



## Turning

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# Turning Product Highlights

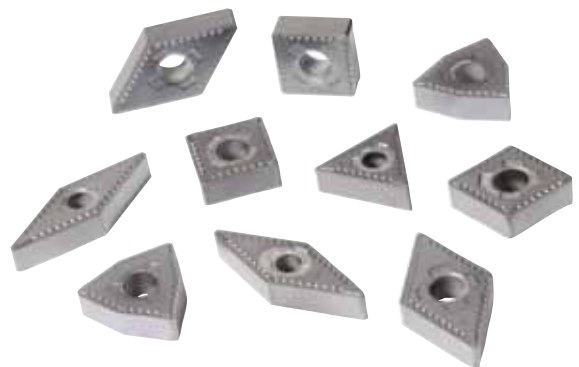
## WIDIA™ Victory™ High-Temp Turning

With three geometries and three grades, WIDIA Victory has a complete portfolio for high-temp turning applications in nickel-based (INCONEL®, Udimet®, Rene), cobalt-based (Haynes®), and Fe-based (Airmet 100) materials, as well as difficult-to-machine stainless (460SS, duplex, high-alloy stainless), cobalt-chrome, and stainless-based powdered metals. These materials are commonly found in rings, housings, hubs, compressors, fans, rotors, and medical devices.

### -FS Geometry

The -FS Geometry is a ground, highly-positive design best used in finishing cuts where size control, finish, and minimisation of part deflection are considerations.

- Excellent chip control versus similar competitive geometries. This chip control adds process stability and reduces machine stoppages to remove stringers.
- Increased cutting speed and/or feed rate for better chip control to reduce cycle time, gain productivity, and reduce machining cost.
- Reduced cutting forces provide longer tool life and/or better surface finish.
- Improved depth-of-cut (DOC) notching resistance for longer tool life.
- Advanced PVD grades provide more wear resistance and longer tool life.





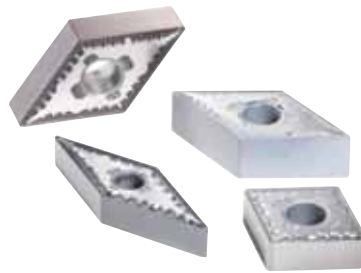
## -MS Geometry

-MS geometry is a moulded geometry with increased edge toughness that is best used in medium machining.

- The -MS geometry offers excellent chip control versus similar competitive geometries. This chip control adds process stability and reduces machine stoppages to remove stringers.
- Available in two PVD grades, -MS is a high-performance geometry. Compete with confidence against any competitor. The -MS is also available in an uncoated grade.
- The WIDIA™ Victory™ grades offer better depth-of-cut (DOC) notching resistance and improved edge toughness. This offers customers an improved solution from other competitors.

## -UR Geometry

- -UR geometry offers a roughing solution for high-temp materials. Available in WS10PT™ and WS25PT™, the -UR geometry provides smooth chip forming and improved coolant flow for increased tool life. This positive geometry, with its unique chipbreaker without inflection points, reduces cutting forces and improves depth-of-cut (DOC) notching resistance.





# Turning Product Highlights

## WIDIA™ VariTurn™

Formerly known as WIDIA Value, the WIDIA VariTurn platform offers high-performance inserts with versatility. With eight grades and eight geometries, VariTurn covers 80% of all turning applications.

Every insert is gold, which exposes wear as the tool continues to be used. This makes it easy to detect when an insert is ready to be changed, maximising the product's value and protecting the workpiece. Also, because WIDIA VariTurn inserts can be used in most applications, a single insert can take on any number of tasks, thus reducing inventory. WIDIA VariTurn products are reliable enough to cut steel, stainless steel, cast iron, and high-temperature alloys, enabling quick changes in workpiece materials without the need to swap inserts, saving time and money.





## WMT™ System

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

### The WMT portfolio offers:

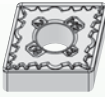
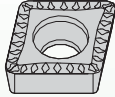
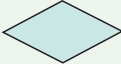






- Proven higher stability.
  - WMT insert design has the best clamping system for stability.
- Platform flexibility, with multiple geometries in single holder for multiple application types.
- Victory™ grades:
  - WU10HT™ — Uncoated
  - WU10PT, WU25PT — PVD
  - WP10CT, WP25CT — CVD
- Greater depth-of-cut (DOC) capability.

### Versatile and Well Constructed

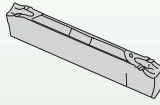
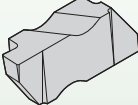
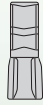
- Specifically designed to increase speeds and feeds.
- Excellent geometry for even the most demanding deep grooving applications.
- The WMT system enables heavy stock removal in turning applications.
- Ensures finer surface finishes and a long, reliable tool life.

■ ISO Turning Inserts

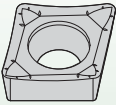
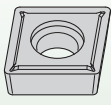
Step 1 • Select Insert Style

				
			Carbide Inserts, Negative	Carbide Inserts, Positive
<b>C</b>	Rhomboid 80°		B35-B45	B30-B34 B45-B46
<b>D</b>	Rhomboid 55°		B51-B63	B47-B50 B63-B64
<b>R</b>	Round		B67	B65-B66
<b>S</b>	Square 90°		B70-B77	B68-B70 B78-B80
<b>T</b>	Triangular 60°		B83-B91	B91-B93
<b>V</b>	Rhomboid 35°		B95-B99	B94-B95
<b>W</b>	Trigon 80° with enlarged corner angles		B99-B105	B105

■ Threading, Grooving, and Cut-Off

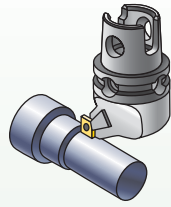
			
	WMT™	TopGroove™	ProGroove™
inserts	D12-D26	D48-D72	D94-D101
toolholders	D28-D39	D73-D79	D102-D104

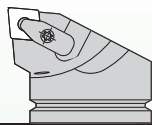
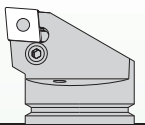
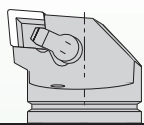
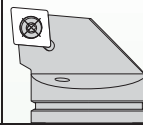
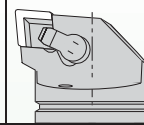
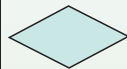





■ WIDIA™ Turning Solutions

		
	Inserts to Machine Aluminium	VariTurn™
inserts	B150-B157	B106-B149

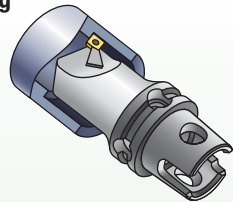
**Step 2 • Select Application and Clamping System**

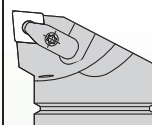
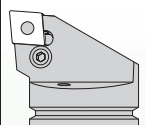
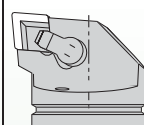
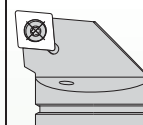
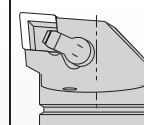




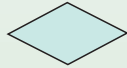

**External Machining**



								
			<b>D-Style Clamping</b>	<b>P-Style Clamping</b>	<b>Negative C-Style Clamping</b>	<b>S-Style Clamping</b>	<b>Positive C-Style Clamping</b>	
<b>C</b>	Rhomboid 80°		conventional	C8–C10	C20–C22	C31–C32	C42–C43	–
<b>D</b>	Rhomboid 55°			C11	C23–C24	C32–C33	C42–C43	–
<b>R</b>	Round		conventional	C12	–	C35	–	C40–C41
<b>S</b>	Square 90°		conventional	C12–C14	C25–C27	C36–C37	C45	–
<b>T</b>	Triangular 60°		conventional	C15	C28–C29	C37–C39	C46–C47	–
<b>V</b>	Rhomboid 35°		conventional	C16–C17	–	–	C48	–
<b>W</b>	Trigon 80° with enlarged corner angles		conventional	C19	C30	–	C48–C49	–

**Internal Machining**



								
			<b>D-Style Clamping</b>	<b>P-Style Clamping</b>	<b>Negative C-Style Clamping</b>	<b>S-Style Clamping</b>	<b>Positive C-Style Clamping</b>	
<b>C</b>	Rhomboid 80°		conventional	C56	C60	C62	C66–C70	–
<b>D</b>	Rhomboid 55°			C56–C57	–	C63	C71–C76	–
<b>R</b>	Round		conventional	–	–	–	–	–
<b>S</b>	Square 90°		conventional	–	–	C63–C64	–	–
<b>T</b>	Triangular 60°		conventional	C58	C60	–	C77–C80	C65
<b>V</b>	Rhomboid 35°		conventional	C58	–	–	C80–C81	–
<b>W</b>	Trigon 80° with enlarged corner angles		conventional	C59	C61	C64	–	–





## Turning • ISO Inserts

WIDIA Victory High-Performance Inserts .....	B2–B105
WIDIA VariTurn .....	B106–B149
Inserts for Machining Aluminium.....	B150–B157

## A Complete High-Performance Turning Portfolio •

### WIDIA™ Victory™

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



# Victory

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

## Steel and Stainless Steel Grades

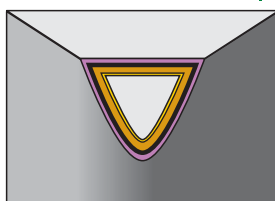
- Reduced cycle times — high speed and feed capability.
- Long tool life — new multilayer coating provides better wear resistance.
- Proven seating — smooth and secure seating surface.
- Outer layer is bronze-colored for easier wear detection.

### Post-coat treatment

- Improves edge toughness.
- Long, predictable tool life.
- Reduces depth-of-cut notching.
- Wide range of applications.

New geometry identification system.

MT-CVD/CVD-TiN-TiCN-  
Al<sub>2</sub>O<sub>3</sub>-ZrCN



### Improved edge toughness

- Provides smooth outer surface to reduce forces, friction, and workpiece sticking.

### Post-coat grinding

- Provides secure seating surface.

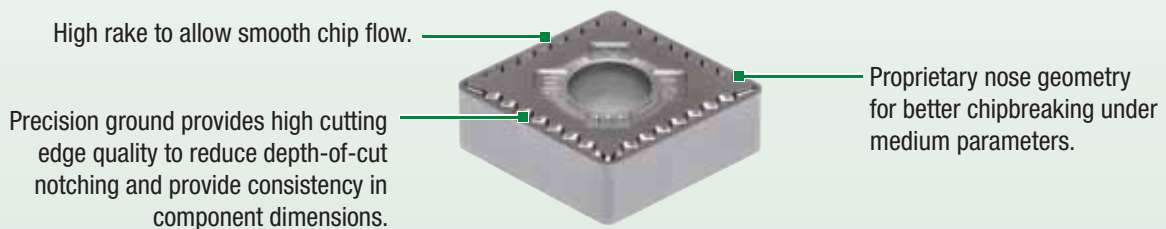
### Alpha alumina layer

- Provides coating integrity at elevated speeds.
- Higher productivity and dependability at high cutting temperatures.

New WIDIA™ Victory™ grades and geometries are designed to offer better tool life and surface finishes.

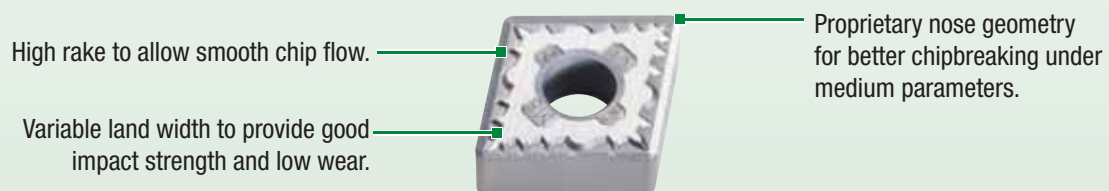
**..GG-FS Geometry**

- All ..GG-FS inserts are G tolerance inserts. This is a critical feature in some applications, especially the aerospace industry.
- Reduced cycle times — high speed and feed capability.
- Reduced cutting forces — improved dimensional control and reduced deflections.
- New chip forming elements — better chip control.
- Long tool life — new multilayer coating provides better wear resistance.
- Proven seating — smooth and secure seating surface.



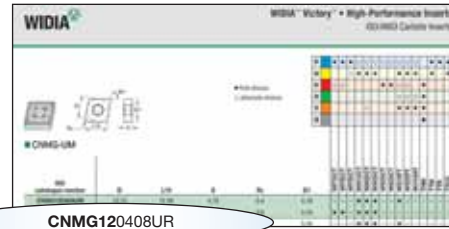
**..MG-MS Geometry**

- High positive rake angle delivers improved tool life by reducing cutting forces and built-up edge when machining high-temp alloys.
- Improved chip control and reduced crater wear due to proprietary chipbreakers with varying shapes and distances.
- Reduced thermal wear and cracking due to near sharp cutting edge with optimised edge treatment.
- Improved chipbreaking at various depths of cut due to variable land width, which improves impact strength.
- All MG-MS inserts are moulded, which supports increased tool life due to the elimination of grinding stress.



## How Do Catalogue Numbers Work?

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

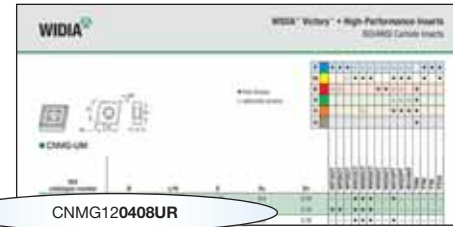


CNMG120408UR

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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>		<p>Code for mm cutting edge length "L10"</p> <table border="1"> <thead> <tr> <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>3,97</td><td>S4</td><td>04</td><td>03</td><td>03</td><td>06</td><td>—</td><td>—</td></tr> <tr><td>4,76</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>5,56</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>6,00</td><td>—</td><td>—</td><td>06</td><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>6,35</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>7,94</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>8,00</td><td>—</td><td>—</td><td>08</td><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>9,52</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>10,00</td><td>—</td><td>—</td><td>10</td><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>11,11</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>12,00</td><td>—</td><td>—</td><td>12</td><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>12,70</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>14,29</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>15,88</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>16,00</td><td>—</td><td>—</td><td>16</td><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>17,46</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>19,05</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>20,00</td><td>—</td><td>—</td><td>20</td><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>22,22</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>25,00</td><td>—</td><td>—</td><td>25</td><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>25,40</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>31,75</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>32,00</td><td>—</td><td>—</td><td>32</td><td>—</td><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>	"D"	C	D	R	S	T	V	W	3,97	S4	04	03	03	06	—	—	4,76	04	05	04	04	08	08	S3	5,56	05	06	05	05	09	09	03	6,00	—	—	06	—	—	—	—	6,35	06	07	06	06	11	11	04	7,94	08	09	07	07	13	13	05	8,00	—	—	08	—	—	—	—	9,52	09	11	09	09	16	16	06	10,00	—	—	10	—	—	—	—	11,11	11	13	11	11	19	19	07	12,00	—	—	12	—	—	—	—	12,70	12	15	12	12	22	22	08	14,29	14	17	14	14	24	24	09	15,88	16	19	15	15	27	27	10	16,00	—	—	16	—	—	—	—	17,46	17	21	17	17	30	30	11	19,05	19	23	19	19	33	33	13	20,00	—	—	20	—	—	—	—	22,22	22	27	22	22	38	38	15	25,00	—	—	25	—	—	—	—	25,40	25	31	25	25	44	44	17	31,75	32	38	31	31	54	54	21	32,00	—	—	32	—	—	—	—	<b>R</b>	
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22,22	22	27	22	22	38	38	15																																																																																																																																																																																																		
25,00	—	—	25	—	—	—	—																																																																																																																																																																																																		
25,40	25	31	25	25	44	44	17																																																																																																																																																																																																		
31,75	32	38	31	31	54	54	21																																																																																																																																																																																																		
32,00	—	—	32	—	—	—	—																																																																																																																																																																																																		
<b>O</b>	Octagon 135°	<b>B</b>	5°	<b>F</b>																																																																																																																																																																																																					
<b>P</b>	Pentagon 108°	<b>C</b>	7°	<b>A</b>																																																																																																																																																																																																					
<b>R</b>	Round —	<b>D</b>	15°	<b>M</b>																																																																																																																																																																																																					
<b>S</b>	Square 90°	<b>E</b>	20°	<b>G</b>																																																																																																																																																																																																					
<b>T</b>	Triangular 60°	<b>F</b>	25°	<b>W</b>																																																																																																																																																																																																					
<b>C</b>	Rhomboid 80° 55° 75° 86° 35°	<b>G</b>	30°	<b>T</b>																																																																																																																																																																																																					
<b>D</b>		<b>N</b>	0°	<b>Q</b>																																																																																																																																																																																																					
<b>E</b>		<b>P</b>	11°	<b>U</b>																																																																																																																																																																																																					
<b>M</b>		<b>L</b>	Rectangular 90°	<b>B</b>																																																																																																																																																																																																					
<b>V</b>		<b>W</b>	Trigon 80° with enlarged corner angles	<b>H</b>																																																																																																																																																																																																					
<b>W</b>	<b>A</b>	Parallelogram 85° 82° 55°	<b>O</b>	Indicated for other clearance angles requiring descriptions.	<b>C</b>																																																																																																																																																																																																				
<b>X</b>				<b>J</b>																																																																																																																																																																																																					
<b>V</b>				<b>X</b>	Special Design																																																																																																																																																																																																				

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

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



CNMG120408UR

04		08						UR	
Thickness S		Corner Radius "Rε"		Hand of Insert (optional)		Cutting Edge (optional)		Chipbreaker (optional)	
<b>symbol</b>	<b>thickness</b>	<b>symbol</b>	<b>corner radius</b>	<b>R</b> = Right hand	<b>F</b>		Sharp	<b>13</b>	= Railroad Light
<b>mm</b>	<b>mm</b>	<b>mm</b>	<b>mm</b>	<b>L</b> = Left hand	<b>E</b>		Rounded	<b>CT</b>	= Copy Turning
—	0,79	X0	0,04	<b>N</b> = Neutral	<b>T</b>		Chamfered	<b>FF</b>	= Fine Finishing
T0	1,00	01	0,1		<b>S</b>		Chamfered and Rounded	<b>FP</b>	= Finish Positive
01	1,59	02	0,2		<b>K</b>		Double-Chamfered	<b>FW</b>	= Finish Wiper
T1	1,98	04	0,4		<b>P</b>		Double-Chamfered and Rounded	<b>ML</b>	= Medium Light
02	2,38	08	0,8					<b>MR</b>	= Medium Roughing
03	3,18	12	1,2					<b>MW</b>	= Medium Wiper
T3	3,97	16	1,6					<b>RH</b>	= Roughing Heavy
04	4,76	20	2,0					<b>T</b>	= Negative Land
05	5,56	24	2,4					<b>UF</b>	= Universal Finishing
06	6,35	28	2,8					<b>UM</b>	= Universal Medium
07	7,94	32	3,2					<b>UR</b>	= Universal Roughing
9	9,52	00	—					<b>.NMP</b>	= Sharp Medium
11	11,11	M0	round insert					<b>MP</b>	= Medium Positive
12	12,70	—	—					<b>FS</b>	= Finishing High-Temp(S)

"D"	± Tolerance on "D"				"D"	± Tolerance on "B"			
	Shapes S, T, C, R, & W	Shape D	Shape V	Class U Tolerance		Shapes S, T, C, R, & W	Shape D	Shape V	Class U Tolerance
mm	mm	mm	mm	mm	mm	mm	mm	mm	
3,97	0,05	—	—	—	3,97	0,08	—	—	—
4,76	0,05	—	—	0,08	4,76	0,08	—	—	0,13
5,56	0,05	0,05	0,05	0,08	5,56	0,08	0,11	—	0,13
6,35	0,05	0,05	0,05	0,08	6,35	0,08	0,11	—	0,13
7,94	0,05	0,05	0,05	0,08	7,94	0,08	0,11	—	0,13
9,52	0,05	0,05	0,05	0,08	9,52	0,08	0,11	0,18	0,13
11,11	0,08	0,08	0,08	0,13	11,11	0,13	0,15	—	—
12,70	0,08	0,08	0,08	0,13	12,70	0,13	0,15	0,25	0,20
14,29	0,08	0,08	0,08	0,13	14,29	0,13	0,15	—	—
15,88	0,10	0,10	0,10	0,18	15,88	0,15	0,18	—	0,27
17,46	0,10	0,10	0,10	0,18	17,46	0,15	0,18	—	0,27
19,05	0,10	0,10	0,10	0,18	19,05	0,15	0,18	—	0,27
22,22	0,13	—	—	0,25	22,22	0,15	—	—	0,38
25,40	0,13	—	—	0,25	25,40	0,18	—	—	0,38
31,75	0,15	—	—	0,25	31,75	0,20	—	—	0,38

<b>MS</b>	= Medium High-Temp(S)
<b>MU</b>	= Medium Universal
<b>SR</b>	= Super Roughing
<b>65</b>	= Heavy Roughing



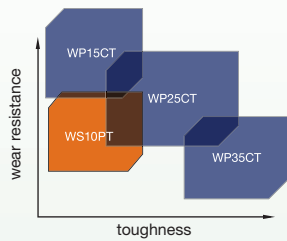
A system of grades, geometries, and application guidelines to provide optimal solutions for your metalcutting needs. It's easy to determine which WIDIA™ chip-control cutting tool will work best in your specific workpiece materials and applications!



W	P	15	C	T
Brand	Primary Workpiece Material	Application Range*	Insert Material	Application
<ul style="list-style-type: none"> <li><b>P</b> Steel</li> <li><b>M</b> Stainless Steel</li> <li><b>K</b> Cast Iron</li> <li><b>N</b> Non-Ferrous</li> <li><b>S</b> High-Temp Alloys</li> <li><b>H</b> Hardened Materials</li> <li><b>U</b> Universal Machining</li> </ul>		<ul style="list-style-type: none"> <li>05 = fine finishing</li> <li>10 = finishing</li> <li>15 = } medium to roughing</li> <li>20 = }</li> <li>25 = }</li> <li>30 = } roughing</li> <li>35 = }</li> <li>40 = }</li> <li>45 = } heaviest roughing</li> <li>50 = }</li> </ul> <p>*Samples shown are based on turning and will differ within applications</p>	<ul style="list-style-type: none"> <li><b>H</b> = Uncoated Carbide</li> <li><b>C</b> = Carbide + CVD</li> <li><b>P</b> = Carbide + PVD</li> <li><b>T</b> = Cermet</li> <li><b>Y</b> = Ceramics</li> <li><b>D</b> = Diamond</li> <li><b>B</b> = PcBN</li> <li><b>S</b> = HSS</li> <li><b>E</b> = HSS-E</li> <li><b>M</b> = HSS-E-PM</li> </ul>	<ul style="list-style-type: none"> <li><b>T</b> = Turning</li> <li><b>M</b> = Milling</li> <li><b>H</b> = Holemaking</li> <li><b>D</b> = Solid Drills</li> <li><b>E</b> = Solid End Mills</li> <li><b>G</b> = Taps</li> <li><b>R</b> = Reamer</li> <li><b>V</b> = Thread Mills</li> </ul>

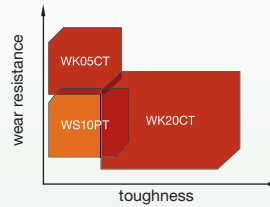


## Victory Toughness/Wear Resistance



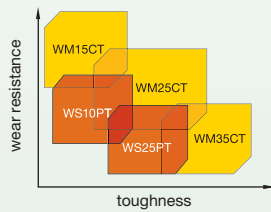
### WP Grades for Steel

- Three grades and seven primary geometries for use in roughing to finishing operations.
- Increase cutting speed and/or feed rate to gain productivity.



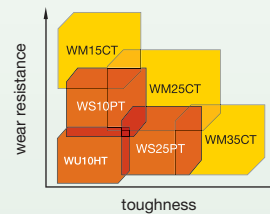
### WK Grades for Cast Iron

- Two grades to cover all of your cast iron turning operations.
- Very good balance of wear resistance and toughness for long predictable tool life. Flat top geometry for machining cast iron. For finishing to roughing applications.



### WM Grades for Stainless Steel

- Three grades across 12 geometries for use in roughing to finishing operations.
- Increase cutting speed and/or feed rate by up to 30% over similar competitive grades.



### WS Grades for High-Temp Alloys

- Two grades for use in roughing to finishing operations.
- Very good wear resistance for longer tool life.
- One uncoated grade for use in titanium.

## Positive and Negative Inserts

### 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.

### Negative Inserts



- Negative style inserts are your first choice for general machining of all materials on medium to large lathes.
- Negative style inserts offer the best economy for high metal removal rates.
- Available in flat-top and chip-control geometries with both moulded and ground peripheries.
- Suitable for all workpiece 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 geometries with moulded and ground peripheries.

### 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 for machining non-ferrous materials.

## Insert Selection System

### How to Use

The WIDIA three-step insert selection system makes choosing and applying the most productive tool as easy as 1, 2, 3. Tool recommendations are based on six workpiece material groups, optimising selection accuracy.

### Example:


#### Six workpiece material groups

##### ■ Step 1 • Select the insert geometry

Given: depths of cut = 1mm (.040")  
feed = 0,4mm (.016 IPR)  
Unknown: insert geometry  
Solution: -RH




##### ■ Step 2 • Select the grade

Given: cutting conditions:  
lightly interrupted cut   
Geometry: -RH  
Unknown: grade  
Solution: WP25CT™



##### ■ Step 3 • Select the cutting speed

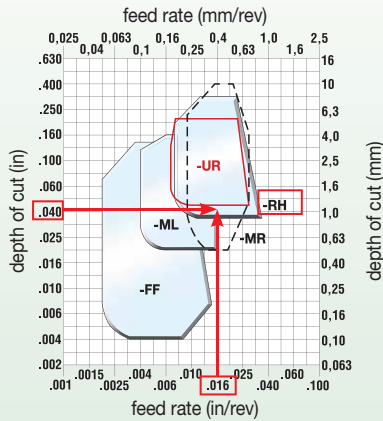
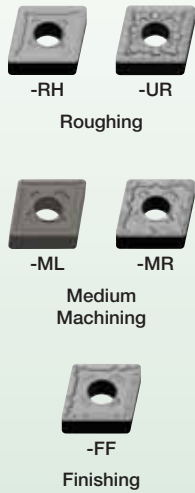
Given: grade WP35CT™   
cutting conditions  
material CK15  
Unknown: cutting speed  
Solution: 210 m/min

### Need help in selecting a product?

Additional information can be obtained by contacting the WIDIA Customer Application Support Team. Go to [widia.com](http://widia.com) for your country's phone number.

**Step 1 • Select the insert geometry**

**Negative Inserts**



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

**Step 2 • Select the grade**

cutting condition	Negative Insert Geometry					Positive Insert Geometry		
	-FF	-ML	-MR	-UR	-RH	-FP	-MU	-MP
heavily interrupted cut	WP15CT	WP25CT	WP35CT/ WP25CT	WP35CT	WP35CT	WP25CT/ WS25PT	WP35CT	WM35CT
lightly interrupted cut	WP15CT	WP25CT	WP25CT	WP35CT	WP35CT	WP25CT	WP25CT	WP25CT
varying depth of cut, casting, or forging skin	WP15CT	WP15CT	WP15CT	WP25CT	WP25CT	WP15CT	WP15CT	WP15CT
smooth cut, pre-turned surface	WP15CT	WP15CT	WP15CT	WP25CT	WP25CT	WP15CT	WP15CT	WP15CT

**Step 3 • Selecting the cutting speed**

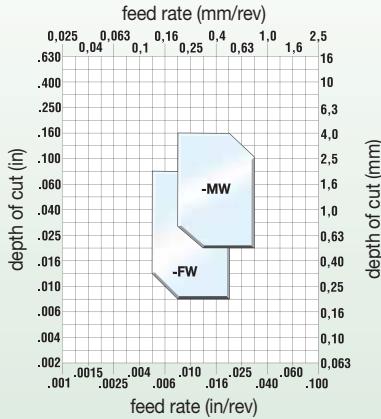
Low-Carbon (<0.3% C) and Free-Machining Steel		speed – m/min									Starting Conditions
material group	grade	135	180	225	275	320	360	410	455	495	m/min
P0/P1	WP15CT	◊									395
	WP25CT	◊									275
	WP35CT	◊									210
	WS10PT	◊									280

**WIDIA Material Group Selection Guide:**  
To optimise speed recommendations, material subgroups have been added to each of the six workpiece material groups.

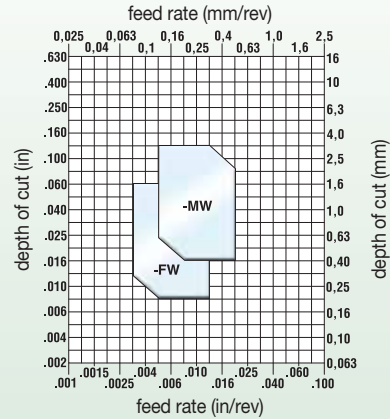
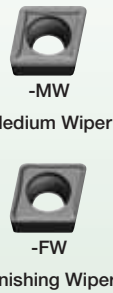
material	material group ISO code	number of material subgroups
steel	P	1–6
stainless steel	M	1–3
cast iron	K	1–3
non-ferrous materials	N	1–8
high-temp alloys	S	1–4
hardened materials	H	1

■ Step 1 • Select the insert geometry

Negative Wiper Inserts



Positive Wiper Inserts

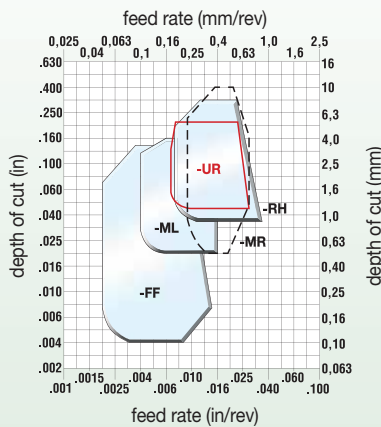
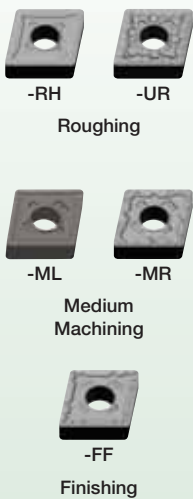


■ Step 2 • Select the grade

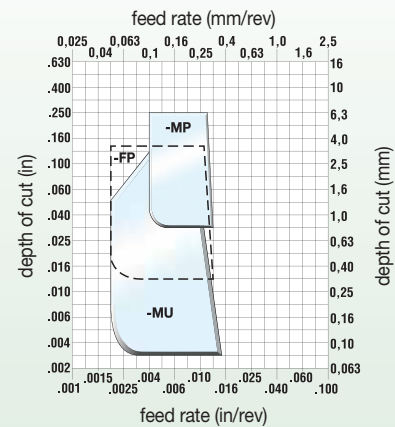
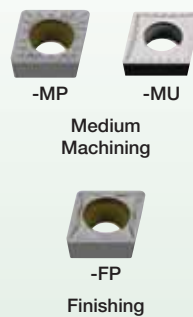
cutting condition	Negative Insert Geometry		Positive Insert Geometry	
	-FW	-MW	-FW	-MW
heavily interrupted cut	WP15CT	WP25CT	-	WP25CT
lightly interrupted cut	WP15CT	WP25CT	WP15CT	WP25CT
varying depth of cut, casting, or forging skin	WP15CT	WP15CT	WP15CT	WP15CT
smooth cut, pre-turned surface	WP15CT	WP15CT	WP15CT	WP15CT

■ Step 1 • Select the insert geometry

Negative Inserts



Positive Inserts



■ Step 2 • Select the grade

cutting condition	Negative Insert Geometry					Positive Insert Geometry		
	-FF	-ML	-MR	-UR	-RH	-FP	-MU	-MP
heavily interrupted cut	WP15CT	WP25CT	WP35CT/ WP25CT	WP35CT	WP35CT	WP25CT/ WS25PT	WP35CT	WM35CT
lightly interrupted cut	WP15CT	WP25CT	WP25CT	WP35CT	WP35CT	WP25CT	WP25CT	WP25CT
varying depth of cut, casting, or forging skin	WP15CT	WP15CT	WP15CT	WP25CT/ WP15CT	WP25CT	WP15CT	WP25CT/ WP15CT	WP15CT
smooth cut, pre-turned surface	WP15CT	WP15CT	WP15CT	WP25CT/ WP15CT	WP25CT	WP15CT	WP25CT/ WP15CT	WP15CT

(continued)



**Step 3 • Select the cutting speed** *(continued)*
**Low-Carbon (<0.3% C) and Free-Machining Steel**

speed – m/min

Starting Conditions

material group	grade	135	180	225	275	320	360	410	455	495	m/min
P0/P1	WP15CT										395
	WP25CT										275
	WP35CT										210
	WS10PT										280
	WM35CT										280

**Medium- and High-Carbon Steels (<0.3% C)**

speed – m/min

Starting Conditions

material group	grade	135	180	225	275	320	360	410	455	495	m/min
P2	WP15CT										265
	WP25CT										195
	WP35CT										150
	WS10PT										200
	WM35CT										200

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

speed – m/min

Starting Conditions

material group	grade	135	180	225	275	320	360	410	455	495	m/min
P3	WP15CT										190
	WP25CT										155
	WP35CT										120
	WS10PT										155
	WM35CT										155

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

speed – m/min

Starting Conditions

material group	grade	60	90	120	150	180	210	240	270	300	m/min
P4	WP15CT										145
	WP25CT										105
	WP35CT										95
	WS10PT										110
	WM35CT										110

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

speed – m/min

Starting Conditions

material group	grade	120	150	180	210	240	270	300	330	360	m/min
P5	WP15CT										215
	WP25CT										195
	WP35CT										135
	WS10PT										200

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

speed – m/min

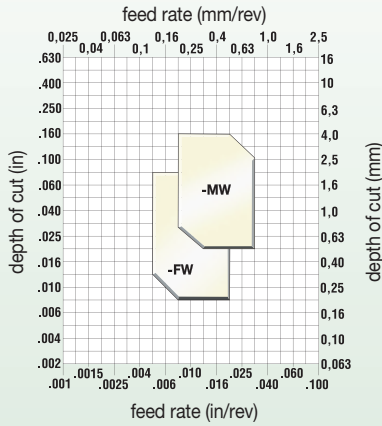
Starting Conditions

material group	grade	105	135	165	195	225	255	285	315	345	m/min
P6	WP15CT										180
	WP25CT										150
	WP35CT										105
	WS10PT										150

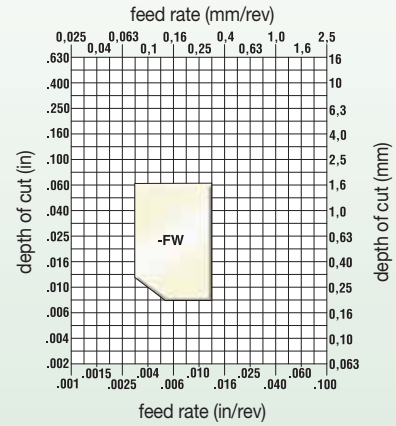
■ Step 1 • Select the insert geometry



**Negative Wiper Inserts**



**Positive Wiper Inserts**

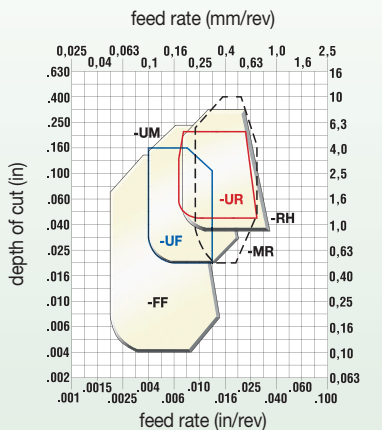
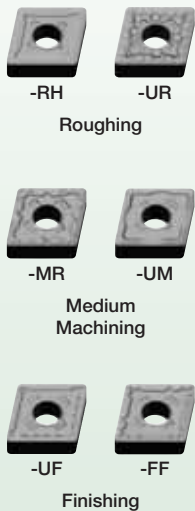


■ Step 2 • Select the grade

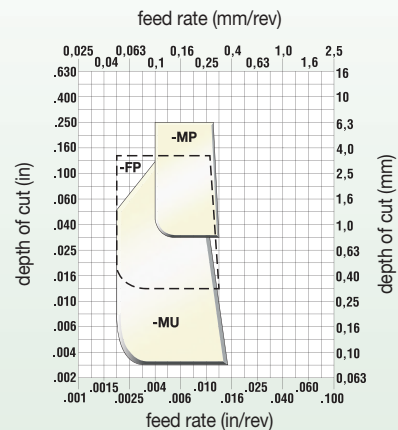
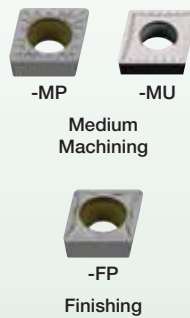
cutting condition	Negative Insert Geometry		Positive Insert Geometry
	-FW	-MW	-FW
heavily interrupted cut	WM15CT	WM15CT	WM15CT
lightly interrupted cut	WM15CT	WM25CT	WM15CT
varying depth of cut, casting, or forging skin	WM15CT	WM25CT	WM15CT
smooth cut, pre-turned surface	WM15CT	WM25CT	WM15CT

■ Step 1 • Select the insert geometry

**Negative Inserts**



**Positive Inserts**



(continued)

**Step 2 • Select the grade** *(continued)*

cutting condition	Negative Insert Geometry						
	-FF	-UF	-MR	-UM	-RH	-UR	
heavily interrupted cut		WS10PT	WM15CT	WM35CT	WM35CT	-	WM35CT
lightly interrupted cut		WS10PT	WM15CT	WM25CT	WM25CT	WM35CT	WM35CT/ WM25CT
varying depth of cut, casting, or forging skin		WM15CT	WM15CT/ WS10PT	WM15CT	WM15CT	WM35CT	WM25CT
smooth cut, pre-turned surface		WM15CT	WM15CT	WM15CT	WM15CT	-	WM15CT

cutting condition	Positive Insert Geometry			
	-FP	-MU	-MP	
heavily interrupted cut		WM25CT	WM35CT/ WS25PT	WM25CT
lightly interrupted cut		WM25CT	WM25CT/ WS10PT	WM25CT
varying depth of cut, casting, or forging skin		WM25CT/ WM15CT	WM25CT	WM25CT/ WM15CT
smooth cut, pre-turned surface		WM15CT	WM25CT	WM15CT

**Step 3 • Select the cutting speed**

**Austenitic Stainless Steel** speed – m/min Starting Conditions

material group	grade	90	135	180	225	270	315	200	360	405	450	m/min
M1	WM15CT			◇								180
	WM25CT		◇									150
	WM35CT		◇									120
	WS10PT				◇							215
	WS25PT		◇									

**Austenitic Stainless Steel** speed – m/min Starting Conditions

material group	grade	90	135	180	225	270	315	200	360	405	450	m/min
M2	WM15CT			◇								165
	WM25CT		◇									140
	WM35CT		◇									105
	WS10PT				◇							200
	WS25PT		◇									

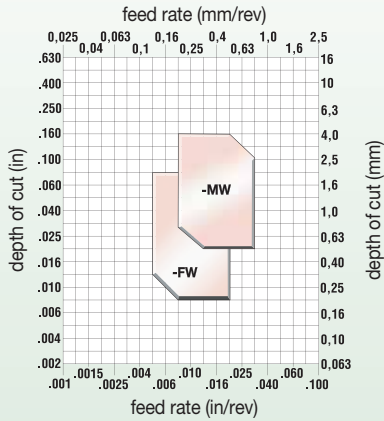
**Austenitic Stainless Steel: Duplex (Ferritic and Austenitic Mixture)** speed – m/min Starting Conditions

material group	grade	90	135	180	225	270	315	200	360	405	450	m/min
M3	WM15CT			◇								150
	WM25CT		◇									120
	WM35CT		◇									90
	WS10PT				◇							185
	WS25PT		◇									

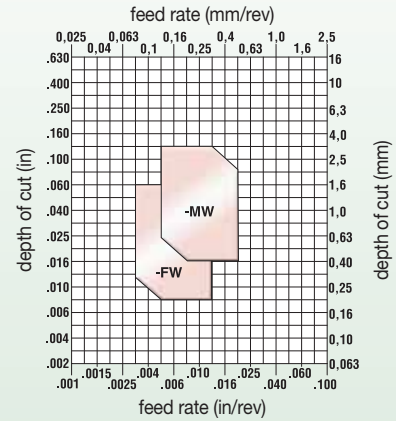
■ Step 1 • Select the insert geometry



Negative Wiper Inserts



Positive Wiper Inserts

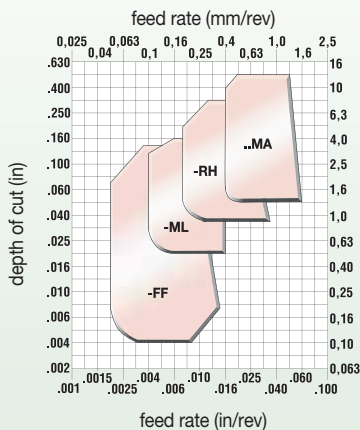


■ Step 2 • Select the grade

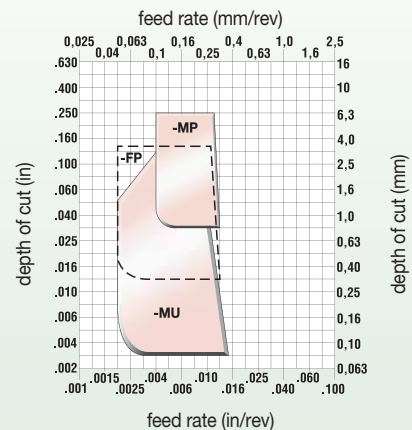
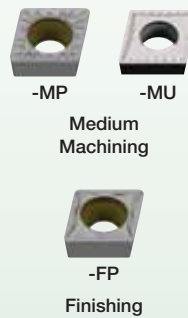
cutting condition		Negative Insert Geometry		Positive Insert Geometry	
		-FW	-MW	-FW	-MW
heavily interrupted cut		-	-	-	-
lightly interrupted cut		WK05CT	WK05CT	WK05CT	WK05CT
varying depth of cut, casting, or forging skin		WK05CT	WK05CT	WK05CT	WK05CT
smooth cut, pre-turned surface		WK05CT	WK05CT	WK05CT	WK05CT

■ Step 1 • Select the insert geometry

Negative Inserts



Positive Inserts



(continued)

**Step 2 • Select the grade** *(continued)*

cutting condition	Negative Insert Geometry				Positive Insert Geometry			
	-FF	-ML	-UR	..MA	-FP	-MU	-MP	
heavily interrupted cut		WK20CT	WK20CT	WK20CT	WK20CT	WK20CT	WK20CT	WK20CT
lightly interrupted cut		WK20CT	WK20CT	WK20CT	WK20CT	WK20CT	WK20CT	WK20CT
varying depth of cut, casting, or forging skin		WK20CT	WK05CT	WK20CT	WK05CT	WK20CT	WK20CT	WK20CT
smooth cut, pre-turned surface		WK20CT	WK05CT	WS10PT	WK05CT	WK20CT	WK20CT/ WK05CT/ WS10PT	WK20CT

**Step 3 • Select the cutting speed**

**Grey Cast Iron** speed – m/min Starting Conditions

material group	grade	60	180	305	430	550	675	800	920	1040	1160	m/min
<b>K1</b>	WK05CT											450
	WK20CT											300

**Ductile, Compacted Graphite, and Malleable Cast Irons (<600 MPa tensile strength)** speed – m/min Starting Conditions

material group	grade	90	135	180	225	275	320	360	410	460	500	m/min
<b>K2</b>	WS10PT											200
	WK05CT											360
	WK20CT											240

**Ductile, Malleable, and Austempered Cast Irons (>600 MPa tensile strength)** speed – m/min Starting Conditions

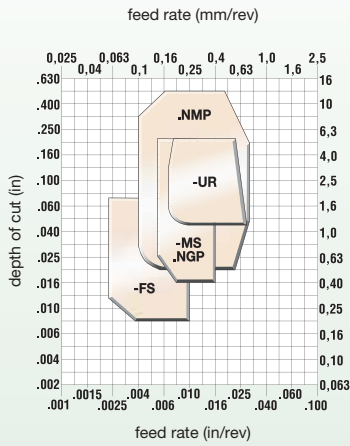
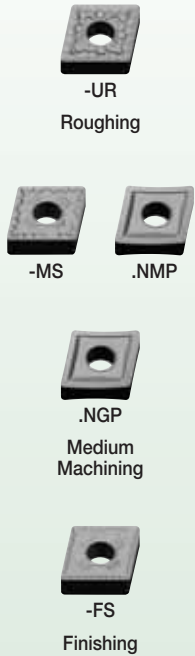
material group	grade	90	135	180	225	275	320	360	410	460	500	m/min
<b>K3</b>	WS10PT											150
	WK05CT											240
	WK20CT											210



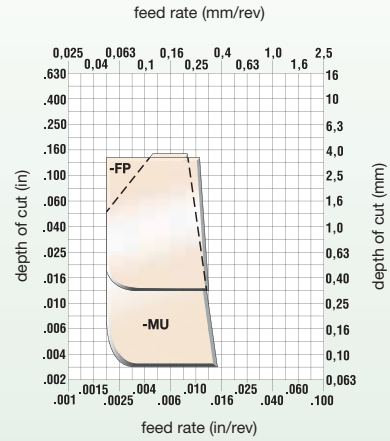
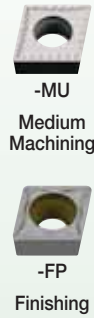
■ Step 1 • Select the insert geometry



**Negative Inserts**



**Positive Inserts**



■ Step 2 • Select the grade

cutting condition	Image	Negative Insert Geometry				Positive Insert Geometry	
		-FS	-NGP/-NMP	-MS	-UR	-FP	-MU
heavily interrupted cut		WS25PT	WS25PT	WS25PT	WS25PT/ WM35CT	WS25PT/ WM15CT	WS25PT
lightly interrupted cut		WS10PT	WS10PT	WS25PT	WS25PT/ WM25CT	WS25PT	WS25PT
varying depth of cut, casting, or forging skin		WS10PT	WS10PT	WS10PT	WS25PT	WS10PT	WS10PT
smooth cut, pre-turned surface		WS10PT/ WU10HT	WS10PT/ WU10HT	WS10PT	WS10PT	WS10PT	WS10PT

(continued)

■ Step 3 • Select the cutting speed (continued)

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

material group	grade	speed – m/min										Starting Conditions
		15	45	75	105	140	170	200	230	290	310	m/min
S1	WU10HT	◊										30
	WS10PT	◊										55
	WS25PT	◊										40
	WM15CT	◊										55
	WM25CT/WM35CT	◊										40

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

material group	grade	speed – m/min										Starting Conditions
		15	45	75	105	140	170	200	230	290	310	m/min
S2	WU10HT	◊										35
	WS10PT	◊										60
	WS25PT	◊										30
	WM15CT	◊										60
	WM25CT/WM35CT	◊										30

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

material group	grade	speed – m/min										Starting Conditions
		15	45	75	105	140	170	200	230	290	310	m/min
S3	WU10HT	◊										40
	WS10PT	◊										70
	WS25PT	◊										40
	WM15CT	◊										70
	WM25CT/WM35CT	◊										40

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

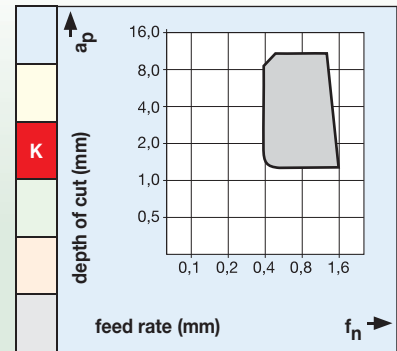
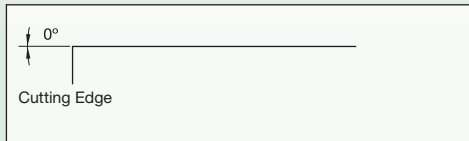
material group	grade	speed – m/min										Starting Conditions
		15	45	75	105	140	170	200	230	290	310	m/min
S4	WU10HT	◊										45
	WM15CT	◊										70
	WM25CT/WM35CT	◊										55

**■ Negative Inserts**

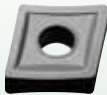
**..MA**



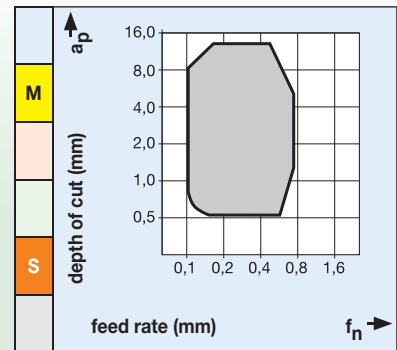
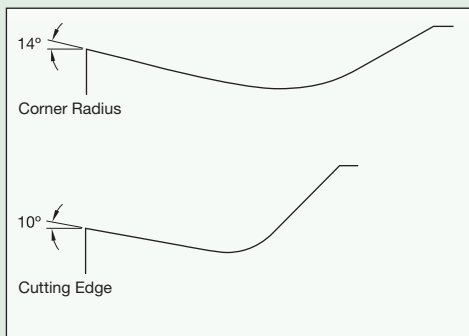
Flat top geometry for machining cast iron. For finishing to roughing applications.



**.NMP**



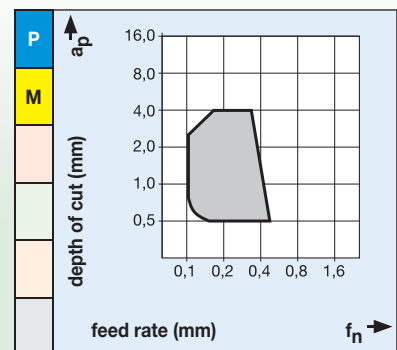
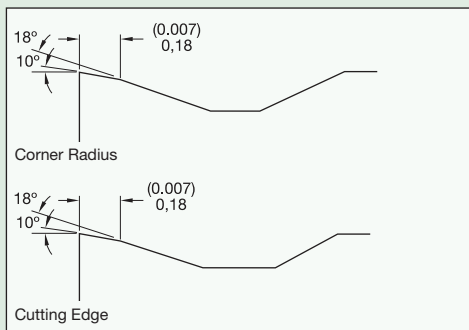
For medium-duty machining of tough work materials, such as chrome- and nickel-based alloys. Minimises tendency for materials to adhere to insert.



**4**



Semi-finishing geometry for light- to medium-duty steel machining. Reduced back forces result from adjusted inclination angle. Well-suited for positive, vibration-prone parts.



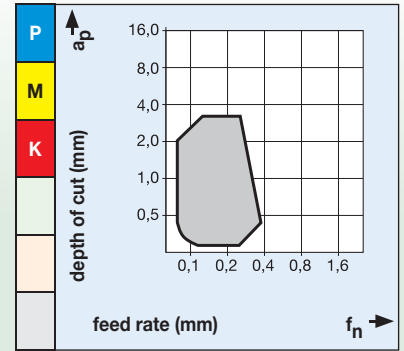
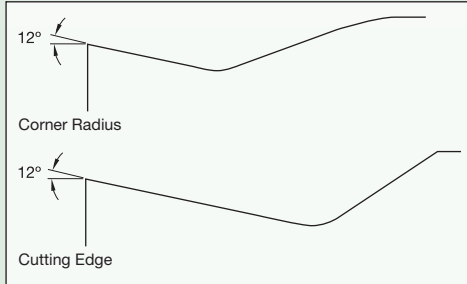
(continued)

■ **Negative Inserts** *(continued)*

**22**



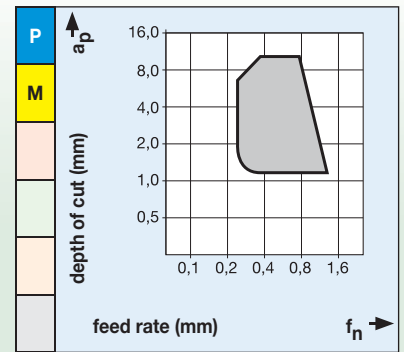
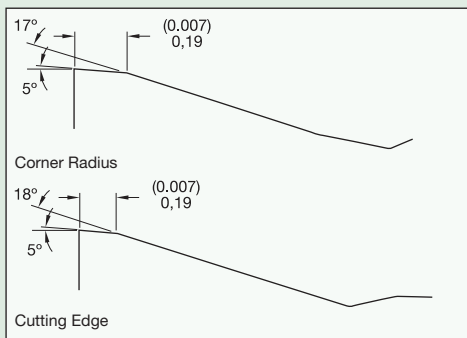
For finish turning, producing smooth, accurate surfaces. Very good chip control, especially at low depths of cut.



**65**



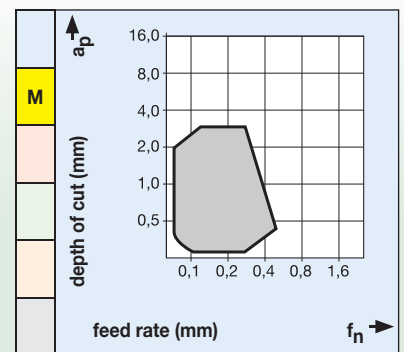
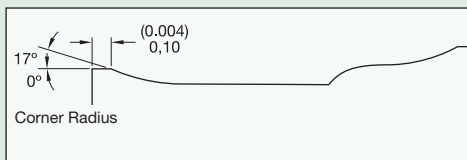
Rough-turning geometry with chip control extending to the medium-duty range. Positive rake angle lowers cutting forces, reducing power requirements. Used on low-tensile and stainless steels.



**CT**



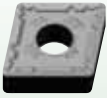
Designed for outward copy turning. Where other geometries produce long chips, the unique distribution of the cut results in good chip control.



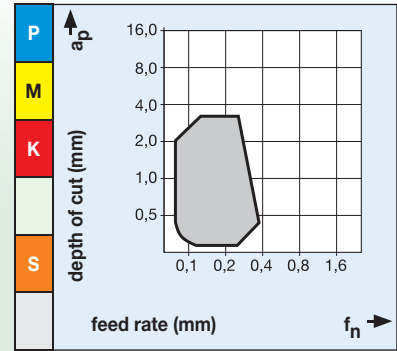
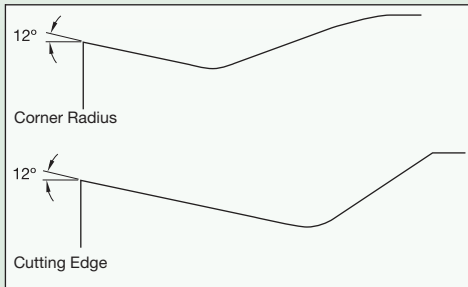
*(continued)*

■ **Negative Inserts** *(continued)*

**FF**



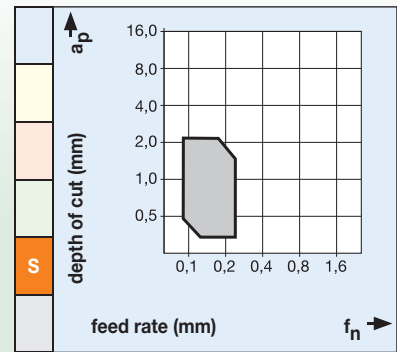
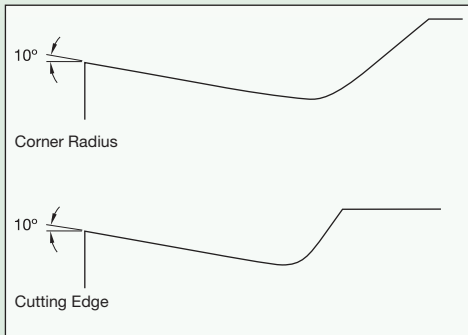
For finish turning, producing smooth, accurate surfaces. Very good chip control, especially at low depths of cut.



**FS**



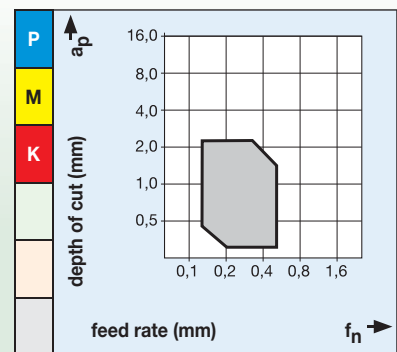
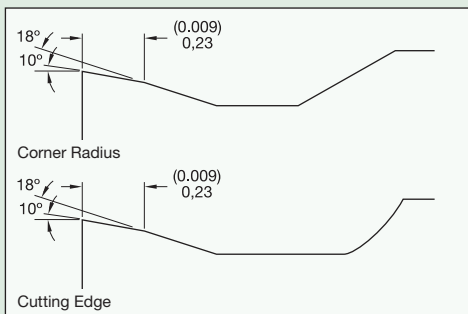
For finishing applications. Ground periphery with positive cutting edge ideally suited for high-temp alloys. Micro finished edge on the ground periphery adds just a slight hone for improved edge integrity and reliability.



**FW**



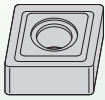
Wiper geometry for finishing when good surface finish is needed using high feed rates. First choice for high-performance finishing.



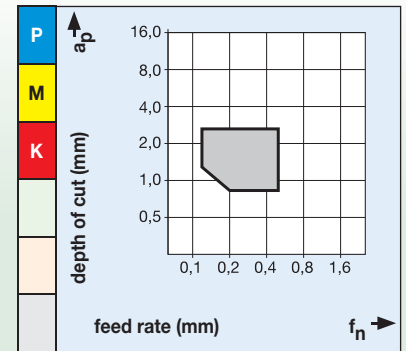
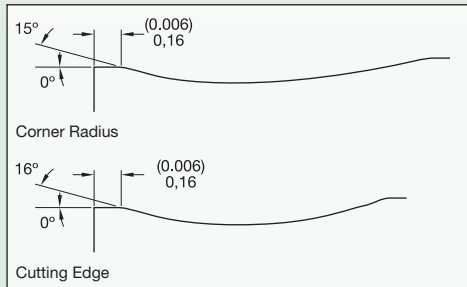
*(continued)*

■ **Negative Inserts** *(continued)*

**MG**



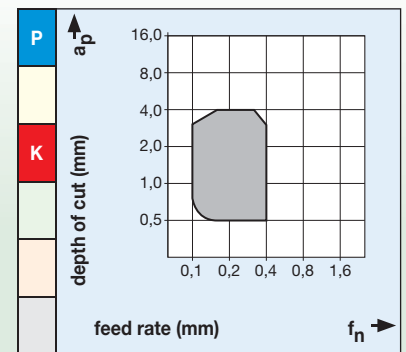
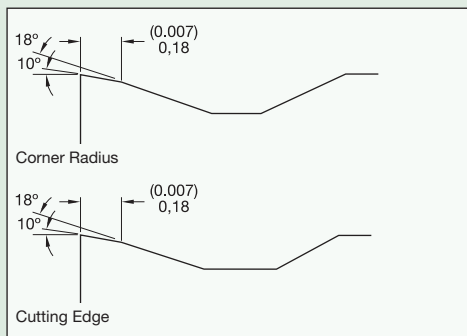
For light machining to light roughing.



**ML**



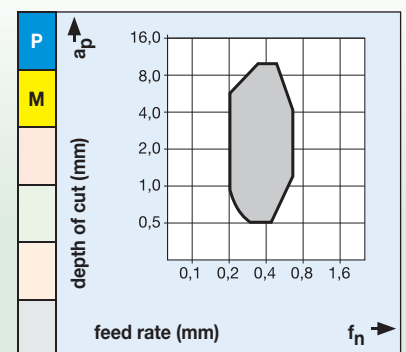
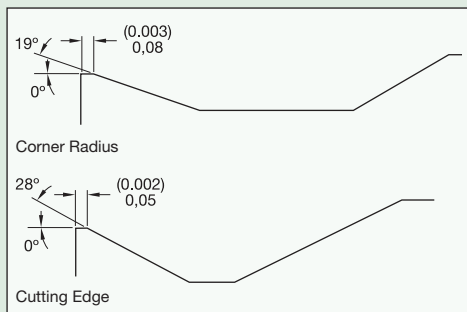
For finishing to medium machining with a negative, stable cutting edge.



**MR**



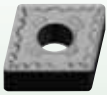
For medium to light roughing of steels, difficult-to-machine high-alloy titanium, and aluminium materials. High strength to deal with heavy chip deformation.



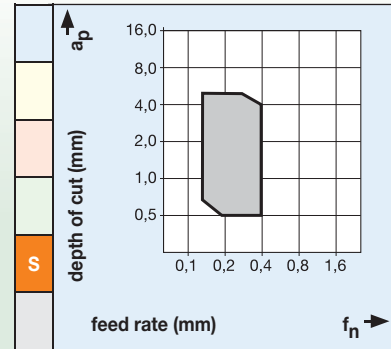
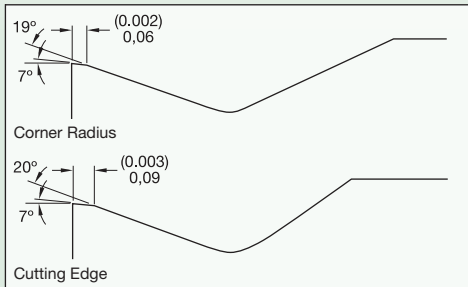
*(continued)*

**■ Negative Inserts** *(continued)*

**MS**



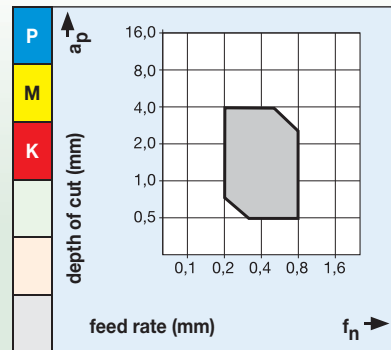
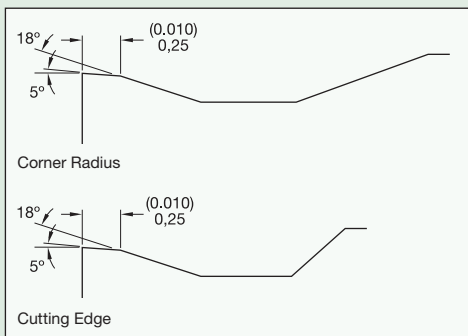
For medium machining in high-temp materials. Utilises a micro-finished edge preparation to increase edge toughness.



**MW**



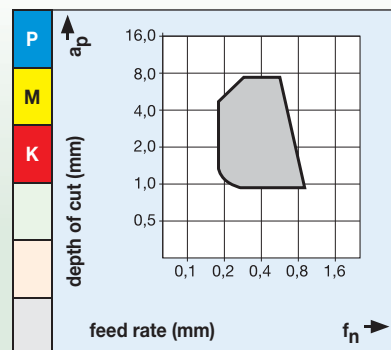
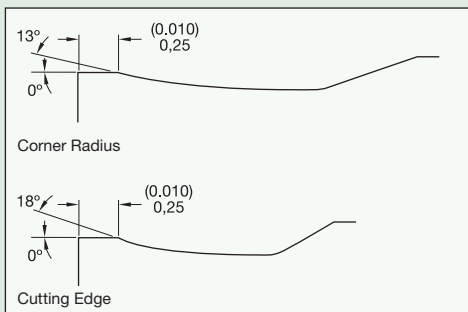
Wiper geometry for light to medium turning with high feed rates. Feed twice as high as with edges with full corner radii to produce same surface finish.



**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 grey, malleable, and nodular.



*(continued)*

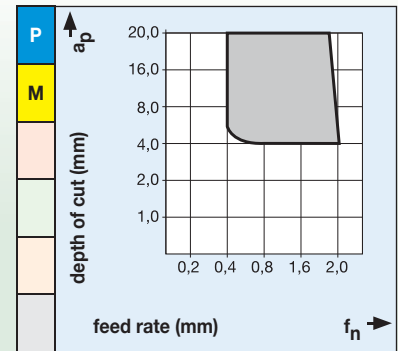
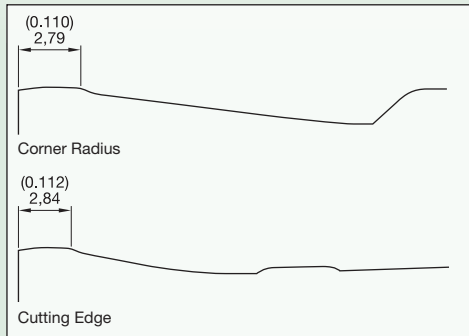


■ **Negative Inserts** *(continued)*

**SR**



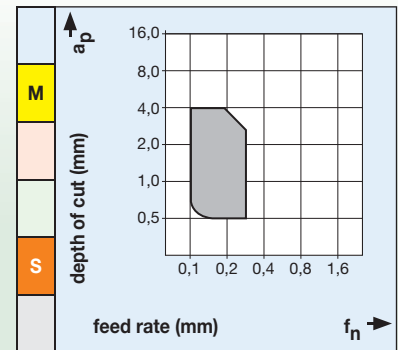
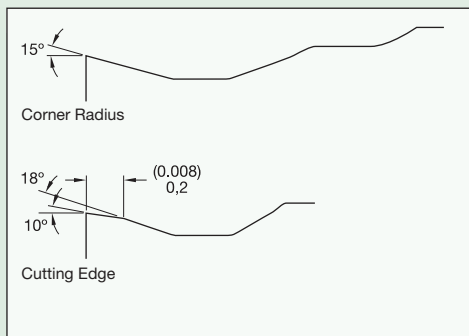
A super roughing geometry. The SR has a strong cutting edge to support high cutting loads in roughing applications. Can produce high metal removal rates.



**UF**



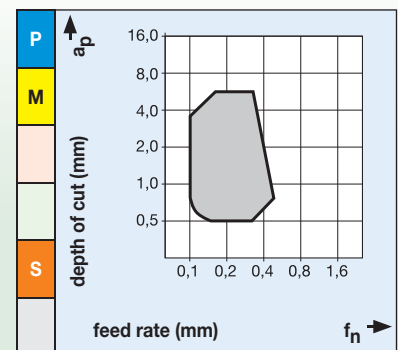
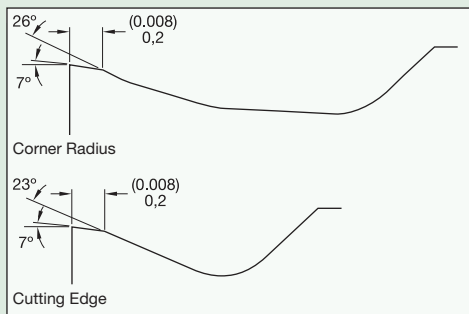
For finishing with a positive cutting edge for reduced cutting forces and superior surface quality.



**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.



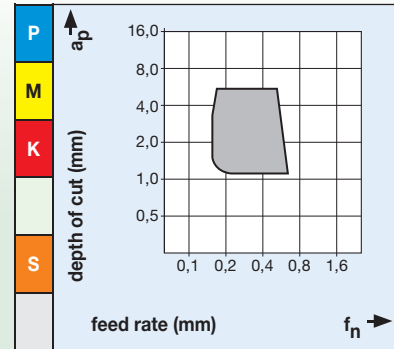
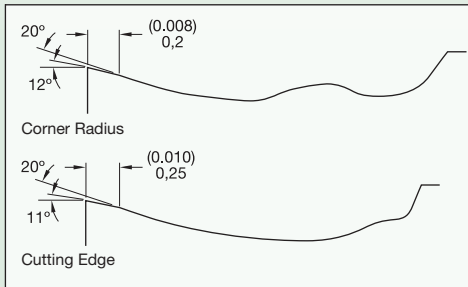
*(continued)*

■ **Negative Inserts** *(continued)*

**UR**

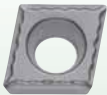


Roughing geometry with smooth chip forming and improved coolant flow for increased tool life. Positive geometry reduces cutting forces and improves depth-of-cut notching resistance. Ideally suitable for stainless steel applications and for smooth machining of steel.

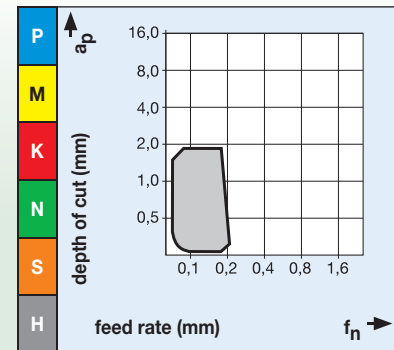
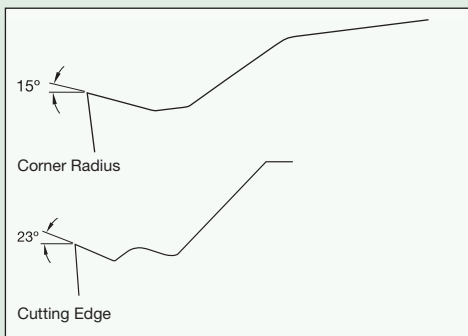


■ **Positive Inserts**

**2**



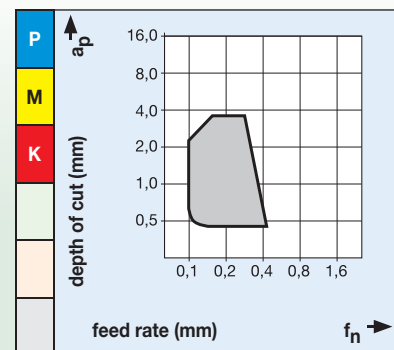
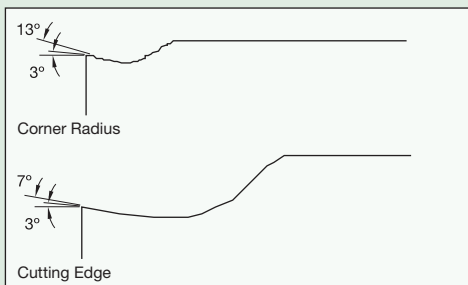
Sharp edge for finish machining. Good chip control with very small chip sections. High dimensional accuracy and smooth surface finishes. Inserts with .008" corner radius precision-ground on all sides.



**41**



Preferred for light- to medium-duty machining. Low cutting forces and reduced power requirements due to positive rake angle. Good chip control over a wide range. Also used on short-chipping cast iron.



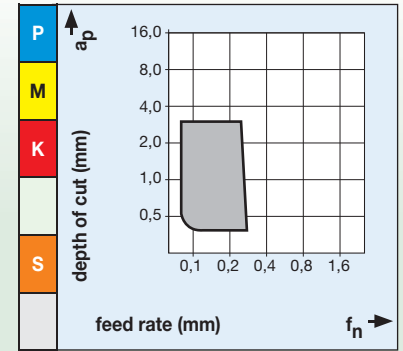
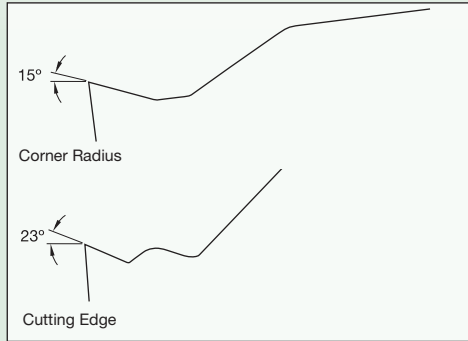
*(continued)*

■ Positive Inserts (continued)

**FP**



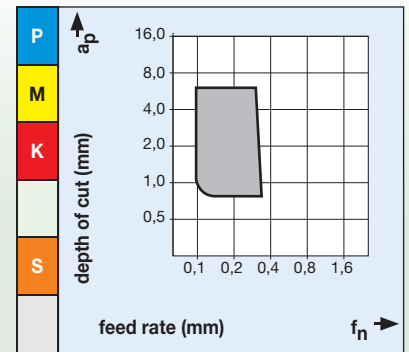
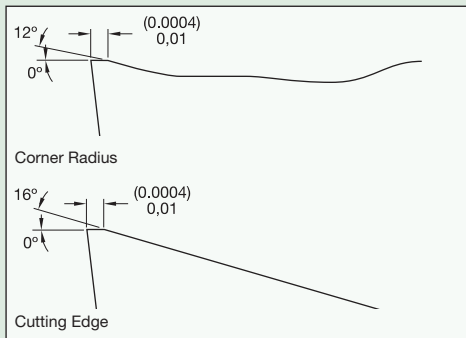
For finishing to medium turning operations with optimal chip control over a wide range of cutting conditions and workpiece materials.



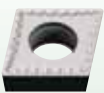
**MP**



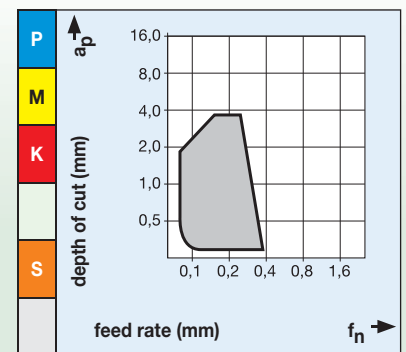
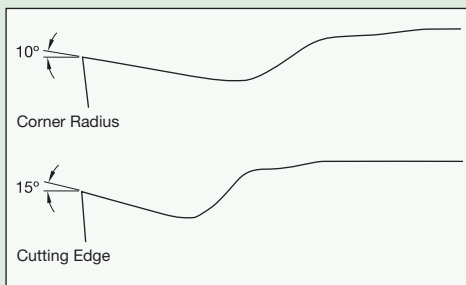
For medium to rough turning with reduced cutting forces and improved chip control for high feed rates. Suitable for high metal removal rates and spindling applications.

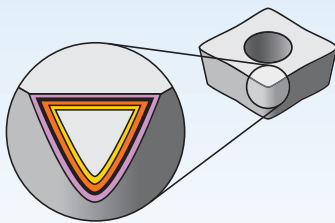


**MU**



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.

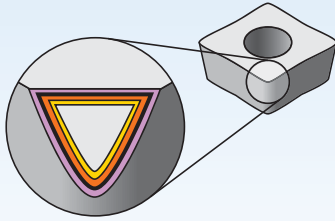




Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

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

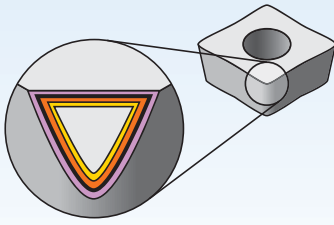
Grade	Coating	Grade Description	wear resistance ← → toughness																			
			05	10	15	20	25	30	35	40	45											
WP15CT		Coated carbide. MT-CVD/CVD – TiN-TiCN-Al <sub>2</sub> O <sub>3</sub> -ZrCN. Good balance of wear resistance and toughness properties. High productivity machining on smooth to lightly interrupted cuts. For steels.	P																			
	HC-P15																					
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, high productivity metal removal for all but the harshest interrupted cuts.	P																			
	HC-P25																					
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.	P																			
	HC-P35																					
WM15CT		Coated carbide. MT-CVD/CVD – TiN-TiCN-Al <sub>2</sub> O <sub>3</sub> -ZrCN. High degree of wear resistance and good resistance to depth-of-cut notching for long tool life in finishing to medium turning applications.	P																			
	HC-M15																					
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.	P																			
	HC-M25																					
WM35CT		Coated carbide. MT-CVD/CVD – TiN-TiCN-Al <sub>2</sub> O <sub>3</sub> -ZrCN. Good toughness and wear resistance balance. For medium to roughing operations with light and heavily interrupted cuts.	P																			
	HC-M35																					



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														
WK05CT		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																						
	HC-K05		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 grey 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.	H																						
			P																						
			M																						
			K																						
			N																						
WU10HT		An uncoated, hard, low-binder content, unalloyed WC/Co fine-grain grade. WU10HT™ offers exceptional edge wear and 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.	S																						
			M																						
			N																						
	C3-C4																								



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

wear resistance ← → toughness

Grade	Coating	Grade Description	Performance Matrix																					
			05	10	15	20	25	30	35	40	45													
<b>THM</b> HW-K15		Uncoated carbide. Extraordinarily good balance of hardness, wear resistance, edge stability, and toughness. Light and medium machining. For cast iron, all non-ferrous metals, and non-metals. Useful in unfavourable conditions.																						
			<b>K</b>																					
			<b>N</b>																					
			<b>S</b>																					
<b>TTM</b> HW-P25		Uncoated carbide. Medium machining. For steel.																						
			<b>P</b>																					
			<b>M</b>																					
<b>TTR</b> HW-P35		Uncoated carbide. Light and medium machining. For steel. To be used at low cutting speeds. Effective in unfavourable conditions.																						
			<b>P</b>																					
<b>TT15</b> HT-P15		Cermets. Light machining. Extremely good wear resistance at higher cutting speeds. For steels and nodular cast iron. Recommended for high cutting speeds under favourable conditions.																						
			<b>P</b>																					
			<b>M</b>																					
			<b>K</b>																					

## NOVO KNOWS CAD/CAM

With the addition of NOVO™ to your team, your CAD/CAM capabilities become much more accurate, streamlined, and productive.

**Before NOVO:** The programmer would be in their CAD/CAM software, programming a part. Using the outdated method of finding a tool in a catalogue, and then manually inputting the tooling information from the catalogue into the CAD/CAM software.

The concern is that assumptions are made, and only partial tooling information is entered.

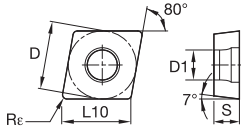
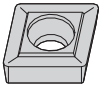
**With NOVO:** The powerful digital intelligence of NOVO not only helps the programmer find the right tool for the metalcutting job, but also automatically integrates all the tooling data into a complete CAD/CAM solution. The integration of all the tooling data increases the viability of the part being programmed, and is delivered quickly — saving you time.

NOVO can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximises every shift. [widia.com/novo](http://widia.com/novo)





Inserts

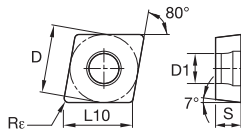
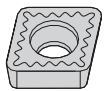


● first choice  
 ○ alternate choice

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

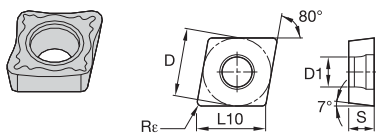
■ CCMT

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TT115	
CCMT060202	6,35	6,45	2,38	0,2	2,80	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CCMT060204	6,35	6,45	2,38	0,4	2,80	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CCMT090304	9,53	9,67	3,18	0,4	4,40	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CCMT090308	9,53	9,67	3,18	0,8	4,40	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CCMT09T304	9,53	9,67	3,97	0,4	4,40	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CCMT09T308	9,53	9,67	3,97	0,8	4,40	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CCMT09T312	9,53	9,67	3,97	1,2	4,40	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CCMT120408	12,70	12,90	4,76	0,8	5,50	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○



■ CCMT-2

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TT115	
CCMT0602042	6,35	6,45	2,38	0,4	2,80	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○

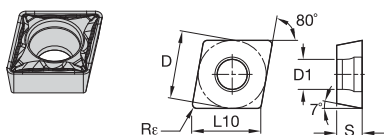


● first choice  
○ alternate choice

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

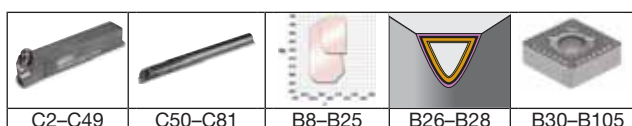
### CCMT-41

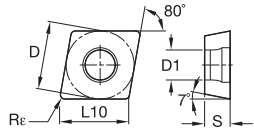
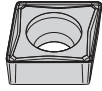
ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TMM	TTR	TTI15	
CCMT12040441	12,70	12,90	4,76	0,4	5,50	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CCMT12040841	12,70	12,90	4,76	0,8	5,50	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



### CCMT-FP

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TMM	TTR	TTI15	
CCMT060202FP	6,35	6,45	2,38	0,2	2,80	4169857	4169857	4170140	○	○	○	○	○	○	○	○	○	○	○	○	○
CCMT060204FP	6,35	6,45	2,38	0,4	2,80	4169858	4170141	4168738	4168779	4168778	○	○	4170032	5684337	5684340	○	○	○	○	○	
CCMT060208FP	6,35	6,45	2,38	0,8	2,80	4169859	4170142	4168739	4168780	○	○	○	4170083	5684342	5684344	○	○	○	○	○	
CCMT09T302FP	9,53	9,67	3,97	0,2	4,40	○	4170293	○	4168781	4168782	○	○	○	○	○	○	○	○	○	○	○
CCMT09T304FP	9,53	9,67	3,97	0,4	4,40	4169860	4170294	4168740	4168782	○	○	○	4170084	5684341	5684343	○	○	○	○	○	
CCMT09T308FP	9,53	9,67	3,97	0,8	4,40	4169861	4170295	4168741	4168783	○	○	○	4170085	5684338	5684338	○	○	○	○	○	
CCMT120404FP	12,70	12,90	4,76	0,4	5,50	4169862	4170296	○	4168742	4168784	○	○	4170086	○	○	○	○	○	○	○	○
CCMT120408FP	12,70	12,90	4,76	0,8	5,50	4169983	4170297	○	4168763	4168785	○	○	○	○	○	○	○	○	○	○	○
CCMT120412FP	12,70	12,90	4,76	1,2	5,50	4169994	○	○	4168786	○	○	○	4170088	○	○	○	○	○	○	○	○



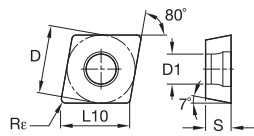
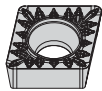


● first choice  
○ alternate choice

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

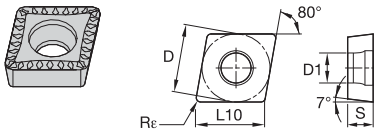
■ CCMT-FW

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TT115	
CCMT060202FW	6,35	6,45	2,38	0,2	2,80	5623344															
CCMT060204FW	6,35	6,45	2,38	0,4	2,80	5623345			5623346												
CCMT060208FW	6,35	6,45	2,38	0,8	2,80	5623347			5623348												
CCMT09T304FW	9,53	9,67	3,97	0,4	4,40	5623349			5623470												
CCMT09T308FW	9,53	9,67	3,97	0,8	4,40	5623473															



■ CCMT-MP

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TT115	
CCMT060204MP	6,35	6,45	2,38	0,4	2,80	4170197	4170217		4168893	4168906			4170237	5684351							
CCMT09T304MP	9,53	9,67	3,97	0,4	4,40	4170198	4170218		4168894	4168907			4170238	5684352							
CCMT09T308MP	9,53	9,67	3,97	0,8	4,40	4170199	4170219		4168895	4168908			4170239	5684350							
CCMT09T312MP	9,53	9,67	3,97	1,2	4,40	4170220			4168909												
CCMT120408MP	12,70	12,90	4,76	0,8	5,50	4170200	4170221		4168896	4168910			4170240	5684349							
CCMT120412MP	12,70	12,90	4,76	1,2	5,50	4170222			4168897	4168911			4170241								



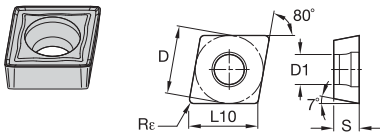
● first choice  
○ alternate choice

P	M	K	N	S	H	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Inserts

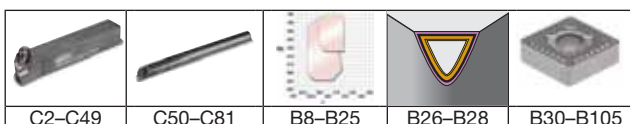
### ■ CCMT-MU

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
CCMT060208MU	6,35	6,45	2,38	0,8	2,80	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CCMT090304MU	9,53	9,67	3,18	0,4	4,40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CCMT090308MU	9,53	9,67	3,18	0,8	4,40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CCMT09T304MU	9,53	9,67	3,97	0,4	4,40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CCMT09T308MU	9,53	9,67	3,97	0,8	4,40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CCMT120408MU	12,70	12,90	4,76	0,8	5,50	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

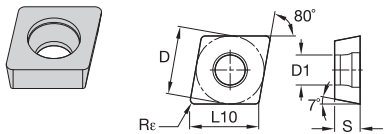


### ■ CCMT-MW

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
CCMT09T304MW	9,53	9,67	3,97	0,4	4,40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CCMT09T308MW	9,53	9,67	3,97	0,8	4,40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CCMT120404MW	12,70	12,90	4,76	0,4	5,50	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CCMT120408MW	12,70	12,90	4,76	0,8	5,50	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



Inserts

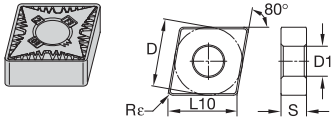


● first choice  
○ alternate choice

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

■ CCMW

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TIM	TTR	TT115
CCMW060202	6,35	6,45	2,38	0,2	2,80	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
CCMW060204	6,35	6,45	2,38	0,4	2,80	■	■	■	■	■	■	4170464	4170368	■	■	■	■	2027507	2031733	■
CCMW090302	9,53	9,67	3,18	0,2	4,40	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
CCMW090304	9,53	9,67	3,18	0,4	4,40	■	■	■	■	■	■	4170465	4170369	■	■	■	■	■	■	■
CCMW090308	9,53	9,67	3,18	0,8	4,40	■	■	■	■	■	■	4170466	4170370	■	■	■	■	■	■	■
CCMW09T304	9,53	9,67	3,97	0,4	4,40	■	■	■	■	■	■	4170467	4170371	■	■	■	■	■	■	■
CCMW09T308	9,53	9,67	3,97	0,8	4,40	■	■	■	■	■	■	4170468	4170372	■	■	■	■	■	■	■
CCMW120404	12,70	12,90	4,76	0,4	5,50	■	■	■	■	■	■	4170469	4170373	■	■	■	■	■	■	■
CCMW120408	12,70	12,90	4,76	0,8	5,50	■	■	■	■	■	■	4170470	4170374	■	■	■	■	■	■	■



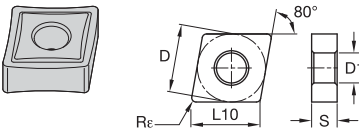
● first choice  
○ alternate choice

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

Inserts

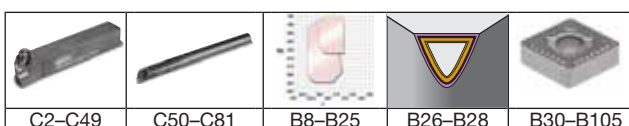
### ■ CNGG-FS

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
CNGG120401FS	12,70	12,90	4,76	0,1	5,16	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNGG120402FS	12,70	12,90	4,76	0,2	5,16	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNGG120404FS	12,70	12,90	4,76	0,4	5,16	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNGG120408FS	12,70	12,90	4,76	0,8	5,16	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNGG120412FS	12,70	12,90	4,76	1,2	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

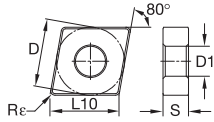
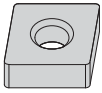


### ■ CNGP

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
CNGP120401	12,70	12,90	4,76	0,1	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNGP120402	12,70	12,90	4,76	0,2	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNGP120404	12,70	12,90	4,76	0,4	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNGP120408	12,70	12,90	4,76	0,8	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



Inserts



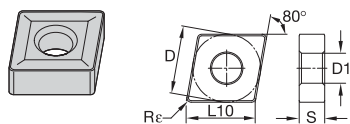
- first choice
- alternate choice

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

■ **CNMA**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TT15	
CNMA120404	12,70	12,90	4,76	0,4	5,16	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNMA120408	12,70	12,90	4,76	0,8	5,16	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNMA120412	12,70	12,90	4,76	1,2	5,16	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNMA120416	12,70	12,90	4,76	1,6	5,16	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNMA160608	15,88	16,12	6,35	0,8	6,35	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNMA160612	15,88	16,12	6,35	1,2	6,35	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNMA160616	15,88	16,12	6,35	1,6	6,35	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNMA190608	19,05	19,34	6,35	0,8	7,93	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNMA190612	19,05	19,34	6,35	1,2	7,93	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
CNMA190616	19,05	19,34	6,35	1,6	7,93	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○



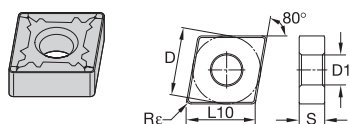


● first choice  
○ alternate choice

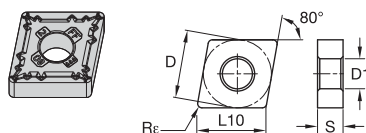
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M	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○


**■ CNMG**

ISO catalogue number	D	L10	S	Rε	D1
CNMG120404	12,70	12,90	4,76	0,4	5,16
CNMG120408	12,70	12,90	4,76	0,8	5,16
CNMG190612	19,05	19,34	6,35	1,2	7,93
CNMG190616	19,05	19,34	6,35	1,6	7,93

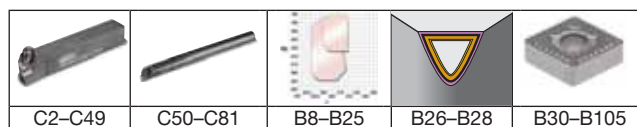

**■ CNMG-22**

ISO catalogue number	D	L10	S	Rε	D1
CNMG12040422	12,70	12,90	4,76	0,4	5,16

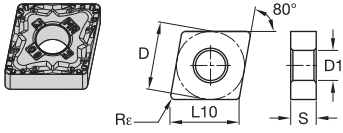

**■ CNMG-FF**

ISO catalogue number	D	L10	S	Rε	D1
CNMG120404FF	12,70	12,90	4,76	0,4	5,16
CNMG120408FF	12,70	12,90	4,76	0,8	5,16
CNMG120412FF	12,70	12,90	4,76	1,2	5,16

WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15
■	■	○	○	○	○	○	○	○	○	○	○	○	○	○
■	■	○	○	○	○	○	○	○	○	○	○	○	○	○
■	■	○	○	○	○	○	○	○	○	○	○	○	○	○
■	■	○	○	○	○	○	○	○	○	○	○	○	○	○
■	■	○	○	○	○	○	○	○	○	○	○	○	○	○
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■	■	○	○	○	○	○	○	○	○	○	○	○	○	○
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■	■	○	○	○	○	○	○	○	○	○	○	○	○	○
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■	■	○	○	○	○	○	○	○	○	○	○	○	○	○





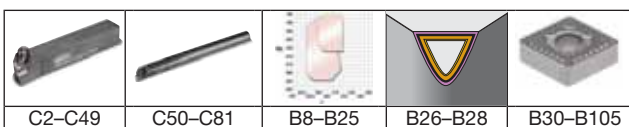


● first choice  
○ alternate choice

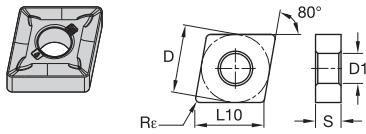
P	M	K	N	S	H	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TT115	
●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
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■ CNMG-MR

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TT115	
CNMG120404MR	12,70	12,90	4,76	0,4	5,16	4171130	4171130	4170546	4170043	-	-	-	-	-	-	-	-	-	-	-	-
CNMG120408MR	12,70	12,90	4,76	0,8	5,16	4171131	4170547	4170044	4170044	4172955	4173120	-	-	-	-	-	-	-	-	-	-
CNMG120412MR	12,70	12,90	4,76	1,2	5,16	4171132	4170548	4170045	-	4172956	4173121	-	-	-	-	-	-	-	-	-	-
CNMG120416MR	12,70	12,90	4,76	1,6	5,16	4171133	5684353	-	-	4172957	4173122	-	-	-	-	-	-	-	-	-	-
CNMG160608MR	15,88	16,12	6,35	0,8	6,35	4171134	4170549	-	-	4172958	4173133	-	-	-	-	-	-	-	-	-	-
CNMG160612MR	15,88	16,12	6,35	1,2	6,35	4171135	4170550	4170046	-	4172959	4173134	-	-	-	-	-	-	-	-	-	-
CNMG160616MR	15,88	16,12	6,35	1,6	6,35	4171136	4170551	4170047	-	4172960	4173135	-	-	-	-	-	-	-	-	-	-
CNMG190612MR	19,05	19,34	6,35	1,2	7,93	4171137	4170552	4170048	-	4172961	4173136	-	-	-	-	-	-	-	-	-	-
CNMG190616MR	19,05	19,34	6,35	1,6	7,93	4171138	4170563	4170049	-	4172962	4173137	-	-	-	-	-	-	-	-	-	-



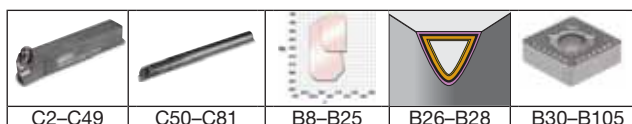


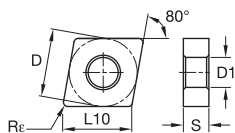

 • first choice  
 ○ alternate choice

**CNMG-RH**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15
						WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15
CNMG120408RH	12,70	12,90	4,76	0,8	5,16	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CNMG120412RH	12,70	12,90	4,76	1,2	5,16	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CNMG120416RH	12,70	12,90	4,76	1,6	5,16	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CNMG160608RH	15,88	16,12	6,35	0,8	6,35	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CNMG160612RH	15,88	16,12	6,35	1,2	6,35	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CNMG160616RH	15,88	16,12	6,35	1,6	6,35	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CNMG190608RH	19,05	19,34	6,35	0,8	7,93	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CNMG190612RH	19,05	19,34	6,35	1,2	7,93	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CNMG190616RH	19,05	19,34	6,35	1,6	7,93	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CNMG190624RH	19,05	19,34	6,35	2,4	7,93	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Inserts



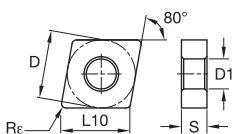
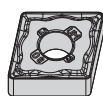


- first choice
- alternate choice

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

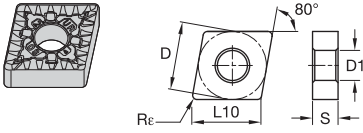
**■ CNMG-UF**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15
<b>CNMG120404UF</b>	12,70	12,90	4,76	0,4	5,16	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
<b>CNMG120408UF</b>	12,70	12,90	4,76	0,8	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
<b>CNMG120412UF</b>	12,70	12,90	4,76	1,2	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



**■ CNMG-UM**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15
<b>CNMG120404UM</b>	12,70	12,90	4,76	0,4	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
<b>CNMG120408UM</b>	12,70	12,90	4,76	0,8	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
<b>CNMG120412UM</b>	12,70	12,90	4,76	1,2	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



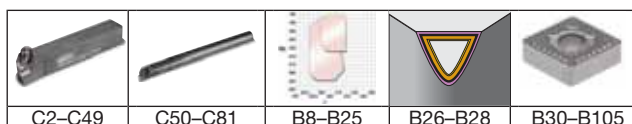
- first choice
- alternate choice

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

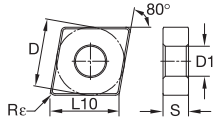
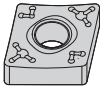
Inserts

**■ CNMG-UR**

ISO catalogue number	D	L10	S	Re	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WS50HT	THM	TIM	TTR	TT115		
CNMG120404UR	12,70	12,90	4,76	0,4	5,16	4171022	4171022	-	4169406	4169444	4169479	-	-	-	-	-	-	-	-	-	-	-
						4171093	4170501	4169960	4169407	4169445	4169480	5680086	5680085	5301400	5578894	5301402	5578895	-	-	-	-	-
CNMG120408UR	12,70	12,90	4,76	0,8	5,16	4171093	4170501	4169960	4169407	4169445	4169479	5680086	5680085	5301400	5578894	5301402	5578895	-	-	-	-	-
						4171094	4170502	4169961	4169408	4169446	4169481	5680087	4171419	5301413	5301416	-	-	-	-	-	-	-
CNMG120412UR	12,70	12,90	4,76	1,2	5,16	4171094	4170502	4169961	4169408	4169446	4169481	5680087	4171419	5301413	5301416	-	-	-	-	-	-	-
						4171095	4170503	-	4169409	4169447	4169482	4169481	5680087	4171420	4171413	5301416	-	-	-	-	-	-
CNMG120416UR	12,70	12,90	4,76	1,6	5,16	4171095	4170503	-	4169409	4169447	4169482	4169481	5680087	4171420	4171413	5301416	-	-	-	-	-	-
						4171096	4170504	-	4169410	4169448	4169483	4169481	5680087	4171421	4171413	5301416	-	-	-	-	-	-
CNMG160608UR	15,88	16,12	6,35	0,8	6,35	4171096	4170504	-	4169410	4169448	4169483	4169481	5680087	4171421	4171413	5301416	-	-	-	-	-	-
						4171097	4170505	4169962	4169411	4169449	4169484	4169481	5680088	4171422	4171413	5301416	-	-	-	-	-	-
CNMG160612UR	15,88	16,12	6,35	1,2	6,35	4171097	4170505	4169962	4169411	4169449	4169484	4169481	5680088	4171422	4171413	5301416	-	-	-	-	-	-
						4171098	4170506	4169963	4169450	4169485	4169484	4169481	5680088	4171423	4171413	5301416	-	-	-	-	-	-
CNMG160616UR	15,88	16,12	6,35	1,6	6,35	4171098	4170506	4169963	4169450	4169485	4169484	4169481	5680088	4171423	4171413	5301416	-	-	-	-	-	-
						4171099	4170507	4169964	4169451	4169486	4169484	4169481	5680088	4171424	4171413	5301416	-	-	-	-	-	-
CNMG190612UR	19,05	19,34	6,35	1,2	7,93	4171099	4170507	4169964	4169451	4169486	4169484	4169481	5680088	4171424	4171413	5301416	-	-	-	-	-	-
						4171100	4170508	4169965	4169452	4169487	4169484	4169481	5680088	4171425	4171413	5301416	-	-	-	-	-	-
CNMG190616UR	19,05	19,34	6,35	1,6	7,93	4171100	4170508	4169965	4169452	4169487	4169484	4169481	5680088	4171425	4171413	5301416	-	-	-	-	-	-
						4171101	4170509	4169966	4169453	4169488	4169484	4169481	5680088	4171426	4171413	5301416	-	-	-	-	-	-





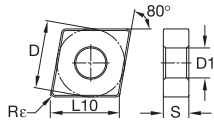
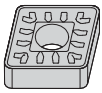


● first choice  
○ alternate choice

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

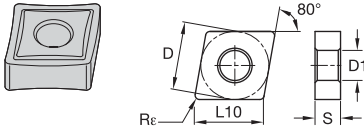
**■ CNMM-65**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
CNMM12040865	12,70	12,90	4,76	0,8	5,16	5698348	5698349	5698360	5698347												
CNMM12041265	12,70	12,90	4,76	1,2	5,16	5698362	5698363		5698361												
CNMM12041665	12,70	12,90	4,76	1,6	5,16		5698365			5698364											
CNMM16060865	15,88	16,12	6,35	0,8	6,35		5698366	5698367													
CNMM16061265	15,88	16,12	6,35	1,2	6,35	5698369	5698370	5698371	5698368												
CNMM16061665	15,88	16,12	6,35	1,6	6,35	5698372	5698373														
CNMM19061265	19,05	19,34	6,35	1,2	7,93			5698376	5698374												
CNMM19061665	19,05	19,34	6,35	1,6	7,93	5698378			5698377	5698374											
CNMM19062465	19,05	19,34	6,35	2,4	7,93	5698410	5698411		5698379												



**■ CNMM-SR**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15		
CNMM190616SR	19,05	19,34	6,35	1,6	7,93	5696643																
CNMM190624SR	19,05	19,34	6,35	2,4	7,93			5696644														
CNMM250924SR	25,40	25,79	9,53	2,4	9,12	5696645	5696646	5696647														



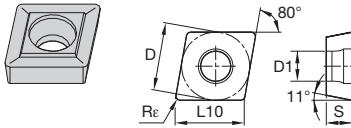
● first choice  
○ alternate choice

P	M	K	N	S	H	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Inserts

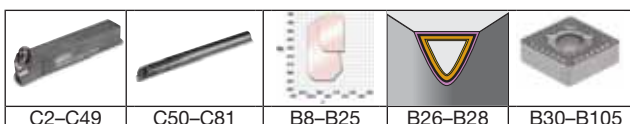
#### CNMP

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
CNMP120404	12,70	12,90	4,76	0,4	5,16	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
CNMP120408	12,70	12,90	4,76	0,8	5,16	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
CNMP120412	12,70	12,90	4,76	1,2	5,16	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
CNMP160608	15,88	16,12	6,35	0,8	6,35	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
CNMP160612	15,88	16,12	6,35	1,2	6,35	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
CNMP190612	19,05	19,34	6,35	1,2	7,93	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
CNMP190616	19,05	19,34	6,35	1,6	7,93	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○

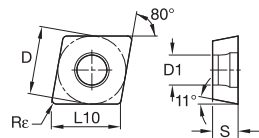


#### CPGT-3

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
CPGT04T1043	4,76	4,83	1,98	0,4	2,15	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



Inserts

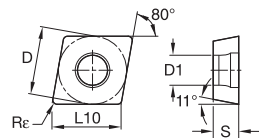


● first choice  
○ alternate choice

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

**CPMT-FP**

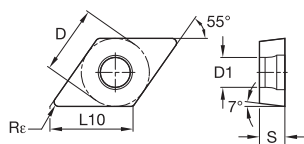
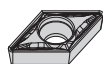
ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TT15
CPMT060202FP	6,35	6,45	2,38	0,2	2,80	4170015	4170015	-	-	-	-	-	-	-	-	-	-	-	-	-
CPMT060204FP	6,35	6,45	2,38	0,4	2,80	4170016	4170326	-	4168812	4168823	4168822	-	4170105	-	-	-	-	-	-	-
CPMT060208FP	6,35	6,45	2,38	0,8	2,80	4170017	4170327	-	4168813	4168824	-	-	4170106	-	-	-	-	-	-	-
CPMT09T302FP	9,53	9,67	3,97	0,2	4,40	-	-	-	-	4168825	-	-	-	-	-	-	-	-	-	-
CPMT09T304FP	9,53	9,67	3,97	0,4	4,40	4170018	4170018	-	4168814	4168826	-	-	4170107	-	-	-	-	-	-	-
CPMT09T308FP	9,53	9,67	3,97	0,8	4,40	4170019	4170329	-	4168815	4168827	-	-	4170108	-	-	-	-	-	-	-



**CPMT-MP**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TT15
CPMT060208MP	6,35	6,45	2,38	0,8	2,80	4170255	4170255	-	-	-	-	-	-	-	-	-	-	-	-	-
CPMT09T308MP	9,53	9,67	3,97	0,8	4,40	4170256	4170256	-	4168923	4168926	-	-	4170266	-	-	-	-	-	-	-
CPMT09T312MP	9,53	9,67	3,97	1,2	4,40	-	4170259	-	-	-	-	-	4170267	-	-	-	-	-	-	-



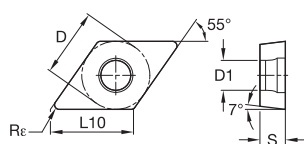
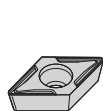


● first choice  
○ alternate choice

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

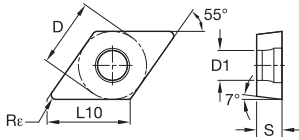
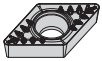
**■ DCMT-FP**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTM15	
DCMT070202FP	6,35	7,75	2,38	0,2	2,80	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
DCMT070204FP	6,35	7,75	2,38	0,4	2,80	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
DCMT070208FP	6,35	7,75	2,38	0,8	2,80	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
DCMT11T302FP	9,53	11,63	3,97	0,2	4,40	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
DCMT11T304FP	9,53	11,63	3,97	0,4	4,40	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
DCMT11T308FP	9,53	11,63	3,97	0,8	4,40	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
DCMT11T312FP	9,53	11,63	3,97	1,2	4,40	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
DCMT150404FP	12,70	15,50	4,76	0,4	5,50	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
DCMT150408FP	12,70	15,50	4,76	0,8	5,50	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•



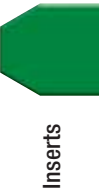
**■ DCMT-FW**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTM15	
DCMT11T304FW	9,53	11,63	3,97	0,2	4,40	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
DCMT11T308FW	9,53	11,63	3,97	0,8	4,40	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•



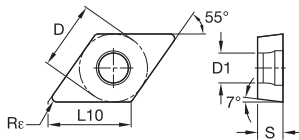
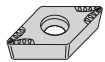
- first choice
- alternate choice

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



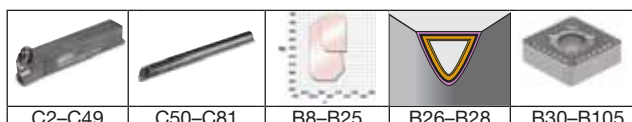
### DCMT-MP

ISO catalogue number	D	L10	S	R <sub>e</sub>	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
DCMT11T304MP	9,53	11,63	3,97	0,4	4,40	4170201	4170202	4170223	-	-	-	-	4170242	-	-	-	-	-	-	-	-
DCMT11T308MP	9,53	11,63	3,97	0,8	4,40	4170202	4170224	4170223	4168898	4168912	-	-	4170243	-	-	-	-	-	-	-	-
DCMT11T312MP	9,53	11,63	3,97	1,2	4,40	4170213	4170225	-	-	-	-	-	-	-	-	-	-	-	-	-	-

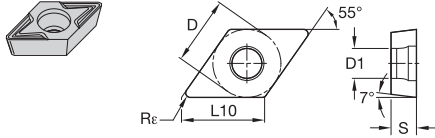


### DCMT-MU

ISO catalogue number	D	L10	S	R <sub>e</sub>	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
DCMT11T304MU	9,53	11,63	3,97	0,4	4,40	5623585	5623583	-	-	-	-	-	5623586	5623587	5623582	5623584	-	-	-	-	-
DCMT11T308MU	9,52	11,63	3,97	0,8	4,40	5623600	-	-	-	5623588	5623581	-	5623602	5623589	5623601	5623603	-	-	-	-	-
DCMT150408MU	12,70	15,50	4,76	0,8	5,50	5623606	5623608	-	-	5623604	-	-	5623605	5623607	5623609	5623610	-	-	-	-	-
DCMT150412MU	12,70	15,50	4,76	1,2	5,50	-	-	-	-	-	-	-	5623611	5623612	-	-	-	-	-	-	-



Inserts

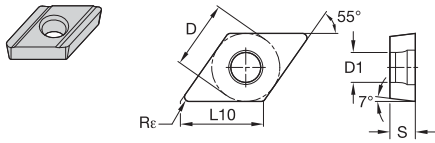


● first choice  
○ alternate choice

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

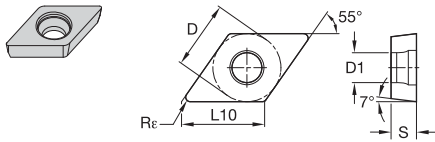
■ DCMT-MW

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
DCMT11T304MW	9,52	11,63	3,97	0,2	4,40	5623484	5623485														
DCMT11T308MW	9,53	11,63	3,97	0,8	4,40	5623488	5623489														



■ DCMX-18

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
DCMX11T302R18	9,53	11,63	3,97	0,2	4,30												2011507				

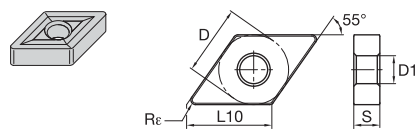


■ DCMW

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
DCMW070204	6,35	7,75	2,38	0,4	2,80							4170471	4170375				2027966				
DCMW11T304	9,53	11,63	3,97	0,4	4,40							4170472	4170376				2027967				
DCMW150408	12,70	15,50	4,76	0,8	5,50							4170473	4170377				2031737				





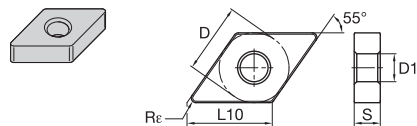


● first choice  
○ alternate choice

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

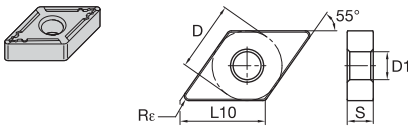
■ DNGP

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TT115	
DNGP150401	12,70	15,50	4,76	0,1	5,16	■	■	■	■	■	■	■	■	○	○	○	○	○	○	○	○
DNGP150402	12,70	15,50	4,76	0,2	5,16	■	■	■	■	■	■	■	■	○	○	○	○	○	○	○	○
DNGP150404	12,70	15,50	4,76	0,4	5,16	■	■	■	■	■	■	■	■	○	○	○	○	○	○	○	○
DNGP150408	12,70	15,50	4,76	0,8	5,16	■	■	■	■	■	■	■	■	○	○	○	○	○	○	○	○



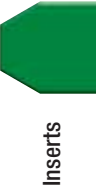
■ DNMA

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TT115	
DNMA110408	9,53	11,63	4,76	0,8	3,81	■	■	■	■	■	■	4171634	4171873	■	■	■	■	■	■	■	■
DNMA110412	9,53	11,63	4,76	1,2	3,81	■	■	■	■	■	■	4171874	4171875	■	■	■	■	■	■	■	■
DNMA150408	12,70	15,50	4,76	0,8	5,16	■	■	■	■	■	■	4171635	4171875	■	■	■	■	■	■	■	■
DNMA150412	12,70	15,50	4,76	1,2	5,16	■	■	■	■	■	■	4171636	4171876	■	■	■	■	■	■	■	■
DNMA150416	12,70	15,50	4,76	1,6	5,16	■	■	■	■	■	■	4171877	4171877	■	■	■	■	■	■	■	■
DNMA150608	12,70	15,50	6,35	0,8	5,16	■	■	■	■	■	■	4171637	4171878	■	■	■	■	■	■	■	■
DNMA150612	12,70	15,50	6,35	1,2	5,16	■	■	■	■	■	■	4171638	4171879	■	■	■	■	■	■	■	■
DNMA150616	12,70	15,50	6,35	1,6	5,16	■	■	■	■	■	■	4171880	4171879	■	■	■	■	■	■	■	■



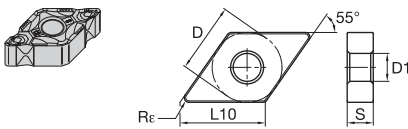
● first choice  
○ alternate choice

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



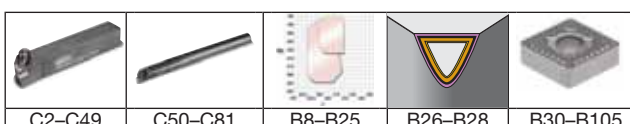
**DNMG-22**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
DNMG11040822	9,53	11,63	4,76	0,8	3,81	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

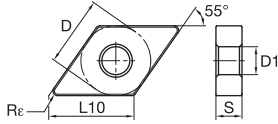
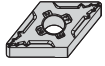


**DNMG-CT**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
DNMG150604CT	12,70	15,50	6,35	0,3	5,16	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
DNMG150608CT	12,70	15,50	6,35	0,8	5,16	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○
DNMG150612CT	12,70	15,50	6,35	1,1	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



Inserts

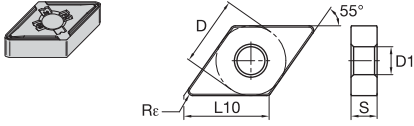


- first choice
- alternate choice

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

**■ DNMG-FF**

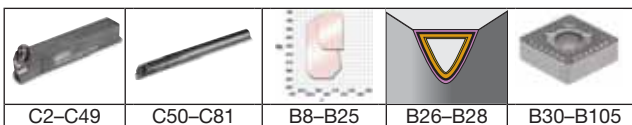
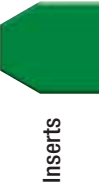
ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI5									
DNMG110404FF	9,53	11,63	4,76	0,4	3,81	4171028	4171028	4171028	4172348	4172348	4172348		4171321	5684273															
DNMG110408FF	9,53	11,63	4,76	0,8	3,81	4171029	4171029	4171029	4172349	4172349	4172349		4171322	5684274															
DNMG110412FF	9,53	11,63	4,76	1,2	3,81				4172350	4172350	4172350																		
DNMG150404FF	12,70	15,50	4,76	0,4	5,16	4171030	4171030	4171030	4172351	4172351	4172351			5684274															
DNMG150408FF	12,70	15,50	4,76	0,8	5,16	4171031	4171031	4171031	4172352	4172352	4172352		4171373	5684275															
DNMG150412FF	12,70	15,50	4,76	1,2	5,16								4171374	5684276															
DNMG150604FF	12,70	15,50	6,35	0,4	5,16	4171032	4171032	4171032	4172683	4172683	4172683		4171375	5684276															
DNMG150608FF	12,70	15,50	6,35	0,8	5,16	4171043	4171043	4171043	4172684	4172684	4172684		4171376																
DNMG150612FF	12,70	15,50	6,35	1,2	5,16	4171044	4171044	4171044	4172685	4172685	4172685		4171377																



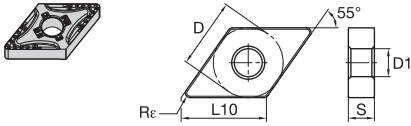
● first choice  
○ alternate choice

### ■ DNMG-FW

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP36CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	P	M	K	N	S	H	
																					●	●	●	○	○	○	○
DNMG110404FW	9,53	11,63	4,76	0,4	3,81	5623490															●	●	○	○	○	○	○
DNMG110408FW	9,53	11,63	4,76	0,8	3,81	5623491															●	●	○	○	○	○	○
DNMG150404FW	12,70	15,50	4,76	0,4	5,16	5623492															●	●	○	○	○	○	○
DNMG150408FW	12,70	15,50	4,76	0,4	5,16	5623493															●	●	○	○	○	○	○
DNMG150604FW	12,70	15,50	6,35	0,4	5,16	5623496															●	●	○	○	○	○	○
DNMG150608FW	12,70	15,50	6,35	0,4	5,16	5623497															●	●	○	○	○	○	○







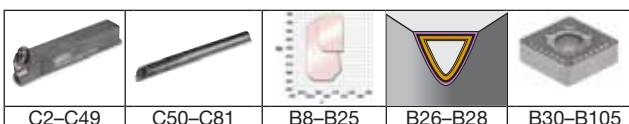
- first choice
- alternate choice

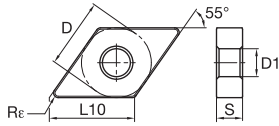
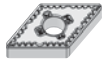
P	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
M	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

**■ DNMG-MR**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP36CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS29PT	WU10HT	THM	TTM	TTR	TT15	
						DNMG110408MR	9,53	11,63	4,76	0,8	3,81	●	●	○	○	○	○	○	○	○	○
DNMG150404MR	12,70	15,50	4,76	0,4	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DNMG150408MR	12,70	15,50	4,76	0,8	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DNMG150412MR	12,70	15,50	4,76	1,2	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DNMG150604MR	12,70	15,50	6,35	0,4	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DNMG150608MR	12,70	15,50	6,35	0,8	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DNMG150612MR	12,70	15,50	6,35	1,2	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Inserts



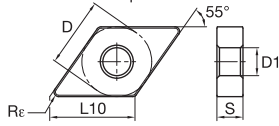
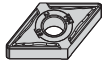


● first choice  
○ alternate choice

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

■ DNMG-MS

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
DNMG110408MS	9,53	11,63	4,76	0,8	3,81									5908769	5908769	5908770	5908781				
DNMG150404MS	12,70	15,50	4,76	0,4	5,16									5908782	5908783	5908784					
DNMG150408MS	12,70	15,50	4,76	0,8	5,16									5908785	5908787	5908788					
DNMG150412MS	12,70	15,50	4,76	1,2	5,16									5908789	5908790	5908791					
DNMG150604MS	12,70	15,50	6,35	0,4	5,16									5908792	5908793	5908794					
DNMG150608MS	12,70	15,50	6,35	0,8	5,16									5908795	5908796	5908797					
DNMG150612MS	12,70	15,50	6,35	1,2	5,16									5908798	5908799	5908800					

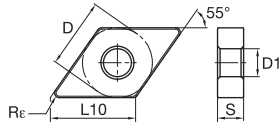


■ DNMG-MW

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
DNMG150408MW	12,70	15,50	4,76	0,4	5,16	5623494	5623495		4173114			4171687									
DNMG150412MW	12,70	15,50	4,76	1,2	5,16				4173115	4173116	4173117	4171688	4171689								
DNMG150608MW	12,70	15,50	6,35	0,4	5,16	5623498	5623499														
DNMG150612MW	12,70	15,50	6,35	1,2	5,16																





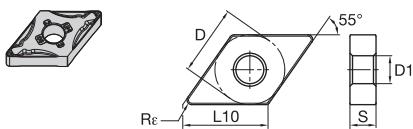


● first choice  
○ alternate choice

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

### ■ DNMG-UF

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TIM	TTR	TTI15	
DNMG110404UF	9,53	11,63	4,76	0,4	3,81				4169356	4169382				5645603							
DNMG110408UF	9,53	11,63	4,76	0,8	3,81				4169357	4169383				5645604							
DNMG150404UF	12,70	15,50	4,76	0,4	5,16				4169358	4169384				5645601							
DNMG150408UF	12,70	15,50	4,76	0,8	5,16	5645606	5645605		4169359	4169385				5645602	5645601						
DNMG150412UF	12,70	15,50	4,76	1,2	5,16				4169360	4169386											
DNMG150604UF	12,70	15,50	6,35	0,4	5,16				4169361	4169387				5645608							
DNMG150608UF	12,70	15,50	6,35	0,8	5,16		5645609		4169362	4169388				5645607							
DNMG150612UF	12,70	15,50	6,35	1,2	5,16				4169363	4169389											



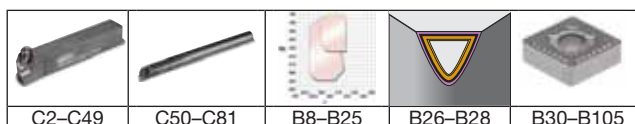
● first choice  
○ alternate choice

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

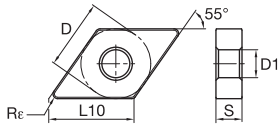
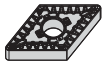


### ■ DNMG-UM

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
DNMG110404UM	9,53	11,63	4,76	0,4	3,81	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DNMG110408UM	9,53	11,63	4,76	0,8	3,81	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DNMG110412UM	9,53	11,63	4,76	1,2	3,81	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DNMG150404UM	12,70	15,50	4,76	0,4	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DNMG150408UM	12,70	15,50	4,76	0,8	5,16	5645260	5645261	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DNMG150412UM	12,70	15,50	4,76	1,2	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DNMG150604UM	12,70	15,50	6,35	0,4	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DNMG150608UM	12,70	15,50	6,35	0,8	5,16	○	5645262	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DNMG150612UM	12,70	15,50	6,35	1,2	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DNMG150616UM	12,70	15,50	6,35	1,6	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



Inserts

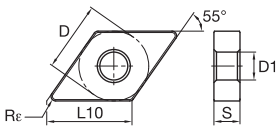
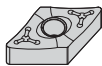


● first choice  
○ alternate choice

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

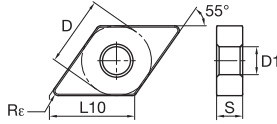
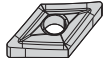
**■ DNMG-UR**

ISO catalogue number	D	L10	S	Re	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
DNMG110408UR	9,53	11,63	4,76	0,8	3,81	4171101	4171009	4169966	4169424	4169453	4169488	-	4171426	-	-	-	-	-	-	-	-
DNMG110412UR	9,53	11,63	4,76	1,2	3,81	4171102	4170510	-	4169425	-	-	-	4171427	-	-	-	-	-	-	-	-
DNMG150408UR	12,70	15,50	4,76	0,8	5,16	4171103	4170511	4169967	4169426	4169454	4169489	-	4171428	-	5579271	-	-	-	-	-	-
DNMG150412UR	12,70	15,50	4,76	1,2	5,16	4171104	4170512	4169968	-	4169455	4169490	-	4171429	-	5579282	-	-	-	-	-	-
DNMG150416UR	12,70	15,50	4,76	1,6	5,16	-	-	-	-	-	4169491	-	4171430	5680171	-	-	-	-	-	-	-
DNMG150608UR	12,70	15,50	6,35	0,8	5,16	4171105	4170513	4169969	4169427	4169456	4169492	-	4171431	-	5579276	-	-	-	-	-	-
DNMG150612UR	12,70	15,50	6,35	1,2	5,16	4171106	4170514	4169970	4169428	4169457	4169493	5680172	4171432	-	-	-	-	-	-	-	-
DNMG150616UR	12,70	15,50	6,35	1,6	5,16	4171107	4170515	4169971	-	-	4169494	-	4171433	-	-	-	-	-	-	-	-



**■ DNMM-65**

ISO catalogue number	D	L10	S	Re	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
DNMM15060865	12,70	15,50	6,35	0,8	5,16	5698413	5698414	5698415	-	-	-	-	-	-	-	-	-	-	-	-	-
DNMM15061265	12,70	15,50	6,35	1,2	5,16	5698417	-	-	-	5698416	-	-	-	-	-	-	-	-	-	-	-
DNMM15061665	12,70	15,50	6,35	1,6	5,16	5698418	5698419	-	-	-	-	-	-	-	-	-	-	-	-	-	-



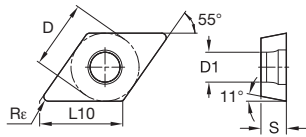
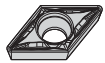
- first choice
- alternate choice

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

■ **DNMP**

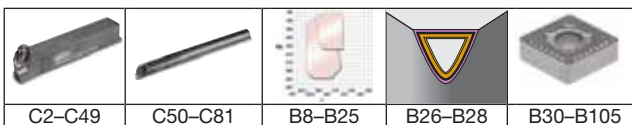
ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
DNMP150404	12,70	15,50	4,76	0,4	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DNMP150408	12,70	15,50	4,76	0,8	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DNMP150412	12,70	15,50	4,76	1,2	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DNMP150604	12,70	15,50	6,35	0,4	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DNMP150608	12,70	15,50	6,35	0,8	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DNMP150612	12,70	15,50	6,35	1,2	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

NOTE: DNMP-style inserts are single sided.

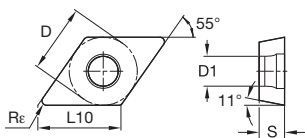
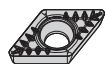


■ **DPMT-FP**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
DPMT070204FP	6,35	7,75	2,38	0,4	2,80	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DPMT11T304FP	9,53	11,63	3,97	0,4	4,40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DPMT11T308FP	9,53	11,63	3,97	0,8	4,40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



Inserts

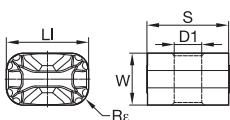


● first choice  
○ alternate choice

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

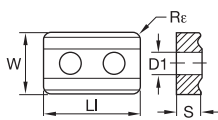
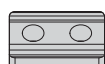
■ DPMT-MP

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
DPMT11T308MP	9,53	11,63	3,97	0,8	4,40	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



■ LNUX-13

ISO catalogue number	W	LI	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
LNUX19194013	10,00	19,05	19,05	4,0	6,35	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
LNUX30194013	12,00	30,00	19,05	4,0	6,35	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

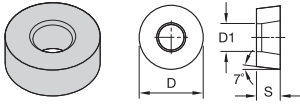


■ LNUX-EN95

ISO catalogue number	W	LI	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
LNUX400924EN95	25,40	40,00	9,53	2,4	9,12	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

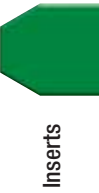






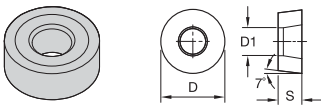
● first choice  
○ alternate choice

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



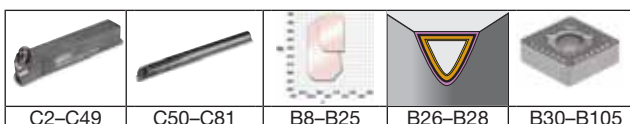
■ **RNMA**

ISO catalogue number	D	S	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15
<b>RNMA120400</b>	12,70	4,76	5,16	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○



■ **RNMG-RH**

ISO catalogue number	D	S	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15
<b>RNMG090300RH</b>	9,53	3,18	3,81	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
<b>RNMG120400RH</b>	12,70	4,76	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
<b>RNMG190600RH</b>	19,05	6,35	7,93	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



















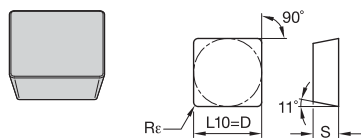








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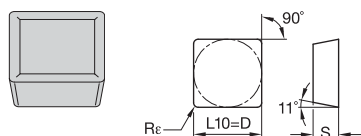


● first choice  
○ alternate choice

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

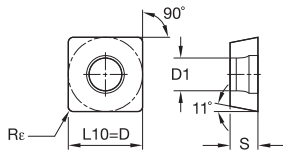
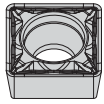
■ SPG

ISO catalogue number	D	L10	S	Rē	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
SPGN090308	9,53	9,53	3,18	0,8	■	■	○	○	○	○	○	○	○	○	○	○	○	○	○	○
SPGN120308	12,70	12,70	3,18	0,8	■	■	○	○	○	○	○	○	○	○	○	○	○	○	○	○
SPGN120312	12,70	12,70	3,18	1,2	■	■	○	○	○	○	○	○	○	○	○	○	○	○	○	○



■ SPMR

ISO catalogue number	D	L10	S	Rē	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
SPMR090308	9,53	9,53	3,18	0,8	■	■	○	○	○	○	○	○	○	○	○	○	○	○	○	○
SPMR120304	12,70	12,70	3,18	0,4	4170853	■	○	○	○	○	○	○	○	○	○	○	○	○	○	○
SPMR120308	12,70	12,70	3,18	0,8	4170854	■	○	○	○	○	○	○	○	○	○	○	○	○	○	○
SPMR120312	12,70	12,70	3,18	1,2	■	■	○	○	○	○	○	○	○	○	○	○	○	○	○	○

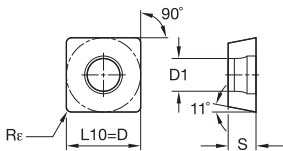
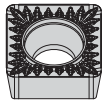


● first choice  
○ alternate choice

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

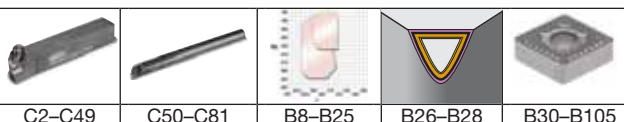
#### ■ SPMT-FP

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
SPMT09T304FP	9,53	9,53	3,97	0,4	4,40	4170023	4170333	-	-	4168831	-	-	4170110	-	-	-	-	-	-	-	-
SPMT09T308FP	9,53	9,53	3,97	0,8	4,40	4170024	4170334	-	-	4168832	-	-	4170111	-	-	-	-	-	-	-	-



#### ■ SPMT-MP

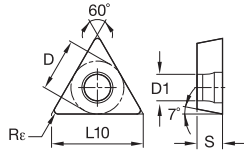
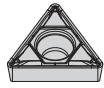
ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
SPMT09T308MP	9,53	9,53	3,97	0,8	4,40	-	4170261	-	4168925	-	-	-	4170269	-	-	-	-	-	-	-	-
SPMT120408MP	12,70	12,70	4,76	0,8	5,50	-	4170262	-	-	-	-	-	4170270	-	-	-	-	-	-	-	-







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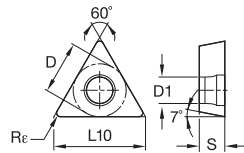


- first choice
- alternate choice

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

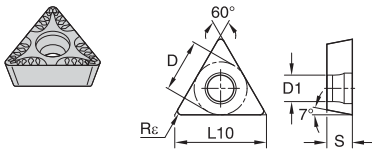
**TCMT-FP**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
TCMT110202FP	6,35	11,00	2,38	0,2	2,90	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TCMT110204FP	6,35	11,00	2,38	0,4	2,80	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TCMT110208FP	6,35	11,00	2,38	0,8	2,80	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TCMT16T304FP	9,53	16,50	3,97	0,4	4,40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TCMT16T308FP	9,53	16,50	3,97	0,8	4,40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TCMT16T312FP	9,53	16,50	3,97	1,2	4,40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TCMT220408FP	12,70	22,00	4,76	0,8	5,50	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



**TCMT-MP**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
TCMT110208MP	6,35	11,00	2,38	0,8	2,80	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TCMT16T304MP	9,53	16,50	3,97	0,4	4,40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TCMT16T308MP	9,53	16,50	3,97	0,8	4,40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TCMT16T312MP	9,53	16,50	3,97	1,2	4,40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



● first choice  
○ alternate choice

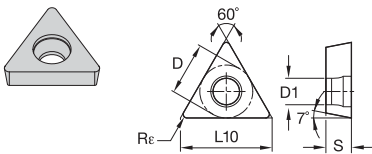
<b>P</b>	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
<b>M</b>	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
<b>K</b>	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
<b>N</b>	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
<b>S</b>	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
<b>H</b>	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



Inserts

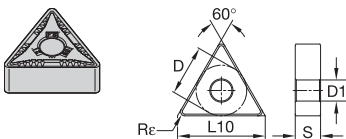
**TCMT-MU**

ISO catalogue number	D	L10	S	Re	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
TCMT16T304MU	9,53	16,50	3,97	0,4	4,40	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TCMT16T308MU	9,53	16,50	3,97	0,8	4,40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



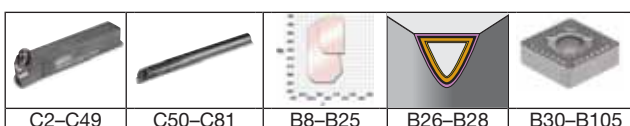
**TCMW**

ISO catalogue number	D	L10	S	Re	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
TCMW110204	6,35	11,00	2,38	0,4	2,80	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TCMW16T304	9,53	16,50	3,97	0,4	4,40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



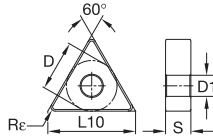
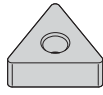
**TNGG-FS**

ISO catalogue number	D	L10	S	Re	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
TNGG160404FS	9,53	16,50	4,76	0,4	3,81	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNGG220408FS	12,70	22,00	4,76	0,8	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○





Inserts

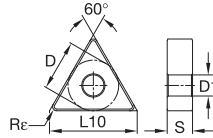


- first choice
- alternate choice

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

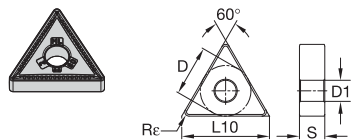
### TNMA

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
TNMA160408	9,53	16,50	4,76	0,8	3,81	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMA160412	9,53	16,50	4,76	1,2	3,81	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMA160416	9,53	16,50	4,76	1,6	3,81	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMA220408	12,70	22,00	4,76	0,8	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMA220412	12,70	22,00	4,76	1,2	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMA220416	12,70	22,00	4,76	1,6	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMA270616	15,88	27,50	6,35	1,6	6,35	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



### TNMG-FF

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
TNMG110304FF	6,35	11,00	3,18	0,4	2,26	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMG110308FF	6,35	11,00	3,18	0,8	2,26	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMG160404FF	9,53	16,50	4,76	0,4	3,81	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMG160408FF	9,53	16,50	4,76	0,8	3,81	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMG160412FF	9,53	16,50	4,76	1,2	3,81	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



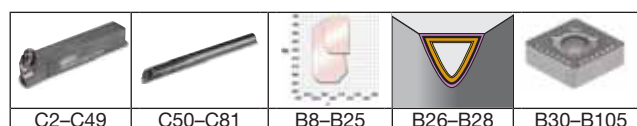
● first choice  
 ○ alternate choice

P	M	K	N	S	H	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15
●	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
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○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

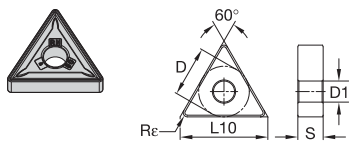
Inserts

**TNMG-ML**

ISO catalogue number	D	L10	S	Rε	D1
TNMG110304ML	6,35	11,00	3,18	0,4	2,26
TNMG110308ML	6,35	11,00	3,18	0,8	2,26
TNMG160404ML	9,53	16,50	4,76	0,4	3,81
TNMG160408ML	9,53	16,50	4,76	0,8	3,81
TNMG160412ML	9,53	16,50	4,76	1,2	3,81
TNMG220404ML	12,70	22,00	4,76	0,4	5,16
TNMG220408ML	12,70	22,00	4,76	0,8	5,16







● first choice  
○ alternate choice

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

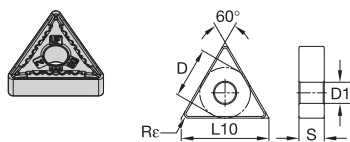
Inserts

### TNMG-RH

ISO catalogue number	D	L10	S	Re	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TT115	
TNMG160408RH	9,53	16,50	4,76	0,8	3,81	●	○														
TNMG160412RH	9,53	16,50	4,76	1,2	3,81	○	○														
TNMG220408RH	12,70	22,00	4,76	0,8	5,16	●	○														
TNMG220412RH	12,70	22,00	4,76	1,2	5,16	○	○														
TNMG220416RH	12,70	22,00	4,76	1,6	5,16	○	○														
TNMG270612RH	15,88	27,50	6,35	1,2	6,35																
TNMG270616RH	15,88	27,50	6,35	1,6	6,35																
TNMG330924RH	19,05	33,00	9,53	2,4	7,93																



Inserts

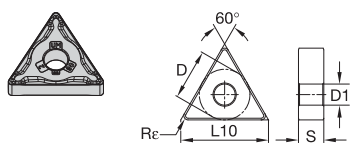


- first choice
- alternate choice

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

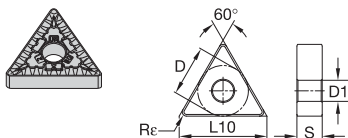
■ TNMG-UF

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
TNMG160404UF	9,53	16,50	4,76	0,4	3,81																
TNMG160408UF	9,53	16,50	4,76	0,8	3,81	5645615			4169367	4169368	4169394			5432605							
TNMG160412UF	9,53	16,50	4,76	1,2	3,81				4169369	4169370	4169395			5645613							
TNMG220404UF	12,70	22,00	4,76	0,4	5,16				4169370	4169371	4169396			5645612							
TNMG220408UF	12,70	22,00	4,76	0,8	5,16				4169371	4169372	4169397			5645614							



■ TNMG-UM

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
TNMG160404UM	9,53	16,50	4,76	0,4	3,81				4172369	4172370	4172396			5550226							
TNMG160408UM	9,53	16,50	4,76	0,8	3,81				4172370	4172371	4172397			5550228							
TNMG160412UM	9,53	16,50	4,76	1,2	3,81				4172371	4172372	4172398										
TNMG160416UM	9,53	16,50	4,76	1,6	3,81				4172399	4172400	4172429										
TNMG220404UM	12,70	22,00	4,76	0,4	5,16				4172372	4172373	4172400										
TNMG220408UM	12,70	22,00	4,76	0,8	5,16	5645266			4172401	4172402	4172430			5645265							
TNMG220412UM	12,70	22,00	4,76	1,2	5,16				4172374	4172402	4172431			5473222							

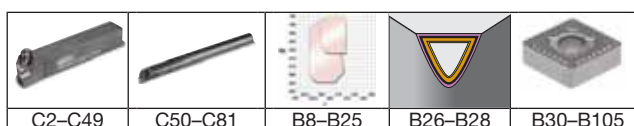


- first choice
- alternate choice

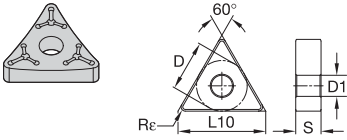
**TNMG-UR**

ISO catalogue number	D	L10	S	Re	D1																				
						WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15					
TNMG160408UR	9,53	16,50	4,76	0,8	3,81	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMG160412UR	9,53	16,50	4,76	1,2	3,81	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMG160416UR	9,53	16,50	4,76	1,6	3,81	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMG220408UR	12,70	22,00	4,76	0,8	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMG220412UR	12,70	22,00	4,76	1,2	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMG220416UR	12,70	22,00	4,76	1,6	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMG270612UR	15,88	27,50	6,35	1,2	6,35	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMG270616UR	15,88	27,50	6,35	1,6	6,35	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Inserts



Inserts

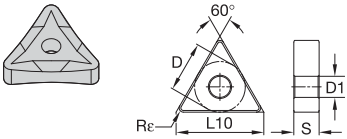


● first choice  
○ alternate choice

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

**■ TNMM-65**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS28PT	WU10HT	THM	TTM	TTR	TT115	
TNMM16040865	9,53	16,50	4,76	0,8	3,81	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMM16041265	9,53	16,50	4,76	1,2	3,81	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMM22040865	12,70	22,00	4,76	0,8	5,16	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMM22041265	12,70	22,00	4,76	1,2	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMM22041665	12,70	22,00	4,76	1,6	5,16	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



**■ TNMP**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS28PT	WU10HT	THM	TTM	TTR	TT115	
TNMP160404	9,53	16,50	4,76	0,4	3,81	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMP160408	9,53	16,50	4,76	0,8	3,81	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMP160412	9,53	16,50	4,76	1,2	3,81	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMP220404	12,70	22,00	4,76	0,4	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMP220408	12,70	22,00	4,76	0,8	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
TNMP220412	12,70	22,00	4,76	1,2	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

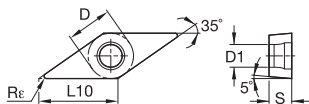








Inserts

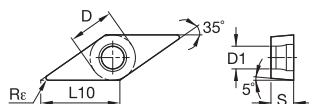


● first choice  
○ alternate choice

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

■ VBMT

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
VBMT160404	9,53	16,61	4,76	0,4	4,40	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
VBMT160408	9,53	16,61	4,76	0,8	4,40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
VBMT160412	9,53	16,61	4,76	1,2	4,40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



■ VBMT-FP

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
VBMT110302FP	6,35	11,07	3,18	0,2	2,80	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
VBMT110304FP	6,35	11,07	3,18	0,4	2,80	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
VBMT110308FP	6,35	11,07	3,18	0,8	2,80	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
VBMT160402FP	9,53	16,61	4,76	0,2	4,40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
VBMT160404FP	9,53	16,61	4,76	0,4	4,40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
VBMT160408FP	9,53	16,61	4,76	0,8	4,40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
VBMT160412FP	9,53	16,61	4,76	1,2	4,40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○





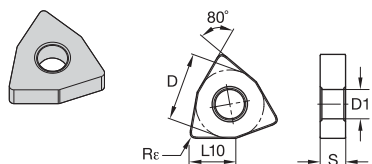








Inserts

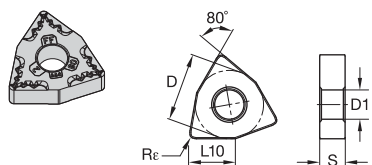


• first choice  
○ alternate choice

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

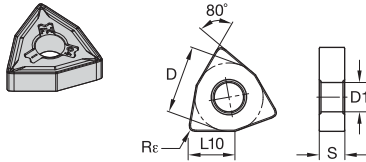
**■ WNMA**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TT115
<b>WNMA060408</b>	9,53	6,52	4,76	0,8	3,81	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
<b>WNMA060412</b>	9,53	6,52	4,76	1,2	3,81	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
WNMA080408	12,70	8,69	4,76	0,8	5,16	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
WNMA080412	12,70	8,69	4,76	1,2	5,16	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
<b>WNMA080416</b>	12,70	8,69	4,76	1,6	5,16	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•



**■ WNMG-FF**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TT115
<b>WNMG060404FF</b>	9,53	6,52	4,76	0,4	3,81	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
<b>WNMG060408FF</b>	9,53	6,52	4,76	0,8	3,81	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
WNMG080404FF	12,70	8,69	4,76	0,4	5,16	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
<b>WNMG080408FF</b>	12,70	8,69	4,76	0,8	5,16	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

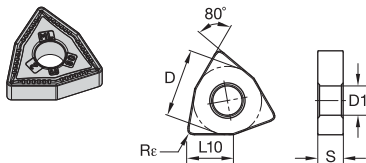


● first choice  
○ alternate choice

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

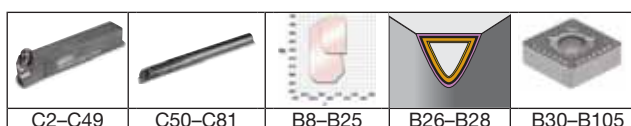
**■ WNMG-FW**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TT15	
WNMG060404FW	9,53	6,52	4,76	0,4	3,81	5623510															
WNMG060408FW	9,53	6,52	4,76	0,8	3,81	5623511															
WNMG080404FW	12,70	8,69	4,76	0,4	5,16	5623514			4171762	4173109		4171693									
WNMG080408FW	12,70	8,69	4,76	0,8	5,16	5623515			4171763	4173110		4171694									
WNMG080412FW	12,70	8,69	4,76	1,2	5,16			4171764	4173111			4171696									

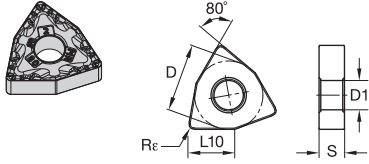


**■ WNMG-ML**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TT15	
WNMG060404ML	9,53	6,52	4,76	0,4	3,81	4171081							4171676	4171415							
WNMG060408ML	9,53	6,52	4,76	0,8	3,81	4171082	4170497						4171677	4171416							
WNMG080404ML	12,70	8,69	4,76	0,4	5,16	4171083	4170498						4171678	4171417							
WNMG080408ML	12,70	8,69	4,76	0,8	5,16	4171084	4170499						4171679	4171418							



Inserts

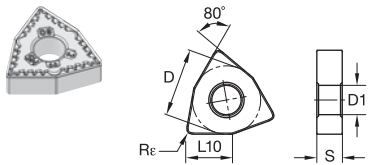


● first choice  
○ alternate choice

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

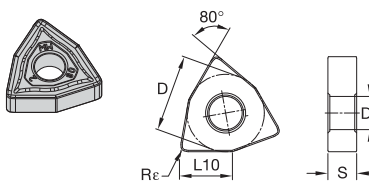
**WNUMG-MR**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TT15	
WNUMG080408MR	12,70	8,69	4,76	0,8	5,16	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNUMG080412MR	12,70	8,69	4,76	1,2	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNUMG080416MR	12,70	8,69	4,76	1,6	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



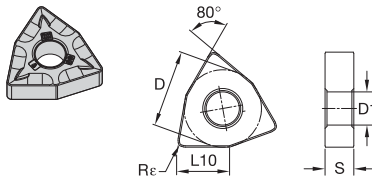
**WNUMG-MS**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TT15	
WNUMG060408MS	9,53	6,52	4,76	0,8	3,81	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNUMG080404MS	12,70	8,69	4,76	0,4	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNUMG080408MS	12,70	8,69	4,76	0,8	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



**WNUMG-MW**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TT15	
WNUMG060408MW	9,53	6,52	4,76	0,8	3,81	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNUMG080408MW	12,70	8,69	4,76	0,8	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNUMG080412MW	12,70	8,69	4,76	1,2	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

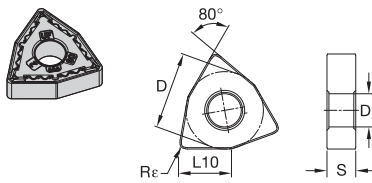


● first choice  
○ alternate choice

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

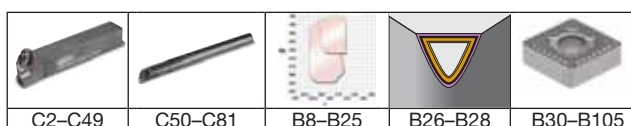
■ WNMG-RH

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TT115	
WNMG060408RH	9,53	6,52	4,76	0,8	3,81	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNMG080408RH	12,70	8,69	4,76	0,8	5,16	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNMG080412RH	12,70	8,69	4,76	1,2	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNMG080416RH	12,70	8,69	4,76	1,6	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

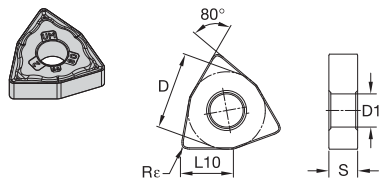


■ WNMG-UF

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TT115	
WNMG060404UF	9,53	6,52	4,76	0,4	3,81	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNMG060408UF	9,53	6,52	4,76	0,8	3,81	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNMG080404UF	12,70	8,69	4,76	0,4	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNMG080408UF	12,70	8,69	4,76	0,8	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNMG080412UF	12,70	8,69	4,76	1,2	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



C2-C49    C50-C81    B8-B25    B26-B28    B30-B105

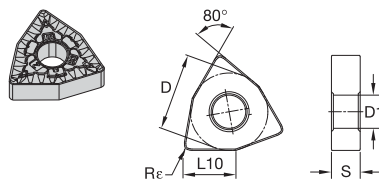


● first choice  
○ alternate choice

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

**■ WNMG-UM**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
WNMG060404UM	9,53	6,52	4,76	0,4	3,81	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNMG060408UM	9,53	6,52	4,76	0,8	3,81	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNMG060412UM	9,53	6,52	4,76	1,2	3,81	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNMG080404UM	12,70	8,69	4,76	0,4	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNMG080408UM	12,70	8,69	4,76	0,8	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNMG080412UM	12,70	8,69	4,76	1,2	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
WNMG080416UM	12,70	8,69	4,76	1,6	5,16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



**■ WNMG-UR**

ISO catalogue number	D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT	WU10HT	THM	TTM	TTR	TTI15	
WNMG060408UR	9,53	6,52	4,76	0,8	3,81	4171125	4170531	4170039	4169441	4169475	-	-	4171451	5680178	5680177	-	-	-	-	-	-
WNMG060412UR	9,53	6,52	4,76	1,2	3,81	4171126	4170532	-	-	-	-	-	4171452	-	-	-	-	-	-	-	-
WNMG080408UR	12,70	8,69	4,76	0,8	5,16	4171127	4170533	4170040	4169442	4169476	4169509	5680179	4171453	-	-	-	-	-	-	-	-
WNMG080412UR	12,70	8,69	4,76	1,2	5,16	4171128	4170534	4170041	4169443	4169477	4169510	-	4171454	5579420	-	-	-	-	-	-	-
WNMG080416UR	12,70	8,69	4,76	1,6	5,16	4171129	4170535	4170042	4169478	4169511	-	-	4171455	-	-	-	-	-	-	-	-

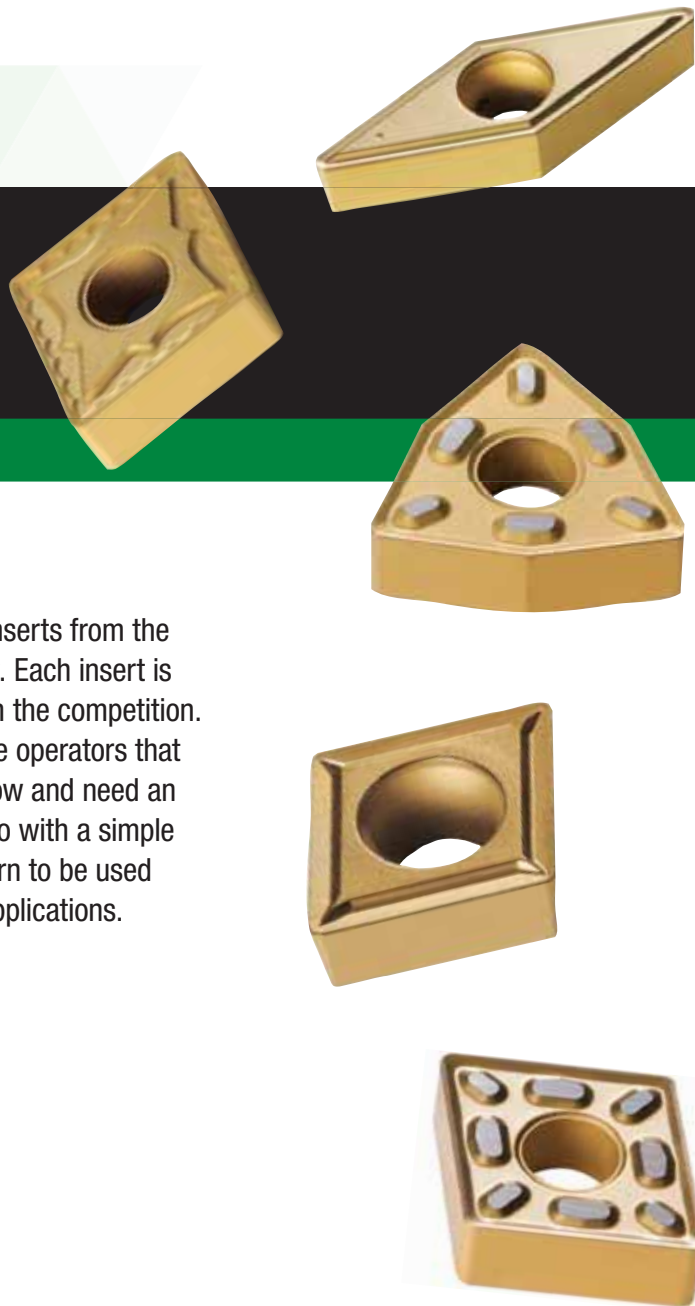


The Gold Standard for Value •  
**WIDIA™ VariTurn™**

# VariTurn

WIDIA VariTurn is the cost-effective line of inserts from the brand you already know and trust for quality. Each insert is 100% manufactured by WIDIA to outperform the competition. WIDIA VariTurn offers the versatility for those operators that are cutting steel today and cast iron tomorrow and need an insert to get the job done. A focused portfolio with a simple grade selection method allows WIDIA VariTurn to be used for up to approximately 80% of all turning applications.

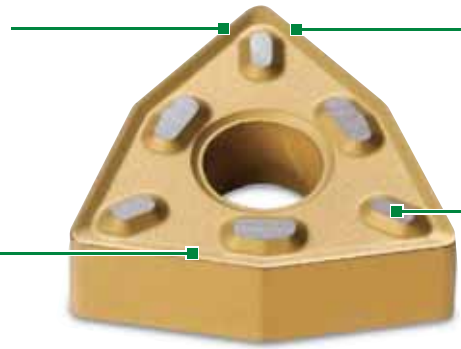
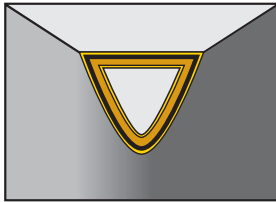
- Engineered to optimise performance.
- Gold coating on every insert.
- Proven grade technologies.



**Post-coat treatment**

- Improves edge toughness.
- Wide range of applications.

MT-CVD/CVD-  
TiN-TiCN-Al2O3-TiN



**Improved edge toughness**

- Provides smooth outer surface to reduce forces, friction, and workpiece sticking.

**Post-coat grinding**

- Provides secure seating surface.

## Getting the Most from Every Insert

WIDIA™ VariTurn™ products make it simple to get the most out of your inserts, and your money. Every insert is gold, which exposes wear as the tool continues to be used. This makes it easy to detect when an insert is ready to be changed — maximising the product's value and protecting the workpiece. Also, because WIDIA VariTurn inserts can be used in most applications, a single insert can take on any number of tasks, thus reducing your inventory. WIDIA VariTurn products are also reliable enough to cut steel, stainless steel, cast iron, and high-temperature alloys, enabling quick changes in workpiece materials without the need to swap inserts, saving time and money.

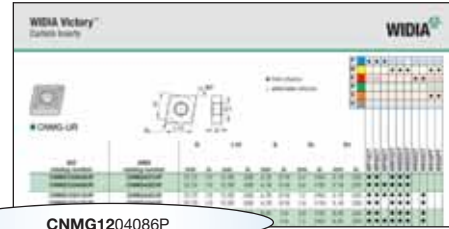
## WIDIA VariTurn Options

This versatile line offers a simple geometry selection system, eight grades, and eight geometries, including negative rake and screw-on. With these options, WIDIA VariTurn inserts cover 80% of all general turning applications.



## How Do Catalogue Numbers Work?

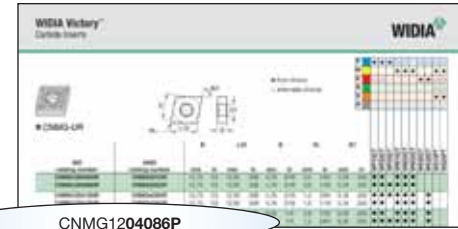
Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



CNMG1204086P

C		N		M		G		12																																																																																																																																																																																																	
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 mm cutting edge length “L10”</p> <table border="1"> <thead> <tr> <th>“D” mm</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>3,97</td><td>S4</td><td>04</td><td>03</td><td>03</td><td>06</td><td>-</td><td>-</td></tr> <tr><td>4,76</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>5,56</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>6,00</td><td>-</td><td>-</td><td>06</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>6,35</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>7,94</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>8,00</td><td>-</td><td>-</td><td>08</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>9,52</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>10,00</td><td>-</td><td>-</td><td>10</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>11,11</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>12,00</td><td>-</td><td>-</td><td>12</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>12,70</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>14,29</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>15,88</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>16,00</td><td>-</td><td>-</td><td>16</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>17,46</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>19,05</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>20,00</td><td>-</td><td>-</td><td>20</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>22,22</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>25,00</td><td>-</td><td>-</td><td>25</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>25,40</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>31,75</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>32,00</td><td>-</td><td>-</td><td>32</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>	“D” mm	C	D	R	S	T	V	W	3,97	S4	04	03	03	06	-	-	4,76	04	05	04	04	08	08	S3	5,56	05	06	05	05	09	09	03	6,00	-	-	06	-	-	-	-	6,35	06	07	06	06	11	11	04	7,94	08	09	07	07	13	13	05	8,00	-	-	08	-	-	-	-	9,52	09	11	09	09	16	16	06	10,00	-	-	10	-	-	-	-	11,11	11	13	11	11	19	19	07	12,00	-	-	12	-	-	-	-	12,70	12	15	12	12	22	22	08	14,29	14	17	14	14	24	24	09	15,88	16	19	15	15	27	27	10	16,00	-	-	16	-	-	-	-	17,46	17	21	17	17	30	30	11	19,05	19	23	19	19	33	33	13	20,00	-	-	20	-	-	-	-	22,22	22	27	22	22	38	38	15	25,00	-	-	25	-	-	-	-	25,40	25	31	25	25	44	44	17	31,75	32	38	31	31	54	54	21	32,00	-	-	32	-	-	-	-	R	
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O	Octagon 135°	B	5°	F		A		M																																																																																																																																																																																																	
P	Pentagon 108°	C	7°	G		W		T																																																																																																																																																																																																	
R	Round -	D	15°	H		U		Q																																																																																																																																																																																																	
S	Square 90°	E	20°	I		B		U																																																																																																																																																																																																	
T	Triangular 60°	F	25°	J		H		C																																																																																																																																																																																																	
C	Rhomboid 80°	G	30°	X		V		J																																																																																																																																																																																																	
D	55°	N	0°																																																																																																																																																																																																						
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W	Trigon 80° with enlarged corner angles																																																																																																																																																																																																								
L	Rectangular 90°																																																																																																																																																																																																								
A	Parallelogram 85°																																																																																																																																																																																																								
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By referencing this easy-to-use guide, you can identify the correct product to meet your needs.



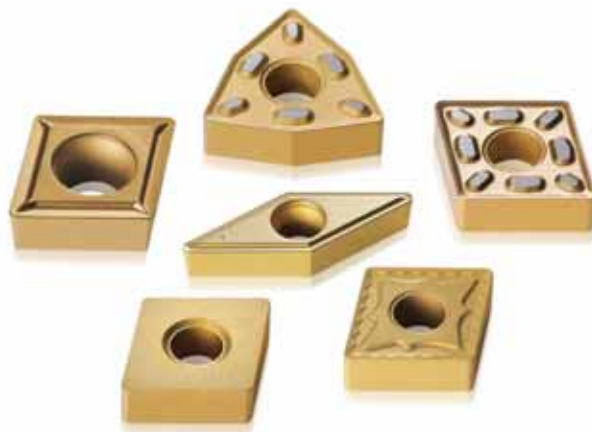
CNMG1204086P

<b>04</b>	<b>08</b>			<b>6P</b>																																																																											
Thickness S	Corner Radius "Re"	Hand of Insert (optional)	Cutting Edge (optional)	Chipbreaker (optional)																																																																											
<table border="1"> <thead> <tr> <th>symbol</th> <th>thickness</th> </tr> <tr> <th>mm</th> <th>mm</th> </tr> </thead> <tbody> <tr><td>—</td><td>0,79</td></tr> <tr><td>T0</td><td>1,00</td></tr> <tr><td>01</td><td>1,59</td></tr> <tr><td>T1</td><td>1,98</td></tr> <tr><td>02</td><td>2,38</td></tr> <tr><td>03</td><td>3,18</td></tr> <tr><td>T3</td><td>3,97</td></tr> <tr><td>04</td><td>4,76</td></tr> <tr><td>05</td><td>5,56</td></tr> <tr><td>06</td><td>6,35</td></tr> <tr><td>07</td><td>7,94</td></tr> <tr><td>09</td><td>9,52</td></tr> <tr><td>11</td><td>11,11</td></tr> <tr><td>12</td><td>12,70</td></tr> </tbody> </table>	symbol	thickness	mm	mm	—	0,79	T0	1,00	01	1,59	T1	1,98	02	2,38	03	3,18	T3	3,97	04	4,76	05	5,56	06	6,35	07	7,94	09	9,52	11	11,11	12	12,70	<table border="1"> <thead> <tr> <th>symbol</th> <th>corner radius</th> </tr> <tr> <th>mm</th> <th>mm</th> </tr> </thead> <tbody> <tr><td>X0</td><td>0,04</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> <tr><td>16</td><td>1,6</td></tr> <tr><td>20</td><td>2,0</td></tr> <tr><td>24</td><td>2,4</td></tr> <tr><td>28</td><td>2,8</td></tr> <tr><td>32</td><td>3,2</td></tr> <tr><td>00</td><td rowspan="2">round insert</td></tr> <tr><td>M0</td></tr> <tr><td>—</td><td></td></tr> </tbody> </table>	symbol	corner radius	mm	mm	X0	0,04	01	0,1	02	0,2	04	0,4	08	0,8	12	1,2	16	1,6	20	2,0	24	2,4	28	2,8	32	3,2	00	round insert	M0	—		<p>R = Right hand</p> <p>L = Left hand</p> <p>N = Neutral</p>	<table border="1"> <tbody> <tr><td>F</td><td>Sharp</td></tr> <tr><td>E</td><td>Rounded</td></tr> <tr><td>T</td><td>Chamfered</td></tr> <tr><td>S</td><td>Chamfered and Rounded</td></tr> <tr><td>K</td><td>Double-Chamfered</td></tr> <tr><td>P</td><td>Double-Chamfered and Rounded</td></tr> </tbody> </table>	F	Sharp	E	Rounded	T	Chamfered	S	Chamfered and Rounded	K	Double-Chamfered	P	Double-Chamfered and Rounded	<p>1P = Finishing</p> <p>2P = Finishing</p> <p>..GP = Medium Machining</p> <p>4P = Medium Machining</p> <p>6P = Medium Roughing</p> <p>..MA = Roughing</p> <p>7N = Heavy Roughing</p>
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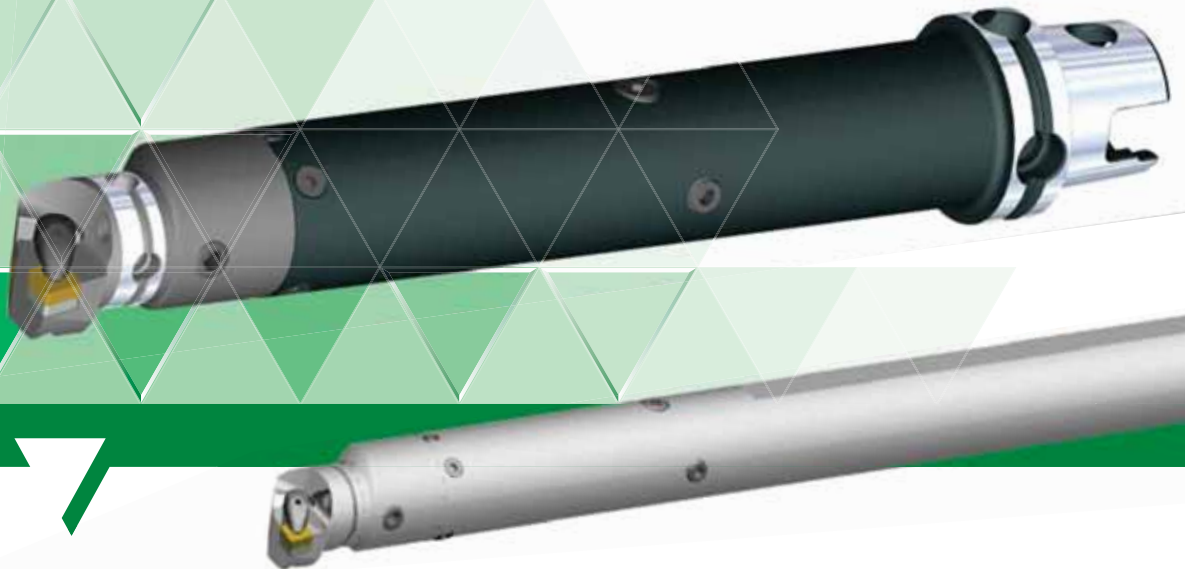
"D"	± Tolerance on "D"				"D"	± Tolerance on "B"			
	Class M Tolerance			Class U Tolerance		Class M Tolerance			Class U Tolerance
	Shapes S, T, C, R, & W	Shape D	Shape V	Shapes S, T, & C		Shapes S, T, C, R, & W	Shape D	Shape V	Shapes S, T, & C
mm	mm	mm	mm	mm	mm	mm	mm	mm	
3,97	0,05	—	—	—	3,97	0,08	—	—	—
4,76	0,05	—	—	0,08	4,76	0,08	—	—	0,13
5,56	0,05	0,05	0,05	0,08	5,56	0,08	0,11	—	0,13
6,35	0,05	0,05	0,05	0,08	6,35	0,08	0,11	—	0,13
7,94	0,05	0,05	0,05	0,08	7,94	0,08	0,11	—	0,13
9,52	0,05	0,05	0,05	0,08	9,52	0,08	0,11	0,18	0,13
11,11	0,08	0,08	0,08	0,13	11,11	0,13	0,15	—	—
12,70	0,08	0,08	0,08	0,13	12,70	0,13	0,15	0,25	0,20
14,29	0,08	0,08	0,08	0,13	14,29	0,13	0,15	—	—
15,88	0,10	0,10	0,10	0,18	15,88	0,15	0,18	—	0,27
17,46	0,10	0,10	0,10	0,18	17,46	0,15	0,18	—	0,27
19,05	0,10	0,10	0,10	0,18	19,05	0,15	0,18	—	0,27
22,22	0,13	—	—	0,25	22,22	0,15	—	—	0,38
25,40	0,13	—	—	0,25	25,40	0,18	—	—	0,38
31,75	0,15	—	—	0,25	31,75	0,20	—	—	0,38

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

TN	15	M														
Brand	Relative Hardness (ISO 513)	Primary Workpiece Material (ISO 513)														
<p>TN = WIDIA</p>	<p>01 = Hardest</p> <p>10</p> <p>20</p> <p>30</p> <p>40</p> <p>50 = Toughest</p>	<table border="1"> <tr> <td><b>P</b></td> <td>Steel</td> </tr> <tr> <td><b>M</b></td> <td>Stainless Steel</td> </tr> <tr> <td><b>K</b></td> <td>Cast Iron</td> </tr> <tr> <td><b>N</b></td> <td>Non-Ferrous</td> </tr> <tr> <td><b>S</b></td> <td>High-Temp Alloys</td> </tr> <tr> <td><b>H</b></td> <td>Hardened Materials</td> </tr> <tr> <td><b>U</b></td> <td>Universal Machining</td> </tr> </table>	<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
<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															



# WIDIA™ Tunable Tooling



EXTREME **CHALLENGES.**  
EXTREME **RESULTS.**

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

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

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

To learn more, contact your local Authorised Distributor or visit [widia.com](http://widia.com)

**WIDIA** 

■ Step 1 • Select the insert geometry

Negative Inserts



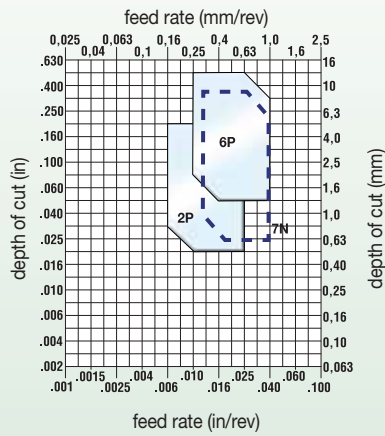
2P  
Finishing



6P  
Roughing



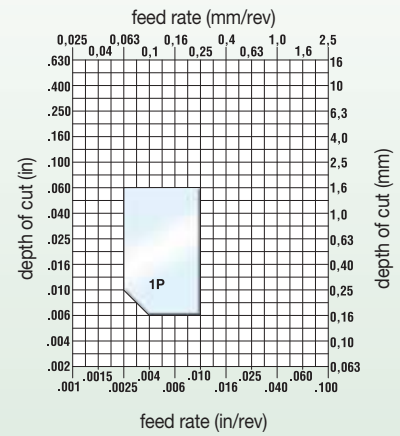
7N  
Heavy Roughing



Positive Inserts



1P  
Finishing



■ Step 2 • Select the grade

cutting condition	Negative Insert Geometry			Positive Insert Geometry
	2P	6P	7N	1P
heavily interrupted cut	TN30P	TN30P	TN30P	TN30P
lightly interrupted cut	TN20P/TN30P	TN20P/TN30P	TN20P/TN30P	TN20P
varying depth of cut, casting, or forging skin	TN20P/TN30P	TN20P/TN30P	TN20P/TN30P	TN10P
smooth cut, pre-turned surface	TN10P	TN10P	TN10P	TN10P

(continued)

**Step 3 • Selecting the cutting speed** *(continued)*
**Low-Carbon (<0.3% C) and Free-Machining Steel**

Material Group	grade	speed – m/min									Starting Conditions
		135	180	225	275	320	360	410	455	495	m/min
P0/P1	TN10P	◊									316
	TN20P	◊									248
	TN30P	◊									189

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

Material Group	grade	speed – m/min									Starting Conditions
		135	180	225	275	320	360	410	455	495	m/min
P2	TN10P	◊									212
	TN20P	◊									176
	TN30P	◊									135

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

Material Group	grade	speed – m/min									Starting Conditions
		135	180	225	275	320	360	410	455	495	m/min
P3	TN10P	◊									152
	TN20P	◊									140
	TN30P	◊									108

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

Material Group	grade	speed – m/min									Starting Conditions
		60	90	120	150	180	210	240	270	300	m/min
P4	TN10P	◊									116
	TN20P	◊									95
	TN30P	◊									86

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

Material Group	grade	speed – m/min									Starting Conditions
		120	150	180	210	240	270	300	330	360	m/min
P5	TN10P	◊									172
	TN20P	◊									176
	TN30P	◊									122

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

Material Group	grade	speed – m/min									Starting Conditions
		105	135	165	195	225	255	285	315	345	m/min
P6	TN10P	◊									144
	TN20P	◊									135
	TN30P	◊									95

**Step 1 • Select the insert geometry**

**Negative Inserts**



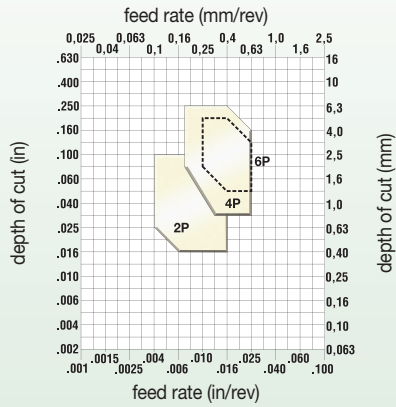
2P  
Finishing



4P  
Medium



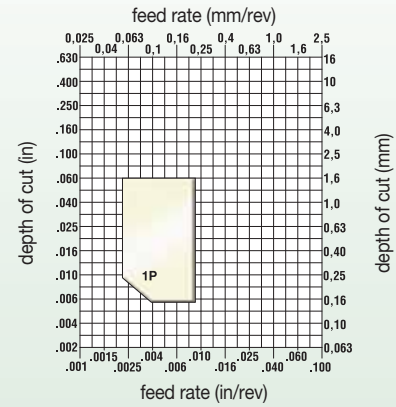
6P  
Roughing



**Positive Inserts**



1P  
Finishing



**Step 2 • Select the grade**

cutting condition	Negative Insert Geometry			Positive Insert Geometry
	2P	4P	6P	1P
heavily interrupted cut	TN15M/TN10	TN30M	TN30M	TN30M/TN10
lightly interrupted cut	TN15M/TN10	TN30M	TN30M	TN30M
varying depth of cut, casting, or forging skin	TN15M	TN15M/TN30M	TN15M/TN30M	TN15M/TN30M
smooth cut, pre-turned surface	TN15M	TN15M	TN15M	TN15M

**Step 3 • Selecting the cutting speed**

Austenitic Stainless Steel		speed – m/min									Starting Conditions
Material Group	grade	90	135	180	225	270	315	360	405	450	m/min
M1	TN15M		◊								162
	TN30M		◊								135
	TN10U			◊							194
	TN15U		◊								129

Austenitic Stainless Steel		speed – m/min									Starting Conditions
Material Group	grade	90	135	180	225	270	315	360	405	450	m/min
M2	TN15M		◊								149
	TN30M		◊								135
	TN10U			◊							180
	TN15U		◊								120

Austenitic Stainless Steel: Duplex (Ferritic and Austenitic Mixture)		speed – m/min									Starting Conditions
Material Group	grade	90	135	180	225	270	315	360	405	450	m/min
M3	TN15M		◊								135
	TN30M		◊								108
	TN10U			◊							167
	TN15U		◊								111

**Step 1 • Select the insert geometry**

**Negative Inserts**



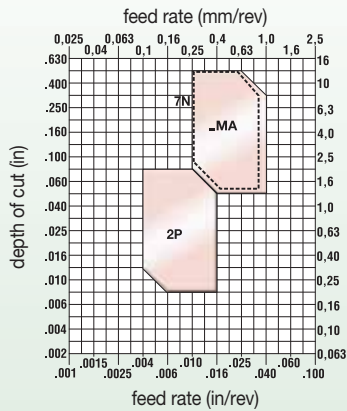
**2P**  
Finishing



**..MA**  
Heavy Roughing



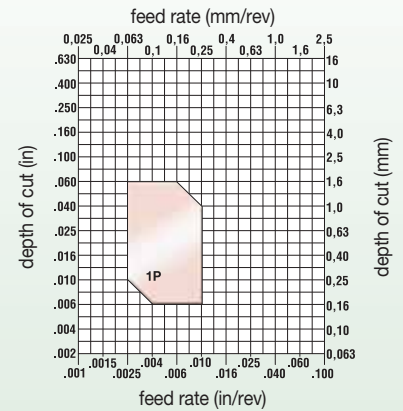
**7N**  
Heavy Roughing



**Positive Inserts**



**1P**  
Finishing



**Step 2 • Select the grade**

cutting condition	Negative Insert Geometry			Positive Insert Geometry
	2P	..MA	7N	1P
heavily interrupted cut	TN20K	TN20K	TN20K	TN20K
lightly interrupted cut	TN20K	TN20K	TN20K	TN20K
varying depth of cut, casting, or forging skin	TN20K	TN20K	TN20K	TN20K
smooth cut, pre-turned surface	TN20K	TN20K	TN20K	TN20K

**Step 3 • Selecting the cutting speed**

Grey Cast Iron		speed – m/min									Starting Conditions
Material Group	grade	60	150	240	330	420	510	600	690	780	m/min
<b>K1</b>	TN20K										270

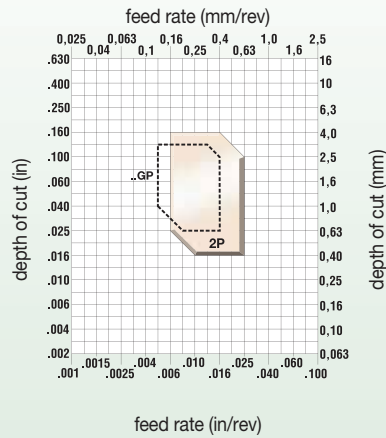
Ductile, Compacted Graphite, and Malleable Cast Irons (<80 KSI tensile strength)		speed – m/min									Starting Conditions
Material Group	grade	60	150	240	330	420	510	600	690	780	m/min
<b>K2</b>	TN20K										216

Ductile, Compacted Graphite, and Malleable Cast Irons (>80 KSI tensile strength)		speed – m/min									Starting Conditions
Material Group	grade	60	150	240	330	420	510	600	690	780	m/min
<b>K3</b>	TN20K										189

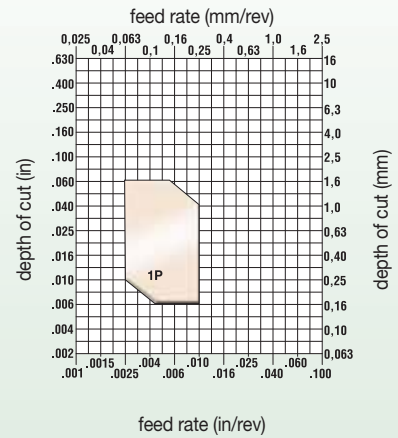


■ Step 1 • Select the insert geometry

Negative Inserts



Positive Inserts



■ Step 2 • Select the grade

cutting condition	Negative Insert Geometry		Positive Insert Geometry
	2P	..GP	1P
heavily interrupted cut	TN15U	-	TN15U
lightly interrupted cut	TN10U	TN10U	TN15U
varying depth of cut, casting, or forging skin	TN10U	TN10U	TN10U
smooth cut, pre-turned surface	TN10U	TN10U	TN10U

■ Step 3 • Select the cutting speed

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

Material Group	grade	speed – m/min									Starting Conditions
		15	45	75	105	140	170	200	230	260	m/min
S1	TN10U										50
	TN15U										33

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

Material Group	grade	speed – m/min									Starting Conditions
		15	45	75	105	140	170	200	230	260	m/min
S2	TN10U										54
	TN15U										36

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

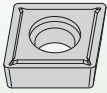
Material Group	grade	speed – m/min									Starting Conditions
		15	45	75	105	140	170	200	230	260	m/min
S3	TN10U										63
	TN15U										42

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

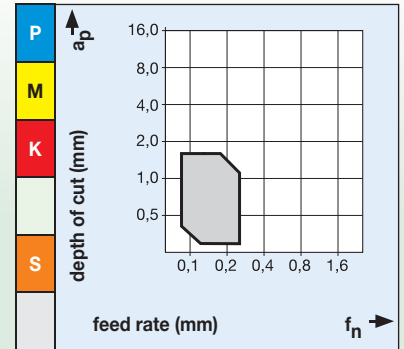
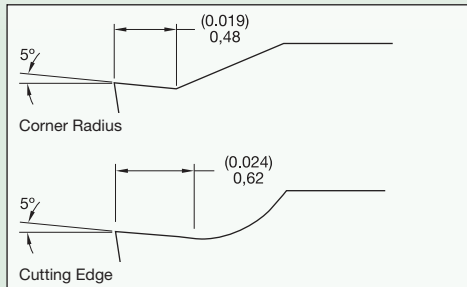
Material Group	grade	speed – m/min									Starting Conditions
		15	45	75	105	140	170	200	230	260	m/min
S4	TN10U										63
	TN15U										42

■ Positive and Negative Inserts

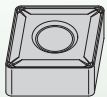
**1P**



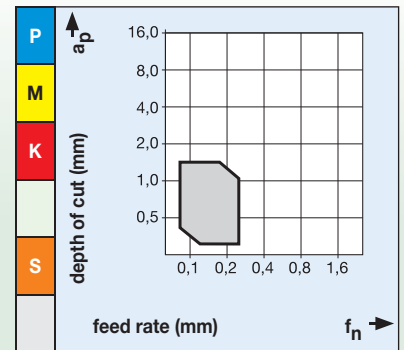
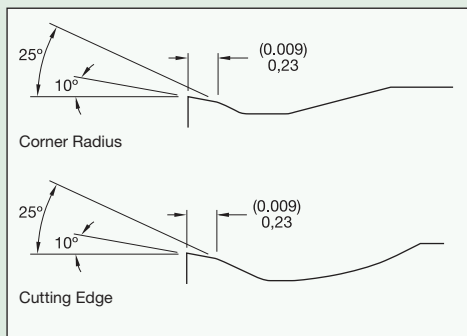
Preferred for light finishing. Low cutting forces and reduced power requirements due to positive rake angle. Good chip control over a wide range.



**2P**



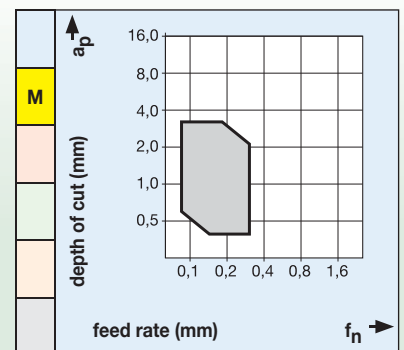
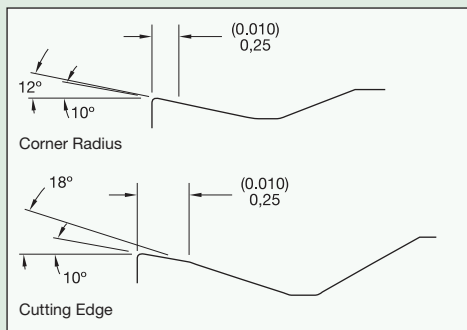
For finish turning, producing smooth, accurate surfaces. Very good chip control, especially at low depths of cut.



**4P**



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.



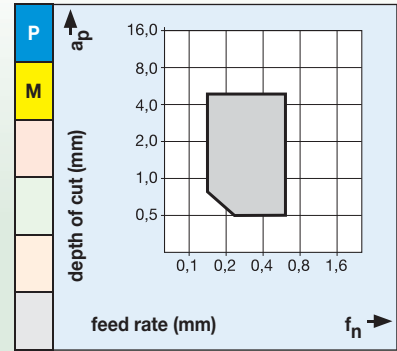
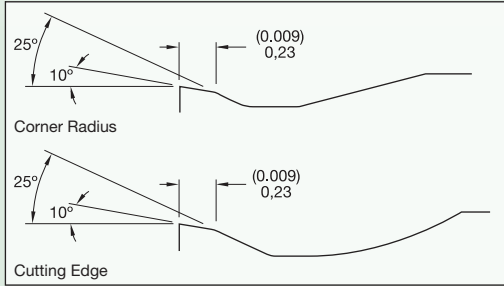
(continued)

■ Positive and Negative Inserts (continued)

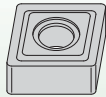
**6P**



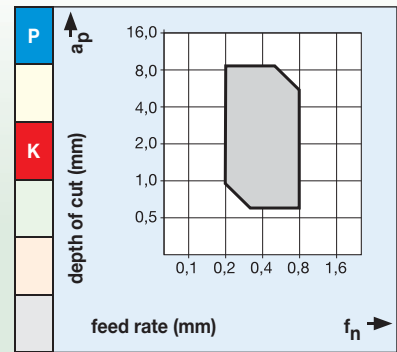
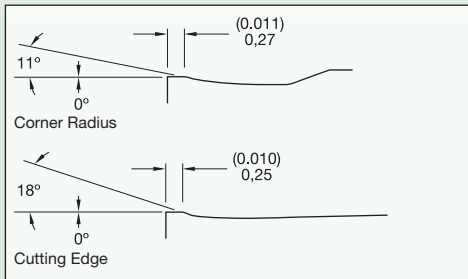
For medium to rough turning. Outstanding chip control due to specially configured chipbreaker element in corner area. Good chip forming with low depths of cut.



**7N**



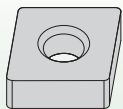
For medium-duty to roughing. Outstanding chip control. High edge strength for interrupted cuts, forging skin, or scale. Preferred for all cast iron such as grey, malleable, and nodular.



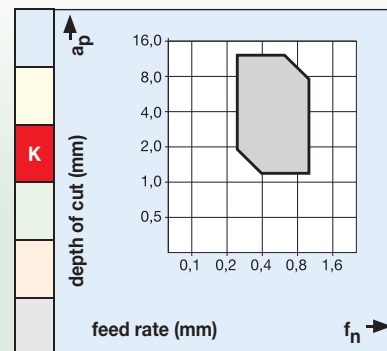
(continued)

■ Positive and Negative Inserts *(continued)*

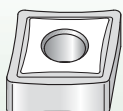
**..MA**



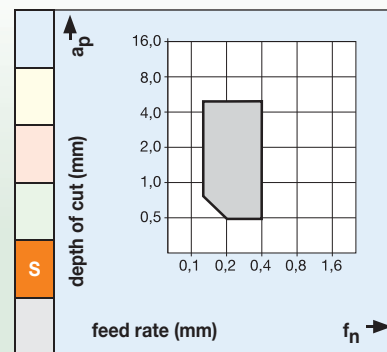
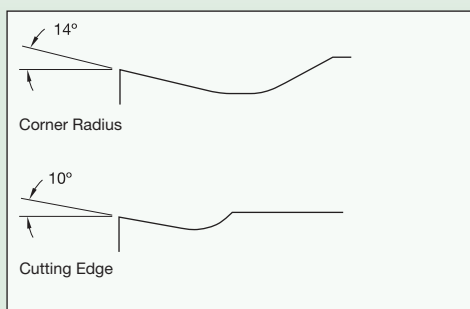
Flat top geometry for machining cast iron. For finishing to roughing applications.

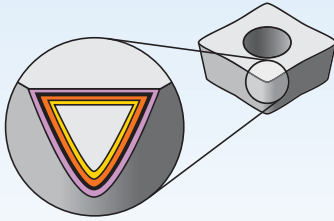


**..GP**



For light machining to light roughing.



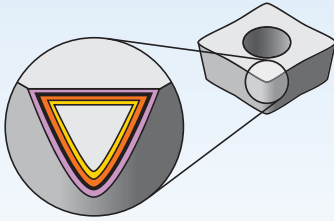


Coatings provide high-speed capability and are engineered for finishing to light roughing.

<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

wear resistance ← → toughness



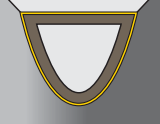
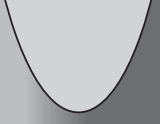
Coating		Grade Description		05	10	15	20	25	30	35	40	45
Grade	 TN10P HC-P10	Coated carbide. MTCVD-TiN-TiCN-Al <sub>2</sub> O <sub>3</sub> -TiN. Ideal for light finishing to medium machining applications. Superior wear resistance.	P									
			K									
	 TN20P HC-P20	Coated carbide. MTCVD-TiN-TiCN-Al <sub>2</sub> O <sub>3</sub> -TiN. Great general-purpose turning grade for steels. Ideal for semi-finishing to moderately heavy roughing.	P									
			K									
 TN30P HC-P30	Coated carbide. MTCVD-TiN-TiCN-Al <sub>2</sub> O <sub>3</sub> -TiN. Tough carbide grade. Ideal for roughing and heavy roughing applications.	P										
		K										
 TN15M HC-M15	Coated carbide. MTCVD-TiN-TiCN-Al <sub>2</sub> O <sub>3</sub> -TiN. Ideal for general-purpose machining of stainless steels.	P										
		M										
		S										



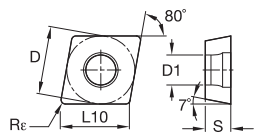
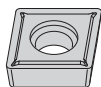
Coatings provide high-speed capability and are engineered for finishing to light roughing.

<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

wear resistance ← → toughness

Grade	Coating	Grade Description	Material Group																				
			P	M	K	N	S	H	05	10	15	20	25	30	35	40	45						
TN30M		Coated carbide. MTCVD-TiN-TiCN-Al <sub>2</sub> O <sub>3</sub> -TiN. Ideal for general-purpose machining of stainless steels.	P																				
	HC-M30		M																				
TN20K		Coated carbide. MTCVD-TiN-TiCN-Al <sub>2</sub> O <sub>3</sub> -TiN. Great when used for straight or lightly interrupted cut applications of ductile and cast irons.	P																				
	HC-K20		K																				
TN10U		Coated carbide. PVD-TiAlN-TiN. Ideal for finishing of difficult to machine alloys and stainless steels.	P																				
			M																				
			K																				
			N																				
			S																				
TN15U		Uncoated carbide. Excellent abarasion resistance for machining cast irons, austentic stainless steels, and most high-temperature alloys.	P																				
			M																				
			K																				
			N																				
			S																				

Inserts

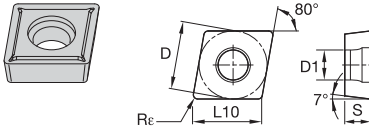


● first choice  
○ alternate choice

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

■ CCGT-1P

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
CCGT0602021P	6,35	6,45	2,38	0,2	2,80							4163978	4163979
CCGT0602041P	6,35	6,45	2,38	0,4	2,80							4163980	4163981
CCGT0602081P	6,35	6,45	2,38	0,8	2,80							4163982	
CCGT09T3011P	9,53	9,67	3,97	0,1	4,40							4164495	4164496
CCGT09T3021P	9,53	9,67	3,97	0,2	4,40							4164493	4164494
CCGT09T3041P	9,53	9,67	3,97	0,4	4,40							4164497	4164498
CCGT09T3081P	9,53	9,67	3,97	0,8	4,40							4164499	4164500



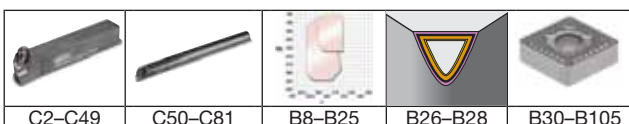
● first choice  
○ alternate choice

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



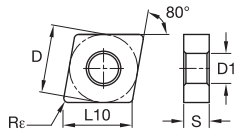
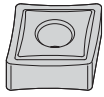
■ **CCMT-1P**

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
CCMT0602021P	6,35	6,45	2,38	0,2	2,80	4166244	-	-	4166242	4166323	4166245	4166324	4166325
CCMT0602041P	6,35	6,45	2,38	0,4	2,80	4166326	4166327	-	4166329	4166330	4166328	4166331	4166332
CCMT0602081P	6,35	6,45	2,38	0,8	2,80	4166333	4166334	-	4166336	4166337	4166335	4166338	-
CCMT09T3021P	9,53	9,67	3,97	0,2	4,40	-	-	-	-	-	-	4166339	4166340
CCMT09T3041P	9,53	9,67	3,97	0,4	4,40	4166341	4166342	-	4166344	4166345	4166343	4166346	4166347
CCMT09T3081P	9,53	9,67	3,97	0,8	4,40	4166348	4166349	-	4166351	4166352	4166350	4166353	4166354
CCMT1204041P	12,70	12,90	4,76	0,4	5,50	4166355	4166356	-	4166358	4166359	4166357	4166358	-
CCMT1204081P	12,70	12,90	4,76	0,8	5,50	4166559	4166560	-	4166562	4166563	4166561	4166562	-





Inserts

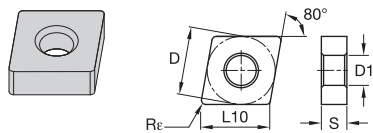


● first choice  
○ alternate choice

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

■ CNGP

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
CNGP120401	12,70	12,90	4,76	0,1	5,16							4164564	4164565
CNGP120402	12,70	12,90	4,76	0,2	5,16							4164564	4164565
CNGP120404	12,70	12,90	4,76	0,4	5,16							4164566	4164567
CNGP120408	12,70	12,90	4,76	0,8	5,16							4164568	4164569
CNGP120412	12,70	12,90	4,76	1,2	5,16							4164570	4164571



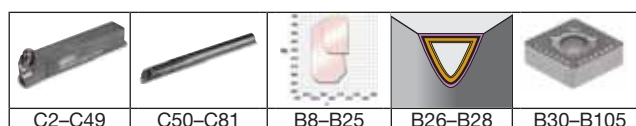
● first choice  
○ alternate choice

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

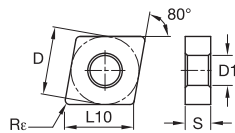
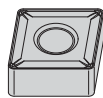
**■ CNMA**

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
CNMA120404	12,70	12,90	4,76	0,4	5,16	●	●	●	○	○	○	○	○
CNMA120408	12,70	12,90	4,76	0,8	5,16	●	●	●	○	○	○	○	○
CNMA120412	12,70	12,90	4,76	1,2	5,16	●	●	●	○	○	○	○	○
CNMA120416	12,70	12,90	4,76	1,6	5,16	●	●	●	○	○	○	○	○
CNMA160612	15,88	16,12	6,35	1,2	6,35	●	●	●	○	○	○	○	○
CNMA160616	15,88	16,12	6,35	1,6	6,35	●	●	●	○	○	○	○	○
CNMA190612	19,05	19,34	6,35	1,2	7,93	●	●	●	○	○	○	○	○
CNMA190616	19,05	19,34	6,35	1,6	7,93	●	●	●	○	○	○	○	○

Inserts



Inserts

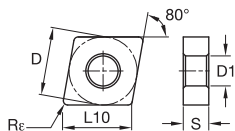


● first choice  
○ alternate choice

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

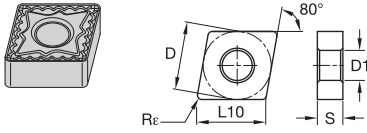
■ CNMG-2P

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
CNMG1204042P	12,70	12,90	4,76	0,4	5,16	4166171	4166172	-	4166244	4166245	4166243	4166246	4166247
CNMG1204082P	12,70	12,90	4,76	0,8	5,16	4166248	4166249	-	4166251	4166252	4166250	4166253	4166254
CNMG1204122P	12,70	12,90	4,76	1,2	5,16	4166255	4166256	-	4166258	-	4166257	4166259	-



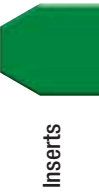
■ CNMG-4P

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
CNMG1204044P	12,70	12,90	4,76	0,4	5,16	-	5359116	-	4165830	4165831	-	5359117	-
CNMG1204084P	12,70	12,90	4,76	0,8	5,16	-	5359118	-	4165832	4165853	-	5359119	-
CNMG1204124P	12,70	12,90	4,76	1,2	5,16	-	5359240	-	4165854	4165855	-	5359241	-
CNMG1606124P	15,88	16,12	6,35	1,2	6,35	-	-	-	4165856	4165857	-	-	-
CNMG1906124P	19,05	19,34	6,35	1,2	7,93	-	-	-	4165858	4165859	-	-	-



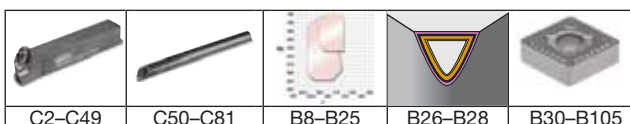
● first choice  
○ alternate choice

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

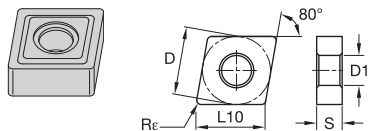


■ CNMG-6P

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
CNMG0903086P	9,53	9,67	3,18	0,8	3,81	4165948	4165949	-	4165950	4165951	-	-	-
CNMG1204046P	12,70	12,90	4,76	0,4	5,16	4165952	4165963	-	4165964	4165965	-	-	-
CNMG1204086P	12,70	12,90	4,76	0,8	5,16	4165966	4165967	4165968	4165969	4165970	-	-	-
CNMG1204126P	12,70	12,90	4,76	1,2	5,16	4165971	4165972	4165973	4165974	4165975	-	-	-
CNMG1606126P	15,88	16,12	6,35	1,2	6,35	-	4165976	4165977	4165978	4165979	-	-	-
CNMG1906126P	19,05	19,34	6,35	1,2	7,93	-	4165980	4165981	4165982	4165983	-	-	-



Inserts

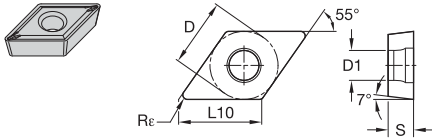


● first choice  
○ alternate choice

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

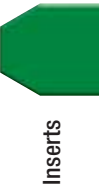
■ CNMG-7N

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
CNMG1204047N	12,70	12,90	4,76	0,4	5,16	4166386	4166387	○	○	○	○	○	○
CNMG1204087N	12,70	12,90	4,76	0,8	5,16	4166389	4166390	4166391	○	○	4166388	4166389	○
CNMG1204127N	12,70	12,90	4,76	1,2	5,16	4166433	4166434	4166435	○	○	4166436	○	○
CNMG1204167N	12,70	12,90	4,76	1,6	5,16	4166437	4166438	○	○	○	4166439	○	○
CNMG1606127N	15,88	16,12	6,35	1,2	6,35	4166440	4166441	4166442	○	○	4166443	○	○
CNMG1606167N	15,88	16,12	6,35	1,6	6,35	4166444	4166445	○	○	○	4166446	○	○
CNMG1906087N	19,05	19,34	6,35	0,8	7,93	4166447	○	○	○	○	4166448	○	○
CNMG1906127N	19,05	19,34	6,35	1,2	7,93	4166449	4166450	4166451	○	○	4166452	○	○
CNMG1906167N	19,05	19,34	6,35	1,6	7,93	4166453	4166454	4166455	○	○	4166456	○	○
CNMG2509247N	25,40	25,79	9,53	2,4	9,12	○	○	○	○	○	○	○	○



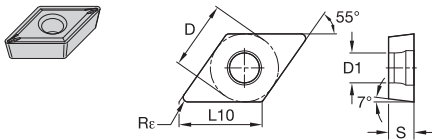
● first choice  
○ alternate choice

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



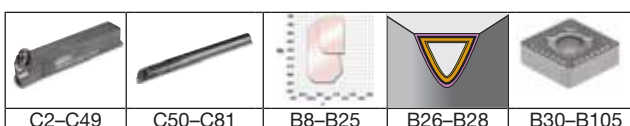
**DCGT-1P**

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
DCGT0702011P	6,35	7,75	2,38	0,1	2,80	●	●	○	○	○	○	○	○
DCGT11T3011P	9,53	11,63	3,97	0,1	4,40	○	○	○	○	○	○	○	○
DCGT1504081P	12,70	15,50	4,76	0,8	5,50	○	○	○	○	○	○	○	○

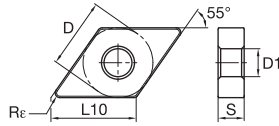
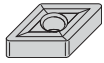


**DCMT-1P**

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
DCMT0702021P	6,35	7,75	2,38	0,2	2,80	○	○	○	○	○	○	○	○
DCMT0702041P	6,35	7,75	2,38	0,4	2,80	4166627	4166628	○	4166630	4166631	4166629	4166632	4166633
DCMT11T3021P	9,53	11,63	3,97	0,2	4,40	○	○	○	○	○	○	○	○
DCMT11T3041P	9,53	11,63	3,97	0,4	4,40	4166636	4166637	○	4166639	4166640	4166638	4166641	4166642
DCMT11T3081P	9,53	11,63	3,97	0,8	4,40	4166643	4166644	○	4166646	4166647	4166645	4166648	○
DCMT11T3121P	9,53	11,63	3,97	1,2	4,40	4166649	○	○	4166651	○	4166650	4166652	○
DCMT1504041P	12,70	15,50	4,76	0,4	5,50	4166653	4166654	○	○	○	4166655	○	○
DCMT1504081P	12,70	15,50	4,76	0,8	5,50	4166656	○	○	○	○	○	○	○



Inserts

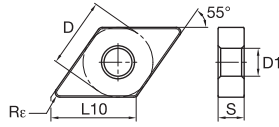
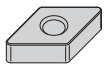


● first choice  
○ alternate choice

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

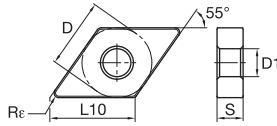
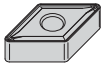
■ DNGP

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
DNGP150401	12,70	15,50	4,76	0,1	5,16	●	●	●	○	○	○	○	○
DNGP150402	12,70	15,50	4,76	0,2	5,16	●	●	●	○	○	○	○	○
DNGP150404	12,70	15,50	4,76	0,4	5,16	●	●	●	○	○	○	○	○
DNGP150408	12,70	15,50	4,76	0,8	5,16	●	●	●	○	○	○	○	○



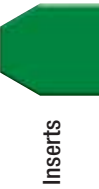
■ DNMA

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
DNMA150408	12,70	15,50	4,76	0,8	5,16	●	●	●	○	○	○	○	○
DNMA150608	12,70	15,50	6,35	0,8	5,16	●	●	●	○	○	○	○	○
DNMA150412	12,70	15,50	4,76	1,2	5,16	●	●	●	○	○	○	○	○
DNMA150612	12,70	15,50	6,35	1,2	5,16	●	●	●	○	○	○	○	○



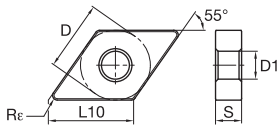
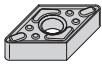
● first choice  
○ alternate choice

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



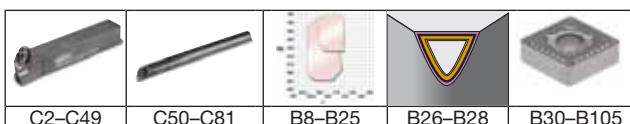
■ **DNMG-2P**

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
DNMG1504042P	12,70	15,50	4,76	0,4	5,16	4166260	4166261	-	4166263	4166264	4166262	4166265	4166266
DNMG1506042P	12,70	15,50	6,35	0,4	5,16	4166825	4166826	-	4166828	-	4166827	4166829	4166830
DNMG1504082P	12,70	15,50	4,76	0,8	5,16	4166267	4166269	-	4166273	4166275	4166271	4166277	4166279
DNMG1506082P	12,70	15,50	6,35	0,8	5,16	4166831	4166832	-	4166844	-	4166843	4166845	4166846
DNMG1506122P	12,70	15,50	6,35	1,2	5,16	4166847	4166848	-	4166850	4166851	4166849	4166852	-



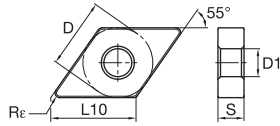
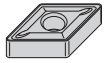
■ **DNMG-4P**

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
DNMG1504044P	12,70	15,50	4,76	0,4	5,16	-	-	-	4165860	4165861	-	-	-
DNMG1506044P	12,70	15,50	6,35	0,4	5,16	-	5359244	-	4165864	4165865	-	-	-
DNMG1504084P	12,70	15,50	4,76	0,8	5,16	-	5359242	-	4165862	4165863	-	5359243	-
DNMG1506084P	12,70	15,50	6,35	0,8	5,16	-	5359245	-	4165866	4165867	-	-	-
DNMG1506124P	12,70	15,50	6,35	1,2	5,16	-	-	-	4165868	4165869	-	-	-





Inserts

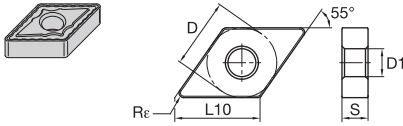


● first choice  
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P	●	●	●	○	○	○	○	○	○	○
M	●	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○
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■ DNMG-6P

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
DNMG1104086P	9,53	11,63	4,76	0,8	3,81	4165984	4165985	-	-	-	-	-	-
DNMG1504046P	12,70	15,50	4,76	0,4	5,16	4165987	4165988	-	4165989	4165990	-	-	-
DNMG1506046P	12,70	15,50	6,35	0,4	5,16	4166767	4166768	-	4166769	4166770	-	-	-
DNMG1504086P	12,70	15,50	4,76	0,8	5,16	4165991	4165992	4165993	4165994	4165995	-	-	-
DNMG1506086P	12,70	15,50	6,35	0,8	5,16	4166771	4166772	4166793	4166794	4166795	-	-	-
DNMG1504126P	12,70	15,50	4,76	1,2	5,16	4165996	4165997	-	4166765	4166766	-	-	-
DNMG1506126P	12,70	15,50	6,35	1,2	5,16	4166796	4166797	4166798	4166799	4166800	-	-	-
DNMG1906126P	15,88	19,38	6,35	1,2	6,35	-	-	4166801	-	-	-	-	-



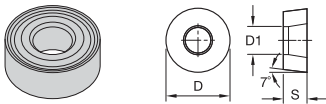
● first choice  
○ alternate choice

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



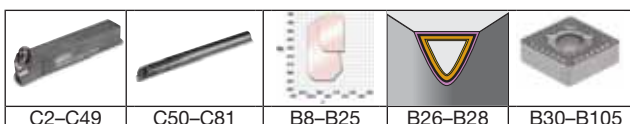
■ **DNMG-7N**

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
DNMG1504047N	12,70	15,50	4,76	0,4	5,16	4166458	4166459	-	-	-	-	-	-
DNMG1504087N	12,70	15,50	4,76	0,8	5,16	4166460	4166461	4166462	-	-	4166463	-	-
DNMG1506087N	12,70	15,50	6,35	0,8	5,16	4166484	4166485	4166486	-	-	4166487	-	-
DNMG1504127N	12,70	15,50	4,76	1,2	5,16	4166464	4166465	4166432	-	-	4166483	-	-
DNMG1506127N	12,70	15,50	6,35	1,2	5,16	4166488	4166489	4166490	-	-	4166491	-	-
DNMG1906127N	15,88	19,38	6,35	1,2	6,35	-	4166492	4166493	-	-	-	-	-

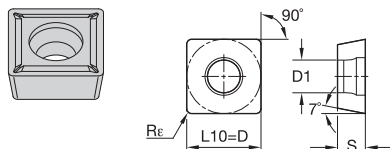


■ **RNMG-7N**

ISO catalogue number	D	S	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
RNMG12047N	12,70	4,76	5,16	-	4166494	-	-	-	4166495	-	-
RNMG19067N	19,05	6,35	7,93	4166496	4166497	-	-	-	-	-	-



Inserts

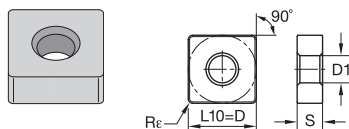


● first choice  
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M	●	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○

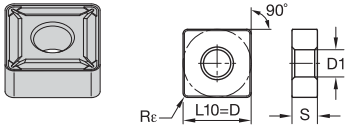
■ SCMT-1P

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
SCMT09T3041P	9,53	9,53	3,97	0,4	4,40	4166362	4166393	-	4166395	4166396	4166394	4166397	-
SCMT09T3081P	9,53	9,53	3,97	0,8	4,40	4166398	4166399	-	4166401	4166402	4166400	4166403	-
SCMT1204041P	12,70	12,70	4,76	0,4	5,50	-	-	-	-	-	-	4166404	-
SCMT1204081P	12,70	12,70	4,76	0,8	5,50	4166405	4166406	-	4166408	4166409	4166407	4166410	-



■ SNMA

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
SNMA120408	12,70	12,70	4,76	0,8	5,16	-	-	-	-	-	4165842	-	-
SNMA120412	12,70	12,70	4,76	1,2	5,16	-	-	-	-	-	4165843	-	-
SNMA150612	15,88	15,88	6,35	1,2	6,35	-	-	-	-	-	4165844	-	-
SNMA190612	19,05	19,05	6,35	1,2	7,93	-	-	-	-	-	4165845	-	-

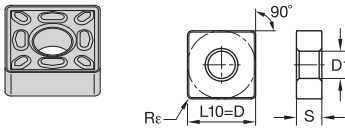


● first choice  
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M	●	○	○	○	○	○	○	○	○
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N	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○

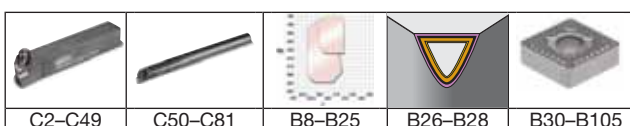
### ■ SNMG-2P

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
SNMG0903082P	9,53	9,53	3,18	0,8	3,81	4166853	4166854	-	-	-	4166855	4166856	-
SNMG1204082P	12,70	12,70	4,76	0,8	5,16	4166857	4166858	-	4166860	-	4166859	4166861	4166862

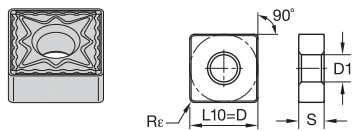


### ■ SNMG-4P

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
SNMG1204084P	12,70	12,70	4,76	0,8	5,16	-	-	-	4165870	4165871	-	-	-
SNMG1204124P	12,70	12,70	4,76	1,2	5,16	-	-	-	4165872	4165873	-	-	-



Inserts

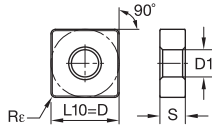
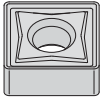


● first choice  
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M	●	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○
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■ SNMG-6P

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
SNMG0903086P	9,53	9,53	3,18	0,8	3,81	4166802	4166803	-	-	-	-	-	-
SNMG1204046P	12,70	12,70	4,76	0,4	5,16	4166804	4166805	-	4166806	4166807	-	-	-
SNMG1204086P	12,70	12,70	4,76	0,8	5,16	4166808	4166809	4166810	-	-	-	-	-
SNMG1204126P	12,70	12,70	4,76	1,2	5,16	4166813	4166814	4166815	4166811	4166812	-	-	-
SNMG1906166P	19,05	19,05	6,35	1,6	7,92	-	-	5308173	-	-	-	-	-
SNMG1906126P	19,05	19,05	6,35	1,2	7,93	4166818	4166819	4166820	4166821	-	-	-	-



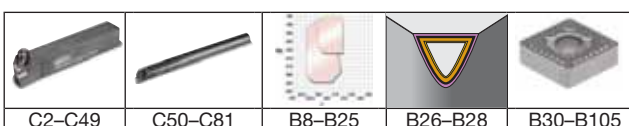
● first choice  
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M	●	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○

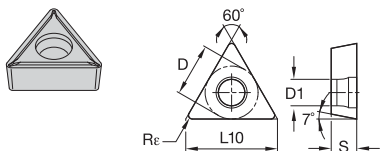


■ **SNMG-7N**

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
SNMG1204087N	12,70	12,70	4,76	0,8	5,16	4166498	4166499	○	○	○	○	○	○
SNMG1204127N	12,70	12,70	4,76	1,2	5,16	4166501	4166502	○	○	○	○	○	○
SNMG1204167N	12,70	12,70	4,76	1,6	5,16	4166505	4166506	○	○	○	○	○	○
SNMG1506127N	15,88	15,88	6,35	1,2	6,35	○	4166509	4166510	○	○	4166511	○	○
SNMG1506167N	15,88	15,88	6,35	1,6	6,35	○	4166512	4166513	○	○	4166514	○	○
SNMG1906127N	19,05	19,05	6,35	1,2	7,93	○	4166515	4166516	○	○	4166517	○	○
SNMG1906167N	19,05	19,05	6,35	1,6	7,93	○	4166518	4166519	○	○	4166520	○	○



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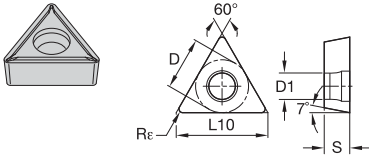


● first choice  
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M	●	○	○	○	○	○	○	○	○
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N	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○
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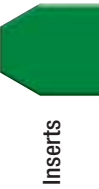
■ TCGT-1P

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
TCGT1102011P	6,35	11,00	2,38	0,1	2,80							4164526	4164527
TCGT1102041P	6,35	11,00	2,38	0,4	2,80							4164528	4164529
TCGT16T3021P	9,53	16,50	3,97	0,2	4,40							4164530	-
TCGT16T3041P	9,53	16,50	3,97	0,4	4,40							4164531	4164532
TCGT16T3081P	9,53	16,50	3,97	0,8	4,40							4164543	-



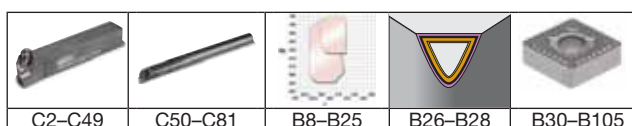
● first choice  
○ alternate choice

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



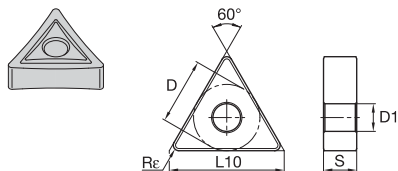
■ **TCMT-1P**

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
TCMT1102041P	6,35	11,00	2,38	0,4	2,80	4166414	4166415	-	4166417	4166418	4166416	4166419	-
TCMT1102081P	6,35	11,00	2,38	0,8	2,80	4166420	4166421	-	-	-	4166422	4166423	-
TCMT1102021P	6,35	11,00	2,38	0,2	2,90	4166411	-	-	-	-	4166412	4166413	-
TCMT16T3021P	9,53	16,50	3,97	0,2	4,40	-	-	-	-	-	-	4166424	-
TCMT16T3041P	9,53	16,50	3,97	0,4	4,40	4166425	4166426	-	4166428	4166429	4166427	4166430	-
TCMT16T3081P	9,53	16,50	3,97	0,8	4,40	4166469	4166471	-	4166563	4166564	4166472	4166565	-
TCMT16T3121P	9,53	16,50	3,97	1,2	4,40	-	-	-	-	-	-	4166566	-
TCMT2204081P	12,70	22,00	4,76	0,8	5,50	4166567	4166568	-	4166570	4166571	4166569	4166572	-





Inserts

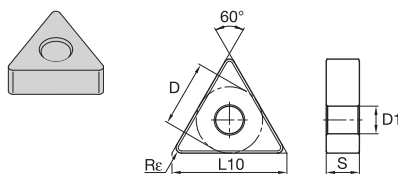


● first choice  
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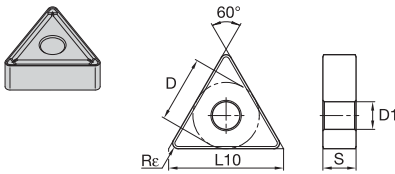
■ TNGP

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
TNGP160402	9,53	16,50	4,76	0,2	3,81	■	■	■	■	■	■	4164789	4164790
TNGP160404	9,53	16,50	4,76	0,4	3,81	■	■	■	■	■	■	4164791	4164792
TNGP160408	9,53	16,50	4,76	0,8	3,81	■	■	■	■	■	■	4164793	■



■ TNMA

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
TNMA160408	9,53	16,50	4,76	0,8	3,81	■	■	■	■	■	4165846	■	■
TNMA160412	9,53	16,50	4,76	1,2	3,81	■	■	■	■	■	4165847	■	■
TNMA220408	12,70	22,00	4,76	0,8	5,16	■	■	■	■	■	4165848	■	■



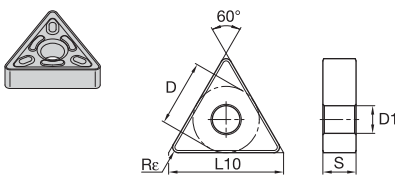
● first choice  
○ alternate choice

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



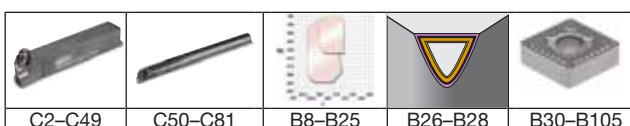
■ **TNMG-2P**

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
TNMG1604042P	9,53	16,50	4,76	0,4	3,81	4166863	4166864	-	4166866	4166867	-	-	-
TNMG1604082P	9,53	16,50	4,76	0,8	3,81	4166870	4166871	-	4166873	-	4166872	4166874	4166875
TNMG1604122P	9,53	16,50	4,76	1,2	3,81	4166876	4166877	-	4166879	4166880	4166878	4166881	-
TNMG2204082P	12,70	22,00	4,76	0,8	5,16	4166882	4166883	-	4166885	-	4166884	4166886	4166887

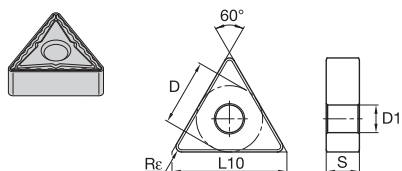


■ **TNMG-4P**

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
TNMG1604044P	9,53	16,50	4,76	0,4	3,81	-	5359246	-	4165874	4165875	-	-	-
TNMG1604084P	9,53	16,50	4,76	0,8	3,81	-	5359247	-	4165876	4165877	-	-	-
TNMG1604124P	9,53	16,50	4,76	1,2	3,81	-	-	-	4165878	4165879	-	-	-
TNMG2204044P	12,70	22,00	4,76	0,4	5,16	-	5359248	-	4165880	4165881	-	-	-
TNMG2204084P	12,70	22,00	4,76	0,8	5,16	-	5359249	-	4165882	4165883	-	-	-
TNMG2204124P	12,70	22,00	4,76	1,2	5,16	-	-	-	-	-	-	-	-



Inserts

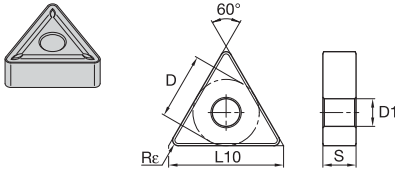


● first choice  
○ alternate choice

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

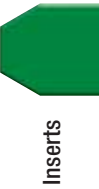
■ TNMG-6P

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
TNMG1604046P	9,53	16,50	4,76	0,4	3,81	4166822	4166823	-	4166824	4167086	-	-	-
TNMG1604086P	9,53	16,50	4,76	0,8	3,81	4167087	4167088	4167089	4167090	4167091	-	-	-
TNMG1604126P	9,53	16,50	4,76	1,2	3,81	4167092	4167113	-	4167114	4167115	-	-	-
TNMG2204046P	12,70	22,00	4,76	0,4	5,16	4167116	4167117	-	4167118	4167119	-	-	-
TNMG2204086P	12,70	22,00	4,76	0,8	5,16	4167120	4167121	4167122	4167123	4167124	-	-	-



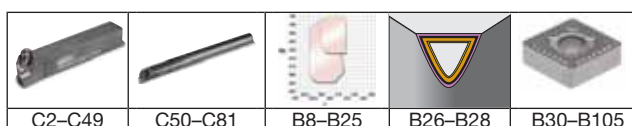
● first choice  
○ alternate choice

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

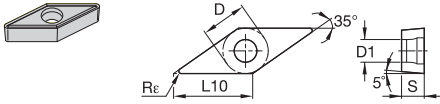


■ **TNMG-7N**

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
TNMG1604047N	9,53	16,50	4,76	0,4	3,81	-	4166521	-	-	-	-	-	-
TNMG1604087N	9,53	16,50	4,76	0,8	3,81	4166522	4166523	4166524	-	-	4166525	-	-
TNMG1604127N	9,53	16,50	4,76	1,2	3,81	4166526	4166527	4166528	-	-	4166529	-	-
TNMG2204047N	12,70	22,00	4,76	0,4	5,16	4166530	4166531	-	-	-	-	-	-
TNMG2204087N	12,70	22,00	4,76	0,8	5,16	4166532	4166533	4166534	-	-	4166535	-	-
TNMG2204127N	12,70	22,00	4,76	1,2	5,16	-	4166536	4166537	-	-	4166538	-	-
TNMG2706127N	15,88	27,50	6,35	1,2	6,35	4166539	4166540	4166541	-	-	4166542	-	-
TNMG3309247N	19,05	33,00	9,53	2,4	7,93	4166543	4166544	4166545	-	-	4166546	-	-



Inserts

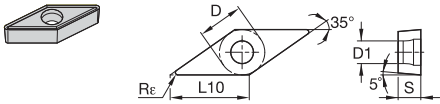


● first choice  
○ alternate choice

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

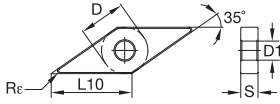
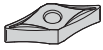
■ VBGT-1P

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
VBGT1103011P	6,35	11,07	3,18	0,1	2,80	●	●	●	○	○	○	○	○
VBGT1103021P	6,35	11,07	3,18	0,2	2,80	●	●	●	○	○	○	○	○
VBGT1103041P	6,35	11,07	3,18	0,4	2,80	●	●	●	○	○	○	○	○
VBGT1604011P	9,53	16,61	4,76	0,1	4,40	●	●	●	○	○	○	○	○
VBGT1604021P	9,53	16,61	4,76	0,2	4,40	●	●	●	○	○	○	○	○
VBGT1604041P	9,53	16,61	4,76	0,4	4,40	●	●	●	○	○	○	○	○



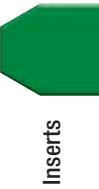
■ VBMT-1P

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
VBMT1103021P	6,35	11,07	3,18	0,2	2,80	●	●	●	○	○	○	○	○
VBMT1103041P	6,35	11,07	3,18	0,4	2,80	●	●	●	○	○	○	○	○
VBMT1103081P	6,35	11,07	3,18	0,8	2,80	●	●	●	○	○	○	○	○
VBMT1604021P	9,53	16,61	4,76	0,2	4,40	●	●	●	○	○	○	○	○
VBMT1604041P	9,53	16,61	4,76	0,4	4,40	●	●	●	○	○	○	○	○
VBMT1604081P	9,53	16,61	4,76	0,8	4,40	●	●	●	○	○	○	○	○



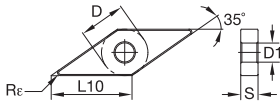
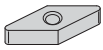
● first choice  
○ alternate choice

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



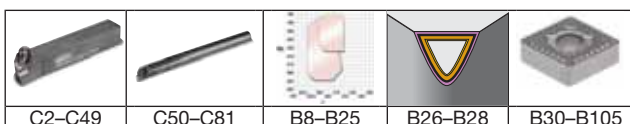
■ VNGP

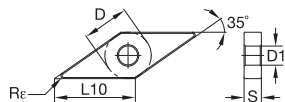
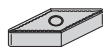
ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
VNGP160401	9,53	16,61	4,76	0,1	3,81	●	●	●	○	○	○	○	○
VNGP160402	9,53	16,61	4,76	0,2	3,81	●	●	●	○	○	○	○	○
VNGP220404	12,70	22,14	4,76	0,4	5,16	●	●	●	○	○	○	○	○
VNGP220408	12,70	22,14	4,76	0,8	5,16	●	●	●	○	○	○	○	○



■ VNMA

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
VNMA160408	9,53	16,61	4,76	0,8	3,81	●	●	●	○	○	○	○	○



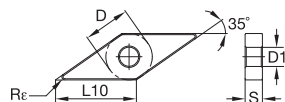


● first choice  
○ alternate choice

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

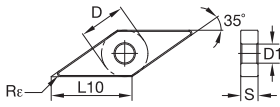
■ VNMG-2P

ISO catalogue number	D	L10	S	Re	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
VNMG160402P	9,53	16,61	4,76	0,4	3,81	4166281	4166282	-	4166284	4166285	4166283	4166286	4166287
VNMG1604082P	9,53	16,61	4,76	0,8	3,81	4166288	4166289	-	4166291	-	4166290	4166292	4166293



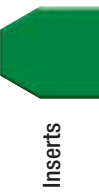
■ VNMG-4P

ISO catalogue number	D	L10	S	Re	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
VNMG1604044P	9,53	16,61	4,76	0,4	3,81	-	5359251	-	4165884	4165885	-	5359252	-
VNMG1604084P	9,53	16,61	4,76	0,8	3,81	-	5359253	-	4165886	4165887	-	5359254	-



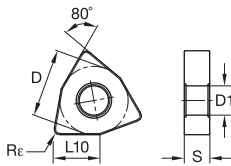
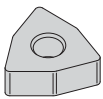
● first choice  
○ alternate choice

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



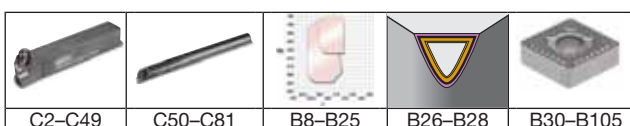
■ **VNMG-6P**

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
VNMG1604086P	9,53	16,61	4,76	0,8	3,81	4167125	4167126	-	4167127	4167128	-	-	-



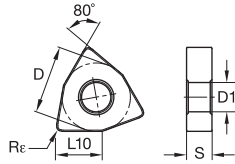
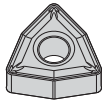
■ **WNMA**

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
WNMA060408	9,53	6,52	4,76	0,8	3,81	-	-	-	-	-	4165850	-	-
WNMA080408	12,70	8,69	4,76	0,8	5,16	-	-	-	-	-	4165851	-	-
WNMA080412	12,70	8,69	4,76	1,2	5,16	-	-	-	-	-	4165852	-	-





Inserts

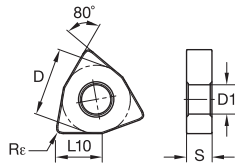
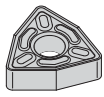


● first choice  
○ alternate choice

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

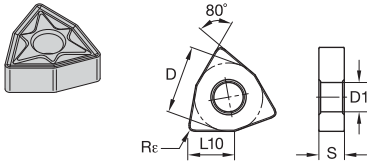
■ WNMG-2P

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
WNMG0804042P	12,70	8,69	4,76	0,4	5,16	4166294	4166295	-	4166297	4166298	4166296	4166299	4166300
WNMG0804082P	12,70	8,69	4,76	0,8	5,16	4166301	4166302	-	4166304	-	4166303	4166305	4166306



■ WNMG-4P

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
WNMG0804044P	12,70	8,69	4,76	0,4	5,16	-	-	-	4165888	4165889	-	-	-
WNMG0804084P	12,70	8,69	4,76	0,8	5,16	-	5359255	-	4165890	4165891	-	5359256	-
WNMG0804124P	12,70	8,69	4,76	1,2	5,16	-	-	-	4165892	-	-	-	-



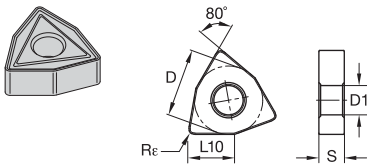
● first choice  
○ alternate choice

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



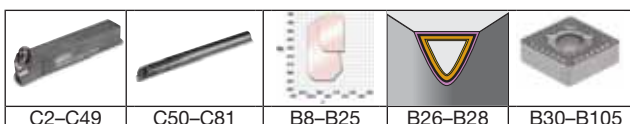
■ **WNMG-6P**

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
WNMG0604086P	9,53	6,52	4,76	0,8	3,81	4167129	4167130	-	4167131	4167132	-	-	-
WNMG0804086P	12,70	8,69	4,76	0,8	5,16	4167133	4167134	4167135	4167136	4167137	-	-	-
WNMG0804126P	12,70	8,69	4,76	1,2	5,16	4167138	4167139	4167140	4167141	4167142	-	-	-



■ **WNMG-7N**

ISO catalogue number	D	L10	S	Rε	D1	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
WNMG0804087N	12,70	8,69	4,76	0,8	5,16	4166547	4166548	4166549	-	-	4166550	-	-
WNMG0804127N	12,70	8,69	4,76	1,2	5,16	4166551	4166552	4166553	-	-	4166554	-	-
WNMG0804167N	12,70	8,69	4,76	1,6	5,16	-	4166555	4166556	-	-	4166557	-	-



## WIDIA™ Inserts for Machining Aluminium

WIDIA offers a series of inserts specifically designed for machining aluminium materials. These inserts are available in both an uncoated and a PVD grade for better performance and better tool life.

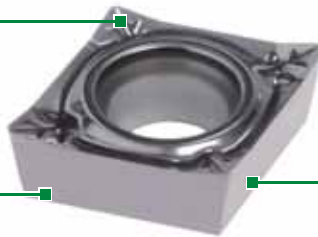
# Inserts for Aluminium

- Easy-to-choose platform — two geometry and three grades.
- Longer tool life.

High positive rake for smooth chip flow.

G tolerance inserts for better precision.

High polish inserts to prevent built-up edge and for longer tool life.

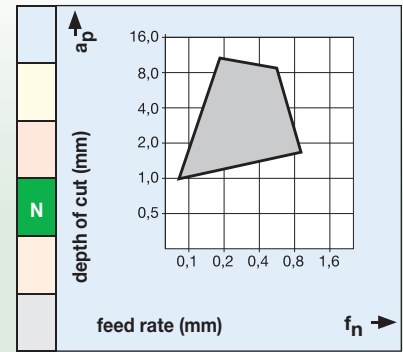


■ Positive Inserts

**AL1**



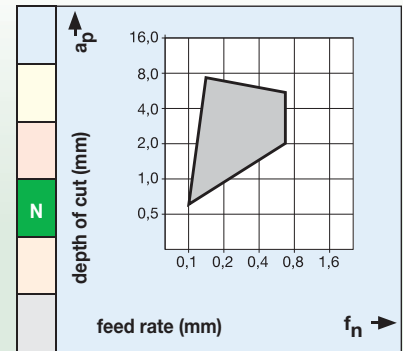
For turning cast aluminium, light alloys, non-ferrous metals, high-melting metals, plastics, glass fibre, reinforced plastics, laminated board, carbon, and fine ceramics.



**AL3**



For cost-effective machining of aluminium, non-ferrous metals, and plastics. Extremely sharp cutting edges result in optimum part finishes with low cutting forces and short chips. Finishing of steel, stainless steel, and grey iron is possible with the coated grade HCK10™.



■ **Step 1 • Select the insert geometry**

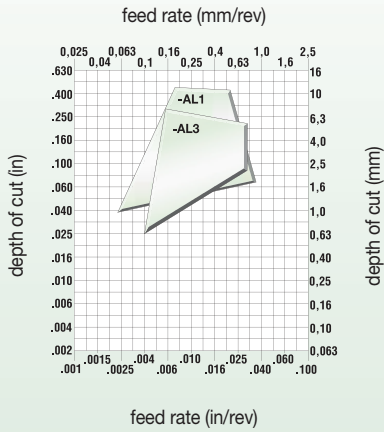
**Positive Inserts**



AL1



AL3



■ **Step 2 • Select the grade**

**Positive Insert Geometry**

cutting condition		-AL1	-AL3
heavily interrupted cut		HCK10/HWK10	HCK10/HWK10
lightly interrupted cut		HCK10/HWK10	HCK10/HWK10
varying depth of cut, casting, or forging skin		HCK10/HWK10	HCK10/HWK10
smooth cut, pre-turned surface		HCK10/HWK10	HCK10/HWK10

■ **Step 3 • Selecting the cutting speed**

**Low-Silicon Aluminium Alloys**

(hypoeutectic <12,2% Si) and Magnesium Alloys

speed – m/min

Starting Conditions

Material Group	grade	250	500	750	1000	1250	1500	1750	2000	2250	2500	m/min
N2	HCK10											550

**High-Silicon Aluminium Alloys**

(hypereutectic >12,2% Si) and Magnesium Alloys

speed – m/min

Starting Conditions

Material Group	grade	250	500	750	1000	1250	1500	1750	2000	2250	2500	m/min
N3	HCK10											550

■ Additional cutting speed recommendations for miscellaneous workpiece materials

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

Material Group	grade	speed – m/min				Starting Conditions
		250	500	750	1000	m/min
N4	HCK10	◊				275
	HWK10/HWK15	◊				260

Nylon, Plastics, Rubbers, Phenolics, Resins, Fibreglass, and Glass

Material Group	grade	speed – m/min				Starting Conditions
		250	500	750	1000	m/min
N5	HCK10	◊				275

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

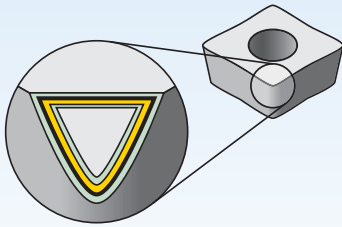
Material Group	grade	speed – m/min				Starting Conditions
		250	500	750	1000	m/min
N6	HCK10	◊				200

MMCs (Aluminium-Based Metal Matrix Composites)

Material Group	grade	speed – m/min				Starting Conditions
		250	500	750	1000	m/min
N7	HCK10	◊				170

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

Material Group	grade	speed – m/min				Starting Conditions
		250	500	750	1000	m/min
N8	HCK10	◊				215
	HWK10/HWK15	◊				180

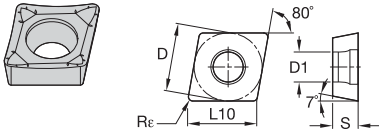


Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

<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

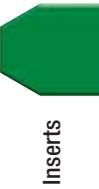
wear resistance ← → toughness

Coating		Grade Description		05	10	15	20	25	30	35	40	45
<b>HCK10</b>		Coated carbide. PVD — TIALN-Al <sub>2</sub> O <sub>3</sub> on micro-grain carbide. Light and medium machining. For aluminium alloys.										
	<b>HC-N10</b>											
<b>HWK10</b>		Uncoated carbide. Micro-grain carbide with high cutting edge stability. Light machining. For non-ferrous metals and non-metals.										
	<b>HF-N10</b>											
<b>HWK15</b>		Uncoated carbide. Micro-grain carbide with high cutting edge stability. Light and medium machining. For non-ferrous metals and non-metals.										
	<b>HF-N15</b>											



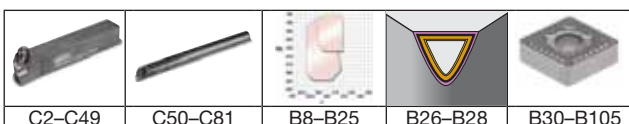
● first choice  
○ alternate choice

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



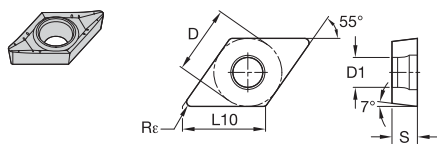
■ CCGT-AL3

ISO catalogue number	D	L10	S	Rε	D1	HCK10	HWK10	HWK15
CCGT060202AL3	6,35	6,45	2,38	0,2	2,80	2022257	2022258	2022258
CCGT060204AL3	6,35	6,45	2,38	0,4	2,80	2022259	2022260	2022260
CCGT09T302AL3	9,53	9,67	3,97	0,2	4,40	2022261	2022262	2022854
CCGT09T304AL3	9,53	9,67	3,97	0,4	4,40	2022261	2022262	2022262
CCGT09T308AL3	9,53	9,67	3,97	0,8	4,40	2022859	2022858	2022858
CCGT120402AL3	12,70	12,90	4,76	0,2	5,50	2022859	2022858	2022859
CCGT120404AL3	12,70	12,90	4,76	0,4	5,50	2022323	2022324	2022324
CCGT120408AL3	12,70	12,90	4,76	0,8	5,50	2022325	2022326	2022326





Inserts

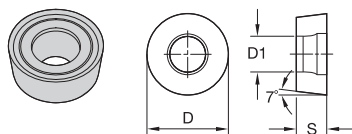


● first choice  
○ alternate choice

P			
M			
K			
N	●	●	●
S			
H			

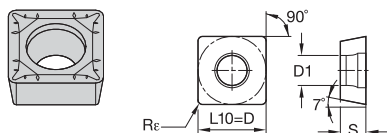
■ DCGT-AL3

ISO catalogue number	D	L10	S	Re	D1	HCK10	HWK10	HWK15
DCGT070202AL3	6,35	7,75	2,38	0,2	2,80	2022327	2022328	2022328
DCGT070204AL3	6,35	7,75	2,38	0,4	2,80	2022329	2022330	2022330
DCGT11T302AL3	9,53	11,63	3,97	0,2	4,40	2014890	2022861	2022861
DCGT11T304AL3	9,53	11,63	3,97	0,4	4,40	2014890	2022331	2022331
DCGT11T308AL3	9,53	11,63	3,97	0,8	4,40	2022332	2022483	2022483



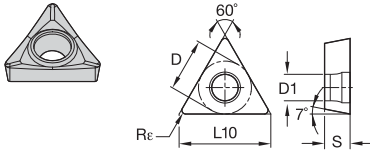
■ RCGT-AL1

ISO catalogue number	D	S	D1	HCK10	HWK10	HWK15
RCGT0803M0AL1	8,00	3,18	3,40	2002473	2002474	2002474



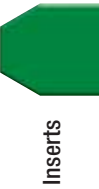
■ SCGT-AL3

ISO catalogue number	D	L10	S	Re	D1	HCK10	HWK10	HWK15
SCGT120408AL3	12,70	12,70	4,76	0,8	5,50	2023638	2023638	2023638



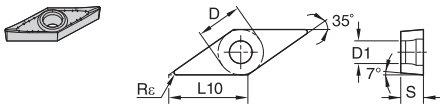
● first choice  
○ alternate choice

P			
M			
K			
N	●	●	●
S			
H			



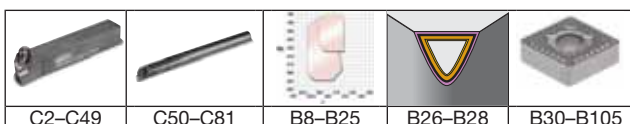
■ **TCGT-AL1**

ISO catalogue number	D	L10	S	Rε	D1	HCK10	HWK10	HWK15
TCGT110204AL1	6,35	11,00	2,38	0,4	2,80	○	●	○
TCGT16T308AL1	9,53	16,50	3,97	0,8	4,40	○	●	○



■ **VCGT-AL3**

ISO catalogue number	D	L10	S	Rε	D1	HCK10	HWK10	HWK15
VCGT110302AL3	6,35	11,07	3,18	0,2	2,80	○	○	●
VCGT110304AL3	6,35	11,07	3,18	0,4	2,80	○	○	●
VCGT160404AL3	9,53	16,61	4,76	0,4	4,40	●	○	○
VCGT160408AL3	9,53	16,61	4,76	0,8	4,40	●	○	○
VCGT160412AL3	9,53	16,61	4,76	1,2	4,40	●	○	○
VCGT220530AL3	12,70	22,14	5,56	3,0	5,50	●	○	○





## Turning • Tools for External Turning and Internal Boring

Tools for External Turning .....	C2–C49
Tools for Internal Boring .....	C50–C81
Tunable Boring Bars.....	C82–C84

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

# Tools for External Turning



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

## D-Style Clamping

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

## 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

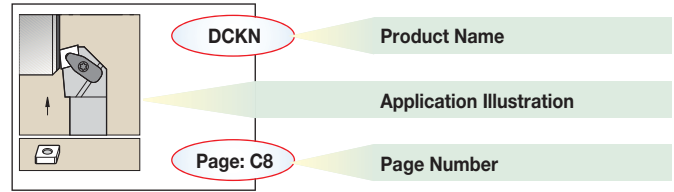
- Screw clamping system for positive indexable inserts.
- Compact design for high reliability and cost efficiency.
- Carbide shim for additional tool protection.

## 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.

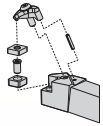


Each unique clamping system offers product options to fill your specific toolholder needs. Find the illustration that fits your application and navigate to the corresponding page to get the correct solution.



### D-Style Clamping

**D**

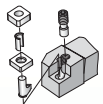


One-piece clamp assembly holder for use with negative style inserts. An extremely rigid clamping system. The tool is protected by a carbide shim.

	<b>DCKN</b> 75° Page: <b>C8</b>		<b>DCLN</b> 95° Page: <b>C9</b>		<b>DCRN</b> 75° Page: <b>C10</b>		<b>DCSN</b> 45° Page: <b>C10</b>
	<b>DDJN</b> 93° Page: <b>C11</b>		<b>DDNN</b> 63° Page: <b>C11</b>		<b>DRGN</b> Page: <b>C12</b>		<b>DSDN</b> 45° Page: <b>C12</b>
	<b>DSKN</b> 75° Page: <b>C13</b>		<b>DSRN</b> 75° Page: <b>C14</b>		<b>DSSN</b> 45° Page: <b>C15</b>		<b>DTFN</b> 90° Page: <b>C16</b>
	<b>DTGN</b> 90° Page: <b>C16</b>		<b>DVJN</b> 93° Page: <b>C17</b>		<b>DVON</b> 117,5° Page: <b>C18</b>		<b>DVVN</b> 72,5° Page: <b>C18</b>
	<b>DWLN</b> 95° Page: <b>C19</b>						

### P-Style Clamping

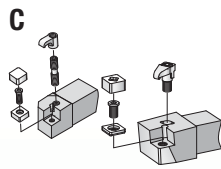
**P**



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.

	<b>PCBN</b> 75° Page: <b>C20</b>		<b>PCKN</b> 75° Page: <b>C21</b>		<b>PCLN</b> 95° Page: <b>C22</b>		<b>PDJN</b> 93° Page: <b>C23</b>
	<b>PDNN</b> 62,5° Page: <b>C24</b>		<b>PSBN</b> 75° Page: <b>C25</b>		<b>PSDN</b> 45° Page: <b>C26</b>		<b>PSKN</b> 75° Page: <b>C26</b>
	<b>PSSN</b> 45° Page: <b>C27</b>		<b>PTFN</b> 90° Page: <b>C28</b>		<b>PTGN</b> 90° Page: <b>C29</b>		<b>PWLN</b> 95° Page: <b>C30</b>

**C-Style Clamping**

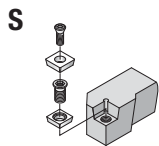


Top clamping system for negative and positive indexable inserts to DIN 4968. This universal clamping system is robust and easy to handle. Some height-adjustable clamps enable the use of additional chipbreakers. A carbide shim provides additional tool protection. Toolholders with cutting edge heights upwards of 16mm and insert iCs greater than 6,35mm.

	<b>CCLN-MX</b> 95° Page: C31		<b>CCLN-MN</b> 95° Page: C31		<b>CCLN-MF</b> 95° Page: C32		<b>CDJN-MX</b> 93° Page: C32
	<b>CDJN-MN</b> 93° Page: C33		<b>CELN-MF</b> 97,5° Page: C33		<b>CELN-MN</b> 97,5° Page: C34		<b>CKJN</b> Page: C34
	<b>CRDN-MN</b> Page: C35		<b>CRSN-MN</b> Page: C35		<b>CSBP</b> 75° Page: C36		<b>CSDP</b> 45° Page: C36
	<b>CSSP</b> 45° Page: C37		<b>CTCP</b> 90° Page: C37		<b>CTDP</b> 45° Page: C38		<b>CTFP</b> 90° Page: C38
	<b>CTGP</b> 90° Page: C39		<b>CRDP*</b> Page: C40		<b>CRGP*</b> Page: C41		

\*Exact Clamping System not shown.

**S-Style Clamping**



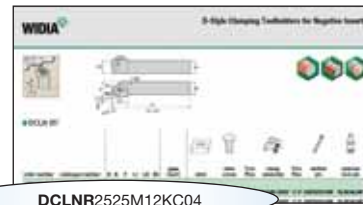
Screw clamping system for positive indexable inserts with countersunk hole to DIN 4967. Compact design using a minimum of spare parts for high reliability and cost efficiency. A carbide shim provides additional tool protection. Toolholders with cutting edge heights upwards of 16mm and insert iCs from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

	<b>SCLC</b> 95° Page: C42		<b>SCDP</b> 45° Page: C42		<b>SCLP</b> 95° Page: C43		<b>SDHC</b> 107,5° Page: C43
	<b>SDJC</b> 93° Page: C44		<b>SDNC</b> 62,5° Page: C45		<b>SRDC</b> Page: C45		<b>SSBC</b> 75° Page: C46
	<b>SSSC</b> 45° Page: C47		<b>STFC</b> 90° Page: C48		<b>SVHB</b> 107,5° Page: C48		<b>SVJB</b> 93° Page: C49
	<b>SVVB</b> 72,5° Page: C49						



## How Do Catalogue Numbers Work?

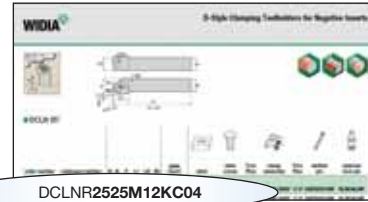
Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



DCLNR2525M12KC04

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> </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>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>F</b> </p> <p><b>G</b> </p> <p><b>L</b> </p> <p><b>P</b> </p> <p><b>Q</b> </p> <p><b>R</b> </p> <p><b>S</b> </p> <p><b>U</b> </p> <p><b>V</b> </p> <p><b>Y</b> </p>	<p><b>N</b> </p> <p><b>B</b> </p> <p><b>C</b> </p> <p><b>P</b> </p> <p><b>D</b> </p> <p><b>E</b> </p> <p><b>F</b> </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>R</b></p> <p><b>L</b></p> <p><b>N</b></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>

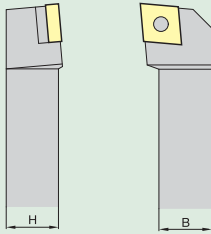
By referencing this easy-to-use guide, you can identify the correct product to meet your needs.



DCLNR2525M12KC04

**25**

Shank Dimensions



The seventh and eighth position shall be a significant two-digit number that indicates the holder cross section.

- If the dimension for the width "B" or the height "H" is represented by a one-digit number, a 0 (zero) will be used in front of it.

Example: 8,0mm = 08

**25**

**M**

Tool Length

L1	ISO
32	A
40	B
50	C
60	D
70	E
80	F
90	G
100	H
110	J
125	K
140	L
150	M
160	N
170	P
180	Q
200	R
250	S
300	T
350	U
400	V
450	W
500	Y
Special Design	X

**12**

Insert Size

**KC**

Additional Information

**KC** =  
D-Style Clamping

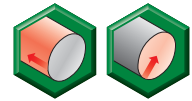
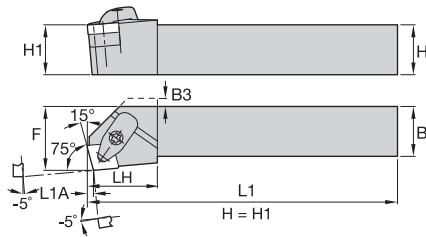
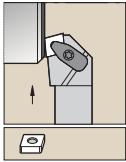
**04**

Insert Thickness (optional)

**04** = 4,76mm  
**06** = 6,35mm

**Cutting Edge Length L10**

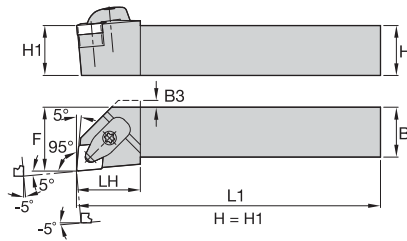
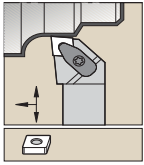
<b>H</b> Hexagon 120°		<b>C</b> Rhomboid 80°	
<b>O</b> Octagon 135°		<b>D</b> 55°	
<b>P</b> Pentagon 108°		<b>E</b> 75°	
<b>S</b> Square 90°		<b>M</b> 86°	
<b>T</b> Triangular 60°		<b>V</b> 35°	
<b>R</b> Round —		<b>W</b> Trigon 80° with enlarged corner angles	
		<b>L</b> Rectangular 90°	
		<b>A</b>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



Tools for External Turning and Internal Boring

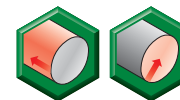
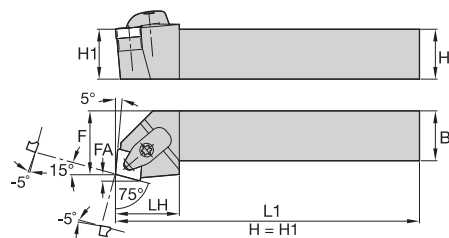
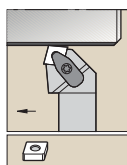
■ DCKN 75°

order number	catalogue number	H	B	F	L1	LH	L1A	B3	gage insert	shim	shim screw	Torx Plus	clamp assembly	Torx Plus	slotted pin	optional lock pin
<b>right hand</b>																
5697856	DCKNR2020K12KC04	20	20	25,0	125	32,0	3,1	6,0	CN..120408	ICSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM4615IP
5697857	DCKNR2525M12KC04	25	25	32,0	150	32,0	3,1	—	CN..120408	ICSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5697858	DCKNR3225P12KC04	32	25	32,0	170	32,0	3,1	—	CN..120408	ICSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5697859	DCKNR3232P16KC06	32	32	40,0	170	32,0	3,8	—	CN..160612	ICSN543	KMSP515IP	15 IP	CM209R ASSY	15 IP	SSP025016M	KLM58L15IP
5697880	DCKNR3232P19KC06	32	32	40,0	170	38,0	4,6	—	CN..190612	ICSN643	KMSP625IP	25 IP	CM210R ASSY	25 IP	SSP025016M	KLM68L25IP
<b>left hand</b>																
5697853	DCKNL2020K12KC04	20	20	25,0	125	32,0	3,1	6,0	CN..120408	ICSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM4615IP
5697854	DCKNL2525M12KC04	25	25	32,0	150	32,0	3,1	—	CN..120408	ICSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5697855	DCKNL3225P12KC04	32	25	32,0	170	32,0	3,1	—	CN..120408	ICSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP



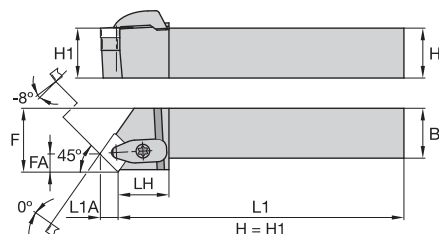
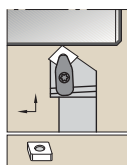
## ■ DCLN 95°

order number	catalogue number	H	B	F	L1	LH	B3	gage insert	shim	shim screw	Torx Plus	clamp assembly	Torx Plus	slotted pin	optional lock pin
<b>right hand</b>															
5697890	DCLNR1616H09KC03	16	16	20,0	100	30,0	6,0	CN..090308	ICSN332	KMSP39IP	9 IP	CM234R ASSY	15 IP	SSP025016M	KLM34L9IP
5697891	DCLNR2020K09KC03	20	20	25,0	125	30,0	2,0	CN..090308	ICSN332	KMSP39IP	9 IP	CM234R ASSY	15 IP	SSP025016M	KLM34L9IP
5697892	DCLNR2020K12KC04	20	20	25,0	125	32,0	4,0	CN..120408	ICSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM4615IP
5697893	DCLNR2525M12KC04	25	25	32,0	150	32,0	—	CN..120408	ICSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5697894	DCLNR2525M16KC06	25	25	32,0	150	33,0	—	CN..160612	ICSN543	KMSP515IP	15 IP	CM209R ASSY	15 IP	SSP025016M	KLM58L15IP
5697895	DCLNR3232P16KC06	32	32	40,0	170	33,0	—	CN..160612	ICSN543	KMSP515IP	15 IP	CM209R ASSY	15 IP	SSP025016M	KLM58L15IP
5697896	DCLNR3232P19KC06	32	32	40,0	170	40,0	—	CN..190612	ICSN643	KMSP625IP	25 IP	CM210R ASSY	25 IP	SSP025016M	KLM68L25IP
5697897	DCLNR4040S19KC06	40	40	50,0	250	40,0	—	CN..190612	ICSN643	KMSP625IP	25 IP	CM210R ASSY	25 IP	SSP025016M	KLM68L25IP
5697898	DCLNR4040S25KC09	40	40	50,0	250	51,0	—	CN..250924	ICSN846	KMSP825IP	25 IP	CM236R ASSY	25 IP	SSP025018M	KLM81025IP
<b>left hand</b>															
5697881	DCLNL1616H09KC03	16	16	20,0	100	30,0	6,0	CN..090308	ICSN332	KMSP315IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM34L9IP
5697882	DCLNL2020K09KC03	20	20	25,0	125	30,0	2,0	CN..090308	ICSN332	KMSP315IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM34L9IP
5697883	DCLNL2020K12KC04	20	20	25,0	125	32,0	4,0	CN..120408	ICSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM4615IP
5697884	DCLNL2525M12KC04	25	25	32,0	150	32,0	—	CN..120408	ICSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5697885	DCLNL2525M16KC06	25	25	32,0	150	33,0	—	CN..160612	ICSN543	KMSP515IP	15 IP	CM209R ASSY	15 IP	SSP025016M	KLM58L15IP
5697886	DCLNL3232P16KC06	32	32	40,0	170	33,0	—	CN..160612	ICSN543	KMSP515IP	15 IP	CM209R ASSY	15 IP	SSP025016M	KLM58L15IP
5697887	DCLNL3232P19KC06	32	32	40,0	170	40,0	—	CN..190612	ICSN643	KMSP625IP	25 IP	CM210R ASSY	25 IP	SSP025016M	KLM68L25IP
5697888	DCLNL4040S19KC06	40	40	50,0	250	40,0	—	CN..190612	ICSN643	KMSP625IP	25 IP	CM210R ASSY	25 IP	SSP025016M	KLM68L25IP
5697889	DCLNL4040S25KC09	40	40	50,0	250	51,0	—	CN..250924	ICSN846	KMSP825IP	25 IP	CM236R ASSY	25 IP	SSP025018M	KLM81025IP



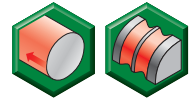
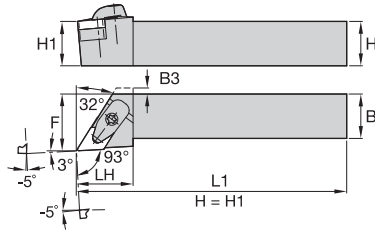
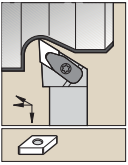
■ DCRN 75°

order number	catalogue number	H	B	F	L1	LH	FA	gage insert	shim	shim screw	Torx Plus	clamp assembly	Torx Plus	slotted pin	optional lock pin
<b>right hand</b>															
5697903	DCRNR2020K12KC04	20	20	25,0	125	32,0	3,3	CN..120408	ICSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM4615IP
5697904	DCRNR2525M12KC04	25	25	32,0	150	32,0	3,3	CN..120408	ICSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5697905	DCRNR3225P12KC04	32	25	32,0	170	32,0	3,3	CN..120408	ICSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5697906	DCRNR3232P16KC06	32	32	40,0	170	38,0	4,1	CN..160612	ICSN543	KMSP515IP	15 IP	CM209R ASSY	15 IP	SSP025016M	KLM58L15IP
5697907	DCRNR3232P19KC06	32	32	40,0	170	38,0	4,9	CN..190612	ICSN643	KMSP625IP	25 IP	CM210R ASSY	25 IP	SSP025016M	KLM68L25IP
<b>left hand</b>															
5697899	DCRNL2020K12KC04	20	20	25,0	125	32,0	3,3	CN..120408	ICSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM4615IP
5697900	DCRNL2525M12KC04	25	25	32,0	150	32,0	3,3	CN..120408	ICSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5697901	DCRNL3225P12KC04	32	25	32,0	170	32,0	3,3	CN..120408	ICSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5697902	DCRNL3232P16KC06	32	32	40,0	170	38,0	4,1	CN..160612	ICSN543	KMSP515IP	15 IP	CM209R ASSY	15 IP	SSP025016M	KLM58L15IP



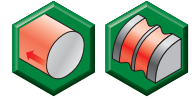
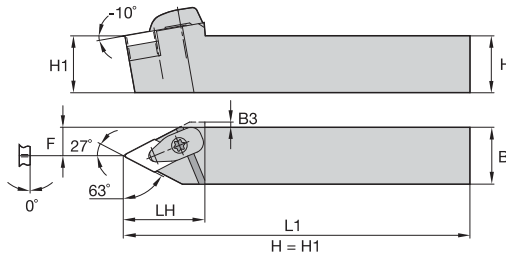
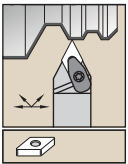
■ DCSN 45°

order number	catalogue number	H	B	F	L1	LH	FA	L1A	gage insert	shim	shim screw	Torx Plus	clamp assembly	Torx Plus	slotted pin	optional lock pin
<b>right hand</b>																
5697911	DCSNR2020K12KC04	20	20	25,0	125	35,0	8,2	8,5	CN..120408	ICSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM4615IP
5697913	DCSNR2525M12KC04	25	25	32,0	150	35,0	8,2	8,5	CN..120408	ICSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
<b>left hand</b>																
5697908	DCSNL2020K12KC04	20	20	25,0	125	35,0	8,2	8,5	CN..120408	ICSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM4615IP
5697909	DCSNL2525M12KC04	25	25	32,0	150	35,0	8,2	8,5	CN..120408	ICSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP



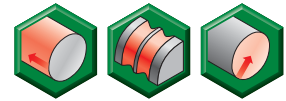
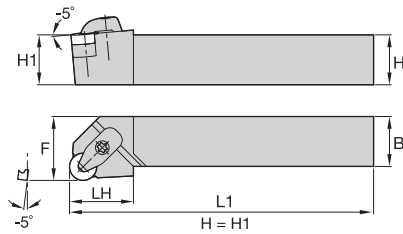
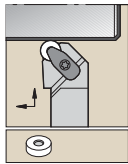
## DDJN 93°

order number	catalogue number	H	B	F	L1	LH	B3	gage insert	shim	shim screw	Torx Plus	clamp assembly	Torx Plus	slotted pin	optional lock pin
<b>right hand</b>															
5697924	DDJNR2020K11KC04	20	20	25,0	125	30,0	2,0	DN..110408	IDSN322	KMSP315IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM34L9IP
5697926	DDJNR2020K15KC06	20	20	25,0	125	32,0	4,0	DN..150608	IDSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5697928	DDJNR2525M11KC04	25	25	32,0	150	30,0	—	DN..110408	IDSN322	KMSP315IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM34L9IP
5697930	DDJNR2525M15KC06	25	25	32,0	150	32,0	—	DN..150608	IDSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5697932	DDJNR3225P15KC06	32	25	32,0	170	32,0	—	DN..150608	IDSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5564336	DDJNR3232P15KC06	32	32	40,0	170	32,0	—	DN..150608	IDSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
<b>left hand</b>															
5697915	DDJNL2020K11KC04	20	20	25,0	125	30,0	2,0	DN..110408	IDSN322	KMSP315IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM34L9IP
5697916	DDJNL2020K15KC06	20	20	25,0	125	32,0	4,0	DN..150608	IDSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5697918	DDJNL2525M11KC04	25	25	32,0	150	30,0	—	DN..110408	IDSN322	KMSP315IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM34L9IP
5697920	DDJNL2525M15KC06	25	25	32,0	150	32,0	—	DN..150608	IDSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5697922	DDJNL3225P15KC06	32	25	32,0	170	32,0	—	DN..150608	IDSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5564335	DDJNL3232P15KC06	32	32	40,0	171	32,0	—	DN..150608	IDSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP



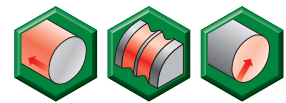
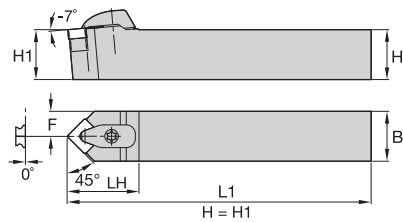
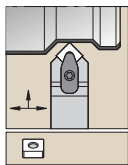
## DDNN 63°

order number	catalogue number	H	B	F	L1	LH	B3	gage insert	shim	shim screw	Torx Plus	clamp assembly	Torx Plus	slotted pin	optional lock pin
<b>right hand</b>															
5697940	DDNNR2020K15KC06	20	20	10,0	125	40,0	2,5	DN..150608	IDSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5697942	DDNNR2525M15KC06	25	25	13,0	150	40,0	—	DN..150608	IDSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
<b>left hand</b>															
5697934	DDNNL2020K15KC06	20	20	10,0	125	40,0	2,5	DN..150608	IDSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5697936	DDNNL2525M15KC06	25	25	13,0	150	40,0	—	DN..150608	IDSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5697938	DDNNL3225P15KC06	32	25	13,0	170	40,0	—	DN..150608	IDSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP



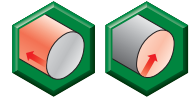
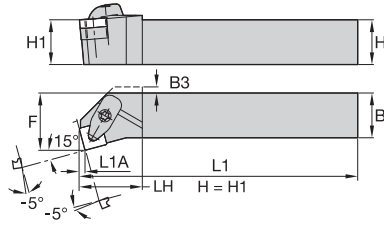
■ DRGN

order number	catalogue number	H	B	F	L1	LH	gage insert	shim	shim screw	Torx Plus	clamp assembly	Torx Plus	slotted pin	optional lock pin	
<b>right hand</b>															
5697948	DRGNR2525M12KC04	25	25	32,0	150	32,0	RN..120400	IRSN44	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP	
5697950	DRGNR3225P12KC04	32	25	32,0	170	32,0	RN..120400	IRSN44	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP	
5697952	DRGNR4040S25KC09	40	40	50,0	250	48,0	RN..250900	IRSN84	KMSP825IP	25 IP	—	25 IP	SSP025018M	KLM81025IP	
<b>left hand</b>															
5697944	DRGNL3225P12KC04	32	25	32,0	170	32,0	RN..120400	IRSN44	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP	
5697946	DRGNL4040S25KC09	40	40	50,0	250	48,0	RN..250900	IRSN84	KMSP825IP	25 IP	CM236R ASSY	25 IP	SSP025018M	KLM81025IP	



■ DSDN 45°

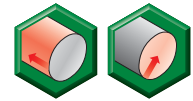
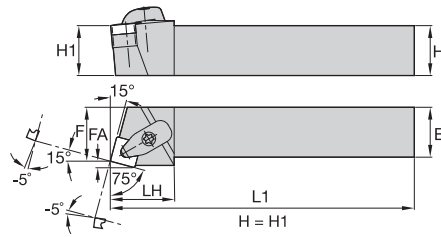
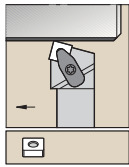
order number	catalogue number	H	B	F	L1	LH	gage insert	shim	shim screw	Torx Plus	clamp assembly	Torx Plus	slotted pin	optional lock pin
5697954	DSDNN2020K12KC04	20	20	10,0	125	36,0	SN..120408	ISSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5697955	DSDNN2525M12KC04	25	25	12,0	150	36,0	SN..120408	ISSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5697957	DSDNN2525M15KC06	25	25	12,0	150	42,0	SN..150612	ISSN543	KMSP515IP	15 IP	CM209R ASSY	15 IP	SSP025016M	KLM58L15IP
5697959	DSDNN3225P12KC04	32	25	12,0	170	36,0	SN..120408	ISSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5697961	DSDNN3232P19KC06	32	32	15,5	170	44,0	SN..190612	ISSN643	KMSP625IP	25 IP	CM210R ASSY	25 IP	SSP025016M	KLM68L25IP
5697963	DSDNN4040S25KC09	40	40	19,5	250	59,0	SN..250924	ISSN846	KMSP825IP	40 IP	CM236R ASSY	25 IP	SSP025018M	KLM81025IP



## ■ DSKN 75°

order number	catalogue number	H	B	F	L1	LH	L1A	B3	gage insert	shim	shim screw	Torx Plus	clamp assembly	Torx Plus	slotted pin	optional lock pin
<b>right hand</b>																
5696685	DSKNR2020K12KC04	20	20	25,0	125	32,0	3,1	8,0	SN..120408	ISSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM4615IP
5696686	DSKNR2525M12KC04	25	25	32,0	150	32,0	3,1	4,0	SN..120408	ISSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5696687	DSKNR3225P12KC04	32	25	32,0	170	32,0	3,1	—	SN..120408	ISSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5696688	DSKNR3232P15KC06	32	32	40,0	170	32,0	3,8	—	SN..150612	ISSN543	KMSP515IP	15 IP	CM209R ASSY	15 IP	SSP025016M	KLM58L15IP
5696689	DSKNR3232P19KC06	32	32	40,0	170	38,0	4,6	—	SN..190612	ISSN643	KMSP625IP	25 IP	CM210R ASSY	25 IP	SSP025016M	KLM68L25IP
<b>left hand</b>																
5696682	DSKNL2525M12KC04	25	25	32,0	150	32,0	3,1	4,0	SN..120408	ISSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5696683	DSKNL3225P12KC04	32	25	32,0	170	32,0	3,1	—	SN..120408	ISSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5696684	DSKNL3232P15KC06	32	32	40,0	170	32,0	3,8	—	SN..150612	ISSN543	KMSP515IP	15 IP	CM209R ASSY	15 IP	SSP025016M	KLM58L15IP

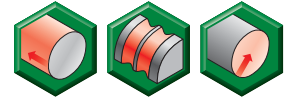
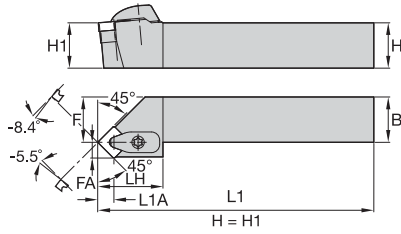
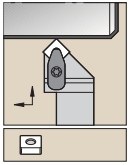




Tools for External Turning and Internal Boring

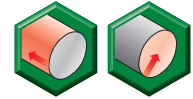
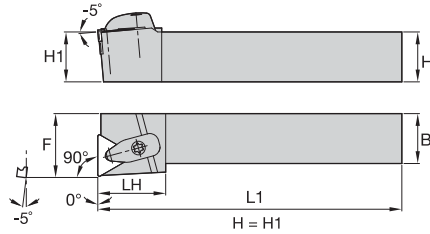
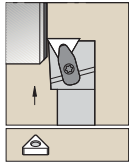
■ DSRN 75°

order number	catalogue number	H	B	F	L1	LH	FA	gage insert	shim	shim screw	Torx Plus	clamp assembly	Torx Plus	slotted pin	optional lock pin
<b>right hand</b>															
5696703	DSRNR2020K12KC04	20	20	22,0	125	32,0	3,3	SN..120408	ISSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM4615IP
5696704	DSRNR2525M12KC04	25	25	27,0	150	32,0	3,3	SN..120408	ISSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5696705	DSRNR3232P15KC06	32	32	35,0	170	38,0	4,0	SN..150612	ISSN543	KMSP515IP	15 IP	CM209R ASSY	15 IP	SSP025016M	KLM58L15IP
5696706	DSRNR3232P19KC06	32	32	35,0	170	42,0	4,8	SN..190612	ISSN643	KMSP625IP	25 IP	CM210R ASSY	25 IP	SSP025016M	KLM68L25IP
5696707	DSRNR4040S25KC09	40	40	43,0	250	52,0	6,1	SN..250924	ISSN846	KMSP825IP	25 IP	CM236R ASSY	25 IP	SSP025018M	KLM81025IP
<b>left hand</b>															
5696700	DSRNL2525M12KC04	25	25	27,0	150	32,0	3,3	SN..120408	ISSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5696701	DSRNL3232P15KC06	32	32	35,0	170	38,0	4,0	SN..150612	ISSN543	KMSP515IP	15 IP	CM209R ASSY	15 IP	SSP025016M	KLM58L15IP
5696702	DSRNL4040S25KC09	40	40	43,0	250	52,0	6,1	SN..250924	ISSN846	KMSP825IP	25 IP	CM236R ASSY	25 IP	SSP025018M	KLM81025IP



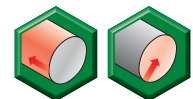
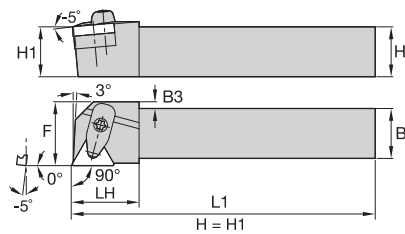
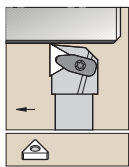
## ■ DSSN 45°

order number	catalogue number	H	B	F	L1	LH	FA	L1A	gage insert	shim	shim screw	Torx Plus	clamp assembly	Torx Plus	slotted pin	optional lock pin
<b>right hand</b>																
5696713	DSSNR2020K12KC04	20	20	25,0	125	36,0	8,4	8,7	SN..120408	ISSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM4615IP
5696714	DSSNR2525M12KC04	25	25	32,0	150	36,0	8,4	8,7	SN..120408	ISSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5696715	DSSNR2525M15KC06	25	25	32,0	150	42,0	10,5	10,7	SN..150612	ISSN543	KMSP515IP	15 IP	CM209R ASSY	15 IP	SSP025016M	KLM58L15IP
5696716	DSSNR3225P12KC04	32	25	32,0	170	35,4	8,4	8,7	SN..120408	ISSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5696717	DSSNR3232P15KC06	32	32	40,0	170	40,3	10,5	10,7	SN..150612	ISSN543	KMSP515IP	15 IP	CM209R ASSY	15 IP	SSP025016M	KLM58L15IP
5696718	DSSNR3232P19KC06	32	32	40,0	170	44,0	12,7	10,7	SN..190612	ISSN643	KMSP625IP	25 IP	CM210R ASSY	25 IP	SSP025016M	KLM68L25IP
<b>left hand</b>																
5696708	DSSNL2020K12KC04	20	20	25,0	125	36,0	8,4	8,7	SN..120408	ISSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM4615IP
5696709	DSSNL2525M12KC04	25	25	32,0	150	36,0	8,4	8,7	SN..120408	ISSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5696710	DSSNL3225P12KC04	32	25	32,0	170	35,4	8,4	8,7	SN..120408	ISSN443	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
5696711	DSSNL3232P15KC06	32	32	40,0	170	40,3	10,5	10,7	SN..150612	ISSN543	KMSP515IP	15 IP	CM209R ASSY	15 IP	SSP025016M	KLM58L15IP
5696712	DSSNL3232P19KC06	32	32	40,0	170	44,0	12,7	10,7	SN..190612	ISSN643	KMSP625IP	25 IP	CM210R ASSY	25 IP	SSP025016M	KLM68L25IP



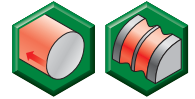
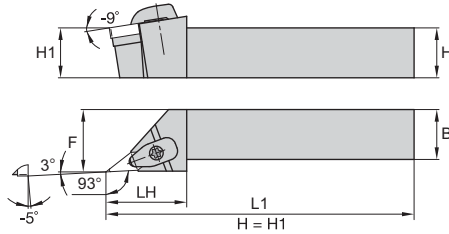
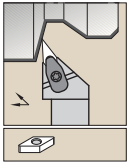
■ DTFN 90°

order number	catalogue number	H	B	F	L1	LH	gage insert	shim	shim screw	Torx Plus	clamp assembly	Torx Plus	slotted pin	optional lock pin	
<b>right hand</b>															
5696724	DTFNR2020K16KC04	20	20	25,0	125	32,0	TN..160408	ITSN323	KMSP315IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM34L9IP	
5696725	DTFNR2525M16KC04	25	25	32,0	150	32,0	TN..160408	ITSN323	KMSP315IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM34L9IP	
5696726	DTFNR3232P27KC06	32	32	40,0	170	38,0	TN..270612	ITSN534	KMSP515IP	15 IP	CM209R ASSY	15 IP	SSP025016M	KLM5815IP	
<b>left hand</b>															
5696719	DTFNL2020K16KC04	20	20	25,0	125	32,0	TN..160408	ITSN323	KMSP315IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM34L9IP	
5696720	DTFNL2525M16KC04	25	25	32,0	150	32,0	TN..160408	ITSN323	KMSP315IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM34L9IP	
5696721	DTFNL2525M22KC04	25	25	32,0	150	34,0	TN..220408	ITSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP	
5696722	DTFNL3225P16KC04	32	25	32,0	170	32,0	TN..160408	ITSN323	KMSP315IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM34L9IP	
5696723	DTFNL3225P22KC04	32	25	32,0	170	34,0	TN..220408	ITSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP	



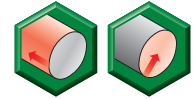
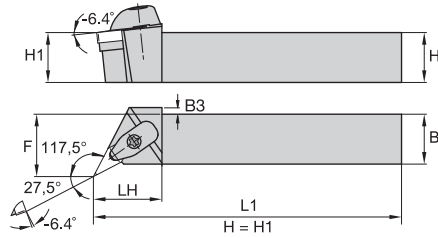
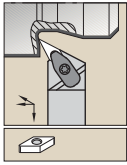
■ DTGN 90°

order number	catalogue number	H	B	F	L1	LH	B3	gage insert	shim	shim screw	Torx Plus	clamp assembly	Torx Plus	slotted pin	optional lock pin
<b>right hand</b>															
5696729	DTGNR2020K16KC04	20	20	25,0	125	25,0	6,5	TN..160408	ITSN323	KMSP315IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM34L9IP
5696730	DTGNR2525M16KC04	25	25	32,0	150	25,0	—	TN..160408	ITSN323	KMSP315IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM34L9IP
5696731	DTGNR2525M22KC04	25	25	32,0	150	32,0	3,0	TN..220408	ITSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM46L15IP
<b>left hand</b>															
5696727	DTGNL2020K16KC04	20	20	25,0	125	25,0	6,5	TN..160408	ITSN323	KMSP315IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM34L9IP
5696728	DTGNL2525M16KC04	25	25	32,0	150	25,0	—	TN..160408	ITSN323	KMSP315IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM34L9IP



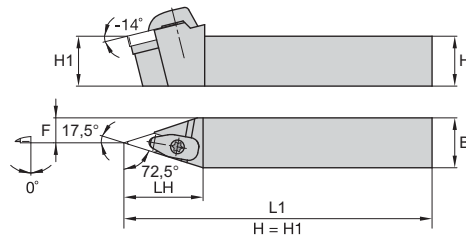
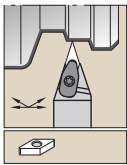
## ■ DVJN 93°

order number	catalogue number	H	B	F	L1	LH	gage insert	shim	shim screw	Torx Plus	clamp assembly	Torx Plus	slotted pin	optional lock pin	
<b>right hand</b>															
5696737	DVJNR2020K16KC04	20	20	25,0	125	46,0	VN..160408	IVSN322	KMSP315IP	15 IP	CM215R ASSY	15 IP	SSP025016M	KLM34L9IP	
5696738	DVJNR2525M16KC04	25	25	32,0	150	46,0	VN..160408	IVSN322	KMSP315IP	15 IP	CM215R ASSY	15 IP	SSP025016M	KLM34L9IP	
5696739	DVJNR2525M22KC04	25	25	32,0	150	55,0	VN..220408	IVSN432	KMSP415IP	15 IP	CM235R ASSY	15 IP	SSP025016M	KLM4615IP	
5696740	DVJNR3225P16KC04	32	25	32,0	170	46,0	VN..160408	IVSN322	KMSP315IP	15 IP	CM215R ASSY	15 IP	SSP025016M	KLM34L9IP	
5696741	DVJNR3225P22KC04	32	25	32,0	170	55,0	VN..220408	IVSN432	KMSP415IP	15 IP	CM235R ASSY	15 IP	SSP025016M	KLM4615IP	
<b>left hand</b>															
5696732	DVJNL2020K16KC04	20	20	25,0	125	46,0	VN..160408	IVSN322	KMSP315IP	15 IP	CM215R ASSY	15 IP	SSP025016M	KLM34L9IP	
5696733	DVJNL2525M16KC04	25	25	32,0	150	46,0	VN..160408	IVSN322	KMSP315IP	15 IP	CM215R ASSY	15 IP	SSP025016M	KLM34L9IP	
5696734	DVJNL2525M22KC04	25	25	32,0	150	55,0	VN..220408	IVSN432	KMSP415IP	15 IP	CM235R ASSY	15 IP	SSP025016M	KLM4615IP	
5696735	DVJNL3225P16KC04	32	25	32,0	170	46,0	VN..160408	IVSN322	KMSP315IP	15 IP	CM215R ASSY	15 IP	SSP025016M	KLM34L9IP	
5696736	DVJNL3225P22KC04	32	25	32,0	170	55,0	VN..220408	IVSN432	KMSP415IP	15 IP	CM235R ASSY	15 IP	SSP025016M	KLM4615IP	



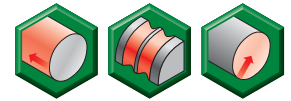
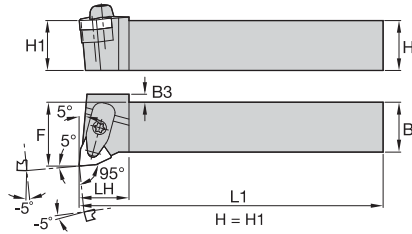
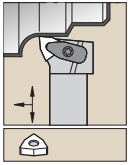
■ DVON 117,5°

order number	catalogue number	H	B	F	L1	LH	B3	gage insert	shim	shim screw	Torx Plus	clamp assembly	Torx Plus	slotted pin	optional lock pin
<b>right hand</b>															
5696745	DVONR2020K16KC04	20	20	27,0	125	38,0	5,0	VN..160408	IVSN322	KMSP315IP	15 IP	CM215R ASSY	15 IP	SSP025016M	KLM34L9IP
5696746	DVONR2525M16KC04	25	25	32,0	150	38,0	—	VN..160408	IVSN322	KMSP315IP	15 IP	CM215R ASSY	15 IP	SSP025016M	KLM34L9IP
5696747	DVONR3225P16KC04	32	25	32,0	170	38,0	—	VN..160408	IVSN322	KMSP315IP	15 IP	CM215R ASSY	15 IP	SSP025016M	KLM34L9IP
<b>left hand</b>															
5696742	DVONL2020K16KC04	20	20	27,0	125	38,0	5,0	VN..160408	IVSN322	KMSP315IP	15 IP	CM215R ASSY	15 IP	SSP025016M	KLM34L9IP
5696743	DVONL2525M16KC04	25	25	32,0	150	38,0	—	VN..160408	IVSN322	KMSP315IP	15 IP	CM215R ASSY	15 IP	SSP025016M	KLM34L9IP
5696744	DVONL3225P16KC04	32	25	32,0	170	38,0	—	VN..160408	IVSN322	KMSP315IP	15 IP	CM215R ASSY	15 IP	SSP025016M	KLM34L9IP



■ DVN 72,5°

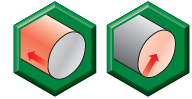
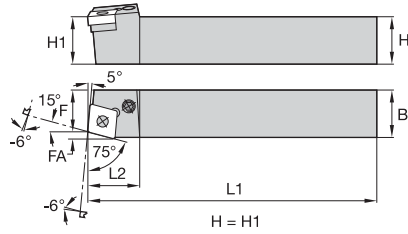
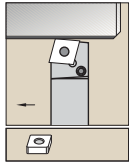
order number	catalogue number	H	B	F	L1	LH	gage insert	shim	shim screw	Torx Plus	clamp assembly	Torx Plus	slotted pin	optional lock pin
5696748	DVVNN2020K16KC04	20	20	9,5	125	48,0	VN..160408	IVSN322	KMSP315IP	15 IP	CM215R ASSY	15 IP	SSP025016M	KLM34L9IP
5696749	DVVNN2525M16KC04	25	25	12,0	150	48,0	VN..160408	IVSN322	KMSP315IP	15 IP	CM215R ASSY	15 IP	SSP025016M	KLM34L9IP
5696750	DVVNN3225P16KC04	32	25	12,0	170	48,0	VN..160408	IVSN322	KMSP315IP	15 IP	CM215R ASSY	15 IP	SSP025016M	KLM34L9IP



## ■ DWLN 95°

order number	catalogue number	H	B	F	L1	LH	B3	gage insert	shim	shim screw	Torx Plus	clamp assembly	Torx Plus	slotted pin	optional lock pin
<b>right hand</b>															
5696757	DWLN2020K06KC04	20	20	25,0	125	31,0	—	WN..060408	IWSN322	KMSP315IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM34L9IP
5696758	DWLN2020K08KC04	20	20	25,0	125	33,0	—	WN..080408	IWSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM4615IP
5696759	DWLN2525M06KC04	25	25	32,0	150	25,0	—	WN..060408	IWSN322	KMSP315IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM34L9IP
5696760	DWLN2525M08KC04	25	25	32,0	150	25,0	4,0	WN..080408	IWSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM4615IP
5696761	DWLN3225P08KC04	32	25	32,0	170	25,0	4,0	WN..080408	IWSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM4615IP
5696762	DWLN3232P08KC04	32	32	40,0	170	25,0	—	WN..080408	IWSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM4615IP
<b>left hand</b>															
5696751	DWLN2020K06KC04	20	20	25,0	125	31,0	—	WN..060408	IWSN322	KMSP39IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM34L9IP
5696752	DWLN2020K08KC04	20	20	25,0	125	33,0	—	WN..080408	IWSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM4615IP
5696753	DWLN2525M06KC04	25	25	32,0	150	25,0	—	WN..060408	IWSN322	KMSP315IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM34L9IP
5696754	DWLN2525M08KC04	25	25	32,0	150	25,0	4,0	WN..080408	IWSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM4615IP
5696755	DWLN3225P08KC04	32	25	32,0	170	25,0	4,0	WN..080408	IWSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM4615IP
5696756	DWLN3232P08KC04	32	32	40,0	170	25,0	—	WN..080408	IWSN433	KMSP415IP	15 IP	CM234R ASSY	15 IP	SSP025016M	KLM4615IP

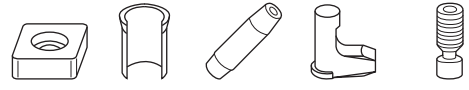
Tools for External Turning and Internal Boring

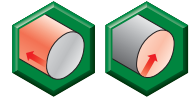
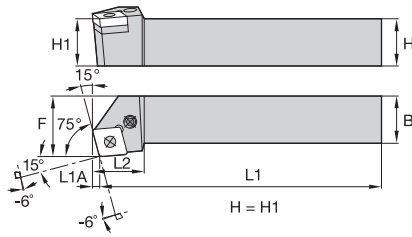
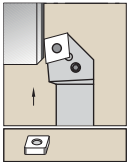


Tools for External Turning and Internal Boring

■ PCBN 75°

order number	catalogue number	H	B	F	L1	L2	FA	gage insert	shim	shim pin	punch pin	lever	lever screw	Torx Plus
<b>right hand</b>														
3878361	PCBNR2020K12	20	20	17,0	125	26,0	3,1	CN..120408	512.112	513.023	515.018	511.023	514.123	15 IP
3878356	PCBNR2525M12	25	25	22,0	150	26,0	3,1	CN..120408	512.112	513.023	515.018	511.023	514.123	15 IP
3878366	PCBNR2525M16	25	25	22,0	150	26,0	4,2	CN..160612	512.117	513.025	515.022	511.025	514.125	15 IP
3878367	PCBNR3225P16	32	25	22,0	170	28,0	4,2	CN..160612	512.117	513.025	515.022	511.025	514.125	15 IP
3878363	PCBNR3232P16	32	32	27,0	170	38,0	4,2	CN..160612	512.117	513.025	515.022	511.025	514.125	15 IP
3878358	PCBNR3232P19	32	32	27,0	170	40,0	4,6	CN..190612	512.123	513.033	515.022	511.033	514.133	25 IP
3878364	PCBNR4040S19	40	40	35,0	250	38,0	4,6	CN..190612	512.123	513.033	515.022	511.033	514.133	25 IP
<b>left hand</b>														
3878360	PCBNL2020K12	20	20	17,0	125	26,0	3,1	CN..120408	512.112	513.023	515.018	511.023	514.123	15 IP
3878354	PCBNL2525M12	25	25	22,0	150	26,0	3,1	CN..120408	512.112	513.023	515.018	511.023	514.123	15 IP
3878365	PCBNL2525M16	25	25	22,0	150	26,0	4,2	CN..160612	512.117	513.025	515.022	511.025	514.125	15 IP
3878359	PCBNL3225P16	32	25	22,0	170	28,0	4,2	CN..160612	512.117	513.025	515.022	511.025	514.125	15 IP
3878355	PCBNL3232P16	32	32	27,0	170	38,0	4,2	CN..160612	512.117	513.025	515.022	511.025	514.125	15 IP
3878357	PCBNL3232P19	32	32	27,0	170	40,0	4,6	CN..190612	512.123	513.033	515.022	511.033	514.133	25 IP
3878362	PCBNL4040S19	40	40	35,0	250	38,0	4,6	CN..190612	512.123	513.033	515.022	511.033	514.133	25 IP





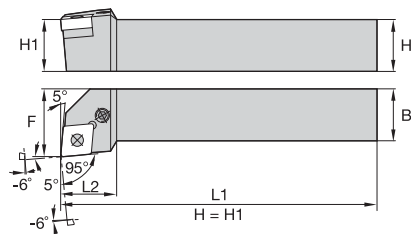
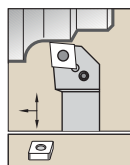
■ PCKN 75°

order number	catalogue number	H	B	F	L1	L2	L1A	gage insert	shim	shim pin	punch pin	lever	lever screw	Torx Plus	
<b>right hand</b>															
3878372	PCKNR2020K12	20	20	25,0	125	23,0	3,1	CN..120408	512.112	513.023	515.018	511.023	514.123	15 IP	
3878370	PCKNR2525M12	25	25	32,0	150	23,0	3,1	CN..120408	512.112	513.023	515.018	511.023	514.123	15 IP	
3878374	PCKNR2525M16	25	25	32,0	150	30,0	3,8	CN..160612	512.117	513.025	515.022	511.025	514.125	15 IP	
3878375	PCKNR3225P16	32	25	32,0	170	30,0	3,8	CN..160612	512.117	513.025	515.022	511.025	514.125	15 IP	
3899889	PCKNR3232P16	32	32	40,0	170	38,0	3,8	CN..160612	512.117	513.025	515.022	511.025	514.125	—	
3878371	PCKNR3232P19	32	32	40,0	170	40,0	4,6	CN..190612	512.123	513.033	515.022	511.033	514.133	25 IP	
3879707	PCKNR4040S19	40	40	50,0	250	36,0	4,6	CN..190612	512.123	513.033	515.022	511.033	514.133	25 IP	
<b>left hand</b>															
3878373	PCKNL2020K12	20	20	25,0	125	23,0	3,1	CN..120408	512.112	513.023	515.018	511.023	514.123	15 IP	
3878369	PCKNL2525M12	25	25	32,0	150	23,0	3,1	CN..120408	512.112	513.023	515.018	511.023	514.123	15 IP	
3878377	PCKNL2525M16	25	25	32,0	150	30,0	3,8	CN..160612	512.117	513.025	515.022	511.025	514.125	15 IP	
3878376	PCKNL3225P16	32	25	32,0	170	30,0	3,8	CN..160612	512.117	513.025	515.022	511.025	514.125	15 IP	
3899888	PCKNL3232P16	32	32	40,0	170	38,0	3,8	CN..160612	512.117	513.025	515.022	511.025	514.125	—	
3878368	PCKNL3232P19	32	32	40,0	170	40,0	4,6	CN..190612	512.123	513.033	515.022	511.033	514.133	25 IP	
3878378	PCKNL4040S19	40	40	50,0	250	36,0	4,6	CN..190612	512.123	513.033	515.022	511.033	514.133	25 IP	



Tools for External Turning and Internal Boring

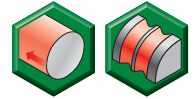
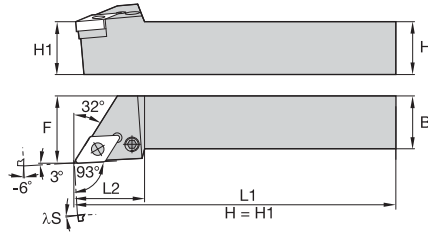
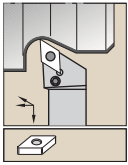




Tools for External Turning and Internal Boring

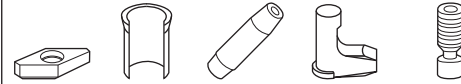
■ PCLN 95°

order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim pin	punch pin	lever	lever screw	lever screw wrench size
<b>right hand</b>													
3900154	PCLNR1616H09	16	16	20,0	100	23,0	CN..090308	512.111	513.019	515.018	511.018	514.018	2.5 mm
3878400	PCLNR1616H12	16	16	20,0	100	26,0	CN..120408	512.112	513.023	515.018	511.023	514.123	15 IP
3878422	PCLNR2020K12	20	20	25,0	125	26,0	CN..120408	512.112	513.023	515.018	511.023	514.123	15 IP
3878419	PCLNR2525M12	25	25	32,0	150	26,0	CN..120408	512.112	513.023	515.018	511.023	514.123	15 IP
3878401	PCLNR2525M16	25	25	32,0	150	28,0	CN..160612	512.117	513.025	515.022	511.025	514.125	15 IP
3878402	PCLNR3225P12	32	25	32,0	170	26,0	CN..120408	512.112	513.023	515.018	511.023	514.123	15 IP
3878421	PCLNR3225P16	32	25	32,0	170	38,0	CN..160612	512.117	513.025	515.022	511.025	514.125	15 IP
3878413	PCLNR3225P19	32	25	32,0	170	38,0	CN..190612	512.123	513.033	515.022	511.033	514.133	25 IP
3878396	PCLNR3232P16	32	32	40,0	170	36,0	CN..160612	512.117	513.025	515.022	511.025	514.125	15 IP
3878414	PCLNR3232P19	32	32	40,0	170	36,0	CN..190612	512.123	513.033	515.022	511.033	514.133	25 IP
3878417	PCLNR4040S19	40	40	50,0	250	36,0	CN..190612	512.123	513.033	515.022	511.033	514.133	25 IP
<b>left hand</b>													
3900153	PCLNL1616H09	16	16	20,0	100	23,0	CN..090308	512.111	513.019	515.018	511.018	514.018	2.5 mm
3878379	PCLNL1616H12	16	16	20,0	100	26,0	CN..120408	512.112	513.023	515.018	511.023	514.123	15 IP
3878418	PCLNL2020K12	20	20	25,0	125	26,0	CN..120408	512.112	513.023	515.018	511.023	514.123	15 IP
3878398	PCLNL2525M12	25	25	32,0	150	26,0	CN..120408	512.112	513.023	515.018	511.023	514.123	15 IP
3878380	PCLNL2525M16	25	25	32,0	150	28,0	CN..160612	512.117	513.025	515.022	511.025	514.125	15 IP
3878397	PCLNL3225P12	32	25	32,0	170	26,0	CN..120408	512.112	513.023	515.018	511.023	514.123	15 IP
3878381	PCLNL3225P19	32	25	32,0	170	38,0	CN..190612	512.123	513.033	515.022	511.033	514.133	25 IP
3878415	PCLNL3232P16	32	32	40,0	170	36,0	CN..160612	512.117	513.025	515.022	511.025	514.125	15 IP
3878393	PCLNL3232P19	32	32	40,0	170	36,0	CN..190612	512.123	513.033	515.022	511.033	514.133	25 IP
3878416	PCLNL4040S19	40	40	50,0	250	36,0	CN..190612	512.123	513.033	515.022	511.033	514.133	25 IP

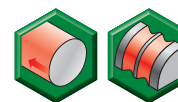
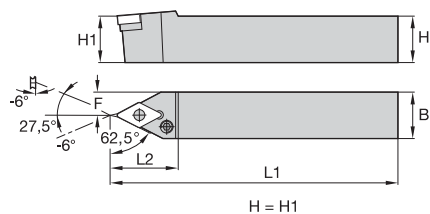
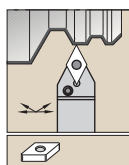


■ PDJN 93°

order number	catalogue number	H	B	F	L1	L2	λS°	gage insert	shim	shim pin	punch pin	lever	lever screw	Torx Plus
<b>right hand</b>														
3878424	PDJNR1616H11	16	16	20,0	100	22,0	-6,0	DN..110408	512.060	513.060	515.018	511.060	514.118	10 IP
3878429	PDJNR2020K11	20	20	25,0	125	30,0	-7,0	DN..110408	512.060	513.060	515.018	511.060	514.118	10 IP
3879318	PDJNR2020K15	20	20	25,0	125	36,0	-7,0	DN..150608	512.153	513.023	515.018	511.024	514.128	15 IP
3879151	PDJNR2525M11	25	25	32,0	150	30,0	-7,0	DN..110408	512.060	513.060	515.018	511.060	514.118	10 IP
3878425	PDJNR3225P15	32	25	32,0	170	38,0	-7,0	DN..150608	512.153	513.023	515.018	511.024	514.128	15 IP
3879152	PDJNR3232P15	32	32	40,0	170	38,0	-7,0	DN..150608	512.153	513.023	515.018	511.024	514.128	15 IP
3878426	PDJNR4025R15	40	25	32,0	200	38,0	-7,0	DN..150608	512.153	513.023	515.018	511.024	514.128	15 IP
<b>left hand</b>														
3879313	PDJNL1616H11	16	16	20,0	100	22,0	-6,0	DN..110408	512.060	513.060	515.018	511.060	514.118	10 IP
3878427	PDJNL2020K11	20	20	25,0	125	30,0	-7,0	DN..110408	512.060	513.060	515.018	511.060	514.118	10 IP
3879317	PDJNL2020K15	20	20	25,0	125	36,0	-7,0	DN..150608	512.153	513.023	515.018	511.024	514.128	15 IP
3878428	PDJNL2525M11	25	25	32,0	150	30,0	-7,0	DN..110408	512.060	513.060	515.018	511.060	514.118	10 IP
3879314	PDJNL2525M15	25	25	32,0	150	—	-7,0	DN..150608	512.153	513.023	515.018	511.024	514.128	15IP
3878423	PDJNL3225P15	32	25	32,0	170	38,0	-7,0	DN..150608	512.153	513.023	515.018	511.024	514.128	15 IP
3879315	PDJNL3232P15	32	32	40,0	170	38,0	-7,0	DN..150608	512.153	513.023	515.018	511.024	514.128	15 IP
3879316	PDJNL4025R15	40	25	32,0	200	38,0	-7,0	DN..150608	512.153	513.023	515.018	511.024	514.128	15 IP



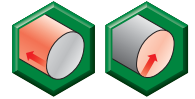
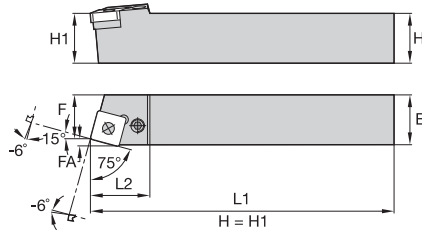
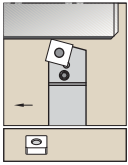
Tools for External Turning and Internal Boring



Tools for External Turning and Internal Boring

■ PDNN 62,5°

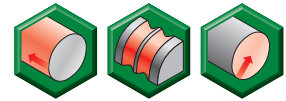
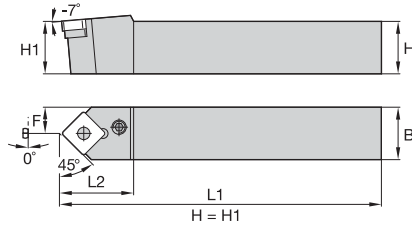
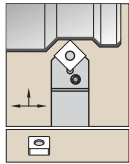
order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim pin	punch pin	lever	lever screw	Torx Plus
<b>right hand</b>													
3879319	PDNNR2525M15	25	25	12,5	150	36,0	DN..150608	512.153	513.023	515.018	511.024	514.128	15 IP
3900156	PDNNR3225P15	32	25	12,5	170	36,0	DN..150608	512.153	513.023	515.018	511.024	514.128	15 IP
3879322	PDNNR4025M15	40	25	12,5	150	36,0	DN..150608	512.153	513.023	515.018	511.024	514.128	15 IP
<b>left hand</b>													
3879320	PDNNL2525M15	25	25	12,5	150	36,0	DN..150608	512.153	513.023	515.018	511.024	514.128	15 IP
3900155	PDNNL3225P15	32	25	12,5	170	36,0	DN..150608	512.153	513.023	515.018	511.024	514.128	15 IP



## ■ PSBN 75°

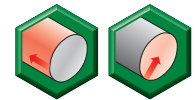
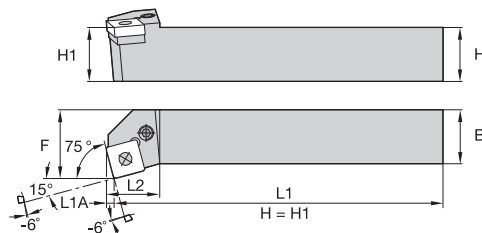
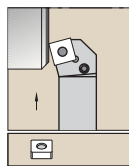
order number	catalogue number	H	B	F	L1	L2	FA	gage insert	shim	shim pin	punch pin	lever	lever screw	Torx Plus	
<b>right hand</b>															
3879324	PSBNR2020K12	20	20	17,0	125	26,0	3,1	SN..120408	512.063	513.023	515.018	511.023	514.123	15 IP	
3900158	PSBNR2525M12	25	25	22,0	150	26,0	—	SN..120408	512.063	513.023	515.018	511.023	514.123	15 IP	
3879333	PSBNR2525M15	25	25	22,0	150	36,0	3,8	SN..150612	512.025	513.025	515.022	511.025	514.125	15 IP	
3879330	PSBNR3232P15	32	32	27,0	170	33,0	3,8	SN..150612	512.025	513.025	515.022	511.025	514.125	15 IP	
3879327	PSBNR3232P19	32	32	27,0	170	40,0	4,6	SN..190612	512.083	513.033	515.022	511.033	514.133	25 IP	
3879334	PSBNR4040S19	40	40	35,0	250	38,0	4,6	SN..190612	512.083	513.033	515.022	511.033	514.133	25 IP	
3879331	PSBNR4040S25	40	40	35,0	250	47,0	5,9	SN..250724	512.092	513.038	515.028	511.038	514.138	30 IP	
<b>left hand</b>															
3879325	PSBNL2020K12	20	20	17,0	125	26,0	3,1	SN..120408	512.063	513.023	515.018	511.023	514.123	15 IP	
3900157	PSBNL2525M12	25	25	22,0	150	26,0	—	SN..120408	512.063	513.023	515.018	511.023	514.123	15 IP	
3879329	PSBNL2525M15	25	25	22,0	150	36,0	3,8	SN..150612	512.025	513.025	515.022	511.025	514.125	15 IP	
3879332	PSBNL3232P15	32	32	27,0	170	33,0	3,8	SN..150612	512.025	513.025	515.022	511.025	514.125	15 IP	
3879328	PSBNL3232P19	32	32	27,0	170	40,0	4,6	SN..190612	512.083	513.033	515.022	511.033	514.133	25 IP	
3879323	PSBNL4040S19	40	40	35,0	250	38,0	4,6	SN..190612	512.083	513.033	515.022	511.033	514.133	25 IP	
3879326	PSBNL4040S25	40	40	35,0	250	47,0	5,9	SN..250724	512.092	513.038	515.028	511.038	514.138	30 IP	
3900159	PSBNL5050T25	50	50	43,0	300	50,0	—	SN..250724	512.092	513.038	515.028	511.038	514.138	30 IP	





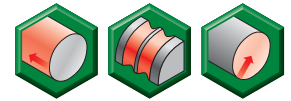
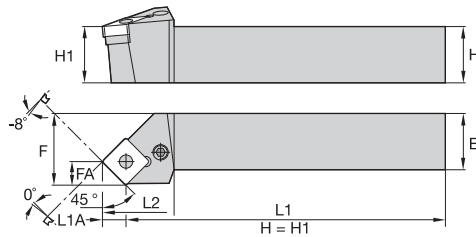
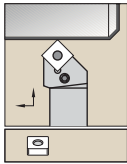
■ PSDN 45°

order number	catalogue number	H	B	F	L1	L2	gage insert						
								shim	shim pin	punch pin	lever	lever screw	Torx Plus
3879336	PSDNN1616H09	16	16	8,0	100	20,0	SN..090308	512.053	513.019	515.018	511.018	514.118	10 IP
3879335	PSDNN2020K12	20	20	10,0	125	26,0	SN..120408	512.063	513.023	515.018	511.023	514.123	15 IP
3879337	PSDNN2525M12	25	25	12,5	150	26,0	SN..120408	512.063	513.023	515.018	511.023	514.123	15 IP
3900160	PSDNN3225P15	32	25	12,5	170	33,0	SN..150612	512.025	513.025	515.022	511.025	514.125	15 IP
3900161	PSDNN3232P15	32	32	16,0	170	33,0	SN..150612	512.025	513.025	515.022	511.025	514.125	15 IP
3879338	PSDNN4040S25	40	40	20,0	250	47,0	SN..250724	512.092	513.038	515.028	511.038	514.138	30 IP



■ PSKN 75°

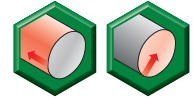
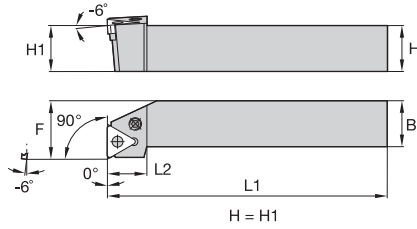
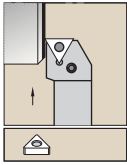
order number	catalogue number	H	B	F	L1	L2	L1A	gage insert						
									shim	shim pin	punch pin	lever	lever screw	Torx Plus
<b>right hand</b>														
3879340	PSKNR2020K12	20	20	25,0	125	23,0	3,1	SN..120408	512.063	513.023	515.018	511.023	514.123	15 IP
3879341	PSKNR2525M12	25	25	32,0	150	23,0	3,1	SN..120408	512.063	513.023	515.018	511.023	514.123	15 IP
3879708	PSKNR2525M15	25	25	32,0	150	32,0	3,8	SN..150612	512.025	513.025	515.022	511.025	514.125	15 IP
3879342	PSKNR3232P19	32	32	40,0	170	37,5	4,6	SN..190612	512.083	513.033	515.022	511.033	514.133	25 IP
3879710	PSKNR4040S19	40	40	50,0	250	37,5	4,6	SN..190612	512.083	513.033	515.022	511.033	514.133	25 IP
<b>left hand</b>														
3879709	PSKNL1616H09	16	16	20,0	100	20,0	2,2	SN..090308	512.053	513.019	515.018	511.018	514.118	10 IP
3879343	PSKNL2020K12	20	20	25,0	125	23,0	3,1	SN..120408	512.063	513.023	515.018	511.023	514.123	15 IP
3879339	PSKNL2525M12	25	25	32,0	150	23,0	3,1	SN..120408	512.063	513.023	515.018	511.023	514.123	15 IP
3879344	PSKNL3232P19	32	32	40,0	170	37,5	4,6	SN..190612	512.083	513.033	515.022	511.033	514.133	25 IP
3879345	PSKNL4040S19	40	40	50,0	250	37,5	4,6	SN..190612	512.083	513.033	515.022	511.033	514.133	25 IP



## ■ PSSN 45°

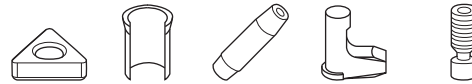
order number	catalogue number	H	B	F	L1	L2	FA	L1A	gage insert	shim	shim pin	punch pin	lever	lever screw	Torx Plus
<b>right hand</b>															
3879351	PSSNR1616H09	16	16	20,0	100	23,0	6,1	6,1	SN..090308	512.053	513.019	515.018	511.018	514.118	10 IP
3879359	PSSNR2020K09	20	20	25,0	125	26,0	6,1	6,1	SN..090308	512.053	513.019	515.018	511.018	514.118	10 IP
3879348	PSSNR2020K12	20	20	25,0	125	28,0	8,3	8,3	SN..120408	512.063	513.023	515.018	511.023	514.123	15 IP
3879352	PSSNR2525M12	25	25	32,0	150	28,0	8,3	8,3	SN..120408	512.063	513.023	515.018	511.023	514.123	15 IP
3879349	PSSNR2525M15	25	25	32,0	150	32,0	10,2	10,2	SN..150612	512.025	513.025	515.022	511.025	514.125	15 IP
3879360	PSSNR3225P12	32	25	32,0	170	29,0	8,3	8,3	SN..120408	512.063	513.023	515.018	511.023	514.123	15 IP
3879362	PSSNR3225P15	32	25	32,0	170	32,0	10,2	10,2	SN..150612	512.025	513.025	515.022	511.025	514.125	15 IP
3879354	PSSNR3232P15	32	32	40,0	170	32,0	10,0	11,5	SN..150612	512.025	513.025	515.022	511.025	514.125	15 IP
3879350	PSSNR3232P19	32	32	40,0	170	37,5	12,5	12,5	SN..190612	512.083	513.033	515.022	511.033	514.133	25 IP
3879361	PSSNR4040S19	40	40	50,0	250	37,5	12,5	12,5	SN..190612	512.083	513.033	515.022	511.033	514.133	25 IP
<b>left hand</b>															
3879363	PSSNL1616H09	16	16	20,0	100	23,0	6,1	6,1	SN..090308	512.053	513.019	515.018	511.018	514.118	10 IP
3879844	PSSNL2020K09	20	20	25,0	125	26,0	6,1	6,1	SN..090308	512.053	513.019	515.018	511.018	514.118	10 IP
3879347	PSSNL2020K12	20	20	25,0	125	28,0	8,3	8,3	SN..120408	512.063	513.023	515.018	511.023	514.123	15 IP
3879353	PSSNL2525M12	25	25	32,0	150	28,0	8,3	8,3	SN..120408	512.063	513.023	515.018	511.023	514.123	15 IP
3879355	PSSNL2525M15	25	25	32,0	150	32,0	10,2	10,2	SN..150612	512.025	513.025	515.022	511.025	514.125	15 IP
3879358	PSSNL3225P12	32	25	32,0	170	29,0	8,3	8,3	SN..120408	512.063	513.023	515.018	511.023	—	15 IP
3879843	PSSNL3225P15	32	25	32,0	170	32,0	10,2	10,2	SN..150612	512.025	513.025	515.022	511.025	514.125	15 IP
3879712	PSSNL3232P15	32	32	40,0	170	32,0	10,2	10,2	SN..150612	512.025	513.025	515.022	511.025	514.125	15 IP
3879356	PSSNL3232P19	32	32	40,0	170	37,5	12,5	12,5	SN..190612	512.083	513.033	515.022	511.033	514.133	25 IP
3879357	PSSNL4040S19	40	40	50,0	250	37,5	12,5	12,5	SN..190612	512.083	513.033	515.022	511.033	514.133	25 IP
3879711	PSSNL4040S25	40	40	50,0	250	50,0	16,0	16,0	SN..250724	512.092	513.038	515.028	511.038	514.138	30 IP

Tools for External Turning and Internal Boring

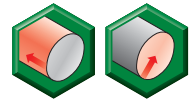
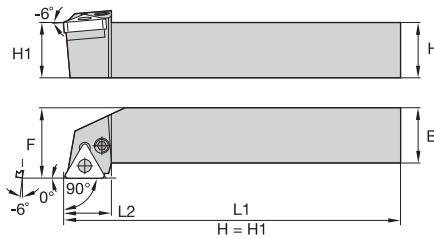
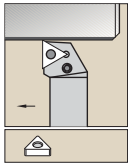


Tools for External Turning and Internal Boring

■ PTFN 90°



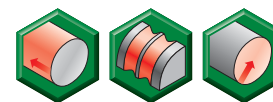
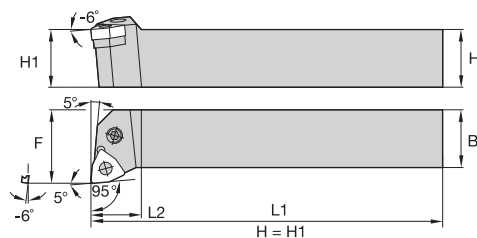
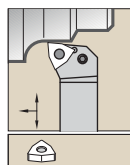
order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim pin	punch pin	lever	lever screw	Torx Plus
<b>right hand</b>													
3879369	PTFNR1616H16	16	16	20,0	100	20,0	TN..160408	512.013	513.018	515.018	511.018	514.118	10 IP
3879367	PTFNR2020K16	20	20	25,0	125	20,0	TN..160408	512.013	513.018	515.018	511.018	514.118	10 IP
3879364	PTFNR2525M16	25	25	32,0	150	20,0	TN..160408	512.013	513.018	515.018	511.018	514.118	10 IP
3879372	PTFNR2525M22	25	25	32,0	150	26,0	TN..220408	512.023	513.023	515.018	511.023	514.123	15 IP
3879370	PTFNR3225P22	32	25	32,0	170	26,0	TN..220408	512.023	513.023	515.018	511.023	514.123	15 IP
3879845	PTFNR3232P22	32	32	40,0	170	26,0	TN..220408	512.023	513.023	515.018	511.023	514.123	15 IP
<b>left hand</b>													
3879365	PTFNL1616H16	16	16	20,0	100	20,0	TN..160408	512.013	513.018	515.018	511.018	514.118	10 IP
3879366	PTFNL2020K16	20	20	25,0	125	20,0	TN..160408	512.013	513.018	515.018	511.018	514.118	10 IP
3879368	PTFNL2525M16	25	25	32,0	150	20,0	TN..160408	512.013	513.018	515.018	511.018	514.118	10 IP



## ■ PTGN 90°

order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim pin	punch pin	lever	lever screw	Torx Plus
<b>right hand</b>													
3879385	PTGNR1616H16	16	16	20,0	100	20,0	TN..160408	512.013	513.018	515.018	511.018	514.118	10 IP
3879389	PTGNR2020K16	20	20	25,0	125	20,0	TN..160408	512.013	513.018	515.018	511.018	514.118	10 IP
3879390	PTGNR2525M16	25	25	32,0	150	20,0	TN..160408	512.013	513.018	515.018	511.018	514.118	10 IP
3879387	PTGNR2525M22	25	25	32,0	150	26,0	TN..220408	512.023	513.023	515.018	511.023	514.123	15 IP
3879846	PTGNR3225P22	32	25	32,0	170	28,0	TN..220408	512.023	513.023	515.018	511.023	514.123	15 IP
3879391	PTGNR3232P22	32	32	40,0	170	26,0	TN..220408	512.023	513.023	515.018	511.023	514.123	15 IP
3900163	PTGNR4040T27	40	40	50,0	300	31,0	TN..270612	512.031	513.025	515.022	511.028	514.128	15 IP
<b>left hand</b>													
3879383	PTGNL1616H16	16	16	20,0	100	20,0	TN..160408	512.013	513.018	515.018	511.018	514.118	10 IP
3879384	PTGNL2020K16	20	20	25,0	125	20,0	TN..160408	512.013	513.018	515.018	511.018	514.118	10 IP
3879388	PTGNL2525M16	25	25	32,0	150	20,0	TN..160408	512.013	513.018	515.018	511.018	514.118	10 IP
3879386	PTGNL2525M22	25	25	32,0	150	26,0	TN..220408	512.023	513.023	515.018	511.023	514.123	15 IP
3879392	PTGNL3232P22	32	32	40,0	170	26,0	TN..220408	512.023	513.023	515.018	511.023	514.123	15 IP
3900162	PTGNL4040T27	40	40	50,0	300	31,0	TN..270612	512.031	513.025	515.022	511.028	514.128	15 IP

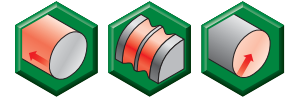
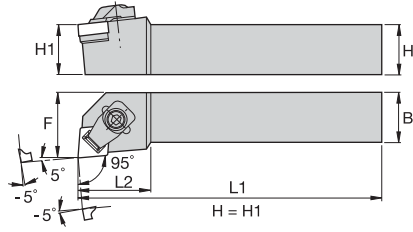
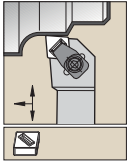




Tools for External Turning and Internal Boring

■ PWLN 95°

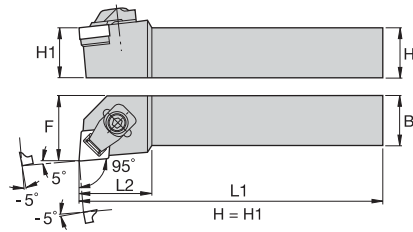
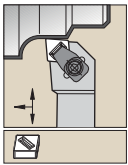
order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim pin	punch pin	lever	lever screw	Torx Plus
<b>right hand</b>													
3879405	PWLN1616H06	16	16	20,0	100	14,0	WN..060408	512.134	513.018	515.018	511.018	514.118	10 IP
3879407	PWLN2020K06	20	20	25,0	125	14,0	WN..060408	512.134	513.018	515.018	511.018	514.118	10 IP
3879408	PWLN2020K08	20	20	25,0	125	20,0	WN..080408	512.135	513.023	515.018	511.023	514.123	15 IP
3900167	PWLN2525M06	25	25	32,0	150	20,0	WN..060408	512.134	513.018	515.018	511.018	514.118	10 IP
3879409	PWLN2525M08	25	25	32,0	150	26,0	WN..080408	512.135	513.023	515.018	511.023	514.123	15 IP
3900164	PWLN3232P08	32	32	40,0	170	26,0	WN..080408	512.135	513.023	515.018	511.023	514.123	15 IP
<b>left hand</b>													
3879410	PWLN1616H06	16	16	20,0	100	14,0	WN..060408	512.134	513.018	515.018	511.018	514.118	10 IP
3879406	PWLN2020K06	20	20	25,0	125	14,0	WN..060408	512.134	513.018	515.018	511.018	514.118	10 IP
3879403	PWLN2020K08	20	20	25,0	125	20,0	WN..080408	512.135	513.023	515.018	511.023	514.123	15 IP
3900166	PWLN2525M06	25	25	32,0	150	20,0	WN..060408	512.134	513.018	515.018	511.018	514.118	10 IP
3879404	PWLN2525M08	25	25	32,0	150	26,0	WN..080408	512.135	513.023	515.018	511.023	514.123	15 IP
3900165	PWLN3232P08	32	32	40,0	170	26,0	WN..080408	512.135	513.023	515.018	511.023	514.123	15 IP



## ■ CCLN-MX 95°

order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim screw	hex	clamp assembly	hex
<b>right hand</b>												
3032691	CCLNR2525M12MX7	25	25	32,0	150	32,0	CN.X120708	552.221	554.252	2.5 mm	551.316	4 mm
3032713	CCLNR3225P12MX7	32	25	32,0	170	32,0	CN.X120708	552.221	554.252	2.5 mm	551.316	4 mm
<b>left hand</b>												
3032692	CCLNL2525M12MX7	25	25	32,0	150	32,0	CN.X120708	552.221	554.252	2.5 mm	551.316	4 mm

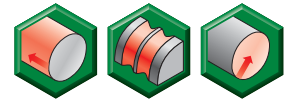
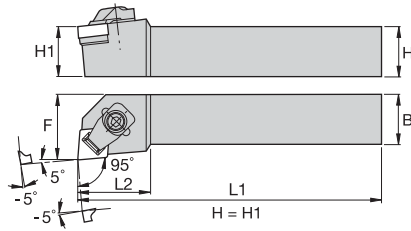
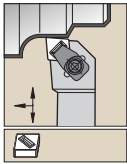
NOTE: MX — clamping version is shown.



## ■ CCLN-MN 95°

order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim screw	hex	thrust plate	clamp assembly	hex
<b>right hand</b>													
3032715	CCLNR2525M12MN4	25	25	32,0	150	32,0	CN.N120408	552.220	554.252	2.5 mm	557.111	551.317	4 mm
3032717	CCLNR2525M12MN7	25	25	32,0	150	32,0	CN.N120708	552.221	554.252	2.5 mm	557.111	551.317	4 mm
3032719	CCLNR3225P12MN7	32	25	32,0	170	32,0	CN.N120708	552.221	554.252	2.5 mm	—	551.317	4 mm
<b>left hand</b>													
3032716	CCLNL2525M12MN4	25	25	32,0	150	32,0	CN.N120408	552.220	554.252	2.5 mm	557.111	551.317	4 mm

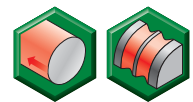
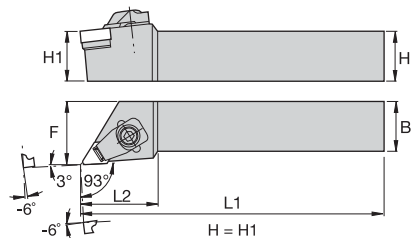
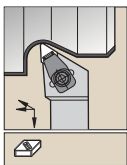
NOTE: MX — clamping version is shown.



■ CCLN-MF 95°

order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim screw	hex	chipbreaker	clamp assembly	hex
<b>right hand</b>													
3032723	CCLNR2525M12MF7	25	25	32,0	150	32,0	CN.N120708	552.221	554.252	2.5 mm	557.125	551.317	4 mm

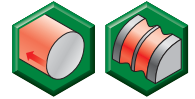
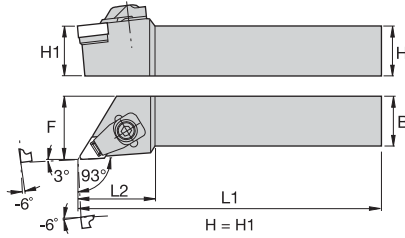
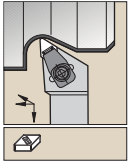
NOTE: MX — clamping version is shown.



■ CDJN-MX 93°

order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim screw	hex	clamp assembly	hex
<b>right hand</b>												
3032726	CDJNR2525M15MX7	25	25	32,0	150	38,0	DN.X150708	552.228	554.252	2.5 mm	551.332	4 mm
<b>left hand</b>												
3032727	CDJNL2525M15MX7	25	25	32,0	150	38,0	DN.X150708	552.228	554.252	2.5 mm	551.332	4 mm

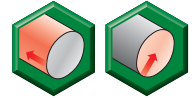
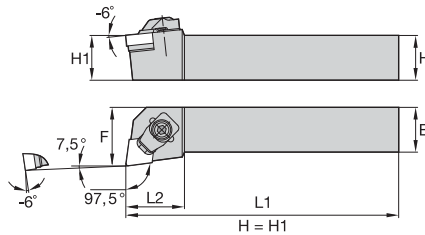
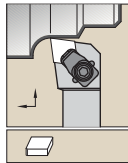
NOTE: MX — clamping version is shown.



## ■ CDJN-MN 93°

order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim screw	hex	thrust plate	clamp assembly	hex
<b>right hand</b>													
3032728	CDJNR2525M15MN7	25	25	32,0	150	38,0	DN.N150708	552.228	554.252	2.5 mm	557.111	551.317	4 mm
3032545	CDJNR3225P15MN7	32	25	32,0	170	38,0	DN.N150708	552.228	554.252	2.5 mm	557.111	551.317	4 mm
<b>left hand</b>													
3032544	CDJNL2525M15MN7	25	25	32,0	150	38,0	DN.N150708	552.228	554.252	2.5 mm	557.111	551.317	4 mm
3032546	CDJNL3225P15MN7	32	25	32,0	170	38,0	DN.N150708	552.228	554.252	2.5 mm	557.111	551.317	4 mm

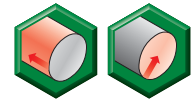
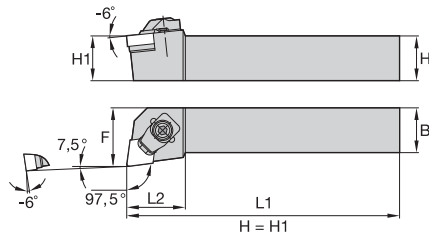
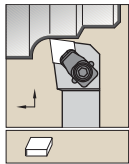
NOTE: MX — clamping version is shown.



## ■ CELN-MF 97,5°

order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim screw	hex	chipbreaker	clamp assembly	hex
<b>right hand</b>													
3879700	CELNR2525M13MF7	25	25	32,5	153	32,0	EN.N130708	552.240	554.252	2.5 mm	557.125	551.317	4 mm
<b>left hand</b>													
3879698	CELNL2525M13MF7	25	25	32,5	153	32,0	EN.N130708	552.240	554.252	2.5 mm	557.125	551.317	4 mm

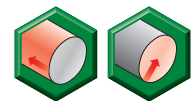
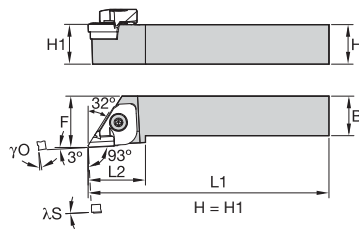
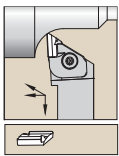
NOTE: MN — clamping version is shown.



■ CELN-MN 97,5°

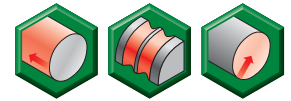
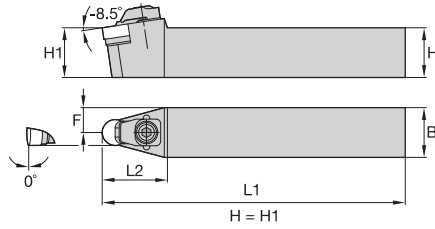
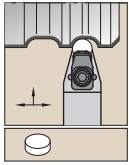
order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim screw	hex	thrust plate	clamp assembly	hex
<b>right hand</b>													
3879701	CELNR2525M13MN7	25	25	32,5	153	32,0	EN.N130708	552.240	554.252	2.5 mm	557.111	551.317	4 mm
<b>left hand</b>													
3879699	CELNL2525M13MN7	25	25	32,5	153	32,0	EN.N130708	552.240	554.252	2.5 mm	557.111	551.317	4 mm

NOTE: MN – clamping version is shown.



■ CKJN

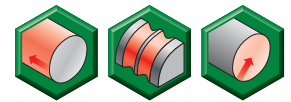
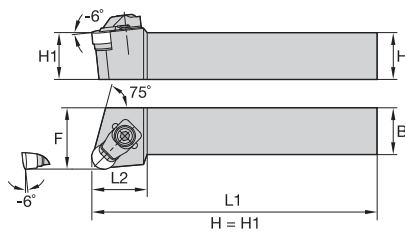
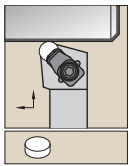
order number	catalogue number	H	B	F	L1	L2	λS°	γ0°	gage insert	shim	shim pin	clamp	clamp assembly	hex	hex wrench	pin
<b>right hand</b>																
3870064	CKJNR2525M16	25	25	32,0	150	36,0	0.0	-6.0	KN..160410R	512.100	513.020	551.129	—	4 mm	170.004	513.123
3870065	CKJNR3225P16	32	25	32,0	170	33,0	0.0	-6.0	KN..160410R	512.100	513.020	551.129	—	4 mm	170.004	513.123
<b>left hand</b>																
3870042	CKJNL2525M16	25	25	32,0	150	36,0	0.0	-6.0	KN..160410L	512.101	513.020	—	551.130	4 mm	170.004	513.123
3870063	CKJNL3225P16	32	25	32,0	170	33,0	0.0	-6.0	KN..160410L	512.101	513.020	—	551.130	4 mm	170.004	513.123



## ■ CRDN-MN

order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim screw	hex	thrust plate	clamp assembly	hex
3032549	CRDNN2525M12MN4	25	25	12,5	150	30,0	RN.N120400	552.229	554.252	2.5 mm	557.111	551.333	4 mm
3032551	CRDNN2525M12MN7	25	25	12,5	150	30,0	RN.N120700	552.230	554.252	2.5 mm	557.111	551.333	4 mm
3032550	CRDNN3225P12MN4	32	25	12,5	170	30,0	RN.N120400	552.229	554.252	2.5 mm	557.111	551.333	4 mm
3032552	CRDNN3225P12MN7	32	25	12,5	170	30,0	RN.N120700	552.230	554.252	2.5 mm	557.111	551.333	4 mm

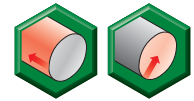
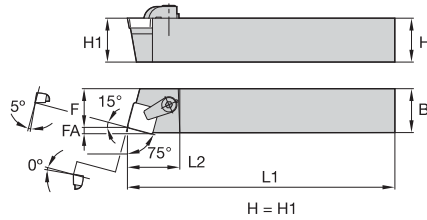
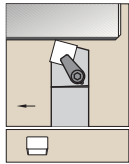
NOTE: MN — clamping version is shown.



## ■ CRSN-MN

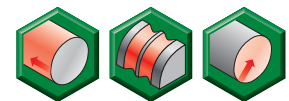
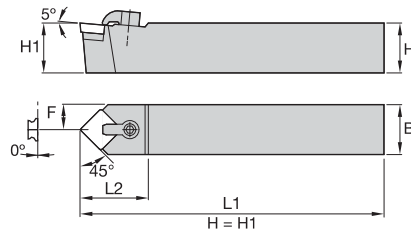
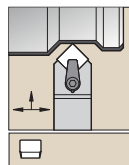
order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim screw	hex	thrust plate	clamp assembly	hex
<b>right hand</b>													
3032677	CRSNR2525M12MN7	25	25	32,0	150	26,0	RN.N120700	552.230	554.252	2.5 mm	557.111	551.333	4 mm
3032675	CRSNR3225P12MN4	32	25	32,0	170	26,0	RN.N120400	552.229	554.252	2.5 mm	557.111	551.333	4 mm
3032679	CRSNR3225P12MN7	32	25	32,0	170	26,0	RN.N120700	552.230	554.252	2.5 mm	557.111	551.333	4 mm
<b>left hand</b>													
3032678	CRSNL2525M12MN7	25	25	32,0	150	26,0	RN.N120700	552.230	554.252	2.5 mm	557.111	551.333	4 mm
3032676	CRSNL3225P12MN4	32	25	32,0	170	26,0	RN.N120400	552.229	554.252	2.5 mm	557.111	551.333	4 mm
3032680	CRSNL3225P12MN7	32	25	32,0	170	26,0	RN.N120700	552.230	554.252	2.5 mm	557.111	551.333	4 mm

NOTE: MN — clamping version is shown.



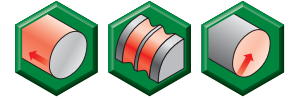
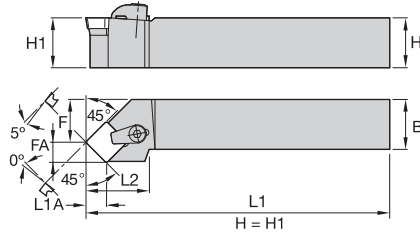
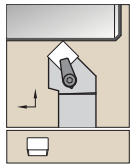
■ CSBP 75°

order number	catalogue number	H	B	F	L1	L2	FA	gage insert	shim	shim screw	hex	clamp	clamp screw	hex	
<b>right hand</b>															
3870068	CSBPR2020K12	20	20	17,0	125	30,0	3,1	SP..120308	SM840	MS111	2 mm	CKM10	STCM8	4 mm	
3870069	CSBPR2525M12	25	25	22,0	150	30,0	3,1	SP..120308	SM840	MS111	2 mm	CKM10	STCM8	4 mm	
<b>left hand</b>															
3870066	CSBPL2020K12	20	20	17,0	125	30,0	3,1	SP..120308	SM840	MS111	2 mm	CKM10	STCM8	4 mm	



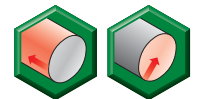
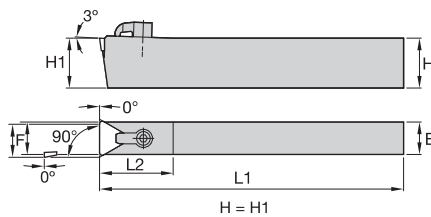
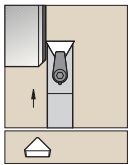
■ CSDP 45°

order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim screw	hex	clamp	clamp screw	hex
3870070	CSDPN1616H09	16	16	8,0	100	25,0	SP..090308	SM820	MS959	—	CKM7	STCM9	2.5 mm
3870071	CSDPN2020K12	20	20	10,0	125	32,0	SP..120308	SM840	MS111	2 mm	CKM10	STCM8	4 mm
3870072	CSDPN2525M12	25	25	12,5	150	32,0	SP..120308	SM840	MS111	2 mm	CKM9	STCM4	4 mm



## ■ CSSP 45°

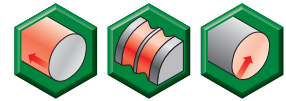
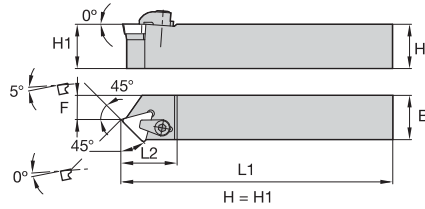
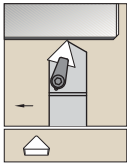
order number	catalogue number	H	B	F	L1	L2	FA	L1A	gage insert	shim	shim screw	hex	clamp	clamp screw	hex
<b>right hand</b>															
3870074	CSSPR2020K12	20	20	25,0	125	32,0	8,7	8,3	SP..120308	SM840	MS111	2 mm	CKM10	STCM8	4 mm
3870075	CSSPR2525M12	25	25	32,0	150	32,0	8,7	8,3	SP..120308	SM840	MS111	2 mm	CKM9	STCM4	4 mm
<b>left hand</b>															
3870073	CSSPL2525M12	25	25	32,0	150	32,0	8,7	8,3	SP..120308	SM840	MS111	2 mm	CKM9	STCM4	4 mm



## ■ CTCN 90°

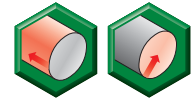
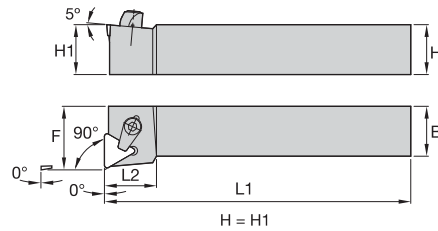
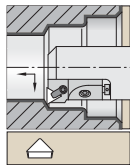
order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim screw	hex	clamp	clamp screw	hex
3870080	CTCPN4018R22	40	18	19,2	200	41,0	TP..220408	SM837	MS125	2.5 mm	CKM13	STCM4	4 mm
3870076	CTCPN2510M11	25	10	10,0	150	26,0	TP..110304	SM819	MS960	—	CKM7	STCM5	2.5 mm
3870077	CTCPN2514M16	25	14	14,4	150	28,0	TP..160308	SM841	MS111	2 mm	CKM13	STCM4	4 mm
3870078	CTCPN2518M22	25	18	19,2	150	41,0	TP..220408	SM837	MS125	2.5 mm	CKM13	STCM4	4 mm
3870079	CTCPN2520M22	25	20	20,2	150	41,0	TP..220408	SM837	MS125	2.5 mm	CKM13	STCM4	4 mm





■ CTDP 45°

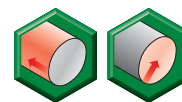
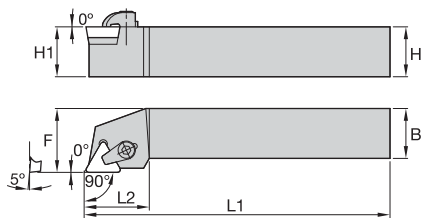
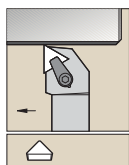
order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim screw	clamp	clamp screw	hex
<b>right hand</b>												
3870083	CTDPR1212F11	12	12	6,0	80	22,0	TP..110304	SM819	MS960	CKM19	STCM9	2.5 mm
<b>left hand</b>												
3870082	CTDPL1212F11	12	12	6,0	80	22,0	TP..110304	SM819	MS960	CKM19	STCM9	2.5 mm



■ CTFP 90°

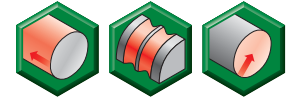
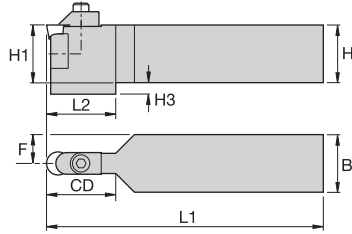
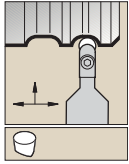
order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim screw	hex	clamp	clamp screw	hex
<b>right hand</b>													
3870087	CTFPR2020K16	20	20	25,0	125	29,0	TP..160308	SM841	MS111	2 mm	CKM10	STCM8	4 mm
3870088	CTFPR2525M16	25	25	32,0	150	29,0	TP..160308	SM841	MS111	2 mm	CKM9	STCM4	4 mm
<b>left hand</b>													
3870086	CTFPL2525M16	25	25	32,0	150	29,0	TP..160308	SM841	MS111	2 mm	CKM9	STCM4	4 mm





## ■ CTGP 90°

order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim screw	hex	clamp	clamp screw	hex
<b>right hand</b>													
3870092	CTGPR1212F11	12	12	16,0	80	20,0	TP..110304	SM819	MS960	—	CKM19	STCM9	2.5 mm
3870103	CTGPR1616H11	16	16	20,0	100	20,0	TP..110304	SM819	MS960	—	CKM19	STCM9	2.5 mm
3870104	CTGPR2020K11	20	20	25,0	125	20,0	TP..110304	SM819	MS960	—	CKM19	STCM9	2.5 mm
3870105	CTGPR2020K16	20	20	25,0	125	26,0	TP..160308	SM841	MS111	2 mm	CKM10	STCM8	4 mm
3870106	CTGPR2525M16	25	25	32,0	150	26,0	TP..160308	SM841	MS111	2 mm	CKM9	STCM4	4 mm
3870107	CTGPR2525M22	25	25	32,0	150	30,0	TP..220408	SM837	MS125	2.5 mm	CKM9	STCM4	4 mm
<b>left hand</b>													
3870089	CTGPL1212F11	12	12	16,0	80	20,0	TP..110304	SM819	MS960	—	CKM19	STCM9	2.5 mm
3870090	CTGPL2020K16	20	20	25,0	125	26,0	TP..160308	SM841	MS111	2 mm	CKM10	STCM8	4 mm
3870091	CTGPL2525M16	25	25	32,0	150	26,0	TP..160308	SM841	MS111	2 mm	CKM9	STCM4	4 mm

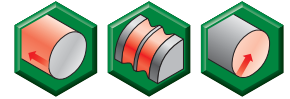
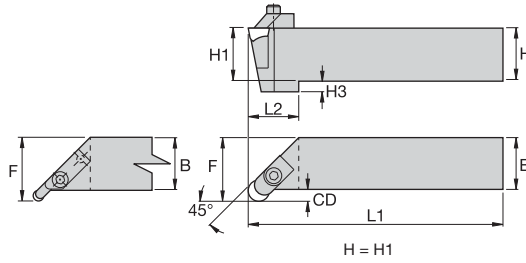
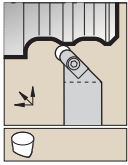


Tools for External Turning and Internal Boring

■ CRDP

order number	catalogue number	H	B	F	L1	L2	H3	CD	gage insert	nest	clamp	clamp screw	hex
3871510	CRDPN2525M06V	25	25	12,5	151	—	—	19,0	R..X060400E	NST1	CM214	MS1321	2.5 mm
3871512	CRDPN3232P09V	32	32	16,0	171	—	—	29,0	R..X090700E	NST2	CM219	CS412	9/64
3871511	CRDPN2525M09V	25	25	12,5	151	—	—	29,0	R..X090700E	NST2	CM219	CS412	9/64
3871514	CRDPN3232P12V	32	32	16,0	171	—	—	38,0	R..X120700E	NST3	CM216	CS412	9/64
3871513	CRDPN2525M12V	25	25	12,5	151	38,1	6,4	38,0	R..X120700E	NST3	CM216	CS412	9/64

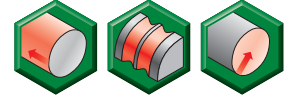
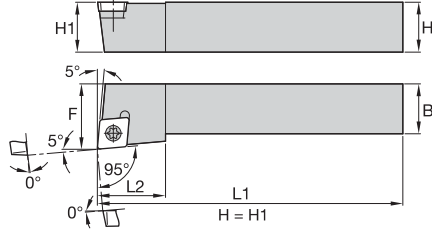
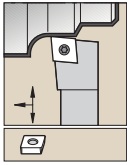
NOTE: CRDP toolholders are able to use RPGX and RCGX insert styles.



## ■ CRGP

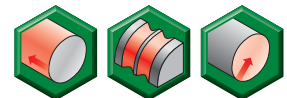
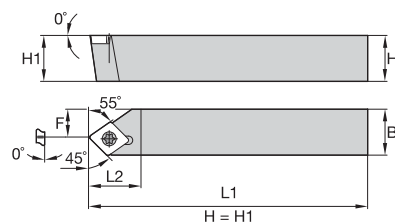
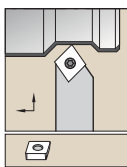
order number	catalogue number	H	B	F	L1	L2	H3	CD	gage insert	nest	clamp	clamp screw	hex
<b>right hand</b>													
3871515	CRGPR2525M06V	25	25	32,0	151	—	—	7,3	R..X060400E	NST1	CM214	MS1321	2.5 mm
3871519	CRGPR3232P09V	32	32	40,0	171	—	—	8,3	R..X090700E	NST2	CM219	CS412	9/64
3871517	CRGPR2525M09V	25	25	32,0	151	—	—	7,3	R..X090700E	NST2	CM219	CS412	9/64
3871521	CRGPR2525M12V	25	25	32,0	151	27,1	6,4	7,3	R..X120700E	NST3	CM216	CS412	9/64
<b>left hand</b>													
3871516	CRGPL2525M06V	25	25	32,0	151	—	—	7,3	R..X060400E	NST1	CM214	MS1321	2.5 mm
3871520	CRGPL3232P09V	32	32	40,0	171	—	—	8,3	R..X090700E	NST2	CM219	CS412	9/64
3871518	CRGPL2525M09V	25	25	32,0	151	—	—	7,3	R..X090700E	NST2	CM219	CS412	9/64
3871524	CRGPL3232P12V	32	32	40,0	171	37,1	—	8,3	R..X120700E	NST3	CM216	CS412	9/64
3871522	CRGPL2525M12V	25	25	32,0	151	27,1	6,4	7,3	R..X120700E	NST3	CM216	CS412	9/64

NOTE: CRGP toolholders are able to use RPGX and RCGX insert styles.



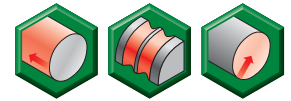
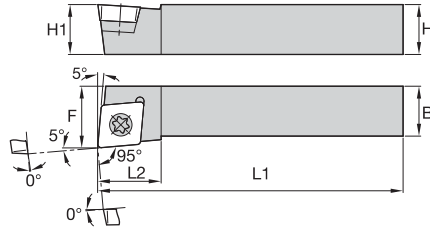
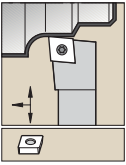
■ SCLC 95°

order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim screw	hex	insert screw	Torx
<b>right hand</b>												
3900169	SCLCR1010E06	10	10	12,0	70	12,0	CC..060204	—	—	—	MS1153	T7
3900172	SCLCR1212F06	12	12	16,0	80	12,0	CC..060204	—	—	—	MS1153	T7
3900170	SCLCR1212F09	12	12	16,0	80	16,0	CC..09T308	—	—	—	MS1155	T15
3879416	SCLCR1616H09	16	16	20,0	100	16,0	CC..09T308	SKCP343	SRS3	3.5 mm	MS1156	T15
3879417	SCLCR2020K09	20	20	25,0	125	16,0	CC..09T308	SKCP343	SRS3	3.5 mm	MS1156	T15
3879414	SCLCR2020K12	20	20	25,0	125	20,0	CC..120408	SKCP453	SRS4	4 mm	MS1158	T15
3879418	SCLCR2525M12	25	25	32,0	150	19,8	CC..120408	SKCP453	SRS4	4 mm	MS1158	T15
<b>left hand</b>												
3900171	SCLCL1010E06	10	10	12,0	70	12,0	CC..060204	—	—	—	MS1153	T7
3900173	SCLCL1212F06	12	12	16,0	80	12,0	CC..060204	—	—	—	MS1153	T7
3900168	SCLCL1212F09	12	12	16,0	80	16,0	CC..09T308	—	—	—	MS1155	T15
3879411	SCLCL1616H09	16	16	20,0	100	16,0	CC..09T308	SKCP343	SRS3	3.5 mm	MS1156	T15
3879412	SCLCL2020K09	20	20	25,0	125	16,0	CC..09T308	SKCP343	SRS3	3.5 mm	MS1156	T15
3879415	SCLCL2020K12	20	20	25,0	125	20,0	CC..120408	SKCP453	SRS4	4 mm	MS1158	T15
3879413	SCLCL2525M12	25	25	32,0	150	19,8	CC..120408	SKCP453	SRS4	4 mm	MS1158	T15



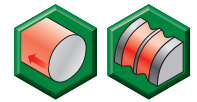
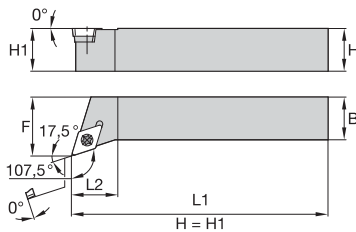
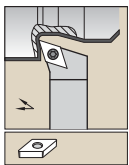
■ SCDP 45°

order number	catalogue number	H	B	F	L1	L2	gage insert	insert screw	Torx
<b>right hand</b>									
5094163	SCDPR1212H06	12	12	7,0	100	14,0	CP..060203	MS1153	T7
<b>left hand</b>									
5094162	SCDPL1212H06	12	12	7,0	100	14,0	CP..060203	MS1153	T7



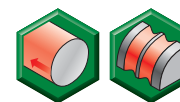
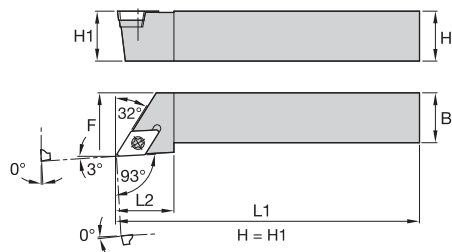
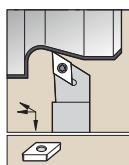
## ■ SCLP 95°

order number	catalogue number	H	B	F	L1	L2	gage insert	insert screw	Torx
<b>right hand</b>									
5094217	SCLPR1010M06	10	10	11,0	150	11,4	CP..060203	MS1153	T7
5094218	SCLPR1212M06	12	12	13,0	150	11,4	CP..060203	MS1153	T7
<b>left hand</b>									
5094212	SCLPL1212M06	12	12	13,0	150	11,4	CP..060203	MS1153	T7



## ■ SDHC 107,5°

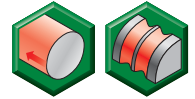
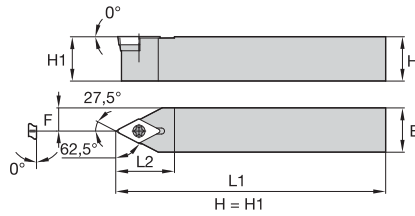
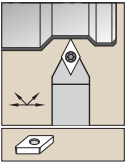
order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim screw	hex	insert screw	Torx
<b>right hand</b>												
3879435	SDHCR1616H11	16	16	20,0	100	20,0	DC..11T308	SKDP343	SRS3	3.5 mm	MS1156	T15
3879437	SDHCR2020K11	20	20	25,0	125	20,0	DC..11T308	SKDP343	SRS3	3.5 mm	MS1156	T15
3879440	SDHCR2525M11	25	25	32,0	150	20,0	DC..11T308	SKDP343	SRS3	3.5 mm	MS1156	T15
3879436	SDHCR2525M15	25	25	32,0	150	25,0	DC..150408	SKDP453	SRS4	4 mm	MS1158	T15
<b>left hand</b>												
3879433	SDHCL1616H11	16	16	20,0	100	20,0	DC..11T308	SKDP343	SRS3	3.5 mm	MS1156	T15
3879439	SDHCL2020K11	20	20	25,0	125	20,0	DC..11T308	SKDP343	SRS3	3.5 mm	MS1156	T15
3879438	SDHCL2525M11	25	25	32,0	150	20,0	DC..11T308	SKDP343	SRS3	3.5 mm	MS1156	T15
3879434	SDHCL2525M15	25	25	32,0	150	25,0	DC..150408	SKDP453	SRS4	4 mm	MS1158	T15



Tools for External Turning and Internal Boring

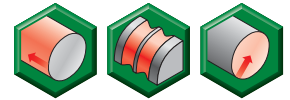
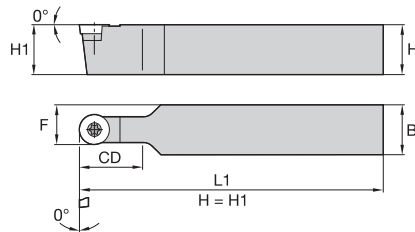
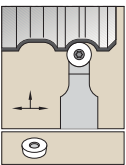
■ SDJC 93°

order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim screw	hex	insert screw	Torx
<b>right hand</b>												
3879464	SDJCR1010M07	10	10	12,0	150	16,0	DC..070204	—	—	—	MS1153	T7
3899890	SDJCR1212F07	12	12	16,0	80	16,0	DC..070204	—	—	—	MS1153	T7
3900177	SDJCR1212F11	12	12	16,0	80	22,0	DC..11T308	—	—	—	MS1155	T15
3879456	SDJCR1616H07	16	16	20,0	100	16,0	DC..070204	—	—	—	MS1153	T7
3879459	SDJCR1616H11	16	16	20,0	100	22,0	DC..11T308	SKDP343	SRS3	3.5 mm	MS1156	T15
3879458	SDJCR2020K07	20	20	25,0	125	16,0	DC..070204	—	—	—	MS1153	T7
3879460	SDJCR2020K11	20	20	25,0	125	22,0	DC..11T308	SKDP343	SRS3	3.5 mm	MS1156	T15
3879457	SDJCR2020K15	20	20	25,0	125	32,0	DC..150408	SKDP453	SRS4	4 mm	MS1158	T15
3879461	SDJCR2525M11	25	25	32,0	150	22,0	DC..11T308	SKDP343	SRS3	3.5 mm	MS1156	T15
3879463	SDJCR2525M15	25	25	32,0	150	32,0	DC..150408	SKDP453	SRS4	4 mm	MS1158	T15
3900175	SDJCR3225P15	32	25	32,0	170	32,0	DC..150408	SKDP453	SRS4	4 mm	MS1158	T15
<b>left hand</b>												
3899892	SDJCL1010E07	10	10	12,0	70	16,0	DC..070204	—	—	—	MS1153	T7
3899891	SDJCL1212F07	12	12	16,0	80	16,0	DC..070204	—	—	—	MS1153	T7
3900176	SDJCL1212F11	12	12	16,0	80	22,0	DC..11T308	—	—	—	MS1155	T15
3879441	SDJCL1616H07	16	16	20,0	100	16,0	DC..070204	—	—	—	MS1153	T7
2024450	SDJCL1616H11	16	16	20,0	100	21,0	DC..11T3..	—	—	—	12148038800	T15
3879454	SDJCL1616H11	16	16	20,0	100	22,0	DC..11T308	SKDP343	SRS3	3.5 mm	MS1156	T15
3879442	SDJCL2020K07	20	20	25,0	125	16,0	DC..070204	—	—	—	MS1153	T7
3879462	SDJCL2020K11	20	20	25,0	125	22,0	DC..11T308	SKDP343	SRS3	3.5 mm	MS1156	T15
3879848	SDJCL2020K15	20	20	25,0	125	32,0	DC..150408	SKDP453	SRS4	4 mm	MS1158	T15
3879453	SDJCL2525M11	25	25	32,0	150	22,0	DC..11T308	SKDP343	SRS3	3.5 mm	MS1156	T15
3879455	SDJCL2525M15	25	25	32,0	150	32,0	DC..150408	SKDP453	SRS4	4 mm	MS1158	T15
3900174	SDJCL3225P15	32	25	32,0	170	32,0	DC..150408	SKDP453	SRS4	4 mm	MS1158	T15



## SDNC 62,5°

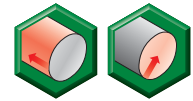
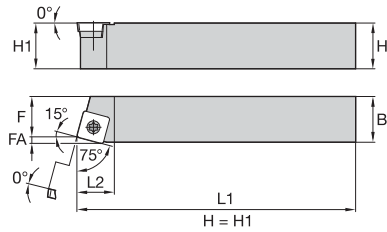
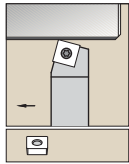
order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim screw	hex	insert screw	Torx
<b>left hand</b>												
3879468	SDNCN0808L07	8	8	4,0	140	16,0	DC..070204	—	—	—	MS1153	T7
3879469	SDNCN1010M07	10	10	5,0	150	16,0	DC..070204	—	—	—	MS1153	T7
3900178	SDNCN1212F11	12	12	6,0	80	22,0	DC..11T308	SKDP343	SRS3	3.5 mm	MS1156	T15
3879465	SDNCN1616H11	16	16	8,0	100	22,0	DC..11T308	SKDP343	SRS3	3.5 mm	MS1156	T15
3879467	SDNCN2020K11	20	20	10,0	125	22,0	DC..11T308	SKDP343	SRS3	3.5 mm	MS1156	T15
3879849	SDNCN2525M11	25	25	12,5	150	25,0	DC..11T308	SKDP343	SRS3	3.5 mm	MS1156	T15
3879466	SDNCN2525M15	25	25	12,5	150	28,0	DC..150408	SKDP453	SRS4	4 mm	MS1158	T15
3900179	SDNCN3225P15	32	25	12,5	170	32,5	DC..150408	SKDP453	SRS4	4 mm	MS1158	T15



## SRDC

order number	catalogue number	H	B	F	L1	CD	gage insert	shim	shim screw	hex	insert screw	Torx
3879735	SRDCN1616H06	16	16	11,0	100	16,0	RC..0602M0	—	—	—	MS1153	T7
3879702	SRDCN1616H08	16	16	12,0	100	16,0	RC..0803M0	—	—	—	MS1154	T9
3900182	SRDCN2020K06	20	20	12,5	125	19,7	RC..0602M0	—	—	—	MS1153	T7
3879733	SRDCN2020K08	20	20	14,0	125	20,0	RC..0803M0	—	—	—	MS1154	T9
3879736	SRDCN2020K10	20	20	15,0	125	20,0	RC..10T3M0	SKRN100300	SRS3	3.5 mm	MS1156	T15
3900183	SRDCN2525M06	25	25	15,0	150	19,7	RC..0602M0	—	—	—	MS1153	T7
3879737	SRDCN2525M08	25	25	16,5	150	25,0	RC..0803M0	—	—	—	MS1154	T9
3879734	SRDCN2525M10	25	25	17,5	150	25,0	RC..10T3M0	SKRN100300	SRS3	3.5 mm	MS1156	T15
3879738	SRDCN2525M12	25	25	18,5	150	25,0	RC..1204M0	SKRN1203M0	SRS3	3.5 mm	MS1156	T15
3900181	SRDCN3225P12	32	25	8,0	170	28,0	RC..1204M0	SKRN1203M0	SRS3	3.5 mm	MS1156	T15
3900180	SRDCN3225P16	32	25	20,0	170	35,0	RC..1605M0	SKRN160400	SRS5	5 mm	MS1160	T20



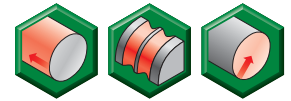
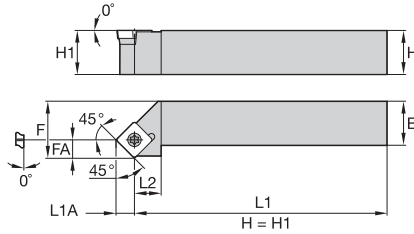
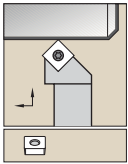


Tools for External Turning and Internal Boring

## SSBC 75°

order number	catalogue number	H	B	F	L1	L2	FA	gage insert	shim	shim screw	hex	insert screw	Torx
<b>right hand</b>													
3879850	SSBCR1616H09	16	16	13,0	100	16,0	2,2	SC..096308	SKSP343	SRS3	3.5 mm	MS1156	T15
3879741	SSBCR2020K12	20	20	17,0	125	21,0	3,1	SC..120408	SKSP453	SRS4	4 mm	MS1158	T15
3879740	SSBCR2525M12	25	25	22,0	150	21,0	3,1	SC..120408	SKSP453	SRS4	4 mm	MS1158	T15
<b>left hand</b>													
3879739	SSBCL1616H09	16	16	13,0	100	16,0	2,2	SC..09T308	SKSP343	SRS3	3.5 mm	MS1156	T15
3879852	SSBCL2020K12	20	20	17,0	125	21,0	3,1	SC..120408	SKSP453	SRS4	4 mm	MS1158	T15
3879851	SSBCL2525M12	25	25	22,0	150	21,0	3,1	SC..120408	SKSP453	SRS4	4 mm	MS1158	T15

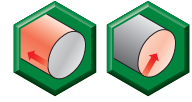
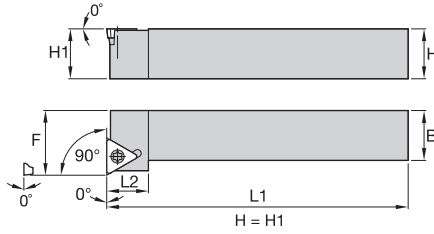
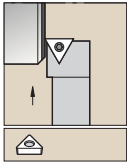




## SSSC 45°

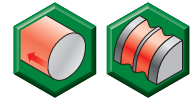
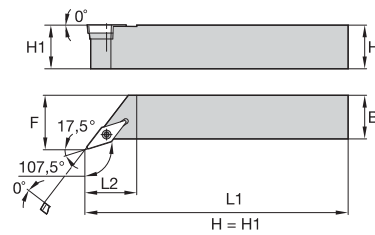
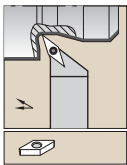
order number	catalogue number	H	B	F	L1	L2	FA	L1A	gage insert	shim	shim screw	hex	insert screw	Torx
<b>right hand</b>														
3879747	SSSCR1616H09	16	16	20,0	100	18,0	6,1	6,1	SC..09T308	SKSP343	SRS3	3.5 mm	MS1156	T15
3879746	SSSCR2020K12	20	20	25,0	125	25,0	8,3	8,3	SC..120408	SKSP453	SRS4	4 mm	MS1158	T15
3879744	SSSCR2525M12	25	25	32,0	150	25,0	8,3	8,3	SC..120408	SKSP453	SRS4	4 mm	MS1158	T15
<b>left hand</b>														
3879745	SSSCL1616H09	16	16	20,0	100	18,0	6,1	6,1	SC..09T308	SKSP343	SRS3	3.5 mm	MS1156	T15
3879743	SSSCL2020K12	20	20	25,0	125	25,0	8,3	8,3	SC..120408	SKSP453	SRS4	4 mm	MS1158	T15
3879742	SSSCL2525M12	25	25	32,0	150	25,0	8,3	8,3	SC..120408	SKSP453	SRS4	4 mm	MS1158	T15

Tools for External Turning and Internal Boring



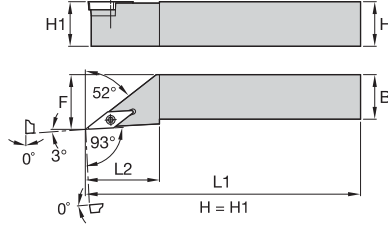
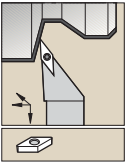
■ STFC 90°

order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim screw	hex	insert screw	Torx
<b>right hand</b>												
3900184	STFCR1212F11	12	12	16,0	80	13,0	TC..110204	—	—	—	MS1153	T7
3879763	STFCR2020K16	20	20	25,0	125	20,0	TC..16T308	SKTP343	SRS3	3.5 mm	MS1156	T15
3879750	STFCR2525M16	25	25	32,0	150	20,0	TC..16T308	SKTP343	SRS3	3.5 mm	MS1156	T15
<b>left hand</b>												
3879751	STFCL1616H16	16	16	20,0	100	20,0	TC..16T308	SKTP343	SRS3	3.5 mm	MS1156	T15
3879748	STFCL2020K16	20	20	25,0	125	20,0	TC..16T308	SKTP343	SRS3	3.5 mm	MS1156	T15
3879752	STFCL2525M16	25	25	32,0	150	20,0	TC..16T308	SKTP343	SRS3	3.5 mm	MS1156	T15



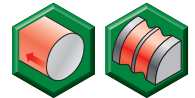
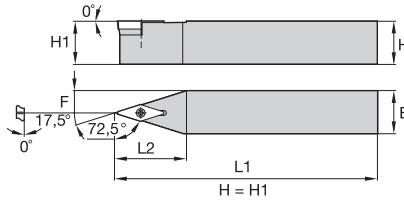
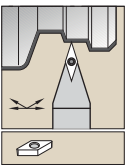
■ SVHB 107,5°

order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim screw	hex	insert screw	Torx
<b>right hand</b>												
3879767	SVHBR2020K16	20	20	25,0	125	28,0	VB..160408	SKVN343	SRS3	3.5 mm	MS1156	T15
3879765	SVHBR2525M16	25	25	32,0	150	28,0	VB..160408	SKVN343	SRS3	3.5 mm	MS1156	T15
3879853	SVHBR3225P16	32	25	32,0	170	25,0	VB..160408	SKVN343	SRS3	3.5 mm	MS1156	T15
<b>left hand</b>												
3879764	SVHBL2020K16	20	20	25,0	125	28,0	VB..160408	SKVN343	SRS3	3.5 mm	MS1156	T15
3879766	SVHBL2525M16	25	25	32,0	150	28,0	VB..160408	SKVN343	SRS3	3.5 mm	MS1156	T15
3879768	SVHBL3225P16	32	25	32,0	170	25,0	VB..160408	SKVN343	SRS3	3.5 mm	MS1156	T15



■ **SVJB 93°**

order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim screw	hex	insert screw	Torx
<b>right hand</b>												
3879769	SVJBR1616H16	16	16	20,0	100	35,0	VB..160408	SKVN343	SRS3	3.5 mm	MS1156	T15
3879776	SVJBR2020K16	20	20	25,0	125	35,0	VB..160408	SKVN343	SRS3	3.5 mm	MS1156	T15
3879775	SVJBR2525M16	25	25	32,0	150	35,0	VB..160408	SKVN343	SRS3	3.5 mm	MS1156	T15
3879773	SVJBR3225P16	32	25	32,0	170	35,0	VB..160408	SKVN343	SRS3	3.5 mm	MS1156	T15
<b>left hand</b>												
3879772	SVJBL1616H16	16	16	20,0	100	35,0	VB..160408	SKVN343	SRS3	3.5 mm	MS1156	T15
3879770	SVJBL2020K16	20	20	25,0	125	35,0	VB..160408	SKVN343	SRS3	3.5 mm	MS1156	T15
3879774	SVJBL2525M16	25	25	32,0	150	35,0	VB..160408	SKVN343	SRS3	3.5 mm	MS1156	T15
3879771	SVJBL3225P16	32	25	32,0	170	35,0	VB..160408	SKVN343	SRS3	3.5 mm	MS1156	T15



■ **SVVB 72,5°**

order number	catalogue number	H	B	F	L1	L2	gage insert	shim	shim screw	hex	insert screw	Torx
3879777	SVVBN2020K16	20	20	10,0	125	33,0	VB..160408	SKVN343	SRS3	3.5 mm	MS1156	T15
3879778	SVVBN2525M16	25	25	12,5	150	33,0	VB..160408	SKVN343	SRS3	3.5 mm	MS1156	T15
3879779	SVVBN3225P16	32	25	12,5	170	33,0	VB..160408	SKVN343	SRS3	3.5 mm	MS1156	T15

Today's modern boring operations require the most reliable, high-performance tools. 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.

# Tools for Internal Boring



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

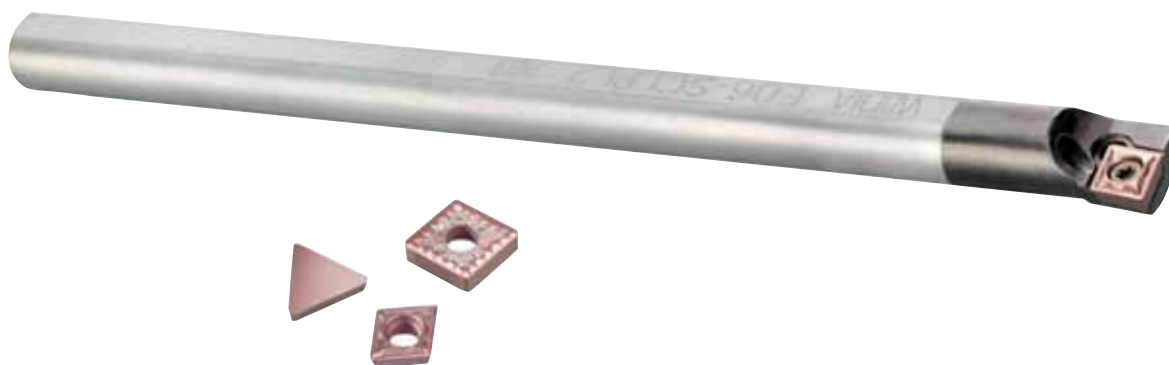
## D-Style Clamping

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

## 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

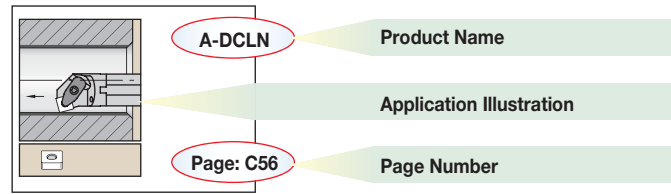
- Screw clamping system for positive indexable inserts.
- Compact design for high reliability and cost efficiency.
- Carbide shim for additional tool protection.

## 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.

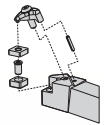


Each unique clamping system offers product options to fill your specific toolholder needs. Find the illustration that fits your application and navigate to the corresponding page to get the correct solution.

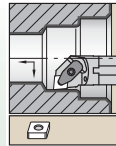


## D-Style Clamping

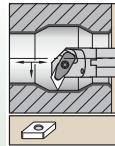
**D**



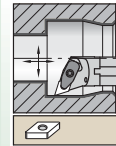
One-piece clamp assembly holder for use with negative style inserts. An extremely rigid clamping system. The tool is protected by a carbide shim.



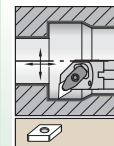
**A-DCLN**  
95°  
Page:  
**C56**



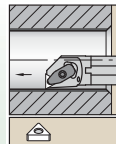
**A-DDPN**  
117,5°  
Page:  
**C56**



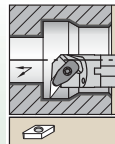
**A-DDQN**  
107,5°  
Page:  
**C57**



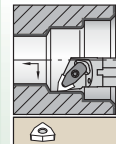
**A-DDUN**  
93°  
Page:  
**C57**



**A-DTFN**  
90°  
Page:  
**C58**



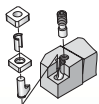
**DVUN**  
93°  
Page:  
**C58**



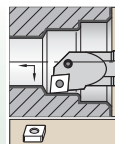
**A-DWLN**  
95°  
Page:  
**C59**

## P-Style Clamping

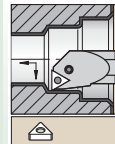
**P**



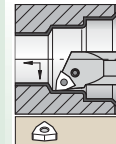
Lever-type clamping system for negative indexable inserts with hole to DIN 4988 and positive round inserts more than 20mm in diameter. Inserts with one- and two-side chip control geometries have positive rakes from 6° to 18°. Advantages of this system are fast insert changes and no interference with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



**A-PCLN**  
95°  
Page:  
**C60**

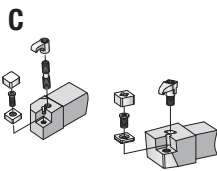


**A-PTFN**  
90°  
Page:  
**C60**

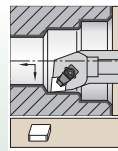


**A-PWLN**  
95°  
Page:  
**C61**

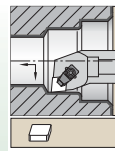
**C-Style Clamping**



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 16mm and insert iCs greater than 6,35mm.



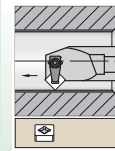
**S-CCLN-MX**  
95°  
Page: C62



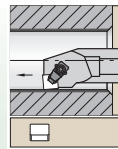
**S-CCLN-MN**  
95°  
Page: C62



**S-CDQN-MX**  
Page: C63



**S-CSSN-MX**  
45°  
Page: C63



**S-CSYN-MN**  
85°  
Page: C64

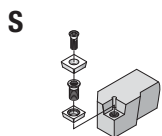


**S-CWLN-MX**  
95°  
Page: C64

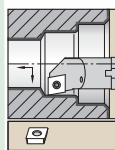


**A-CTFP**  
90°  
Page: C65

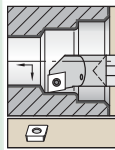
**S-Style Clamping**



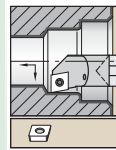
Screw clamping system for positive indexable inserts with countersunk hole to DIN 4967. Compact design using a minimum of spare parts for high reliability and cost efficiency. A carbide shim provides additional tool protection. Toolholders with cutting edge heights upwards of .625" and insert iCs from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



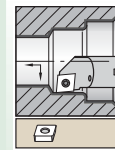
**A-SCFP**  
90°  
Page: C66



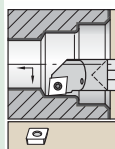
**E-SCFC**  
90°  
Page: C66



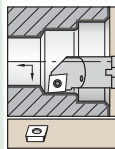
**E-SCFP**  
90°  
Page: C67



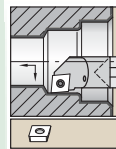
**A-SCLC**  
95°  
Page: C67



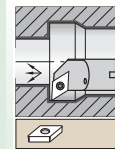
**E-SCLC**  
95°  
Page: C68



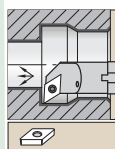
**A-SCLP**  
95°  
Page: C69



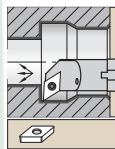
**E-SCLP**  
95°  
Page: C70



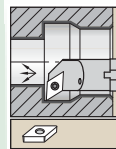
**A-SDQC**  
107,5°  
Page: C71



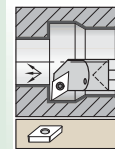
**E-SDQC**  
107,5°  
Page: C72



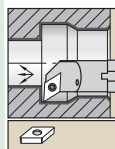
**A-SDQP**  
Page: C72



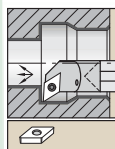
**A-SDUC**  
93°  
Page: C73



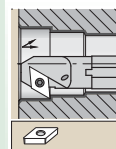
**E-SDUC**  
93°  
Page: C74



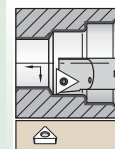
**A-SDUP**  
93°  
Page: C75



**E-SDUP**  
93°  
Page: C75



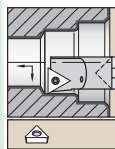
**A-SDXP**  
95°  
Page: C76



**A-STFC**  
90°  
Page: C76



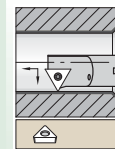
**E-STFC**  
90°  
Page: C77



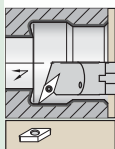
**A-STFP**  
90°  
Page: C78



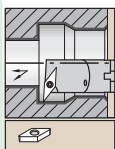
**E-STFP**  
90°  
Page: C79



**A-STWP**  
60°  
Page: C80



**A-SVQB**  
107,5°  
Page: C80

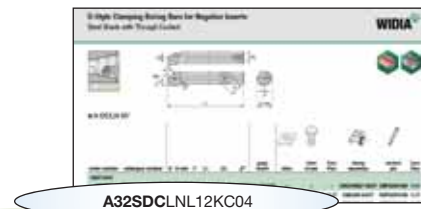



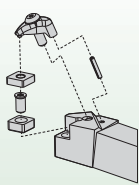
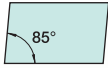

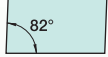









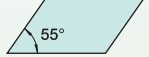

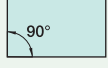









**A-SVUB**  
93°  
Page: C81



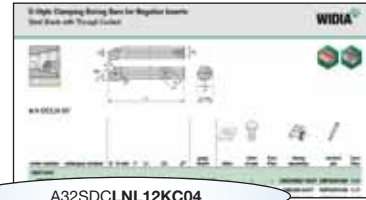
## How Do Catalogue Numbers Work?

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



A	32	S	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><b>Metric:</b> A two-digit number indicates the bar diameter in mm. If the diameter is represented by a one digit number, a 0 (zero) will be used in front of it. Example: 8mm = 08</p>	<p>3 = F 3.5 = G 4 = H 4.5 = J 5 = K 5.5 = L 6 = M 6.5 = N 7 = Q 8 = R 10 = S 12 = T 14 = U 16 = V 18 = W 20 = 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>S</b> </p> <p>Steel bar without coolant</p>			<p><b>B</b> </p>	
<p><b>C</b> </p> <p>Carbide bar</p>			<p><b>C</b> </p>	
<p><b>D</b> </p> <p>DeVibrator bar with coolant</p>			<p><b>D</b> </p>	
<p><b>D</b> </p> <p>Tunable bar with coolant</p>			<p><b>E</b> </p>	
<p><b>E</b> </p> <p>Carbide bar with coolant</p>			<p><b>H</b> </p>	
<p><b>B</b> </p> <p>DeVibrator</p>			<p><b>K</b> </p>	
<p><b>H</b> </p> <p>Interchangeable head</p>			<p><b>L</b> </p>	
<p><b>L</b> </p> <p>Heavy metal bar with coolant</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>			

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

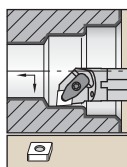


A32SDCLNL12KC04

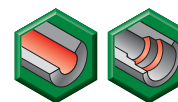
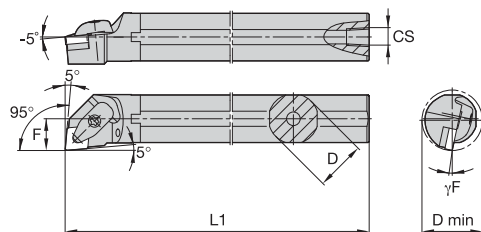
L	N	L	12	KC04
Bar Style or Lead Angle	Insert Clearance Angle	Hand of Tool	Insert Size Cutting Edge Length L10	Additional Information
<p><b>E</b> </p> <p><b>F</b> </p> <p><b>K</b> </p> <p><b>L</b> </p> <p>(E-style inserts)</p> <p><b>L</b> </p> <p><b>P</b> </p> <p><b>Q</b> </p> <p><b>S</b> </p> <p><b>U</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><b>R</b> </p> <p><b>L =</b> Left-hand boring bar</p> <p><b>L</b> </p>	<p><b>H</b> </p> <p><b>O</b> </p> <p><b>P</b> </p> <p><b>S</b> </p> <p><b>T</b> </p> <p><b>CDE</b> <b>M</b> <b>V</b> </p> <p><b>W</b> </p> <p><b>L</b> </p> <p><b>A</b> <b>B</b> <b>K</b> </p> <p><b>R</b> </p>	<p><b>M... =</b> M.. MF, MN, MX, for ceramic and PcBN inserts</p> <p><b>KC =</b> D-Style Clamping</p> <p><b>+ =</b> Insert thickness</p>

# D-Style Clamping Boring Bars for Negative Inserts

Steel Shank with Through Coolant

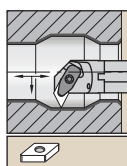


Steel shank with through coolant.

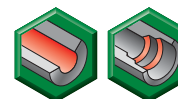
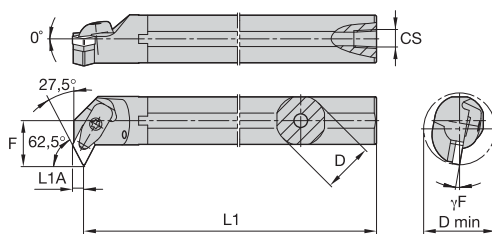


## ■ A-DCLN 95°

order number	catalogue number	D	D min	F	L1	CS	γF°	gage insert	shim	shim screw	Torx Plus	clamp assembly	slotted pin	Torx Plus
<b>right hand</b>														
5696071	A25RDCLNR12KC04	25	32,0	17,0	200	1/4-18 NPT	-12.0	CN..120408	—	—	—	CM234RLP ASSY	SSP025016M	15 IP
5696073	A32SDCLNR12KC04	32	40,0	22,0	250	1/4-18 NPT	-12.0	CN..120408	ICSN433	KMSP415IP	15 IP	CM234R ASSY	SSP025016M	15 IP
5696075	A40TDCLNR12KC04	40	50,0	27,0	300	1/4-18 NPT	-9.0	CN..120408	ICSN433	KMSP415IP	15 IP	CM234R ASSY	SSP025016M	15 IP
5696077	A40TDCLNR16KC06	32	45,0	27,0	250	1/4-18 NPT	-12.0	CN..160612	ICSN533	KMSP515IP	15 IP	CM209R ASSY	SSP025018M	15 IP
<b>left hand</b>														
5696072	A25RDCLNL12KC04	25	32,0	17,0	200	1/4-18 NPT	-12.0	CN..120408	—	—	—	CM234RLP ASSY	SSP025016M	15 IP
5696074	A32SDCLNL12KC04	40	50,0	27,0	300	1/4-18 NPT	-9.0	CN..120408	ICSN433	KMSP415IP	15 IP	CM234R ASSY	SSP025016M	15 IP
5696076	A40TDCLNL12KC04	32	45,0	27,0	250	1/4-18 NPT	-12.0	DN..150608	ICSN433	KMSP415IP	15 IP	CM234R ASSY	SSP025016M	15 IP
5696078	A40TDCLNL16KC06	32	45,0	27,0	250	1/4-18 NPT	-12.0	CN..160612	ICSN533	KMSP515IP	15 IP	CM209R ASSY	SSP025018M	15 IP



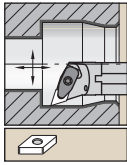
Steel shank with through coolant.



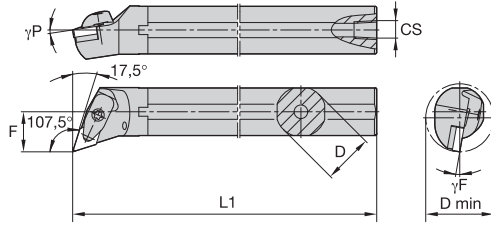
## ■ A-DDPN 117,5°

order number	catalogue number	D	D min	F	L1	L1A	CS	γF°	gage insert	shim	shim screw	Torx Plus	clamp assembly	slotted pin	Torx Plus
<b>right hand</b>															
5696079	A25RDDPNR11KC04	32	45,0	27,0	250	6,5	1/4-18 NPT	-12.0	DN..150608	IDSN322	KMSP315IP	15 IP	CM234RLP ASSY	SSP025016M	15 IP
5696080	A32SDDPNR15KC06	40	52,0	30,0	300	6,6	1/4-18 NPT	-10.0	DN..150608	IDSN433	KMSP415IP	15 IP	CM234R ASSY	SSP025016M	15 IP
5696082	A40TDDPNR15KC06	40	52,0	30,0	300	6,6	1/4-18 NPT	-10.0	DN..150608	IDSN433	KMSP415IP	15 IP	CM234R ASSY	SSP025016M	15 IP
<b>left hand</b>															
5696081	A32SDDPNL15KC06	40	52,0	30,0	300	6,6	1/4-18 NPT	-10.0	DN..150608	IDSN433	KMSP415IP	15 IP	CM234R ASSY	SSP025016M	15 IP
5696083	A40TDDPNL15KC06	40	52,0	30,0	300	6,6	1/4-18 NPT	-10.0	DN..150608	IDSN433	KMSP415IP	15 IP	CM234R ASSY	SSP025016M	15 IP



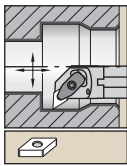


Steel shank with through coolant.

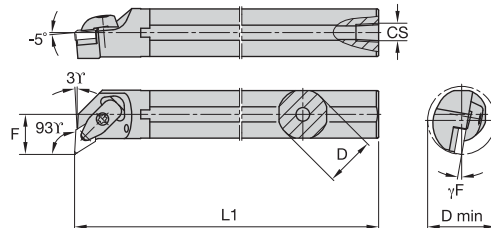


■ **A-DDQN 107,5°**

order number	catalogue number	D	D min	F	L1	CS	$\gamma_F^\circ$	$\gamma_P^\circ$	gage insert	shim	shim screw	Torx Plus	clamp assembly	slotted pin	Torx Plus
<b>right hand</b>															
5696085	A32SDDQNR15KC06	32	40,0	22,0	250	1/4-18 NPT	-12.0	-10.0	DN..150608	IDSN433	KMSP415IP	15 IP	CM234RLP ASSY	SSP025016M	15 IP
5696087	A40TDDQNR15KC06	40	50,0	27,0	300	1/4-18 NPT	-10.0	-10.0	DN..150608	IDSN433	KMSP415IP	15 IP	CM234R ASSY	SSP025016M	15 IP
<b>left hand</b>															
5696086	A32SDDQNL15KC06	32	40,0	22,0	250	1/4-18 NPT	-12.0	-10.0	DN..150608	IDSN433	KMSP415IP	15 IP	CM234RLP ASSY	SSP025016M	15 IP
5696088	A40TDDQNL15KC06	40	50,0	27,0	300	1/4-18 NPT	-10.0	-10.0	DN..150608	IDSN433	KMSP415IP	15 IP	CM234R ASSY	SSP025016M	15 IP



Steel shank with through coolant.

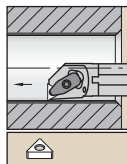


■ **A-DDUN 93°**

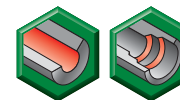
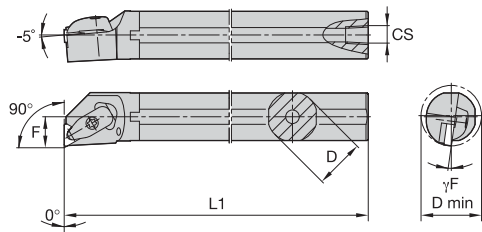
order number	catalogue number	D	D min	F	L1	CS	$\gamma_F^\circ$	gage insert	shim	shim screw	Torx Plus	clamp assembly	slotted pin	Torx Plus	
<b>right hand</b>															
5696089	A25RDDUNR11KC04	25	32,0	17,0	200	1/4-18 NPT	-12.0	DN..110408	—	—	—	CM234RLP ASSY	SSP025016M	15 IP	
5696211	A32SDDUNR11KC04	32	40,0	22,0	250	1/4-18 NPT	-12.0	DN..110408	IDSN322	KMSP315IP	15 IP	CM234R ASSY	SSP025016M	15 IP	
5696213	A32SDDUNR15KC06	32	40,0	22,0	250	1/4-18 NPT	-12.0	DN..150608	IDSN433	KMSP415IP	15 IP	CM234R ASSY	SSP025016M	15 IP	
5696215	A40TDDUNR15KC06	40	50,0	27,0	300	1/4-18 NPT	-9.0	DN..150608	IDSN433	KMSP415IP	15 IP	CM234R ASSY	SSP025016M	15 IP	
5696217	A50UDDUNR15KC06	50	63,0	35,0	350	1/4-18 NPT	-7.0	DN..150608	IDSN433	KMSP415IP	15 IP	CM234R ASSY	SSP025016M	15 IP	
<b>left hand</b>															
5696210	A25RDDUNL11KC04	25	32,0	17,0	200	1/4-18 NPT	-12.0	DN..110408	—	—	—	CM234RLP ASSY	SSP025016M	15 IP	
5696212	A32SDDUNL11KC04	32	40,0	22,0	250	1/4-18 NPT	-12.0	DN..110408	IDSN322	KMSP315IP	15 IP	CM234R ASSY	SSP025016M	15 IP	
5696214	A32SDDUNL15KC06	32	40,0	22,0	250	1/4-18 NPT	-12.0	DN..150608	IDSN433	KMSP415IP	15 IP	CM234R ASSY	SSP025016M	15 IP	
5696216	A40TDDUNL15KC06	40	50,0	27,0	300	1/4-18 NPT	-9.0	DN..150608	IDSN433	KMSP415IP	15 IP	CM234R ASSY	SSP025016M	15 IP	
5696218	A50UDDUNL15KC06	50	63,0	35,0	350	1/4-18 NPT	-7.0	DN..150608	IDSN433	KMSP415IP	15 IP	CM234R ASSY	SSP025016M	15 IP	

# D-Style Clamping Boring Bars for Negative Inserts

Steel Shank with Through Coolant

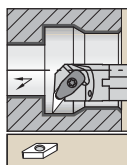


Steel shank with through coolant.

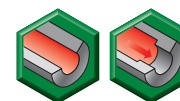
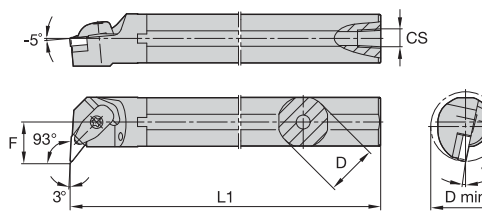


## ■ A-DTFN 90°

order number	catalogue number	D	D min	F	L1	CS	γF°	gage insert	shim	shim screw	Torx Plus	clamp assembly	slotted pin	Torx Plus
<b>right hand</b>														
5696219	A25RDTFNR16KC04	25	32,0	17,0	200	1/4-18 NPT	-14.0	TN..160408	ITSN323	KMSP315IP	15 IP	CM234RLP ASSY	SSP025016M	15 IP
5696261	A32SDTFNR16KC04	32	40,0	22,0	250	1/4-18 NPT	-12.0	TN..160408	ITSN323	KMSP315IP	15 IP	CM234RLP ASSY	SSP025016M	15 IP
<b>left hand</b>														
5696260	A25RDTFNL16KC04	25	32,0	17,0	200	1/4-18 NPT	-14.0	TN..160408	ITSN323	KMSP315IP	15 IP	CM234RLP ASSY	SSP025016M	15 IP
5696262	A32SDTFNL16KC04	32	40,0	22,0	250	1/4-18 NPT	-12.0	TN..160408	ITSN323	KMSP315IP	15 IP	CM234RLP ASSY	SSP025016M	15 IP



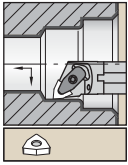
Steel shank with through coolant.



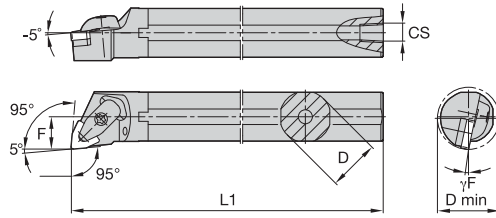
## ■ A-DVUN 93°

order number	catalogue number	D	D min	F	L1	CS	γF°	gage insert	shim	shim screw	Torx Plus	clamp assembly	slotted pin	Torx Plus
<b>right hand</b>														
5696263	A32SDVUNR16KC04	32	40,0	22,0	250	1/4-18 NPT	-9.0	VN..160408	IVSN322	KMSP315IP	15 IP	CM234R ASSY	SSP025016M	15 IP
5696265	A40TDVUNR16KC04	40	50,0	27,0	300	1/4-18 NPT	-8.0	VN..160408	IVSN322	KMSP315IP	15 IP	CM215R ASSY	SSP025016M	15 IP
<b>left hand</b>														
5696264	A32SDVUNL16KC04	32	40,0	22,0	250	1/4-18 NPT	-9.0	VN..160408	IVSN322	KMSP315IP	15 IP	CM234R ASSY	SSP025016M	15 IP
5696266	A40TDVUNL16KC04	40	50,0	27,0	300	1/4-18 NPT	-8.0	VN..160408	IVSN322	KMSP315IP	15 IP	CM215R ASSY	SSP025016M	15 IP





Steel shank with through coolant.



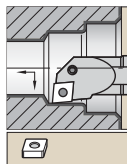
## ■ A-DWLN 95°

order number	catalogue number	D	D min	F	L1	CS	γF°	gage insert	shim	shim screw	Torx Plus	clamp assembly	slotted pin	Torx Plus
<b>right hand</b>														
5696267	A25RDWLNRO6KC04	25	32,0	17,0	200	1/4-18 NPT	-14.0	WN..060408	—	—	—	CM234RLP ASSY	SSP025016M	15 IP
5696269	A25RDWLNRO8KC04	25	32,0	17,0	200	1/4-18 NPT	-12.0	WN..080408	—	—	—	CM234RLP ASSY	SSP025016M	15 IP
5696281	A32SDWLNRO8KC04	32	40,0	22,0	250	1/4-18 NPT	-14.0	WN..080408	IWSN433	KMSP415IP	15 IP	CM234RLP ASSY	SSP025016M	15 IP
5696283	A40TDWLNRO8KC04	40	50,0	27,0	300	1/4-18 NPT	-14.0	WN..080408	IWSN433	KMSP415IP	15 IP	CM234R ASSY	SSP025016M	15 IP
<b>left hand</b>														
5696268	A25RDWLNLO6KC04	25	32,0	17,0	200	1/4-18 NPT	-14.0	WN..060408	—	—	—	CM234RLP ASSY	SSP025016M	15 IP
5696280	A25RDWLNLO8KC04	25	32,0	17,0	200	1/4-18 NPT	-12.0	WN..080408	—	—	—	CM234RLP ASSY	SSP025016M	15 IP
5696282	A32SDWLNLO8KC04	32	40,0	22,0	250	1/4-18 NPT	-14.0	WN..080408	IWSN433	KMSP415IP	15 IP	CM234RLP ASSY	SSP025016M	15 IP
5696284	A40TDWLNLO8KC04	40	50,0	27,0	300	1/4-18 NPT	-14.0	WN..080408	IWSN433	KMSP415IP	15 IP	CM234R ASSY	SSP025016M	15 IP

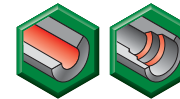
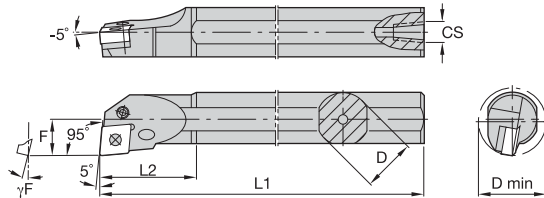


# P-Style Clamping Boring Bars for Negative Inserts

Steel Shank with Through Coolant

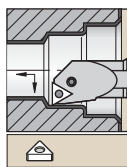


Steel shank with through coolant.

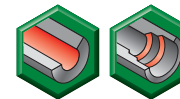
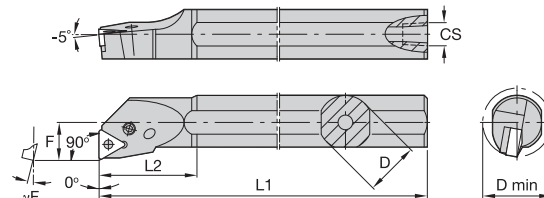


## ■ A-PCLN 95°

order number	catalogue number	D	D min	F	L1	L2	CS	$\gamma F^\circ$	gage insert	shim	shim pin	pin	toggle lever	lever screw	Torx Plus
<b>right hand</b>															
3883468	A25TPCLNR12	25	32,0	17,0	300	40	1/4-18 NPT	-12,0	CN..120408	—	—	—	511.022	514.122	10 IP
3883466	A32UPCLNR12	32	40,0	22,0	350	50	1/4-18 NPT	-10,0	CN..120408	512.112	513.023	515.018	511.023	514.123	15 IP
3883463	A40VPCLNR12	40	50,0	27,0	400	55	1/4-18 NPT	-10,0	CN..120408	512.112	513.023	515.018	511.023	514.123	15 IP
3883442	A40VPCLNR16	40	50,0	27,0	400	55	1/4-18 NPT	-11,0	CN..160612	512.117	513.025	515.022	511.025	514.125	15 IP
<b>left hand</b>															
3883469	A25TPCLNL12	25	32,0	17,0	300	40	1/4-18 NPT	-12,0	CN..120408	—	—	—	511.022	514.122	10 IP
3883467	A32UPCLNL12	32	40,0	22,0	350	50	1/4-18 NPT	-10,0	CN..120408	512.112	513.023	515.018	511.023	514.123	15 IP
3883465	A40VPCLNL12	40	50,0	27,0	400	55	1/4-18 NPT	-10,0	CN..120408	512.112	513.023	515.018	511.023	514.123	15 IP
3883464	A40VPCLNL16	40	50,0	27,0	400	55	1/4-18 NPT	-11,0	CN..160612	512.117	513.025	515.022	511.025	514.125	15 IP



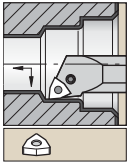
Steel shank with through coolant.



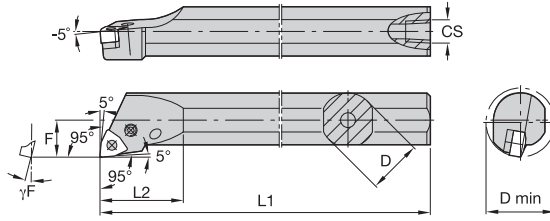
## ■ A-PTFN 90°

order number	catalogue number	D	D min	F	L1	L2	CS	$\gamma F^\circ$	gage insert	shim	shim pin	pin	toggle lever	lever screw	Torx Plus
<b>right hand</b>															
3883263	A25TPTFNR16	25	32,0	17,0	300	40	1/4-18 NPT	-12,0	TN..160408	512.013	513.018	515.018	511.018	514.118	10 IP
3883151	A32UPTFNR16	32	40,0	22,0	350	50	1/4-18 NPT	-10,0	TN..160408	512.013	513.018	515.018	511.018	514.118	10 IP
3883149	A40VPTFNR22	40	48,0	27,0	400	55	1/4-18 NPT	-10,0	TN..220408	512.023	513.023	515.018	511.023	514.123	15 IP
<b>left hand</b>															
3883264	A25TPTFNL16	25	32,0	17,0	300	40	1/4-18 NPT	-12,0	TN..160408	512.013	513.018	515.018	511.018	514.118	10 IP
3883150	A40VPTFNL22	40	48,0	27,0	400	55	1/4-18 NPT	-10,0	TN..220408	512.023	513.023	515.018	511.023	514.123	15 IP

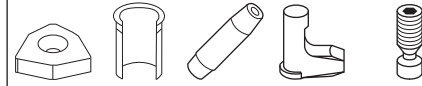




Steel shank with through coolant.



## ■ A-PWLN 95°

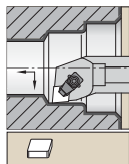


order number	catalogue number	D	D min	F	L1	L2	CS	$\gamma F^\circ$	gage insert	shim	shim pin	pin	toggle lever	lever screw	Torx Plus
<b>right hand</b>															
3883459	A16RPWLN06	16	27,0	11,0	200	32	1/8-27 NPT	-12,0	WN..060408	—	—	—	511.030	514.112	—
3883455	A20SPWLN06	20	25,0	13,0	250	—	1/8-27 NPT	-14,0	WN..060408	—	—	—	511.030	514.112	8 IP
3883458	A25RPWLN08	25	32,0	17,0	200	—	1/4-18 NPT	-12,0	WN..080408	512.135	513.023	515.018	511.023	514.123	15 IP
3883454	A32SPWLN08	32	40,0	22,0	250	50	1/4-18 NPT	-10,0	WN..080408	512.135	513.023	515.018	511.023	514.123	—
<b>left hand</b>															
3883461	A16RPWLN06	16	27,0	11,0	200	32	1/8-27 NPT	-12,0	WN..060408	—	—	—	511.030	514.112	—
3883457	A20SPWLN06	20	25,0	13,0	250	—	1/8-27 NPT	-14,0	WN..060408	—	—	—	511.030	514.112	8 IP
3883456	A32SPWLN08	32	40,0	22,0	250	50	1/4-18 NPT	-10,0	WN..080408	512.135	513.023	515.018	511.023	514.123	—

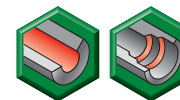
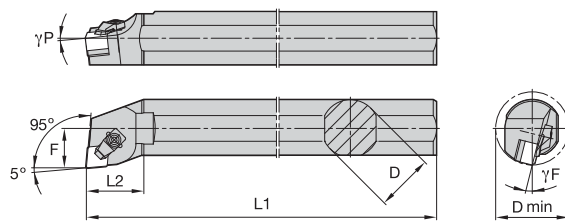


# C-Style Clamping Boring Bars for Negative Inserts

Steel Shank with Through Coolant



Steel shank with through coolant.

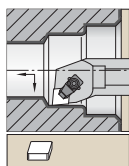


Tools for External Turning and Internal Boring

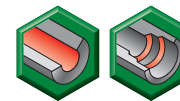
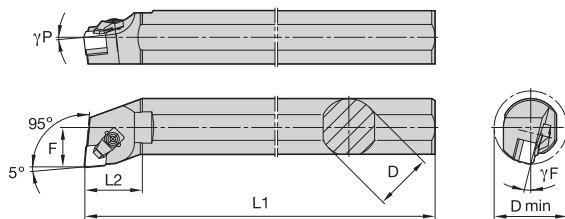
## ■ S-CCLN-MX 95°

order number	catalogue number	D	D min	F	L1	L2	γF°	γP°	gage insert	shim	shim screw	hex	clamp assembly	hex
<b>right hand</b>														
3883565	S32SCCLNR12MX7	32	40,0	22,0	251	43	-14,0	-5,0	CN.X120708	—	—	—	551.316	4 mm
3029009	S40TCCLNR12MX7	40	55,0	27,0	300	40	-14,0	-6,0	CN.X120708	552.221	554.252	2.5 mm	551.316	4 mm
<b>left hand</b>														
3883564	S32SCCLNL12MX7	32	40,0	22,0	251	43	-14,0	-5,0	CN.X120708	—	—	—	551.316	4 mm
3029010	S40TCCLNL12MX7	40	55,0	27,0	300	40	-14,0	-6,0	CN.X120708	552.221	554.252	2.5 mm	551.316	4 mm

NOTE: MN — clamping version is shown.



Steel shank with through coolant.

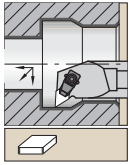


## ■ S-CCLN-MN 95°

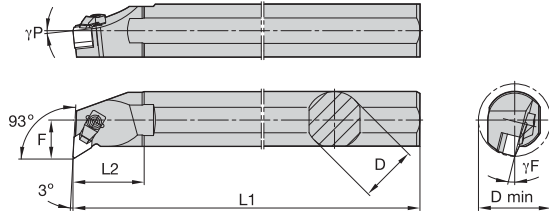
order number	catalogue number	D	D min	F	L1	L2	γF°	γP°	gage insert	shim	shim screw	hex	thrust plate	clamp assembly	hex
<b>right hand</b>															
3029011	S40TCCLNR12MN4	40	55,0	27,0	300	40	-14,0	-6,0	CN.N120408	552.220	554.252	2.5 mm	557.111	551.317	4 mm
3029143	S40TCCLNR12MN7	40	55,0	27,0	300	40	-14,0	-6,0	CN.N120708	552.221	554.253	2.5 mm	557.111	551.317	4 mm
<b>left hand</b>															
3029012	S40TCCLNL12MN4	40	55,0	27,0	300	40	-14,0	-6,0	CN.N120408	552.220	554.252	2.5 mm	557.111	551.317	4 mm
3029144	S40TCCLNL12MN7	40	55,0	27,0	300	40	-14,0	-6,0	CN.N120708	552.221	554.252	2.5 mm	557.111	551.317	4 mm

NOTE: MN — clamping version is shown.





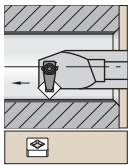
Steel shank with through coolant.



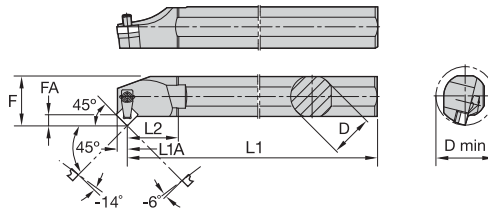
■ **S-CDQN-MX**

order number	catalogue number	D	D min	F	L1	L2	γF°	γP°	gage insert	shim	shim screw	hex	clamp assembly	hex
<b>right hand</b>														
3883567	S40TCDQNR12MX7	40	50,0	27,0	302	45,0	-14,0	-5,0	DN.X120708	552.225	554.254	2.5 mm	551.316	4 mm
<b>left hand</b>														
3883566	S40TCDQNL12MX7	40	50,0	27,0	302	45,0	-14,0	-5,0	DN.X120708	552.225	554.254	2.5 mm	551.316	4 mm

NOTE: MN – clamping version is shown.



Steel shank with through coolant.



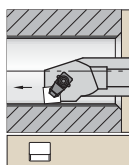
■ **S-CSSN-MX 45°**

order number	catalogue number	D	D min	F	L1	L2	L1A	FA	gage insert	shim	shim screw	hex	clamp assembly	hex
<b>right hand</b>														
3029151	S40TCSSNR12MX7	40	55,0	27,0	300	67,0	8,5	8,2	SN.X120708	552.232	554.252	2.5 mm	551.316	4 mm
<b>left hand</b>														
3029152	S40TCSSNL12MX7	40	55,0	27,0	300	67,0	8,5	8,2	SN.X120708	552.232	554.252	2.5 mm	551.316	4 mm

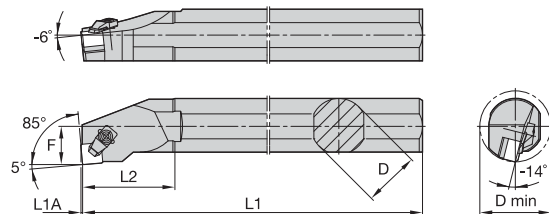
NOTE: MX – clamping version is shown.

# C-Style Clamping Boring Bars for Negative Inserts

Steel Shank with Through Coolant



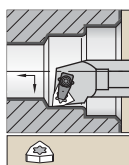
Steel shank with through coolant.



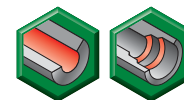
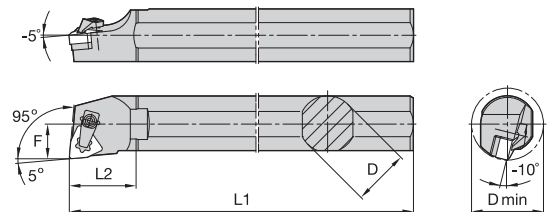
## ■ S-CSYN-MN 85°

order number	catalogue number	D	D min	F	L1	L2	L1A	gage insert	shim	shim screw	hex	thrust plate	clamp assembly	hex	
<b>right hand</b>															
3883569	S40TCSYNR12MN7	40	55,0	27,0	300	67,0	1,0	SN.N120708	552.232	554.252	2.5 mm	557.111	551.317	4 mm	
<b>left hand</b>															
3883568	S40TCSYNL12MN7	40	55,0	27,0	300	67,0	1,0	SN.N120708	552.232	554.252	2.5 mm	557.111	551.317	4 mm	

NOTE: MN – clamping version is shown.



Steel shank with through coolant.

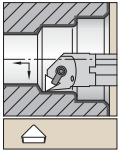


## ■ S-CWLN-MX 95°

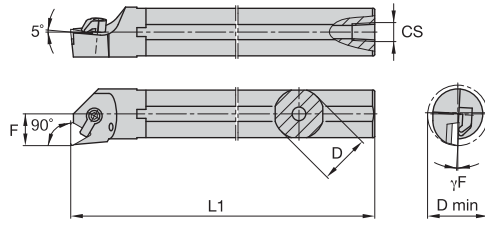
order number	catalogue number	D	D min	F	L1	L2	gage insert	shim	shim screw	hex	clamp assembly	hex
<b>right hand</b>												
3029153	S40TCWLNLR08MX7	40	80,0	27,0	300	55,0	WN.X080708	552.210	554.252	2.5 mm	551.316	4 mm
<b>left hand</b>												
3029154	S40TCWLNLR08MX7	40	80,0	27,0	300	55,0	WN.X080708	552.210	554.252	2.5 mm	551.316	4 mm

NOTE: MX – clamping version is shown.

Tools for External Turning and Internal Boring



Steel shank with through coolant.

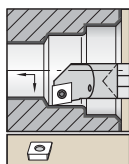


## ■ A-CTFP 90°

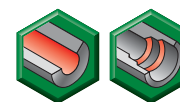
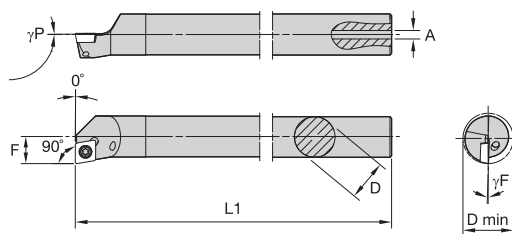
order number	catalogue number	D	D min	F	L1	CS	$\gamma F^\circ$	gage insert	shim	shim screw	hex	clamp	clamp screw	hex	
<b>right hand</b>															
3883451	A16RCTFPR11	16	20,0	11,0	200	1/8-27 NPT	-4.0	TP..110304	—	—	—	CKM19	STCM9	2.5 mm	
3883450	A25RCTFPR16	25	32,0	17,0	200	1/4-18 NPT	-3.0	TP..160308	SM841	MS110	2 mm	CKM10	STCM8	4 mm	
<b>left hand</b>															
3883453	A16RCTFPL11	16	20,0	11,0	200	1/8-27 NPT	-4.0	TP..110304	—	—	—	CKM19	STCM9	2.5 mm	
3883452	A25RCTFPL16	25	32,0	17,0	200	1/4-18 NPT	-3.0	TP..160308	SM841	MS110	2 mm	CKM10	STCM8	4 mm	

# S-Style Clamping Boring Bars for Positive Inserts

Carbide Shank with Through Coolant



Carbide shank with through coolant.

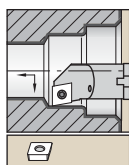


## E-SCFC 90°

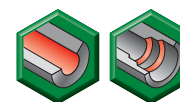
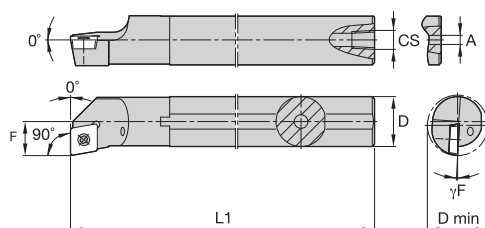


order number	catalogue number	D	D min	F	L1	A	γF°	γP°	gage insert	insert screw	Torx
<b>right hand</b>											
2023600	E08KSCFCR06	8	11,0	6,0	125	3,0	-12,0	0,0	CC..060204	12148036300	T8
<b>left hand</b>											
2031019	E08KSCFCL06	8	11,0	6,0	125	3,0	-12,0	0,0	CC..060204	12148036300	T8

## Steel Shank with Through Coolant



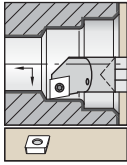
Steel shank with through coolant.



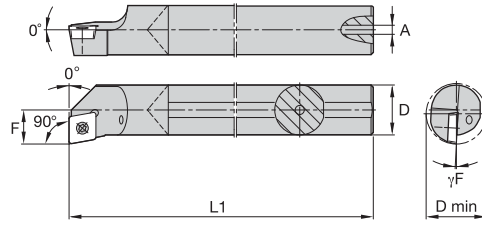
## A-SCFP 90°



order number	catalogue number	D	D min	F	L1	A	CS	γF°	gage insert	insert screw	Torx
<b>right hand</b>											
5077442	A08JSCFP06	8	11,0	6,0	110	2,4	—	-8,0	CP..0602..	MS1153	T7
5077449	A10KSCFP06	10	13,0	7,0	125	3,2	—	-6,0	CP..0602..	MS1153	T7
5077497	A12MSCFP06	12	16,0	9,0	150	—	1/16 - 27 NPT	-4,0	CP..0602..	MS1153	T7
5077552	A16RSCFP06	16	20,0	11,0	200	—	1/8 - 27 NPT	-5,0	CC..0602..	MS1153	T7
5077553	A16RSCFP09	16	20,0	11,0	200	—	1/8 - 27 NPT	-4,0	CP..09T3..	MS1155	T15
5077614	A20SSCF06	20	25,0	13,0	250	—	1/8 - 27 NPT	-3,0	CC..0602..	MS1153	T7
5077615	A20SSCF09	20	25,0	13,0	250	—	1/8 - 27 NPT	-2,0	CP..09T3..	MS1155	T15
<b>left hand</b>											
5077441	A08JSCFPL06	8	11,0	6,0	110	2,4	—	-8,0	CP..0602..	MS1153	T15
5077447	A10KSCFPL06	10	13,0	7,0	125	3,2	—	-6,0	CP..0602..	MS1153	T7
5077496	A12MSCFPL06	12	16,0	9,0	150	—	1/16 - 27 NPT	-4,0	CP..0602..	MS1153	T7
5077550	A16RSCFPL06	16	20,0	11,0	200	—	1/8 - 27 NPT	-5,0	CC..0602..	MS1153	T7
5077551	A16RSCFPL09	16	20,0	11,0	200	—	1/8 - 27 NPT	-4,0	CP..09T3..	MS1155	T15
5077556	A20SSCFPL06	20	25,0	13,0	250	—	1/8 - 27 NPT	-3,0	CC..0602..	MS1153	T7
5077557	A20SSCFPL09	20	25,0	13,0	250	—	1/8 - 27 NPT	-2,0	CP..09T3..	MS1155	T7



Carbide shank with through coolant.

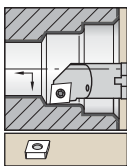


**E-SCFP 90°**

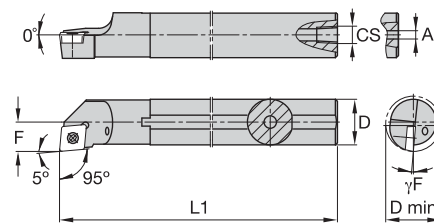


order number	catalogue number	D	D min	F	L1	A	A1	$\gamma F^\circ$	gage insert	insert screw	Torx
<b>right hand</b>											
2010047	E06JSCFPR04	6	8,0	4,5	110,0	2,0	1,4	-10.0	CP..04T104	12148005800	T6
5092759	E08KSCFPR06A	8	11,0	6,0	123,0	2,4	—	-8.0	CP..060204	MS1939	T7
5092921	E10MSCFPR06A	10	13,0	7,0	148,0	3,2	—	-4.0	CP..060204	MS1939	T7
5092923	E12QSCFPR06	12	16,0	9,0	177,5	4,8	—	-3.0	CP..060204	MS1153	T7
<b>left hand</b>											
2031018	E06JSCFPL04	6	8,0	4,5	110,0	2,0	1,4	-10.0	CP..04T104	12148005800	T6
5092757	E08KSCFPL06A	8	11,0	6,0	123,0	2,4	—	-8.0	CP..060204	MS1939	T7
5092920	E10MSCFPL06A	10	13,0	7,0	148,0	3,2	—	-4.0	CP..060204	MS1939	T7
5092922	E12QSCFPL06	12	16,0	9,0	177,5	4,8	—	-3.0	CP..060204	MS1153	T7

**Steel Shank with Through Coolant**



Steel shank with through coolant.



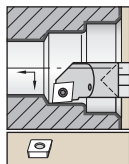
**A-SCLC 95°**



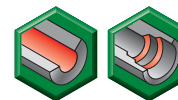
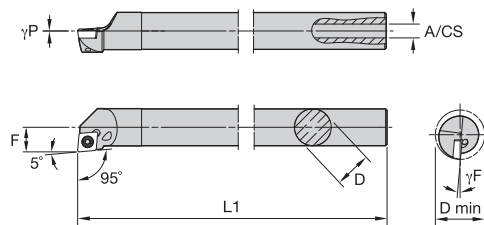
order number	catalogue number	D	D min	F	L1	A	CS	$\gamma F^\circ$	gage insert	shim	shim screw	hex	insert screw	Torx
<b>right hand</b>														
3883285	A08JSCLCR06	8	11,0	6,0	110	2,4	—	-8.0	CC..060204	—	—	—	MS1939	T7
3883283	A10KSCLCR06	10	13,0	7,0	125	3,2	—	-7.0	CC..060204	—	—	—	MS1153	T7
3883271	A16RSCLCR09	16	20,0	11,0	200	—	1/8-27 NPT	-7.0	CC..09T308	—	—	—	MS1155	T15
3883269	A20SSCLCR09	20	25,0	13,0	250	4,0	1/8-27 NPT	-5.0	CC..09T308	—	—	—	MS1155	T15
3883265	A25TSCLCR12	25	32,0	17,0	300	6,4	1/4-18 NPT	-7.0	CC..120408	—	—	—	MS1157	T15
3883266	A32TSCLCR12	32	40,0	22,0	300	6,4	1/4-18 NPT	-7.0	CC..120408	SKCP453	SRS4	4 mm	MS1158	T15
<b>left hand</b>														
3883286	A08JSCLCL06	8	11,0	6,0	110	2,4	—	-8.0	CC..060204	—	—	—	MS1939	T7
3883284	A10KSCLCL06	10	13,0	7,0	125	3,2	—	-7.0	CC..060204	—	—	—	MS1153	T7
3883272	A16RSCLCL09	16	20,0	11,0	200	4,0	1/8-27 NPT	-7.0	CC..09T308	—	—	—	MS1155	T15
3883270	A20SSCLCL09	20	25,0	13,0	250	—	1/8-27 NPT	-5.0	CC..09T308	—	—	—	MS1155	T15
3883267	A25TSCLCL12	25	32,0	17,0	300	6,4	1/4-18 NPT	-7.0	CC..120408	—	—	—	MS1157	T15
3883268	A32TSCLCL12	32	40,0	22,0	300	6,4	1/4-18 NPT	-7.0	CC..120408	SKCP453	SRS4	4 mm	MS1158	T15

# S-Style Clamping Boring Bars for Positive Inserts

Carbide Shank with Through Coolant



Carbide shank with through coolant.

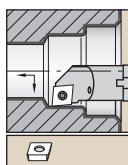


## ■ E-SCLC 95°

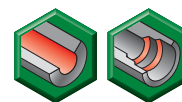
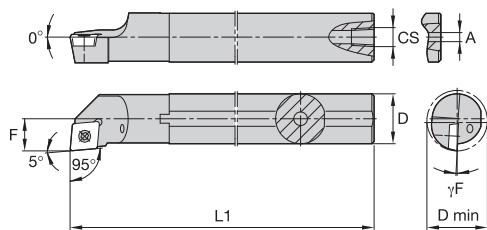


order number	catalogue number	D	D min	F	L1	A	CS	γF°	γP°	gage insert	insert screw	Torx
<b>right hand</b>												
2010068	E08KSCLCR06	8	11,0	6,0	125	3,0	—	-12.0	0.0	CC..060204	12148036300	T8
2023603	E08KSCLCR065	8	10,0	5,0	125	3,0	—	-15.0	0.0	CC..060204	12148036300	T8
2031021	E10MSCLCR06	10	13,0	7,0	150	3,5	—	-10.0	0.0	CC..060204	12148068700	T8
2023608	E12QSCLCR06	12	16,0	9,0	180	4,5	—	-8.0	0.0	CC..060204	12148068700	T8
2010139	E16RSCLCR09	16	20,0	11,0	200	4,5	—	-7.0	0.0	CC..090308	12148038800	T15
2023614	E16RSCLCR09T3	16	20,0	11,0	200	4,5	—	-7.0	0.0	CC..09T308	12148038800	T15
2023621	E20SSCLCR09	20	25,0	13,0	250	—	G 1/8	-5.0	0.0	CC..090308	12148038800	T15
2010184	E20SSCLCR09T3	20	25,0	13,0	250	—	G 1/8	-5.0	0.0	CC..09T308	12148038800	T15
2031029	E25TSCCLCR09	25	32,0	17,0	300	—	G 1/4	-3.0	0.0	CC..090308	12148038800	T15
2010224	E25TSCCLCR09T3	25	32,0	17,0	300	—	G 1/4	-3.0	0.0	CC..09T308	12148038800	T15
2023632	E32USCLCR12	32	40,0	22,0	350	—	G 1/4	-10.0	0.0	CC..120408	MS2260	T20
<b>left hand</b>												
2023601	E08KSCLCL06	8	11,0	6,0	125	3,0	—	-12.0	0.0	CC..060204	12148036300	T8
2031020	E08KSCLCL065	8	10,0	5,0	125	3,0	—	-15.0	0.0	CC..060204	12148036300	T8
2031022	E10MSCLCL06	10	13,0	7,0	150	3,5	—	-10.0	0.0	CC..060204	12148036300	T8
2023607	E12QSCLCL06	12	16,0	9,0	180	4,5	—	-8.0	0.0	CC..060204	12148068700	T8
2023613	E16RSCLCL09	16	20,0	11,0	200	4,5	—	-7.0	0.0	CC..090308	12148038800	T15
2023615	E16RSCLCL09T3	16	20,0	11,0	200	4,5	—	-7.0	0.0	CC..09T308	12148038800	T15
2031026	E20SSCLCL09	20	25,0	13,0	250	—	G 1/8	-5.0	0.0	CC..090308	12148038800	T15
2031027	E20SSCLCL09T3	20	25,0	13,0	250	—	G 1/8	-5.0	0.0	CC..09T308	12148038800	T15
2010215	E25TSCCLCL09	25	32,0	17,0	300	—	G 1/4	-3.0	0.0	CC..090308	12148038800	T15
2031028	E25TSCCLCL09T3	25	32,0	17,0	300	—	G 1/4	-3.0	0.0	CC..09T308	12148038800	T15

Tools for External Turning and Internal Boring



Steel shank with through coolant.



## ■ A-SCLP 95°

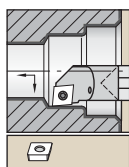


order number	catalogue number	D	D min	F	L1	A	CS	γF°	gage insert	insert screw	Torx
<b>right hand</b>											
5077640	A08JSCLPR06	8	11,0	6,0	110	2,4	—	-6.0	CP..0602..	MS1939	T7
5077645	A10KSCLPR06	10	13,0	7,0	125	3,2	—	-4.0	CP..0602..	MS1939	T7
5077681	A12MSCLPR06	12	16,0	9,0	150	4,0	—	-3.0	CP..0602..	MS1153	T7
5077694	A16RSCLPR06	16	20,0	11,0	200	—	1/8 - 27 NPT	-5.0	CC..0602..	MS1153	T7
5077695	A16RSCLPR09	16	20,0	11,0	200	4,0	1/8 - 27 NPT	-4.0	CP..09T308	MS1155	T15
5077722	A20SSCLPR09	20	25,0	13,0	250	—	1/8 - 27 NPT	-2.0	CP..09T3..	MS1155	T15
<b>left hand</b>											
5077619	A08JSCLPL06	8	11,0	6,0	110	2,4	—	-6.0	CP..0602..	MS1939	T7
5077644	A10KSCLPL06	10	13,0	7,0	125	3,2	—	-4.0	CP..0602..	MS1939	T7
5077680	A12MSCLPL06	12	16,0	9,0	150	4,0	—	-3.0	CP..0602..	MS1153	T7
5077688	A16RSCLPL06	16	20,0	11,0	200	—	1/8 - 27 NPT	-5.0	CC..0602..	MS1153	T7
5077692	A16RSCLPL09	16	20,0	11,0	200	—	1/8 - 27 NPT	-4.0	CP..09T3..	MS1155	T15
5077721	A20SSCLPL09	20	25,0	13,0	250	—	1/8 - 27 NPT	-2.0	CP..09T3..	MS1155	T15

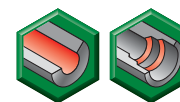
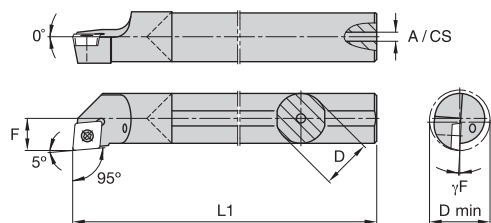


# S-Style Clamping Boring Bars for Positive Inserts

Carbide Shank with Through Coolant



Carbide shank with through coolant.

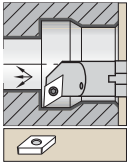


Tools for External Turning and Internal Boring

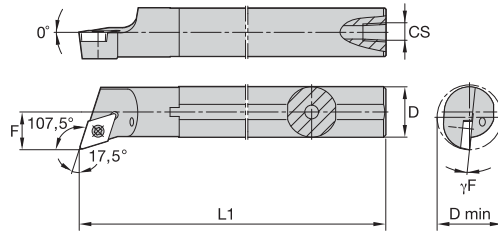
## ■ E-SCLP 95°



order number	catalogue number	D	D min	F	L1	A	γF°	gage insert	insert screw	Torx
<b>right hand</b>										
2023598	E06JSCLPR04	6	8,0	4,5	110	2,0	-10.0	CP..04T104	12148005800	T6
5093094	E08KSCLPR06A	8	11,0	6,0	122	2,4	-6.0	CP..060204	MS1939	T7
5093098	E10MSCLPR06A	10	13,0	7,0	149	3,2	-4.0	CP..060204	MS1939	T7
5093144	E12QSCLPR06	12	16,0	9,0	178	4,8	-3.0	CP..060204	MS1153	T7
5093181	E16RSCLPR09	16	20,0	11,0	201	5,5	-4.0	CP..09T308	MS1155	T15
5093185	E20SSCLPR09	20	25,0	13,0	250	7,1	-2.0	CP..09T308	MS1155	T15
<b>left hand</b>										
2023597	E06JSCLPL04	6	8,0	4,5	110	2,0	-10.0	CP..04T104	12148005800	T6
5093093	E08KSCLPL06A	8	11,0	6,0	122	2,4	-6.0	CP..060204	MS1939	T7
5093097	E10MSCLPL06A	10	13,0	7,0	149	3,2	-4.0	CP..060204	MS1939	T7
5093143	E12QSCLPL06	12	16,0	9,0	178	4,8	-3.0	CP..060204	MS1153	T7
5093149	E16RSCLPL09	16	20,0	11,0	201	5,5	-4.0	CP..09T308	MS1155	T15
5093184	E20SSCLPL09	20	25,0	13,0	250	7,1	-2.0	CP..09T308	MS1155	T15



Steel shank with through coolant.



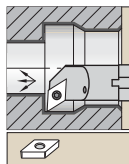
## ■ A-SDQC 107,5°

order number	catalogue number	D	D min	F	L1	CS	$\gamma F^\circ$	gage insert	insert screw	Torx
<b>right hand</b>										
3883476	A16RSDQCR07	16	20,0	11,0	200	1/8-27 NPT	-5.0	DC..070204	MS1153	T7
3883474	A20SSDQCR11	20	25,0	13,0	250	1/8-27 NPT	-5.0	DC..11T308	MS1155	T15
3883462	A25TSDQCR11	25	32,0	17,0	300	1/4-18 NPT	-4.0	DC..11T308	MS1155	T15
<b>left hand</b>										
3883477	A16RSDQCL07	16	20,0	11,0	200	1/8-27 NPT	-5.0	DC..070204	MS1153	T7
3883475	A20SSDQCL11	20	25,0	13,0	250	1/8-27 NPT	-5.0	DC..11T308	MS1155	T15
3883473	A25TSDQCL11	25	32,0	17,0	300	1/4-18 NPT	-4.0	DC..11T308	MS1155	T15

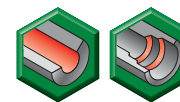
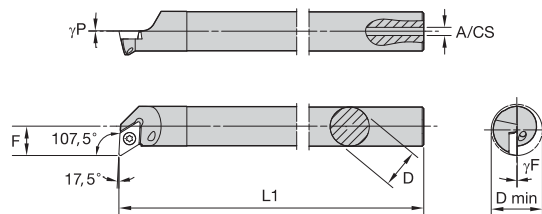


# S-Style Clamping Boring Bars for Positive Inserts

Carbide Shank with Through Coolant



Carbide shank with through coolant.

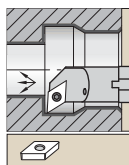


## ■ E-SDQC 107,5°

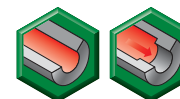
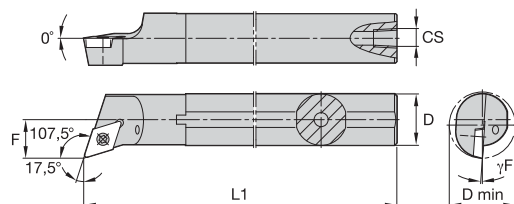
order number	catalogue number	D	D min	F	L1	A	CS	$\gamma F^\circ$	$\gamma P^\circ$	gage insert	insert screw	Torx
<b>right hand</b>												
2010111	E12QSDQCR07	12	16,0	9,0	180	4,5	—	-7.0	0.0	DC..070204	12148080000	T8
2031025	E16RSDQCR07	16	20,0	11,0	200	5,5	—	-5.0	0.0	DC..070204	12148080000	T8
2023623	E20SSDQCR11	20	25,0	13,0	250	—	G 1/8	-7.0	0.0	DC..11T308	12148038800	T15
<b>left hand</b>												
2031023	E12QSDQCL07	12	16,0	9,0	180	4,5	—	-7.0	0.0	DC..070204	12148080000	T8
2010148	E16RSDQCL07	16	20,0	11,0	200	5,5	—	-5.0	0.0	DC..070204	12148080000	T8
2023622	E20SSDQCL11	20	25,0	13,0	250	—	G 1/8	-7.0	0.0	DC..11T308	12148038800	T15



## Steel Shank with Through Coolant



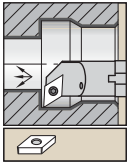
Steel shank with through coolant.



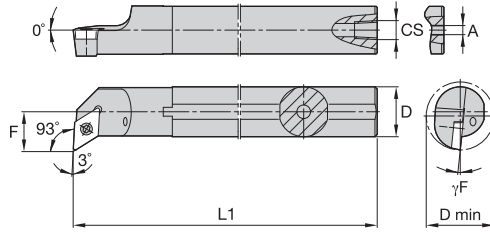
## ■ A-SDQP

order number	catalogue number	D	D min	F	L1	CS	$\gamma F^\circ$	gage insert	insert screw	Torx
<b>right hand</b>										
5078292	A12MSDQPR07	12	16,0	9,0	150	1/16-27 NPT	2.0	DP..0702..	MS1153	T7
5078295	A16RSDQPR07	16	20,0	11,0	200	1/8-27 NPT	0.0	DP..0702..	MS1153	T7
5078298	A20SSDQPR11	20	25,0	13,0	250	1/8-27 NPT	2.0	DP..11T3..	MS1155	T15
5078320	A25TSDQPR11	25	32,0	17,0	300	1/4-18 NPT	0.0	DP..11T3..	MS1155	T15
<b>left hand</b>										
5078291	A12MSDQPL07	12	16,0	9,0	150	1/16-27 NPT	2.0	DP..0702..	MS1153	T7
5078293	A16RSDQPL07	16	20,0	11,0	200	1/8-27 NPT	0.0	DP..0702..	MS1153	T7
5078296	A20SSDQPL11	20	25,0	13,0	250	1/8-27 NPT	2.0	DP..11T3..	MS1155	T15
5078299	A25TSDQPL11	25	32,0	17,0	300	1/4-18 NPT	0.0	DP..11T3..	MS1155	T15





Steel shank with through coolant.



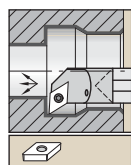
## ■ A-SDUC 93°

order number	catalogue number	D	D min	F	L1	A	CS	γF°	gage insert	shim	shim screw	hex	insert screw	Torx
<b>right hand</b>														
3883297	A10KSDUCR07	10	13,0	7,0	125	3,2	—	-7.0	DC..070204	—	—	—	MS1153	T7
3883294	A16RSDUCR07	16	20,0	11,0	200	—	1/8-27 NPT	-4.0	DC..070204	—	—	—	MS1153	T7
3883293	A16RSDUCR11	16	20,0	11,0	200	—	1/8-27 NPT	-6.0	DC..11T308	—	—	—	MS1155	T15
3883291	A20SSDUCR11	20	25,0	13,0	250	—	1/8-27 NPT	-5.0	DC..11T308	—	—	—	MS1155	T15
3883288	A25TSDUCR11	25	32,0	17,0	300	—	1/8-27 NPT	-4.0	DC..11T308	—	—	—	MS1155	T15
3883287	A32TSDUCR15	32	40,0	22,0	300	—	1/8-27 NPT	-7.0	DC..150408	SKDP453	SRS4	4 mm	MS1158	T15
<b>left hand</b>														
3883298	A10KSDUCL07	10	13,0	7,0	125	3,2	—	-7.0	DC..070204	—	—	—	MS1153	T7
3883296	A16RSDUCL07	16	20,0	11,0	200	—	1/8-27 NPT	-4.0	DC..070204	—	—	—	MS1153	T7
3883295	A16RSDUCL11	16	20,0	11,0	200	—	1/8-27 NPT	-6.0	DC..11T308	—	—	—	MS1155	T15
3883292	A20SSDUCL11	20	25,0	13,0	250	—	1/8-27 NPT	-5.0	DC..11T308	—	—	—	MS1155	T15
3883290	A25TSDUCL11	25	32,0	17,0	300	—	1/8-27 NPT	-4.0	DC..11T308	—	—	—	MS1155	T15
3883289	A32TSDUCL15	32	40,0	22,0	300	—	1/8-27 NPT	-7.0	DC..150408	SKDP453	SRS4	4 mm	MS1158	T15

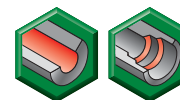
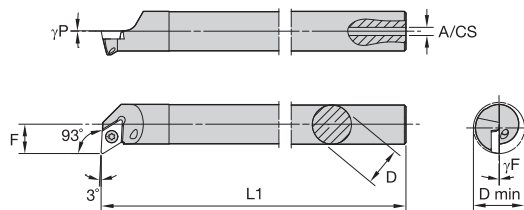


# S-Style Clamping Boring Bars for Positive Inserts

Carbide Shank with Through Coolant



Carbide shank with through coolant.

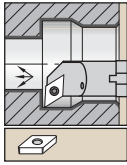


## ■ E-SDUC 93°

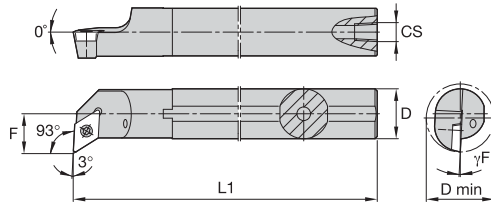


order number	catalogue number	D	D min	F	L1	A	CS	γF°	γP°	gage insert	insert screw	Torx
<b>right hand</b>												
2023611	E12QSDUCR07	12	16,0	9,0	180	4,5	—	-7.0	0.0	DC..070204	12148068700	T8
2010157	E16RSDUCR07	16	20,0	11,0	200	4,5	—	-5.0	0.0	DC..070204	12148080000	T8
2023624	E20SSDUCR11	20	25,0	13,0	250	—	G 1/8	-7.0	0.0	DC..11T308	12148038800	T15
2023630	E25TSDUCR11	25	32,0	17,0	300	—	G 1/4	-5.0	0.0	DC..11T308	12148038800	T15
<b>left hand</b>												
2023610	E12QSDUCL07	12	16,0	9,0	180	4,5	—	-7.0	0.0	DC..070204	12148068700	T8
2023617	E16RSDUCL07	16	20,0	11,0	200	4,5	—	-5.0	0.0	DC..070204	12148080000	T8
2010193	E20SSDUCL11	20	25,0	13,0	250	—	G 1/8	-7.0	0.0	DC..11T308	12148038800	T15
2023629	E25TSDUCL11	25	32,0	17,0	300	—	G 1/4	-5.0	0.0	DC..11T308	12148038800	T15

Tools for External Turning and Internal Boring



Steel shank with through coolant.

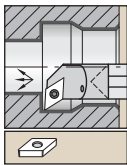


## ■ A-SDUP 93°

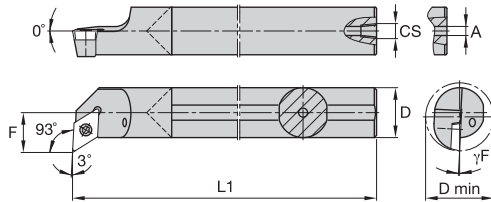
order number	catalogue number	D	D min	F	L1	CS	γF°	gage insert	insert screw	Torx
<b>right hand</b>										
5078360	A12MSDUPR07	12	16,0	9,0	150	1/16-27 NPT	-2.0	DP..070204	MS1153	T7
5078364	A16RSDUPR07	16	20,0	11,0	200	1/8-27 NPT	0.0	DP..070204	MS1153	T7
5078368	A20SSDUPR11	20	25,0	13,0	250	1/8-27 NPT	-2.0	DP..11T308	MS1155	T15
5078376	A25TSDUPR11	25	32,0	17,0	300	1/4-18 NPT	0.0	DP..11T308	MS1155	T15
<b>left hand</b>										
5078329	A12MSDUPL07	12	16,0	9,0	150	1/16-27 NPT	-2.0	DP..070204	MS1153	T7
5078363	A16RSDUPL07	16	20,0	11,0	200	1/8-27 NPT	0.0	DP..070204	MS1153	T7
5078367	A20SSDUPL11	20	25,0	13,0	250	1/8-27 NPT	-2.0	DP..11T308	MS1155	T15
5078375	A25TSDUPL11	25	32,0	17,0	300	1/4-18 NPT	0.0	DP..11T308	MS1155	T15



## Carbide Shank with Through Coolant



Carbide shank with through coolant.



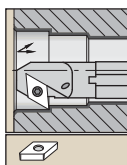
## ■ E-SDUP 93°

order number	catalogue number	D	D min	F	L1	A	γF°	gage insert	insert screw	Torx
<b>right hand</b>										
5093591	E12QSDUPR07	12	16,0	9,0	179	4,8	-2.0	DP..070204	MS1153	T7
5093634	E16RSDUPR07	16	20,0	11,0	199	5,5	0.0	DP..070204	MS1153	T7
5093639	E20SSDUPR11	20	25,0	13,0	253	7,1	-2.0	DP..11T308	MS1155	T15
<b>left hand</b>										
5093429	E12QSDUPL07	12	16,0	9,0	179	4,8	-2.0	DP..070204	MS1153	T7
5093633	E16RSDUPL07	16	20,0	11,0	199	5,5	0.0	DP..070204	MS1153	T7
5093638	E20SSDUPL11	20	25,0	13,0	253	7,1	-2.0	DP..11T308	MS1155	T15

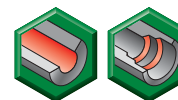
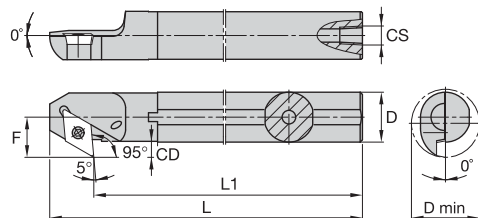


# S-Style Clamping Boring Bars for Positive Inserts

Steel Shank with Through Coolant

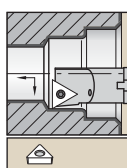


Steel shank with through coolant.

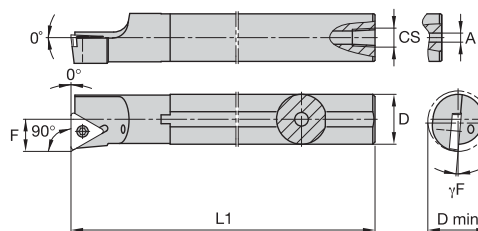


## ■ A-SDXP 95°

order number	catalogue number	D	D min	F	L1	L	CD	CS	gage insert	insert screw	Torx
<b>right hand</b>											
5078401	A12MSDXPR07	12	16,0	9,0	150	162,0	3,09	1/16-27 NPT	DP..070204	MS1153	T7
5078405	A16RSDXPR07	16	20,0	11,0	200	212,0	3,20	1/8-27 NPT	DP..070204	MS1153	T7
5078430	A20SSDXPR11	20	25,0	13,0	250	270,0	4,31	1/8-27 NPT	DP..11T308	MS1155	T15
<b>left hand</b>											
5078400	A12MSDXPL07	12	16,0	9,0	150	162,0	3,09	1/16-27 NPT	DP..070204	MS1153	T7
5078404	A16RSDXPL07	16	20,0	11,0	200	212,0	3,20	1/8-27 NPT	DP..070204	MS1153	T7
5078409	A20SSDXPL11	20	25,0	13,0	250	270,0	4,31	1/8-27 NPT	DP..11T308	MS1155	T15



Steel shank with through coolant.

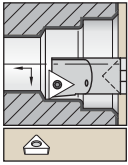


## ■ A-STFC 90°

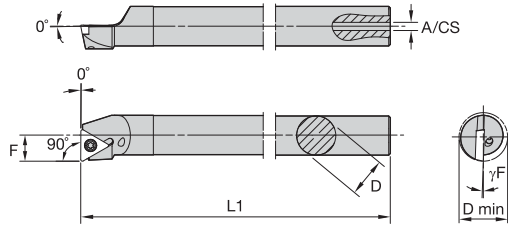
order number	catalogue number	D	D min	F	L1	A	γF°	gage insert	insert screw	Torx	
<b>right hand</b>											
3883382	A10KSTFCR11	10	13,0	7,0	125	3,2	-7.0	TC..110204	MS1153	T7	
<b>left hand</b>											
3883443	A10KSTFCL11	10	13,0	7,0	125	3,2	-7.0	TC..110204	MS1153	T7	



Tools for External Turning and Internal Boring



Carbide shank with through coolant.



■ E-STFC 90°

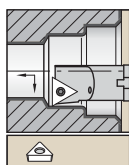


order number	catalogue number	D	D min	F	L1	A	CS	γF°	gage insert	insert screw	Torx
<b>right hand</b>											
2031888	E10MSTFCR11	10	13,0	7,0	150	3,5	—	-10,0	TC..110204	12148068700	T8
2031024	E12QSTFCR11	12	16,0	9,0	180	4,5	—	-8,0	TC..110204	12148068700	T8
2010174	E16RSTFCR16	16	20,0	11,0	200	4,5	—	-9,0	TC..16T308	12148038800	T15
2023626	E20SSTFCR16	20	25,0	13,0	250	—	G 1/8	-7,0	TC..16T308	12148038800	T15
2023631	E25TSTFCR16	25	32,0	17,0	300	—	G 1/4	-5,0	TC..16T308	12148038800	T15
<b>left hand</b>											
2010090	E10MSTFCL11	10	13,0	7,0	150	3,5	—	-10,0	TC..110204	12148068700	T8
2010120	E12QSTFCL11	12	16,0	9,0	180	4,5	—	-8,0	TC..110204	12148068700	T8
2023618	E16RSTFCL16	16	20,0	11,0	200	4,5	—	-9,0	TC..16T308	12148038800	T15
2023625	E20SSTFCL16	20	25,0	13,0	250	—	G 1/8	-7,0	TC..16T308	12148038800	T15
2010233	E25TSTFCL16	25	32,0	17,0	300	—	G 1/4	-5,0	TC..16T308	12148038800	T15

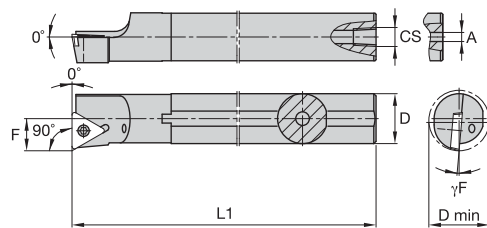


# S-Style Clamping Boring Bars for Positive Inserts

Steel Shank with Through Coolant



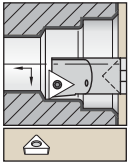
Steel shank with through coolant.



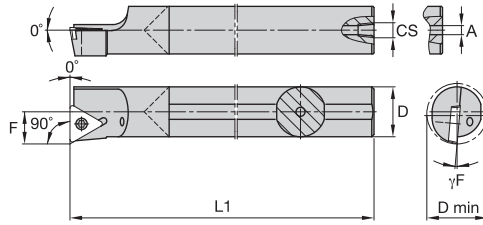
## ■ A-STFP 90°



order number	catalogue number	D	D min	F	L1	A	CS	γF°	gage insert	insert screw	Torx
<b>right hand</b>											
5086726	A08JSTFPR09	8	11,0	6,0	110	—	—	-8.0	TP..090204	MS1933	T7
3883446	A10KSTFPR11	10	13,0	7,0	125	3,2	—	-4.0	TP..110204	MS1153	T7
5086802	A12MSTFPR11	12	16,0	9,0	150	4,0	—	-2.0	TP..110204	MS1153	T7
3883444	A16RSTFPR11	16	20,0	11,0	200	—	1/16-27 NPT	0.0	TP..110204	MS1153	T7
5086807	A20SSTFPR16	20	25,0	13,0	250	—	—	-2.0	TP..16T308	MS1155	T15
5086809	A25STFPR16	25	32,0	17,0	300	6,4	1/4-18 NPT	0.0	TP..16T308	MS1155	T15
<b>left hand</b>											
5086724	A08JSTFPL09	8	11,0	6,0	110	—	—	-8.0	TP..090204	MS1933	T7
3883447	A10KSTFPL11	10	13,0	7,0	125	3,2	—	-4.0	TP..110204	MS1153	T7
5086800	A12MSTFPL11	12	16,0	9,0	150	4,0	—	-2.0	TP..110204	MS1153	T7
3883445	A16RSTFPL11	16	20,0	11,0	200	—	1/16-27 NPT	0.0	TP..110204	MS1153	T7
5086806	A20SSTFPL16	20	25,0	13,0	250	—	—	-2.0	TP..16T308	MS1155	T15
5086808	A25STFPL16	25	32,0	17,0	300	6,4	1/4-18 NPT	0.0	TP..16T308	MS1155	T15



Carbide shank with through coolant.



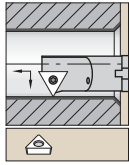
## ■ E-STFP 90°

order number	catalogue number	D	D min	F	L1	A	γF°	gage insert	insert screw	Torx
<b>right hand</b>										
5093696	E08KSTFPR09A	8	11,0	6,0	124	2,4	-6.0	TP..090204	MS1933	T7
5093750	E10MSTFPR11A	10	13,0	7,0	152	3,2	-4.0	TP..110204	MS1153	T7
5093755	E12QSTFPR11	12	16,0	9,0	181	4,8	-2.0	TP..110204	MS1153	T7
5093759	E16RSTFPR11	16	20,0	11,0	201	5,5	0.0	TP..110204	MS1153	T7
5093773	E20SSTFPR16	20	25,0	13,0	251	7,1	-2.0	TP..16T308	MS1155	T15
<b>left hand</b>										
5093694	E08KSTFPL09A	8	11,0	6,0	124	2,4	-6.0	TP..090204	MS1933	T7
5093699	E10MSTFPL11A	10	13,0	7,0	152	3,2	-4.0	TP..110204	MS1153	T7
5093754	E12QSTFPL11	12	16,0	9,0	181	4,8	-2.0	TP..110204	MS1153	T7
5093758	E16RSTFPL11	16	20,0	11,0	201	5,5	0.0	TP..110204	MS1153	T7
5093772	E20SSTFPL16	20	25,0	13,0	251	7,1	-2.0	TP..16T308	MS1155	T15

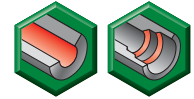
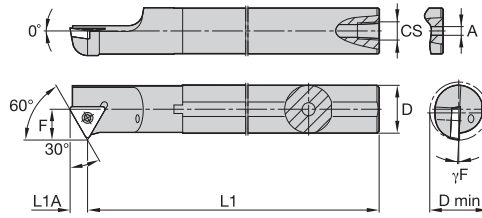


# S-Style Clamping Boring Bars for Positive Inserts

Steel Shank with Through Coolant

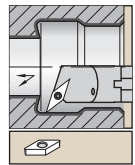


Steel shank with through coolant.

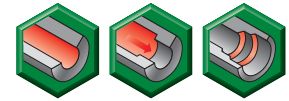
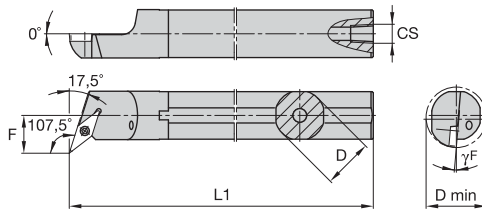


## ■ A-STWP 60°

order number	catalogue number	D	D min	F	L1	L1A	A	γF°	gage insert	insert screw	Torx
<b>right hand</b>											
5086811	A12MSTWPR11	12	16,0	9,0	150	—	—	-2.0	TP..110204	MS1153	T7
5086813	A16RSTWPR11	16	20,0	11,0	200	—	—	-2.0	TP..110204	MS1153	T7
<b>left hand</b>											
3883449	A10KSTWPL11	10	13,0	7,0	125	5,0	3,2	-4.0	TP..110204	MS1153	T7
5086810	A12MSTWPL11	12	16,0	9,0	150	—	—	-2.0	TP..110204	MS1153	T7
5086812	A16RSTWPL11	16	20,0	11,0	200	—	—	-2.0	TP..110204	MS1153	T7



Steel shank with through coolant.

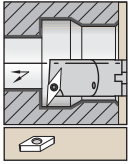


## ■ A-SVQB 107,5°

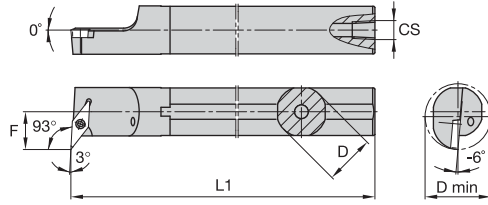
order number	catalogue number	D	D min	F	L1	CS	γF°	gage insert	insert screw	Torx	
<b>right hand</b>											
3883436	A16RSVQBR11	16	20,0	11,0	200	1/8-27 NPT	-7.0	VB..110304	MS1153	T7	
3883434	A25TSVQBR16	25	32,0	17,0	300	1/4-18 NPT	-6.0	VB..160408	MS1155	T15	
<b>left hand</b>											
3883435	A25TSVQBL16	25	32,0	17,0	300	1/4-18 NPT	-6.0	VB..160408	MS1155	T15	



Tools for External Turning and Internal Boring



Steel shank with through coolant.



■ **A-SVUB 93°**

order number	catalogue number	D	D min	F	L1	CS	gage insert	insert screw	Torx
<b>right hand</b>									
3883440	A20SSVUBR11	20	25,0	13,0	250	1/8-27 NPT	VB..110304	MS1153	T7
3883438	A25TSVUBR16	25	32,0	17,0	300	1/4-18 NPT	VB..160408	MS1155	T15
<b>left hand</b>									
3883439	A25TSVUBL16	25	32,0	17,0	300	1/4-18 NPT	VB..160408	MS1155	T15



## Tunable Boring Bars with Front End KM™ Quick Change Adaptor

Reduce vibrations and enhance productivity in deep boring applications with KM Quick Change heads and tunable boring bars.

# Tunable Boring Bars



Adjustment screw to allow for on-machine tuning. Allows each bar to be setup for the specific operation.



Available in either steel or carbide shanks:

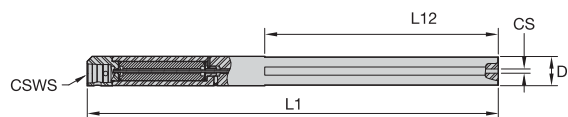
- Steel  
— 40–100mm
- Carbide  
— 50–100mm

Comprehensive offering of KM Quick Change cutting units. See WIDIA™ Tooling Systems Catalogue (A-09-02122) for KM adaptors.

Features	Function	Benefit
Robust internal clamping package	<ul style="list-style-type: none"> <li>• Eliminates chatter and vibration.</li> <li>• Higher metal removal rate.</li> <li>• Larger depths of cut.</li> </ul>	<ul style="list-style-type: none"> <li>• High surface quality.</li> <li>• Low scrap rate.</li> <li>• Increased productivity.</li> <li>• Reduced noise exposure.</li> </ul>
Tunable clamping mechanism	Bar can be tuned on the machine with just turning a screw.	Optimised damping characteristics for all kinds of machining conditions.
KM™ Quick Change front end adaptor	<ul style="list-style-type: none"> <li>• Ridged clamping system.</li> <li>• Wide selection of KM Quick Change cutting units.</li> </ul>	Flexible system reduces tooling inventory and setup times.

### ■ Tuning Procedure

1. Loosen the two locking screws on the bar.
2. Turn the adjusting screw in the positive direction until it becomes snug. The adjusting screw becomes snug when it locks the tuner mass.
3. Turn the screw one complete turn in the negative direction and take a test cut.
4. Repeat Step 3 until chatter is eliminated.
5. Once chatter is eliminated, note that chatter starts between the current screw setting and one turn in the positive direction. Make 1/4 turn adjustments within this range, taking test cuts for each setting, until you can identify the adjusting screw setting that causes chatter to start.
6. Once the adjusting screw setting that causes chatter is determined, back the adjusting screw off a 1/2 turn in the negative direction.
7. Tighten both clamping screws and take a test cut to confirm desired results.



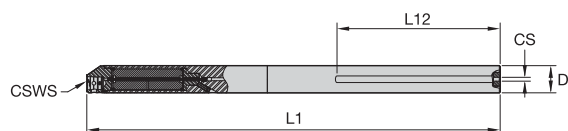
Tunable steel shank with through coolant and front end KM™ clamping unit.



■ D...TTB-KM • Metric

order number	catalogue number	D	L1	CS	L12	L1 min	CSWS system size
3637636	D40MTTB560KM40	40	520	RP 3/8-19	305	330	KM40
3637637	D50MTTB737KM40	50	697	RP 3/8-19	470	337	KM40
3637638	D60MTTB1000KM40	60	976	RP 3/8-19	686	396	KM40
3642134	D80MTTB1120KM63	80	1060	RP 3/8-19	610	560	KM63
3642135	D100MTTB1330KM63	100	1384	RP 3/8-19	622	695	KM63

NOTE: KM adaptors can be found in the WIDIA™ Tooling Systems Catalogue (A-09-02122EN).



Carbide tunable boring bar with KM™ Quick Change connection.



■ G-KM-TTB • Metric

order number	catalogue number	D	L1	CS	L12	CSWS system size
3954298	G50MTTB1026KM40	50	986	RP 3/8-19	300	KM40
3954299	G60MTTB1226KM40	60	1186	RP 3/8-19	381	KM40
3954300	G80MTTB1564KM63	80	1504	RP 3/8-19	480	KM63
3954301	G100MTTB2066KM63	100	1975	RP 3/8-19	600	KM63

NOTE: KM adaptors can be found in the WIDIA™ Tooling Systems Catalogue (A-09-02122EN).

# WMT™ System



EXTREME **CHALLENGES.**  
EXTREME **RESULTS.**

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

## **Versatile and Well-Constructed**

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

## **WMT Toolholders**

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

To learn more, contact your local Authorised Distributor or visit [widia.com](http://widia.com).

**WIDIA** 

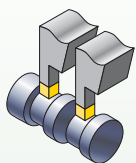




## Turning • Grooving and Cut-Off

Grooving and Cut-Off Platforms .....	D2-D3
WMT Grooving, Face Grooving, Cut-Off, and Profiling.....	D4-D39
TopGroove Shallow Grooving and Face Grooving .....	D40-D91
ProGroove Grooving and Cut-Off .....	D92-D106

**Grooving**



**WMT™**

- Insert cutting widths: 2–8mm.
- O.D. cutting depths: 16,5–25,4mm.
- I.D. boring bar minimum bore diameter: 57,15mm.
- Screw-clamping integral shank/cartridge toolholders available.
- Geometry for deep grooving.

Pages:  
D4–D39



**TopGroove™**

- Insert cutting widths: 0,5–6,35mm.
- Insert cutting depths: 0,64–12,7mm.
- I.D. boring bar minimum bore diameter: 11,2mm.
- Integral shank toolholders available.

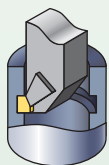
Pages:  
D40–D91



**ProGroove™**

- Insert cutting depths: 10–40mm.
- Inserts enable precision sintered execution, good tolerances, and repeatability.
- Screw-clamping integral shank toolholders available.
- Grooving and O.D. turning.

Pages:  
D92–D104



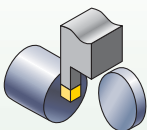
**LG**

- Insert cutting widths: 8–16mm.
- O.D. cutting depths: 20–32mm.
- Wedge-clamping integral shank tooling available.

Pages:  
D105–D106



**Cut-Off**



**WMT**

- Cut-off widths: 1,5–4mm.
- Maximum cutting depth: 22,2mm.
- Screw-clamping integral shank/cartridge toolholders available.
- Economical double-sided inserts for rigidity and dimensional accuracy.
- Right-/left-hand styles: 5° and 12° lead angles.

Pages:  
D4–D39



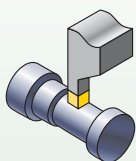
**ProGroove**

- Cut-off widths: 2–8mm.
- Single-edge inserts for maximum depth capacity.
- Right-/left-hand styles with 6° lead angles.
- Self-clamping blades/screw-clamping integral shank toolholders available.

Pages:  
D92–D104



**Plunge and Turn**



**WMT**

**Heavy Stock Removal in Turning Applications**

- Double-sided inserts, cutting widths: 2–8mm.
- O.D. cutting depths: 16,5–25,4mm.
- I.D. boring bar minimum bore diameter: 57,15mm.
- Screw-clamping integral shank/cartridge toolholders available.

Pages:  
D4–D39



**ProGroove**

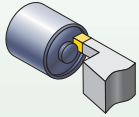
**For Light-Cutting Inserts**

- Cutting widths: 2–8mm.
- O.D. cutting depths: 10–40mm.
- Single-edge inserts for maximum depth capacity.
- Screw-clamping integral shank toolholders available.

Pages:  
D92–D104



**Face Grooving**



**WMT™**

- Cutting widths: 3–6,35mm.
- Cutting depths: 13–25,4mm.
- Minimum face groove diameter: 38–205mm.

Pages:  
D4–D39



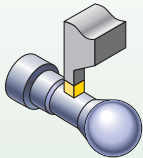
**TopGroove™**

- NF/NFD face groove insert range: 24–57mm.
- Cutting width range for standard inserts: 0,8–9,5mm.
- Cutting depth range for standard inserts: 1,27–12,70mm.
- Cutting width range for NF/NFD face grooving inserts: 2–6,35mm.
- Standard insert minimum face groove diameter range: 54–330mm.
- Cutting depth range for NF/NFD face grooving inserts: 1,52–12,70mm.
- Cutting depth range for NF: 1,52–3,81mm.
- Cutting depth range for NFD: 6,35–12,7mm.

Pages:  
D40–D91



**Profiling**



**WMT**

**For Heavy Stock Removal**

- Full-radius insert cutting widths: 3–8mm.
- O.D. cutting depths: 16,5–25,4mm.
- Screw-clamping integral shank/cartridge toolholders available.

Pages:  
D4–D39



**TopGroove**

**Moderate/Heavy Stock Removal at Shallow Profile Depths**

- Full-radius insert cutting widths: 1,57–6,35mm.
- Insert cutting depths: 2,39–6,35mm.
- Integral shank toolholders and ERICKSON™ heads available.

Pages:  
D40–D91



**ProGroove™**

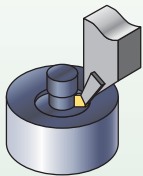
**For Light Cutting**

- Full-radius insert cutting widths: 3–6mm.
- O.D. cutting depths: 10–32mm.
- Screw-clamping integral shank/cartridge toolholders available.

Pages:  
D92–D104



**Undercutting**



**TopGroove**

- Undercutting insert widths: 2,4–4mm.
- Economical double-ended inserts.

Pages:  
D40–D91



## WMT™ System •

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

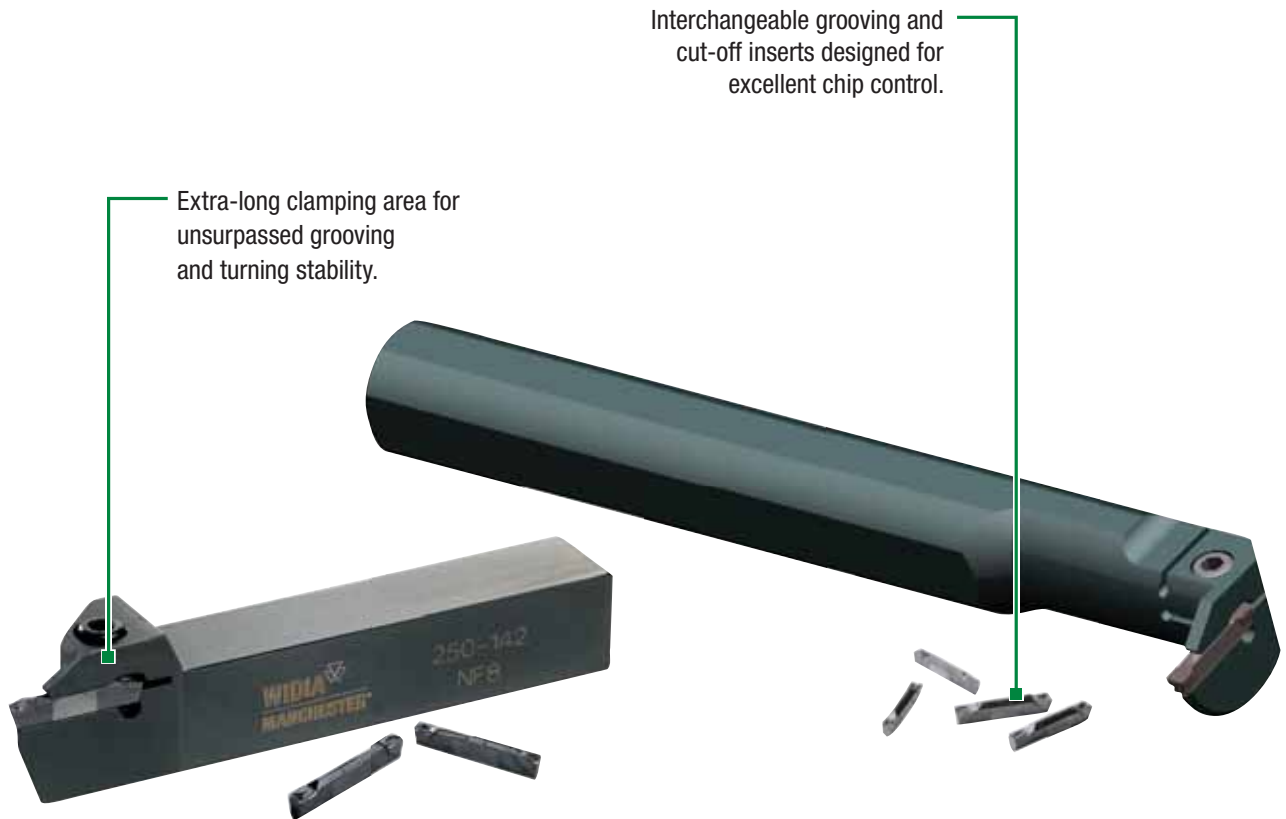


# WMT

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

### Versatile and Well-Constructed

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



## WMT™ Toolholders

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



## 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!

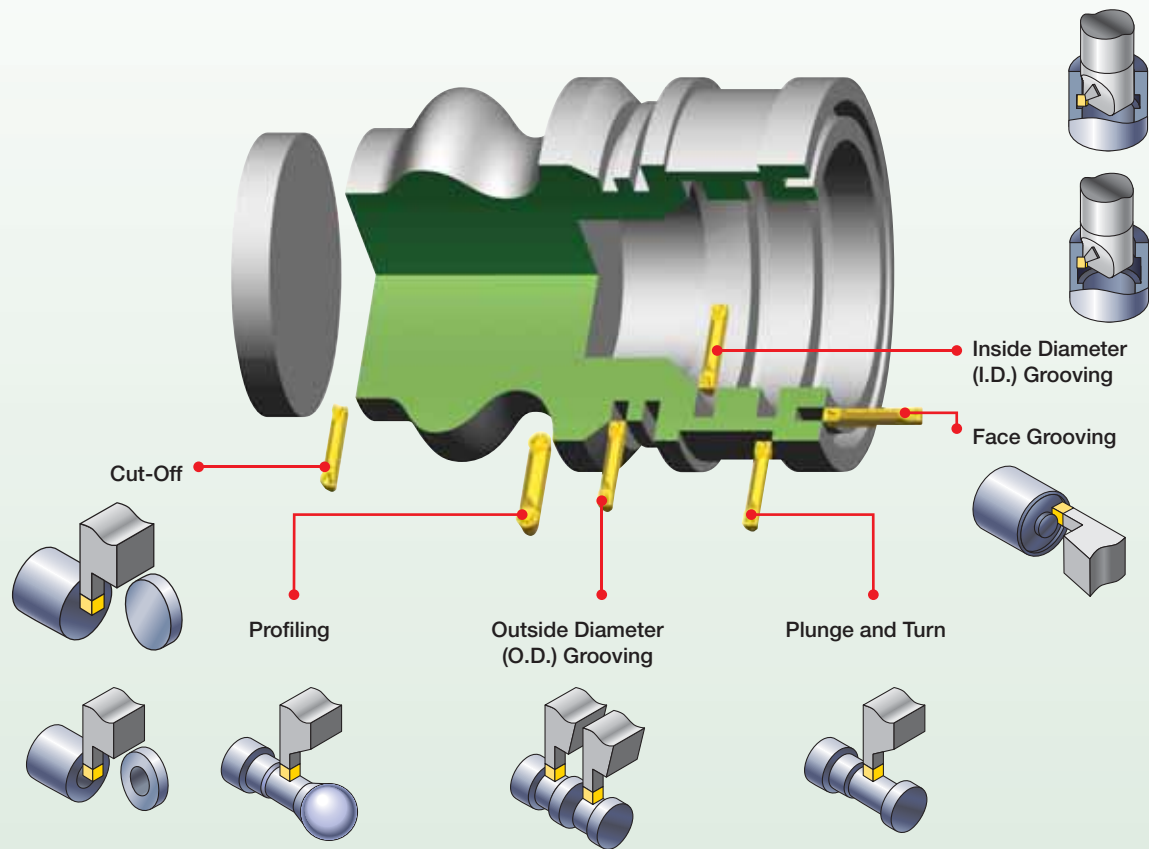
The WMT system, with its extra-long clamping area and precise insert positioning, ensures exceptionally fast and accurate machining, all-in-one tool, for your most demanding grooving, cut-off, turning, and profiling applications.

It is perfect for all general-purpose operations, including both shallow and deep grooving.

Utilise 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.



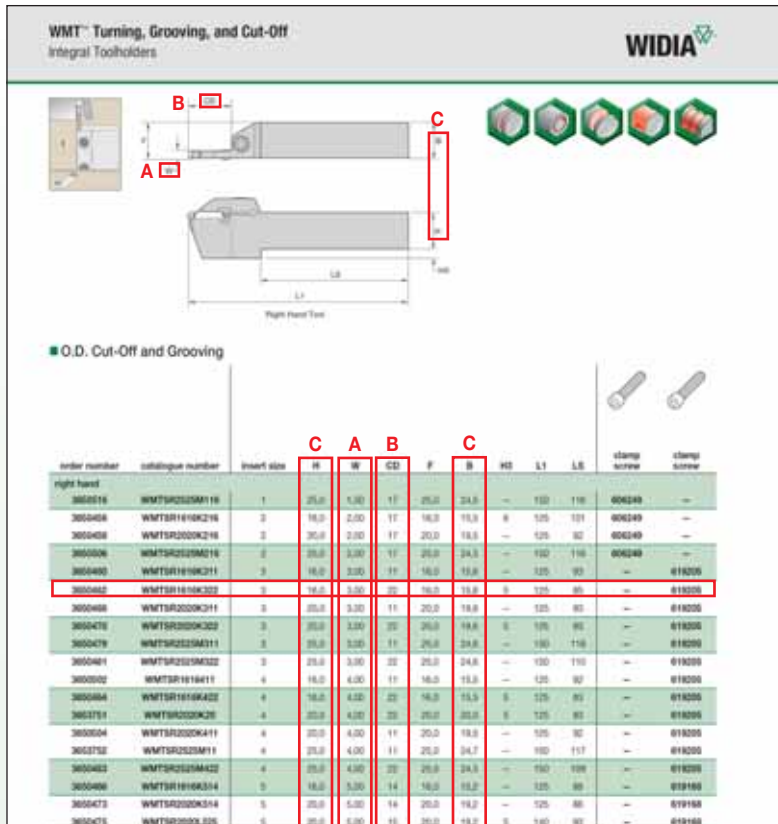
### 2 Identify the material to be machined:

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

<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 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.



	application	conventional toolholders	modular blades
	O.D. Grooving and Cut-Off	pages D30–D32	page D38
	Face Grooving	pages D33–D34	page D39
	I.D. Grooving	page D35	—
	Plunge and Turn	pages D30–D32	page D38



**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.

**WMT™ Turning, Grooving, Cut-off, and Profiling**  
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, INCOINEL®, 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 Grooving 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.
- Delivers chip control over full range of DOC when turning.
- Cuts 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 Plunging and Turning Inserts**

- Excellent performance in greater than 35 HRC.
- Deep grooving tool for plunge and turn O.D. and face grooving operations.
- Delivers chip control over full range of DOC when turning.
- Delivers superior chip control in interrupted cuts.

Recommended Starting Feed

turn/plunge feed mm/rev	0.1	0.16	0.25	0.4
plunge groove feed mm/rev	0.05	0.1	0.16	0.30

turn/profile feed mm/rev	0.1	0.16	0.25	0.4
plunge groove feed mm/rev	0.05	0.1	0.16	0.30

turn/profile feed mm/rev	0.1	0.16	0.25	0.4
plunge groove feed mm/rev	0.05	0.1	0.16	0.30

- A** Choose the appropriate insert width “W” for your specific application.
- B** Select the required corner radius value “RR”.

**WMT™ Turning, Grooving, and Cut-Off**  
Cut-Off Inserts

• first choice  
○ alternate choice

catalogue number	insert size	A W	B RR	LJ	hand	WP190T	WP250T	WU190T	WU250T	WU15HT
WMTC015A00CM06	1	1.50	0.08	16.30	N - Neutral	+	+	+	+	+
WMTC020A00CM06	2	2.00	0.08	16.21	N - Neutral	+	+	+	+	+

**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 D11 for Grades and Grade Descriptions.

**6 Determine cutting data:**

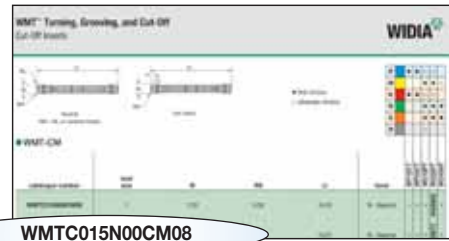
- A** Based on material group and grade, identify starting speed (vc).
- B** First choice starting speed is in **bold**.

NOTE: See page D13 for cutting data.

WIDIA		WMT™ Turning, Grooving, and Cut-Off Recommended Cutting Speeds • Metric														
		Cutting Speed — vc m/min														
Material Group		WU15HT			WU15PT			WU25PT			WP10CT			WP25CT		
		min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
P	9/1	100	<b>100</b>	110	100	200	210	170	<b>175</b>	180	210	<b>225</b>	240	170	<b>175</b>	180
	2	95	<b>95</b>	105	180	185	190	150	<b>160</b>	170	210	<b>220</b>	230	185	<b>195</b>	205
	3	95	<b>95</b>	105	160	<b>165</b>	170	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>140</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	-	-	-	-	-	-
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>	160	110	<b>120</b>	130	-	-	-	-	-	-
	3	70	<b>75</b>	80	140	<b>150</b>	160	110	<b>120</b>	130	-	-	-	-	-	-
	4	70	<b>75</b>	80	140	<b>150</b>	160	110	<b>120</b>	130	-	-	-	-	-	-
	5	70	<b>75</b>	80	140	<b>150</b>	160	110	<b>120</b>	130	-	-	-	-	-	-
	6	70	<b>75</b>	80	140	<b>150</b>	160	110	<b>120</b>	130	-	-	-	-	-	-
	7	70	<b>75</b>	80	140	<b>150</b>	160	110	<b>120</b>	130	-	-	-	-	-	-
S	1	30	<b>35</b>	40	70	<b>75</b>	80	60	<b>65</b>	65	-	-	-	-	-	-
	2	30	<b>35</b>	40	65	<b>65</b>	70	50	<b>50</b>	50	-	-	-	-	-	-
	3	30	<b>30</b>	30	100	<b>100</b>	110	70	<b>75</b>	80	-	-	-	-	-	-
	4	-	-	-	70	<b>75</b>	80	50	<b>50</b>	50	-	-	-	-	-	-
T	1	-	-	-	15	<b>30</b>	60	15	<b>30</b>	60	-	-	-	-	-	-

## WMT Identification System

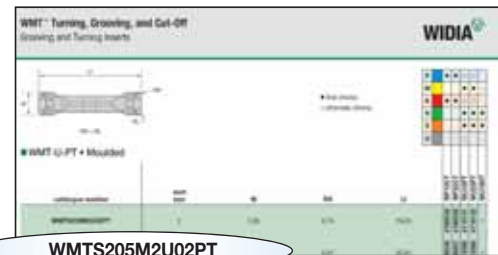
Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



WMTC015N00CM08

**Cut-Off**

<b>WMT</b> Tooling System	<b>C</b> Cut-Off	<b>015</b> W in mm* 10	<b>N</b> Hand of Insert	<b>00</b> Main Cutting Edge Lead Angle	<b>CM</b> Chipbreaker Geometry <b>CM</b> = Cut-Off Medium <b>CM-W</b> = Cut-Off Medium with Wiper	<b>08</b> Corner Radius in mm* 10
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WMTS205M2U02PT

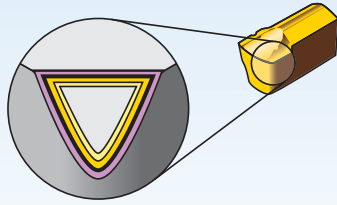
**Groove, Plunge, Turn, and Contour Inserts**

<b>WMT</b> Tooling System	<b>S</b> Square	<b>205</b> mm* 10 inch* 1000	<b>M</b> Unit of Measurement for Width <b>M</b> = mm <b>I</b> = inch	<b>2</b> Seat Size	<b>U</b> Insert Tolerance	<b>02</b> Corner Radius in mm* 10	<b>PT</b> Chipbreaker Geometry <b>PT</b> = Groove, Plunge, and Turn <b>PH</b> = Groove, Plunge, and Turn <b>PC</b> = Plunge and Contour
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**P** = Precision ground grooving width tolerance:  
± .001" (0,025mm)

**U** = Utility moulded grooving width tolerance:

3,05–4,05:	$\frac{+.006"}{-0}$	$\frac{(+0,15\text{mm})}{-0}$
5,05–10,05:	$\frac{+.010"}{-0}$	$\frac{(+0,25\text{mm})}{-0}$



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

wear resistance ← → toughness

Grade	Coating	Grade Description	Material																						
				05	10	15	20	25	30	35	40	45													
WU10PT	HC-P15	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.	P																						
			M																						
			K																						
			N																						
			S																						
			H																						
WU25PT	HC-P30	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.	P																						
			M																						
			K																						
			N																						
			S																						
			H																						
WU10HT	HW-K15	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.	M																						
			K																						
			N																						
			S																						
			H																						
WP10CT	HC-P10	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.	P																						
			M																						
			K																						
			N																						
WP25CT	HC-P25	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, minimises microchipping, and improves workpiece surface finishes.	P																						
			M																						
			K																						
			N																						

**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 minimised cutting pressure on various materials.



**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 minimised 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.



**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.
- Delivers chip control over full range of DOC when turning.
- Cuts in both axial and radial directions.



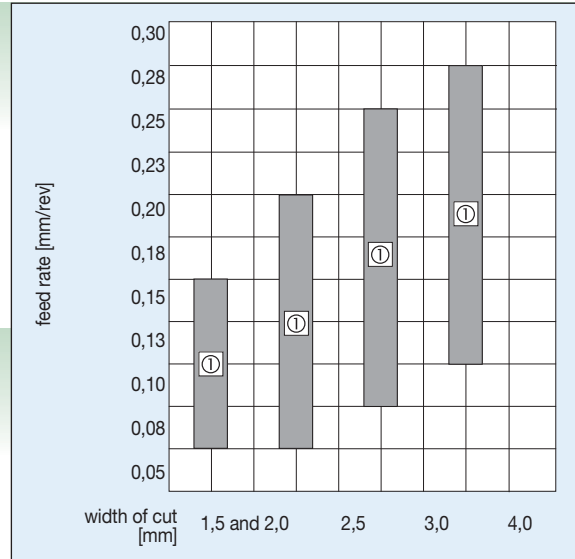
**PC Grooving and Profiling Inserts**

- Superior chip control.
- Full nose radius geometry for plunge and contour operations.
- Effective cutting edge geometry exceeds 180° for increased versatility.

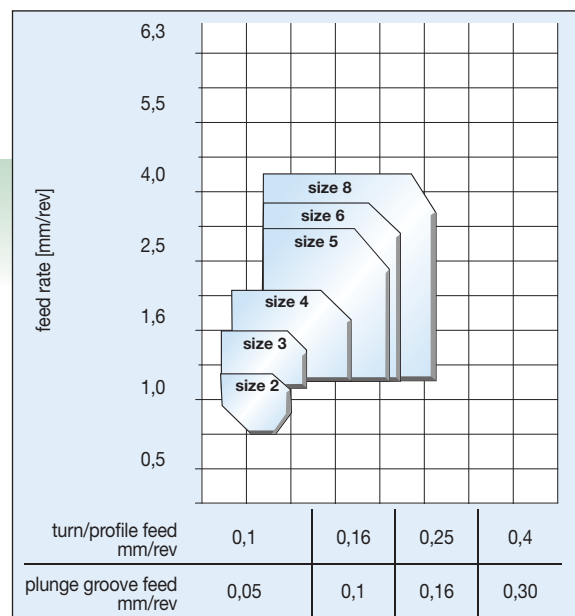
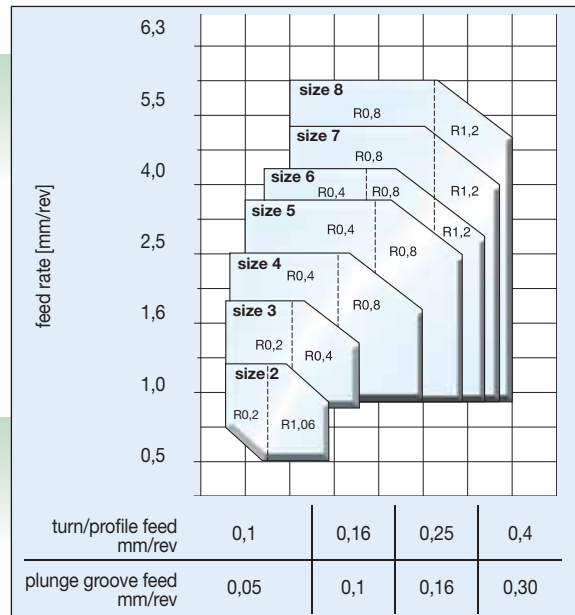


**PH Plunge, Groove, and Turn Inserts**

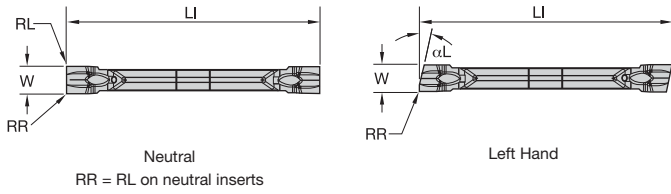
- Excellent performance in greater than 35 HRC.
- Deep grooving tool for plunge and turn O.D. and face grooving operations.
- Delivers chip control over full range of DOC when turning.
- Delivers superior chip control in interrupted cuts.



① Recommended Starting Feed



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
<b>P</b>	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
<b>M</b>	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	-	-	-	-	-	-
<b>K</b>	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
<b>N</b>	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	-	-	-	-	-	-
<b>S</b>	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	-	-	-	-	-	-
<b>H</b>	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	-	-	-	-	-	-



● first choice  
○ alternate choice

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

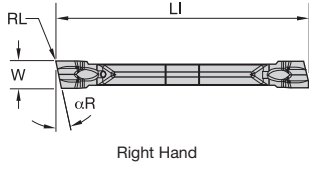
**WMT-CM**

Grooving and Cut-Off

catalogue number	seat size	W	RR	LI	hand	WP10CT	WP25CT	WU10PT	WU25PT	WU10HT
WMTC015N00CM08	1	1,50	0,08	19,30	N - Neutral	●	●	○	○	○
WMTC020N00CM08	2	2,00	0,08	19,21	N - Neutral	●	●	○	○	○
WMTC094N00CM13	2B	2,39	0,13	22,32	N - Neutral	●	●	○	○	○
WMTC030N00CM17	3	3,00	0,17	25,40	N - Neutral	●	●	○	○	○
WMTC125N00CM17	3	3,17	0,17	25,41	N - Neutral	●	●	○	○	○
WMTC040N00CM17	4	4,00	0,17	25,40	N - Neutral	●	●	○	○	○
WMTC015L05CM08	1	1,50	0,08	19,31	L - Left	●	●	○	○	○
WMTC020L05CM08	2	1,99	0,08	19,21	L - Left	●	●	○	○	○
WMTC020L12CM08	2	2,00	0,08	19,25	L - Left	●	●	○	○	○
WMTC030L12CM17	3	3,00	0,17	25,40	L - Left	●	●	○	○	○
WMTC030L05CM17	3	3,00	0,17	25,40	L - Left	●	●	○	○	○
WMTC040L12CM17	4	4,00	0,17	25,40	L - Left	●	●	○	○	○
WMTC040L05CM17	4	4,00	0,17	25,40	L - Left	●	●	○	○	○

(continued)

(WMT-CM – continued)



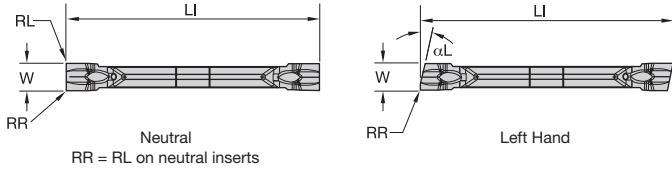
● first choice  
○ alternate choice

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

catalogue number	seat size	W	RL	LI	αR	hand	WP10CT	WP25CT	WU10PT	WU25PT	WU10HT
WMTC015R12CM08	1	1,50	0,08	19,28	12	R - Right	●	●	○	○	○
WMTC015R05CM08	1	1,50	0,08	19,31	5	R - Right	●	●	○	○	○
WMTC020R05CM08	2	2,00	0,08	19,26	5	R - Right	●	●	○	○	○
WMTC020R12CM08	2	2,00	0,08	19,26	12	R - Right	●	●	○	○	○
WMTC094R12CM13	2B	2,39	0,13	22,28	12	R - Right	●	●	○	○	○
WMTC094R05CM13	2B	2,39	0,13	22,32	5	R - Right	●	●	○	○	○
WMTC030R05CM17	3	3,00	0,17	25,40	5	R - Right	●	●	○	○	○
WMTC030R12CM17	3	3,00	0,17	25,40	12	R - Right	●	●	○	○	○
WMTC125R05CM17	3	3,17	0,17	25,40	5	R - Right	●	●	○	○	○
WMTC125R12CM17	3	3,18	0,17	25,40	12	R - Right	●	●	○	○	○
WMTC040R12CM17	4	4,00	0,17	25,40	12	R - Right	●	●	○	○	○
WMTC040R05CM17	4	4,00	0,17	25,40	5	R - Right	●	●	○	○	○

Grooving and Cut-Off





● first choice  
○ alternate choice

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

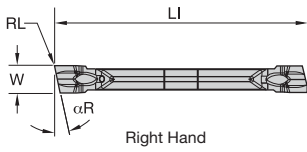
**WMT-CM-W**

catalogue number	seat size	W	RR	LI	hand	WP10CT	WP25CT	WU10PT	WU25PT	WU10HT
WMTC015N00CMW08	1	1,50	0,08	19,30	N - Neutral	●	●	○	○	○
WMTC020N00CMW08	2	2,00	0,08	19,21	N - Neutral	●	●	○	○	○
WMTC094N00CMW13	2B	2,39	0,13	22,32	N - Neutral	●	●	○	○	○
WMTC030N00CMW17	3	3,00	0,17	25,40	N - Neutral	●	●	○	○	○
WMTC125N00CMW17	3	3,18	0,17	25,41	N - Neutral	●	●	○	○	○
WMTC040N00CMW17	4	4,00	0,17	25,40	N - Neutral	●	●	○	○	○
WMTC020L12CMW08	2	2,00	0,08	19,27	L - Left	●	●	○	○	○
WMTC030L12CMW17	3	3,00	0,17	25,40	L - Left	●	●	○	○	○
WMTC030L05CMW17	3	3,00	0,17	25,40	L - Left	●	●	○	○	○

(continued)

Grooving and Cut-Off

(WMT-CM-W – continued)

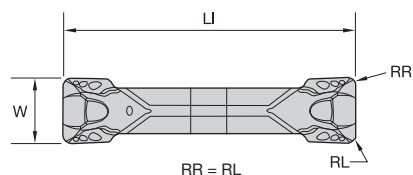


● first choice  
○ alternate choice

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

catalogue number	seat size	W	RL	LI	αR	hand	WP10CT	WP25CT	WU10PT	WU25PT	WU10HT
WMTC020R05CMW08	2	2,00	0,08	19,20	5	R - Right	●	●	○	○	○
WMTC020R12CMW08	2	2,00	0,08	19,27	12	R - Right	●	●	○	○	○
WMTC094R12CMW13	2B	2,39	0,13	22,29	12	R - Right	●	●	○	○	○
WMTC094R05CMW13	2B	2,39	0,13	22,32	5	R - Right	●	●	○	○	○
WMTC030R05CMW17	3	3,00	0,17	25,40	5	R - Right	●	●	○	○	○
WMTC030R12CMW17	3	3,00	0,17	25,40	12	R - Right	●	●	○	○	○
WMTC125R05CMW17	3	3,17	0,17	25,41	5	R - Right	●	●	○	○	○
WMTC125R12CMW17	3	3,17	0,17	25,41	12	R - Right	●	●	○	○	○





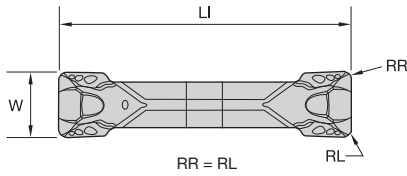
● first choice  
○ alternate choice

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

**WMT-U-PT • Moulded**

Grooving and Cut-Off

catalogue number	seat size	W	RR	LI	WP10CT	WP25CT	WU10PT	WU25PT	WU10HT
WMTS205M2U02PT	2	2,05	0,15	19,23	4169554	4169555	4116131	4116132	—
WMTS305M3U03PT	3	3,05	0,31	25,81	4169556	4169557	4113568	4113569	—
WMTS305M3U06PT	3	3,05	0,61	25,78	4169558	4169559	4113570	4113571	—
WMTS405M4U03PT	4	4,05	0,31	25,53	4169560	4169561	4113577	4113578	—
WMTS405M4U06PT	4	4,05	0,61	25,53	4169562	4169563	4113579	4113580	—
WMTS505M5U03PT	5	5,05	0,30	28,76	4169564	4169565	4116148	4116149	—
WMTS505M5U06PT	5	5,05	0,61	28,76	4169566	4169567	4116150	4116151	—
WMTS605M6U03PT	6	6,05	0,30	28,76	4169568	4169569	4117253	4117254	—
WMTS605M6U06PT	6	6,05	0,59	28,76	4169570	4169571	4117255	4117256	—
WMTS805M8U06PT	8	8,05	0,61	28,70	4169572	4169573	4117261	4117262	—
WMTS805M8U15PT	8	8,05	1,50	28,71	4169574	4169575	4117263	4117264	—



● first choice  
○ alternate choice

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

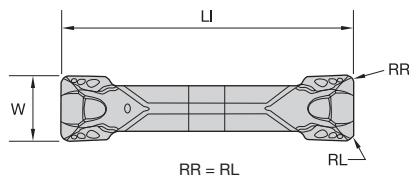
■ **WMT-P-PT • Precision**

catalogue number	seat size	W	RR	LI	WP10CT	WP25CT	WU10PT	WU25PT	WU10HT
WMTS200M2P02PT	2	2,00	0,15	19,10	•	•	•	•	•
WMTS094I2BP02PT	2B	2,38	0,15	22,15	•	•	•	•	•
WMTS094I2BP04PT	2B	2,38	0,38	22,14	•	•	•	•	•
WMTS300M3P03PH	3	3,00	0,30	25,65	•	•	•	•	•
WMTS300M3P03PT	3	3,00	0,31	25,65	•	•	•	•	•
WMTS300M3P06PH	3	3,00	0,60	25,65	•	•	•	•	•
WMTS300M3P06PT	3	3,00	0,61	25,65	•	•	•	•	•
WMTS125I3P03PT	3	3,17	0,23	25,40	•	•	•	•	•
WMTS125I3P08PT	3	3,17	0,76	25,40	•	•	•	•	•
WMTS125I3P03PH	3	3,18	0,25	25,40	•	•	•	•	•
WMTS125I3P08PH	3	3,18	0,75	25,40	•	•	•	•	•
WMTS156I4P03PH	4	3,95	0,30	25,40	•	•	•	•	•
WMTS156I4P08PH	4	3,96	0,75	25,40	•	•	•	•	•
WMTS400M4P03PH	4	4,00	0,30	25,40	•	•	•	•	•
WMTS400M4P03PT	4	4,00	0,31	25,40	•	•	•	•	•
WMTS400M4P06PH	4	4,00	0,60	25,40	•	•	•	•	•



Grooving and Cut-Off

(WMT-P-PT • Precision — continued)



● first choice  
○ alternate choice

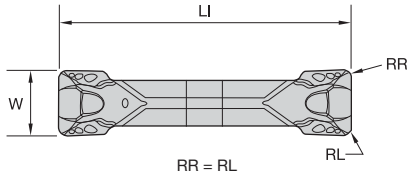
P	●	●	○	○
M	●	●	○	○
K	●	●	○	○
N	●	●	○	○
S	●	●	○	○
H	○	○	○	○

Grooving and Cut-Off

catalogue number	seat size	W	RR	LI	WP10CT	WP25CT	WU10PT	WU25PT	WU10HT
WMTS400M4P06PT	4	4,00	0,60	25,40	●	●	○	○	○
WMTS188I5P03PT	5	4,76	0,26	28,63	●	●	○	○	○
WMTS188I5P03PH	5	4,77	0,25	28,63	●	●	○	○	○
WMTS188I5P08PH	5	4,77	0,75	28,63	●	●	○	○	○
WMTS188I5P08PT	5	4,77	0,76	28,63	●	●	○	○	○
WMTS500M5P03PH	5	5,00	0,30	28,63	●	●	○	○	○
WMTS500M5P03PT	5	5,00	0,30	28,63	●	●	○	○	○
WMTS500M5P06PH	5	5,00	0,60	28,63	●	●	○	○	○
WMTS500M5P06PT	5	5,00	0,61	28,63	●	●	○	○	○
WMTS600M6P03PH	6	6,00	0,30	28,63	●	●	○	○	○
WMTS600M6P03PT	6	6,00	0,30	28,63	●	●	○	○	○
WMTS600M6P06PT	6	6,00	0,58	28,63	●	●	○	○	○
WMTS600M6P06PH	6	6,00	0,60	28,63	●	●	○	○	○
WMTS250I6P08PH	6	6,32	0,75	28,63	●	●	○	○	○

(continued)

(WMT-P-PT • Precision — continued)



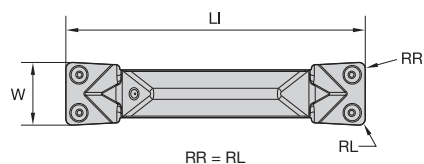
● first choice  
○ alternate choice

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

catalogue number	seat size	W	RR	LI	WP10CT	WP25CT	WU10PT	WU25PT	WU10HT
WMTS250I6P08PT	6	6,34	0,76	28,63	●	●	○	○	○
WMTS250I6P03PH	6	6,35	0,25	28,63	●	●	○	○	○
WMTS250I6P03PT	6	6,35	0,25	28,63	●	●	○	○	○
WMTS312I8P03PH	8	7,92	0,25	28,57	●	●	○	○	○
WMTS312I8P08PH	8	7,92	0,75	28,57	●	●	○	○	○
WMTS800M8P03PH	8	8,00	0,30	28,57	●	●	○	○	○
WMTS800M8P06PH	8	8,00	0,60	28,57	●	●	○	○	○
WMTS800M8P06PT	8	8,00	0,61	28,57	●	●	○	○	○
WMTS800M8P15PT	8	8,00	1,50	28,57	●	●	○	○	○



Grooving and Cut-Off



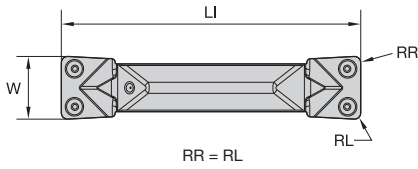
● first choice  
○ alternate choice

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

■ **WMT-U-PH • Moulded**

Grooving and Cut-Off

catalogue number	seat size	W	RR	LI	WP10CT	WP25CT	WU10PT	WU25PT	WU10HT
WMTS305M3U03PH	3	3,05	0,30	25,81	●	●	○	○	○
WMTS305M3U06PH	3	3,05	0,60	25,81	●	●	○	○	○
WMTS405M4U03PH	4	4,05	0,30	25,53	●	●	○	○	○
WMTS405M4U06PH	4	4,05	0,60	25,53	●	●	○	○	○
WMTS505M5U03PH	5	5,05	0,30	28,76	●	●	○	○	○
WMTS505M5U06PH	5	5,05	0,60	28,76	●	●	○	○	○
WMTS605M6U03PH	6	6,05	0,30	28,76	●	●	○	○	○
WMTS605M6U06PH	6	6,05	0,60	28,76	●	●	○	○	○
WMTS805M8U03PH	8	8,05	0,30	28,70	●	●	○	○	○
WMTS805M8U06PH	8	8,05	0,60	28,70	●	●	○	○	○



● first choice  
○ alternate choice

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

■ WMT-P-PH • Precision

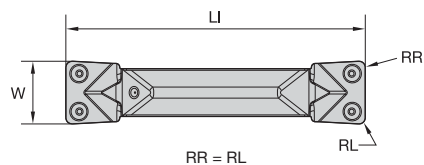
catalogue number	seat size	W	RR	LI	WP10CT	WP25CT	WU10PT	WU25PT	WU10HT
WMTS300M3P03PH	3	3,00	0,30	25,65	●	●	○	○	○
WMTS300M3P06PH	3	3,00	0,60	25,65	●	●	○	○	○
WMTS125I3P03PH	3	3,18	0,25	25,40	●	●	○	○	○
WMTS125I3P08PH	3	3,18	0,75	25,40	●	●	○	○	○
WMTS156I4P03PH	4	3,95	0,30	25,40	●	●	○	○	○
WMTS156I4P08PH	4	3,96	0,75	25,40	●	●	○	○	○
WMTS400M4P03PH	4	4,00	0,30	25,40	●	●	○	○	○
WMTS400M4P06PH	4	4,00	0,60	25,40	●	●	○	○	○
WMTS188I5P03PH	5	4,77	0,25	28,63	●	●	○	○	○
WMTS188I5P08PH	5	4,77	0,75	28,63	●	●	○	○	○

(continued)

Grooving and Cut-Off



(WMT-P-PH • Precision — continued)

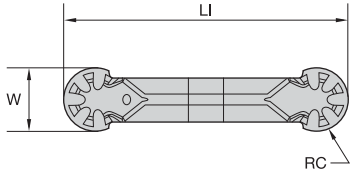


● first choice  
○ alternate choice

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

Grooving and Cut-Off

catalogue number	seat size	W	RR	LI	WP10CT	WP25CT	WU10PT	WU25PT	WU10HT
WMTS500M5P03PH	5	5,00	0,30	28,63	●	●	○	○	○
WMTS500M5P06PH	5	5,00	0,60	28,63	●	●	○	○	○
WMTS600M6P03PH	6	6,00	0,30	28,63	●	●	○	○	○
WMTS600M6P06PH	6	6,00	0,60	28,63	●	●	○	○	○
WMTS250I6P08PH	6	6,32	0,75	28,63	●	●	○	○	○
WMTS250I6P03PH	6	6,35	0,25	28,63	●	●	○	○	○
WMTS312I8P03PH	8	7,92	0,25	28,57	●	●	○	○	○
WMTS312I8P08PH	8	7,92	0,75	28,57	●	●	○	○	○
WMTS800M8P03PH	8	8,00	0,30	28,57	●	●	○	○	○
WMTS800M8P06PH	8	8,00	0,60	28,57	●	●	○	○	○



● first choice  
○ alternate choice

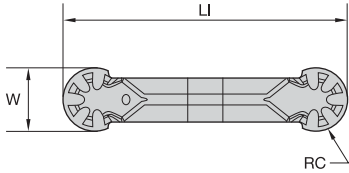
P	●	●	○	○
M	●	●	○	○
K	●	●	○	○
N	●	●	●	●
S	●	●	●	●
H	○	○	○	○

■ **WMT-U-PC • Moulded**

catalogue number	seat size	W	RC	LI	WP10CT	WP25CT	WU10PT	WU25PT	WU10HT
WMTR305M3UPC	3	3,05	1,53	25,53	4170174	4170174	4170172	4170173	4170173
WMTR405M4UPC	4	4,05	2,03	25,58	4170179	4170179	4170177	4170178	4170178
WMTR505M5UPC	5	5,05	2,53	29,01	4170184	4170184	4170182	4170183	4170183
WMTR605M6UPC	6	6,05	3,03	28,77	4170189	4170189	4170187	4170188	4170188
WMTR805M8UPC	8	8,05	4,03	29,22	4170194	4170194	4170192	4170193	4170193



Grooving and Cut-Off



● first choice  
○ alternate choice

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

■ WMT-P-PC • Precision

Grooving and Cut-Off

catalogue number	seat size	W	RC	LI	WP10CT	WP25CT	WU10PT	WU25PT	WU10HT
WMTR300M3PPC	3	3,00	1,50	25,40			4170170	4170171	4170195
WMTR400M4PPC	4	4,00	2,00	25,45			4170175	4170176	4170196
WMTR188I5PPC	5	4,78	2,39	28,65			4170119	4170120	
WMTR500M5PPC	5	5,00	2,50	28,88			4170180	4170181	
WMTR600M6PPC	6	6,00	3,00	28,65			4170185	4170186	
WMTR250I6PPC	6	6,36	3,18	29,01			4170121	4170122	
WMTR312I8PPC	8	7,94	3,96	29,00			4170163	4170164	
WMTR800M8PPC	8	8,00	4,00	29,08			4170190	4170191	

## NOVO KNOWS SEARCH

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

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### ADVISE

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

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

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### SELECT

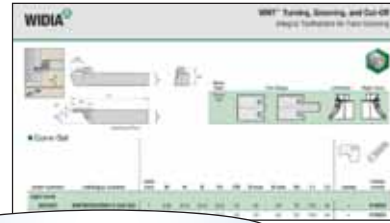
A method of selecting cutting tools from a tree structure via a hierarchy or parametric search:

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

NOVO can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximises every shift. [widia.com/novo](http://widia.com/novo)

## WMT System

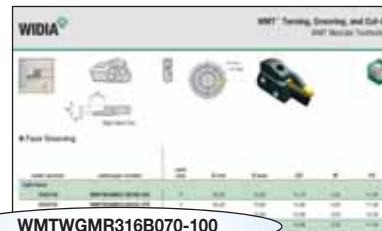
Our WMT toolholders now have a smart new naming system. Here are some examples of the improved nomenclature for our WMT Toolholders.



**WMTBR2525M313038-052**

### Integral Toolholders

<b>WMT</b>	<b>B</b>	<b>R</b>	<b>2525</b>	<b>M</b>	<b>3</b>	<b>13</b>	<b>—</b>	<b>038-052</b>
Tooling System	Tool Style	Hand	Shank Size	Tool Length	Seat Size	Max Grooving Depth		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	Height x Width in mm	<b>H</b> = 100 <b>J</b> = 110 <b>K</b> = 125 <b>L</b> = 140 <b>M</b> = 150 <b>P</b> = 170	<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 mm  D min – D max in mm (e.g., 70–100 = 70mm D min 100 mm D max)	Diameters are min and max for outer face groove diameter 999 = unlimited D max	



**WMTWGMR316B070-100**

### Modular Blades

<b>WMT</b>	<b>WGM</b>	<b>R</b>	<b>3</b>	<b>16</b>	<b>B</b>	<b>070-100</b>
Tooling System	Connection Type	Hand	Seat Size	Max Grooving Depth	Tool Style	Face Grooving Diameter
		<b>R</b> = Right hand <b>L</b> = Left hand			<b>A</b> = Curve In <b>B</b> = Curve Out	



WGMSR2525

**Modular Toolholders**

**WGM**

Tooling System

**MDG** = Modular Deep Grooving

**WGM** = Modular Serrated Locking System

**S**

Tool Style

**S** = Straight  
**E** = End mount

**R**

Hand

**R** = Right hand  
**L** = Left hand

**2525**

Shank Size

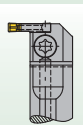


A25RWMTER0316M

**Integral Boring Bars**

**A**

Steel Bar with Coolant

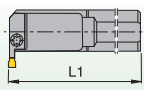


**25**

Bar Diameter

**R**

Bar Length



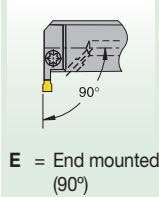
metric bars:	inch bars:
R = 200mm	R = 8"
S = 250mm	S = 10"
T = 300mm	T = 12"

**WMT**

WMT™ Groove and Turn System

**E**

Tool Style



**R**

Hand

**R** = Right hand  
**L** = Left hand

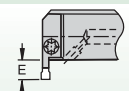
**03**

Seat Size

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

**16**

Max Grooving Depth



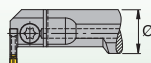
**conversions:**

mm	inch
7mm	.28"
10mm	.39"
12mm	.47"
16mm	.63"

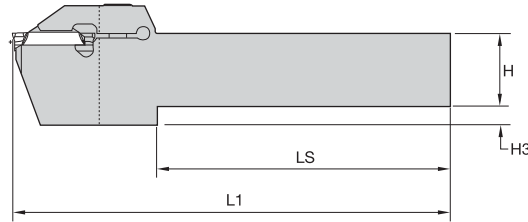
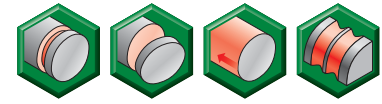
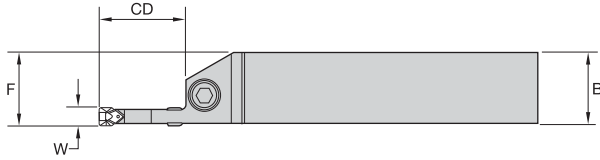
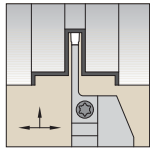
**M**

Tool Units

**N** = Inch  
**M** = Metric



metric bars:	inch bars:
Bar diameter in millimetres	A two-digit number which indicates the bar diameter in 1/16" increments.

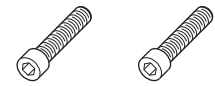


Right Hand Tool

Grooving and Cut-Off

■ O.D. Grooving and Cut-Off

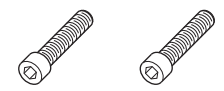
order number	catalogue number	seat size	W	H	B	CD	F	H3	L1	LS	clamp screw	clamp screw
right hand												
3650516	WMTSR2525M116	1	1,50	25,0	25,0	17	25,0	—	150	116	606249	—
3650456	WMTSR1616K216	2	2,00	16,0	16,0	17	16,0	6	125	101	606249	—
3650458	WMTSR2020K216	2	2,00	20,0	20,0	17	20,0	—	125	92	606249	—
3650506	WMTSR2525M216	2	2,00	25,0	25,0	17	25,0	—	150	116	606249	—
3539172	WMTSR1616K2B19	2B	2,38	16,0	16,0	24	15,9	5	125	88	—	MS326
3539174	WMTSR2020K2B19	2B	2,38	20,0	20,0	24	19,9	5	125	88	—	MS326
3539221	WMTCR2525M2B19	2B	2,38	25,0	25,0	24	24,9	—	150	113	—	MS326
3650460	WMTSR1616K311	3	3,00	16,0	16,0	11	16,0	—	125	93	—	619205
3650462	WMTSR1616K322	3	3,00	16,0	16,0	22	16,0	5	125	85	—	619205
3650468	WMTSR2020K311	3	3,00	20,0	20,0	11	20,0	—	125	93	—	619205
3650470	WMTSR2020K322	3	3,00	20,0	20,0	22	20,0	5	125	85	—	619205
3650479	WMTSR2525M311	3	3,00	25,0	25,0	11	25,0	—	150	118	—	619205
3650481	WMTSR2525M322	3	3,00	25,0	25,0	22	25,0	—	150	110	—	619205
3650502	WMTSR1616411	4	4,00	16,0	16,0	11	16,0	—	125	92	—	619205
3650464	WMTSR1616K422	4	4,00	16,0	16,0	22	16,0	5	125	83	—	619205
3653751	WMTSR2020K20	4	4,00	20,0	20,0	22	20,0	5	125	83	—	619205
3650504	WMTSR2020K411	4	4,00	20,0	20,0	11	20,0	—	125	92	—	619205
3653752	WMTSR2525M11	4	4,00	25,0	25,0	11	25,0	—	150	117	—	619205
3650483	WMTSR2525M422	4	4,00	25,0	25,0	22	25,0	—	150	109	—	619205
3650466	WMTSR1616K514	5	5,00	16,0	16,0	14	16,0	—	125	88	—	619168
3650473	WMTSR2020K514	5	5,00	20,0	20,0	14	20,0	—	125	88	—	619168
3650475	WMTSR2020L525	5	5,00	20,0	20,0	15	20,0	5	140	93	—	619168
3650485	WMTSR2525M514	5	5,00	25,0	25,0	14	25,0	—	150	115	—	619168
3650487	WMTSR2525M525	5	5,00	25,0	25,0	25	25,0	—	150	104	—	619168
3650477	WMTSR2020L614	6	6,00	20,0	20,0	14	20,0	—	140	103	—	619168
3650489	WMTSR2525M614	6	6,00	25,0	25,0	14	25,0	—	150	114	—	619168
3650491	WMTSR2525M625	6	6,00	25,0	25,0	25	25,0	—	150	104	—	619168
3650494	WMTSR2525M814	8	8,00	25,0	25,0	14	25,0	—	150	113	—	619168
3650496	WMTSR2525M825	8	8,00	25,0	25,0	25	25,0	—	150	104	—	619168
3650498	WMTSR3232M814	8	8,00	32,0	32,0	14	32,0	—	150	113	—	619168
3650500	WMTSR3232M825	8	8,00	32,0	32,0	25	32,0	—	150	104	—	619168



(continued)

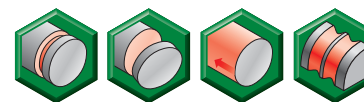
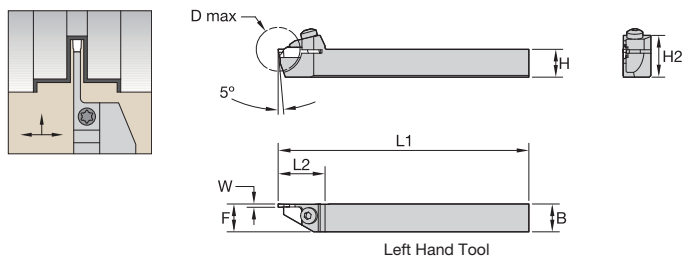
(O.D. Grooving and Cut-Off – continued)

order number	catalogue number	seat size	W	H	B	CD	F	H3	L1	LS	clamp screw	clamp screw
<b>left hand</b>												
3653332	WMTSL2525M116	1	1,50	25,0	25,0	16	25,0	—	150	116	606249	—
3650457	WMTSL1616K216	2	2,00	16,0	16,0	17	16,0	6	125	101	606249	—
3650459	WMTSL2020K216	2	2,00	20,0	20,0	17	20,0	—	125	92	606249	—
3650507	WMTSL2525M216	2	2,00	25,0	25,0	17	25,0	—	150	116	606249	—
3539173	WMTSL1616K2B19	2B	2,38	16,0	16,0	24	15,9	5	125	88	—	MS326
3539175	WMTSL2020K2B19	2B	2,38	20,0	20,0	24	19,9	5	125	88	—	MS326
3650461	WMTSL1616K311	3	3,00	16,0	16,0	11	16,0	—	125	93	—	619205
3650463	WMTSL1616K322	3	3,00	16,0	16,0	22	16,0	5	125	85	—	619205
3650469	WMTSL2020K311	3	3,00	20,0	20,0	11	20,0	—	125	93	—	619205
3650471	WMTSL2020K322	3	3,00	20,0	20,0	22	20,0	5	125	85	—	619205
3650480	WMTSL2525M311	3	3,00	25,0	25,0	11	25,0	—	150	118	—	619205
3650482	WMTSL2525M322	3	3,00	25,0	25,0	22	25,0	—	150	110	—	619205
3650465	WMTSL1616K422	4	4,00	16,0	16,0	22	16,0	5	125	83	—	619205
3650472	WMTSL2020K22	4	4,00	20,0	20,0	22	20,0	5	125	83	—	619205
3650505	WMTSL2020K411	4	4,00	20,0	20,0	11	20,0	—	125	92	—	619205
3653763	WMTSL2525M11	4	4,00	25,0	25,0	11	25,0	—	150	117	—	619205
3650484	WMTSL2525M422	4	4,00	25,0	25,0	22	25,0	—	150	109	—	619205
3650467	WMTSL1616K514	5	5,00	16,0	16,0	14	16,0	—	125	88	—	619168
3650474	WMTSL2020K514	5	5,00	20,0	20,0	14	20,0	—	125	88	—	619168
3650486	WMTSL2525M514	5	5,00	25,0	25,0	14	25,0	—	150	113	—	619168
3650488	WMTSL2525M525	5	5,00	25,0	25,0	25	25,0	—	150	104	—	619168
3650478	WMTSL2020L614	6	6,00	20,0	20,0	14	20,0	—	140	103	—	619168
3650490	WMTSL2525M614	6	6,00	25,0	25,0	14	25,0	—	150	114	—	619168
3650493	WMTSL2525M625	6	6,00	25,0	25,0	25	25,0	—	150	104	—	619168
3650495	WMTSL2525M814	8	8,00	25,0	25,0	14	25,0	—	150	113	—	619168
3650497	WMTSL2525M825	8	8,00	25,0	25,0	25	25,0	—	150	104	—	619168
3650499	WMTSL3232M814	8	8,00	32,0	32,0	14	32,0	—	150	113	—	619168
3650501	WMTSL3232M825	8	8,00	32,0	32,0	25	32,0	—	150	104	—	619168



Grooving and Cut-Off





■ **Swiss Grooving and Cut-Off • Metric**

Grooving and Cut-Off

order number	catalogue number	seat size	W	H	B	F	D max	H2	L1	L2	clamp screw
<b>right hand</b>											
3650508	WMTCR1010H110	1	1,50	10,0	10,0	10,0	20	16	100	21	606249
3650510	WMTCR1212H110	1	1,50	12,0	12,0	12,0	20	18	100	21	606249
3650512	WMTCR1616K113	1	1,50	16,0	15,9	16,0	26	24	125	24	606266
3650514	WMTCR2020K113	1	1,50	20,0	19,9	20,0	26	28	125	24	606266
3653413	WMTCR1010H210	2	2,00	10,0	10,0	10,0	20	16	100	21	606249
3653415	WMTCR1212H210	2	2,00	12,0	12,0	12,0	20	18	100	21	606249
3653417	WMTCR1616K213	2	2,00	16,0	15,8	16,0	26	24	125	24	606266
3653419	WMTCR2020K213	2	2,00	20,0	19,8	20,0	26	28	125	24	606266
3539170	WMTCR1212H2B16	2B	2,38	12,0	11,7	11,9	32	23	100	30	606249
<b>left hand</b>											
3650509	WMTCL1010H110	1	1,50	10,0	10,0	10,0	20	16	100	21	606249
3650511	WMTCL1212H110	1	1,50	12,0	12,0	12,0	20	18	100	21	606249
3650513	WMTCL1616K113	1	1,50	16,0	15,9	16,0	26	24	125	24	606266
3650515	WMTCL2020K113	1	1,50	20,0	19,9	20,0	26	28	125	24	606266
3653414	WMTCL1010H210	2	2,00	10,0	10,0	10,0	20	16	100	21	606249
3653416	WMTCL1212H210	2	2,00	12,0	12,0	12,0	20	18	100	21	606249
3653418	WMTCL1616K213	2	2,00	16,0	15,8	16,0	26	24	125	24	606266
3653420	WMTCL2020K213	2	2,00	20,0	19,8	20,0	26	28	125	24	606266
3539171	WMTCL1212H2B16	2B	2,38	12,0	11,7	11,9	32	23	100	30	606249

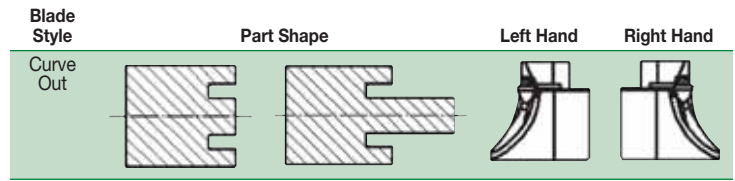
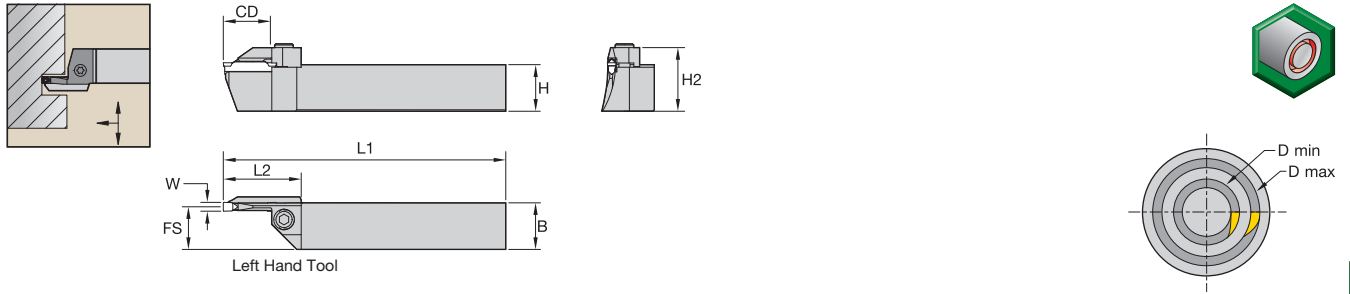


NOTE: Insert exterior edge in line with toolholder edge for 10mm and 12mm shank toolholders.

Update to our latest style cut-off inserts for use in the above style toolholders.

These holders can be used in many machines including Stars, Citizens, Tsugami, and Tonos/DECO.

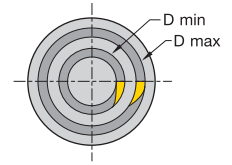
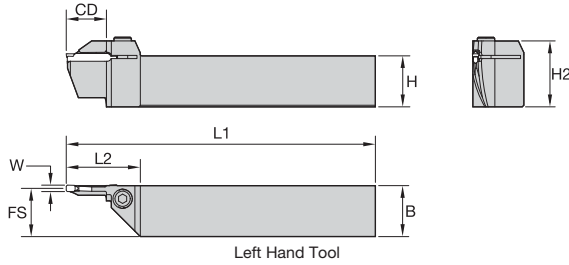
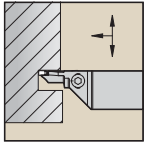
Insert Width	Lead Angle	Old Manchester Catalogue Number	Old Manchester Grade	WMT Cut-Off Insert	WMT Insert Grade	WIDIA™ Order Number
1,5mm	Neutral	583-165	M443B	WMTC015N00CM08	WU25PT	4169668
1,5mm	Right - 5°	583-166	M443B	WMTC015R05CM08	WU25PT	4169670
1,5mm	Right - 12°	583-168	M443B	WMTC015R12CM08	WU25PT	4169672
1,5mm	Left - 5°	583-167	M443B	WMTC015L05CM08	WU25PT	4169671
2,0mm	Neutral	583-170	M443B	WMTC020N00CM08	WU25PT	4169673
2,0mm	Right - 5°	583-170	M443B	WMTC020R05CM08	WU25PT	4169675
2,0mm	Right - 12°	583-173	M443B	WMTC020R12CM08	WU25PT	4169678
2,0mm	Left - 5°	583-172	M443B	WMTC020L05CM08	WU25PT	4169677
2,0mm	Left - 12°	583-174	M443B	WMTC020L12CM08	WU25PT	4169680
2,0mm	Neutral - Groove	583-129	M45 / M43	WMTC020M2P02PT	WU25PT	4116130
2,0mm	Neutral	583-125	M45 / M43	WMTC020N00CMW08	WU25PT	4169674
2,0mm	Right - 5°	583-126	M45 / M43	WMTC020R05CMW08	WU25PT	4169676
2,0mm	Right - 12°	583-128	M45 / M43	WMTC020R12CMW08	WU25PT	4169679
2,0mm	Left - 12°	583-129	M45 / M43	WMTC020L12CMW08	WU25PT	4169681



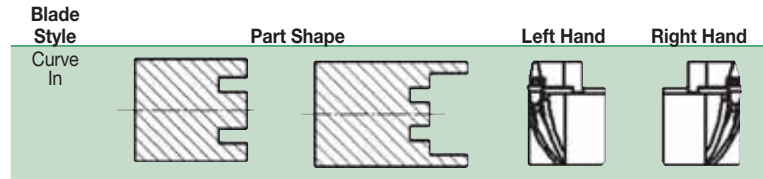
■ **Curve Out**

order number	catalogue number	seat size	W	H	B	FS	CD	D max	D min	H2	L1	L2	clamp	clamp screw
<b>right hand</b>														
3653421	WMTBR2525M313-038-052	3	3,00	24,8	24,8	23,5	13	52	38	32	150	34	—	619205
3653423	WMTBR2525M316-052-070	3	3,00	24,8	24,8	23,5	16	70	52	32	150	34	—	619205
3653425	WMTBR2525M316-070-100	3	3,00	24,8	24,8	23,5	16	100	70	32	150	34	—	619205
3653427	WMTBR2525M319-100-205	3	3,00	25,0	24,8	23,5	19	205	100	32	150	37	—	619205
3653764	WMTBR2525M412-032-052	4	4,00	24,8	24,8	23,0	13	52	32	32	150	34	—	619205
3653766	WMTBR2525M415-052-070	4	4,00	24,8	24,8	23,0	16	70	52	32	150	34	—	619205
3653770	WMTBR2525M418-100-205	4	4,00	24,8	24,8	23,0	19	205	100	32	150	37	—	619205
3653431	WMTBR2525M519-052-070	5	5,00	24,8	24,8	22,5	19	70	52	34	150	38	446102	619168
3653433	WMTBR2525M519-070-100	5	5,00	24,8	24,8	22,5	19	100	70	34	150	42	446104	619168
3653435	WMTBR2525M525-100-205	5	5,00	24,8	24,8	22,5	25	205	100	34	150	42	446104	619168
3653437	WMTBR2525M616-038-052	6	6,00	24,8	24,8	22,0	16	52	38	35	150	38	446102	619168
3653441	WMTBR2525M619-070-100	6	6,00	24,8	24,8	22,0	19	100	70	36	150	42	446104	619168
3653443	WMTBR2525M625-100-205	6	6,00	24,8	24,8	22,0	25	205	100	34	150	42	446104	619168
<b>left hand</b>														
3653422	WMTBL2525M313-038-052	3	3,00	24,8	24,8	23,5	13	52	38	32	150	34	—	619205
3653424	WMTBL2525M316-052-070	3	3,00	24,8	24,8	23,5	16	70	52	32	150	34	—	619205
3653426	WMTBL2525M316-070-100	3	3,00	24,8	24,8	23,5	16	100	70	32	150	34	—	619205
3653428	WMTBL2525M319-100-205	3	3,00	24,8	24,8	23,5	19	205	100	32	150	37	—	619205
3653765	WMTBL2525M412-032-052	4	4,00	24,8	24,8	23,0	13	52	32	32	150	34	—	619205
3653767	WMTBL2525M415-052-070	4	4,00	24,8	24,8	23,0	16	70	52	32	150	34	—	619205
3653769	WMTBL2525M415-070-100	4	4,00	24,8	24,8	23,0	16	100	70	32	150	34	—	619205
3653771	WMTBL2525M418-100-205	4	4,00	24,8	24,8	23,0	19	205	100	32	150	37	—	619205
3653432	WMTBL2525M519-052-070	5	5,00	24,8	24,8	22,5	19	70	52	34	150	38	446101	619168
3653434	WMTBL2525M519-070-100	5	5,00	24,8	24,8	22,5	19	100	70	34	150	42	446103	619168
3653436	WMTBL2525M525-100-205	5	5,00	24,8	24,8	22,5	25	205	100	34	150	42	446103	619168
3653438	WMTBL2525M616-038-052	6	6,00	24,8	24,8	22,0	16	52	38	35	150	38	446101	619168
3653444	WMTBL2525M625-100-205	6	6,00	24,8	24,8	22,0	25	205	100	34	150	42	446103	619168

NOTE: Initial cut of tool must be between D min and D max. Due to the insert being positioned 0,75mm above centre, minimum diameter after initial cut is 12,6mm.  
Toolholders that accept 3mm and 4mm width inserts have an integral clamp.  
Toolholders that accept 5mm and 6mm width inserts are supplied with a detachable clamp.

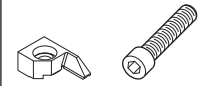


Grooving and Cut-Off

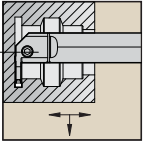


■ Curve In

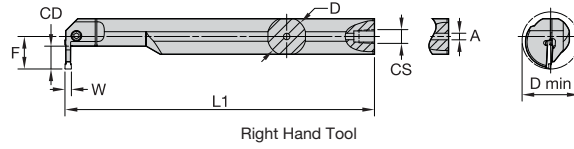
order number	catalogue number	seat size	W	H	B	FS	CD	D max	D min	H2	L1	L2	clamp	clamp screw
<b>right hand</b>														
3634282	WMTAR2525M316-070-100	3	3,00	24,8	24,8	23,5	16	100	70	32	150	34	—	MS326
3634284	WMTAR2525M319-100-205	3	3,00	24,8	24,8	23,5	19	205	100	32	150	37	—	MS326
3634290	WMTAR2525M619-070-100	6	6,00	24,8	24,8	22,0	19	100	70	34	150	42	446104	619168
<b>left hand</b>														
3634283	WMTAL2525M316-070-100	3	3,00	24,8	24,8	23,5	16	100	70	32	150	34	—	MS326
3634285	WMTAL2525M319-100-205	3	3,00	24,8	24,8	23,5	19	205	100	32	150	37	—	MS326



NOTE: Initial cut of tool must be between D min and D max. Due to the insert being positioned 0,75mm above centre, minimum diameter after initial cut is 12,6mm.  
Toolholders that accept 3mm and 4mm width inserts have an integral clamp.  
Toolholders that accept 5mm and 6mm width inserts are supplied with a detachable clamp.



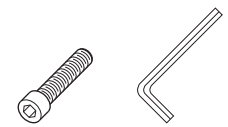
Steel shank with through coolant.

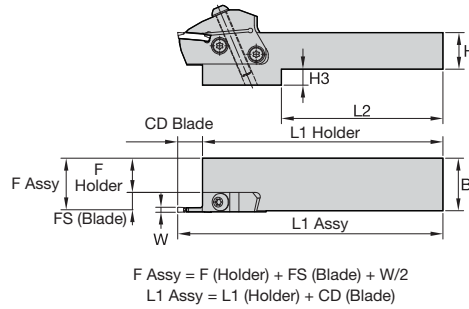
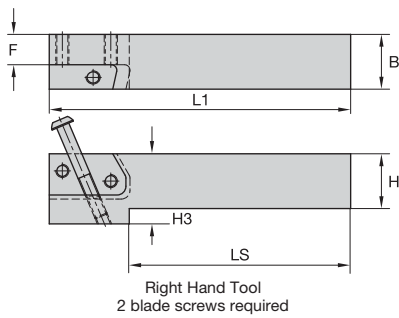
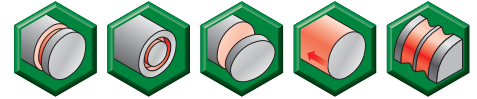
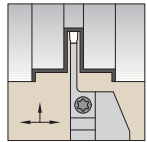


Grooving and Cut-Off

■ I.D. Boring Bars

order number	catalogue number	insert size	W	F	CD	D	D min	L1	A	clamp screw	hex
<b>right hand</b>											
5423874	A25RWMTER0316M	3	3,00	26,0	16	25,00	41	200	6,40	619168	5 mm
5423875	A32SWMTER0319M	3	3,00	29,0	19	32,00	47	250	6,40	619168	5 mm
5423876	A25RWMTER0416M	4	4,00	26,0	16	25,00	41	200	6,40	619168	5 mm
5423877	A32SWMTER0419M	4	4,00	29,0	19	32,00	47	250	6,40	619168	5 mm
5423878	A32SWMTER0519M	5	5,00	29,0	19	32,00	47	250	6,40	619168	5 mm
5423879	A40TWMTER0522M	5	5,00	32,0	22	40,00	54	300	6,40	619168	5 mm
5423880	A32SWMTER0619M	6	6,00	29,0	19	32,00	47	250	6,40	619168	5 mm
5423881	A40TWMTER0622M	6	6,00	31,8	22	40,00	54	300	6,40	619168	5 mm
<b>left hand</b>											
5423882	A25RWMTEL0316M	3	3,00	26,0	16	25,00	41	200	6,40	619168	5 mm
5423883	A32SWMTEL0319M	3	3,00	29,0	19	32,00	47	250	6,40	619168	5 mm
5423884	A25RWMTEL0416M	4	4,00	26,0	16	25,00	41	200	6,40	619168	5 mm
5423885	A32SWMTEL0419M	4	4,00	29,0	19	32,00	47	250	6,40	619168	5 mm
5423886	A32SWMTEL0519M	5	5,00	29,0	19	32,00	47	250	6,40	619168	5 mm
5423887	A40TWMTEL0522M	5	5,00	32,0	22	40,00	54	300	6,40	619168	5 mm
5423888	A32SWMTEL0619M	6	6,00	29,0	19	32,00	47	250	6,40	619168	5 mm
5423889	A40TWMTEL0622M	6	6,00	31,8	22	40,00	54	300	6,40	619168	5 mm





Grooving and Cut-Off

■ Straight Mount • Grooving, Cut-Off, and Face Grooving

order number	catalogue number	H	B	L1	LS	F	H3	blade screw	Torx for blade screw	clamp screw	Torx for clamp screw
<b>right hand</b>											
5349628	WGMSR2020	20	20	108,0	68,00	8,84	12	MS2002	T25	MS1162	T25
5349629	WGMSR2525	25	25	126,0	95,78	13,84	7	MS2002	T25	MS1162	T25
5349641	WGMSR3232	32	32	126,0	69,85	20,81	—	MS2002	T25	MS1162	T25
<b>left hand</b>											
5349625	WGMSL1620	16	20	108,0	68,00	8,84	16	MS2002	T25	MS1162	T25
5349626	WGMSL2020	20	20	108,0	68,00	8,84	12	MS2002	T25	MS1162	T25
5349627	WGMSL2525	25	25	126,0	95,78	13,84	7	MS2002	T25	MS1162	T25
5349640	WGMSL3232	32	32	126,0	69,85	20,81	—	MS2002	T25	MS1162	T25

NOTE: Use the larger seat size toolholder for optimal performance.  
Blade screws and clamp screw included with holder.

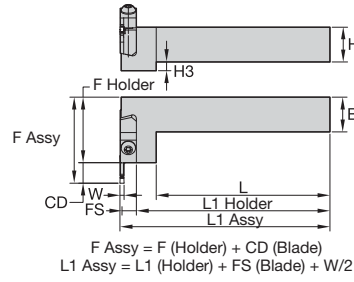
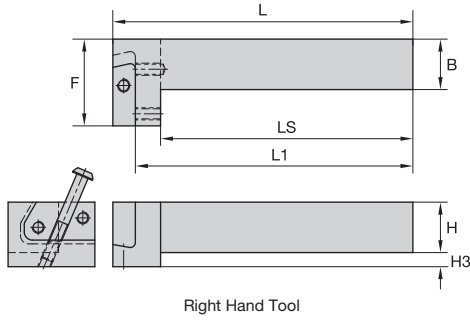
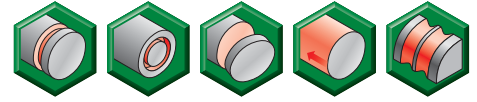
Toolholder Style	Hand of Holder	Hand of Blade
WGMS – Straight Mount	Right	Right
	Left	Left
WGME – End Mount	Right	Left
	Left	Right



Grooving and Cut-Off Blades found on page D38.



Face Grooving Blades found on page D39.



Grooving and Cut-Off

■ End Mount • Grooving, Cut-Off, and Face Grooving

order number	catalogue number	H	B	L	L1	LS	F	H3
<b>right hand</b>								
5514979	WGMR2525	25	25	150,3	139,3	125,25	42,75	9
5515021	WGMR3232	32	32	170,3	159,3	145,25	42,75	—
<b>left hand</b>								
5514978	WGME2525	25	25	150,3	139,3	125,25	42,75	9
5515020	WGME3232	32	32	170,3	159,3	145,25	42,75	—

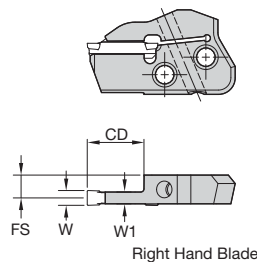
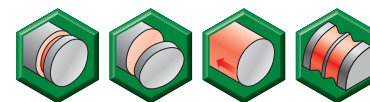
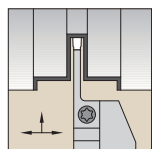
Toolholder Style	Hand of Holder	Hand of Blade
WGMS – Straight Mount	Right	Right
	Left	Left
WGME – End Mount	Right	Left
	Left	Right



Grooving and Cut-Off Blades found on page D38.



Face Grooving Blades found on page D39.



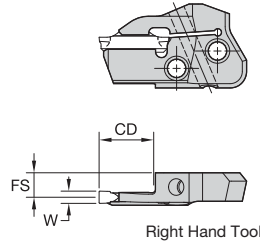
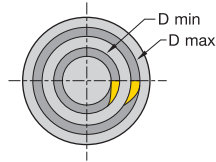
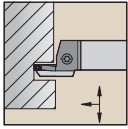
Grooving and Cut-Off

■ Grooving and Cut-Off

order number	catalogue number	seat size	CD	W	FS	W1
<b>right hand</b>						
5359127	WMTWGMR114S	1	14,00	1,50	11,04	1,22
5359128	WMTWGMR213S	2	13,00	2,00	10,81	1,68
5359129	WMTWGMR2B16S	2B	16,50	2,39	10,71	1,88
5359130	WMTWGMR319S	3	19,00	3,00	10,38	2,54
5359131	WMTWGMR419S	4	19,00	4,00	10,00	3,30
5359132	WMTWGMR522S	5	22,00	5,00	9,82	3,66
5359133	WMTWGMR622S	6	22,00	6,00	9,26	4,78
<b>left hand</b>						
5359120	WMTWGML114S	1	14,00	1,50	11,04	1,22
5359121	WMTWGML213S	2	13,00	2,00	10,81	1,68
5359122	WMTWGML2B16S	2B	16,50	2,39	10,71	1,88
5359123	WMTWGML319S	3	19,00	3,00	10,38	2,54
5359124	WMTWGML419S	4	19,00	4,00	10,00	3,30
5359125	WMTWGML522S	5	22,00	5,00	9,82	3,66
5359126	WMTWGML622S	6	22,00	6,00	9,26	4,78

NOTE: Blade and clamp screw torque equals 8–10 Nm.

Toolholder Style	Hand of Holder	Hand of Blade
WGMS – Straight Mount	Right	Right
	Left	Left
WGME – End Mount	Right	Left
	Left	Right



Grooving and Cut-Off

■ Face Grooving

order number	catalogue number	seat size	D min	D max	CD	W	FS
<b>right hand</b>							
5359150	WMTWGMR313B038-052	3	38,00	52,00	12,70	3,00	11,00
5359151	WMTWGMR316B052-070	3	52,00	70,00	15,88	3,00	11,00
5359154	WMTWGMR416B052-070	4	52,00	70,00	15,88	4,00	10,50
5359152	WMTWGMR316B070-100	3	70,00	100,00	15,88	3,00	11,00
5359155	WMTWGMR416B070-100	4	70,00	100,00	15,88	4,00	10,50
5359153	WMTWGMR319B100-205	3	100,00	205,00	19,05	3,00	11,00
5359156	WMTWGMR419B100-205	4	100,00	205,00	19,05	4,00	10,50
5359157	WMTWGMR522B100-205	5	100,00	205,00	22,00	5,00	10,00
5359158	WMTWGMR622B100-205	6	100,00	205,00	22,00	6,00	10,00
<b>left hand</b>							
5359146	WMTWGML616B030-052	6	30,00	52,00	15,88	6,00	10,00
5359134	WMTWGML313B038-052	3	38,00	52,00	12,70	3,00	11,00
5359138	WMTWGML413B038-052	4	38,00	52,00	12,70	4,00	10,50
5359142	WMTWGML516B038-052	5	38,00	52,00	15,88	5,00	10,00
5359135	WMTWGML316B052-070	3	52,00	70,00	15,88	3,00	11,00
5359139	WMTWGML416B052-070	4	52,00	70,00	15,88	4,00	10,50
5359143	WMTWGML519B052-070	5	52,00	70,00	19,05	5,00	10,00
5359147	WMTWGML619B052-070	6	52,00	70,00	19,05	6,00	10,00
5359136	WMTWGML316B070-100	3	70,00	100,00	15,88	3,00	11,00
5359140	WMTWGML416B070-100	4	70,00	100,00	15,88	4,00	10,50
5359144	WMTWGML519B070-100	5	70,00	100,00	19,05	5,00	10,00
5359148	WMTWGML619B070-100	6	70,00	100,00	19,05	6,00	10,00
5359137	WMTWGML319100-205	3	100,00	205,00	19,05	3,00	11,00
5359141	WMTWGML419B100-205	4	100,00	205,00	19,05	4,00	10,50
5359145	WMTWGML522B100-205	5	100,00	205,00	22,00	5,00	10,00
5359149	WMTWGML622B100-205	6	100,00	205,00	22,00	6,00	10,00

NOTE: Blade and clamp screw torque equals 8–10 Nm.

Toolholder Style	Hand of Holder	Hand of Blade
WGMS – Straight Mount	Right	Right
	Left	Left
WGME – End Mount	Right	Left
	Left	Right



## WIDIA™ TopGroove™ for Shallow Grooving and Face Grooving

# TopGroove

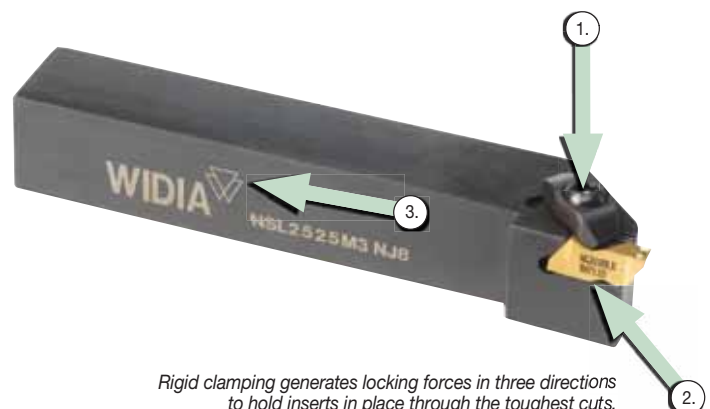


WIDIA has set the industry standard for threading and grooving productivity with the TopGroove clamping design. The TopGroove design provides consistent tool performance, accurate indexing, and superior clamping to provide excellent surface finish and outstanding tool life.

Let us help you select the correct insert for your application needs or upgrade your current TopGroove tooling inventory to include chip control geometries and the high productivity grades available from WIDIA.

### Rigidity, Versatility, and Chip Control

- TopGroove clamping design features a rugged bridge clamp, which locates in a groove moulded 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 multi-directional turning as well as radial feed applications to provide excellent chip evacuation in deep grooving applications.



*Rigid clamping generates locking forces in three directions to hold inserts in place through the toughest cuts.*

TopGroove inserts employ a unique top rake chip control geometry that efficiently evacuates chips and produces better quality parts faster.

The WIDIA™ TopGroove™ clamping system offers a complete line of grooving geometries and an extensive grade selection.



## Carbide Grades and Proven Solutions for High Productivity

- The TopGroove system has a carbide grade to match your application needs that include uncoated grades, PVD-coated grades, CVD-coated grades, and advanced material grades, including cermets, ceramics, PcBNs, and PCDs (as custom solutions).
- PVD TiAlN-coated grades are designed to cut a variety of workpiece materials.
- Versatile design enables one system to handle O.D. and I.D. grooving, face grooving, back turning, undercutting, and even threading operations.

## 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.

Utilise this comprehensive, easy-to-use guide for the information necessary to identify, choose, and select the appropriate cutting tools for your specific needs.

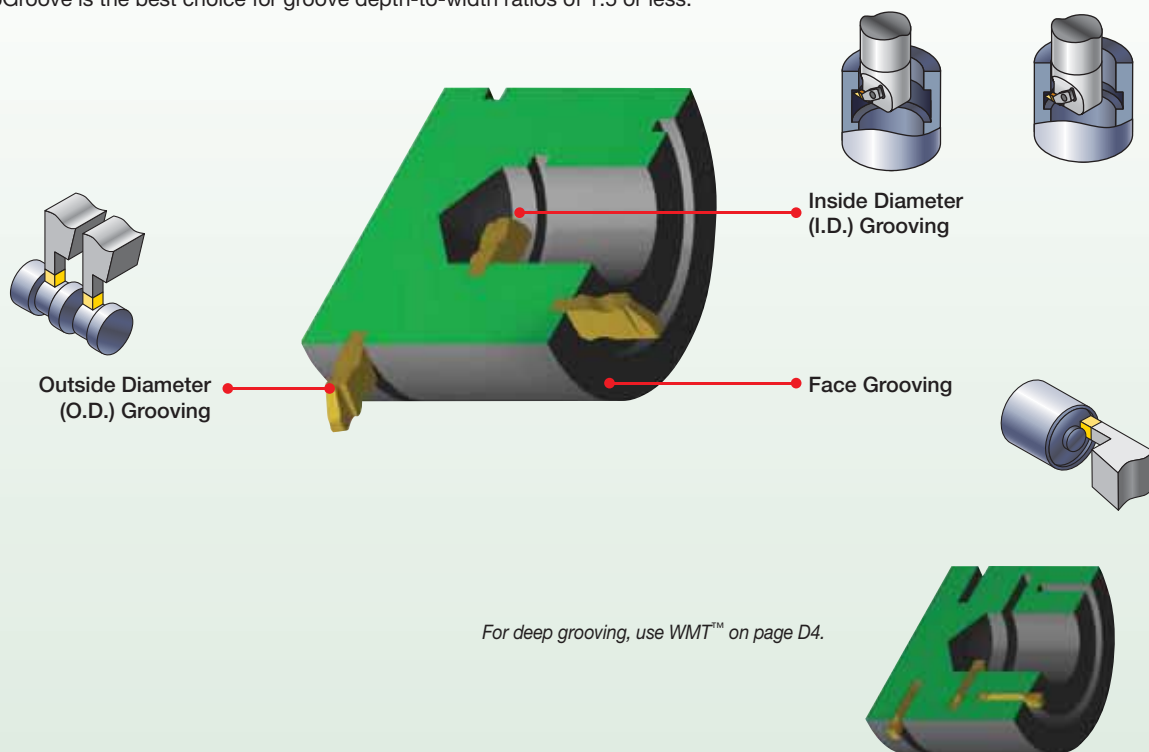
### What you need to know:

- 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	0,50mm
		depth	—
	Face Grooving	width	3,2mm
		depth	—
	Internal Grooving	diameter	11,2mm
	Face Grooving Diameter	standard	23,9mm
		deep	—
	Deep O.D./I.D. Grooving	width	1,50mm
		depth	—
	Deep Face Grooving	width	3,18mm
		depth	—

**2 Identify the material to be machined:**


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

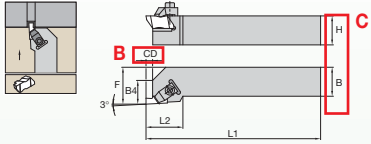
<b>P</b>	Steel
<b>M</b>	Stainless Steel
<b>K</b>	Cast Iron
<b>N</b>	Non-Ferrous
<b>S</b>	High-Temp Alloys
<b>H</b>	Hardened Materials

**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.


**TopGroove™**  
Toolholders

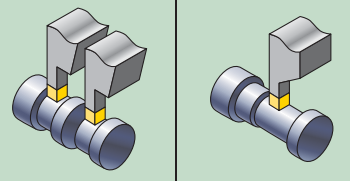
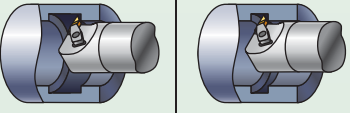
**WIDIA** 



■ NS

order number	catalogue number	C		F	L1	L2	B4	CD	A	gage insert	clamp	clamp screw	clamp screw	hex/Torx Plus
		H	B											
<b>right hand</b>														
3641682	NSR1010E2	10,0	10,0	14,0	70	19	9	4	N.2R	CM74	MS1200	—	T10	
3641660	NSR1212F2	12,0	12,0	16,0	80	19	9	4	N.2R	CM74	MS1200	—	T10	
3636542	NSR1616H2	16,0	16,0	20,0	100	19	9	4	N.2R	CM74	MS1200	—	T10	
3638589	NSR2020K2	20,0	20,0	25,0	125	19	9	4	N.2R	CM74	MS1200	—	T10	
3638588	NSR2020K3	20,0	20,0	25,0	125	32	13	5	N.3R	CM72LP	—	MS2111	25 IP	
3638590	NSR2525M2	25,0	25,0	32,0	150	19	9	4	N.2R	CM74	MS1200	—	T10	
3636536	NSR2525M3	25,0	25,0	32,0	150	32	13	5	N.3R	CM72LP	—	MS2111	25 IP	
3636540	NSR2525M4	25,0	25,0	32,0	150	35	14	7	N.4R	CM72LP	—	MS2111	25 IP	
3641664	NSR3225P3	32,0	25,0	32,0	170	32	13	5	N.3R	CM72LP	—	MS2111	25 IP	
3641675	NSR3225P4	32,0	25,0	32,0	170	35	14	7	N.4R	CM72LP	—	MS2111	25 IP	
3641666	NSR3232P3	32,0	32,0	40,0	170	32	13	5	N.3R	CM72LP	—	MS2111	25 IP	
3641669	NSR3232P4	32,0	32,0	40,0	170	35	14	7	N.4R	CM72LP	—	MS2111	25 IP	
<b>left hand</b>														
3641683	NSL1010E2	10,0	10,0	14,0	70	19	9	4	N.2L	CM75	MS1200	—	T10	
3641681	NSL1212F2	12,0	12,0	16,0	80	19	9	4	N.2L	CM75	MS1200	—	T10	
3636545	NSL1616H2	16,0	16,0	20,0	100	19	9	4	N.2L	CM75	MS1200	—	T10	
3639045	NSL2020K2	20,0	20,0	25,0	125	19	9	4	N.2L	CM75	MS1200	—	T10	



		application	conventional toolholders	modular blades
		O.D. Grooving and Plunge and Turn	pages D74–D76	—
		I.D. Grooving	pages D78–D79	—

**4 Select chipbreaker style for the application:**


See application guide on page D48 for a complete list of insert styles.

NOTE: Chart shows recommended starting feed rates.


See page D49.

WIDIA
TopGroove™  
Feed Values for Grooving Inserts

**TopGroove • NG -K, NG-1L, and NG**

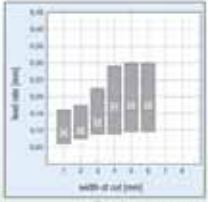


NG-K




NG

- Chip control enables true optimisation 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.




① Recommended Starting Feed

**TopGroove • NGP and NGD-K**

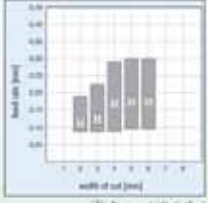


NGP




NGD-K

- 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.




① Recommended Starting Feed

**TopGroove • NR and NR-K**

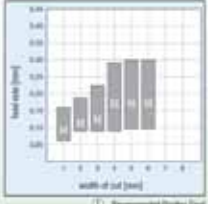


NR



NR-K

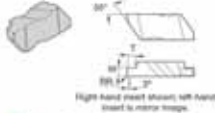
- For full radius grooving and turning profiling applications.
- Chip geometry for excellent chip control.
- Precision ground for accurate edge location.
- Can be used in both toolholders and boring bars.



① Recommended Starting Feed

- A Choose the appropriate insert width “W” for your specific application.
- B Select the required corner radius value “RR”.

WIDIA
TopGroove™  
Grooving Inserts







Right-hand insert shown with insert to rotate image.

■ NG • Grooving Inserts

catalogue number	insert size	A		T										
		W	RR		P	M	K	N	S	H				
right hand														
NG201R	2	0.79	0.08	1.27	3607123	3607123	3607123	3607123	3607123	3607123	3607123	3607123	3607123	3607123
NG204R	2	1.04	0.08	1.27	3607123	3607123	3607123	3607123	3607123	3607123	3607123	3607123	3607123	3607123
NG3047R	3	1.19	0.19	1.91	3607123	3607123	3607123	3607123	3607123	3607123	3607123	3607123	3607123	3607123
NG206R	2	1.47	0.19	1.27	3607123	3607123	3607123	3607123	3607123	3607123	3607123	3607123	3607123	3607123
NG3062R	3	1.68	0.19	2.26	3607123	3607123	3607123	3607123	3607123	3607123	3607123	3607123	3607123	3607123
NG2062R	2	1.55	0.19	2.79	3607123	3607123	3607123	3607123	3607123	3607123	3607123	3607123	3607123	3607123
NG3094R	3	2.29	0.19	3.81	3607123	3607123	3607123	3607123	3607123	3607123	3607123	3607123	3607123	3607123

**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 D47 for Grades and Grade Descriptions.

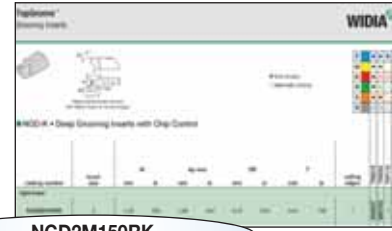
**6 Determine cutting data:**

- A Based on material group and grade, identify starting speed (vc).
- B First choice starting speed is in **bold**.

See page D50 for cutting data.

Material Group		Cutting Speed – vc m/min											
		TN6010			TN6025			TN7110			THM		
		min	Start	max	min	Start	max	min	Start	max	min	Start	max
P	0 / 1	140	175	210	130	148	150	200	215	230	90	85	100
	2	115	145	175	110	145	175	170	220	270	75	100	125
	3	115	145	175	110	145	175	170	220	270	75	100	125
	4	75	100	120	75	95	115	115	145	175	55	65	80
	5	100	140	170	100	125	145	105	<b>190</b>	220	70	85	100
	6	45	60	75	40	55	65	65	85	100	30	40	45
M	1	90	115	140	60	75	90	--	--	--	90	75	90
	2	55	70	90	40	50	55	--	--	--	50	60	75
	3	60	80	95	40	60	80	--	--	--	40	60	55
K	1	120	150	180	60	80	90	175	220	275	70	90	100
	2	120	150	180	60	75	85	185	215	265	50	65	80
	3	110	140	170	60	75	90	180	<b>230</b>	280	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	560	700	850	560	700	850	--	--	--	150	200	250
S	1	35	40	50	25	35	40	--	--	--	25	35	45
	2	20	30	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	--	--	--
	2	--	--	--	15	30	60	15	30	60	--	--	--
	3	--	--	--	15	30	60	15	30	60	--	--	--
	4	--	--	--	15	30	60	15	30	60	--	--	--

# TopGroove Insert Identification System



NGD2M150RK

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>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>	<p><b>D</b> – Deep grooving</p> <p><b>P</b> – Positive</p> <p><b>C</b> – Groove and chamfer</p>	<p><b>2</b> – Insert Size</p> <table border="1"> <thead> <tr> <th>insert number</th> <th>W1 mm</th> </tr> </thead> <tbody> <tr><td>1</td><td>2,54</td></tr> <tr><td>2</td><td>3,81</td></tr> <tr><td>3</td><td>4,95</td></tr> <tr><td>4</td><td>6,98</td></tr> <tr><td>5</td><td>9,65</td></tr> <tr><td>6</td><td>9,73</td></tr> </tbody> </table>	insert number	W1 mm	1	2,54	2	3,81	3	4,95	4	6,98	5	9,65	6	9,73	<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 0,01mm 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>
insert number	W1 mm																						
1	2,54																						
2	3,81																						
3	4,95																						
4	6,98																						
5	9,65																						
6	9,73																						

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 0,01mm.  
**Example:** 3,25mm width groove or radius equals "325" catalogue position number.  
**Width Tolerance:** ±0,025mm unless otherwise specified.

\*\*Omit position for TopGroove NB-style blanks.

### TopGroove/TopThread Threading and Grooving Insert Dimensions

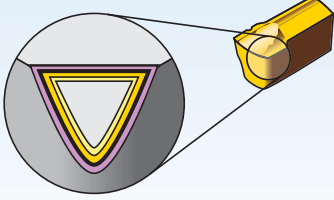
insert size	S		W1	
	mm	inch	mm	Inch
1	2,54	.100	2,54	.100
2	5,56	.219	3,81	.150
3	8,74	.344	4,95	.195
4	11,51	.453	6,48	.255
5	17,48	.688	9,65	.380
6	11,51	.453	9,73	.383
8	7,93	.312	11,13	.438

### 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.









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		Performance Characteristics																
				05	10	15	20	25	30	35	40	45								
TN6010	 <b>HC-S10</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>																	
TN6025	 <b>HC-S25</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>																	
TN7110	 <b>HC-P10</b>	Coated carbide. MTCVD/CVD — TiN-TiCN-Al <sub>2</sub> O <sub>3</sub> -TiN. Very wear resistant. Light and medium machining. For steels and nodular cast iron.	<b>P</b>																	
			<b>M</b>																	
			<b>K</b>																	
			<b>N</b>																	
			<b>S</b>																	
			<b>H</b>																	
THM	 <b>HW-K15</b>	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 unfavourable conditions.	<b>P</b>																	
			<b>M</b>																	
			<b>K</b>																	
			<b>N</b>																	
			<b>S</b>																	
			<b>H</b>																	





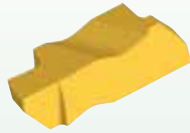
insert style	application	rake angle	page(s)	insert style	application	rake angle	page(s)
<b>NG</b> 	<ul style="list-style-type: none"> <li>• General-purpose grooving.</li> <li>• O-ring grooving.</li> <li>• Circlip grooving.</li> </ul>	neutral	<b>D51–D52</b>	<b>NFD-KI*</b> 	<ul style="list-style-type: 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>D53–D59</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>D66</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>D67–D69</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>D70</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>D60–D62</b>	<b>NRD</b> 	<ul style="list-style-type: none"> <li>• Deep grooving.</li> <li>• Full radius end-form.</li> </ul>	neutral	<b>D71</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>D63–D64</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>D65</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>D66</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>D72</b>

\*Inserts are available as custom solutions.

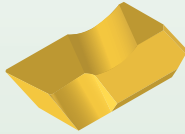
**TopGroove • NG -K, NG-1L, and NG**



**NG-K**

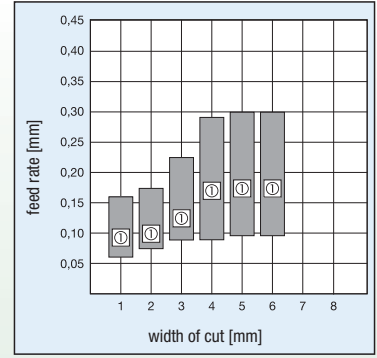


**NG**



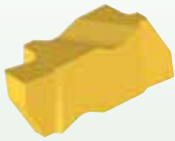
**NG-1L**

- Chip control enables true optimisation 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.

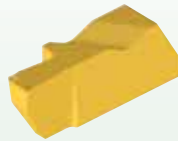


① Recommended Starting Feed

**TopGroove • NGP and NGD-K**

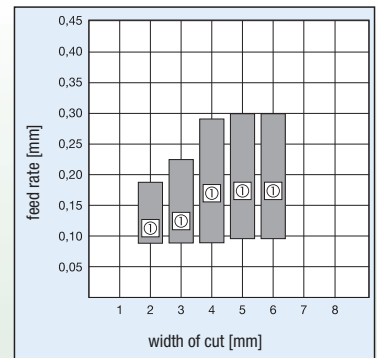


**NGP**



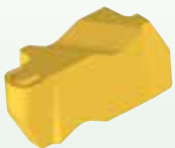
**NGD-K**

- 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.

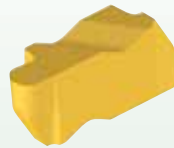


① Recommended Starting Feed

**TopGroove • NR and NR-K**

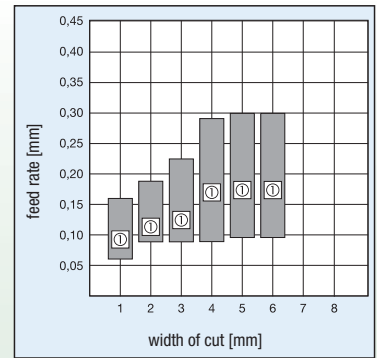


**NR**



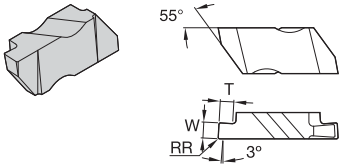
**NR-K**

- 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.



① Recommended Starting Feed

Material Group		Cutting Speed – vc m/min											
		TN6010			TN6025			TN7110			THM		
		min	Start	max	min	Start	max	min	Start	max	min	Start	max
P	0/1	140	175	210	130	140	150	200	215	230	90	95	100
	2	115	145	175	110	145	175	170	220	270	75	100	125
	3	115	145	175	110	145	175	170	220	270	75	100	125
	4	75	100	120	75	95	115	115	145	175	55	65	80
	5	105	140	170	100	125	145	155	190	220	70	85	100
	6	45	60	75	40	55	65	65	85	100	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	175	220	275	70	90	100
	2	120	150	180	60	75	85	165	215	265	50	65	80
	3	110	140	170	60	75	90	180	230	280	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



Right-hand insert shown; left-hand insert is mirror image.

● first choice  
○ alternate choice

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

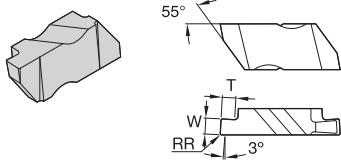
■ NG • Grooving Inserts

catalogue number	insert size	W	RR	T	TN6010	TN6025	TN7110	THM
<b>right hand</b>								
NG2031R	2	0,79	0,09	1,27	3607153	3607495	•	3607030
NG2041R	2	1,04	0,09	1,27	•	3607330	•	•
NG3047R	3	1,19	0,19	1,91	3607157	3607416	•	•
NG2058R	2	1,47	0,19	1,27	•	3607450	•	•
NG2062R	2	1,58	0,19	2,79	3607167	3607453	•	3607027
NG3062R	3	1,58	0,19	2,39	3607109	3607403	•	•
NG3094R	3	2,39	0,19	3,81	3607137	3607406	•	3607018
NG3125R	3	3,18	0,19	3,81	3607110	3607375	•	3607020
NG4250R	4	6,35	0,57	6,35	3607143	3607382	•	•
<b>left hand</b>								
NG2031L	2	0,79	0,09	1,27	•	3607482	•	•
NG3047L	3	1,19	0,19	1,91	3607179	3607501	•	3607036
NG2058L	2	1,47	0,19	1,27	•	3607498	•	•
NG2062L	2	1,58	0,19	2,79	•	3607481	•	•
NG3062L	3	1,58	0,19	2,39	3607158	3607459	•	•

(continued)



(NG • Grooving Inserts — continued)



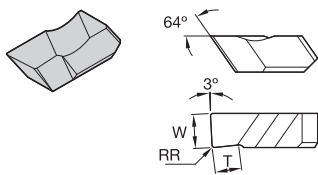
Right-hand insert shown; left-hand insert is mirror image.

● first choice  
○ alternate choice

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

Grooving and Cut-Off

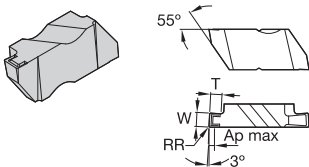
catalogue number	insert size	W	RR	T	TN6010	TN6025	TN7110	THM
NG3094L	3	2,39	0,19	3,81	3607160	3607323	—	—
NG3125L	3	3,18	0,19	3,81	3607152	3607445	—	3607022
NG5M500L	5	5,00	0,32	9,52	—	3636572	—	—
NG4250L	4	6,35	0,57	6,35	3607175	3607513	—	—



■ NG-1L • Grooving Inserts

catalogue number	insert size	W	RR	T	cutting edges	TN6010	TN6025	TN7110	THM
<b>left hand</b>									
NG1047L	1	1,19	0,19	1,91	1	—	3636571	—	—
NG1062L	1	1,58	0,19	1,91	1	—	3636569	—	—
NG1094L	1	2,39	0,19	1,91	1	—	3636570	—	—

NOTE: Width tolerance is +/- 0,076mm on NG-1L inserts.



Right-hand insert shown; left-hand insert is mirror image.

● first choice  
○ alternate choice

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

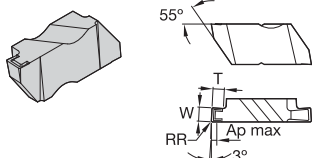
■ **NG-K • Grooving Inserts with Chip Control**

catalogue number	insert size	W	Ap max	RR	T	TN6010	TN6025	TN7110	THM
<b>right hand</b>									
NG2M050RK	2	0,50	0,64	0,09	0,64	●	●	○	○
NG2031RK	2	0,79	0,76	0,09	1,27	●	●	○	○
NG2M080RK	2	0,80	0,76	0,09	1,27	●	●	○	○
NG2M100RK	2	1,00	0,76	0,09	1,27	●	●	○	○
NG3M100RK	3	1,00	0,76	0,19	1,91	○	○	○	○
NG2047RK	2	1,19	0,76	0,09	1,27	●	●	○	○
NG3047RK	3	1,19	0,76	0,19	1,91	○	○	○	○
NG2M120RK	2	1,20	0,76	0,09	1,27	●	●	○	○
NG3M120RK	3	1,20	0,76	0,19	1,91	○	○	○	○
NG2M140RK	2	1,40	0,76	0,09	1,27	●	●	○	○
NG2M150RK	2	1,50	1,09	0,19	2,79	○	○	○	○
NG3M150RK	3	1,50	1,02	0,19	2,39	○	○	○	○
NG2062RK	2	1,58	1,09	0,19	2,79	○	○	○	○
NG3062RK	3	1,58	1,02	0,19	2,39	○	○	○	○
NG2M170RK	2	1,70	1,09	0,19	2,79	○	○	○	○

(continued)



(NG-K • Grooving Inserts with Chip Control — continued)



Right-hand insert shown; left-hand insert is mirror image.

● first choice  
○ alternate choice

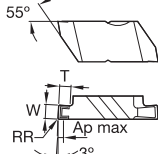
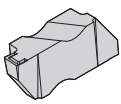
P		●	●	●	●
M		●	●	○	○
K		●	○	○	○
N		●	○	○	●
S		●	●	○	●
H		○	○	○	○

Grooving and Cut-Off

catalogue number	insert size	W	Ap max	RR	T	TN6010	TN6025	TN7110	THM
NG2M175RK	2	1,75	1,09	0,19	2,79	○	○	○	○
NG3M175RK	3	1,75	1,02	0,19	2,39	○	○	○	○
NG3072RK	3	1,83	1,02	0,19	2,39	○	○	○	○
NG2M195RK	2	1,95	1,09	0,19	2,79	○	○	○	○
NG3078RK	3	1,98	1,02	0,19	2,39	○	○	○	○
NG2M200RK	2	2,00	1,09	0,19	2,79	○	○	○	○
NG3M200RK	3	2,00	1,02	0,19	2,39	○	○	○	○
NG2M220RK	2	2,20	1,09	0,19	2,79	○	○	○	○
NG3M220RK	3	2,20	1,02	0,19	2,39	○	○	○	○
NG3M225RK	3	2,24	1,02	0,19	2,39	○	○	○	○
NG2M225RK	2	2,25	1,09	0,19	2,79	○	○	○	○
NG2094RK	2	2,39	1,09	0,19	2,79	○	○	○	○
NG3094RK	3	2,39	1,02	0,19	3,81	○	○	○	○
NG2M250RK	2	2,50	1,09	0,19	2,79	○	○	○	○
NG3M250RK	3	2,50	1,02	0,19	3,81	○	○	○	○
NG2M275RK	2	2,75	1,09	0,19	2,79	○	○	○	○

(continued)

(NG-K • Grooving Inserts with Chip Control — continued)



Right-hand insert shown; left-hand insert is mirror image.

● first choice  
○ alternate choice

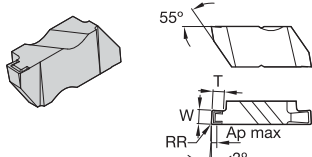
P		●	●	●	●
M		●	●	○	○
K		●	○	○	○
N		●	○	○	●
S		●	●	○	●
H		○	○	○	○

catalogue number	insert size	W	Ap max	RR	T	TN6010	TN6025	TN7110	THM
NG3M275RK	3	2,75	1,02	0,19	3,81	3606677	3607337	○	○
NG2M300RK	2	3,00	1,09	0,19	2,79	3606676	3607340	○	○
NG3M300RK	3	3,00	1,02	0,19	3,81	3607138	3607072	○	○
NG4M300RK	4	3,00	1,02	0,19	3,81	3607388	3607655	○	○
NG2125RK	2	3,18	1,09	0,19	2,79	3607155	3607381	○	○
NG3125RK	3	3,18	1,02	0,19	3,81	3607057	3607068	○	○
NG4125RK	4	3,18	1,06	0,19	3,81	3607163	3607449	○	○
NG3M320RK	3	3,20	1,02	0,19	3,81	3607365	3607365	○	○
NG2M325RK	2	3,25	1,09	0,19	2,79	3607533	3607533	○	○
NG3M325RK	3	3,25	1,02	0,19	3,81	3607515	3607515	○	○
NG3M350RK	3	3,50	2,92	0,32	3,81	3607302	3607302	○	○
NG4M350RK	4	3,50	2,92	0,57	6,35	3607370	3607370	○	○
NG3156RK	3	3,96	2,92	0,19	3,81	3607127	3607456	○	○
NG3M400RK	3	3,99	2,92	0,32	3,81	3606678	3607235	○	○
NG4M400RK	4	4,00	2,92	0,57	6,35	3606908	3607364	○	○
NG3M425RK	3	4,24	2,92	0,32	3,81	3607517	3607517	○	○





(NG-K • Grooving Inserts with Chip Control — continued)



Right-hand insert shown; left-hand insert is mirror image.

● first choice  
○ alternate choice

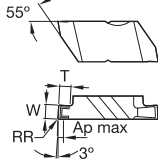
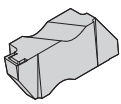
P	●	●	●	●
M	●	●	○	○
K	●	○	○	○
N	●	○	○	●
S	●	●	○	●
H	○	○	○	○

Grooving and Cut-Off

catalogue number	insert size	W	Ap max	RR	T	TN6010	TN6025	TN7110	THM
NG3M450RK	3	4,50	2,92	0,32	3,81	●	●	●	○
NG4M450RK	4	4,50	2,92	0,57	6,35	●	●	●	○
NG3189RK	3	4,80	2,92	0,57	3,81	●	●	●	○
NG4189RK	4	4,80	2,92	0,57	6,35	●	●	●	○
NG4M500RK	4	5,00	2,92	0,32	6,35	●	●	●	○
NG4M550RK	4	5,50	3,81	0,57	6,35	●	●	●	○
NG4M600RK	4	6,00	3,81	0,57	6,35	●	●	●	○
NG4250RK	4	6,35	3,81	0,57	6,35	●	●	●	○
<b>left hand</b>									
NG2M050LK	2	0,50	0,64	0,09	0,64	●	●	●	○
NG2031LK	2	0,79	0,76	0,09	1,27	●	●	●	○
NG2M080LK	2	0,80	0,76	0,09	1,27	●	●	●	○
NG2M100LK	2	1,00	0,76	0,09	1,27	●	●	●	○
NG3M100LK	3	1,00	0,76	0,19	1,91	●	●	●	○
NG2047LK	2	1,19	0,76	0,09	1,27	●	●	●	○
NG3047LK	3	1,19	0,76	0,19	1,91	●	●	●	○

(continued)

(NG-K • Grooving Inserts with Chip Control — continued)



Right-hand insert shown; left-hand insert is mirror image.

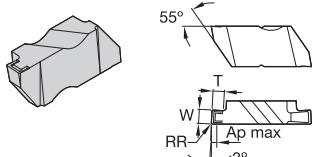
● first choice  
○ alternate choice

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

catalogue number	insert size	W	Ap max	RR	T	TN6010	TN6025	TN7110	THM
NG2M120LK	2	1,20	0,76	0,09	1,27	3606827	3607334	○	○
NG3M120LK	3	1,20	0,76	0,19	1,91	3606917	3607384	○	○
NG2M140LK	2	1,40	0,76	0,09	1,27	3606904	3607338	○	○
NG2M150LK	2	1,50	1,09	0,19	2,79	3607294	○	○	○
NG3M150LK	3	1,50	1,02	0,19	2,39	3607308	3607308	○	○
NG2062LK	2	1,58	1,09	0,19	2,79	3607126	3607307	○	○
NG3062LK	3	1,58	1,02	0,19	2,39	3607092	3607213	○	○
NG2M170LK	2	1,70	1,09	0,19	2,79	3606905	3607327	○	○
NG2M175LK	2	1,75	1,09	0,19	2,79	3607421	○	○	○
NG3M175LK	3	1,75	1,02	0,19	2,39	3607331	3607331	○	○
NG3072LK	3	1,83	1,02	0,19	2,39	3607184	3607454	○	○
NG2M195LK	2	1,95	1,09	0,19	2,79	3606910	3607420	○	○
NG3078LK	3	1,98	1,02	0,19	2,39	3607106	3607460	○	○
NG2M200LK	2	2,00	1,09	0,19	2,79	3607144	3607207	○	○
NG3M200LK	3	2,00	1,02	0,19	2,39	3607211	3607211	○	○
NG2M220LK	2	2,20	1,09	0,19	2,79	3607367	○	○	○



(NG-K • Grooving Inserts with Chip Control — continued)



Right-hand insert shown; left-hand insert is mirror image.

● first choice  
○ alternate choice

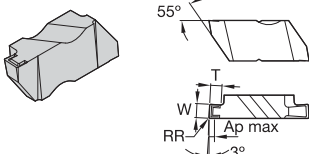
P		●	●	●	○
M		●	●	○	○
K		●	○	○	○
N		●	○	○	●
S		●	●	○	●
H		○	○	○	○

Grooving and Cut-Off

catalogue number	insert size	W	Ap max	RR	T	TN6010	TN6025	TN7110	THM
NG3M220LK	3	2,20	1,02	0,19	2,39	●	●	○	○
NG3M225LK	3	2,24	1,02	0,19	2,39	●	●	○	○
NG2M225LK	2	2,25	1,09	0,19	2,79	●	●	○	○
NG2094LK	2	2,39	1,09	0,19	2,79	●	●	○	○
NG3094LK	3	2,39	1,02	0,19	3,81	●	●	○	○
NG2M250LK	2	2,50	1,09	0,19	2,79	●	●	○	○
NG3M250LK	3	2,50	1,02	0,19	3,81	●	●	○	○
NG2M275LK	2	2,75	1,09	0,19	2,79	●	●	○	○
NG3M275LK	3	2,75	1,02	0,19	3,81	●	●	○	○
NG2M300LK	2	3,00	1,09	0,19	2,79	●	●	○	○
NG3M300LK	3	3,00	1,02	0,19	3,81	●	●	○	○
NG4M300LK	4	3,00	1,02	0,19	3,81	●	●	○	○
NG2125LK	2	3,18	1,09	0,19	2,79	●	●	○	○
NG3125LK	3	3,18	1,02	0,19	3,81	●	●	○	○
NG4125LK	4	3,18	1,06	0,19	3,81	●	●	○	○
NG3M320LK	3	3,20	1,02	0,19	3,81	●	●	○	○

(continued)

(NG-K • Grooving Inserts with Chip Control — continued)



Right-hand insert shown; left-hand insert is mirror image.

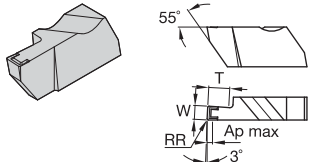
● first choice  
○ alternate choice

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

catalogue number	insert size	W	Ap max	RR	T	TN6010	TN6025	TN7110	THM
NG2M325LK	2	3,25	1,09	0,19	2,79	●	●	○	○
NG3M325LK	3	3,25	1,02	0,19	3,81	●	●	○	○
NG3M350LK	3	3,50	2,92	0,32	3,81	●	●	○	○
NG4M350LK	4	3,50	2,92	0,57	6,35	●	●	○	○
NG3156LK	3	3,96	2,92	0,19	3,81	●	●	○	○
NG3M400LK	3	3,99	2,92	0,32	3,81	●	●	○	○
NG4M400LK	4	4,00	2,92	0,57	6,35	●	●	○	○
NG3M425LK	3	4,24	2,92	0,32	3,81	●	●	○	○
NG3M450LK	3	4,50	2,92	0,32	3,81	●	●	○	○
NG4M450LK	4	4,50	2,92	0,57	6,35	●	●	○	○
NG3189LK	3	4,80	2,92	0,57	3,81	●	●	○	○
NG4189LK	4	4,80	2,92	0,57	6,35	●	●	○	○
NG4M500LK	4	5,00	2,92	0,32	6,34	●	●	○	○
NG4M550LK	4	5,50	3,81	0,57	6,35	●	●	○	○
NG4M600LK	4	6,00	3,81	0,57	6,35	●	●	○	○
NG4250LK	4	6,35	3,81	0,57	6,35	●	●	○	○



Grooving and Cut-Off



Right-hand insert shown; left-hand insert is mirror image.

● first choice  
○ alternate choice

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

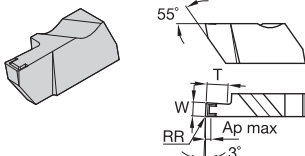
■ NGD-K • Deep Grooving Inserts with Chip Control

catalogue number	insert size	W	Ap max	RR	T	cutting edges	TN6010	TN6025	TN7110	THM
right hand										
NGD2M150RK	2	1,50	1,09	0,19	4,06	1	3606937	3607503	○	○
NGD3062RK	3	1,58	1,02	0,19	3,18	2	3607104	3607233	○	○
NGD2M200RK	2	2,00	1,09	0,19	5,08	1	3606938	3607465	○	○
NGD3M200RK	3	2,00	1,02	0,19	4,06	1	3606945	3607505	○	○
NGD3094RK	3	2,39	1,02	0,19	6,35	1	3607083	3607205	○	3607029
NGD2M250RK	2	2,50	1,09	0,19	5,08	1	3606939	3607504	○	○
NGD3M250RK	3	2,50	1,02	0,19	6,35	1	3606946	3607425	○	○
NGD3M300RK	3	3,00	1,02	0,19	6,35	1	3606922	3607426	○	○
NGD3125RK	3	3,18	1,02	0,19	6,35	1	3607088	3607210	○	○
NGD4125RK	4	3,18	1,02	0,19	6,35	2	3607133	3607312	○	○
NGD3M350RK	3	3,50	2,92	0,32	6,35	1	○	3607506	○	○
NGD3M400RK	3	4,00	2,92	0,32	6,35	1	3606940	3607427	○	○
NGD4M400RK	4	4,00	2,92	0,57	9,53	1	3606986	3607507	○	○
NGD4M450RK	4	4,50	2,92	0,57	12,70	1	○	3607508	○	○
NGD3189RK	3	4,80	2,92	0,57	6,35	1	3607170	3607373	○	○

(continued)

Grooving and Cut-Off

(NGD-K • Deep Grooving Inserts with Chip Control – continued)



Right-hand insert shown; left-hand insert is mirror image.

● first choice  
○ alternate choice

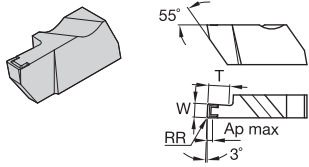
P	●	●	●	●	●
M	●	●	●	○	○
K	●	○	○	○	○
N	●	○	○	○	○
S	●	○	○	○	○
H	○	○	○	○	○

catalogue number	insert size	W	Ap max	RR	T	cutting edges	TN6010	TN6025	TN7110	THM
NGD4189RK	4	4,80	2,92	0,57	9,53	1	3607161	3607321	●	●
NGD4M500RK	4	5,00	2,92	0,57	12,70	1	3606988	3607509	●	●
NGD4M550RK	4	5,50	3,81	0,57	12,70	1	3606989	●	●	●
NGD4250RK	4	6,35	3,81	0,57	12,70	1	3607134	3607414	●	●
<b>left hand</b>										
NGD2M150LK	2	1,50	1,09	0,19	4,06	1	3606935	3607402	●	●
NGD3062LK	3	1,58	1,02	0,19	3,18	2	3607098	3607451	●	●
NGD2M200LK	2	2,00	1,09	0,19	5,08	1	3606936	3607399	●	●
NGD3M200LK	3	2,00	1,02	0,19	4,06	1	3606941	3607487	●	●
NGD3094LK	3	2,39	1,02	0,19	6,34	1	3607096	3607240	●	3607035
NGD2M250LK	2	2,50	1,09	0,19	5,08	1	3606992	3607391	●	●
NGD3M250LK	3	2,50	1,02	0,19	6,35	1	3606942	3607423	●	●
NGD3M300LK	3	3,00	1,02	0,19	6,35	1	3606943	3607400	●	●
NGD3125LK	3	3,18	1,02	0,19	6,35	1	3607097	3607209	●	●
NGD4125LK	4	3,18	1,02	0,19	6,35	2	3607132	3607316	●	●
NGD3M350LK	3	3,50	2,92	0,32	6,35	1	3607488	●	●	●

(continued)



(NGD-K • Deep Grooving Inserts with Chip Control – continued)



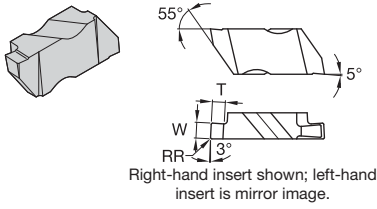
Right-hand insert shown; left-hand insert is mirror image.

● first choice  
○ alternate choice







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

Grooving and Cut-Off

catalogue number	insert size	W	Ap max	RR	T	cutting edges	TN6010	TN6025	TN7110	THM
NGD3M400LK	3	4,00	2,92	0,32	6,35	1	3606921	3607424	○	○
NGD4M400LK	4	4,00	2,92	0,57	9,53	1	3606923	3607489	○	○
NGD4M450LK	4	4,50	2,92	0,57	12,70	1	○	3607490	○	○
NGD3189LK	3	4,80	2,92	0,57	6,35	1	3607148	3607410	○	○
NGD4189LK	4	4,80	2,92	0,57	9,53	1	3607147	3607314	○	○
NGD4M500LK	4	5,00	2,92	0,57	12,70	1	○	3607491	○	○
NGD4M550LK	4	5,50	3,81	0,57	12,70	1	○	3607492	○	○
NGD4250LK	4	6,35	3,80	0,57	12,70	1	3607178	3607422	○	○



● first choice  
○ alternate choice

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

■ **NGP • Grooving Positive Rake Inserts**

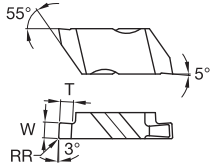
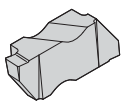
catalogue number	insert size	W	RR	T	TN6010	TN6025	TN7110	THM
<b>right hand</b>								
NGP2M150R	2	1,50	0,19	2,79	3606975			3607045
NGP3M150R	3	1,50	0,19	1,90	3606979			3607049
NGP2062R	2	1,58	0,19	2,79	3607128			
NGP2M200R	2	2,00	0,19	2,79	3606976			3607046
NGP3M200R	3	2,00	0,19	2,79	3606980			3607050
NGP2M250R	2	2,50	0,19	2,79	3606977			3607047
NGP3M250R	3	2,50	0,19	3,81	3606981			3607051
NGP2M300R	2	3,00	0,19	2,79	3606978			3607048
NGP3M300R	3	3,00	0,19	3,81				3607052

(continued)





(NGP • Grooving Positive Rake Inserts – continued)



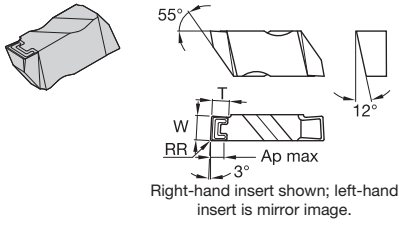
Right-hand insert shown; left-hand insert is mirror image.

● first choice  
○ alternate choice

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

Grooving and Cut-Off

catalogue number	insert size	W	RR	T	TN6010	TN6025	TN7110	THM
<b>left hand</b>								
NGP2M150L	2	1,50	0,19	2,79	3606967			3607037
NGP3M150L	3	1,50	0,19	1,90	3606971			3607041
NGP2062L	2	1,57	0,19	2,79	3607182			
NGP2M200L	2	2,00	0,19	2,79	3606968			3607038
NGP3M200L	3	2,00	0,19	2,79	3606972			3607042
NGP2M250L	2	2,50	0,19	2,79	3606969			3607039
NGP3M250L	3	2,50	0,19	3,81	3606973			3607043
NGP2M300L	2	3,00	0,19	2,79				3607040
NGP3M300L	3	3,00	0,19	3,81	3606974			3607044



● first choice  
○ alternate choice

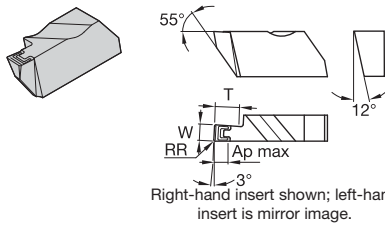
P		●	●	●	○
M		●	●	○	○
K		●	○	○	○
N		●	○	○	●
S		●	●	○	●
H		○	○	○	○

■ **NF-K • Face Grooving Positive Rake Inserts**

catalogue number	insert size	W	Ap max	RR	T	TN6010	TN6025	TN7110	THM
<b>right hand</b>									
NF3M200RK	3	2,00	1,02	0,19	1,78	●	●	○	○
NF3M300RK	3	3,00	1,02	0,19	3,81	●	●	○	○
NF3125RK	3	3,18	1,02	0,19	3,81	●	●	○	○
<b>left hand</b>									
NF3M200LK	3	2,00	1,02	0,19	1,78	○	○	●	●
NF3M300LK	3	3,00	1,02	0,19	3,81	○	○	●	●
NF3125LK	3	3,18	1,02	0,19	3,81	○	○	●	●
NF3156LK	3	3,96	2,92	0,19	3,81	○	○	●	●



Grooving and Cut-Off

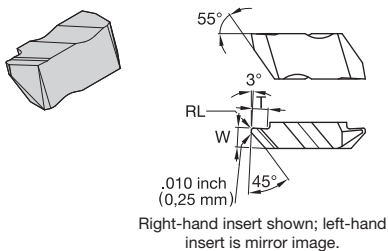


● first choice  
○ alternate choice

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

**■ NFD-K • Face Grooving Deep-Grooving Inserts**

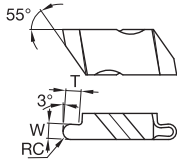
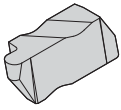
catalogue number	insert size	W	Ap max	RR	T	cutting edges	TN6010	TN6025	TN7110	THM
<b>right hand</b>										
NFD3M300RK	3	3,00	1,02	0,19	6,35	1	●	●	○	○
NFD3125RK	3	3,18	1,02	0,19	6,35	1	●	●	○	○
NFD4189RK	4	4,80	2,92	0,57	9,53	1	●	●	○	○
NFD4250RK	4	6,35	3,81	0,57	12,70	1	●	●	○	○
<b>left hand</b>										
NFD3M300LK	3	3,00	1,02	0,19	6,35	1	○	○	●	●
NFD3125LK	3	3,18	1,02	0,19	6,35	1	○	○	●	●
NFD4189LK	4	4,80	2,92	0,57	9,53	1	○	○	●	●



**■ NP-K • Profiling Inserts**

catalogue number	insert size	W	RL	T	TN6010	TN6025	TN7110	THM
<b>right hand</b>								
NP2002RK	2	3,68	0,25	2,79	●	●	○	○
NP3002RK	3	4,83	0,25	5,08	●	●	○	○
NP3012RK	3	4,83	0,25	5,08	●	●	○	○

NOTE: Width tolerance is +/- 0,13mm.



Right-hand insert shown; left-hand insert is mirror image.

● first choice  
○ alternate choice

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

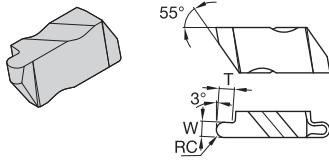
■ NR • Full Radius Inserts

catalogue number	insert size	W	RC	T	TN6010	TN6025	TN7110	THM
right hand								
NR2M050R	2	1,00	0,50	1,27	3606957	3607393		
NR2M075R	2	1,50	0,75	2,79	3606929	3607489		
NR2031R	2	1,58	0,79	2,79	3607174	3607301		
NR3031R	3	1,58	0,79	2,39	3607125	3607475		3607015
NR2M100R	2	2,00	1,00	2,79	3606930	3607470		
NR3M100R	3	2,00	1,00	2,39	3606956	3607397		
NR2047R	2	2,39	1,19	2,79	-	3607494		
NR3047R	3	2,39	1,19	3,81	3607093	3607502		3607031
NR2M125R	2	2,50	1,25	2,79	3606931	3607471		
NR3M125R	3	2,50	1,25	3,81	3606959	3607439		
NR2M150R	2	3,00	1,50	2,79	3606932	3607472		
NR3M150R	3	3,00	1,50	3,81	3606960	3607440		
NR3062R	3	3,18	1,59	3,81	3607131	3607473		3607026
NR2M175R	2	3,50	1,75	2,79	3606933	3607483		
NR3M175R	3	3,50	1,75	3,81	3606961	3607441		

(continued)



(NR • Full Radius Inserts – continued)



Right-hand insert shown; left-hand insert is mirror image.

● first choice  
○ alternate choice

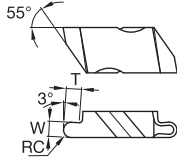
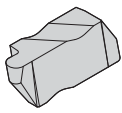
P		●	●	●	
M		●	●	○	○
K		●	○	○	○
N		●	○	○	●
S		●	●	○	●
H		○	○		

Grooving and Cut-Off

catalogue number	insert size	W	RC	T	TN6010	TN6025	TN7110	THM
NR3M200R	3	4,00	2,00	3,81	●	●	○	○
NR4M200R	4	4,00	2,00	6,35	●	●	○	○
NR3M225R	3	4,50	2,25	3,81	●	●	○	○
NR4M225R	4	4,50	2,25	6,35	●	●	○	○
NR3094R	3	4,78	2,39	3,81	●	●	○	○
NR4M250R	4	5,00	2,50	6,35	●	●	○	○
NR4125R	4	6,35	3,18	6,35	●	●	○	○
<b>left hand</b>								
NR2M050L	2	1,00	0,50	1,27	●	●	○	○
NR2M075L	2	1,50	0,75	2,79	●	●	○	○
NR2031L	2	1,58	0,79	2,79	●	●	○	○
NR3031L	3	1,58	0,79	2,39	●	●	○	○
NR2M100L	2	2,00	1,00	2,79	●	●	○	○
NR3M100L	3	2,00	1,00	2,39	●	●	○	○
NR2047L	2	2,39	1,19	2,79	●	●	○	○
NR3047L	3	2,39	1,19	3,81	●	●	○	○

(continued)

(NR • Full Radius Inserts – continued)



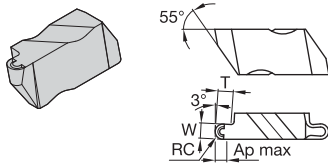
Right-hand insert shown; left-hand insert is mirror image.

● first choice  
○ alternate choice

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

catalogue number	insert size	W	RC	T	TN6010	TN6025	TN7110	THM
NR2M125L	2	2,50	1,25	2,79	3606926	3607432		
NR3M125L	3	2,50	1,25	3,81	3606950	3607435	3607689	
NR2M150L	2	3,00	1,50	2,79	3606927	3607433		
NR3M150L	3	3,00	1,50	3,81	3606951	3607436		
NR3062L	3	3,18	1,59	3,81	3607171	3607497		3607032
NR2M175L	2	3,50	1,75	2,79	3606928	3607434		
NR3M175L	3	3,50	1,75	3,81	3606952	3607437	3607691	
NR3M200L	3	4,00	2,00	3,81	3606953	3607396		
NR4M200L	4	4,00	2,00	6,35	3606954	3607466		
NR3M225L	3	4,50	2,25	3,81	3606934	3607438		
NR4M225L	4	4,50	2,25	6,35	3606955	3607467		
NR3094L	3	4,78	2,39	3,81	3607169	3607339		
NR4M250L	4	5,00	2,50	6,35	3606956	3607468		
NR4125L	4	6,35	3,18	6,35	3607181	3607514		

Grooving and Cut-Off



Right-hand insert shown; left-hand insert is mirror image.

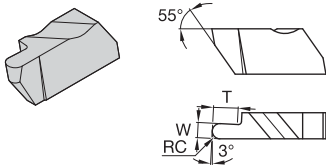
● first choice  
○ alternate choice

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

■ NR-K • Full Radius Inserts with Chip Control

catalogue number	insert size	W	Ap max	RC	T	TN6010	TN6025	TN7110	THM
<b>right hand</b>									
NR3031RK	3	1,57	1,97	0,79	2,39	3607062	3607206	○	○
NR3047RK	3	2,39	1,91	1,19	3,81	3607086	3607214	○	○
NR3062RK	3	3,18	2,92	1,59	3,81	3607056	3607236	○	○
NR4062RK	4	3,18	2,92	1,59	3,81	3607461	3607461	○	○
NR3078RK	3	3,96	2,54	1,98	3,81	3607094	3607407	○	○
NR4094RK	4	4,78	3,81	2,39	6,35	3607101	3607480	○	○
NR4125RK	4	6,35	3,81	3,18	6,35	3607141	3607303	○	○
<b>left hand</b>									
NR3031LK	3	1,58	1,98	0,79	2,39	3607095	3607222	○	○
NR3047LK	3	2,39	1,91	1,19	3,81	3607102	3607408	○	○
NR3062LK	3	3,18	2,92	1,59	3,81	3607091	3607216	○	○
NR4062LK	4	3,18	2,92	1,59	3,81	3607156	3607405	○	○
NR3078LK	3	3,96	2,54	1,98	3,81	3607172	3607306	○	○
NR4094LK	4	4,78	3,81	2,39	6,35	3607150	3607452	○	○
NR4125LK	4	6,35	3,81	3,18	6,35	3607166	3607458	○	○

Grooving and Cut-Off



Right-hand insert shown; left-hand insert is mirror image.

● first choice  
○ alternate choice

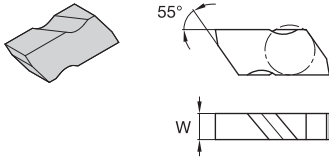
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M		●	●	○	○
K		●	○	○	○
N		●	○	○	●
S		●	●	○	●
H		○	○	○	○

■ **NRD • Full Radius Deep-Grooving Inserts**

catalogue number	insert size	W	T	cutting edges	TN6010	TN6025	TN7110	THM
<b>right hand</b>								
NRD3031R	3	1,58	3,18	2	3607087	3607457		
NRD3062R	3	3,18	6,35	1	3607099	3607474		
NRD4062R	4	3,18	6,35	2	3607173	3607499		
NRD4125R	4	6,35	12,70	1		3607496		
<b>left hand</b>								
NRD3031L	3	1,58	3,18	2	3607085	3607455		
NRD3062L	3	3,18	6,35	1	3607124	3607462		
NRD4062L	4	3,18	6,35	2	3607162	3607295		
NRD4125L	4	6,35	12,70	1	3607186	3607298		







Right-hand insert shown; left-hand insert is mirror image.

● first choice  
○ alternate choice

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

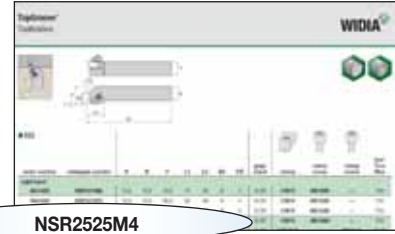
■ NB • Blanks

Grooving and Cut-Off

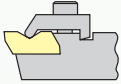

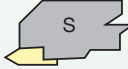


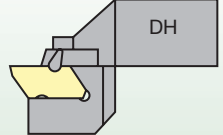
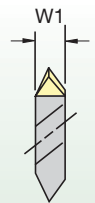
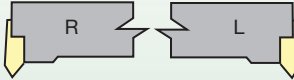
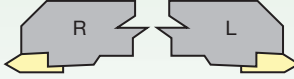
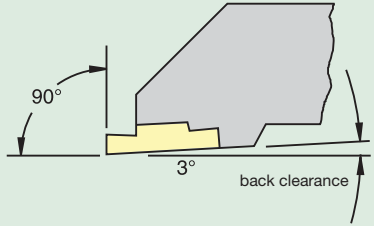
catalogue number	insert size	W	TN6010	TN6025	TN7110	THM
<b>right hand</b>						
NB2R	2	3,81	●	●	○	3607064
NB3R	3	4,95	●	●	○	3607019
<b>left hand</b>						
NB2L	2	3,81	●	●	○	3607016
NB3L	3	4,95	●	●	○	3607017

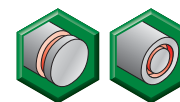
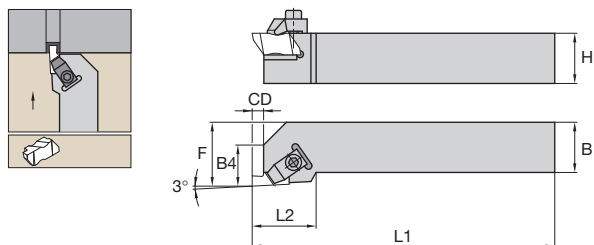
NOTE: NB blanks are designed to allow modification of the W dimension and end form.  
W dimension is provided to indicate maximum possible width.  
Available in uncoated grades only.

**TopGroove™**  
**Holder Identification System**






NSR2525M4

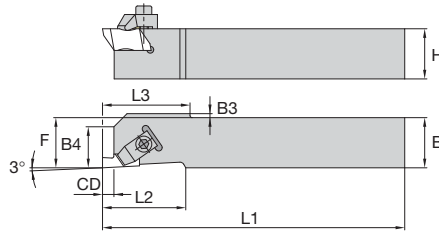
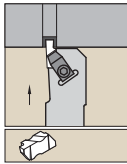
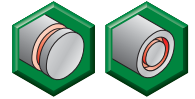
N	S	R		2525	M	4																																																																	
Insert Holding Method	Insert Mounting Location	Hand of Tool	Drop Head	Shank Size	Tool Length	Insert Size	Qualified Surface and Length																																																																
<p><b>N</b> – TopGroove*</p>  <p>*Proprietary standard only.</p>	<p>End mount</p>  <p>Side mount Offset</p>  <p>Side mount No offset for swiss machining</p>  <p>NRR undercut</p> 		<p>Drop Head</p>  <p><b>DH</b> = Drop Head</p>	<p>Shank height and width in mm and holder length according to ISO standard.</p>	<table border="1"> <thead> <tr> <th>L1</th> <th>ISO</th> </tr> </thead> <tbody> <tr><td>32</td><td>A</td></tr> <tr><td>40</td><td>B</td></tr> <tr><td>50</td><td>C</td></tr> <tr><td>60</td><td>D</td></tr> <tr><td>70</td><td>E</td></tr> <tr><td>80</td><td>F</td></tr> <tr><td>90</td><td>G</td></tr> <tr><td>100</td><td>H</td></tr> <tr><td>110</td><td>I</td></tr> <tr><td>125</td><td>J</td></tr> <tr><td>140</td><td>K</td></tr> <tr><td>150</td><td>L</td></tr> <tr><td>160</td><td>M</td></tr> <tr><td>170</td><td>N</td></tr> <tr><td>180</td><td>P</td></tr> <tr><td>200</td><td>Q</td></tr> <tr><td>250</td><td>R</td></tr> <tr><td>300</td><td>S</td></tr> <tr><td>350</td><td>T</td></tr> <tr><td>400</td><td>U</td></tr> <tr><td>450</td><td>V</td></tr> <tr><td>500</td><td>W</td></tr> <tr><td>Special Length</td><td>Y</td></tr> <tr><td></td><td>X</td></tr> </tbody> </table>	L1	ISO	32	A	40	B	50	C	60	D	70	E	80	F	90	G	100	H	110	I	125	J	140	K	150	L	160	M	170	N	180	P	200	Q	250	R	300	S	350	T	400	U	450	V	500	W	Special Length	Y		X	 <table border="1"> <thead> <tr> <th>insert size</th> <th>W1</th> </tr> </thead> <tbody> <tr><td>2</td><td>3,81mm</td></tr> <tr><td>3</td><td>4,95mm</td></tr> <tr><td>4</td><td>6,98mm</td></tr> <tr><td>5</td><td>9,65mm</td></tr> <tr><td>6</td><td>9,73mm</td></tr> <tr><td>8</td><td>11,13mm</td></tr> </tbody> </table>	insert size	W1	2	3,81mm	3	4,95mm	4	6,98mm	5	9,65mm	6	9,73mm	8	11,13mm	<p>Qualified Surface and Length</p>
L1	ISO																																																																						
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140	K																																																																						
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			<p>End mount</p>  <p>Side mount</p> 		<p><b>Q</b> – qualified metric holder</p>  <p><b>NOTE:</b> Holders are designed to locate insert inclined to 3° to provide back clearance down open side.</p>																																																																		






■ NS

order number	catalogue number	H	B	F	L1	L2	B4	CD	gage insert	 clamp	 clamp screw	 clamp screw	hex/ Torx Plus
<b>right hand</b>													
3641682	NSR1010E2	10,0	10,0	14,0	70	19	9	4	N.2R	CM74	MS1200	—	T10
3641660	NSR1212F2	12,0	12,0	16,0	80	19	9	4	N.2R	CM74	MS1200	—	T10
3636542	NSR1616H2	16,0	16,0	20,0	100	19	9	4	N.2R	CM74	MS1200	—	T10
3638589	NSR2020K2	20,0	20,0	25,0	125	19	9	4	N.2R	CM74	MS1200	—	T10
3638588	NSR2020K3	20,0	20,0	25,0	125	32	13	5	N.3R	CM72LP	—	MS2111	25 IP
3638590	NSR2525M2	25,0	25,0	32,0	150	19	9	4	N.2R	CM74	MS1200	—	T10
3636536	NSR2525M3	25,0	25,0	32,0	150	32	13	5	N.3R	CM72LP	—	MS2111	25 IP
3636540	NSR2525M4	25,0	25,0	32,0	150	35	14	7	N.4R	CM72LP	—	MS2111	25 IP
3641664	NSR3225P3	32,0	25,0	32,0	170	32	13	5	N.3R	CM72LP	—	MS2111	25 IP
3641675	NSR3225P4	32,0	25,0	32,0	170	35	14	7	N.4R	CM72LP	—	MS2111	25 IP
3641666	NSR3232P3	32,0	32,0	40,0	170	32	13	5	N.3R	CM72LP	—	MS2111	25 IP
3641669	NSR3232P4	32,0	32,0	40,0	170	35	14	7	N.4R	CM72LP	—	MS2111	25 IP
<b>left hand</b>													
3641683	NSL1010E2	10,0	10,0	14,0	70	19	9	4	N.2L	CM75	MS1200	—	T10
3641681	NSL1212F2	12,0	12,0	16,0	80	19	9	4	N.2L	CM75	MS1200	—	T10
3636545	NSL1616H2	16,0	16,0	20,0	100	19	9	4	N.2L	CM75	MS1200	—	T10
3639045	NSL2020K2	20,0	20,0	25,0	125	19	9	4	N.2L	CM75	MS1200	—	T10
3639046	NSL2020K3	20,0	20,0	32,0	125	32	13	5	N.3L	CM73LP	—	MS2111	25 IP
3639047	NSL2525M2	25,0	25,0	32,0	150	19	9	4	N.2L	CM75	MS1200	—	T10
3636539	NSL2525M3	25,0	25,0	32,0	150	32	13	5	N.3L	CM73LP	—	MS2111	25 IP
3636544	NSL2525M4	25,0	25,0	32,0	150	35	14	7	N.4L	CM73LP	—	MS2111	25 IP
3641670	NSL3225P3	32,0	25,0	32,0	170	32	13	5	N.3L	CM73LP	—	MS2111	25 IP
3641678	NSL3225P4	32,0	25,0	32,0	170	35	14	7	N.4L	CM73LP	—	MS2111	25 IP
3641671	NSL3232P3	32,0	32,0	40,0	170	32	13	5	N.3L	CM73LP	—	MS2111	25 IP
3641679	NSL3232P4	32,0	32,0	40,0	170	35	14	7	N.4L	CM73LP	—	MS2111	25 IP
3641688	NSL3232P5	32,0	32,0	40,0	170	51	16	11	N.5L	CM81	MS352	—	6 mm

NOTE: F dimension measured over sharp point of insert.

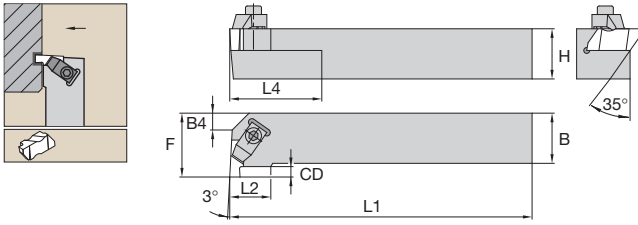


■ **NAS**

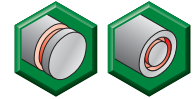
order number	catalogue number	H	B	F	L1	L2	B4	CD	B3	L3	gage insert	 clamp	 clamp screw	 clamp screw	hex/ Torx Plus
<b>right hand</b>															
3641667	NASR1010M2Q	10,0	10,0	10,0	150	19	9	3,5	2,03	19	N.2R	<b>CM182</b>	<b>MS1200</b>	—	T10
3641662	NASR1212M2Q	12,0	12,0	12,0	150	19	9	3,5	—	—	N.2R	<b>CM182</b>	<b>MS1200</b>	—	T10
3639048	NASR1616K3Q	16,0	16,0	16,0	125	32	12	5,3	—	—	N.3R	<b>CM184LP</b>	—	<b>MS2111</b>	25 IP
<b>left hand</b>															
3641691	NASL1010M2Q	10,0	10,0	10,0	150	19	9	3,5	2,03	19	N.2L	<b>CM183</b>	<b>MS1200</b>	—	T10
3641686	NASL1212M2Q	12,0	12,0	12,0	150	19	9	3,5	—	—	N.2L	<b>CM183</b>	<b>MS1200</b>	—	T10
3641687	NASL1616K3Q	16,0	16,0	16,0	125	32	12	5,3	—	—	N.3L	<b>CM185LP</b>	—	<b>MS2111</b>	25 IP

NOTE: F dimension measured over sharp point of insert.




Grooving and Cut-Off



Right-hand toolholder shown.

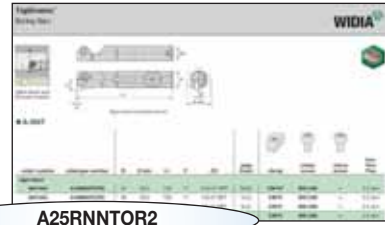


■ NE

order number	catalogue number	H	B	F	L1	L2	L4	B4	CD	gage insert	 clamp	 clamp screw	 clamp screw	hex/ Torx Plus
<b>right hand</b>														
3641674	NER1616H2	16,0	16,0	20,0	100	15	25	—	4	N.2L	CM75	MS1200	—	T10
3641658	NER2020K2	20,0	20,0	25,0	125	15	25	6	4	N.2L	CM75	MS1200	—	T10
3641665	NER2525M2	25,0	25,0	32,0	150	15	25	12	4	N.2L	CM75	MS1200	—	T10
3636541	NER2525M3	25,0	25,0	32,0	150	22	51	—	5	N.3L	CM73LP	—	MS2111	25 IP
3641672	NER2525M4	25,0	25,0	35,0	150	24	51	—	7	N.4L	CM73LP	—	MS2111	25 IP
3641680	NER3225P3	32,0	25,0	32,0	170	22	51	—	4	N.3L	CM73LP	—	MS2111	25 IP
3641689	NER3225P4	32,0	25,0	35,0	170	24	51	—	7	N.4L	CM73LP	—	MS2111	25 IP
3641693	NER3232P4	32,0	32,0	40,0	170	24	51	—	6	N.4L	CM73LP	—	MS2111	25 IP
3641692	NER3232P5	32,0	32,0	50,0	170	35	51	—	11	N.5L	CM81	MS352	—	6 mm
<b>left hand</b>														
3641684	NEL1616H2	16,0	16,0	20,0	100	15	25	—	4	N.2R	CM74	MS1200	—	T10
3641677	NEL2020K2	20,0	20,0	25,0	125	15	25	6	4	N.2R	CM74	MS1200	—	T10
3641676	NEL2525M2	25,0	25,0	32,0	150	15	25	12	4	N.2R	CM74	MS1200	—	T10
3636543	NEL2525M3	25,0	25,0	32,0	150	22	51	—	5	N.3R	CM72LP	—	MS2111	25 IP
3641668	NEL2525M4	25,0	25,0	35,0	150	24	51	—	7	N.4R	CM72LP	—	MS2111	25 IP
3641685	NEL3225P3	32,0	25,0	32,0	170	22	51	—	4	N.3R	CM72LP	—	MS2111	25 IP
3641694	NEL3225P4	32,0	25,0	35,0	170	24	51	—	7	N.4R	CM72LP	—	MS2111	25 IP
3641696	NEL3232P4	32,0	32,0	40,0	170	24	51	—	6	N.4R	CM72LP	—	MS2111	25 IP
3641695	NEL3232P5	32,0	32,0	50,0	170	35	51	—	11	N.5R	CM80	MS352	—	6 mm

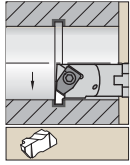
NOTE: F dimension measured over sharp point of insert.

**TopGroove**  
**Boring Bar Identification System**

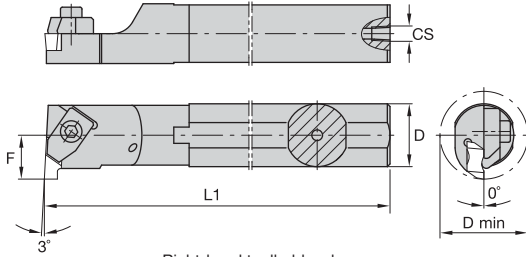


**A25RRNNTOR2**

<b>A</b>	<b>25</b>	<b>R</b>	<b>N</b>	<b>N</b>	<b>T</b>	<b>0</b>	<b>R</b>	<b>2</b>																
Bar Type	Bar Diameter	Bar Length	Insert Holding Method	Insert Shape	Insert Location	Rake Angle	Hand of Tool	Insert Size																
<p>Steel with coolant</p>	<p>Bar diameter</p>		<p>N – TopGroove</p>		<p>End mount</p> <p>Side mount</p>		<p>Right hand</p> <p>Left hand</p>																	
								<table border="1"> <thead> <tr> <th>insert size</th> <th>W1</th> </tr> </thead> <tbody> <tr><td>1</td><td>3,54mm</td></tr> <tr><td>2</td><td>3,81mm</td></tr> <tr><td>3</td><td>5,35mm</td></tr> <tr><td>4</td><td>6,40mm</td></tr> <tr><td>5</td><td>9,65mm</td></tr> <tr><td>6</td><td>9,73mm</td></tr> <tr><td>8</td><td>11,13mm</td></tr> </tbody> </table>	insert size	W1	1	3,54mm	2	3,81mm	3	5,35mm	4	6,40mm	5	9,65mm	6	9,73mm	8	11,13mm
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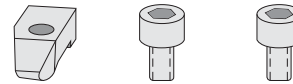
Steel shank with through coolant.



Right-hand toolholder shown.

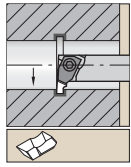


■ **A-NNT**

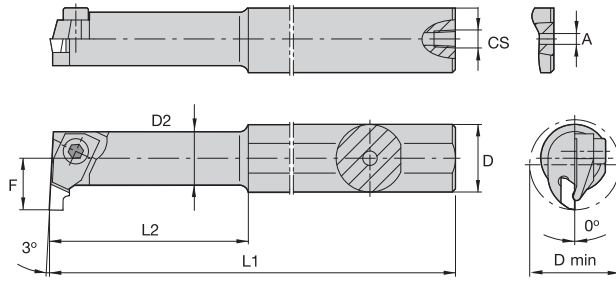


order number	catalogue number	D	D min	L1	F	CS	gage insert	clamp	clamp screw	clamp screw	hex/Torx Plus
<b>right hand</b>											
3641644	A12MNNTOR2	12	18,5	150	11	1/16-27 NPT	NG2L	CM147	MS1200	—	2.5 mm
3641643	A16MNNTOR2	16	22,0	150	11	1/8-27 NPT	N.2L	CM75	MS1200	—	2.5 mm
3641645	A20QNNTOR2	20	26,0	180	13	1/8-27 NPT	N.2L	CM75	MS1200	—	2.5 mm
3641651	A25RNNTOR2	25	34,0	200	17	1/4-18 NPT	N.2L	CM75	MS1200	—	2.5 mm
3641622	A25RNNTOR3	25	34,0	200	17	1/8 - 27 NPT	N.3L	CM73LP	—	MS2111	25 IP
3641646	A32SNNTOR3	32	44,0	250	22	1/4-18 NPT	N.3L	CM73LP	—	MS2111	25 IP
3641653	A40TNNTOR3	40	54,0	300	27	1/4-18 NPT	N.3L	CM73LP	—	MS2111	25 IP
3641654	A40TNNTOR4	40	54,0	300	27	1/4-18 NPT	N.4L	CM73LP	—	MS2111	25 IP
3641661	A50UNNTOR4	50	70,0	350	35	1/4-18 NPT	N.4L	CM73LP	—	MS2111	25 IP
<b>left hand</b>											
3641655	A12MNNTOL2	12	18,5	150	11	1/16-27 NPT	NG2R	CM146	MS1200	—	2.5 mm
3641649	A16MNNTOL2	16	22,0	150	11	1/8-27 NPT	N.2R	CM74	MS1200	—	2.5 mm
3641652	A20QNNTOL2	20	26,0	180	13	1/8-27 NPT	N.2R	CM74	MS1200	—	2.5 mm
3641657	A25RNNTOL2	25	34,0	200	17	1/4-18 NPT	N.2R	CM74	MS1200	—	2.5 mm
3641650	A25RNNTOL3	25	34,0	200	17	1/4-18 NPT	N.3R	CM72LP	—	MS2111	25 IP
3641656	A32SNNTOL3	32	44,0	250	22	1/4-18 NPT	N.3R	CM72LP	—	MS2111	25 IP
3641659	A40TNNTOL3	40	54,0	300	27	1/4-18 NPT	N.3R	CM72LP	—	MS2111	25 IP
3641663	A40TNNTOL4	40	54,0	300	27	1/4-18 NPT	N.4R	CM72LP	—	MS2111	25 IP
3641690	A50UNNTOL4	50	70,0	350	35	1/4-18 NPT	N.4R	CM72LP	—	MS2111	25 IP

NOTE: Minimum bore capability varies with depth of groove. See pages D86–D87 for details.  
F dimension measured over sharp point of insert.



Necked steel shank with through coolant.



Right-hand toolholder shown.

■ **A-NNT-1**

order number	catalogue number	D	D min	D2	L1	L2	F	A	CS	gage insert	clamp	clamp screw	hex/Torx Plus
<b>right hand</b>													
3641648	A10KNNTOR1	10	11,5	10,0	125	—	7	3,2	—	NG1L	CM109	MS1034	1.5 mm
3641647	A12MNNTOR1	12	11,5	8,7	150	31,30	7	4,0	1/16-27 NPT	N.1L	CM109	MS1034	1.5 mm

NOTE: Minimum bore capability varies with depth of groove. See pages D86–D87 for details.  
F dimension measured over sharp point of insert.

Grooving and Cut-Off



## TopGroove™ Inserts: The Best Platform for Customisation

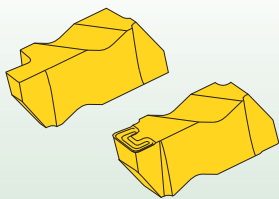
All TopGroove custom order inserts benefit from the superior rigidity of our TopGroove toolholder and clamping system. For added productivity, most custom orders can be incorporated into the double-ended inserts.

Custom orders start with proven WIDIA™ carbide grade technology as the basis for optimising tool performance. Positive top rake angles are also available in most inserts.

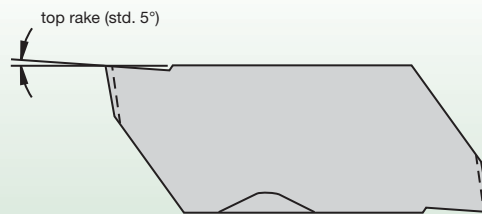
State-of-the-art CAD enables rapid development of your custom insert design. For convenience, a concept drawing is always available to facilitate engineering development of an insert.

There are limitless variations of the flat-top TopGroove design. Additionally, chip control in the most common styles enables true optimisation and productivity. WIDIA offers NB- and NBD-style insert blanks as well. These blanks can be end-form ground in your own shop.

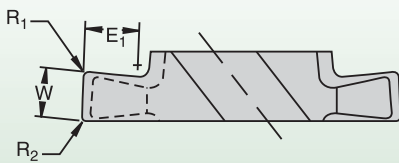
Whatever your special grooving requirements may be, WIDIA can provide an effective solution. We have the technical expertise, resources, and commitment to help you develop insert designs that satisfy your metalcutting application demands.



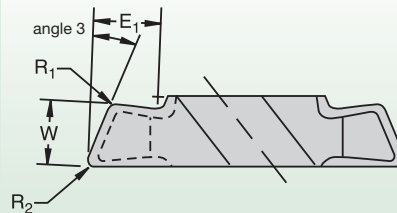
**top rake**



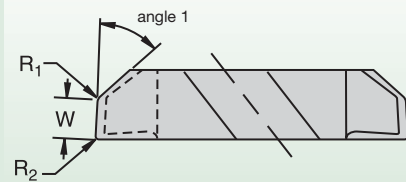
**style A**



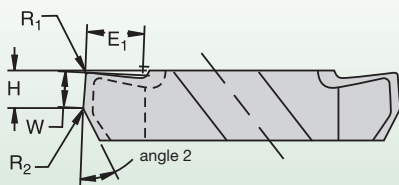
**style B1**



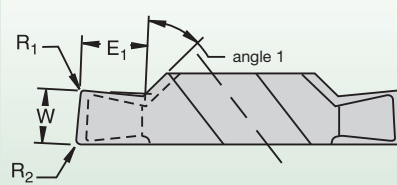
**style B2**



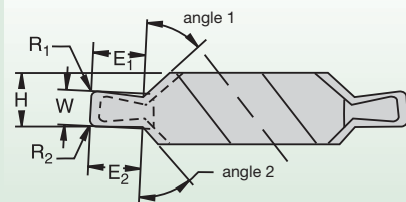
**style B3**



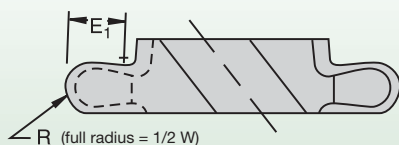
**style B4**



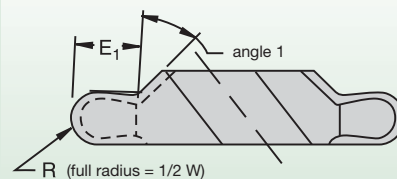
**style C1**



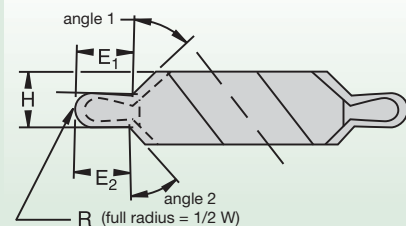
**style D**



**style F**



**style G**



NOTE: Common styles are shown here in right-hand versions. Left-hand versions are also available.

### TopGroove Grooving Systems

Use this Custom Order Worksheet to modify an existing product to meet your specifications. If your custom requirements do not fall into these categories, simply contact your WIDIA™ Distributor.

Trust our experienced distributors and WIDIA engineering team to design the best solution for you.

Date

#### Customer-Specified Dimensions

Style (circle one)

A    B1    B2    B3    B4    C1    D    F    G

Orientation (circle one)

left hand

right hand

Top Rake

Total Width (T)

Cutting Width (W)

Angle 1

Corner Radius 1 (R<sub>1</sub>)

Angle 2

Corner Radius 2 (R<sub>2</sub>)

Offset (H)

Cutting Depth (E<sub>1</sub>)

Other (please specify)

#### Special Instructions

*(please make any necessary notes or sketches in the box at right)*

Closest Catalogue Standard

Customer

Distributor

#### Shipping Requirements

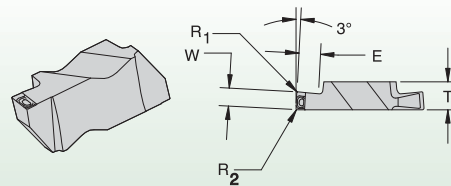
*Attention Distributors: Use this worksheet to collect information for your customer.*

Ground                     
  Next Day Air                     
  2nd Day Air                     
  3rd Day Air

■ A-SK Specials

10° positive cutting action

- Grooving
- Face grooving



insert catalogue number		width range W	corner radii range R <sub>1</sub> and R <sub>2</sub>	E	T	grades
right hand	left hand					
NG2-R-SK or NF2-R-SK	NG2-L-SK or NF2-L-SK	0,66–1,42	0,00–0,18	1,27	3,810	Carbide grades quoted upon request. <b>See page D47.</b>
		1,45–3,43	0,08–0,33	2,79		
NG3-R-SK or NF3-R-SK	NG3-L-SK or NF3-L-SK	1,07–1,70	0,08–0,33	2,39	4,950	
		1,73–1,93	0,13–0,51	2,39		
		1,96–2,39	0,13–0,76	3,81		
		2,41–2,67	0,13–0,51	3,81		
		2,69–3,18	0,13–0,76	3,81		
		3,20–3,40	0,13–0,51	3,81		
NG4-R-SK or NF4-R-SK	NG4-L-SK or NF4-L-SK	3,43–3,96	0,13–0,76	3,81	6,480	
		3,99–4,42	0,20–0,46	3,81		
		4,67–4,98	0,46–0,71	3,81		
		2,54–2,79	0,13–0,51	3,81		
		2,82–3,18	0,13–0,76	3,81		
		3,20–3,33	0,13–0,51	3,81		
		3,35–3,96	0,13–0,76	3,81		
		3,99–4,11	0,13–0,51	3,81		
		3,89–4,80	0,13–0,76	6,35		
		4,83–4,85	0,46–0,71	6,35		
		4,88–5,18	0,20–0,46	6,35		
		6,22–6,53	0,46–0,64	6,35		

NG-SK, NF-SK, NGD-SK, and NFD-SK inserts may be specially ordered within the specifications listed in the above charts.

Order example: NF3R-SK W = .090,  
R<sub>1</sub> = .010, R<sub>2</sub> = .010, grade TN6010™.

Unless otherwise specified, a standard tolerance of ±0,03mm on width (W) will be applied, and a standard tolerance of ±0,06mm on radii (R<sub>1</sub> and R<sub>2</sub>) will be applied.

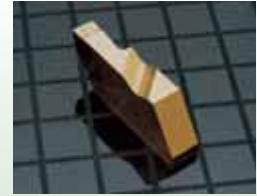
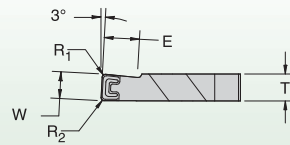
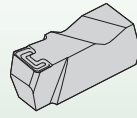
If deeper cutting depth (E) is required, please specify. Refer to the application drawing and charts for maximum face groove depths and minimum face groove diameters.

In addition to the guidelines above, full radius face groove inserts may be quoted. Under certain conditions, chip control performance may vary from standard insert styles.

**■ A-SK Specials**

10° positive cutting action

- Deep grooving
- Deep face grooving



insert catalogue number		width range W	corner radii range R <sub>1</sub> and R <sub>2</sub>	E	T	grades
right hand	left hand					
<b>NGD3-R-SK</b>	<b>NGD3-L-SK</b>	1,45–1,75	.008–.033	3,18	4,95	Carbide grades quoted upon request. <b>See page D47.</b>
or	or	2,26–2,57*	.008–.033	6,35		
<b>NFD3-R-SK</b>	<b>NFD3-L-SK</b>	3,05–3,35*	.008–.033	6,35		
		4,67–4,98*	.046–.071	6,35		
<b>NGD4-R-SK</b>	<b>NG4-L-SK</b>	3,05–3,35*	.008–.033	6,35	6,48	
or	or	4,57–4,98*	.046–.071	9,53		
<b>NFD4-R-SK</b>	<b>NF4-L-SK</b>	6,22–6,53*	.046–.071	12,70		

\*One cutting edge.

NG-SK, NF-SK, NGD-SK, and NFD-SK inserts may be specially ordered within the specifications listed in the above charts.

Order example: NF3R-SK W = .090, R<sub>1</sub> = .010, R<sub>2</sub> = .010, grade TN6010™.

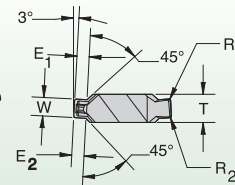
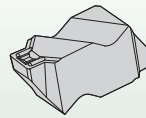
Unless otherwise specified, a standard tolerance of ±0,03mm on width (W) will be applied, and a standard tolerance of ±0,06mm on radii (R<sub>1</sub> and R<sub>2</sub>) will be applied.

If deeper cutting depth (E) is required, please specify. Refer to the application drawing and charts for maximum face groove depths and minimum face groove diameters.

In addition to the guidelines above, full radius face groove inserts may be quoted. Under certain conditions, chip control performance may vary from standard insert styles.

**■ C1-SK Specials**

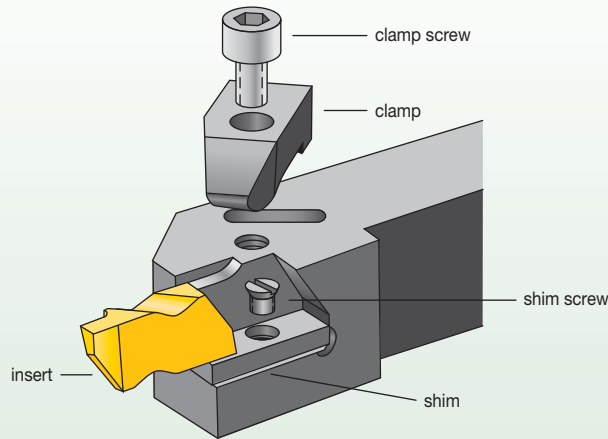
- Groove and chamfer













insert catalogue number		width range W	corner radii range R <sub>1</sub> and R <sub>2</sub>	E	T	grades
right hand	left hand					
<b>NB2-R-K</b>	<b>NB2-L-K</b>	1,19–3,18	0,13–0,38	2,54	3,81	Carbide grades quoted upon request.
<b>NB3-R-K</b>	<b>NB3-L-K</b>	2,39–4,32	0,13–0,64	3,81	4,95	<b>See page D47.</b>

NOTE: The above insert style is for simultaneous groove and chamfer operations with chip control.

**TopGroove Toolholders and Boring Bars**



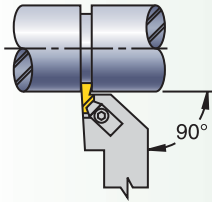
insert size and style	 clamp	 clamp screw	 shim	 shim screw
NG-1L 	CM-109	S-304	—	—
NG-2R	CM-182	S-310	—	—
NG-2L	CM-183	S-310	—	—
NG-2R 	CM-74	S-310	—	—
NG-2L	CM-75	S-310	—	—
NG-3R	CM-184	S-412	—	—
NG-3L	CM-185	S-412	—	—
NG-3R	CM-72	S-412	—	—
NG-3L 	CM-73	S-412	—	—
NG-3R*	CM-78	S-412	—	—
NG-3L*	CM-70	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.

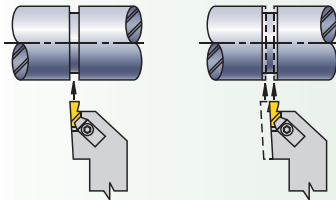
**Grooving Tool Failure and Solution Guide**

**Practical Solutions to Common Grooving Problems**

**Holder Position for Grooving Operation**

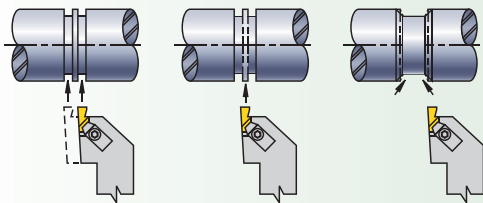


**How to Cut a Groove Slightly Wider than the Groove Tool**



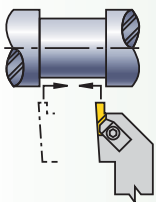
1. Plunge the centre of the groove.
2. Plunge each side of the groove to get the specified width. Use a slower feed rate when cutting groove sides.

**How to Cut Wider Grooves**



1. Plunge out both sides of groove width.
2. Plunge centre 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**



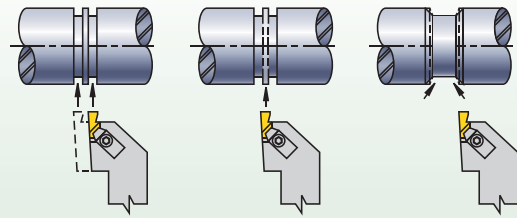
1. Follow recommendations explained above.
2. To avoid insert chipping and to achieve groove wall perpendicularity, follow the tool path outlined here.
3. Use the lightest depth of cut that still enables good chip surface finishing.

problem	solution
bur	<ol style="list-style-type: none"> <li>1. Ensure tool centre 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 centre 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 centre 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 for Chip Control • Grooving

When the proper cutter diameter is not available, proper cutter positioning will provide positive results.

- Centre height of insert should be positioned at the centre of the workpiece or up to 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 0,08–0,3 mm/rev.

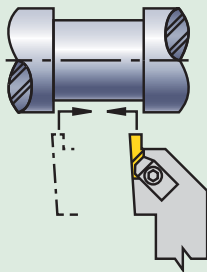


### Machining Guidelines for Chip Control • Turning/Profiling

Maximum depth of cut for side cutting (turning/profiling) depends on the material being cut and the width of the tool.

- 0,79–1,6mm wide insert can cut up to 0,6mm deep.
- 1,7–3,3mm wide insert can cut up to 1mm deep.
- 3,5–4,8mm wide insert can cut up to 2mm deep.
- 5–6,35mm wide insert can cut up to 3mm deep.

#### Finish Turning the Groove

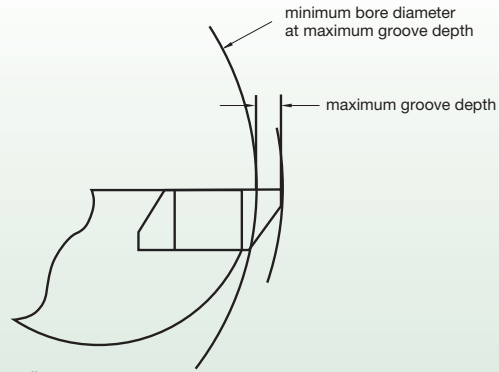


1. Plunge both sides of groove width.
2. Plunge centre area to remove web of material remaining.
3. To avoid insert chipping and to achieve groove wall perpendicularity, follow the tool path outlined.
4. Use the lightest depth of cut that still allows good chipbreaking, tool life, and surface finish.

insert catalogue number	Groove Limits	
	maximum internal groove depth mm	minimum bore diameter mm
NG-1094L	1,91	20,32
—	1,02	11,18
NG-2031R/L	1,27	18,54
NG-2041R/L	—	—
NG-2047R/L	—	—
NG-2058R/L	—	—
—	2,79	63,50
NG-2062R/L	2,59	44,45
NG-2094R/L	2,49	38,10
NG-2125R/L	2,03	25,40
—	1,40	18,54
NG-3047R/L	—	—
NG-3062R/L	2,39	44,45
NG-3072R/L	2,29	41,28
NG-3078R/L	1,91	34,93
NG-3088R/L	—	—
NG-3094R/L	—	—
NG-3097R/L	3,81	60,33
NG-3105R/L	—	—
NG-3110R/L	3,68	53,98
NG-3122R/L	—	—
NG-3125R/L	3,51	47,63
NG-3142R/L	—	—
NG-3156R/L	3,18	41,28
NG-3178R/L	—	—
NG-3185R/L	2,79	34,93
NG-3189R/L	—	—
NG-4125R/L	3,81	69,85
—	6,35	146,05
NG-4189R/L	6,22	127,00
NG-4213R/L	6,10	114,30
NG-4219R/L	5,54	82,55
NG-4250R/L	5,08	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.

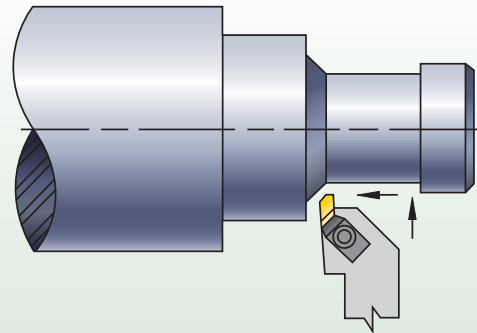
### Internal Groove Depth versus Bar Interference



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 2,74mm for size 2 inserts or 3,84mm for size 3 inserts.



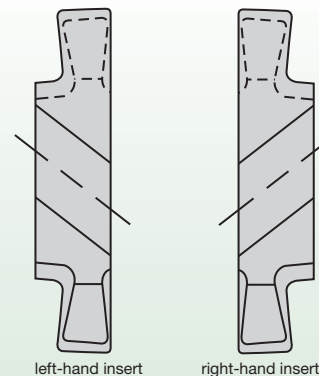
### Machining Guidelines for Using TopGroove Deep Grooving Inserts (NGD)

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 catalogue number	add to C dimension mm	add to F dimension mm
NGD-3062	0,00	0,00
NGD-3094	2,54	2,54
NGD-3125	2,54	2,54
NGD-3189	2,54	2,54
NGD-4125	0,00	0,00
NGD-4189	3,18	3,18
NGD-4250	6,35	6,35
NRD-3031	0,00	0,00
NRD-3062	2,54	2,54
NRD-4062	0,00	0,00
NRD-4094	6,35	6,35
NRD-4125	6,35	6,35

### TopGroove Insert Selection Guide

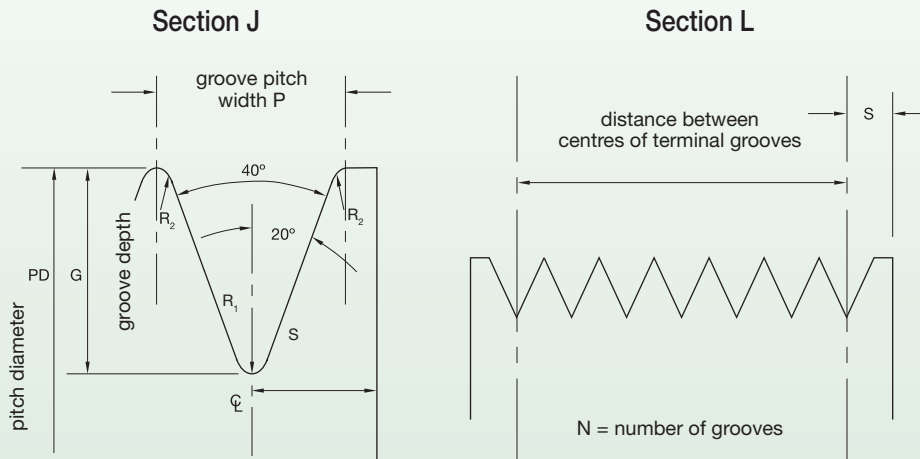
- All TopGroove inserts are precision ground to provide accurate edge location and secure locking of the insert in the toolholder pocket.
- TopGroove inserts can be used in either toolholders or boring bars.
- Right-hand TopGroove toolholders use right-hand inserts. Left-hand TopGroove toolholders use left-hand inserts.
- Right-hand TopGroove boring bars use left-hand inserts. Left-hand TopGroove boring bars use right-hand inserts.





### Machining Guidelines 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.

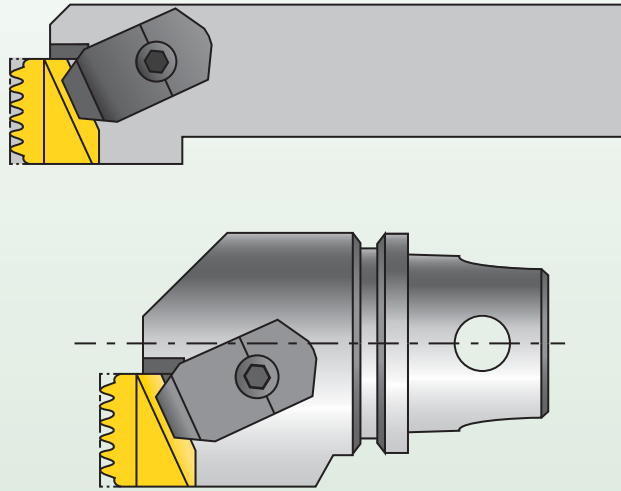


### Groove Dimensions and Tolerances for Sheaves

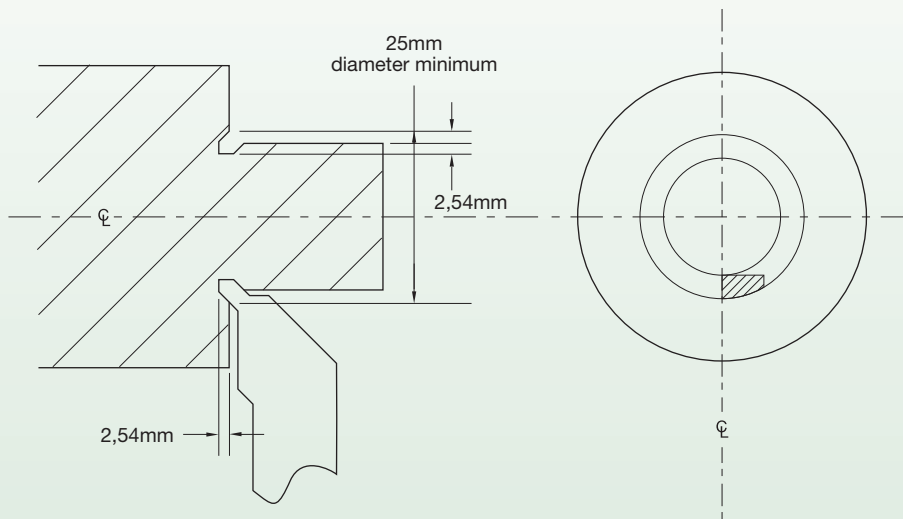
groove cross section	pitch width (P)	groove depth (G)	minimum radius (R2)	radius (R1)	terminal distance	distance between centres of terminal grooves and maximum accumulated tolerance
J	2,34 ±0,03	2,21 ±0,13	0,20	0,32 ±0,06	3,18	(N-1)4,88 ±0,25
L	4,70 ±0,05	5,11 ±0,13	0,38	0,32 ±0,06	3,18	(N-1)4,70 ±0,25

### Multiple Tooth Poly-Vee Grooving

Let WIDIA™ quote your multiple tooth poly-vee grooving applications. Semi-standard inserts and holders are available. The strong TopGroove design holds the insert rigid and outperforms any other tooling method for this application.

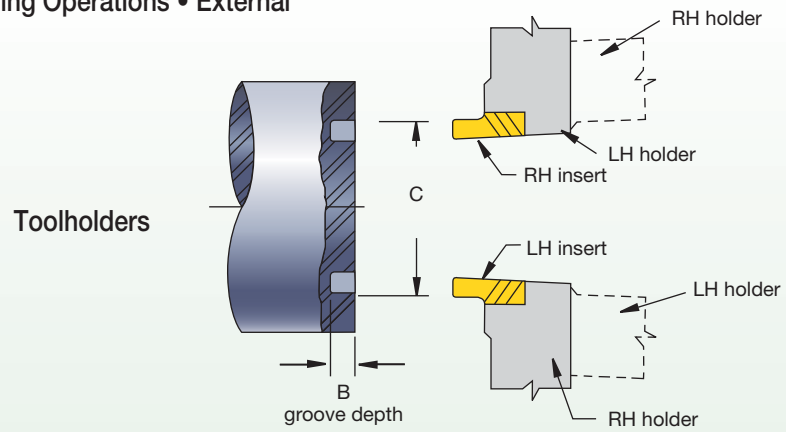


### Machining Guidelines for Undercutting Operations Performed with Custom Solution and TopGroove NU Inserts (NU3094, NU3125, and NU3156)



NOTE: Items shown are non-standard items.

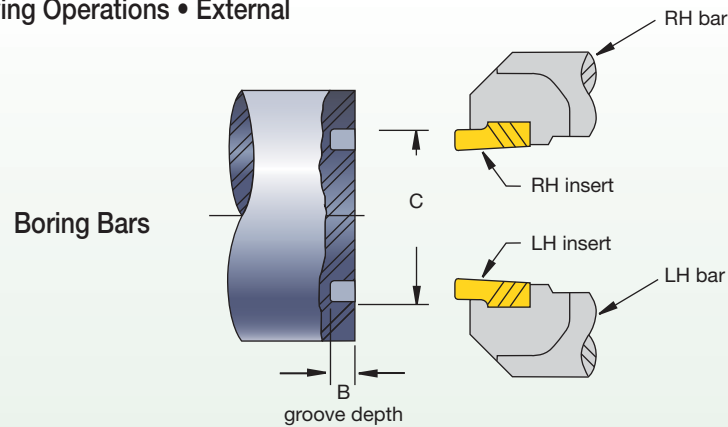
Machining Guidelines for Face Grooving Operations • External



Standard NF/NDF Inserts

insert family	maximum groove depth B mm	minimum groove diameter C mm
NF-3	1,52	23,9
NF-3	2,39	30,5
NF-3	3,18	36,1
NF-3	3,81	41,3
NFD-3	6,35	47,6
NFD-4	9,53	57,2
NFD-4	12,70	57,2

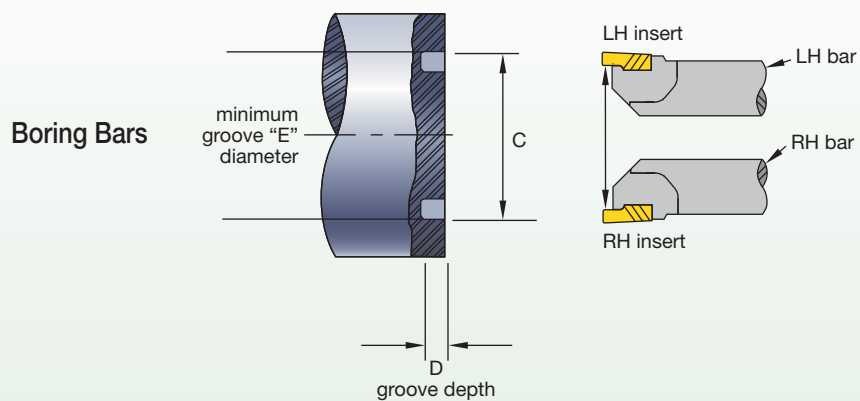
Machining Guidelines for Face Grooving Operations • External



Standard NG/NGD Inserts

insert family	maximum groove depth B mm	minimum groove diameter C mm
NG-2	1,27	54,0
NG-2	2,79	88,9
NG-3	2,39	101,6
NG-3	3,18	127,0
NG-3	3,81	139,7
NGD-3	6,35	174,6
NG-4	3,81	152,4
NG-4	6,35	209,6
NGD-4	9,53	222,3
NGD-4	12,70	222,3

Machining Guidelines for Face Grooving Operations • Internal



Standard NG/NGD Inserts

insert family	maximum groove depth B mm	minimum groove diameter C mm
NFD-3-KI	6,35	63,5

*NOTE: Also check minimum bore diameter of boring bar. See page D78.*

## ProGroove™ • Grooving and Cut-Off

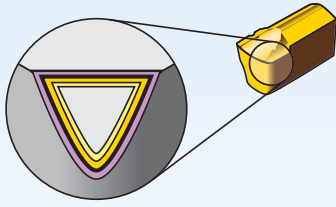
# ProGroove



With easy-to-change inserts available in multiple high-performance carbide grades, the ProGroove system ensures accurate, reliable, and reproducible cutting edge performance.

- Single-end grooving and cut-off inserts.
- Offered with integral toolholders and blades.
- Shallow, deep grooving, and cut-off capabilities.
- Available in four different geometries.





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

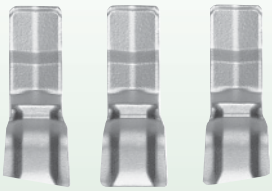
- Reduce cycle times — high speed and feed capability.
- Longer tool life — new multilayer coating provides better wear resistance.

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

wear resistance ← → toughness

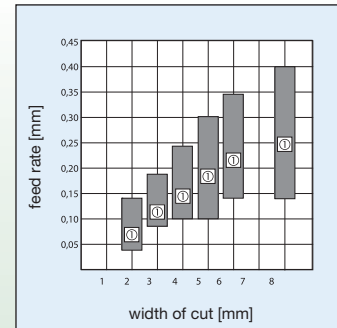
Grade	Coating	Grade Description	Material Group																			
			P	M	K	N	S	H	P	M	K	N	S	H								
TN6030		PVD-TiAlN Nanolayer coated carbide. Medium and heavy machining for steels and nodular cast irons. Recommended at medium cutting speeds when good toughness properties are required.																				
	HC-P30																					
TN7525		MT-CVD/CVD — TiN-TiCN-Al <sub>2</sub> O <sub>3</sub> -TiN coated carbide. Light and medium machining for steels and nodular cast irons.																				
	HC-P25																					
TN7535		MT-CVD/CVD — TiN-TiCN-Al <sub>2</sub> O <sub>3</sub> coated carbide. Medium and heavy machining for steels and nodular cast iron.																				
	HC-P35																					
TN8025		MT-CVD/CVD-TiN-TiCN-Al <sub>2</sub> O <sub>3</sub> -ZrCN coated carbide. Light and medium machining for all stainless steels. Can be used both with or without coolant.																				
	HC-M25																					
THM		Uncoated carbide for light and medium machining. For cast iron and all non-ferrous metals and non-metals. Also capable of machining hardened materials at low cutting speeds.																				
	HW-K15																					
TTM		Uncoated carbide with good toughness and wear properties. Medium machining for steels.																				
	HW-P25																					

### PGU



left-hand      neutral      right-hand

For grooving and parting operations, universal use. Positive chipbreaker groove for light cutting action. Right-hand and left-hand styles with 6° front angle.

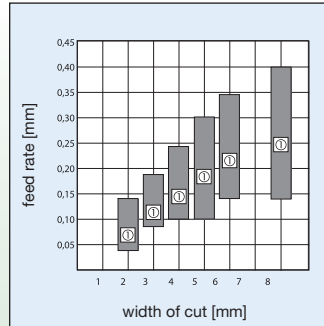


① Recommended Starting Feed

### PGM



neutral



① Recommended Starting Feed

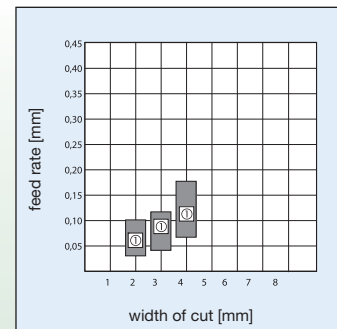
For grooving and parting, also capable of copy and straight turning as well as chamfering. With additional chip forming element for good chip control with varying depths of cut.

### PGS



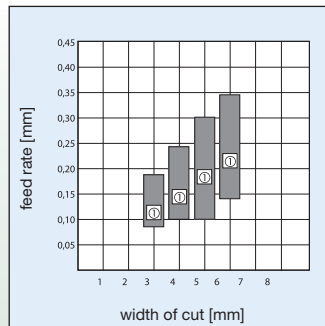
left-hand      neutral      right-hand

For low-bur parting with straight flanks and smooth surface finishes. All inserts are recommended for parting and grooving slender workpieces, part diameter <32mm, and thin-wall tubes.



① Recommended Starting Feed

### PGR



① Recommended Starting Feed

Full round inserts for profiling, grooving, and copy turning. Very good chip control for broad general use. Accurate, reproducible cutting edge positioning.

### LG System • 0 and 1

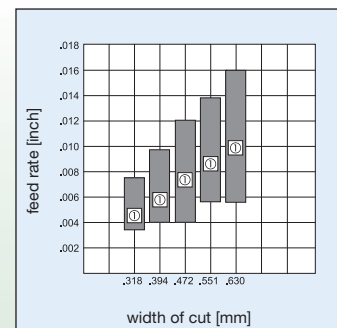


0

1

...0  
Inserts with wide range of applications in grooving and deep grooving. With additional chip control element for good chip control, even with varying widths of cut.

...1  
Inserts with wide range of uses in grooving and deep grooving of short chipping materials.

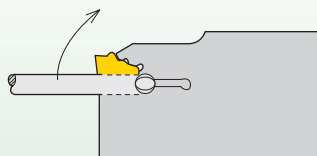


① Recommended Starting Feed

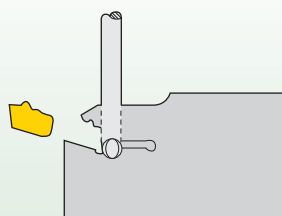
Material Group		Cutting Speed – vc m/min																	
		TN6030			TN7525			TN7535			TN8025			THM			TTM		
		min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
P	0/1	130	140	150	200	215	230	140	175	210	-	-	-	-	-	-	90	95	100
	2	110	145	175	170	220	270	115	145	175	-	-	-	-	-	-	75	100	125
	3	110	145	175	170	220	270	115	145	175	-	-	-	-	-	-	75	100	125
	4	75	95	115	115	145	175	75	100	120	-	-	-	-	-	-	55	65	80
	5	100	125	145	155	190	220	105	140	170	-	-	-	-	-	-	70	85	100
	6	40	55	65	65	85	100	45	60	75	-	-	-	-	-	-	30	40	45
M	1	90	110	140	-	-	-	-	-	-	90	120	150	-	-	-	60	75	90
	2	55	70	90	-	-	-	-	-	-	55	75	95	-	-	-	40	50	55
	3	60	75	95	-	-	-	-	-	-	60	80	100	-	-	-	40	50	60
K	1	60	80	90	120	150	180	-	-	-	-	-	-	60	80	90	-	-	-
	2	60	75	85	120	150	180	-	-	-	-	-	-	60	75	85	-	-	-
	3	60	75	90	110	140	170	-	-	-	-	-	-	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	-	-	-
H	1	-	-	-	-	-	-	-	-	-	-	-	-	10	20	35	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	10	20	35	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	10	20	35	-	-	-
	4	-	-	-	-	-	-	-	-	-	-	-	-	10	20	35	-	-	-



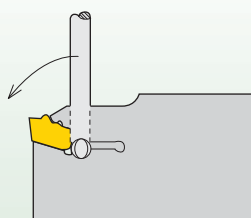
## ProGroove System



To change the cutting insert, place the wrench into the blade recess.  
The blade mouth is opened by turning through 90°.

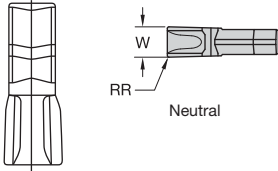


In this position, the wrench is self-locking, leaving both hands free  
for changing the cutting insert.



The cutting insert is pressed against the rear seat in the blade mouth,  
releasing the wrench. The insert is accurately positioned and securely clamped.





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

● first choice  
○ alternate choice

■ PGU

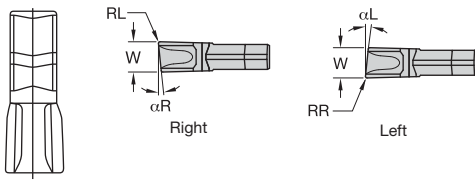
catalogue number	insert size	W	RR	hand	TN6030	TN7525	TN7535	TN8025	THM	TTM
123567320	2	2,10	0,20	N - Neutral	2953289	2498725	2498713	2021804	2008876	-
123567330	3	3,10	0,30	N - Neutral	2953284	-	2498714	2017822	2008931	-
123567340	4	4,10	0,30	N - Neutral	2953286	2498727	2498715	-	2009080	-
123567350	5	5,10	0,30	N - Neutral	2953673	2498728	2498716	-	2021873	-
123567360	6	6,10	0,40	N - Neutral	2953674	2952333	2952350	-	2009385	-
123567380	8	8,15	0,60	N - Neutral	2953666	-	2952351	2009482	2009504	-

NOTE: W tolerance on all = ±0,05mm.

(continued)



(PGU – continued)



● first choice  
○ alternate choice

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

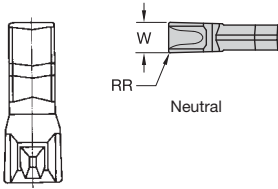
Grooving and Cut-Off

catalogue number	insert size	W	RR	αL	hand	TN6030	TN7525	TN7535	TN8025	THM	TTM
123567231	3	3,10	0,25	6	L - Left	2953672	2498730	2498718	■	■	■
123567241	4	4,10	0,25	6	L - Left	2953676	■	■	■	■	■

catalogue number	insert size	W	RL	αR	hand	TN6030	TN7525	TN7535	TN8025	THM	TTM
123567230	3	3,10	0,25	6	R - Right	2953291	2498729	2498717	■	■	■
123567240	4	4,10	0,25	6	R - Right	2953667	2498731	2498719	■	■	■

NOTE: W tolerance on all = ±0,05mm.



● first choice  
○ alternate choice

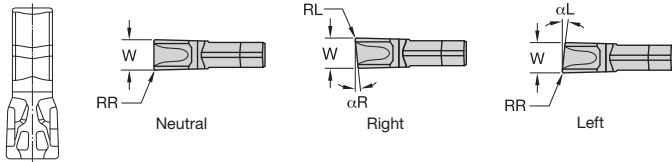
P	●	●	●	○	●	●
M	●	○	○	○	●	●
K	●	●	●	●	●	●
N	○	○	○	○	○	○
S	○	○	○	○	○	○
H	○	○	○	○	○	○

■ PGM

catalogue number	insert size	W	RR	hand	TN6030	TN6030	TN7525	TN7535	TN8025	THM	TTM
123567420	2	2,10	0,20	N - Neutral	2953679	2953679	2498733	2498721	■	■	■
123567430	3	3,10	0,30	N - Neutral	2953678	2953678	2498734	2498722	■	■	■
123567440	4	4,10	0,30	N - Neutral	2953663	2953663	2498735	2498723	■	■	■
123567450	5	5,10	0,30	N - Neutral	2953671	2953671	2498736	2498724	■	■	■
123567460	6	6,10	0,40	N - Neutral	2953677	2953677	2952335	2952352	■	■	■
123567480	8	8,15	0,60	N - Neutral	2953675	2953675	2952336	2952353	■	■	■

NOTE: W tolerance on all = ±0,05mm.





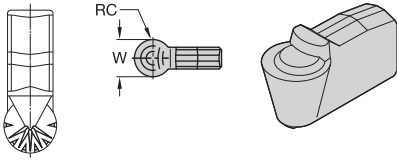
● first choice  
○ alternate choice

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

PGS

catalogue number	insert size	W	RR	hand	TN6030	TN7525	TN7535	TN8025	THM	TTM	
123567702	2	2,25	0,20	N - Neutral	●	●	●	○	○	○	
123567703	3	3,25	0,20	N - Neutral	●	●	●	○	○	○	
123567704	4	4,25	0,20	N - Neutral	●	●	●	○	○	○	
catalogue number	insert size	W	RR	αL	hand	TN6030	TN7525	TN7535	TN8025	THM	TTM
123567721	2	2,25	0,20	6	L - Left	●	●	●	○	○	○
123567731	3	3,25	0,20	6	L - Left	●	●	●	○	○	○
catalogue number	insert size	W	RL	αR	hand	TN6030	TN7525	TN7535	TN8025	THM	TTM
123567720	2	2,25	0,20	6	R - Right	●	●	●	○	○	○
123567730	3	3,25	0,20	6	R - Right	●	●	●	○	○	○
123567740	4	4,25	0,20	6	R - Right	●	●	●	○	○	○

NOTE: W tolerance on all = ±0,05mm.



● first choice  
○ alternate choice

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

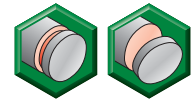
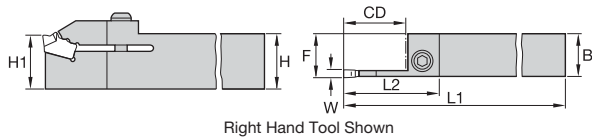
	TN6030	TN7525	TN7535	TN8025	THM	TTM
123567803	-	2952337	-	-	-	-
123567804	-	2952338	-	-	-	-
123567805	-	2952339	-	-	-	-
123567806	-	2952340	-	-	-	-

■ PGR

catalogue number	insert size	W	RC	TN6030	TN7525	TN7535	TN8025	THM	TTM
123567803	3	3,00	1,50	-	2952337	-	-	-	-
123567804	4	4,00	2,00	-	2952338	-	-	-	-
123567805	5	5,00	2,50	-	2952339	-	-	-	-
123567806	6	6,00	3,00	-	2952340	-	-	-	-

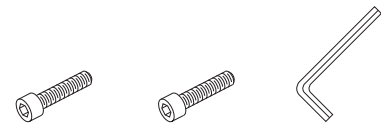
NOTE: W tolerance on all = ±0,07mm.



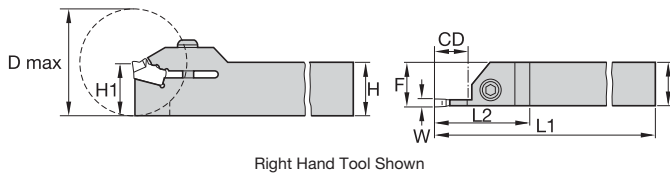
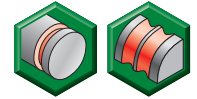


Grooving and Cut-Off

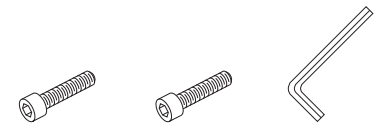
■ Grooving and Cut-Off



order number	catalogue number	seat size	W	CD	H	B	F	L1	L2	H1	cap screw	cap screw	wrench
<b>right hand</b>													
2007136	12251782000	2	2,10	16,0	16	16,0	16,2	100	27	16	—	12146012600	12148041100
2962743	12250023000	3	3,10	20,0	19	19,1	19,4	127	32	19	12148596200	—	—
2962745	12250023200	3	3,10	25,0	25	25,4	25,7	152	40	25	12148596200	—	—
2022560	12251783000	3	3,10	20,0	20	20,0	20,3	125	32	20	12148596200	—	—
2007142	12251783200	3	3,10	25,0	25	25,0	25,3	150	40	25	12148596200	—	—
2008153	12251783600	3	3,10	25,0	32	25,0	25,3	170	40	32	12148596200	—	—
2022562	12251784000	4	4,10	25,0	20	20,0	20,4	125	40	20	12148596200	—	—
2007148	12251784200	4	4,10	25,0	25	25,0	25,4	150	40	25	12148596200	—	—
2022564	12251785200	5	5,10	32,0	25	25,0	25,4	150	53	25	12148596200	—	—
2022566	12251785400	5	5,10	32,0	32	25,0	25,4	170	53	32	12148596200	—	—
2962751	12250025200	5	5,11	32,0	25	25,4	25,8	152	53	25	12148596200	—	—
2015814	12251784400	6	4,10	32,0	32	25,0	25,4	170	53	32	12148596200	—	—
2022568	12251786400	6	6,10	32,0	32	25,0	25,5	170	53	32	—	12146012700	12148041300
2022569	12251788400	8	8,10	40,0	32	25,0	25,6	170	66	32	—	12146012700	12148041300
<b>left hand</b>													
2007139	12251782100	2	2,10	16,0	16	16,0	16,2	100	27	16	—	12146012600	12148041100
2962744	12250023100	3	3,10	20,0	19	19,1	19,4	127	32	19	12148596200	—	—
2022561	12251783100	3	3,10	20,0	20	20,0	20,3	125	32	20	12148596200	—	—
2007145	12251783300	3	3,10	25,0	25	25,0	25,3	150	40	25	12148596200	—	—
2008150	12251783700	4	3,10	25,0	32	25,0	25,3	170	40	32	12148596200	—	—
2022563	12251784100	4	4,10	25,0	20	20,0	20,4	125	40	20	12148596200	—	—
2007151	12251784300	4	4,10	25,0	25	25,0	25,4	150	40	25	12148596200	—	—
2015816	12251784500	4	4,10	32,0	32	25,0	25,4	170	53	32	12148596200	—	—
2015839	12251786500	4	6,10	32,0	32	25,0	25,5	170	53	32	—	12146012700	12148041300
2022565	12251785300	5	5,10	32,0	25	25,0	25,4	150	53	25	12148596200	—	—
2022567	12251785500	5	5,10	32,0	32	25,0	25,4	170	53	32	12148596200	—	—
2015842	12251788500	8	8,10	40,0	32	25,0	25,6	170	66	32	—	12146012700	12148041300



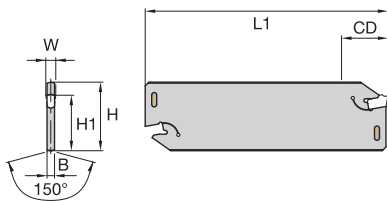
■ Grooving and Profiling



order number	catalogue number	seat size	W	CD	D max	H	B	F	L1	L2	H1	cap screw	cap screw	wrench
<b>right hand</b>														
2007105	12251762000	2	2,10	10,0	25,4	16	16,0	16,2	100	26	16	—	12146012600	12148041100
2021637	12251762400	2	2,10	10,0	25,4	25	25,0	25,2	150	26	25	—	12146012600	12148041100
2007111	12251763200	2	3,10	10,0	25,4	25	25,0	25,3	150	26	20	12148596200	—	—
2007127	12251763400	3	3,10	10,0	25,4	16	16,0	16,3	100	26	25	12148596200	—	—
2007130	12251764200	3	4,10	12,5	32,0	25	25,0	25,4	150	31	25	12148596200	—	—
2007832	12251762200	4	2,10	10,0	25,4	20	20,0	20,2	125	26	25	—	12146012600	12148041100
2022548	12251764000	4	4,10	12,5	32,0	20	20,0	20,4	125	31	20	12148596200	—	—
2022550	12251764400	4	4,10	12,5	32,0	32	25,0	25,4	170	31	32	12148596200	—	—
2022552	12251765200	5	5,10	12,5	—	25	25,0	25,5	150	31	25	12148596200	—	—
2015792	12251768400	5	8,10	16,0	—	32	25,0	25,7	170	36	32	—	12146012700	12148041300
2022555	12251766200	6	6,10	16,0	—	25	25,0	25,6	150	35	25	—	12146012700	12148041300
2022557	12251766400	6	6,10	16,0	—	32	25,0	25,6	170	35	32	—	12146012700	12148041300
2015754	12251763000	8	3,10	10,0	25,4	20	20,0	20,3	125	26	25	12148596200	—	—
<b>left hand</b>														
2007108	12251762100	2	2,10	10,0	25,4	16	16,0	16,2	100	26	16	—	12146012600	12148041100
2021636	12251762500	2	2,10	10,0	25,4	25	25,0	25,2	150	26	25	—	12146012600	12148041100
2007124	12251763300	2	3,10	10,0	25,4	25	25,0	25,3	150	26	20	12148596200	—	—
2021631	12251762300	3	2,10	10,0	25,4	20	20,0	20,2	125	26	16	—	12146012600	12148041100
2022547	12251763100	3	3,10	10,0	25,4	20	20,0	20,3	125	26	20	12148596200	—	—
2007133	12251764300	3	4,10	12,5	32,0	25	25,0	25,4	150	31	25	12148596200	—	—
2015782	12251765500	3	5,10	12,5	—	32	25,0	25,5	170	31	20	12148596200	—	—
2022549	12251764100	4	4,10	12,5	32,0	20	20,0	20,4	125	31	20	12148596200	—	—
2022551	12251764500	4	4,10	12,5	32,0	32	25,0	25,4	170	31	32	12148596200	—	—
2022553	12251765300	5	5,10	12,5	—	25	25,0	25,5	150	31	25	12148596200	—	—
2022556	12251766300	6	6,10	16,0	—	25	25,0	25,6	150	35	25	—	12146012700	12148041300
2022558	12251766500	6	6,10	16,0	—	32	25,0	25,6	170	35	32	—	12146012700	12148041300
2021627	12251763500	8	3,10	10,0	25,4	16	16,0	16,3	100	26	32	12148596200	—	—
2022559	12251768500	8	8,10	16,0	—	32	25,0	25,7	170	36	32	—	12146012700	12148041300

NOTE: Select shorter CD dimension for added stability.





■ Cut-Off Blades

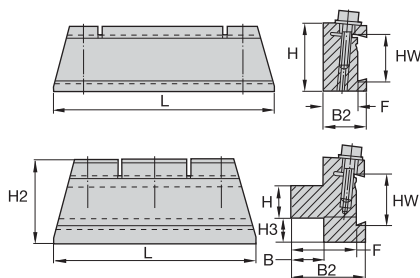
Grooving and Cut-Off



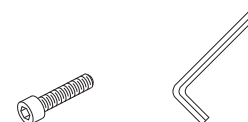
order number	catalogue number	seat size	W	H	H1	L1	B	CD	wrench
2021629	12251332000	2	2,1	19,0	15,7	90	1,7	20	12146003800
2021639	12251342000	2	2,1	26,0	21,4	110	1,7	25	12146003800
2008113	12251352000	2	2,1	32,0	25,0	150	1,7	25	12146003800
2021640	12251343000	3	3,1	26,0	21,4	110	2,4	40	12146003800
2008116	12251353000	3	3,1	32,0	25,0	150	2,4	50	12146003800
2021641	12251344000	4	4,1	26,0	21,4	110	3,2	40	12146003800
2008119	12251354000	4	4,1	32,0	25,0	150	3,2	50	12146003800
2008122	12251355000	5	5,1	32,0	25,0	150	4,2	60	12146003800
2008135	12251356000	6	6,1	32,0	25,0	150	5,0	60	12146009500
2008138	12251358000	8	8,1	32,0	25,0	150	6,8	60	12146009500
2021743	12251368000	8	8,1	52,5	45,0	250	6,8	100	12146009500

NOTE: Order wrench separately.

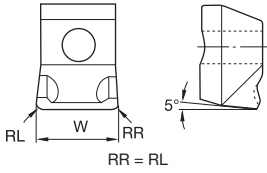
Blade Holders



■ Cut-Off Blade Holders



order number	catalogue number	HW	H	B	F	H2	B2	H3	L	cap screw	wrench
2021625	12251221900	19	16,0	16,0	28,3	30	30	4	100	12148036000	12148041300
2021634	12251212500	19	25,0	19,0	17,3	25	19	—	100	12148036000	12148041300
2021626	12251221600	26	16,0	16,0	31,0	40	36	12	100	12148036000	12148041300
2007826	12251222000	26	20,0	18,0	33,0	40	38	8	100	12148036000	12148041300
2008141	12251213200	26	32,0	20,0	15,0	32	20	—	125	12148036000	12148041300
2021635	12251222500	32	25,0	20,0	35,0	50	40	10	125	12148036000	12148041300
2008156	12251223200	32	32,0	25,0	40,0	50	45	3	125	12148036000	12148041300
2008159	12251233200	53	32,0	25,0	50,0	82	57	30	160	12146013400	12148041400
2021723	12251234000	53	40,0	40,0	58,0	82	65	22	160	12146013400	12148041400



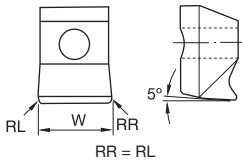
● first choice  
○ alternate choice

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

■ **LGNO**

catalogue number	W	RR	TN6030	TN7525	TN7535	TN8025	THM	TTM
123568080	8,15	0,80	-	2952341	2952363	-	2017973	2009562
123568100	10,15	0,80	-	2952342	2952364	-	2017976	-
123568120	12,20	0,80	-	2952343	2952365	-	2017980	-
123568140	14,20	0,80	-	2952344	2952366	-	2022789	-
123568160	16,20	0,80	-	2952345	2952367	-	2022790	2021798

NOTE: W tolerance on all = ± 0,05mm.

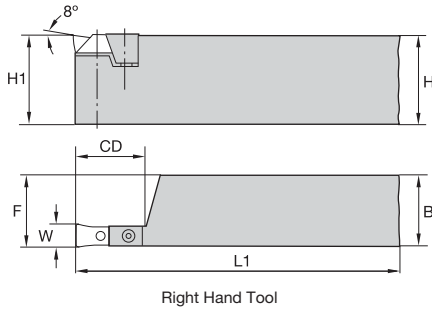


■ **LGN1**

catalogue number	W	RR	TN6030	TN7525	TN7535	TN8025	THM	TTM
123568081	8,15	0,80	-	-	-	-	2022787	-
123568121	12,20	0,80	-	-	-	-	2017993	-
123568141	14,20	0,80	-	-	-	-	2017996	-
123568161	16,20	0,80	-	-	-	-	2022791	-

NOTE: W tolerance on all = ± 0,05mm.

Grooving and Cut-Off



Grooving and Cut-Off

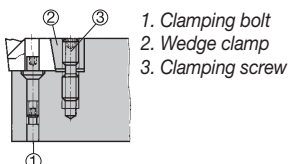
■ Grooving

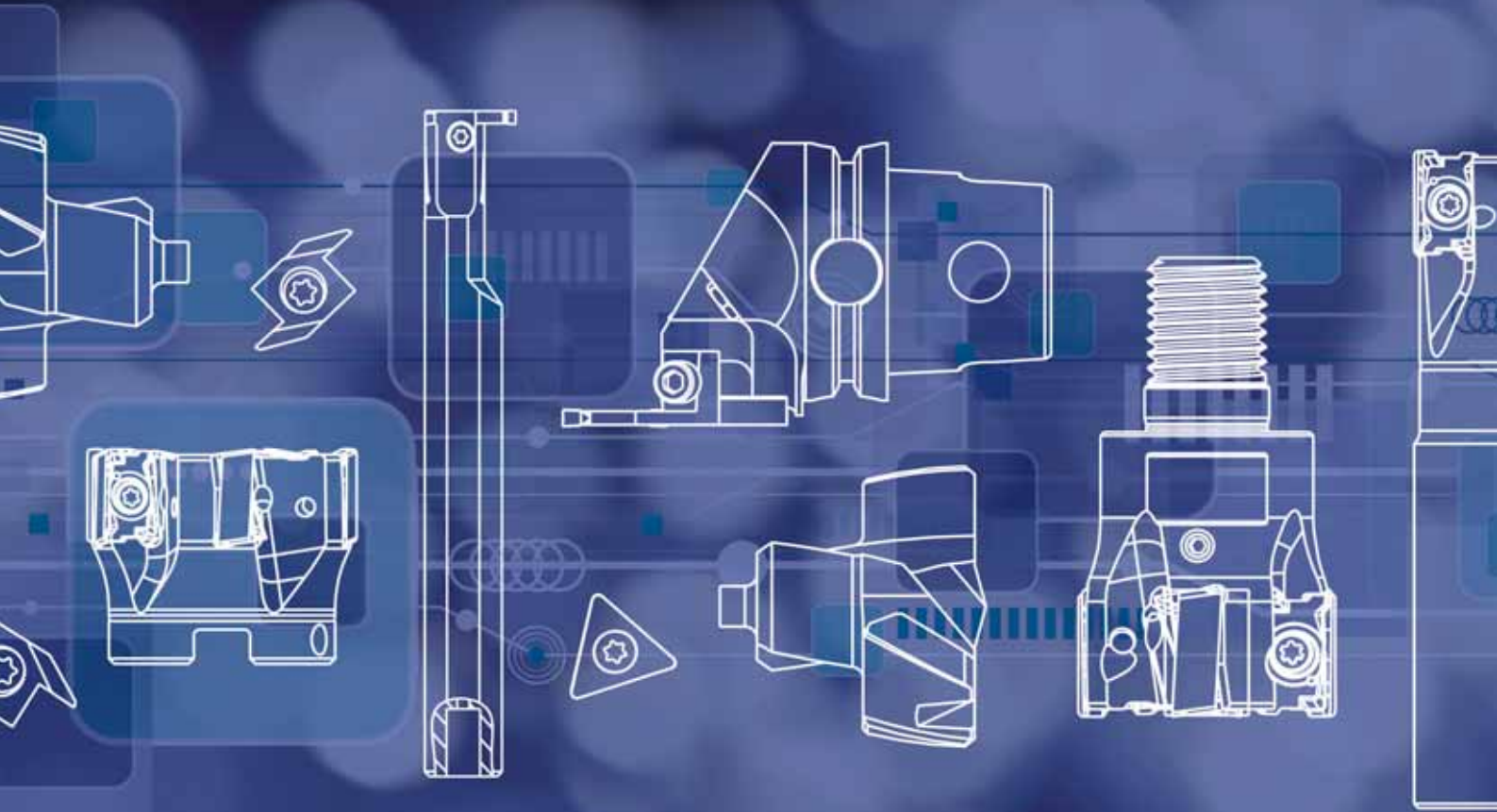
order number	catalogue number	seat size	W	CD	H	B	F	L1	H1
<b>right hand</b>									
2022446	12250110100	1	8,00	20,0	32	25,0	25,5	170	32
2008147	12250110300	1	10,00	20,0	32	25,0	25,5	170	32
2021719	12250110500	1	12,00	25,0	40	32,0	33,0	200	40
2021721	12250110700	1	14,00	28,0	40	32,0	33,0	200	40
2008521	12250110900	1	16,00	32,0	40	32,0	33,0	200	40
<b>left hand</b>									
2022447	12250110200	1	8,00	20,0	32	25,0	25,5	170	32
2008144	12250110400	1	10,00	20,0	32	25,0	25,5	170	32
2021718	12250110600	1	12,00	25,0	40	32,0	33,0	200	40
2021720	12250110800	—	14,00	28,0	40	32,0	33,0	200	40
2021722	12250111000	1	16,00	32,0	40	32,0	33,0	200	40

■ Spare Parts



catalogue number	clamping bolt	wedge clamp	clamping screw	wrench for clamp screw	wrench for clamp screw	wrench for clamping bolt
<b>right hand</b>						
12250110100	12148060600	12148094300	12148574100	12148041000	—	12148046000
12250110300	12148060600	12148094400	12148574900	—	12148041100	12148046000
12250110500	12148060700	12148094500	12148574900	—	12148041100	12148040900
12250110700	12148060700	12148094600	12148574000	—	12148041200	12148040900
12250110900	12148060800	12148094700	12148574000	12148041000	12148041200	—
<b>left hand</b>						
12250110200	12148060600	12148094300	12148574100	12148041000	—	12148046000
12250110400	12148060600	12148094400	12148574900	—	12148041100	12148046000
12250110600	12148060700	12148094500	12148574900	—	12148041100	12148040900
12250110800	12148060700	12148094600	12148574000	—	12148041200	12148040900
12250111000	12148060800	12148094700	12148574000	12148041000	12148041200	—





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