0035	0.0038	0.0043	0.0048	0.0050	0.0055	0.0059
8						0.0027	0.0032	0.0035	0.0040	0.0044	0.0046	0.0050	0.0054
9								0.0032	0.0037	0.0041	0.0043	0.0047	0.0050
10								0.0030	0.0035	0.0039	0.0040	0.0044	0.0047
11									0.0033	0.0037	0.0038	0.0042	0.0045
12										0.0035	0.0036	0.0040	0.0043
13											0.0035	0.0038	0.0041
14												0.0033	0.0039
15													0.0038
16													0.0036
<b>T Ap</b>	0.011	0.016	0.021	0.027	0.032	0.037	0.043	0.053	0.064	0.075	0.085	0.096	0.107

NOTE: Always allow .003-.005" extra stock for full profile inserts.

### Threading Infeed Tables

#### UN Thread, External Thread Cutting

TPI	24	20	18	16	14	12	11	10	9	8	7	6	5
<b>T Ap (in)</b>	0.026	0.031	0.034	0.038	0.036	0.042	0.048	0.060	0.072	0.085	0.097	0.109	0.121
<b>N Ap</b>	5	6	6	7	9	9	10	11	12	13	14	15	16
values for flank infeed (X/Z)													
order of passes	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z
1	0.0071	0.0076	0.0083	0.0085	0.0070	0.0081	0.0088	0.0104	0.0119	0.0134	0.0147	0.0160	0.0171
2	0.0059	0.0063	0.0069	0.0070	0.0058	0.0067	0.0072	0.0086	0.0098	0.0111	0.0122	0.0132	0.0141
3	0.0054	0.0057	0.0063	0.0064	0.0053	0.0062	0.0066	0.0079	0.0090	0.0102	0.0111	0.0121	0.0129
4	0.0041	0.0044	0.0048	0.0049	0.0040	0.0047	0.0051	0.0060	0.0069	0.0078	0.0086	0.0093	0.0099
5	0.0035	0.0037	0.0041	0.0042	0.0034	0.0040	0.0043	0.0051	0.0058	0.0066	0.0072	0.0078	0.0084
6		0.0033	0.0036	0.0037	0.0030	0.0035	0.0038	0.0045	0.0051	0.0058	0.0064	0.0069	0.0074
7				0.0033	0.0027	0.0032	0.0034	0.0040	0.0046	0.0052	0.0057	0.0062	0.0067
8					0.0025	0.0029	0.0031	0.0037	0.0043	0.0048	0.0053	0.0057	0.0061
9					0.0023	0.0027	0.0029	0.0035	0.0040	0.0045	0.0049	0.0053	0.0057
10							0.0027	0.0033	0.0037	0.0042	0.0046	0.0050	0.0054
11								0.0031	0.0035	0.0040	0.0044	0.0047	0.0051
12									0.0034	0.0038	0.0042	0.0045	0.0048
13										0.0036	0.0040	0.0043	0.0046
14											0.0038	0.0041	0.0044
15												0.0040	0.0043
16													0.0041
<b>T Ap (in)</b>	0.026	0.031	0.034	0.038	0.036	0.042	0.048	0.060	0.072	0.085	0.097	0.109	0.121

NOTE: Always allow .003-.005" extra stock for full profile inserts.

#### UN Thread, Internal Thread Cutting

TPI	24	20	18	16	14	12	11	10	9	8	7	6	5
<b>T Ap</b>	.023	.027	.030	.034	.039	.045	.049	.054	.060	.068	.077	.090	.108
<b>N Ap</b>	5	6	6	7	8	9	9	10	11	12	13	14	15
values for flank infeed (X/Z)													
order of passes	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z
1	0.0063	0.0066	0.0073	0.0076	0.0081	0.0087	0.0095	0.0099	0.0104	0.0112	0.0122	0.0137	0.0158
2	0.0052	0.0055	0.0061	0.0063	0.0067	0.0072	0.0078	0.0081	0.0086	0.0093	0.0101	0.0113	0.0131
3	0.0048	0.0050	0.0056	0.0057	0.0061	0.0066	0.0072	0.0075	0.0079	0.0085	0.0092	0.0103	0.0120
4	0.0037	0.0038	0.0043	0.0044	0.0047	0.0051	0.0055	0.0057	0.0060	0.0065	0.0071	0.0079	0.0092
5	0.0031	0.0032	0.0036	0.0037	0.0039	0.0043	0.0046	0.0048	0.0051	0.0055	0.0060	0.0067	0.0077
6		0.0029	0.0032	0.0033	0.0035	0.0038	0.0041	0.0042	0.0045	0.0048	0.0052	0.0059	0.0068
7				0.0030	0.0031	0.0034	0.0037	0.0038	0.0040	0.0044	0.0047	0.0053	0.0062
8					0.0029	0.0031	0.0034	0.0035	0.0037	0.0040	0.0044	0.0049	0.0057
9						0.0029	0.0032	0.0033	0.0035	0.0037	0.0041	0.0046	0.0053
10								0.0031	0.0033	0.0035	0.0038	0.0043	0.0050
11									0.0031	0.0033	0.0036	0.0041	0.0047
12										0.0032	0.0034	0.0039	0.0045
13											0.0033	0.0037	0.0043
14												0.0031	0.0035
15													0.0039
16													
<b>T Ap</b>	0.023	0.027	0.030	0.034	0.039	0.045	0.049	0.054	0.060	0.068	0.080	0.090	0.108

NOTE: Always allow .003-.005" extra stock for full profile inserts.

## Threading Infeed Tables

### NPT Thread, External, and Internal Machining

TPI	27	18	14	11.5	8
T Ap	0.030	0.044	0.056	0.068	0.098
N Ap	6	8	10	12	14
values for flank infeed (X/Z)					
order of passes	X/Z	X/Z	X/Z	X/Z	X/Z
1	0.0073	0.0091	0.0102	0.0112	0.0149
2	0.0061	0.0075	0.0084	0.0093	0.0123
3	0.0056	0.0069	0.0077	0.0085	0.0113
4	0.0043	0.0053	0.0059	0.0065	0.0086
5	0.0036	0.0045	0.0050	0.0055	0.0073
6	0.0032	0.0039	0.0044	0.0048	0.0064
7		0.0035	0.0040	0.0044	0.0058
8		0.0033	0.0037	0.0040	0.0053
9			0.0034	0.0037	0.0050
10			0.0032	0.0035	0.0047
11				0.0033	0.0044
12				0.0032	0.0042
13					0.0040
14					0.0038
15					
16					
T Ap	0.030	0.044	0.056	0.068	0.098

NOTE: Always allow .003-.005" extra stock for full profile inserts.

### BSPT Thread, External, and Internal Machining

TPI	28	19	14	11
T Ap	0.023	0.034	0.046	0.057
N Ap	5	8	10	12
values for flank infeed (X/Z)				
order of passes	X/Z	X/Z	X/Z	X/Z
1	0.0063	0.0070	0.0084	0.0094
2	0.0052	0.0058	0.0069	0.0078
3	0.0048	0.0053	0.0064	0.0071
4	0.0037	0.0041	0.0049	0.0055
5	0.0031	0.0034	0.0041	0.0046
6		0.0030	0.0036	0.0041
7		0.0027	0.0033	0.0037
8		0.0025	0.0030	0.0034
9			0.0028	0.0031
10			0.0026	0.0029
11				0.0028
12				0.0027
13				
14				
15				
16				
T Ap	0.023	0.034	0.046	0.057

### Trapezoid Thread to DIN 103, External, and Internal Machining

pitch	1.50	2.00	3.00	4.00	5.00
T Ap	0.040	0.049	0.069	0.089	0.108
N Ap	6	8	10	12	14
values for flank infeed (X/Z)					
order of passes	X/Z	X/Z	X/Z	X/Z	X/Z
1	0.0098	0.0101	0.0126	0.0147	0.0164
2	0.0081	0.0084	0.0104	0.0121	0.0135
3	0.0074	0.0077	0.0095	0.0111	0.0124
4	0.0057	0.0059	0.0073	0.0085	0.0095
5	0.0048	0.0050	0.0062	0.0072	0.0080
6	0.0042	0.0044	0.0054	0.0063	0.0071
7		0.0040	0.0049	0.0057	0.0064
8		0.0036	0.0045	0.0053	0.0059
9			0.0042	0.0049	0.0055
10			0.0039	0.0046	0.0051
11				0.0044	0.0049
12				0.0041	0.0046
13					0.0044
14					0.0042
15					
16					
T Ap	0.040	0.049	0.069	0.089	0.108

NOTE: Always allow .003-.005" extra stock for full profile inserts.

### Round Thread to DIN 405, External, and Internal Machining

pitch	10	8	6
T Ap	0.052	0.064	0.085
N Ap	8	10	12
values for flank infeed (X/Z)			
order of passes	X/Z	X/Z	X/Z
1	0.0108	0.0117	0.0140
2	0.0089	0.0096	0.0116
3	0.0081	0.0088	0.0106
4	0.0062	0.0068	0.0081
5	0.0053	0.0057	0.0069
6	0.0046	0.0050	0.0061
7	0.0042	0.0046	0.0055
8	0.0039	0.0042	0.0050
9		0.0039	0.0047
10		0.0037	0.0044
11			0.0042
12			0.0040
13			
14			
15			
16			
T Ap	0.052	0.064	0.085

NOTE: Always allow .003-.005" extra stock for full profile inserts.

### Threading Infeed Tables

#### Whitworth, External, and Internal Thread Cutting

TPI	28	20	19	16	14	12	11	10	9	8	7	6	5
<b>T Ap</b>	0.023	0.032	0.032	0.034	0.040	0.053	0.058	0.064	0.071	0.080	0.091	0.107	0.128
<b>N Ap</b>	5	6	6	8	8	9	9	10	11	12	14	15	16
	values for flank infeed (X/Z)												
order of passes	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z	X/Z
1	0.0063	0.0078	0.0078	0.0070	0.0083	0.0103	0.0112	0.0117	0.0123	0.0132	0.0138	0.0157	0.0181
2	0.0052	0.0065	0.0065	0.0058	0.0068	0.0085	0.0093	0.0096	0.0102	0.0109	0.0114	0.0129	0.0149
3	0.0048	0.0059	0.0059	0.0053	0.0063	0.0078	0.0085	0.0088	0.0093	0.0100	0.0105	0.0118	0.0137
4	0.0037	0.0045	0.0045	0.0041	0.0048	0.0060	0.0065	0.0068	0.0071	0.0077	0.0080	0.0091	0.0105
5	0.0031	0.0038	0.0038	0.0034	0.0041	0.0050	0.0055	0.0057	0.0060	0.0065	0.0068	0.0077	0.0089
6		0.0034	0.0034	0.0030	0.0036	0.0044	0.0048	0.0050	0.0053	0.0057	0.0060	0.0068	0.0078
7				0.0027	0.0032	0.0040	0.0044	0.0046	0.0048	0.0051	0.0054	0.0061	0.0071
8				0.0025	0.0030	0.0037	0.0040	0.0042	0.0044	0.0047	0.0050	0.0056	0.0065
9						0.0034	0.0037	0.0039	0.0041	0.0044	0.0046	0.0052	0.0060
10								0.0037	0.0039	0.0041	0.0043	0.0049	0.0057
11									0.0036	0.0039	0.0041	0.0046	0.0054
12										0.0037	0.0039	0.0044	0.0051
13											0.0037	0.0042	0.0049
14											0.0036	0.0040	0.0047
15												0.0039	0.0045
16													0.0043
<b>T Ap</b>	0.023	0.032	0.032	0.034	0.040	0.053	0.058	0.064	0.071	0.080	0.091	0.107	0.128

NOTE: Always allow .003-.005" extra stock for full profile inserts.

#### Multi-Tooth Threads, Internal

type	ISO metric						ISO UN						Whit-	NPT		
	3M	2M	3M	2M	3M	2M	2M	3M	2M	3M	2M	2M	2M	3M	2M	
pitch (mm)	1.0	1.5	1.5	2.0	2.0	3.0	—	—	—	—	—	—	—	—	—	
TPI	—	—	—	—	—	—	16	16	12	12	8	11	11.5	11.5	8	
total depth	.024	.033	.033	.460	.460	.070	.037	.037	.490	.490	.740	.620	.690	.690	.100	
1	.013	.015	.020	.020	.028	.022	.017	.022	.022	.030	.023	.029	.023	.032	.035	
2	.011	.010	.013	.015	.018	.019	.012	.015	.016	.019	.020	.019	.020	.022	.025	
3	—	.008	—	.011	—	.017	.008	—	.011	—	.017	.014	.014	.015	.022	
4	—	—	—	—	—	.012	—	—	—	—	.014	—	.012	—	.018	

#### Recommendations for Steel Workpieces (<300 BHN)

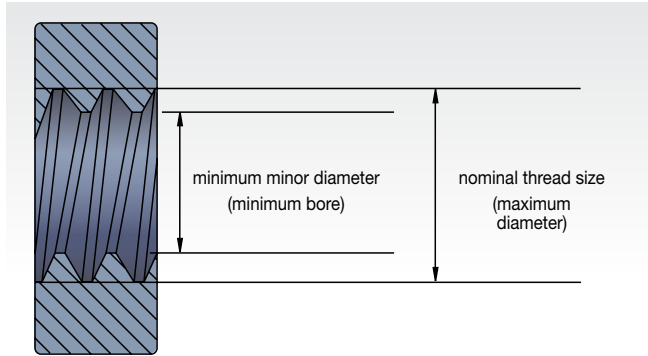
catalog number	insert size	TPI profile	total depth — on radius		
			1st pass	2nd pass	3rd pass
NTC-8R/L8EM	8	8 UN	.048	.064	.079
NTC-8R/L8IM	8	8 UN	.047	.061	.074
NTC-8R/L10EM	8	10 UN	.036	.050	.063
NTC-8R/L10IM	8	10 UN	.035	.048	.060
NTC-8R/L12EM	8	12 UN	.030	.041	.052
NTC-8R/L12IM	8	12 UN	.030	.037	.047
NTC-8R/L14EM	8	14 UN	.027	.037	.044
NTC-8R/L14IM	8	14 UN	.024	.031	.041
NTC-8R/L16EM 8	8	16 UN	.023	.032	.038
NTC-8R/L16IM	8	16 UN	.020	.027	.037
NTC-8R/L18EM	8	18 UN	.019	.026	.034
NTC-8R/L18IM	8	18 UN	.019	.024	.033
NDC-68RDR/L-75M	8	8 round	.058	.065	.073
NDC-61RDR/L-75M	8	10 round	.044	.051	.057
NDC-88RDR/L-75M	8	8 round	.051	.069	.073
NDC-88VR/L-75M	8	8 NPT	.040	.068	.096
NDC-8115VR/L-75M	8	11.5 NPT	.038	.054	.067
NDN-814VR/L-75M	8	14 NPT	.038	.054	.054

NOTE: Always allow .003-.005" extra stock for full profile inserts.



## TopThread™

The following charts list the largest thread pitch that can be applied on internal applications using TopThread threading inserts for 60° V-threading and Acme threading.



### Inch-Sized 60° V-Threading Limits

internal threading limitations NT-1, NT-2 V-threading inserts

TPI	nominal thread size		minimum minor diameter (inch)	
	NT-1	NT-2	NT-1	NT-2
6	1-7/8	—	1.695	—
7	1-3/4	—	1.595	—
8	1-5/8	—	1.490	—
9	1-9/16	—	1.442	—
10	1-1/2	15/16	1.392	.830
11	1-7/16	15/16	1.339	.830
11-1/2	1-3/8	15/16	1.281	.830
12	1-3/8	9/16	1.285	.472
13	1-5/16	9/16	1.229	.472
14	1-1/4	9/16	1.173	.472
16	1-1/4	9/16	1.182	.472
18	1-1/8	9/16	1.065	.472
20	1-1/8	1/2	1.071	.440
24*	1-1/16	1/2	1.017	.440

\*Twenty-four threads per inch and finer can be cut with an NT-2 insert provided the minor diameter is 1.000" or larger (.440" or larger with NT-1).

internal threading limitations NT-3 and-4 V-threading inserts

TPI	nominal thread size	minimum minor diameter (inch)
4**	3	2.729
4-1/2**	2-7/8	2.634
5	2-3/4	2.534
6	2-1/2	2.320
7	2-1/4	2.095
8	2	1.865
9	1-15/16	1.817
10	1-7/8	1.767
11	1-13/16	1.714
11-1/12	1-3/4	1.656
12	1-3/4	1.660
13	1-5/8	1.542
14	1-9/16	1.485
16*	1-7/16	1.370

\*Sixteen threads per inch and finer can be cut provided minor diameter is 1.370" or larger.

\*\*NT-4 insert only.

### Metric-sized 60° V-Threading Limits

internal threading limitations NT-1, NT-2 60° V-threading inserts

TPI	nominal thread size		minimum thread diameter (inch)	
	NT-1	NT-2	NT-1	NT-2
4,00	M48 x 4.00	—	43,67	—
3,00	M42 x 3.00	—	38,75	—
2,50	M39 x 2.50	M24 x 2,50	36,29	21,29
2,00	M33 x 2.00	M15 x 2,00	30,84	12,84
1,75	M32 x 1.75	M15 x 1,75	30,11	13,11
1,50	M32 x 1.50	M15 x 1,50	30,38	13,38
1,25	M29 x 1.29	M14 x 1,25	27,65	12,65
1,00*	M27 x 1.00	M14 x 1,00	25,92	12,92
0,75	M22 x 0.75	M12 x 0,75	21,19	11,19

\*Thread pitch of 1mm and less can be cut with an NT-2 insert provided the core thread diameter is 25mm or larger (11mm or larger with NT-1).

internal threading limitations NT-3 and NT-4 60° V-threading inserts

TPI	nominal thread size	minimum thread diameter (inch)
6,00**	M76 x 6.00	69,50
5,50**	M73 x 5.50	67,05
5,00	M70 x 5.00	64,59
4,00	M64 x 4.00	59,67
3,00	M52 x 3.00	48,75
2,50	M48 x 2.50	45,29
2,00	M42 x 2.00	39,84
1,75	M40 x 1.75	38,11
1,50*	M38 x 1.50	36,38

\*Thread pitch of 1,5mm and less can be cut provided core thread diameter is 35mm or larger.

\*\*NT-4 insert only.

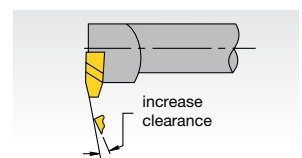
### Acme Threading Limits

internal threading limitations NA and NAS-2, -3, -4, and -6 Acme threading inserts

TPI	nominal thread size	minimum thread diameter (inch)	
	NT-1	NT-1	NT-2
2**	5	4.500	114.3
2-1/2**	4-1/2	4.100	104.1
3**	4	3.665	93.1
4	3-1/2	3.250	82.6
5	3	2.800	71.1
6	2-1/2	2.333	59.3
8	2-1/4	2.125	54.0
10	2	1.900	48.3
12	1-3/4	1.667	42.4
14	1-5/8	1.554	39.5
16*	1-1/2	1.438	36.5

\*Sixteen threads per inch and finer can be cut provided minor diameter is 36,5mm (1.438") or larger.

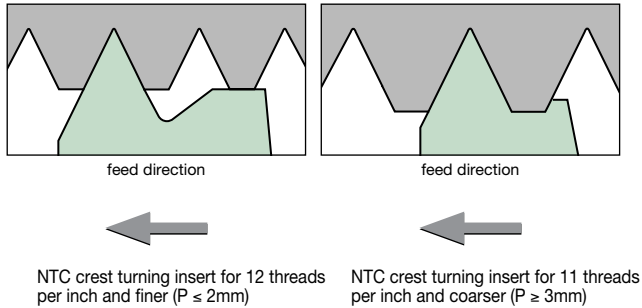
\*\*NA-6 insert only.



Additional secondary clearance can be ground on leading edge of insert to provide sufficient helical clearance for machining coarser threads and multiple start threads. Modified standard inserts may be furnished for machining threads outside of the limits shown.

TopThread™

60° V-Thread Crest Turning Application Data



NOTE: NTC inserts automatically control root to crest dimensions. Therefore, in setting up threading operations with NTC inserts, check the O.D. or I.D. at the thread crest for correct dimensions.

60° V-Thread Crest Turning Application Data

insert catalog number	nose radius on insert (inch)	thread radius per MIL-S-8879A (inch)
NJ-3014R/L12	.0125/.0135	.0125/.0150
NJK-3008R/L20	.0075/.0085	.0075/.0090

“J” thread note for catalog

The controlled root radius thread form (SAE8879C) is defined for the external thread only. To machine the corresponding internal thread, choose any insert that will cut a unified class 2B thread, then bore the minor diameter to size. Refer to SAE8879C and MIL-S-8879C and SAEAS8879D for the correct “J” thread minor diameter values.

60° V-Thread Application Data

insert description	insert	D** (inch)	E** (inch)	recommended TPI*		recommended TP*	
				external	internal	external	internal
<p>NT-NTP-</p>	NT-1	.075	.044	-	24-12	-	1,00-2,00
	NT-2	.113	.075	36-8	20-7	0,70-3,00	1,25-3,50
	NT-2-K	.113	.075	36-8	20-7	0,70-3,00	1,25-3,50
	NTF-2	.062	.040	44-14	24-12	0,60-1,75	1,00-2,00
	NTK-2	.062	.040	44-14	24-12	0,60-1,75	1,00-2,00
	NTP-2	.113	.075	36-8	20-7	0,70-3,00	1,25-3,50
	NT-3	.148	.097	20-6	12-5	1,25-4,00	2,00-5,00
	NT-3-K	.148	.097	20-6	12-5	1,25-4,00	2,00-5,00
	NT-3-C	.148	.097	11-6	6 (only)	2,50-4,00	4,00 (only)
	NT-3-CK	.148	.097	11-6	6 (only)	2,50-4,00	4,00 (only)
<p>NTF-NTK-</p>	NTF-3	.083	.054	44-10	24-9	0,60-2,50	1,00-2,50
	NTK-3	.083	.054	44-10	24-9	0,60-2,50	1,00-2,50
	NTP-3	.148	.097	20-6	12-5	1,25-4,00	2,00-5,00
	NT-4	.196	.127	20-4	12-4	1,25-6,25	2,00-6,25
	NT-4-K	.196	.127	20-4	12-4	1,25-6,25	2,00-6,25
	NTP-4	.196	.127	20-4	12-4	1,25-6,25	2,00-6,25

\*Based on maximum insert radius size and class 2A and 2B thread specifications.

## TopThread™

### API Thread Forms • Insert Applications Chart for API Rotary Shouldered Connections

thread form	WIDIA™ insert		tool joint application	minimum box size*
	cresting	non-cresting		
V-.038R 2" TPF 4 TPI	NDC-4038R/L2 4-E/IR4API382	ND-3038R/L	2-3/8 API internal flush 2-7/8 API internal flush 3-1/2 API internal flush 4 API internal flush 4-1/2 API internal flush 5-1/2 API internal flush 6-5/8 API internal flush 4 API full hole API #23, API #26, API #31, API #35, API #38, API #40, API #44, API #46, API #50	API #31 2-7/8 IF
V-.038R 3" TPF 4 TPI	NDC-4038R/L3 4-E/IR4API383	ND-3038R/L	API #56 API #61 API #70 API #77	API #56
V-.050 2" TPF 4 TPI	NDC-4050R/L2 4-E/IR4API502	ND-4050R/L	5-1/2 API full hole 6-5/8 API regular 6-5/8 API full hole	5-1/2 API full hole
V-.050 3" TPF 4 TPI	NDC-4050R/L3 4-E/IR4API503	ND-4050R/L	5-1/2 API regular 7-5/8 API regular 8-5/8 API regular	5-1/2 API regular
V-.040 3" TPF 5 TPI	NDC-3040R/L3 NDC-4040R/L3 4-E/IR5API403	ND-3040R/L ND-4040R/L	2-3/8 API regular 2-7/8 API regular 3-1/2 API regular 4-1/2 API regular	3-1/2 API regular

\*Minimum box size that can be threaded with a standard TopThread insert due to minimum bore equipment.

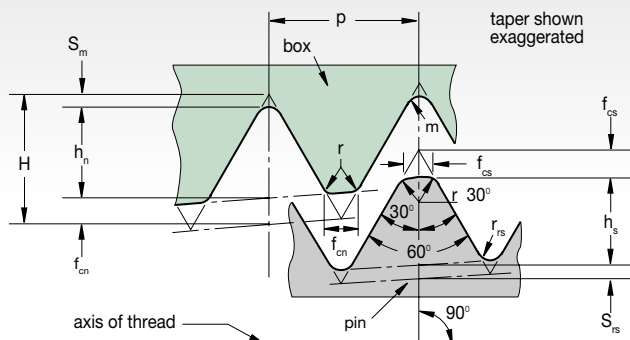
### API Thread Forms

#### Product Thread Dimensions • Rotary Shouldered Connections (Inch)

threadform	taper inch per ft.	thread height, not truncated H	thread height, truncated $h_n = h_s$	root truncation $S_m = S_{rs}$ $f_m = f_{rs}$	crest truncation $f_{cn} = f_{cs}$	width of flat		root radius $r_m = r_{rs}$	radius at thread corners r	pitch p
						crest $f_{cn} = f_{cs}$	crest $f_m = f_{rs}$			
V-.038R	2	.216005	.121844	.038000	.056161	.065	—	.038	.015	.250
V-.038R	3	.215379	.121381	.038000	.055998	.065	—	.038	.015	.250
V-.040	3	.172303	.117842	.020000	.034461	.040	—	.020	.015	
V-.050	3	.215379	.147303	.025000	.043076	.050	—	.025	.015	.250
V-.050	2	.216005	.147804	.025000	.043201	.050	—	.025	.015	

NOTE: All dimensions in inches.

#### V-.040 and V-.050 Product Thread Form

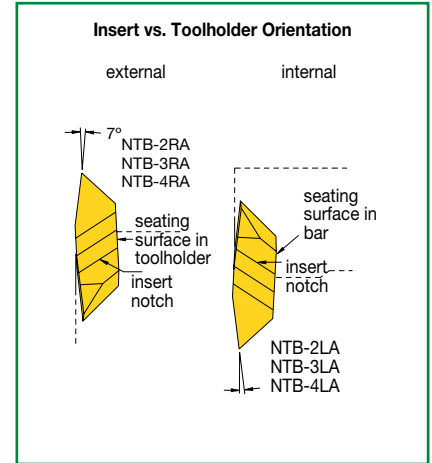
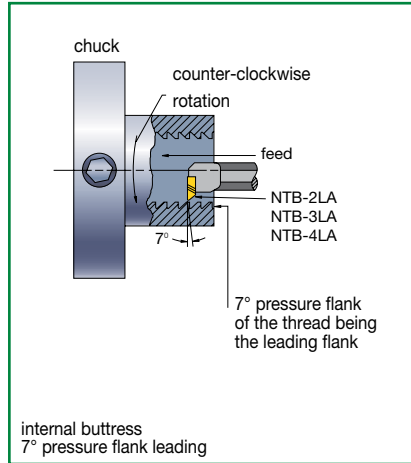
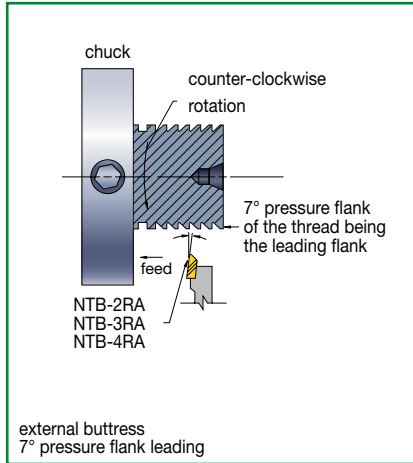


#### Casing and Tubing Round Thread (Height Dimensions)

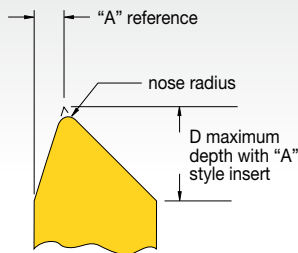
thread element	10 TPI p= .1000	8 TPI p= .1250
H	= .866p	.08660
$H_s = h_n$	= .626p - .007	.05560
$S_{rs} = S_m$	= .120p + .002	.01400
$S_{cs} = S_{cn}$	= .120p + .005	.01700
		.02000

TopThread™

American Buttress (7° Pressure Flank Leading) NTB-A Inserts • Push Type



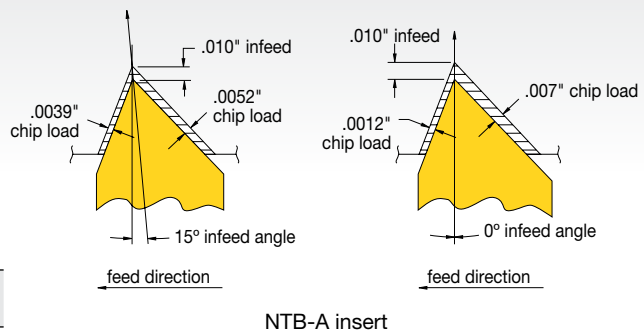
Reference Dimensions



insert	D (inch)	"A" ref. (inch)	nose radius (inch)	pitch based on maximum radius
NTB-2A	.133	.024	.002-.004	16-20 TPI
NTB-3A	.171	.031	.005-.008	8-16 TPI
NTB-4A	.218	.049	.008-.012	4-6 TPI

NOTE: For balanced chip load, 15° infeed angle is suggested.

Infeed Angle vs. Chip Load: 7° Pressure Flank Leading



Internal Threading Limitations

internal threading limitations  
NTB-2A Buttress threading inserts

TPI	nominal thread size	minimum minor diameter (inch)
8	1-3/4	1.600
10	1-5/8	1.505
12	1-1/2	1.400
16	1-1/4	1.175
20	1-1/16	1.002

internal threading limitations  
NTB-3 and NTB-4A Buttress threading inserts

TPI	nominal thread size	minimum minor diameter (inch)
4*	2-1/2	2.200
5	2-1/4	2.010
6	2	1.800
8	1-3/4	1.600
10	1-5/8	1.505
12**	1-1/2	1.400

\*NTB-4A insert only.

\*\*Can cut 16 or 20 threads per inch provided minor diameter is 1.375" or larger.

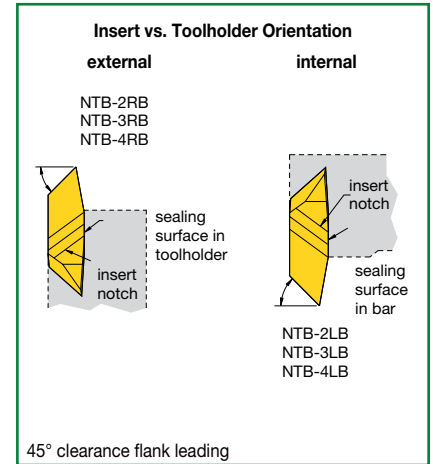
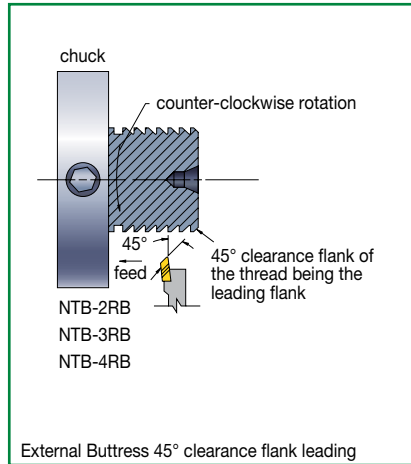
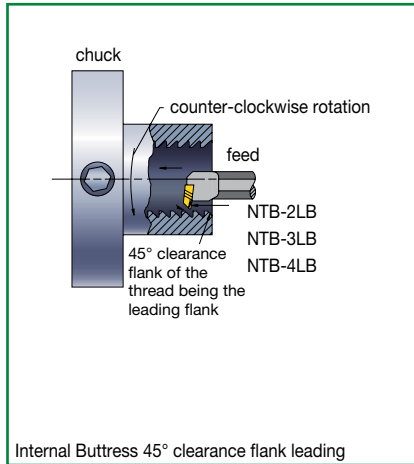
Threads per Inch vs. Maximum Root Radius Chart (Inch)

TPI	20	16	12	10	8	6	5	4	3	2-1/2	2	1-1/2	1-1/4	1
maximum root radius	.0036	.0045	.0059	.0071	.0089	.0119	.0143	.0179	.0238	.0268	.0375	.0476	.0572	.0714

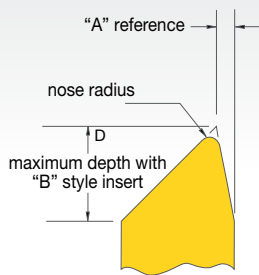
NOTE: Special buttress forms are available upon request.

## TopThread™

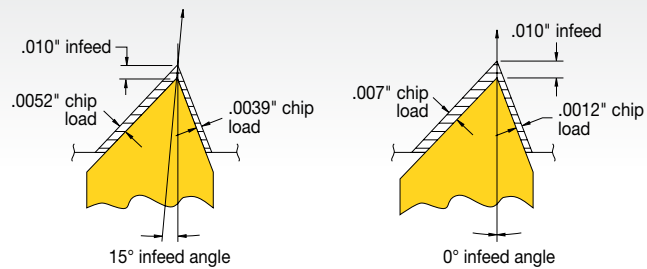
### American Buttress (45° Clearance Flank Leading): NTB-B Inserts • Pull Type



### Reference Dimensions



### Infeed Angle vs. Chip Load: 45° Clearance Flank Leading



NTB-B insert

insert	D (inch)	"A" reference (inch)	nose radius (inch)	pitch based on maximum radius
NTB-3B	.171	.031	.005-.004	8-16 TPI

NOTE: For balanced chip load, a reverse 15° infeed angle is suggested.

### Internal Threading Limitations

TPI	nominal thread size	minimum minor diameter (inch)
8	1-3/4	1.600
10	1-5/8	1.505
12	1-1/2	1.400
16	1-1/4	1.175
20	1-1/16	1.002

TPI	nominal thread size	minimum minor diameter (inch)
4*	2-7/8	2.575
5	2-3/4	2.510
6	2-3/8	2.175
8	2-1/8	1.975
10	1-7/8	1.755
12	1-5/8	1.525
16	1-1/2	1.407
20	1-7/16	1.378

\*NTB-4B insert only.

## External Laydown Threading

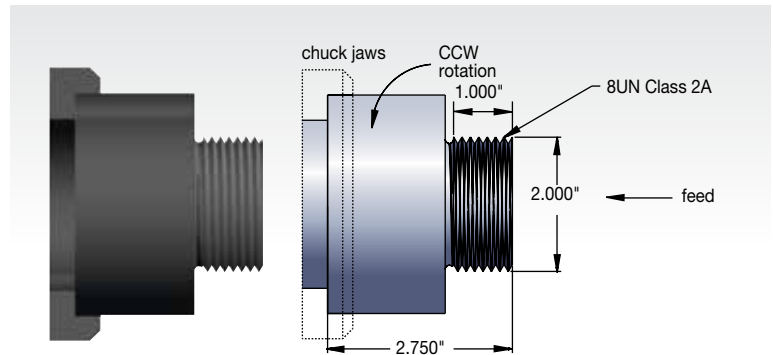
### Required Information

From Part Drawing:

material: 316SS, 200 HB  
 thread form: 8UN  
 tolerance: class 2A  
 operation: external threading  
 pitch diameter: 2.00" x 1.00" deep

From Machine Setup Data:

tooling: .750" x .750"  
 spindle rotation: counter-clockwise  
 feed: toward chuck

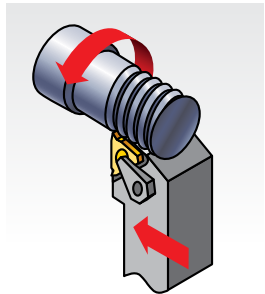


### Steps for a Successful Threading Operation

#### Step 1 • Determine Threading Method

Need to Know:

- Operation (external).
- Spindle rotation (CCW). Counter-clockwise rotation.
- Feed direction (toward chuck).
- Right-hand toolholder.
- Right-hand insert (ER).
- Standard helix method.



#### Step 2 • Select Insert



Need to Know:

- Thread form (8 UN Class 2A).
- Hand of insert (right hand – ER).

#### Choose the High-Performance Solution

catalog number	insert size	TN6025
3ER8UN	3"	•

#### High-Performance Selection

NOTE: Use insert with largest iC available.

insert: 3ER8UN  
 grade: TN6025  
 speed: 500 SFM

#### Step 3 • Select the Grade and Speed

Need to Know:

- Workpiece material (316SS-200HB).
- Operation (external).

Options: Grade and Speed Selection Guidelines

threading operation	stainless steel
external	general purpose and high performance
	TN6025
	150–450 SFM

#### Step 4 • Select Toolholder

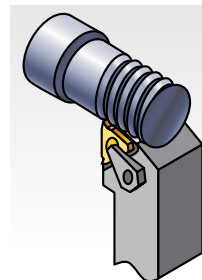
Need to Know:

- External or internal operation (external).
- Pitch diameter to determine minimum bore diameter (N/A).
- Type of tooling – toolholder, boring bar (toolholder).
- Hand of tool (right hand).
- Insert size (3/8").

Options:

catalog number	insert size	shim
LSASR-123	3"	SM-YE3

First choice: LSASR-123 holder



#### Step 5 • Select Shim

Need to Know:

- Thread form – TPI or pitch (8 TPI).
- Pitch diameter (2").
- Helix method (standard). See Laydown Threading (LT) shim selection chart.

Select SM-YE3 shim

NOTE: The SM-YE3 shim is supplied with the selected toolholder.

## Internal Laydown Threading

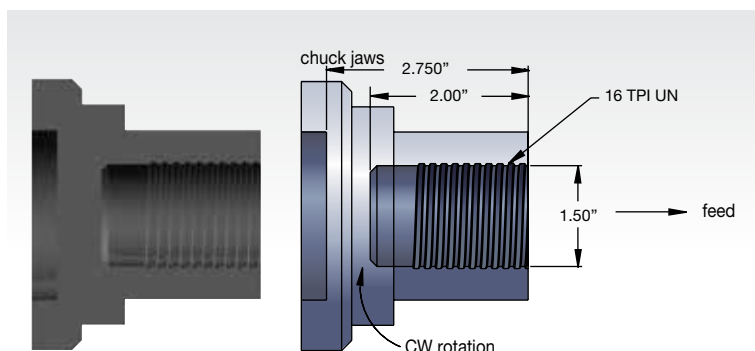
### Required Information

**From Part Drawing:**

- material: 4140 steel
- thread form: 16 TPI UN
- tolerance: class 2B
- operation: internal threading
- pitch diameter: 1.5" x 2" deep

**From Machine Setup Data:**

- tooling: .075" boring bar
- spindle rotation: clockwise
- feed: away from chuck

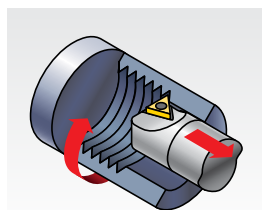


### Steps for a Successful Threading Operation

#### Step 1 • Determine Threading Method

**Need to Know:**

- Operation (internal).
- Spindle rotation (CW). Clockwise rotation.
- Feed direction (away from chuck).
- Left-hand toolholder.
- Left-hand insert (NL).
- Reverse helix method.



#### Step 2 • Select Insert



**Need to Know:**

- Thread form (16UN Class 2B).
- Hand of insert (left hand – NL).

#### Choose the High-Performance Solution

catalog number	insert size	TN6025
2ILA60	2"	•
3ILA60	3"	•

#### High-Performance Selection

*NOTE: Use insert with largest possible iC to go into the bore.*

insert: 3ILA60  
grade: TN6025  
speed: 450 SFM

#### Step 3 • Select the Grade and Speed

**Need to Know:**

- Workpiece material (4010 steel).
- Operation (internal).

Options: Grade and Speed Selection Guidelines

threading operation	steel
internal	general purpose and high performance
	TN6025
	100–550 SFM

#### Step 4 • Select Toolholder

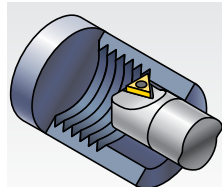
**Need to Know:**

- External or internal operation (internal).
- Pitch diameter to determine minimum bore diameter for internal operations (1.5").
- Type of tooling – toolholder, boring bar (boring bar).
- Hand of tool (left hand).
- Insert size (3/8").

Options:

catalog number	insert size	minimum bore diameter	shim
S1212-LSEL3	3"	.90	SM-YE3
S0812-LSEL2	2"	.65	–

**First choice: S1212-LSEL3 bar**



#### Step 5 • Select Shim

**Need to Know:**

- Thread form – TPI or pitch (16 TPI).
- Pitch diameter (1.5").
- Helix method (reverse). See Laydown Threading (LT) shim selection chart.

Select SM-YE3-2N shim

*NOTE: For this application, the standard shim supplied should be replaced with the recommended shim, SM-YE3-2N.*

## Laydown Threading

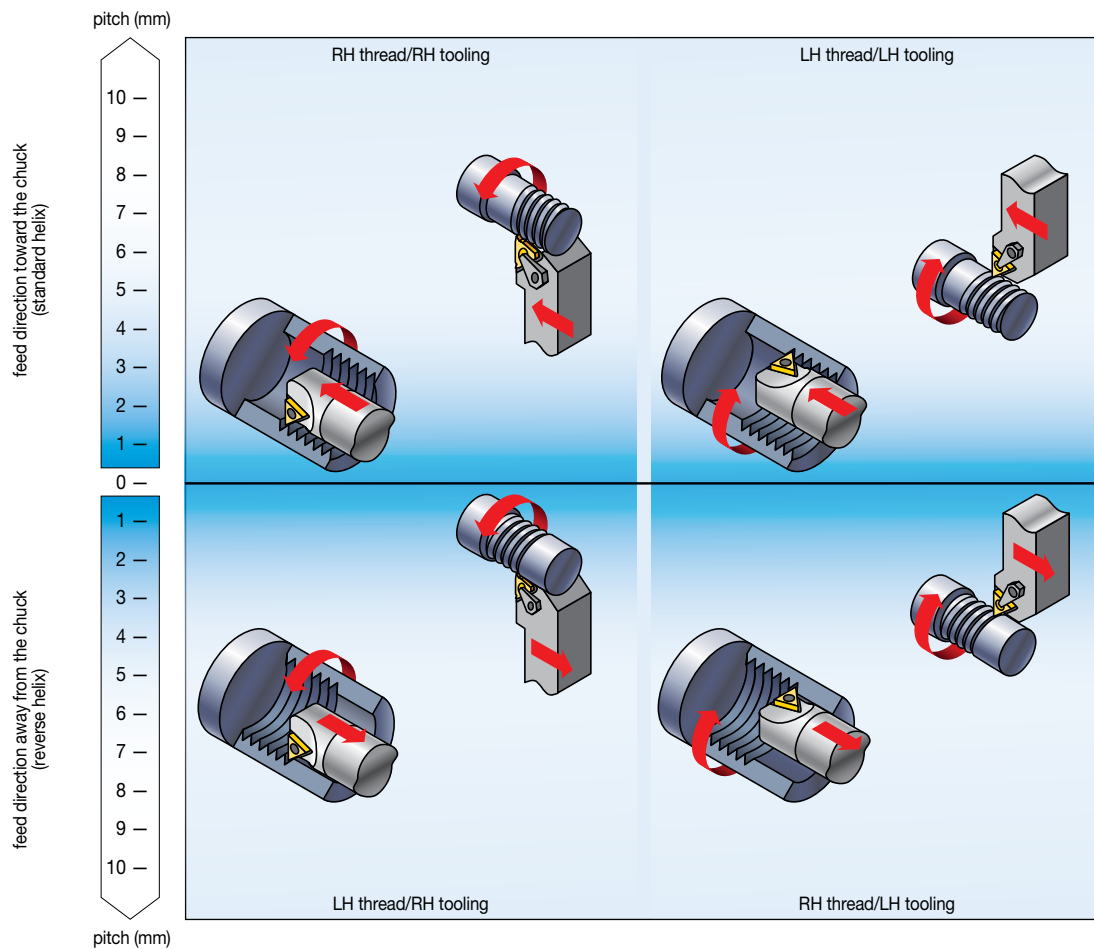
### Laydown Threading Shim Selection Guidelines

It is essential to select the correct shim to ensure thread quality and maximum tool life. These parameters are needed:

- Pitch
- Pitch diameter
- Number of starts
- Feed direction

NOTE: When considering method of thread cutting, the part's shape and stability and the flow of chips are determining factors in your decision.

### Laydown Selection Chart



NOTE: For multi-start threads, use the lead value instead of the pitch.

### Diagram of Thread Lead Angles

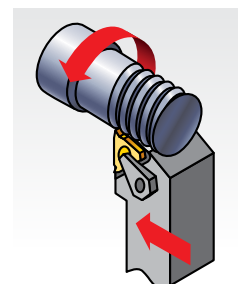
To calculate the lead angle of a given thread, use this formula:

$$\beta = \text{Arctan} \frac{P \cdot S}{\pi D_e}$$

$\beta$  = thread lead angle  
 $D_e$  = effective pitch diameter of thread wear  
 $P$  = 1/TPI  
 $TPI$  = threads per inch  
 $S$  = number of starts  
 single-start, lead = pitch  
 multiple-start, lead = pitch (x) number of starts

All toolholders are designed with an inclination angle = 1.5°. When turning standard threads with a lead angle of 1–2°, this guarantees adequate clearance at the flanks of the insert's thread tooth. The thread lead angle and the required inclination angle of the insert are given by  $\beta$ .

Cutting edge height is constant at every shim and insert combination. All toolholders are supplied with 1-1/2° lead angle.





## Laydown Threading

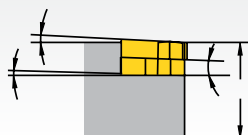
### Laydown Threading Shim Selection Table • Inch

insert size	toolholder		shim ordering code (inch)							
	external	internal				standard				
3 (3/8")	RH	LH	SM-YE3-3P	SM-YE3-2P	SM-YE3-1P	SM-YE3	SM-YE3-1N	SM-YE3-1.5N	SM-YE3-2N	SM-YE3-3N
3 (3/8")	LH	RH	SM-YI3-3P	SM-YI3-2P	SM-YI3-1P	SM-YI3	SM-YI3-1N	SM-YI3-1.5N	SM-YI3-2N	SM-YI3-3N
4 (1/2")	RH	LH	SM-YE4-3P	SM-YE4-2P	SM-YE4-1P	SM-YE4	SM-YE4-1N	SM-YE4-1.5N	SM-YE4-2N	SM-YE4-3N
4 (1/2")	LH	RH	SM-YI4-3P	SM-YI4-2P	SM-YI4-1P	SM-YI4	SM-YI4-1N	SM-YI4-1.5N	SM-YI4-2N	SM-YI4-3N
TPI	pitch (mm)		pitch diameter (inch)							
72	-	-	-	-	-	0.12-0.31	0.32-0.84	>0.84	0.84-0.32	0.31-0.12
-	0,35	-	-	-	-	0.12-0.3	0.31-0.84	>0.84	0.84-0.31	0.3-0.12
64	-	-	-	-	-	0.14-0.35	0.36-0.95	>0.95	0.95-0.36	0.35-0.14
-	0,40	-	-	-	-	0.14-0.35	0.36-0.96	>0.96	0.96-0.36	0.35-0.14
56	-	-	-	-	-	0.16-0.4	0.41-1.09	>1.09	1.09-0.41	0.4-0.16
-	0,50	-	-	-	0.11-0.16	0.17-0.44	0.45-1.2	>1.20	1.2-0.45	0.44-0.17
48	-	-	-	-	0.12-0.17	0.18-0.46	0.47-1.27	>1.27	1.27-0.47	0.46-0.18
44	-	-	-	-	0.13-0.19	0.2-0.51	0.52-1.38	>1.38	1.38-0.52	0.51-0.2
-	0,60	-	0.1-0.12	0.13-0.2	0.21-0.53	0.54-1.44	>1.44	1.44-0.54	0.53-0.21	
40	-	-	0.11-0.13	0.14-0.21	0.22-0.56	0.57-1.52	>1.52	1.52-0.57	0.56-0.22	
-	0,70	-	0.12-0.15	0.16-0.23	0.24-0.62	0.63-1.68	>1.68	1.68-0.63	0.62-0.24	
36	-	-	0.12-0.15	0.16-0.23	0.24-0.62	0.63-1.69	>1.69	1.69-0.63	0.62-0.24	
-	0,75	0.11-0.12	0.13-0.16	0.17-0.25	0.26-0.66	0.67-1.8	>1.80	1.8-0.67	0.66-0.26	
32	-	0.12-0.13	0.14-0.17	0.18-0.26	0.27-0.7	0.71-1.9	>1.90	1.9-0.71	0.7-0.27	
-	0,80	0.12-0.13	0.14-0.17	0.18-0.26	0.27-0.71	0.72-1.91	>1.91	1.91-0.72	0.71-0.27	
28	-	0.14-0.14	0.15-0.19	0.2-0.3	0.31-0.8	0.81-2.17	>2.17	2.17-0.81	0.8-0.31	
27	-	0.14-0.15	0.16-0.2	0.21-0.31	0.32-0.83	0.84-2.25	>2.25	2.25-0.84	0.83-0.32	
-	1,00	0.15-0.16	0.17-0.21	0.22-0.33	0.34-0.89	0.9-2.39	>2.39	2.39-0.9	0.89-0.34	
24	-	0.16-0.17	0.18-0.23	0.24-0.35	0.36-0.94	0.95-2.53	>2.53	2.53-0.95	0.94-0.36	
-	1,25	0.19-0.2	0.21-0.27	0.28-0.42	0.43-1.11	1.12-2.99	>2.99	2.99-1.12	1.11-0.43	
20	-	0.19-0.21	0.22-0.27	0.28-0.42	0.43-1.13	1.14-3.04	>3.04	3.04-1.14	1.13-0.43	
18	-	0.21-0.23	0.24-0.31	0.32-0.47	0.48-1.26	1.27-3.38	>3.38	3.38-1.27	1.26-0.48	
-	1,50	0.22-0.25	0.26-0.33	0.34-0.5	0.51-1.34	1.35-3.59	>3.59	3.59-1.35	1.34-0.51	
16	-	0.24-0.26	0.27-0.35	0.36-0.53	0.54-1.41	1.42-3.8	>3.80	3.8-1.42	1.41-0.54	
-	1,75	0.26-0.29	0.3-0.38	0.39-0.59	0.6-1.56	1.57-4.19	>4.19	4.19-1.57	1.56-0.6	
14	-	0.27-0.3	0.31-0.4	0.41-0.61	0.62-1.62	1.63-4.34	>4.34	4.34-1.63	1.62-0.62	
13	-	0.29-0.32	0.33-0.43	0.44-0.66	0.67-1.74	1.75-4.68	>4.68	4.68-1.75	1.74-0.67	
-	2,00	0.3-0.33	0.34-0.44	0.45-0.67	0.68-1.78	1.79-4.79	>4.79	4.79-1.79	1.78-0.68	
12	-	0.32-0.35	0.36-0.46	0.47-0.71	0.72-1.89	1.9-5.07	>5.07	5.07-1.9	1.89-0.72	
11.5	-	0.33-0.37	0.38-0.49	0.5-0.74	0.75-1.97	1.98-5.29	>5.29	5.29-1.98	1.97-0.75	
11	-	0.34-0.38	0.39-0.51	0.52-0.78	0.79-2.06	2.07-5.53	>5.53	5.53-2.07	2.06-0.79	
-	2,50	0.37-0.42	0.43-0.55	0.56-0.84	0.85-2.23	2.24-5.98	>5.98	5.98-2.24	2.23-0.85	
10	-	0.38-0.42	0.43-0.56	0.57-0.86	0.87-2.27	2.28-6.08	>6.08	6.08-2.28	2.27-0.87	
9	-	0.42-0.47	0.48-0.62	0.63-0.95	0.96-2.52	2.53-6.75	>6.75	6.75-2.53	2.52-0.96	
-	3,00	0.45-0.5	0.51-0.66	0.67-1.02	1.03-2.68	2.69-7.18	>7.18	7.18-2.69	2.68-1.03	
8	-	0.47-0.53	0.54-0.7	0.71-1.08	1.09-2.84	2.85-7.6	>7.60	7.6-2.85	2.84-1.09	
-	3,50	0.52-0.59	0.6-0.77	0.78-1.19	1.2-3.13	3.14-8.38	>8.38	8.38-3.14	3.13-1.2	
7	-	0.524-0.61	0.62-0.8	0.81-1.23	1.24-3.25	3.26-8.68	>8.68	8.68-3.26	3.25-1.24	
-	4,00	0.6-0.67	0.68-0.89	0.9-1.36	1.37-3.58	3.59-9.57	>9.57	9.57-3.59	3.58-1.37	
6	-	0.63-0.71	0.72-0.94	0.95-1.44	1.45-3.79	3.8-10.13	>10.13	10.13-3.8	3.79-1.45	
-	5,00	0.75-0.84	0.85-1.11	1.12-1.7	1.71-4.48	4.49-11.97	>11.97	11.97-4.49	4.48-1.71	
5	-	0.76-0.86	0.87-1.13	1.14-1.73	1.74-4.55	4.56-12.16	>12.16	12.16-4.56	4.55-1.74	
4.5	-	0.84-0.95	0.96-1.26	1.27-1.92	1.93-5.06	5.07-13.51	>13.51	13.51-5.07	5.06-1.93	
-	6,00	0.9-1.01	1.02-1.33	1.34-2.04	2.05-5.37	5.38-14.36	>14.36	14.36-5.38	5.37-2.05	
4	-	0.95-1.07	1.08-1.41	1.42-2.16	2.17-5.69	5.7-15.2	>15.20	15.2-5.7	5.69-2.17	
inclination angle			4.5	3.5	2.5	1.5	0.5	0.0	-0.5	-1.5
			standard helix (feed toward the chuck)				reverse helix (feed away from the chuck)			

1. Select TPI or pitch from the left-hand columns.
2. Follow row to specified pitch diameter and the correct feed direction.
3. Follow the column to the top for the required shim based on the toolholder and insert size.

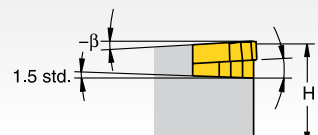
#### standard helix method:

Used when RH thread is cut with RH tool or LH thread with LH tool.



#### reverse helix method:

Used when RH thread is cut with LH tool or when LH thread is cut with RH tool.





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## Turning Icons

<p>Shank: KM-TS™ (ISO 26622)</p>	<p>ISO: 26622</p>	<p>Through Coolant: 100 bar</p>	<p>Through Coolant: 1500 psi</p>	<p>Turning</p>
<p>Cut-off</p>	<p>I.D. Turning</p>	<p>I.D. Chamfering</p>	<p>I.D. Grooving</p>	<p>I.D. Face Grooving</p>
<p>I.D. Internal Threading</p>	<p>Profiling</p>	<p>Facing</p>	<p>Face Grooving</p>	<p>Back Boring</p>
<p>Threading</p>	<p>Grooving</p>			

## Indexable Milling Icons

 Countersinking	 Face Milling	 Helical Milling	 Plunge Milling	 Ramping Blank
 Slotting: Ball Nose	 Slotting: Side Milling	 Slotting: Side Milling with AE/AP Dimensions	 Slotting: Square End	 Slotting: T
 Side Milling/Shoulder Milling: Ball Nose	 Side Milling/Shoulder Milling: Square End	 Side Milling: Square End with AE/AP Dimensions	 Chamfer Milling	 Side Milling: Roughing
 3D Profiling	 PCD Tool	 Pocketing	 Plain Shank	 Shell Mill Shank
 Weldon® Shank	 Weldon Shank: 2 Flat	 Screw-On Shank	 Shank	 Through Coolant: Radial: Indexable Milling

## Solid End Milling Icons








































 Plunge Milling	 Ramping Blank	 Slotting: Ball Nose	 Slotting: Ball Nose with AP Dimension	 Slotting: Square End
 Slotting: Square End with AP Dimension	 Trochoidal Milling	 Trochoidal Milling: Ball Nose	 Side Milling/Shoulder Milling: Ball Nose	 Side Milling/Shoulder Milling: Ball Nose with AE/AP Dimension
 Side Milling/Shoulder Milling: Square End	 Side Milling/Shoulder Milling: Square End with AE/AP Dimension	 Chamfer Milling	 Chamfer Milling: Chamfer Milling with AE/AP Dimension	 3D Profiling
 PCD Tool	 HSS-PM Material	 HSS-M42	 Corner Style: Ball Nose	 Corner Style: Corner Chamfer
 Corner Style: Corner Radius	 Corner Style: Square End	 Corner Style: Torus	 Helix Angle: 0°	 Helix Angle: 15°
 Helix Angle: 20°	 Helix Angle: 25°	 Helix Angle: 30°	 Helix Angle: 35°	 Helix Angle: 37°
 Helix Angle: 38°	 Helix Angle: 40°	 Helix Angle: 45°	 Helix Angle: 45°	 Helix Angle: 60°
 Helix Angle: 43°	 DIN 6528	 DIN 844	 DIN 1835/B	 DIN 6527
 Through Coolant: Radial: Drilling	 Through Coolant: Axial: Solid End Mill	 Tool Dimensions: Flute Configuration: X (Variable)	 Tool Dimensions: Flute Configuration: 1	 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
 Manufacturer's Specs: JIS				



## Holemaking Icons

 Countersinking/ Stroke Chamfering	 Drilling	 Chain Drilling	 Drilling: Cross Hole	 Drilling: Half Cylinder
 Drilling: Corner Drilling 45°	 Drilling: Inclined Entry	 Drilling: Inclined Exit	 Drilling: Exit Offset	 Drilling: Stacked Plates
 Drilling: Convex	 Drilled Hole	 Reaming: Through Hole	 Reaming: Blind Hole	 Reaming: Through Cross
 Reaming: Blind and Cross Holes	 Drilling Depth: 3x	 Drilling Depth: 5x	 Drilling Depth: 8x	 Drilling Depth: 12x
 Shank: Cylindrical Plain ≤h6	 Shank: Cylindrical Whistle Notch 2°	 Flat Shank	 Shank: Cylindrical with flat	 KM™ Shank
 Helix Angle 0°	 Helix Angle 30°	 DIN 212	 DIN 6535	 DIN 6537
 Through Coolant: Radial: Drilling	 Through Coolant: Radial: Drilling	 Through Coolant: Radial: Indexable Drilling	 Flood Coolant: Reaming	 Through Coolant: MQL (Minimum Quantity Lubricant): Drilling
 Axial: Drilling	 Through Coolant: Axial Reaming	 Tool Dimensions: 2-Flute/2-Margin/ Coolant	 Tool Dimensions: 2-Flute/4-Margin/ Coolant	

## Tapping Icons

 Tapping: Blind Hole	 Threading: Through Hole	 Threading: Blind Hole	 HSS-E: High-Speed Steel with Cobalt Alloy for Materials with Higher Hardness	 HSS-E-PM: High-Speed Steel with Cobalt Alloy for Materials with Higher Hardness (PM = Power Metal Steel)
 HM: (Carbide)	 Square Shank	 Chamfer Form C (2-3)	 Chamfer Form D (3.5-5)	 Chamfer Form E (1.5-2)
 Plug Chamfer (3-5)	 Tapping Helix: Angle: 0°	 Tapping Helix: Angle: 10°	 Tapping Helix: Angle: L8°	 Tapping Helix: Angle: 15°
 Tapping Helix: Angle: L15°	 Tapping Helix: Angle: 25°	 Tapping Helix: Angle: 30°	 Tapping Helix: Angle: 42°	 Tapping Helix: Angle: 45°
 DIN 371 DIN Number 371	 DIN 374 DIN Number 374	 DIN 2174 DIN Number 2174	 DIN 376 DIN Number 376	 Tapping: Through Coolant
 Flood Coolant: Tapping	 Through Coolant: Axial: Tapping	 ISO 2 ISO 2	 JIS Manufacturer's Specs: JIS	 2B Class of Fit: 2B
 3B Class of Fit: 3B	 6H Class of Fit: 6H	 6HX Class of Fit: 6HX	 6G Class of Fit: 6G	 ANSI ANSI
 UNJC Unified Course Thread: J Profile	 UNJF Unified Fine Thread: J Profile	 UNF Unified Fine Thread	 UNC Unified Course Thread	 M ISO Metric Coarse Thread
 MF ISO Metric Fine Thread				

DIN – German Institute for Standardization

ISO – International Standardization Organization



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## Turning



## Tapping



## Holemaking



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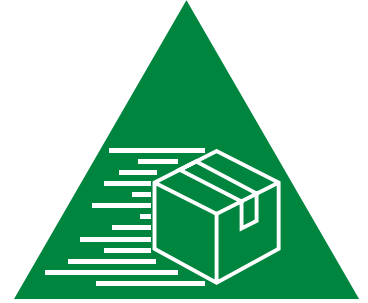
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## **Indexable Milling**



## **Solid End Milling**



# Material Cross Reference • ANSI

<b>P</b> Steel	<b>N</b> Non-Ferrous	<b>H</b> Hardened Materials
<b>M</b> Stainless Steel	<b>S</b> High-Temp Alloys	<b>C</b> CFRP Materials
<b>K</b> Cast Iron		

material group	description	content	tensile strength RM (MPa)*	hardness (HB)	hardness (HRC)	material number
<b>P0</b>	Low-Carbon Steels, Long Chipping	C <0,25%	<530	<125	–	A36, 1008, 1010, 1018 through 1029; 1108, 1117
<b>P1</b>	Low-Carbon Steels, Short Chipping, Free Machining	C <0,25%	<530	<125	–	10L18, 1200 Series, 1213, 12L14
<b>P2</b>	Medium- and High-Carbon Steels	C >0,25%	>530	<220	<25	1035, 1045, 10L45, 1050, 10L50, 1080, 1137, 1144, 11L44, 1525, 1545, 1572
<b>P3</b>	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
<b>P4</b>	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
<b>P5</b>	Ferritic, Martensitic, and PH Stainless Steels	–	600–900	<330	<35	15–5 PH, 13–8 PH, 17–4 PH, 400 and 500 Series
<b>P6</b>	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
<b>M1</b>	Austenitic Stainless Steel	–	<600	130–200	–	200 Series, 301, 302, 304, 304L, 309
<b>M2</b>	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
<b>M3</b>	Duplex Stainless Steel	–	<800	135–275	<30	323, 329, F55, 2205, S329000
<b>K1</b>	Gray Cast Iron	–	125–500	120–290	<32	class 20, 25, 30, 35, 40, 45, 50, 55, 60, G1800, G3000, G3500, G4000
<b>K2</b>	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
<b>K3</b>	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
<b>N1</b>	Wrought Aluminum	–	–	–	–	2025, 5050, 7050, 1000, 2017
<b>N2</b>	Low-Silicon Aluminum Alloys and Magnesium Alloys	Si <12,2%	–	–	–	2024, 6061, 7075
<b>N3</b>	High-Silicon Aluminum Alloys and Magnesium Alloys	Si >12,2%	–	–	–	–
<b>N4</b>	Copper-, Brass-, Zinc-Based on Machinability Index Range of 70–100	–	–	–	–	C81500
<b>N5</b>	Nylon, Plastics, Rubbers, Phenolics, Resins, Fiberglass	–	–	–	–	–
<b>N6</b>	Carbon, Graphite Composites, CFRP	–	–	–	–	Graphite, CFK, CFRP
<b>N7</b>	Metal Matrix Composites (MMC)	–	–	–	–	C63000
<b>S1</b>	Iron-Based, Heat-Resistant Alloys	–	500–1200	160–260	25–48	A-286, INCOLOY® 800 Series, A608, A567, Discaloy, INVAR®, N-155, 16-25-6, 19-9 DL; Cast: ASTM A-297, A-351, A-567, A-608
<b>S2</b>	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
<b>S3</b>	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®
<b>S4</b>	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
<b>H1</b>	Hardened Materials	–	–	–	44–48	Tool Steel H10, H11, H13, D2, D3, 4340, P20
<b>H2</b>	Hardened Materials	–	–	–	48–55	Tool Steel H10, H11, H13, D2, D3, 4340, P20
<b>H3</b>	Hardened Materials	–	–	–	56–60	Tool Steel H10, H11, H13, D2, D3, 4340, P20
<b>H4</b>	Hardened Materials	–	–	–	>60	Tool Steel H10, H11, H13, D2, D3, 4340, P20
<b>C1</b>	CFRP, CFRP/CFRP	–	–	–	–	–
<b>C2</b>	CFRP/Non-Ferrous	–	–	–	–	–
<b>C3</b>	CFRP/High-Temp	–	–	–	–	–
<b>C4</b>	CFRP/Stainless Steel	–	–	–	–	–
<b>C5</b>	CFRP/Non-Ferrous/High-Temp	–	–	–	–	–

<b>P</b>	Steel
<b>M</b>	Stainless Steel
<b>K</b>	Cast Iron

<b>N</b>	Non-Ferrous
<b>S</b>	High-Temp Alloys

<b>H</b>	Hardened Materials
<b>C</b>	CFRP Materials

material group	description	content	tensile strength RM (MPa)*	hardness (HB)	hardness (HRC)	material number
<b>P0</b>	Low-Carbon Steels, Long Chipping	C <0,25%	<530	<125	–	–
<b>P1</b>	Low-Carbon Steels, Short Chipping, Free Machining	C <0,25%	<530	<125	–	C15, Ck22, ST37-2, S235JR, 9SMnPb28, GS38
<b>P2</b>	Medium- and High-Carbon Steels	C >0,25%	>530	<220	<25	ST52, S355JR, C35, GS60, Cf53
<b>P3</b>	Alloy Steels and Tool Steels	C >0,25%	600–850	<330	<35	16MnCr5, Ck45, 21CrMoV5-7, 38SMn28
<b>P4</b>	Alloy Steels and Tool Steels	C >0,25%	850–1400	340–450	35–48	100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12
<b>P5</b>	Ferritic, Martensitic, and PH Stainless Steels	–	600–900	<330	<35	100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12
<b>P6</b>	High-Strength Ferritic, Martensitic, and PH Stainless Steels	–	900–1350	350–450	35–48	X102CrMo17, G-X120Cr29
<b>M1</b>	Austenitic Stainless Steel	–	<600	130–200	–	X5CrNi 18 10, X2CrNiMo 17 13 2, G-X25CrNiSi18 9, X15CrNiSi 20 12
<b>M2</b>	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
<b>M3</b>	Duplex Stainless Steel	–	<800	135–275	<30	X8CrNiMo27 5, X2CrNiMoN22 5 3, X20CrNiSi25 4, G-X40CrNiSi27 4
<b>K1</b>	Gray Cast Iron	–	125–500	120–290	<32	GG15, GG25, GG30, GG40, GTW40
<b>K2</b>	Low- and Medium-Strength Ductile Irons (Nodular Irons) and Compacted Graphite Irons (CGI)	–	<600	130–260	<28	GGG40, GTS35
<b>K3</b>	High-Strength Ductile Irons and Austempered Ductile Iron (ADI)	–	>600	180–350	<43	GGG60, GTW55, GTS65
<b>N1</b>	Wrought Aluminum	–	–	–	–	AlMg1, Al99.5, AlCuMg1, AlCuBiPb, AlMgSi1, AlMgSiPb
<b>N2</b>	Low-Silicon Aluminum Alloys and Magnesium Alloys	Si <12,2%	–	–	–	GAISiCu4, GDAISi10Mg
<b>N3</b>	High-Silicon Aluminum Alloys and Magnesium Alloys	Si >12,2%	–	–	–	G-ALSi12, G-AISi17Cu4, G-AISi21CuNiMg
<b>N4</b>	Copper-, Brass-, Zinc-Based on Machinability Index Range of 70–100	–	–	–	–	CuZn40, Ms60, G-CuSn5ZnPb, CuZn37, CuSi3Mn
<b>N5</b>	Nylon, Plastics, Rubbers, Phenolics, Resins, Fiberglass	–	–	–	–	LEXAN®, Hostalen™, Polystyrol®, MAKROLON®
<b>N6</b>	Carbon, Graphite Composites, CFRP	–	–	–	–	CFK, GFK
<b>N7</b>	Metal Matrix Composites (MMC)	–	–	–	–	–
<b>S1</b>	Iron-Based, Heat-Resistant Alloys	–	500–1200	160–260	25–48	X1NiCrMoCu32 28 7, X12NiCrSi36 16, X5NiCrAlTi31 20, X40CoCrNi20 20
<b>S2</b>	Cobalt-Based, Heat-Resistant Alloys	–	1000–1450	250–450	25–48	Haynes® 188, Stellite™ 6,21,31
<b>S3</b>	Nickel-Based, Heat-Resistant Alloys	–	600–1700	160–450	<48	INCONEL® 690, INCONEL 625, Hastelloy®, NIMONIC® 75
<b>S4</b>	Titanium and Titanium Alloys	–	900–1600	300–400	33–48	Ti1, TiAl5Sn2, TiAl6V4, TiAl4Mo4Sn2
<b>H1</b>	Hardened Materials	–	–	–	44–48	GX260NiCr42, GX330NiCr42, GX300CrNiSi952, GX300CrMo153, Hardox® 400
<b>H2</b>	Hardened Materials	–	–	–	48–55	–
<b>H3</b>	Hardened Materials	–	–	–	56–60	–
<b>H4</b>	Hardened Materials	–	–	–	>60	–
<b>C1</b>	CFRP, CFRP/CFRP	–	–	–	–	–
<b>C2</b>	CFRP/Non-Ferrous	–	–	–	–	–
<b>C3</b>	CFRP/High-Temp	–	–	–	–	–
<b>C4</b>	CFRP/Stainless Steel	–	–	–	–	–
<b>C5</b>	CFRP/Non-Ferrous/High-Temp	–	–	–	–	–



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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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# CUTTING TOOLS

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