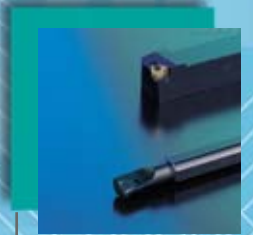


Member IMC Group  
**Ingersoll**  
Cutting Tools

# TURNING



# Ingersoll



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# Ingersoll





CUTTING TOOLS  
CUTTING TOOLS

# TAEGUTURN

*Cutting Tools*



## TAE GUTURN

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# TAEGUTURN PROGRAM TURNING INSERTS



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## WT

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**CNMA** T42

**CNMG** T50

**DNMG** T57

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**CCMT** T80



## FA

For Inserts see pages

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**DNMG** T53



## FG

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**DNMG** T54

**SNMG** T62

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## MC

For Inserts see pages

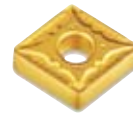
**CNMG** T46

**DNMG** T54

**SNMG** T62

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## SF

For Inserts see pages

**CNMG** T49

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## GG & TNMG-FS

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## VF

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## ML

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**SNMG** T63

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## MP

For Inserts

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<b>SNMG</b>	T63
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For Inserts


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## Common Style

For Inserts


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## KNUX

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## RT

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## MA

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<b>TNMA</b>	T66
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## FA

For Inserts see pages

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## FG

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<b>DCMT</b>	T82
<b>SCMT</b>	T85
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<b>VBMT</b>	T93
<b>CPMT</b>	T81
<b>TPMT</b>	T92


# TAEGUTURN PROGRAM TURNING INSERTS



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## PMR

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## PGT PGX

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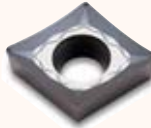
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## FL

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TCGT	T98
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### Ceramic Inserts

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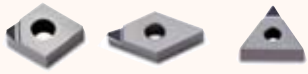
### CBN Inserts

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### PCD Inserts

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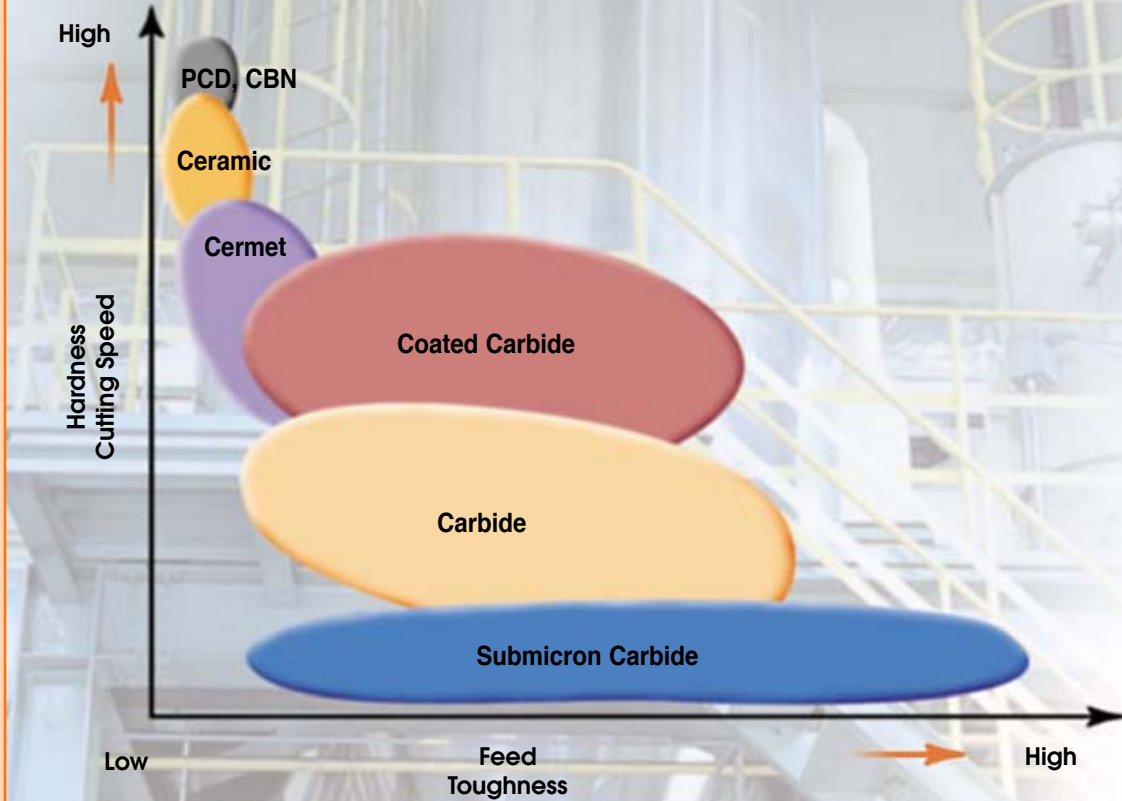


T11

**TAEGL***ine*

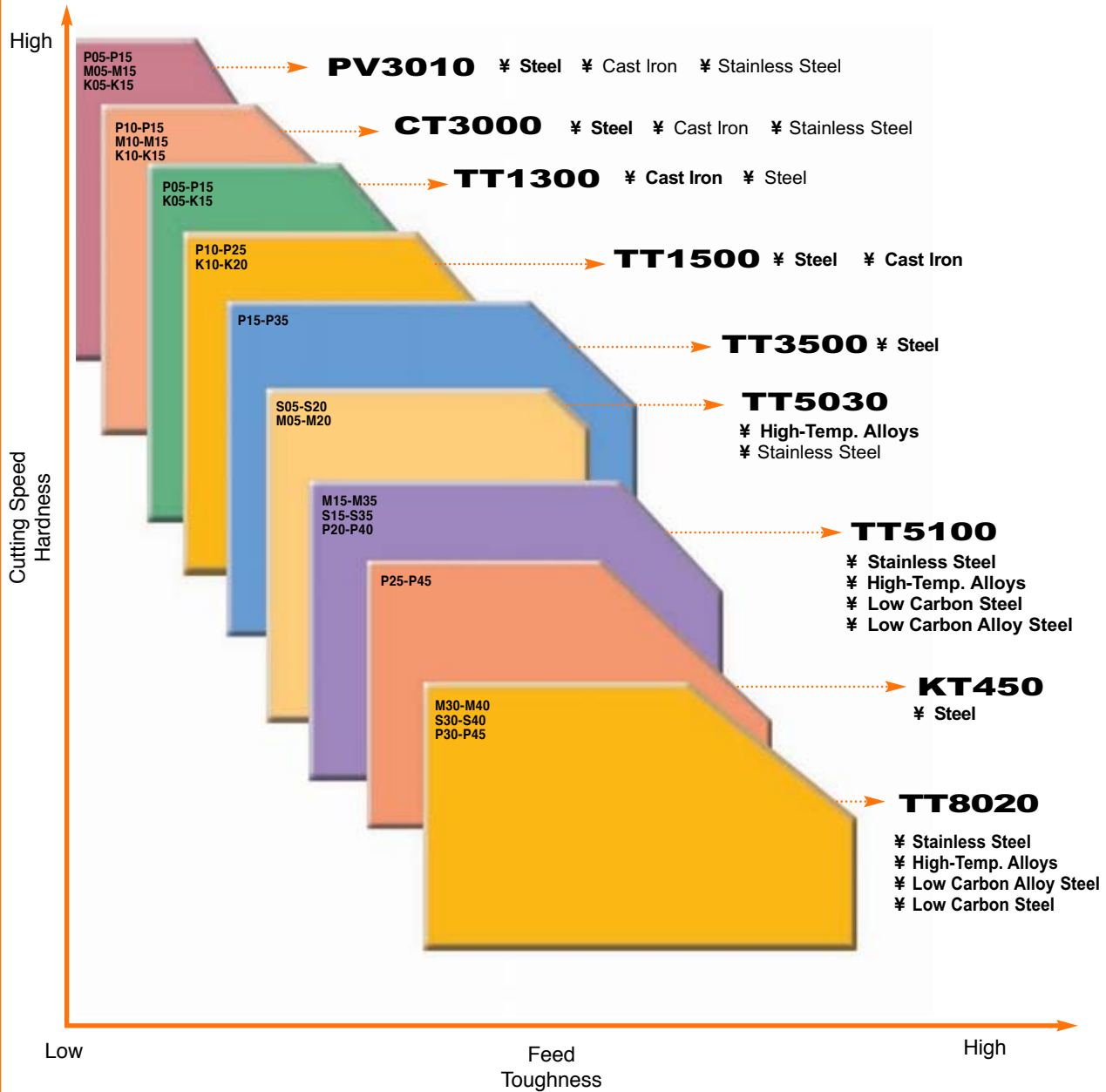
## USER GUIDE - GRADES

### Insert Materials





## Insert Grades



- PV3010: PVD coated cermet, CT3000: uncoated cermet
- TT1300, TT1500, TT3500, TT5100, KT450: CVD coated carbide
- TT5030, TT8020: PVD coated carbide

## ■ USER GUIDE - GRADES

### Coated Carbide, Cermet and Carbide Grades

TaeguTurn Grades	ISO	Characteristics & Applications
<b>TT1300</b> CVD Coated	<div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; justify-content: space-between;"><span style="background-color: red; color: white; padding: 2px;">K05</span> — <span style="background-color: red; color: white; padding: 2px;">K15</span></div> <div style="display: flex; justify-content: space-between;"><span style="background-color: blue; color: white; padding: 2px;">P05</span> — <span style="background-color: blue; color: white; padding: 2px;">P15</span></div> </div>	<ul style="list-style-type: none"> <li>• For high speed turning of cast iron and steel.</li> <li>• Thick aluminum oxide coating on a high wear resistant substrate.</li> <li>• First choice for machining cast iron (Rough and Finish).</li> </ul>
<b>TT1500</b> CVD Coated	<div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; justify-content: space-between;"><span style="background-color: blue; color: white; padding: 2px;">P10</span> — <span style="background-color: blue; color: white; padding: 2px;">P25</span></div> <div style="display: flex; justify-content: space-between;"><span style="background-color: red; color: white; padding: 2px;">K10</span> — <span style="background-color: red; color: white; padding: 2px;">K20</span></div> </div>	<ul style="list-style-type: none"> <li>• For high speed turning of steel and medium to low speed turning of cast iron.</li> <li>• High crater and flank wear resistance.</li> <li>• First choice for finish machining of steel and cast iron roughing.</li> </ul>
<b>TT3500</b> CVD Coated	<div style="display: flex; justify-content: space-between;"><span style="background-color: blue; color: white; padding: 2px;">P15</span> — <span style="background-color: blue; color: white; padding: 2px;">P35</span></div>	<ul style="list-style-type: none"> <li>• Steel turning application.</li> <li>• Very good combination of wear resistance and toughness.</li> <li>• For finish to medium turning of steel.</li> </ul>
<b>TT5030</b> PVD Coated	<div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; justify-content: space-between;"><span style="background-color: red; color: white; padding: 2px;">S05</span> — <span style="background-color: red; color: white; padding: 2px;">S20</span></div> <div style="display: flex; justify-content: space-between;"><span style="background-color: yellow; color: black; padding: 2px;">M05</span> — <span style="background-color: yellow; color: black; padding: 2px;">M20</span></div> </div>	<ul style="list-style-type: none"> <li>• For a wide range of turning of high-temp alloys.</li> <li>• Very hard submicron substrate with good fracture toughness.</li> </ul>
<b>TT5100</b> CVD Coated	<div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; justify-content: space-between;"><span style="background-color: yellow; color: black; padding: 2px;">M15</span> — <span style="background-color: yellow; color: black; padding: 2px;">M35</span></div> <div style="display: flex; justify-content: space-between;"><span style="background-color: red; color: white; padding: 2px;">S15</span> — <span style="background-color: red; color: white; padding: 2px;">S35</span></div> <div style="display: flex; justify-content: space-between;"><span style="background-color: blue; color: white; padding: 2px;">P20</span> — <span style="background-color: blue; color: white; padding: 2px;">P40</span></div> </div>	<ul style="list-style-type: none"> <li>• For a wide range of turning of sticky materials such as stainless steel and low carbon steel.</li> <li>• Excellent chipping resistance and sticking resistance.</li> <li>• For finish and medium machining on stainless steel and low carbon steel.</li> </ul>
<b>KT450</b> CVD Coated	<div style="display: flex; justify-content: space-between;"><span style="background-color: blue; color: white; padding: 2px;">P25</span> — <span style="background-color: blue; color: white; padding: 2px;">P45</span></div>	<ul style="list-style-type: none"> <li>• For heavy roughing and interrupted cutting of steel.</li> <li>• Very tough grade.</li> <li>• For interrupted cutting of steel.</li> </ul>
<b>TT8020</b> PVD Coated	<div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; justify-content: space-between;"><span style="background-color: yellow; color: black; padding: 2px;">M30</span> — <span style="background-color: yellow; color: black; padding: 2px;">M40</span></div> <div style="display: flex; justify-content: space-between;"><span style="background-color: red; color: white; padding: 2px;">S30</span> — <span style="background-color: red; color: white; padding: 2px;">S40</span></div> <div style="display: flex; justify-content: space-between;"><span style="background-color: blue; color: white; padding: 2px;">P30</span> — <span style="background-color: blue; color: white; padding: 2px;">P45</span></div> </div>	<ul style="list-style-type: none"> <li>• For medium to low speed turning of stainless steel, exotic alloys and low carbon steel.</li> <li>• Toughest grade in turning product line.</li> <li>• For interrupted cut on stainless steel and exotic alloys.</li> </ul>
<b>PV3010</b> PVD Coated Cermet	<div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; justify-content: space-between;"><span style="background-color: blue; color: white; padding: 2px;">P05</span> — <span style="background-color: blue; color: white; padding: 2px;">P15</span></div> <div style="display: flex; justify-content: space-between;"><span style="background-color: yellow; color: black; padding: 2px;">M05</span> — <span style="background-color: yellow; color: black; padding: 2px;">M15</span></div> <div style="display: flex; justify-content: space-between;"><span style="background-color: red; color: white; padding: 2px;">K05</span> — <span style="background-color: red; color: white; padding: 2px;">K15</span></div> </div>	<ul style="list-style-type: none"> <li>• For high surface finish turning of steel, stainless steel and cast iron.</li> <li>• Excellent wear resistance and low coefficient of friction</li> <li>• Long tool life.</li> </ul>
<b>CT3000</b> Uncoated Cermet	<div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; justify-content: space-between;"><span style="background-color: blue; color: white; padding: 2px;">P10</span> — <span style="background-color: blue; color: white; padding: 2px;">P15</span></div> <div style="display: flex; justify-content: space-between;"><span style="background-color: yellow; color: black; padding: 2px;">M10</span> — <span style="background-color: yellow; color: black; padding: 2px;">M15</span></div> <div style="display: flex; justify-content: space-between;"><span style="background-color: red; color: white; padding: 2px;">K10</span> — <span style="background-color: red; color: white; padding: 2px;">K15</span></div> </div>	<ul style="list-style-type: none"> <li>• Excellent surface finish turning on steel, stainless steel and cast iron.</li> <li>• Excellent wear resistance and low coefficient of friction</li> </ul>
<b>K10</b> Carbide	<div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; justify-content: space-between;"><span style="background-color: red; color: white; padding: 2px;">K10</span> — <span style="background-color: red; color: white; padding: 2px;">K20</span></div> <div style="display: flex; justify-content: space-between;"><span style="background-color: red; color: white; padding: 2px;">S10</span> — <span style="background-color: red; color: white; padding: 2px;">S20</span></div> <div style="display: flex; justify-content: space-between;"><span style="background-color: green; color: white; padding: 2px;">N10</span> — <span style="background-color: green; color: white; padding: 2px;">N20</span></div> </div>	<ul style="list-style-type: none"> <li>• General turning of cast iron, exotic alloy and non-ferrous materials including aluminum and copper alloy.</li> <li>• Excellent wear resistant grade.</li> </ul>





## Recommended Cutting Speeds: sfm

### Materials

Low Carbon Steel and Low Carbon Alloy Steel	Carbon Steel and Alloy Steel	Stainless Steel	High Temp. Alloy	Cast Iron	Aluminum Alloy
				490-1410	
1310-2620	980-1960			330-980	
820-1960	490-1640				
		490-820	100-330		
490-1640	230-1150	230-750	100-260		
330-1310	230-1050				
230-980	230-820	160-490	65-130		
980-2620	490-1970	650-980		330-1150	
820-2300	490-1800	650-890		330-980	
			65-165	260-590	190-4920

# TaeguTurn Chipbreakers



## Chipbreaker Identification

CNM Tq  
120408



### Machining Type

Finishing

Medium

Roughing

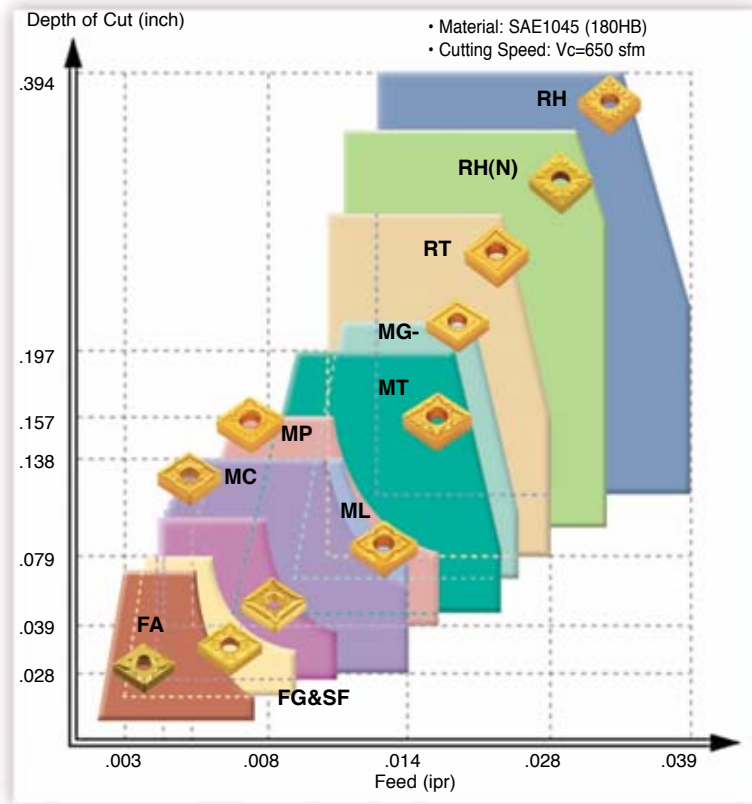
### Geometry and Application Information

<b>WS</b>	Wiper insert, super finishing	
<b>FA</b>	Finishing accurate	
<b>FG</b>	General finishing, tight chipbreaker	
<b>SF</b>	Finishing, stainless steel	
<b>MC</b>	Medium, negative rake angle	
<b>VF</b>	Vibration free	
<b>ML</b>	Medium light, high positive rake angle	
<b>MP</b>	Medium, positive rake angle	
<b>MT</b>	Medium roughing, tough rake angle	
<b>WT</b>	Wiper insert, medium roughing	
	No indication-general use chipbreaker	
<b>RT</b>	Roughing, tough rake angle	
<b>RH</b>	Roughing, high feed	

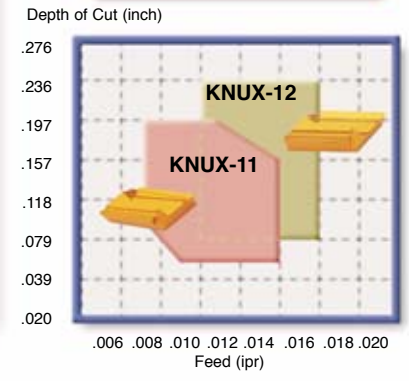


# USER GUIDE - CHIPBREAKERS

## Negative Inserts

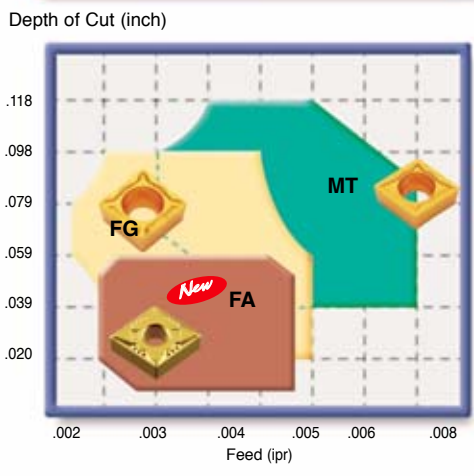


### KNUX Type

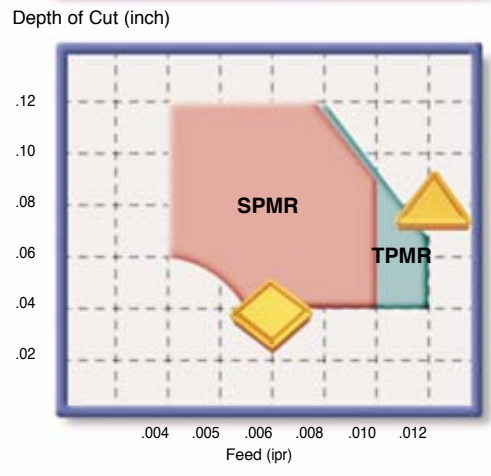


## Positive Inserts

### For Finish to Medium Applications



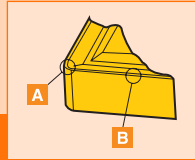
### For Medium Applications


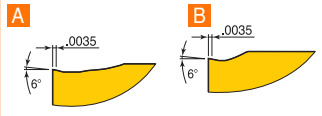

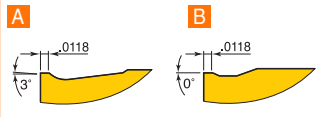


## ■ “WS and WT” Wiper Inserts for High Feed Turning


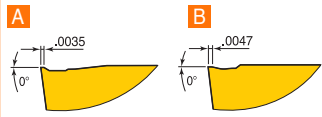
*A new solution for High Productivity  
and High Surface Quality*

### ■ Negative Inserts

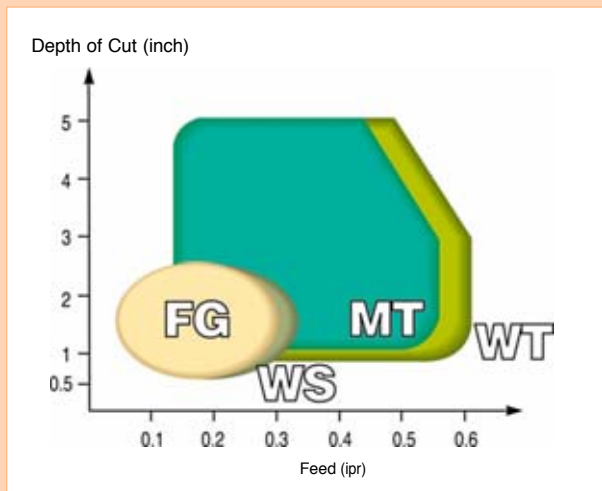


Chipbreaker Name and Geometry		Applications and Features
WS	 	<ul style="list-style-type: none"> <li>• For super finish applications</li> <li>• Steel, cast iron and stainless steel</li> <li>• Excellent chip control and low cutting forces</li> </ul>
WT	 	<ul style="list-style-type: none"> <li>• For medium to medium rough applications</li> <li>• Steel, cast iron and stainless steel</li> <li>• Stable cutting and low cutting forces with high feed rate</li> </ul>

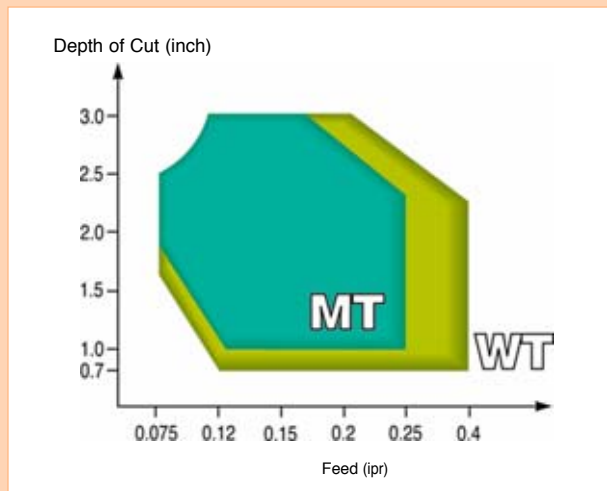
### ■ Positive Insert

Chipbreaker Name and Geometry		Applications and Features
WT	 	<ul style="list-style-type: none"> <li>• For medium to medium rough applications</li> <li>• Steel, cast iron and stainless steel</li> <li>• Stable cutting and low cutting forces in high feed rate</li> </ul>

### ■ Negative Inserts

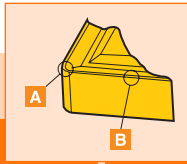



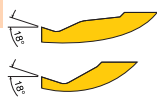

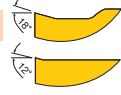

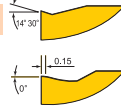

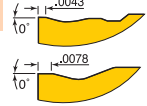

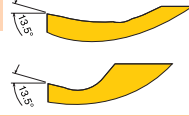

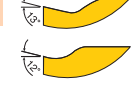

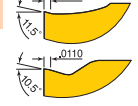

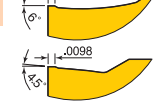

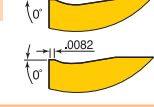

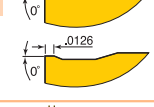

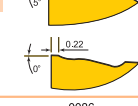

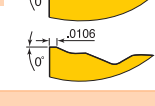
### ■ Positive Inserts



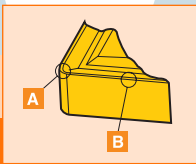
## USER GUIDE - CHIPBREAKERS

### Negative Inserts


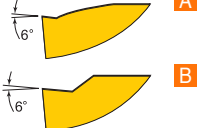



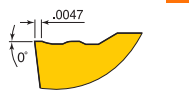



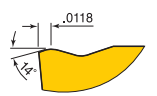
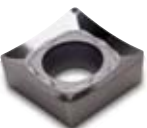



Chipbreaker Name and Geometry		Applications and Features	
FA	 <p>CNMG 43</p>  <p>A</p> <p>B</p>	<ul style="list-style-type: none"> <li>For super finish applications</li> <li>Steel, stainless steel and heat resistant alloys</li> <li>Excellent chip control</li> </ul>	
FG	 <p>WNMG 32</p>  <p>A</p> <p>B</p>	<ul style="list-style-type: none"> <li>For finish applications</li> <li>Steel, stainless steel and cast iron</li> <li>Low cutting forces</li> </ul>	
SF	 <p>CNMG 43</p>  <p>A</p> <p>B</p>	<ul style="list-style-type: none"> <li>For finish applications</li> <li>Stainless steel and heat resistant alloys</li> <li>Low cutting forces</li> </ul>	
MC	 <p>CNMG 43</p>  <p>A</p> <p>B</p>	<ul style="list-style-type: none"> <li>For medium applications</li> <li>Steel and cast iron</li> <li>Strong rake geometry</li> <li>Excellent chip control on medium turning applications</li> </ul>	
VF	 <p>DNMG 43</p>  <p>A</p> <p>B</p>	<ul style="list-style-type: none"> <li>For slender workpiece applications</li> <li>Vibration free</li> <li>Steel and stainless steel</li> <li>High positive rake geometry to minimize cutting force</li> </ul>	
ML	 <p>CNMG 43</p>  <p>A</p> <p>B</p>	<ul style="list-style-type: none"> <li>For medium light applications</li> <li>Stainless steel, steel and aluminum</li> <li>Very high positive rake geometry to minimize built-up edge and cutting forces</li> </ul>	
MP	 <p>CNMG 43</p>  <p>A</p> <p>B</p>	<ul style="list-style-type: none"> <li>For medium applications</li> <li>Steel and stainless steel</li> <li>High positive rake geometry to optimize machining in stable conditions</li> </ul>	
MT	 <p>WNMG 43</p>  <p>A</p> <p>B</p>	<ul style="list-style-type: none"> <li>For medium rough applications</li> <li>Steel, cast iron and stainless steel</li> <li>Tough rake angle for general use</li> </ul>	
MG-	 <p>CNMG 43</p>  <p>A</p> <p>B</p>	<ul style="list-style-type: none"> <li>For medium rough applications</li> <li>Steel and cast iron</li> <li>Strong rake geometry</li> <li>Suitable for manual lathe</li> </ul>	
RT	 <p>CNMM 64</p>  <p>A</p> <p>B</p>	<ul style="list-style-type: none"> <li>For rough applications</li> <li>Steel and cast iron</li> <li>Very strong rake geometry</li> </ul>	
RH(N)	 <p>CNMM 64</p>  <p>A</p> <p>B</p>	<ul style="list-style-type: none"> <li>For high feed roughing applications</li> <li>Steel, stainless steel and cast iron</li> <li>Very strong rake geometry</li> </ul>	
RH	 <p>CNMM 64</p>  <p>A</p> <p>B</p>	<ul style="list-style-type: none"> <li>For high feed roughing applications</li> <li>Steel, stainless steel and cast iron</li> <li>Very strong rake geometry</li> </ul>	


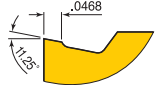

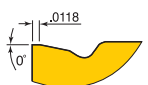






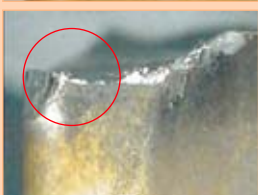
## Positive Inserts

Chipbreaker Name and Geometry			Applications and Features
FA		CCMT 32.5 	<ul style="list-style-type: none"> <li>For super finish applications</li> <li>Very tight chipbreaker</li> <li>Excellent chip control</li> </ul>
FG		CCMT 32.5 	<ul style="list-style-type: none"> <li>For finish to medium light applications</li> <li>Steel and stainless steel</li> <li>Low cutting forces</li> <li>Excellent chip control</li> </ul>
MT		CCMT 32.5 	<ul style="list-style-type: none"> <li>For medium to medium rough applications</li> <li>Steel, stainless steel and cast iron</li> <li>Negative rake geometry for general use</li> </ul>
PMR-		TPMR 22 	<ul style="list-style-type: none"> <li>For medium to medium rough applications</li> <li>Steel, stainless steel and cast iron</li> <li>Positive rake geometry</li> </ul>
CMX-		RCMX 43 	<ul style="list-style-type: none"> <li>For high feed roughing applications</li> <li>Steel, stainless steel and cast iron</li> <li>Strong rake geometry</li> </ul>
FL		CCGT 43 	<ul style="list-style-type: none"> <li>For finish to medium applications</li> <li>Aluminum</li> <li>Very high positive rake geometry to minimize built-up-edge</li> </ul>

## KNUX Type Inserts

Chipbreaker Name and Geometry			Applications and Features
11		KNUX 33 	<ul style="list-style-type: none"> <li>For medium light to medium applications</li> <li>Steel and stainless steel</li> <li>Positive rake geometry to minimize cutting forces</li> <li>Excellent chip control</li> </ul>
12		KNUX 33 	<ul style="list-style-type: none"> <li>For medium to medium rough applications</li> <li>Steel and stainless steel</li> <li>Strong rake geometry</li> <li>Wide chip control range</li> </ul>

## ■ USER GUIDE - INSERT FAILURE TROUBLE SHOOTING

		Cause
Crater Wear		<ul style="list-style-type: none"> <li>Excessive cutting speed or feed rate (alloy steel and over 0.3% carbon steel)</li> <li>Workpiece material contains high hardness chemical elements (tool steel, die steel)</li> </ul>
Flank Wear		<ul style="list-style-type: none"> <li>Excessive cutting speed (alloy steel and over 0.3% carbon steel)</li> <li>Workpiece material contains high hardness chemical elements (tool steel, die steel)</li> <li>Sometimes increase cutting speed if abnormal flank wear caused by very slow cutting speed.</li> </ul>
Deformation		<ul style="list-style-type: none"> <li>Excessive cutting speed or feed rate</li> </ul>
Chipping		<ul style="list-style-type: none"> <li>Excessive feed rate</li> <li>Interrupted cut</li> </ul>
Notching		<ul style="list-style-type: none"> <li>Machining scale part</li> <li>High work hardening materials</li> </ul>
Built-Up-Edge		<ul style="list-style-type: none"> <li>Slow cutting speed</li> <li>Sticky materials</li> </ul>
Mechanical Fracture		<ul style="list-style-type: none"> <li>Excessive feed rate in interrupted cut</li> </ul>
Thermal Cracking		<ul style="list-style-type: none"> <li>Thermal shock repeatedly (interrupted cut)</li> </ul>

## Solution

- Reduce cutting speed or feed rate or use more wear resistant grade
- Use coolant
- Use more positive rake geometry

- Reduce cutting speed or feed rate or use more wear resistant grade
- Use coolant

- Reduce cutting speed or feed rate or use more wear resistant grade
- Use coolant
- Use more positive rake geometry

- Reduce cutting speed or feed rate or use more wear resistant grade
- Use coolant

- Reduce cutting speed or feed rate or use more wear resistant grade
- Use coolant
- Use stronger insert geometry

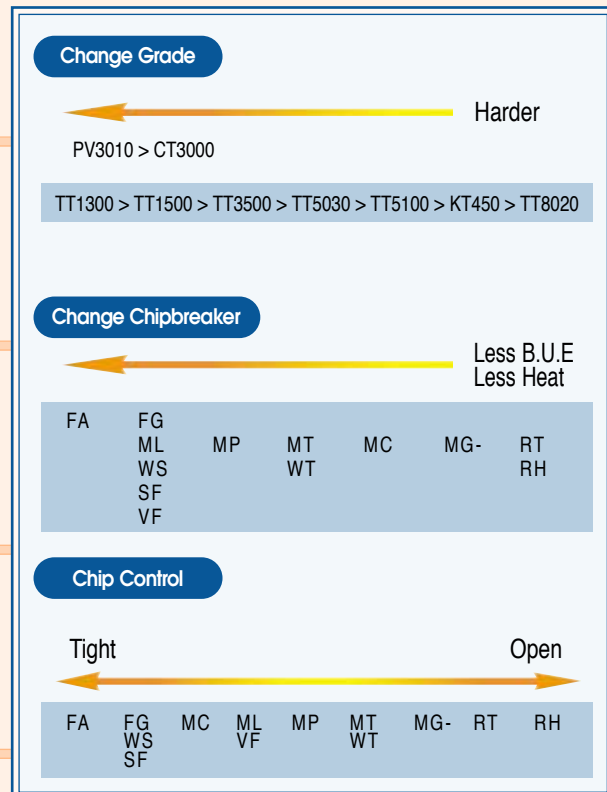
- Reduce feed rate
- Use tougher grade
- Use stronger insert geometry
- Remove coolant completely or apply coolant correctly

- Use tougher grade
- Use stronger insert geometry
- Increase lead angle
- Use tougher grade
- Use more positive rake geometry
- Increase lead angle

- Increase cutting speed
- Use more positive rake geometry
- Use more positive rake geometry
- Use tougher grade

- Use tougher grade
- Use stronger insert geometry
- Reduce feed rate
- Remove coolant completely or apply coolant correctly
- Increase cutting speed

- Use tougher grade
- Use stronger insert geometry
- Reduce feed rate
- Remove coolant completely or apply coolant correctly







# T·CAST

## The best solution for cast iron machining

Satisfaction guaranteed with TT's **T·CAST** turning grades for cast iron machining

### Ceramic

AW20, AB30, SC10, AS10

High Productivity

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### CVD Carbide Coated

NEW TT1300, TT1500

## ■ INSERT SELECTION BY CAST IRON MATERIALS

### ■ Grade selection by workpiece material

•Gray cast iron (180 - 220HBN) •Ductile cast iron (200 - 240HBN)

Workpiece condition	Grades										
	TB650	KB90A	KB90	AW20	AB30	SC10	AS10	PV3010	CT3000	TT1300	TT1500
Scale and severe interruption	•	•	•				••			•	••
Scale and light interruption	•	•	•		••	••	••			••	••
No scale, continuous cut	•	•	•	•	••	•	•	••	••	••	•

### ■ Recommended cutting parameters

Materials	Grades										
	TB650	KB90A	KB90	AW20	AB30	SC10	AS10	PV3010	CT3000	TT1300	TT1500
	Cutting speed (sfm), Feed rate (inch/rev)										
<b>Gray cast iron (180 - 220HBN)</b>		2620 - 3940 .004 - .020	2620 - 3940 .004 - .012	1310 - 3281 .003 - .008	980 - 2620 .004 - .010	980 - 3281 .008 - .024	980 - 2620 .008 - .024	330 - 1148 .004 - .010	330 - 980 .004 - .010	490 - 1475 .004 - .028	330 - 980 .004 - .028
<b>Ductile cast iron (200 - 240HBN)</b>	660 - 1640 .002 - .008				820 - 1640 .002 - .008	820 - 1970 .008 - .024	820 - 1640 .008 - .024	330 - 980 .004 - .010	330 - 820 .004 - .010	390 - 1150 .004 - .020	330 - 820 .004 - .020

### ■ Chipbreaker and grade selection by workpiece material

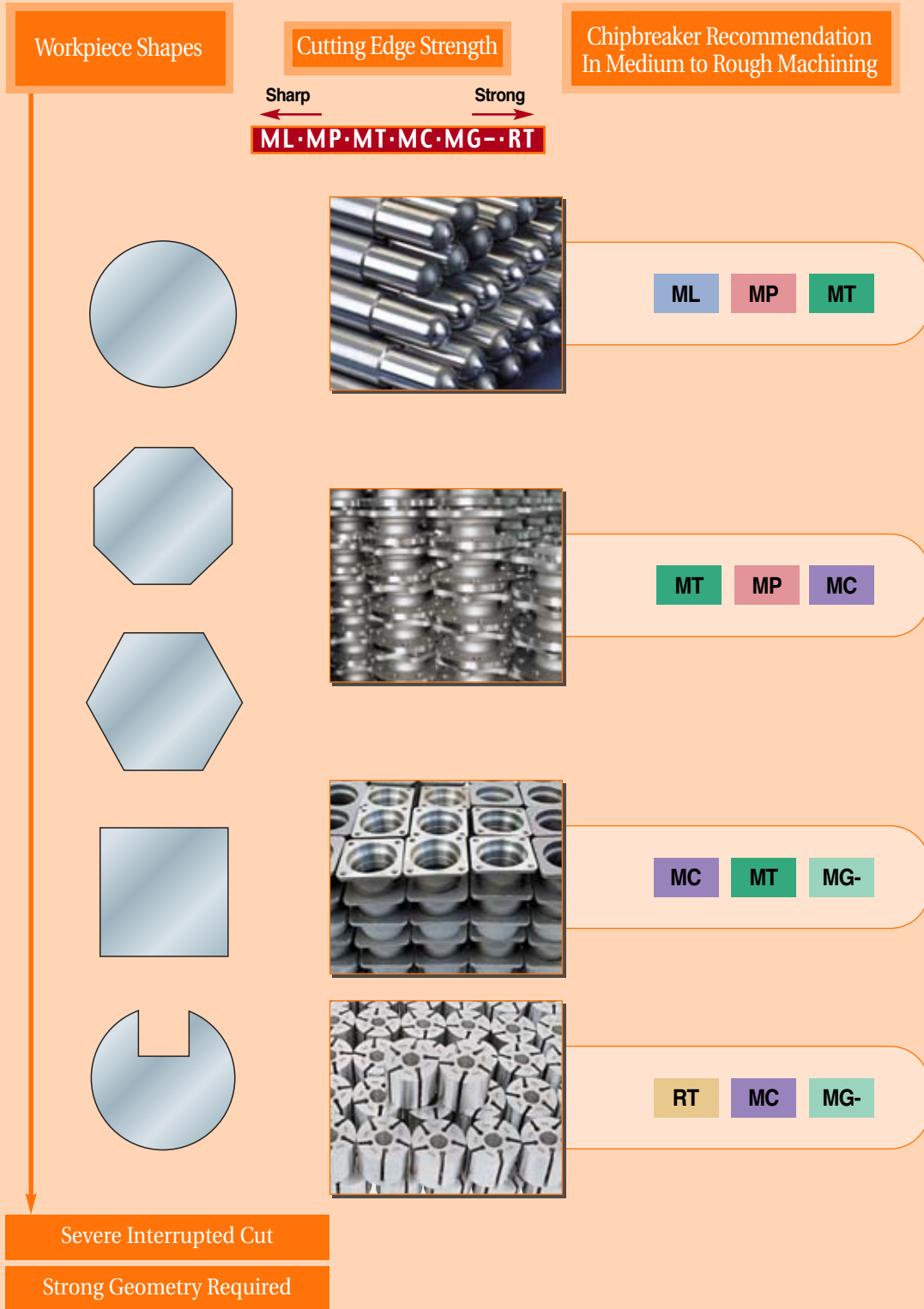
•Gray cast iron (180 - 220HBN)

Workpiece condition	Depth of cut	Chipbreaker/Grade				
		Recommended cutting conditions (V,f)				
Roughing (Scale & severe interruption)	.160 - 240	RT/TT1300 980, .016	RT/TT1500 787, .016			
	240 -	RT/TT1300 270, .016	RT/TT1500 722, .016			
Medium (Scale & light interruption)	.039 - .100	- NMN/KB90A 2493, .012	- NMN/KB90A 2493, .012	- NGA/AS10 1772, .014	MT/TT1300 1181, .014	RT/TT1300 1050, .016
	.100 - .157	- NMN/KB90A 2362, .014	- NGA/AS10 1772, .014	RT/TT1300 984, .016		
Finishing (No scale & continuous cut)	- .039	- NMN/KB90A 2625, .008	- NGA/AW20 2625, .008	NGA/AB30 2297, .008	NGA/AS10 1968, .010	MT/TT1300 1312, .010

•Ductile cast iron (200 - 240HBN)

Workpiece condition	Depth of cut	Chipbreaker/Grade				
		Recommended cutting conditions (V,f)				
Roughing (Scale & severe interruption)	.160 - .240	RT/TT1500 740, .016				
	.240 -	RT/TT1500 690, .016				
Medium (Scale & light interruption)	.039 - .100	- NMA/TB650 1640, .008	- NGA/AB30 1540, .008	MT/TT1300 1000, .012	RT/TT1300 880, .014	
	.100 - .157	- NGA/AS10 1440, .012	MT/TT1500 850, .014	RT/TT1500 770, .014		
Finishing (No scale & continuous cut)	- .039	- NMA/TB650 1800, .008	- NGA/AB30 1700, .008	MT/TT1300 1050, .008	MT/PV3010 1050, .008	MT/CT3000 950, .008

# USER GUIDE - INSERT GEOMETRY BY WORKPIECE SHAPE





# INSERT SELECTION BY WORKPIECE MATERIALS

## Recommended cutting parameters

**Insert style** **N** : Negative inserts **P** : Positive inserts  
**Application** **F** : Finishing **M** : Medium **R** : Roughing  
**Depth of cut (inches)**  
**Workpiece, stability and machine condition**  
 -Best: no scale, no interruption, good rigidity  
 -Normal: a little scale, a little interruption, good rigidity  
 -Poor: heavy scale, severe interruptions, poor rigidity  
**First and second choice Grade, Chipbreaker, Cutting speed in sfm & Feed rate in ipr**

		Workpiece Material														
		0.15% Carbon Steel (150 BHN)				0.45% Carbon Steel (180 - 200BHN)				0.55% Carbon Steel (200 - 220BHN)						
<b>N</b>	<b>F</b>	~.04	Best	1	PV3010	SF	1558	.005	PV3010	FG	1164	.006	PV3010	FG	1082	.006
				2	CT3000	SF	1410	.005	TT1500	FG	1115	.006	TT1500	FG	1033	.006
	<b>M</b>	.04~.10	Best	1	TT5100	ML	1082	.008	TT1500	MP	1082	.012	TT1500	MP	1000	.012
				2	TT3500	ML	1378	.008	TT3500	MP	984	.012	TT3500	MP	918	.012
			Normal	1	TT5100	MP	1033	.009	TT1500	MC	1017	.012	TT1500	MC	951	.012
				2	TT3500	MP	1312	.009	TT3500	MC	918	.012	TT3500	MC	853	.012
			Poor	1	TT8020	MT	771	.009	KT450	RT	558	.013	KT450	RT	525	.013
				2												
		.10~.16	Best	1	TT5100	MT	984	.011	TT1500	MT	1017	.014	TT1500	MT	951	.014
				2	TT3500	MT	1263	.011	TT3500	MT	918	.014	TT3500	MT	853	.014
			Normal	1	TT5100	MT	935	.011	TT3500	MT	918	.014	TT3500	MT	853	.014
				2	TT3500	MT	1214	.011	TT3500	MG-	869	.016	TT3500	MG-	804	.016
	Poor		1	TT8020	MT	705	.009	KT450	RT	558	.014	KT450	RT	525	.014	
			2													
	<b>R</b>	.16~.28	Normal	1	TT5100	RT	754	.018	TT3500	RT	853	.022	TT3500	RT	787	.022
				2	TT3500	RT	1050	.018	TT1500	RT	951	.022	TT1500	RT	886	.022
			Poor	1	TT8020	RT	590	.014	KT450	RT	525	.018	KT450	RT	476	.018
				2												
		.28~	Normal	1	TT5100	RH	689	.022	TT3500	RH	804	.028	TT3500	RH	738	.028
				2												
Poor			1	TT8020	RH	541	.018	KT450	RH	492	.022	KT450	RH	459	.022	
			2													
<b>P</b>	<b>F</b>	~.04	Best	1	PV3010	FG	1558	.005	PV3010	FG	1164	.006	PV3010	FG	1082	.006
				2	CT3000	FG	1378	.005	CT3000	FG	1033	.006	CT3000	FG	968	.006
	<b>M</b>	.04~.14	Best	1	TT5100	MT	935	.007	TT1500	MT	1017	.008	TT1500	MT	935	.008
				2	TT3500	MT	1214	.007	TT3500	MT	918	.008	TT3500	MT	836	.008
			Normal	1	TT5100	MT	902	.007	TT3500	MT	918	.008	TT3500	MT	836	.008
				2	TT3500	MT	1148	.007	TT5100	MT	705	.008	TT5100	MT	640	.008
			Poor	1	TT8020	MT	722	.007	KT450	MT	574	.008	KT450	MT	525	.008
				2												

# USER GUIDE - INSERT SELECTION BY WORKPIECE MATERIALS

## Recommended cutting parameters

**Insert style** **N** : Negative inserts      **P** : Positive inserts  
**Application** **F** : Finishing    **M** : Medium    **R** : Roughing  
**Depth of cut (inch)**  
**Workpiece, stability and machine condition**  
 -Best: no scale, no interruption, good rigidity  
 -Normal: a little scale, a little interruption, good rigidity  
 -Poor: heavy scale, severe interruptions, poor rigidity  
**First and second choice Grade, Chipbreaker, Cutting speed in sfm & Feed rate in ipr**

				Workpiece Material												
				Low Carbon (0.13 - 0.18%) Alloy Steel (150 - 180BHN)				Cr-Mo Alloy Steel (200 - 220BHN)				Ni-Cr-Mo Alloy Steel (200 - 220BHN)				
<b>N</b>	<b>F</b>	~.04	Best	1	PV3010	SF	1378	.005	PV3010	FG	1082	.006	PV3010	FG	1050	.006
				2	CT3000	SF	1246	.005	TT1500	FG	1033	.006	TT1500	FG	1000	.006
	<b>M</b>	.04~.10	Best	1	TT5100	ML	968	.008	TT1500	MP	1000	.012	TT1500	MP	968	.012
				2	TT3500	ML	1230	.008	TT3500	MP	918	.012	TT3500	MP	886	.012
			Normal	1	TT5100	MP	935	.009	TT1500	MC	951	.012	TT1500	MC	918	.012
				2	TT3500	MP	1197	.009	TT3500	MC	853	.012	TT3500	MC	820	.012
			Poor	1	TT8020	MT	672	.009	KT450	RT	525	.013	KT450	RT	508	.013
				2												
	<b>R</b>	.10~.16	Best	1	TT5100	MT	869	.011	TT1500	MT	951	.014	TT1500	MT	918	.014
				2	TT3500	MT	1115	.011	TT3500	MT	853	.014	TT3500	MT	820	.014
			Normal	1	TT5100	MT	836	.011	TT3500	MT	853	.014	TT3500	MT	820	.014
				2	TT3500	MT	1033	.011	TT3500	MG-	804	.016	TT3500	MG-	787	.016
Poor			1	TT8020	MT	623	.009	KT450	RT	525	.014	KT450	RT	508	.014	
			2													
<b>P</b>	<b>F</b>	~.04	Best	1	PV3010	FG	1378	.005	PV3010	FG	1082	.006	PV3010	FG	1050	.006
				2	CT3000	FG	1246	.005	CT3000	FG	968	.006	CT3000	FG	935	.006
	<b>M</b>	.04~.14	Best	1	TT5100	MT	869	.007	TT1500	MT	935	.008	TT1500	MT	902	.008
				2	TT3500	MT	1132	.007	TT3500	MT	836	.008	TT3500	MT	820	.008
			Normal	1	TT5100	MT	836	.007	TT3500	MT	836	.008	TT3500	MT	820	.008
				2	TT3500	MT	1082	.007	TT5100	MT	640	.008	TT5100	MT	623	.008
Poor	1	TT8020	MT	672	.007	KT450	MT	525	.008	KT450	MT	508	.008			
	2															

## Recommended cutting parameters

**Insert style** **N** : Negative inserts **P** : Positive inserts  
**Application** **F** : Finishing **M** : Medium **R** : Roughing  
**Depth of cut (inches)**  
**Workpiece, stability and machine condition**  
 -Best: no scale, no interruption, good rigidity  
 -Normal: a little scale, a little interruption, good rigidity  
 -Poor: heavy scale, severe interruptions, poor rigidity  
**First and second choice Grade, Chipbreaker, Cutting speed in sfm & Feed rate in ipr**

		Workpiece Material														
		Bearing Steel (200 - 220BHN)				Carbon Tool Steel (200 - 220BHN)				Alloy Tool Steel (200 - 220BHN)						
<b>N</b>	<b>F</b>	~.04	Best	1	PV3010	FG	1082	.006	PV3010	FG	1082	.006	PV3010	FG	1050	.006
				2	TT1500	FG	1033	.006	TT1500	FG	1033	.006	TT1500	FG	1000	.006
	<b>M</b>	.04~.10	Best	1	TT1500	MP	1000	.012	TT1500	MP	1000	.012	TT1500	MP	968	.012
				2	TT3500	MP	918	.012	TT3500	MP	918	.012	TT3500	MP	820	.012
			Normal	1	TT1500	MC	951	.012	TT1500	MC	951	.012	TT1500	MC	918	.012
				2	TT3500	MC	853	.012	TT3500	MC	853	.012	TT3500	MC	820	.012
			Poor	1	KT450	RT	525	.013	KT450	RT	525	.013	KT450	RT	508	.013
				2												
	<b>R</b>	.10~.16	Best	1	TT1500	MT	951	.014	TT1500	MT	951	.014	TT1500	MT	918	.014
				2	TT3500	MT	853	.014	TT3500	MT	853	.014	TT3500	MT	820	.014
			Normal	1	TT3500	MT	853	.014	TT3500	MT	853	.014	TT3500	MT	820	.014
				2	TT3500	MG-	804	.016	TT3500	MG-	804	.016	TT3500	MG-	787	.016
			Poor	1	KT450	RT	525	.014	KT450	RT	525	.014	KT450	RT	508	.014
				2												
	<b>P</b>	<b>F</b>	~.04	Best	1	PV3010	FG	1082	.006	PV3010	FG	1082	.006	PV3010	FG	1050
2					CT3000	FG	968	.006	CT3000	FG	968	.006	CT3000	FG	935	.006
<b>M</b>		.04~.14	Best	1	TT1500	MT	935	.008	TT1500	MT	935	.008	TT1500	MT	902	.008
				2	TT3500	MT	836	.008	TT3500	MT	836	.008	TT3500	MT	820	.008
			Normal	1	TT3500	MT	836	.008	TT3500	MT	836	.008	TT3500	MT	820	.008
				2	TT5100	MT	640	.008	TT5100	MT	640	.008	TT5100	MT	623	.008
	Poor		1	KT450	MT	525	.008	KT450	MT	525	.008	KT450	MT	508	.008	
			2													



# USER GUIDE - INSERT SELECTION BY WORKPIECE MATERIALS

## Recommended cutting parameters

**Insert style**    **N** : Negative inserts    **P** : Positive inserts  
**Application**    **F** : Finishing    **M** : Medium    **R** : Roughing  
**Depth of cut (inches)**  
**Workpiece, stability and machine condition**  
 -**Best**: no scale, no interruption, good rigidity  
 -**Normal**: a little scale, a little interruption, good rigidity  
 -**Poor**: heavy scale, severe interruptions, poor rigidity  
**First and second choice Grade, Chipbreaker, Cutting speed in sfm & Feed rate in ipr**

		Workpiece Material														
		High Speed Steel (220 - 260BHN)				Cold Working Die Steel (240 - 260BHN)				Hard Material (40 ≤ HRC)						
<b>N</b>	<b>F</b>	~.04	<b>Best</b>	1	PV3010	FG	754	.004	TT1500	FG	787	.006	TB650		492	.004
				2	CT3000	FG	689	.004	TT3500	FG	689	.006	AB20		394	.004
	<b>M</b>	.04~.10	<b>Best</b>	1	TT5030	ML	590	.006	TT1500	MP	754	.011	TB650		492	.006
				2	TT5100	ML	525	.006	TT3500	MP	689	.011	AB20		394	.006
			<b>Normal</b>	1	TT5030	MP	558	.008	TT1500	MC	705	.011	TB650		328	.006
				2	TT5100	MP	492	.008	TT3500	MC	640	.011	KB90		328	.006
			<b>Poor</b>	1	TT5100	MT	443	.010	KT450	RT	394	.011	AB30		262	.004
				2									KB90A		262	.004
	<b>M</b>	.10~.16	<b>Best</b>	1	TT5030	MP	558	.008	TT1500	MT	705	.013	AB20		328	.006
				2	TT5100	MP	476	.008	TT3500	MT	640	.013	KB90A		328	.006
			<b>Normal</b>	1	TT5030	MT	525	.010	TT3500	MT	574	.013	AB20		328	.006
				2	TT5100	MT	443	.010	TT3500	MG-	607	.015	KB90A		328	.006
			<b>Poor</b>	1	KT450	RT	426	.010	KT450	RT	394	.013	AB30		262	.004
				2									KB90A		262	.004
	<b>R</b>	.16~.28	<b>Normal</b>	1					TT3500	RT	590	.020				
				2					TT1500	RT	672	.020				
			<b>Poor</b>	1					KT450	RT	377	.016				
				2												
.28~		<b>Normal</b>	1					TT3500	RH	558	.026					
			2													
<b>Poor</b>	1					KT450	RH	344	.020							
	2															
<b>P</b>	<b>F</b>	~.04	<b>Best</b>	1	PV3010	FG	754	.004	PV3010	FG	820	.006	TB650		394	.004
				2	CT3000	FG	689	.004	CT3000	FG	738	.006	AB20		394	.004
	<b>M</b>	.04~.14	<b>Best</b>	1	TT5030	MT	541	.006	TT1500	MT	705	.007	TB650		394	.005
				2	TT5100	MT	476	.006	TT3500	MT	640	.007	AB20		394	.005
			<b>Normal</b>	1	TT5030	MT	525	.006	TT3500	MT	705	.007	AB20		328	.005
				2	TT5100	MT	459	.006	TT5100	MT	640	.007	TB650		328	.005
			<b>Poor</b>	1	KT450	MT	426	.006	KT450	MT	476	.007	AB30		262	.003
				2									KB90A		262	.003

## Recommended cutting parameters

Insert style **N** : Negative inserts **P** : Positive inserts  
 Application **F** : Finishing **M** : Medium **R** : Roughing  
 Depth of cut (inches)  
 Workpiece, stability and machine condition  
 -Best: no scale, no interruption, good rigidity  
 -Normal: a little scale, a little interruption, good rigidity  
 -Poor: heavy scale, severe interruptions, poor rigidity  
 First and second choice Grade, Chipbreaker, Cutting speed in sfm & Feed rate in ipr

						Workpiece Material									
						Martensitic/Ferritic Stainless Steel (180 - 200BHN)					Austenitic Stainless Steel (180 - 200BHN)				
<b>N</b>	<b>F</b>	~.04	Best	1	PV3010	SF	1082	.005	PV3010	SF	869	.005			
				2	TT5030	SF	853	.005	TT5030	SF	689	.005			
	<b>M</b>	.04~.10	Best	1	TT5100	ML	754	.008	TT5030	ML	656	.008			
				2											
			Normal	1	TT5100	MP	689	.009	TT5030	MP	607	.009			
				2	TT8020	MP	590	.009	TT8020	MP	476	.009			
			Poor	1	TT8020	MT	558	.009	TT8020	MT	443	.009			
				2											
	<b>R</b>	.10~.16	Best	1	TT5100	MP	656	.009	TT5100	MP	525	.009			
				2											
			Normal	1	TT5100	MT	623	.011	TT5100	MT	492	.011			
				2	TT8020	MT	541	.011	TT8020	MT	443	.011			
Poor			1	TT8020	MT	541	.009	TT8020	MT	410	.009				
			2												
<b>P</b>	.16~.28	Normal	1	TT5100	RT	558	.018	TT5100	RT	426	.018				
			2												
		Poor	1	TT8020	RT	492	.014	TT8020	RT	361	.014				
			2												
		<b>M</b>	.28~	Normal	1	TT5100	RH	525	.025	TT5100	RH	394	.025		
					2										
Poor	1			TT8020	RH	443	.022	TT8020	RH	328	.022				
	2														
<b>P</b>	<b>F</b>	~.04	Best	1	PV3010	FG	1082	.005	PV3010	FG	869	.005			
				2	TT5030	FG	886	.005	TT5030	FG	722	.005			
	<b>M</b>	.04~.14	Best	1	TT5100	MT	640	.007	TT5100	MT	525	.007			
				2											
			Normal	1	TT5100	MT	607	.007	TT5100	MT	492	.007			
				2	TT8020	MT	525	.007	TT8020	MT	426	.007			
			Poor	1	TT8020	MT	492	.007	TT8020	MT	394	.007			
				2											

# USER GUIDE - INSERT SELECTION BY WORKPIECE MATERIALS

## Recommended cutting parameters

- Insert style **N** : Negative inserts **P** : Positive inserts
- Application **F** : Finishing **M** : Medium **R** : Roughing
- Depth of cut (inches)
- Workpiece, stability and machine condition
  - Best: no scale, no interruption, good rigidity
  - Normal: a little scale, a little interruption, good rigidity
  - Poor: heavy scale, severe interruptions, poor rigidity
- First and second choice Grade, Chipbreaker, Cutting speed in sfm & Feed rate in ipr

		Workpiece Material											
		Ni Based Super Alloy Inconel 718 (300 - 350BHN)					Titanium Alloy Ti-6Al-4V						
<b>N</b>	<b>F</b>	~.04	Best	1	AS20		820	.006	TT5030	SF	328	.006	
				2	TT5030	SF	197	.006					
	<b>M</b>	.04~.10	Best	1	AS20		820	.006	TT5030	MP	295	.008	
				2	TT5030	MP	197	.008					
			Normal	1	TT5030	MP	164	.008	TT5030	MT	262	.008	
				2									
			Poor	1	TT8020	MT	115	.008	TT8020	MT	164	.008	
				2									
	<b>R</b>	.10~.16	Best	1	TT5030	MP	164	.008	TT5030	MP	262	.008	
				2									
			Normal	1	TT5030	MT	148	.008	TT5030	MT	230	.008	
				2									
			Poor	1	TT8020	MT	98	.008	TT8020	MT	148	.008	
				2									
	<b>P</b>	.16~.28	Normal	1	TT5030	MT	131	.008	TT5030	MT	197	.008	
				2									
			Poor	1	TT8020	MT	82	.008	TT8020	MT	131	.008	
				2									
<b>M</b>			.28~	Normal	1								
					2								
	Poor	1											
		2											
<b>F</b>	~.04	Best	1	TT5030	FG	197	.004	TT5030	FG	328	.004		
			2										
		Normal	1	TT5030	MT	164	.006	TT5030	MT	262	.006		
			2										
		Poor	1	TT5030	MT	148	.006	TT5030	MT	246	.006		
			2										
<b>M</b>	.04~.14	Best	1	TT5030	MT	164	.006	TT5030	MT	262	.006		
			2										
		Normal	1	TT5030	MT	148	.006	TT5030	MT	246	.006		
			2										
		Poor	1	TT8020	MT	98	.006	TT8020	MT	164	.006		
			2										



## Recommended cutting parameters to start machining

**Insert style** **N** : Negative inserts **P** : Positive inserts  
**Application** **F** : Finishing **M** : Medium **R** : Roughing  
**Depth of cut (inches)**  
**Workpiece, stability and machine condition**  
 -Best: no scale, no interruption, good rigidity  
 -Normal: a little scale, a little interruption, good rigidity  
 -Poor: heavy scale, severe interruptions, poor rigidity  
**First and second choice Grade, Chipbreaker, Cutting speed in sfm & Feed rate in ipr**

						Workpiece Material						
						Gray Cast Iron (180 - 220BHN)			Ductile Cast Iron (200 - 240BHN)			
<b>N</b>	<b>F</b>	~.04	Best	1	AS10		1968	.010	AS10		1443	.008
				2	TT1300	MT	1312	.010	TT1300	MT	1050	.008
	<b>M</b>	.04~.10	Best	1	AS10		1870	.014	AS10		1378	.012
				2	TT1300	MT	1246	.014	TT1300	MT	1000	.012
			Normal	1	AS10		1771	.014	AS10		1312	.012
				2	TT1300	MT	1181	.014	TT1300	MT	951	.012
			Poor	1	TT1300	RT	1050	.016	TT1500	RT	820	.014
				2	TT1500	RT	886	.016				
	<b>R</b>	.10~.16	Best	1	AS10		1771	.014	AS10		1312	.012
				2	TT1300	MT	1181	.014	TT1300	MT	902	.012
			Normal	1	AS10		1673	.014	AS10		1246	.012
				2	TT1300	RT	1050	.016	TT1500	MT	853	.014
Poor			1	TT1300	RT	984	.016	TT1500	RT	771	.014	
			2	TT1500	RT	836	.016					
<b>P</b>	~.04	Best	1	TT1300	MT	1312	.007	TT1300	MT	1050	.006	
			2	KB90		2296	.006					
	.04~.14	Best	1	TT1300	MT	1246	.010	TT1300	MT	1000	.008	
			2									
		Normal	1	TT1300	MT	1181	.010	TT1300	MT	951	.008	
			2	TT1500	MT	1000	.010	TT1500	MT	820	.008	
Poor		1	TT1500	MT	951	.010	TT1500	MT	771	.008		
		2										

# USER GUIDE - INSERT SELECTION BY WORKPIECE MATERIALS

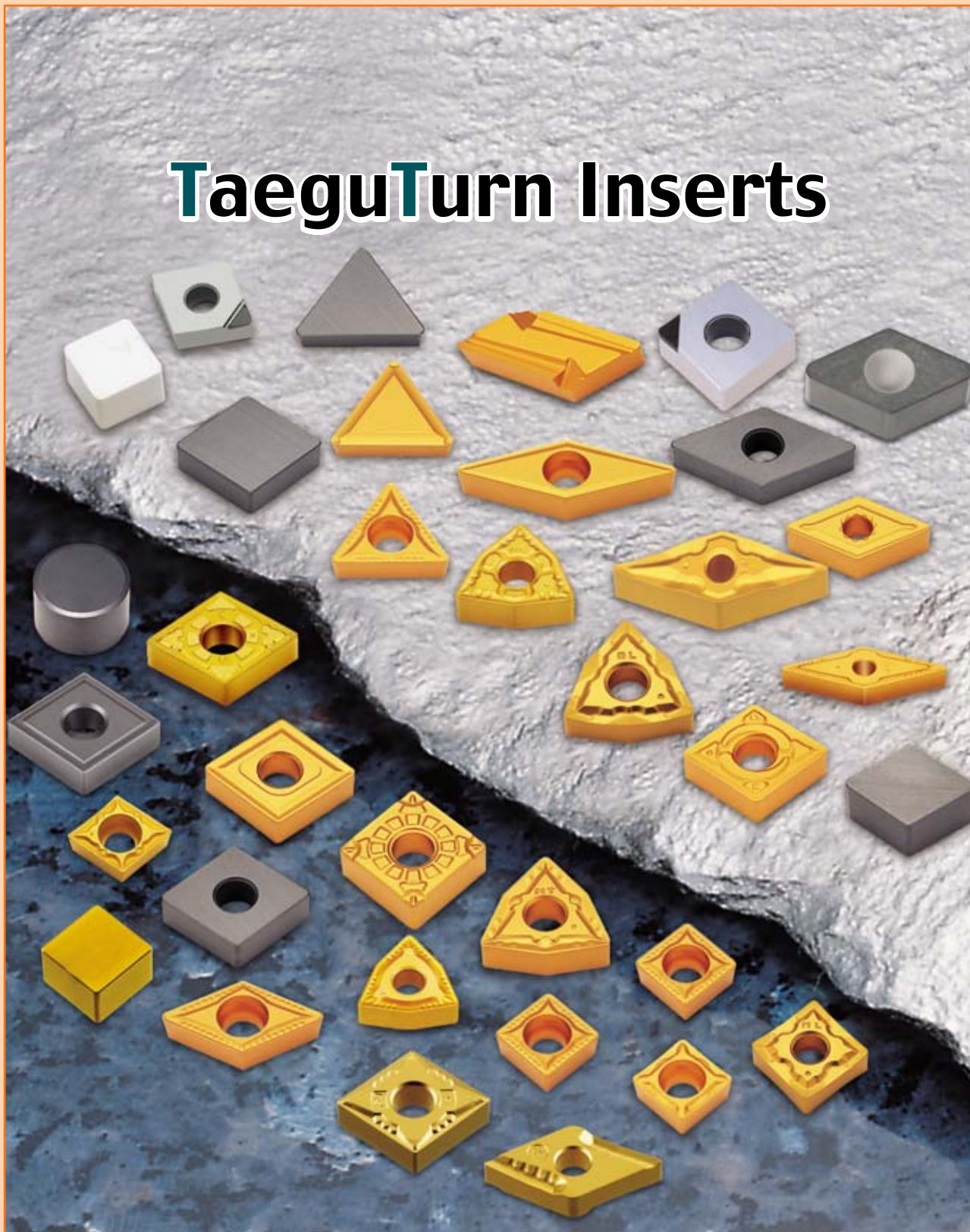
## Recommended cutting parameters

**Insert style** **N** : Negative inserts      **P** : Positive inserts  
**Application** **F** : Finishing    **M** : Medium    **R** : Roughing  
**Depth of cut (inches)**  
**Workpiece, stability and machine condition**  
 -**Best**: no scale, no interruption, good rigidity  
 -**Normal**: a little scale, a little interruption, good rigidity  
 -**Poor**: heavy scale, severe interruptions, poor rigidity  
**First and second choice Grade, Chipbreaker, Cutting speed in sfm & Feed rate in ipr**

		Workpiece Material														
		Low Si Aluminum Alloy (12.2% ≥ Si)				High Si Aluminum Alloy (12.2% < Si)				Copper Alloy						
<b>N</b>	<b>F</b>	~.04	<b>Best</b>	1	KP300	-	4264	.004	KP500	-	1968	.004	KP300	-	3608	.004
				2	K10	ML	1640	.006	K10	ML	492	.006	TT5100	ML	1312	.006
	<b>M</b>	.04~.10	<b>Best</b>	1	KP300	-	4264	.006	KP500	-	1968	.006	KP300	-	3608	.006
				2	K10	ML	1640	.014	K10	ML	492	.012	TT5100	ML	1312	.010
			<b>Normal</b>	1	KP300	-	4264	.006	KP500	-	1968	.006	KP300	-	3608	.006
				2	K10	ML	1640	.014	K10	ML	492	.012	TT5100	ML	1312	.010
			<b>Poor</b>	1	KP300	-	3280	.006	KP500	-	1968	.006	KP300	-	2952	.006
				2	K10	ML	1312	.014	K10	ML	394	.012	TT5100	MP	1050	.010
	<b>M</b>	.10~.16	<b>Best</b>	1	KP300	-	4264	.006	KP500	-	1968	.006	KP300	-	3608	.006
				2	K10	ML	1640	.014	K10	ML	492	.012	TT5100	MP	1312	.012
			<b>Normal</b>	1	KP300	-	4264	.006	KP500	-	1968	.006	KP300	-	3608	.006
				2	K10	ML	1640	.014	K10	ML	492	.012	TT5100	MP	1312	.012
<b>Poor</b>			1	KP300	-	3280	.006	KP500	-	1968	.006	KP300	-	2952	.006	
			2	K10	ML	1312	.014	K10	ML	394	.012	TT5100	MT	1050	.012	
<b>P</b>	<b>F</b>	~.04	<b>Best</b>	1	KP300	-	4264	.004	KP500	-	1968	.004	KP300	-	3608	.004
				2	K10	FL	1640	.006	K10	FL	492	.005	TT5100	FG	1312	.006
	<b>M</b>	.04~.14	<b>Best</b>	1	KP300	-	4264	.006	KP500	-	1968	.006	KP300	-	3608	.006
				2	K10	FL	1640	.010	K10	FL	492	.009	TT5100	FG	1312	.008
			<b>Normal</b>	1	KP300	-	4264	.006	KP500	-	1968	.006	KP300	-	3608	.006
				2	K10	FL	1640	.010	K10	FL	492	.009	TT5100	FG	1312	.008
			<b>Poor</b>	1	KP300	-	3280	.006	KP500	-	1640	.006	KP300	-	2952	.006
				2	K10	FL	1312	.010	K10	FL	394	.006	TT5100	MT	1050	.008



## TaeguTurn Inserts





# USER GUIDE - TURNING INSERT DESIGNATION SYSTEM

1 Shape			2 Clearance Angle		4 Type		
<b>C</b>	<b>D</b>	<b>E</b>	<b>N</b>	<b>B</b>	<b>A</b>	<b>G</b>	<b>M</b>
<b>K</b>	<b>R</b>	<b>S</b>	<b>C</b>	<b>P</b>	<b>R</b>	<b>B, W</b>	<b>T.H</b>
			<b>Special Z,X</b>				
<b>T</b>	<b>V</b>	<b>W</b>					



3 Tolerance			
<b>Class</b>	<b>m</b>	<b>t</b>	<b>d</b>
<b>A</b>	±.0002	±.001	±.001
<b>F</b>	±.0002	±.001	±.0005
<b>C</b>	±.0005	±.001	±.001
<b>H</b>	±.0005	±.001	±.0005
<b>E</b>	±.001	±.001	±.001
<b>G</b>	±.001	±.005	±.001
<b>M</b>	±.003 - ±.007	±.005	±.002 - ±.005
<b>U</b>	±.005 - ±.015	±.005	±.003 - ±.010

Diameter of IC	Tolerance			
	On m		On d	
	Class M	Class U	Class M	Class U
<b>.250</b>	±.003	±.005	±.002	±.003
<b>.375</b>	±.003	±.005	±.002	±.003
<b>.500</b>	±.005	±.008	±.003	±.005
<b>.625</b>	±.006	±.011	±.004	±.007
<b>.750</b>	±.006	±.011	±.004	±.007
<b>1.000</b>	±.007	±.015	±.005	±.010
<b>1.250</b>	±.007	±.015	±.005	±.010

**6 Thickness**

1 = .063  
 T1 = .078  
 2 = .094  
 T2 = .109  
 3 = .125  
 T3 = .156  
 4 = .187  
 5 = .219  
 6 = .250  
 7 = .313  
 9 = .375

**7 Corner Radius**

0 = .004  
 0.5 = .008  
 1 = .016  
 2 = .031  
 3 = .047  
 4 = .063  
 6 = .094  
 8 = .126

**8 Hand of Insert**

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

**9 Chipbreaker Designation**

<b>WS</b>	Wiper, Super Finishing
<b>FA</b>	Finishing Accurate
<b>FG</b>	General Finishing
<b>SF</b>	Finishing, Stainless Steel
<b>MP</b>	Medium Popular
<b>MT</b>	Medium Roughing
<b>WT</b>	Wiper, Medium Roughing
<b>RT</b>	Roughing, Tough Rake Angle
<b>RH</b>	Roughing High Feed

See pages T21-T25 for all Chipbreakers

**4**  
5
 

**3**  
6
 

**2**  
7
 

**( R )**  
8
 

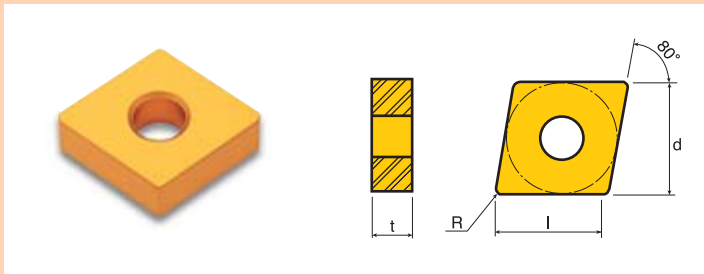
**MP**  
9

**5 Cutting Edge I.C. / Length**

I.C.(inch)	C	D	E	R	S	T	V	W	K
.156	.118	.157			.118	.236		.079	
.187	.157	.197			.157	.315	.315		
.219	.197	.236			.197	.354	.354	.118	
.250	.236	.276			.236	.433	.433	.157	
.313	.315	.354			.276	.512	.512	.197	
.315				.315					
.375	.354	.433		.375	.375	.630	.630	.236	.630
.394				.394					
.472				.472					
.500	.472	.591	.512		.472	.866	.866	.315	
.625	.630	.748		.625	.591	1.063	1.063	.394	
.630				.630					
.750	.748	.906		.750	.750	1.299	1.299	.512	
.787				.787					
.984				.948					
1.000	.984	1.220		1.000	.984	1.732			
1.260				1.260					

## NEGATIVE INSERTS - CNMA NEGATIVE

### NEGATIVE 80° RHOMBIC INSERTS FOR ROUGHING



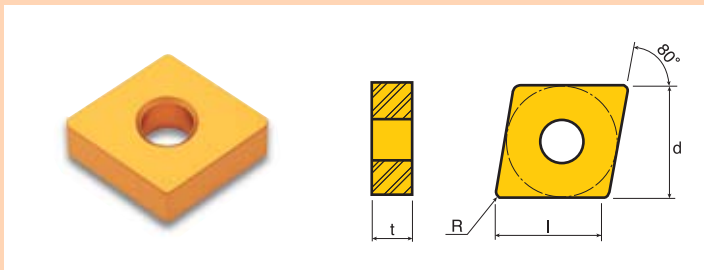
Designation	l	d	t	R
CNMA 431	.488	.500	.187	.016
CNMA 432	.472	.500	.187	.031
CNMA 433	.457	.500	.187	.047
CNMA 434	.441	.500	.187	.063
CNMA 543	.583	.625	.250	.047
CNMA 641	.744	.750	.250	.016
CNMA 642	.728	.750	.250	.031
CNMA 643	.713	.750	.250	.047
CNMA 644	.697	.750	.250	.063

Designation		Recommended Machining Conditions														
		Grades & Vc (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
CNMA 431	CNMA 120404	.012 (.006~.018)	.118 (.039~.197)													
CNMA 432	CNMA 120408	.018 (.006~.028)	.118 (.039~.236)													
CNMA 433	CNMA 120412	.022 (.006~.028)	.118 (.059~.236)													
CNMA 434	CNMA 120416	.024 (.008~.032)	.118 (.059~.236)													
CNMA 543	CNMA 160612	.022 (.006~.028)	.157 (.059~.315)													
CNMA 641	CNMA 190604	.022 (.006~.028)	.236 (.059~.394)													
CNMA 642	CNMA 190608	.022 (.006~.028)	.236 (.059~.394)													
CNMA 643	CNMA 190612	.022 (.006~.028)	.236 (.059~.394)													
CNMA 644	CNMA 190616	.022 (.006~.028)	.236 (.059~.394)													

For toolholders, see page T145, T146, T164, T167, T177

Marked: Stocked Standard Items

### NEGATIVE 80° RHOMBIC WIPER INSERT FOR ROUGHING



Designation	l	d	t	R
CNMA 432	.472	.500	.187	.031

Designation		Recommended Machining Conditions														
		Grades & Vc (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
CNMA 432 WT	CNMA 120408 WT	.020 (.006~.031)	.118 (.028~.197)													

For toolholders, see page T145, T146, T164, T167, T177

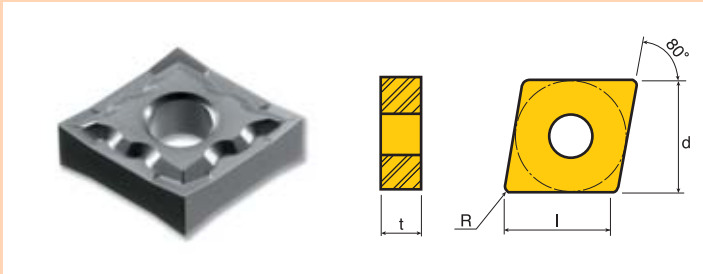
Marked: Stocked Standard Items

- Carbon Steel C: 0.45%
- Austenitic Stainless Steel
- High Tensile Cast Iron
- Aluminum
- Inconel
- Hardened Steel



## NEGATIVE INSERTS - CNGG ML

### CHIPBREAKER/NEGATIVE 80° RHOMBIC GROUND INSERTS FOR MEDIUM LIGHT MACHINING/VERY SHARP



Designation	l	d	t	R
CNGG 430	.504	.500	.187	.004
CNGG 430.5	.500	.500	.187	.008
CNGG 431	.488	.500	.187	.016
CNGG 432	.472	.500	.187	.031

Designation		Recommended Machining Conditions																					
		Grades & Vc (sfm)																					
ANSI	ISO	feed (ipr)	ap (inch)	P	M	K	N	S	H	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20	
CNGG 430 ML	CNGG 120401 ML	.002 (.001-.004)	.008 (.004-.039)																				
CNGG 430.5 ML	CNGG 120402 ML	.003 (.002-.006)	.012 (.008-.047)												197								
CNGG 431 ML	CNGG 120404 ML	.007 (.004-.012)	.059 (.031-.138)												850								
CNGG 432 ML	CNGG 120408 ML	.010 (.005-.014)	.079 (.039-.138)																				

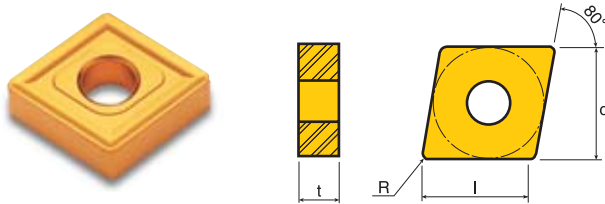
For toolholders, see pages T167, T177

Marked: Stocked Standard Items

- Carbon Steel C: 0.45%
- Austenitic Stainless Steel
- High Tensile Cast Iron
- Aluminum
- Inconel
- Hardened Steel

## NEGATIVE INSERTS - CNMG

### COMMON TYPE CHIPBREAKER/NEGATIVE 80° RHOMBIC INSERTS FOR MEDIUM ROUGHING



Designation	l	d	t	R
CNMG 322	.346	.375	.125	.031
CNMG 431	.488	.500	.187	.016
CNMG 432	.472	.500	.187	.031
CNMG 433	.457	.500	.187	.047
CNMG 532	.602	.625	.187	.031
CNMG 541	.618	.625	.250	.016
CNMG 542	.602	.625	.250	.031
CNMG 543	.583	.625	.250	.047
CNMG 641	.744	.750	.250	.016
CNMG 642	.728	.750	.250	.031
CNMG 643	.713	.750	.250	.047
CNMG 644	.697	.750	.250	.063

Designation		Recommended Machining Conditions											<span style="color:blue">■</span> P <span style="color:yellow">■</span> M <span style="color:red">■</span> K <span style="color:green">■</span> N <span style="color:purple">■</span> S <span style="color:grey">■</span> H					
		feed (ipr)	ap (inch)	Grades & V <sub>c</sub> (sfm)														
ANSI	ISO			PV3010	CT3000		TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020		P10	P20	K10	K20
CNMG 322	CNMG 090308	.016 (.008~.020)	.079 (.039~.138)				•	•	•		•	•	•					
CNMG 431	CNMG 120404	.011 (.007~.018)	.118 (.039~.197)		•		•	•	•		•	•	•			•	•	•
CNMG 432	CNMG 120408	.016 (.009~.024)	.118 (.059~.197)		•		•	•	•		•	•	•			•	•	•
CNMG 433	CNMG 120412	.020 (.010~.024)	.118 (.079~.197)				•	•	•		•	•	•					•
CNMG 532	CNMG 160408	.016 (.010~.024)	.157 (.079~.256)															
CNMG 541	CNMG 160604	.011 (.008~.018)	.157 (.079~.256)		950			950										
CNMG 542	CNMG 160608	.016 (.010~.024)	.157 (.079~.256)		820		1080	820	870		670	640	490		620	490	390	
CNMG 543	CNMG 160612	.014 (.011~.024)	.157 (.079~.256)															
CNMG 641	CNMG 190604	.011 (.008~.018)	.197 (.118~.315)				•	•	•		•	•	•					
CNMG 642	CNMG 190608	.016 (.010~.024)	.197 (.118~.315)				•	•	•		•	•	•					
CNMG 643	CNMG 190612	.020 (.012~.024)	.197 (.118~.315)				•	•	•		•	•	•					
CNMG 644	CNMG 190616	.022 (.014~.028)	.197 (.118~.315)				•	•	•		•	•	•					

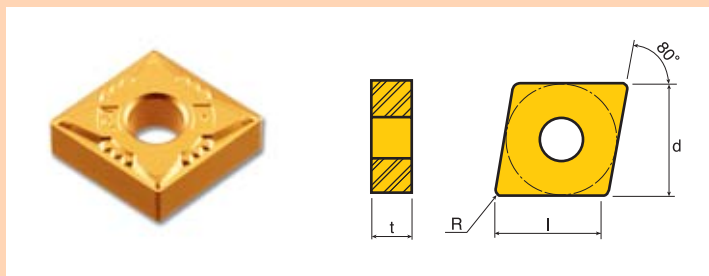
For toolholders, see page T131, T145, T146, T164, T167, T177

Marked: Stocked Standard Items

<span style="color:blue">■</span> Carbon Steel C: 0.45%	<span style="color:yellow">■</span> Austenitic Stainless Steel	<span style="color:red">■</span> High Tensile Cast Iron
<span style="color:green">■</span> Aluminum	<span style="color:purple">■</span> Inconel	<span style="color:grey">■</span> Hardened Steel

## NEGATIVE INSERTS - CNMG FA

### CHIPBREAKER/NEGATIVE 80° RHOMBIC INSERTS FOR SUPER FINISHING



Designation	l	d	t	R
CNMG 431	.488	.500	.187	.016
CNMG 432	.472	.500	.187	.031

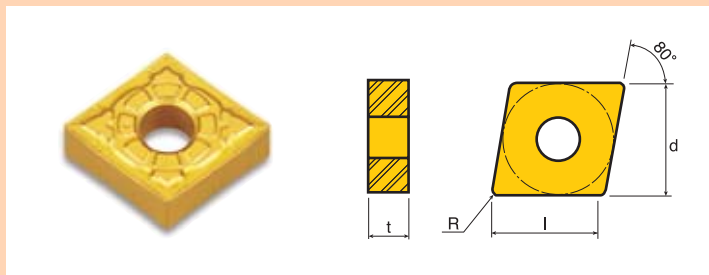
Designation		Recommended Machining Conditions														
		Grades & V <sub>c</sub> (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
CNMG 431 FA	CNMG 120404 FA	.004 (.002~.008)	.016 (.008~.079)	1180	1115		1115	1020		790						
CNMG 432 FA	CNMG 120408 FA	.005 (.002~.010)	.020 (.012~.079)	980	885		885			540						

For toolholders, see page T131, T145, T146, T164, T177

Marked: Stocked Standard Items

## NEGATIVE INSERTS - CNMG FG

### CHIPBREAKER/NEGATIVE 80° RHOMBIC INSERTS FOR FINISHING



Designation	l	d	t	R
CNMG 321	.362	.375	.125	.016
CNMG 322	.346	.375	.125	.031
CNMG 431	.488	.500	.187	.016
CNMG 432	.472	.500	.187	.031

Designation		Recommended Machining Conditions														
		Grades & V <sub>c</sub> (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
CNMG 321 FG	CNMG 090304 FG	.004 (.003~.008)	.031 (.020~.079)													
CNMG 322 FG	CNMG 090308 FG	.006 (.004~.010)	.039 (.028~.079)	1180	1115		1115	1020		790						
CNMG 431 FG	CNMG 120404 FG	.004 (.003~.008)	.031 (.020~.079)	980	885		885			540						
CNMG 432 FG	CNMG 120408 FG	.006 (.004~.010)	.039 (.028~.079)													

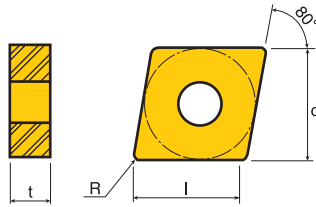
For toolholders, see page T131, T145, T146, T164, T177

Marked: Stocked Standard Items

Carbon Steel C: 0.45%	Austenitic Stainless Steel	High Tensile Cast Iron
Aluminum	Inconel	Hardened Steel

## ■ NEGATIVE INSERTS - CNMG MC

### ■ CHIPBREAKER/NEGATIVE 80° RHOMBIC INSERTS FOR MEDIUM MACHINING



Designation	l	d	t	R
CNMG 431	.488	.500	.187	.016
CNMG 432	.472	.500	.187	.031
CNMG 433	.457	.500	.187	.047

Designation		Recommended Machining Conditions											<span style="color:blue">■</span> P <span style="color:yellow">■</span> M <span style="color:red">■</span> K <span style="color:green">■</span> N <span style="color:purple">■</span> S <span style="color:gray">■</span> H					
		feed (ipr)	ap (inch)	Grades & V <sub>c</sub> (sfm)											P10	P20	K10	K20
ANSI	ISO			PV3010	CT3000		TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020					
CNMG 431 MC	CNMG 120404 MC	.008 (.004~.012)	.059 (.028~.138)															
CNMG 432 MC	CNMG 120408 MC	.012 (.005~.014)	.059 (.028~.138)		1020 870			1020 870	920		705		490					
CNMG 433 MC	CNMG 120412 MC	.014 (.006~.016)	.059 (.028~.138)															

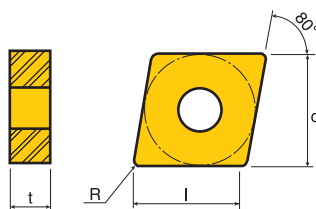
• For toolholders, see page T131, T145, T146, T164, T177

• Marked: Stocked Standard Items

<span style="color:blue">■</span> Carbon Steel C: 0.45%	<span style="color:yellow">■</span> Austenitic Stainless Steel	<span style="color:red">■</span> High Tensile Cast Iron
<span style="color:green">■</span> Aluminum	<span style="color:purple">■</span> Inconel	<span style="color:gray">■</span> Hardened Steel

## ■ NEGATIVE INSERTS - CNMG ML

### ■ CHIPBREAKER/NEGATIVE 80° RHOMBIC WIPER INSERTS FOR MEDIUM LIGHT MACHINING



Designation	l	d	t	R
CNMG 431	.488	.500	.187	.016
CNMG 432	.472	.500	.187	.031
CNMG 433	.457	.500	.187	.047

Designation		Recommended Machining Conditions											<span style="color:blue">■</span> P <span style="color:yellow">■</span> M <span style="color:red">■</span> K <span style="color:green">■</span> N <span style="color:purple">■</span> S <span style="color:gray">■</span> H				
		feed (ipr)	ap (inch)	Grades & V <sub>c</sub> (sfm)											P10	P20	K10
ANSI	ISO			PV3010	CT3000		TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020				
CNMG 431 ML	CNMG 120404 ML	.007 (.004~.012)	.059 (.031~.138)														
CNMG 432 ML	CNMG 120408 ML	.010 (.005~.014)	.079 (.039~.138)		1115			1115	1017	196	787	700	623				1968
CNMG 433 ML	CNMG 120412 ML	.012 (.006~.014)	.079 (.051~.138)							850	540		426				

• For toolholders, see page T131, T145, T146, T164, T177

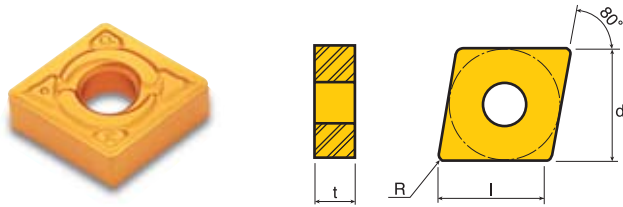
• Marked: Stocked Standard Items

<span style="color:blue">■</span> Carbon Steel C: 0.45%	<span style="color:yellow">■</span> Austenitic Stainless Steel	<span style="color:red">■</span> High Tensile Cast Iron
<span style="color:green">■</span> Aluminum	<span style="color:purple">■</span> Inconel	<span style="color:gray">■</span> Hardened Steel



## NEGATIVE INSERTS - CNMG MP

### CHIPBREAKER/NEGATIVE 80° RHOMBIC INSERTS FOR MEDIUM MACHINING/POSITIVE RAKE ANGLE



Designation	l	d	t	R
CNMG 321	.362	.375	.125	.016
CNMG 322	.346	.375	.125	.031
CNMG 431	.488	.500	.187	.016
CNMG 432	.472	.500	.187	.031
CNMG 433	.457	.500	.187	.047
CNMG 543	.583	.625	.250	.047

Designation		Recommended Machining Conditions																	
		feed (ipr)	ap (inch)	Grades & Vc (sfm)											P10	P20	K10	K20	
ANSI	ISO			PV3010	CT3000		TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020						
CNMG 321 MP	CNMG 090304 MP	.008 (.004~.012)	.059 (.031~.118)																
CNMG 322 MP	CNMG 090308 MP	.012 (.005~.014)	.059 (.039~.118)																
CNMG 431 MP	CNMG 120404 MP	.008 (.004~.012)	.079 (.031~.157)																
CNMG 432 MP	CNMG 120408 MP	.012 (.005~.016)	.079 (.039~.157)																
CNMG 433 MP	CNMG 120412 MP	.014 (.006~.020)	.079 (.059~.157)																
CNMG 543 MP	CNMG 160612 MP	.014 (.006~.020)	.118 (.098~.236)																

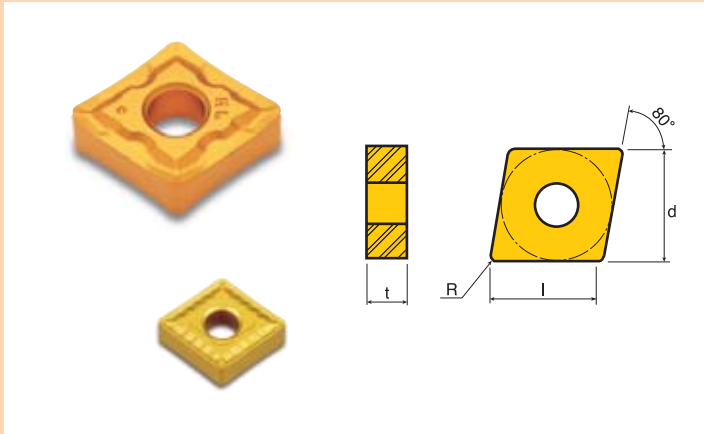
- For toolholders, see page T131, T145, T146, T164, T177

• Marked: Stocked Standard Items

<span style="background-color: blue; color: white; padding: 2px;"> </span> Carbon Steel C: 0.45%	<span style="background-color: yellow; padding: 2px;"> </span> Austenitic Stainless Steel	<span style="background-color: red; padding: 2px;"> </span> High Tensile Cast Iron
<span style="background-color: green; padding: 2px;"> </span> Aluminum	<span style="background-color: maroon; padding: 2px;"> </span> Inconel	<span style="background-color: gray; padding: 2px;"> </span> Hardened Steel

## NEGATIVE INSERTS - CNMG MT

### CHIPBREAKER/NEGATIVE 80° RHOMBIC INSERTS FOR MEDIUM ROUGHING/TOUGH RAKE ANGLE



Designation	l	d	t	R
CNMG 321	.362	.375	.125	.016
CNMG 322	.346	.375	.125	.031
CNMG 431	.488	.500	.187	.016
CNMG 432	.472	.500	.187	.031
CNMG 433	.457	.500	.187	.047
CNMG 542	.602	.625	.250	.031
CNMG 543	.583	.625	.250	.047
CNMG 544	.567	.625	.250	.063
CNMG 642	.728	.750	.250	.031
CNMG 643	.713	.750	.250	.047
CNMG 644	.697	.750	.250	.063

Designation		Recommended Machining Conditions												Grades & Vc (sfm)									
		feed (ipr)	ap (inch)	Grades & Vc (sfm)																			
ANSI	ISO			P	M	K	N	S	H	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20	
CNMG 321 MT	CNMG 090304 MT	.010 (.005~.016)	.079 (.031~.138)																				
CNMG 322 MT	CNMG 090308 MT	.014 (.007~.018)	.079 (.039~.138)																				
CNMG 431 MT	CNMG 120404 MT	.010 (.006~.016)	.118 (.039~.197)																				
CNMG 432 MT	CNMG 120408 MT	.014 (.007~.022)	.118 (.047~.197)																				
CNMG 433 MT	CNMG 120412 MT	.017 (.008~.022)	.118 (.059~.197)	1082	1017																		
CNMG 542 MT	CNMG 160608 MT	.014 (.008~.022)	.157 (.079~.256)			1263	1017	820	200	700	640	490											
CNMG 543 MT	CNMG 160612 MT	.017 (.009~.022)	.157 (.079~.256)	935	870			870	771	490		360											
CNMG 544 MT	CNMG 160616 MT	.018 (.012~.022)	.157 (.079~.256)																				
CNMG 642 MT	CNMG 190608 MT	.014 (.009~.022)	.197 (.118~.315)																				
CNMG 643 MT	CNMG 190612 MT	.017 (.010~.022)	.236 (.118~.315)																				
CNMG 644 MT	CNMG 190616 MT	.018 (.012~.022)	.236 (.118~.315)																				

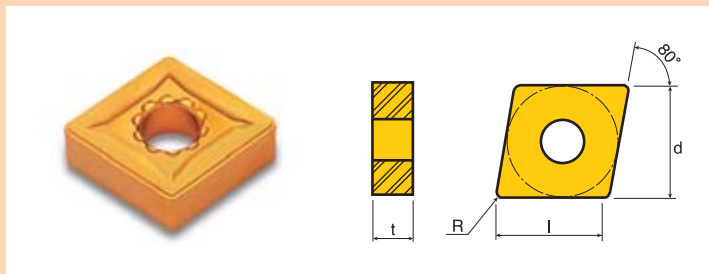
For toolholders, see page T131, T145, T146, T164, T177

Marked: Stocked Standard Items

<span style="color: blue;">■</span> Carbon Steel C: 0.45%	<span style="color: yellow;">■</span> Austenitic Stainless Steel	<span style="color: red;">■</span> High Tensile Cast Iron
<span style="color: green;">■</span> Aluminum	<span style="color: maroon;">■</span> Inconel	<span style="color: grey;">■</span> Hardened Steel

## NEGATIVE INSERTS - CNMG RT

### CHIPBREAKER/NEGATIVE 80° RHOMBIC INSERTS FOR ROUGHING/ WIDE, TOUGH RAKE ANGLE



Designation	l	d	t	R
CNMG 432	.472	.500	.187	.031
CNMG 433	.457	.500	.187	.047
CNMG 543	.583	.625	.250	.047
CNMG 544	.567	.625	.250	.063
CNMG 642	.728	.750	.250	.031
CNMG 643	.713	.750	.250	.047
CNMG 644	.697	.750	.250	.063
CNMG 866	.917	1.000	.375	.094

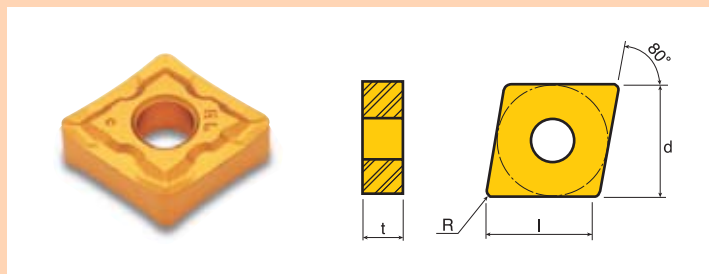
Designation		Recommended Machining Conditions																
		<span style="color:blue">■</span> P <span style="color:yellow">■</span> M <span style="color:red">■</span> K <span style="color:green">■</span> N <span style="color:purple">■</span> S <span style="color:grey">■</span> H																
ANSI	ISO	feed (ipr)	ap (inch)	Grades & V <sub>c</sub> (sfm)														
				PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20		
CNMG 432 RT	CNMG 120408 RT	.018 (.010~.028)	.157 (.098~.236)															
CNMG 433 RT	CNMG 120412 RT	.022 (.010~.028)	.157 (.098~.236)															
CNMG 543 RT	CNMG 160612 RT	.022 (.010~.028)	.157 (.118~.276)															
CNMG 544 RT	CNMG 160616 RT	.025 (.012~.033)	.157 (.118~.276)															
CNMG 642 RT	CNMG 190608 RT	.018 (.010~.028)	.236 (.118~.354)															
CNMG 643 RT	CNMG 190612 RT	.022 (.010~.028)	.236 (.118~.354)															
CNMG 644 RT	CNMG 190616 RT	.025 (.012~.033)	.236 (.118~.354)															
CNMG 866 RT	CNMG 250924 RT	.033 (.018~.039)	.315 (.197~.472)															

For toolholders, see page T131, T145, T146, T164, T177

Marked: Stocked Standard Items

## NEGATIVE INSERTS - CNMG SF

### CHIPBREAKER/NEGATIVE 80° RHOMBIC INSERTS FOR FINISHING



Designation	l	d	t	R
CNMG 431	.488	.500	.187	.016
CNMG 432	.472	.500	.187	.031

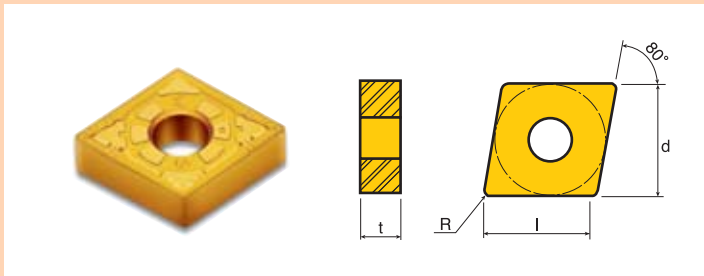
Designation		Recommended Machining Conditions																
		<span style="color:blue">■</span> P <span style="color:yellow">■</span> M <span style="color:red">■</span> K <span style="color:green">■</span> N <span style="color:purple">■</span> S <span style="color:grey">■</span> H																
ANSI	ISO	feed (ipr)	ap (inch)	Grades & V <sub>c</sub> (sfm)														
				PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20		
CNMG 431 SF	CNMG 120404 SF	.005 (.003~.010)	.030 (.020~.059)															
CNMG 432 SF	CNMG 120408 SF	.008 (.004~.012)	.039 (.028~.059)															

For toolholders, see page T131, T145, T146, T164, T177

Marked: Stocked Standard Items

## NEGATIVE INSERTS - CNMG WS

### CHIPBREAKER/NEGATIVE 80° RHOMBIC WIPER INSERT FOR SUPER FINISHING



Designation	l	d	t	R
CNMG 431	.488	.500	.187	.016

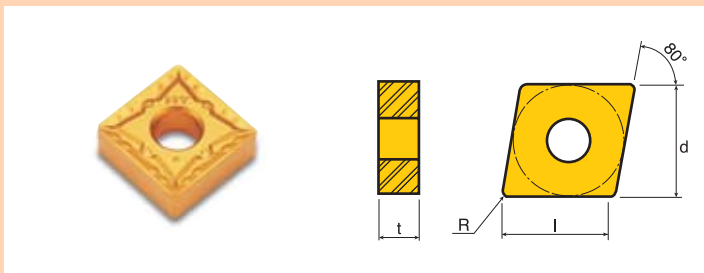
Designation		Recommended Machining Conditions											Grades & V <sub>c</sub> (sfm)			
		feed (ipr)	ap (inch)	<span style="color:blue">P</span> <span style="color:yellow">M</span> <span style="color:red">K</span> <span style="color:green">N</span> <span style="color:purple">S</span> <span style="color:gray">H</span>												
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
CNMG 431 WS	CNMG 120404 WS	.008 (.002~.014)	.039 (.020~.079)		1066 885		1066 885	920		705 490						

For toolholders, see page T131, T145, T146, T164, T177

Marked: Stocked Standard Items

## NEGATIVE INSERTS - CNMG WT

### CHIPBREAKER/NEGATIVE 80° RHOMBIC WIPER INSERTS FOR MEDIUM ROUGHING



Designation	l	d	t	R
CNMG 432	.472	.500	.187	.031
CNMG 433	.457	.500	.187	.047

Designation		Recommended Machining Conditions											Grades & V <sub>c</sub> (sfm)			
		feed (ipr)	ap (inch)	<span style="color:blue">P</span> <span style="color:yellow">M</span> <span style="color:red">K</span> <span style="color:green">N</span> <span style="color:purple">S</span> <span style="color:gray">H</span>												
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
CNMG 432 WT	CNMG 120408 WT	.018 (.006~.024)	.079 (.039~.197)		920		1132	920	820	640						
CNMG 433 WT	CNMG 120412 WT	.020 (.008~.031)	.079 (.039~.197)		787			787		443						

For toolholders, see page T131, T145, T146, T164, T177

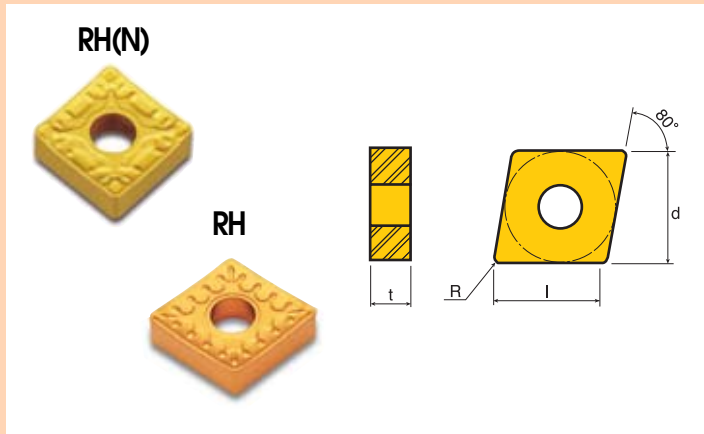
Marked: Stocked Standard Items

<span style="color:blue">■</span> Carbon Steel C: 0.45%	<span style="color:yellow">■</span> Austenitic Stainless Steel	<span style="color:red">■</span> High Tensile Cast Iron
<span style="color:green">■</span> Aluminum	<span style="color:purple">■</span> Inconel	<span style="color:gray">■</span> Hardened Steel



# NEGATIVE INSERTS - CNMM RH & RH(N)

## CHIPBREAKER/NEGATIVE 80° RHOMBIC INSERTS FOR HIGH FEED ROUGHING



Designation	l	d	t	R
CNMM 432	.472	.500	.187	.031
CNMM 433	.457	.500	.187	.047
CNMM 542	.602	.625	.250	.031
CNMM 543	.583	.625	.250	.047
CNMM 544	.567	.625	.250	.063
CNMM 642	.728	.750	.250	.031
CNMM 643	.713	.750	.250	.047
CNMM 644	.697	.750	.250	.063
CNMM 646	.661	.750	.250	.094
CNMM 856	.917	1.000	.313	.094
CNMM 866	.917	1.000	.375	.094

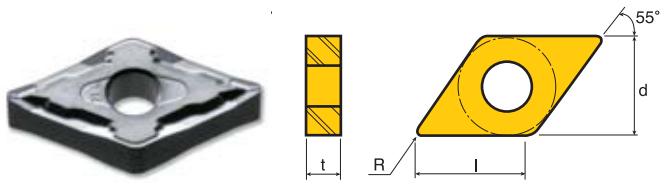
Designation		Recommended Machining Conditions															
		feed (ipr)	ap (inch)	Grades & Vc (sfm)											P10	P20	K10
ANSI	ISO			PV3010	CT3000		TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020				
CNMM 432 RH	CNMM 120408 RH	.020 (.012~.031)	.157 (.098~.236)					•	•								
CNMM 432 RH(N)	CNMM 120408 RH(N)	.018 (.010~.028)	.118 (.078~.196)					•	•		•	•					
CNMM 433 RH	CNMM 120412 RH	.025 (.012~.031)	.157 (.098~.236)					•	•		•	•					
CNMM 542 RH	CNMM 160608 RH	.020 (.012~.031)	.197 (.118~.315)					•	•		•	•					
CNMM 543 RH	CNMM 160612 RH	.025 (.012~.031)	.197 (.118~.315)					•	•		•	•					
CNMM 544 RH	CNMM 160616 RH	.028 (.018~.039)	.197 (.157~.315)					•	•		•	•					
CNMM 642 RH	CNMM 190608 RH	.020 (.012~.031)	.236 (.118~.354)					•	•		623	•					
CNMM 643 RH	CNMM 190612 RH	.025 (.012~.031)	.236 (.118~.354)					885	804		•	•	558				
CNMM 643 RH(N)	CNMM 190612 RH(N)	.022 (.012~.028)	.197 (.098~.315)					•	•		•	•					
CNMM 644 RH	CNMM 190616 RH	.028 (.018~.039)	.236 (.157~.354)					•	•		•	•					
CNMM 644 RH(N)	CNMM 190616 RH(N)	.025 (.015~.035)	.197 (.098~.315)					•	•		•	•					
CNMM 646 RH	CNMM 190624 RH	.037 (.022~.047)	.236 (.157~.354)					•	•		•	•					
CNMM 856 RH	CNMM 250724 RH	.037 (.022~.047)	.315 (.197~.472)					•	•		•	•					
CNMM 866 RH	CNMM 250924 RH	.037 (.022~.047)	.315 (.197~.472)					•	•		•	•					

• For toolholders, see page T131, T145, T146, T164, T177 • Marked: Stocked Standard Items  
 \*Marked: Chipbreaker shape is not same as the picture in the catalog.

- Carbon Steel C: 0.45%
- Austenitic Stainless Steel
- High Tensile Cast Iron
- Aluminum
- Inconel
- Hardened Steel

## ■ NEGATIVE INSERTS - DNGG ML

### ■ CHIPBREAKER/NEGATIVE 55° RHOMBIC GROUND INSERT FOR MEDIUM LIGHT MACHINING/VERY SHARP



Designation	L	d	t	R
DNGG 431	.594	.500	.187	.016
DNGG 432	.579	.500	.187	.031

Designation		Recommended Machining Conditions														
		<span style="color:blue">■</span> P <span style="color:yellow">■</span> M <span style="color:red">■</span> K <span style="color:green">■</span> N <span style="color:purple">■</span> S <span style="color:gray">■</span> H														
ANSI	ISO	feed (ipr)	ap (inch)	Grades & V <sub>c</sub> (sfm)								P10	P20	K10	K20	
				PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450					TT8020
DNGG 431 ML	DNGG 150404 ML	.007 (.004-.012)	.047 (.031-.138)						230							
DNGG 432 ML	DNGG 150408 ML	.010 (.005-.014)	.059 (.039-.138)						850							

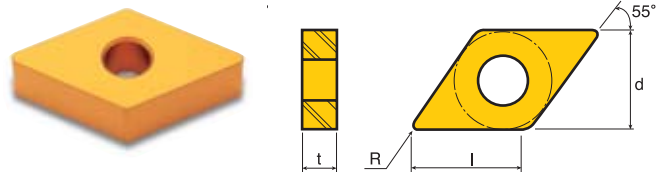
• For toolholders, see pages T158

• Marked : Stocked Standard Items

<span style="color:blue">■</span> Carbon Steel C: 0.45%	<span style="color:yellow">■</span> Austenitic Stainless Steel	<span style="color:red">■</span> High Tensile Cast Iron
<span style="color:green">■</span> Aluminum	<span style="color:purple">■</span> Inconel	<span style="color:gray">■</span> Hardened Steel

## NEGATIVE INSERTS - DNMA

### NEGATIVE 55° RHOMBIC INSERTS FOR ROUGHING



Designation	l	d	t	R
DNMA 332	.425	.375	.187	.031
DNMA 333	.413	.375	.187	.047
DNMA 431	.594	.500	.187	.016
DNMA 441	.594	.500	.250	.016
DNMA 432	.579	.500	.187	.031
DNMA 442	.579	.500	.250	.031
DNMA 433	.567	.500	.187	.047
DNMA 443	.567	.500	.250	.047

Designation		Recommended Machining Conditions																
		feed (ipr)	ap (inch)	Grades & V <sub>c</sub> (sfm)														
ANSI	ISO			PV3010	CT3000		TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020		P10	P20	K10	K20
* DNMA 332	DNMA 110408	.014 (.006~.020)	.059 (.031~.118)				•	•										
* DNMA 333	DNMA 110412	.017 (.006~.020)	.059 (.031~.118)				•	•										
DNMA 431	DNMA 150404	.012 (.006~.020)	.079 (.016~.157)															
DNMA 441	DNMA 150604	.012 (.006~.020)	.079 (.016~.157)															
DNMA 432	DNMA 150408	.017 (.006~.026)	.079 (.031~.157)				•	•										
DNMA 442	DNMA 150608	.017 (.006~.026)	.079 (.031~.157)				•	•										
DNMA 433	DNMA 150412	.020 (.006~.026)	.079 (.047~.157)				•	•										
DNMA 443	DNMA 150612	.020 (.006~.026)	.079 (.047~.157)				•	•										

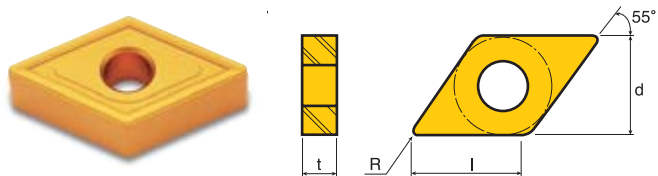
\* For toolholders, see page T131, T132, T139, T147, T148, T177

• Marked: Stocked Standard Items

\* Marked: Insert with Screw Hole

## NEGATIVE INSERTS - DNMG

### COMMON TYPE CHIPBREAKER/NEGATIVE 55° RHOMBIC INSERTS FOR MEDIUM ROUGHING



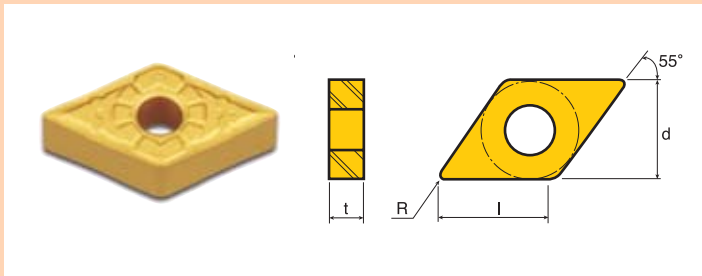
Designation	l	d	t	R
DNMG 431	.594	.500	.187	.016
DNMG 441	.594	.500	.250	.016
DNMG 432	.579	.500	.187	.031
DNMG 442	.579	.500	.250	.031
DNMG 433	.567	.500	.187	.047
DNMG 443	.567	.500	.250	.047
DNMG 434	.551	.500	.187	.063
DNMG 444	.551	.500	.250	.063

Designation		Recommended Machining Conditions																
		feed (ipr)	ap (inch)	Grades & V <sub>c</sub> (sfm)														
ANSI	ISO			PV3010	CT3000		TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020		P10	P20	K10	K20
DNMG 431	DNMG 150404	.011 (.007~.018)	.079 (.039~.157)				•	•										
DNMG 441	DNMG 150604	.011 (.007~.018)	.079 (.039~.157)				•	•										
DNMG 432	DNMG 150408	.015 (.007~.022)	.098 (.059~.157)				•	•										
DNMG 442	DNMG 150608	.015 (.007~.022)	.098 (.059~.157)				•	•										
DNMG 433	DNMG 150412	.018 (.010~.022)	.098 (.059~.157)				•	•										
DNMG 443	DNMG 150612	.018 (.010~.022)	.098 (.059~.157)				•	•										
DNMG 434	DNMG 150416	.022 (.010~.026)	.118 (.098~.157)				•	•										
DNMG 444	DNMG 150616	.022 (.010~.026)	.118 (.098~.157)				•	•										

\* For toolholders, see page T131, T132, T139, T147, T148, T171, T172, T177

## NEGATIVE INSERTS - DNMG FG

### CHIPBREAKER/NEGATIVE 55° RHOMBIC INSERTS FOR FINISHING



Designation	l	d	t	R
DNMG 331	.441	.375	.187	.016
DNMG 332	.425	.375	.187	.031
DNMG 431	.594	.500	.187	.016
DNMG 441	.594	.500	.250	.016
DNMG 432	.579	.500	.187	.031
DNMG 442	.579	.500	.250	.031

Designation		Recommended Machining Conditions												<span style="color:blue">■</span> P <span style="color:yellow">■</span> M <span style="color:red">■</span> K <span style="color:green">■</span> N <span style="color:purple">■</span> S <span style="color:grey">■</span> H			
		feed (ipr)	ap (inch)	Grades & V <sub>c</sub> (sfm)													
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020		P10	P20	K10	K20
DNMG 331 FG	DNMG 110404 FG	.004 (.003~.008)	.031 (.020~.079)	•	•		•	•		•							
DNMG 332 FG	DNMG 110408 FG	.006 (.004~.010)	.039 (.028~.079)	•	•		•	•		•							
DNMG 431 FG	DNMG 150404 FG	.004 (.003~.008)	.031 (.020~.079)	1181	1115		1115			787							
DNMG 441 FG	DNMG 150604 FG	.004 (.003~.008)	.031 (.020~.079)	984	885		885	1017		540		426					
DNMG 432 FG	DNMG 150408 FG	.006 (.004~.010)	.039 (.028~.079)	•	•		•	•		•							
DNMG 442 FG	DNMG 150608 FG	.006 (.004~.010)	.039 (.028~.079)	•	•		•	•		•							

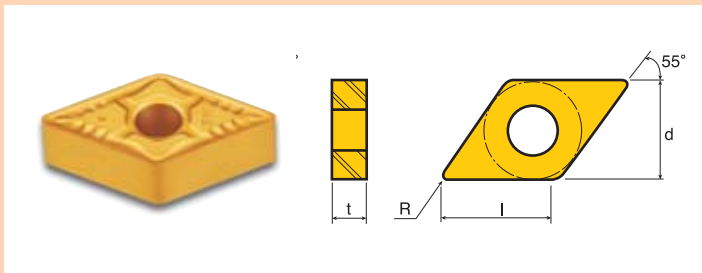
• For toolholders, see page T131, T132, T139, T147, T148, T171, T172, T177

• Marked: Stocked Standard Items

\* Marked: Insert with Screw Hole

## NEGATIVE INSERTS - DNMG MC

### CHIPBREAKER/NEGATIVE 55° RHOMBIC INSERTS FOR MEDIUM MACHINING



Designation	l	d	t	R
DNMG 441	.594	.500	.250	.016
DNMG 432	.579	.500	.187	.031
DNMG 442	.579	.500	.250	.031
DNMG 443	.567	.500	.250	.047

Designation		Recommended Machining Conditions												<span style="color:blue">■</span> P <span style="color:yellow">■</span> M <span style="color:red">■</span> K <span style="color:green">■</span> N <span style="color:purple">■</span> S <span style="color:grey">■</span> H			
		feed (ipr)	ap (inch)	Grades & V <sub>c</sub> (sfm)													
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020		P10	P20	K10	K20
DNMG 441 MC	DNMG 150604 MC	.008 (.004~.012)	.059 (.020~.138)				•	•		•							
DNMG 432 MC	DNMG 150408 MC	.012 (.005~.014)	.059 (.028~.138)				1017										
DNMG 442 MC	DNMG 150608 MC	.012 (.005~.014)	.059 (.028~.138)				870	920		705	640	490					
DNMG 443 MC	DNMG 150612 MC	.012 (.006~.014)	.059 (.039~.138)							•							

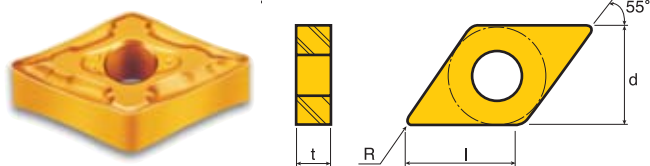
• For toolholders, see page T131, T132, T139, T147, T148, T171, T172, T177

• Marked: Stocked Standard Items



## NEGATIVE INSERTS - DNMG ML

### CHIPBREAKER/NEGATIVE 55° RHOMBIC INSERTS FOR MEDIUM LIGHT MACHINING



Designation	L	d	t	R
DNMG 431	.594	.500	.187	.016
DNMG 441	.594	.500	.250	.016
DNMG 432	.579	.500	.187	.031
DNMG 442	.579	.500	.250	.031

Designation		Recommended Machining Conditions														
		feed (ipr)	ap (inch)	Grades & Vc (sfm)												
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
DNMG 431 ML	DNMG 150404 ML	.007 (.004~.012)	.047 (.031~.138)													
DNMG 441 ML	DNMG 150604 ML	.007 (.004~.012)	.047 (.031~.138)				1115	1017	197	787	705	98				1968
DNMG 432 ML	DNMG 150408 ML	.010 (.005~.014)	.059 (.039~.138)						850	540		426				
DNMG 442 ML	DNMG 150608 ML	.010 (.005~.014)	.059 (.039~.138)													

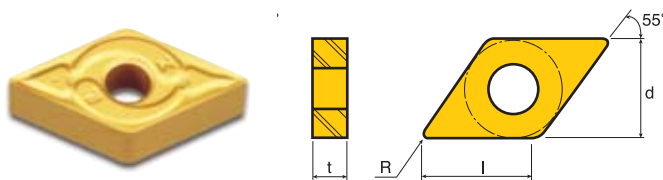
For toolholders, see page T131, T132, T139, T147, T148, T171, T172, T177

Marked: Stocked Standard Items

## DNMG MP Chipbreaker/Negative 55° Rhombic Inserts for Medium Machining/Positive Rake Angle

## NEGATIVE INSERTS - DNMG MP

### CHIPBREAKER/NEGATIVE 55° RHOMBIC INSERTS FOR MEDIUM MACHINING/POSITIVE RAKE ANGLE



Designation	L	d	t	R
DNMG 431	.594	.500	.187	.016
DNMG 441	.594	.500	.250	.016
DNMG 432	.579	.500	.187	.031
DNMG 442	.579	.500	.250	.031
DNMG 443	.567	.500	.250	.047

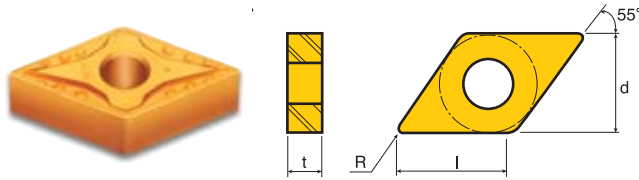
Designation		Recommended Machining Conditions														
		feed (ipr)	ap (inch)	Grades & Vc (sfm)												
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
DNMG 431 MP	DNMG 150404 MP	.008 (.004~.012)	.059 (.031~.157)													
DNMG 441 MP	DNMG 150604 MP	.008 (.004~.012)	.059 (.031~.157)							197	738	590				
DNMG 432 MP	DNMG 150408 MP	.012 (.005~.016)	.079 (.039~.157)				1082	984			689	393				
DNMG 442 MP	DNMG 150608 MP	.012 (.005~.016)	.079 (.039~.157)						820	540						
DNMG 443 MP	DNMG 150612 MP	.014 (.006~.016)	.079 (.039~.157)													

For toolholders, see page T131, T132, T139, T147, T148, T171, T172, T177

Marked: Stocked Standard Items

## NEGATIVE INSERTS - DNMG MT

### CHIPBREAKER/NEGATIVE 55° RHOMBIC INSERTS FOR MEDIUM ROUGHING/TOUGH RAKE ANGLE



Designation	l	d	t	R
DNMG 332	.425	.375	.187	.031
DNMG 333	.413	.375	.187	.047
DNMG 431	.594	.500	.187	.016
DNMG 441	.594	.500	.250	.016
DNMG 432	.579	.500	.187	.031
DNMG 442	.579	.500	.250	.031
DNMG 433	.567	.500	.187	.047
DNMG 443	.567	.500	.250	.047

Designation		Recommended Machining Conditions												Grades & V <sub>c</sub> (sfm)			
		feed (ipr)	ap (inch)	Grades & V <sub>c</sub> (sfm)													
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20	
DNMG 332 MT	DNMG 110408 MT	.012 (.007~.016)	.059 (.039~.118)														
DNMG 333 MT	DNMG 110412 MT	.014 (.008~.018)	.059 (.039~.118)														
DNMG 431 MT	DNMG 150404 MT	.010 (.006~.016)	.079 (.031~.157)														
DNMG 441 MT	DNMG 150604 MT	.010 (.006~.016)	.079 (.031~.157)		1017		1017		197	705		98					
DNMG 432 MT	DNMG 150408 MT	.014 (.007~.020)	.098 (.039~.157)		870		1247	920			640						
DNMG 442 MT	DNMG 150608 MT	.014 (.007~.020)	.098 (.039~.157)				870		771	490		360					
DNMG 433 MT	DNMG 150412 MT	.017 (.008~.020)	.098 (.051~.157)														
DNMG 443 MT	DNMG 150612 MT	.017 (.008~.020)	.098 (.051~.157)														

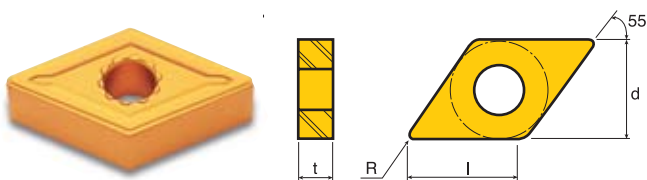
For toolholders, see page T131, T132, T139, T147, T148, T171, T172, T177

Marked: Stocked Standard Items

\* Marked: Insert with Screw Hole

## NEGATIVE INSERTS - DNMG RT

### CHIPBREAKER/NEGATIVE 55° RHOMBIC INSERTS FOR ROUGHING/WIDE, TOUGH RAKE ANGLE



Designation	l	d	t	R
DNMG 432	.579	.500	.187	.031
DNMG 442	.579	.500	.250	.031
DNMG 433	.567	.500	.187	.047
DNMG 443	.567	.500	.250	.047
DNMG 444	.551	.500	.250	.063

Designation		Recommended Machining Conditions												Grades & V <sub>c</sub> (sfm)			
		feed (ipr)	ap (inch)	Grades & V <sub>c</sub> (sfm)													
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20	
DNMG 432 RT	DNMG 150408 RT	.017 (.010~.026)	.118 (.079~.157)														
DNMG 442 RT	DNMG 150608 RT	.017 (.010~.026)	.118 (.079~.157)														
DNMG 433 RT	DNMG 150412 RT	.020 (.010~.026)	.118 (.098~.157)														
DNMG 443 RT	DNMG 150612 RT	.020 (.010~.026)	.118 (.098~.157)														
DNMG 444 RT	DNMG 150616 RT	.022 (.010~.028)	.138 (.098~.157)														

For toolholders, see page T131, T132, T139, T147, T148, T171, T172, T177

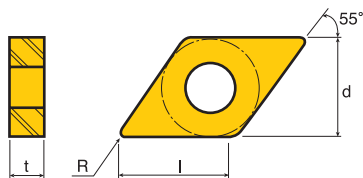
Marked: Stocked Standard Items

## NEGATIVE INSERTS - DNMG VF

CHIPBREAKER/NEGATIVE 55° RHOMBIC INSERTS FOR MEDIUM/ LOW CUTTING FORCE



Right Hand Shown



Designation	l	d	t	R
DNMG 431	.594	.500	.187	.016
DNMG 441	.594	.500	.250	.016
DNMG 432	.579	.500	.187	.031
DNMG 442	.579	.500	.250	.031

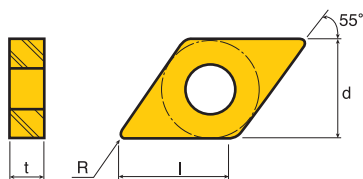
Designation		Recommended Machining Conditions														
		Grades & V <sub>c</sub> (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
DNMG 431 R-VF	DNMG 150404 R-VF	.007 (.004-.014)	.059 (.028-.177)		•											
DNMG 441 R-VF	DNMG 150604 R-VF	.007 (.004-.014)	.059 (.028-.177)		•											
DNMG 432 R-VF	DNMG 150408 R-VF	.009 (.005-.018)	.071 (.039-.177)		•											
DNMG 442 R-VF	DNMG 150608 R-VF	.009 (.005-.018)	.071 (.039-.177)		•											
DNMG 431 L-VF	DNMG 150404 L-VF	.007 (.004-.014)	.059 (.028-.177)		•											
DNMG 441 L-VF	DNMG 150604 L-VF	.007 (.004-.014)	.059 (.028-.177)		•											
DNMG 432 L-VF	DNMG 150408 L-VF	.009 (.005-.018)	.071 (.039-.177)		•											
DNMG 442 L-VF	DNMG 150608 L-VF	.009 (.005-.018)	.071 (.039-.177)		•											

• For toolholders, see page T131, T132, T139, T147, T148, T171, T172, T177

• Marked: Stocked Standard Items

## NEGATIVE INSERTS - DNMG WT

CHIPBREAKER/NEGATIVE 55° RHOMBIC WIPER INSERTS FOR MEDIUM ROUGHING



Designation	l	d	t	R
DNMG 433	.567	.500	.187	.047
DNMG 443	.567	.500	.250	.047

Designation		Recommended Machining Conditions														
		Grades & V <sub>c</sub> (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
DNMG 433 WT	DNMG 150412 WT	.018 (.006~.024)	.079 (.039~.197)		•											
DNMG 443 WT	DNMG 150612 WT	.018 (.006~.024)	.079 (.039~.197)		•											

• For toolholders, see page T131, T132, T139, T147, T148, T171, T172, T177

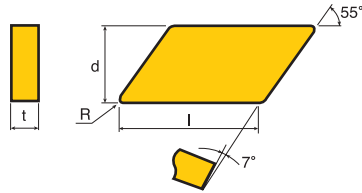
• Marked: Stocked Standard Items

## ■ KNUX TYPE INSERTS - KNUX 11

### ■ NEGATIVE 55° RHOMBIC INSERTS FOR MEDIUM MACHINING IN PROFILING



Right Hand Shown



Designation	l	d	t	R
KNUX 3331 R/L 11	.756	.375	.187	.020
KNUX 3332 R/L 11	.740	.375	.187	.039

Designation		Recommended Machining Conditions											<span style="color:blue">■</span> P <span style="color:yellow">■</span> M <span style="color:red">■</span> K <span style="color:green">■</span> N <span style="color:purple">■</span> S <span style="color:grey">■</span> H			
		feed (ipr)	ap (inch)	Grades & V <sub>c</sub> (sfm)												
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
KNUX 3331 R11	KNUX 160405 R11	.012 (.006~.014)	.098 (.059~.197)		●		●	●		●	●	●		●		
KNUX 3332 R11	KNUX 160410 R11	.014 (.008~.018)	.138 (.079~.197)		885		885	722		558	490	426		476		
KNUX 3331 L11	KNUX 160405 L11	.012 (.006~.014)	.098 (.059~.197)		755		755			459						
KNUX 3332 L11	KNUX 160410 L11	.014 (.008~.018)	.138 (.079~.197)													

• For toolholders, see pages T127, T163

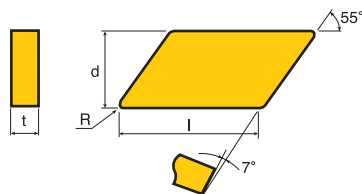
• Marked: Stocked Standard Items

## ■ KNUX TYPE INSERTS - KNUX 12

### ■ NEGATIVE 55° RHOMBIC INSERTS FOR MEDIUM ROUGHING IN PROFILING



Right Hand Shown



Designation	l	d	t	R
KNUX 3331 R/L 12	.756	.375	.187	.020
KNUX 3332 R/L 12	.740	.375	.187	.039

Designation		Recommended Machining Conditions											<span style="color:blue">■</span> P <span style="color:yellow">■</span> M <span style="color:red">■</span> K <span style="color:green">■</span> N <span style="color:purple">■</span> S <span style="color:grey">■</span> H			
		feed (ipr)	ap (inch)	Grades & V <sub>c</sub> (sfm)												
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
KNUX 3331 R12	KNUX 160405 R12	.014 (.009~.020)	.098 (.079~.197)				●	●		●	●	●				
KNUX 3332 R12	KNUX 160410 R12	.017 (.012~.024)	.138 (.098~.236)				885	722		558						
KNUX 3331 L12	KNUX 160405 L12	.014 (.009~.020)	.098 (.079~.197)			1050	755			459						
KNUX 3332 L12	KNUX 160410 L12	.017 (.012~.024)	.138 (.098~.236)													

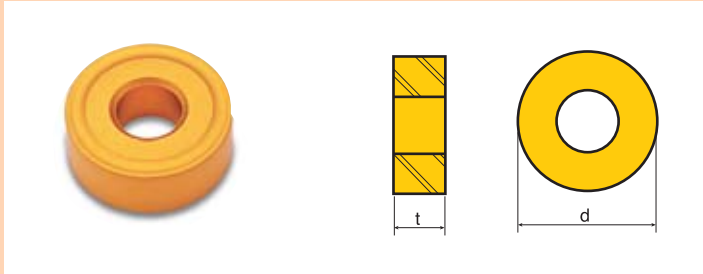
• For toolholders, see pages T127, T163

• Marked: Stocked Standard Items



## NEGATIVE INSERTS - RNMG

### COMMON TYPE CHIPBREAKER/NEGATIVE ROUND INSERTS FOR MEDIUM ROUGHING



Designation	d	t
RNMG 43	.500	.187
RNMG 86	1.000	.375

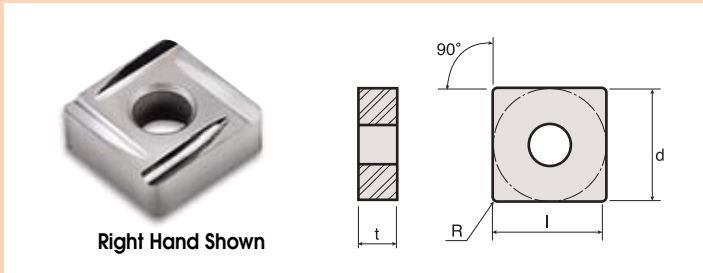
Designation		Recommended Machining Conditions														
		Grades & V <sub>c</sub> (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
RNMG 43	RNMG 120400	.018 (.012~.024)	.118 (.079~.197)			1082	951	870		672						
RNMG 86	RNMG 250900	.033 (.022~.047)	.236 (.157~.472)				820									

• For toolholders, see page T132

• Marked: Stocked Standard Items

## NEGATIVE INSERTS - SNGG

### CHIPBREAKER/NEGATIVE SQUARE GROUND INSERTS FOR MEDIUM LIGHT MACHINING



Right Hand Shown

Designation	l	d	t	R
SNGG 321	.358	.375	.125	.016
SNGG 322	.343	.375	.125	.031
SNGG 431	.484	.500	.187	.016
SNGG 432	.469	.500	.187	.031

Designation		Recommended Machining Conditions														
		Grades & V <sub>c</sub> (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
SNGG 321 L	SNGG 090304 L	.007 (.005-.014)	.059 (.039-.118)													
SNGG 322 R	SNGG 090308 R	.010 (.006-.014)	.059 (.039-.118)													
SNGG 322 L	SNGG 090308 L	.009 (.006-.016)	.079 (.039-.118)		885											
SNGG 431 R	SNGG 120404 R	.007 (.005-.014)	.079 (.039-.157)											490		
SNGG 431 L	SNGG 120404 L	.008 (.006-.014)	.118 (.039-.157)		656											
SNGG 432 R	SNGG 120408 R	.010 (.006-.014)	.079 (.039-.157)													
SNGG 432 L	SNGG 120408 L	.009 (.006-.016)	.118 (.039-.157)													

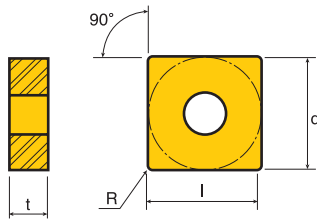
• For toolholders, see pages T156, T157

• Marked: Stocked Standard Items

■ Carbon Steel C: 0.45%   
 ■ Austenitic Stainless Steel   
 ■ High Tensile Cast Iron  
■ Aluminum   
 ■ Inconel   
 ■ Hardened Steel

## NEGATIVE INSERTS - SNMA

### NEGATIVE SQUARE INSERTS FOR ROUGHING



Designation	L	d	t	R
SNMA 432	.469	.500	.187	.031
SNMA 433	.453	.500	.187	.047
SNMA 434	.437	.500	.187	.063
SNMA 543	.575	.625	.250	.047
SNMA 643	.701	.750	.250	.047
SNMA 854	.937	1.000	.313	.063
SNMA 856	.906	1.000	.313	.094

Designation		Recommended Machining Conditions																
		<span style="color:blue">■</span> P <span style="color:yellow">■</span> M <span style="color:red">■</span> K <span style="color:green">■</span> N <span style="color:purple">■</span> S <span style="color:grey">■</span> H																
ANSI	ISO	feed (ipr)	ap (inch)	Grades & V <sub>c</sub> (sfm)														
				PV3010	CT3000		TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020		P10	P20	K10	K20
SNMA 432	SNMA 120408	.018 (.006~.028)	.118 (.039~.236)				●	●										
SNMA 433	SNMA 120412	.022 (.010~.031)	.118 (.059~.236)				●	●										
SNMA 434	SNMA 120416	.026 (.012~.040)	.118 (.079~.236)				●	●										
SNMA 543	SNMA 150612	.022 (.010~.031)	.157 (.079~.315)				●	●										●
SNMA 643	SNMA 190612	.022 (.010~.031)	.236 (.079~.394)				●	●										
SNMA 854	SNMA 250716	.026 (.012~.040)	.315 (.118~.512)				●	●										
SNMA 856	SNMA 250724	.037 (.016~.047)	.315 (.118~.512)				●	●										

For toolholders, see pages T133, T134, T148, T149, T150, T165

● Marked: Stocked Standard Items

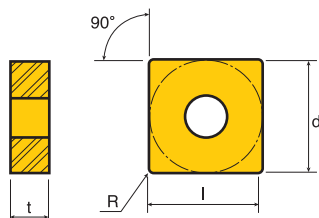
■ Carbon Steel C: 0.45%  
■ Aluminum

■ Austenitic Stainless Steel  
■ Inconel

■ High Tensile Cast Iron  
■ Hardened Steel

## NEGATIVE INSERTS - SNMG

### COMMON TYPE CHIPBREAKER/NEGATIVE SQUARE INSERTS FOR MEDIUM ROUGHING



Designation	L	d	t	R
SNMG 321	.358	.375	.125	.016
SNMG 322	.343	.375	.125	.031
SNMG 431	.484	.500	.187	.016
SNMG 432	.469	.500	.187	.031
SNMG 433	.453	.500	.187	.047
SNMG 434	.437	.500	.187	.063
SNMG 542	.591	.625	.250	.031
SNMG 543	.575	.625	.250	.047
SNMG 544	.559	.625	.250	.063
SNMG 641	.732	.750	.250	.016
SNMG 642	.717	.750	.250	.031
SNMG 643	.701	.750	.250	.047
SNMG 644	.685	.750	.250	.063
SNMG 854	.937	1.000	.313	.063
SNMG 856	.906	1.000	.313	.094
SNMG 866	.906	1.000	.375	.094

Designation		Recommended Machining Conditions														
		feed (ipr)	ap (inch)	Grades & Vc (sfm)												
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
SNMG 321	SNMG 090304	.011 (.007-.018)	.059 (.031-.138)													
SNMG 322	SNMG 090308	.016 (.008-.020)	.079 (.039-.138)													
SNMG 431	SNMG 120404	.011 (.007-.018)	.118 (.039-.197)													
SNMG 432	SNMG 120408	.016 (.009-.024)	.118 (.059-.197)													
SNMG 433	SNMG 120412	.020 (.010-.024)	.118 (.079-.197)													
SNMG 434	SNMG 120416	.022 (.014-.028)	.118 (.098-.197)													
SNMG 542	SNMG 150608	.016 (.010-.024)	.157 (.059-.236)		951		951									
SNMG 543	SNMG 150612	.020 (.010-.024)	.157 (.079-.236)		820		1082	870		672	640	459		623	490	393
SNMG 544	SNMG 150616	.022 (.014-.028)	.157 (.079-.236)		820											
SNMG 641	SNMG 190604	.011 (.007-.018)	.197 (.118-.315)													
SNMG 642	SNMG 190608	.016 (.010-.024)	.197 (.118-.315)													
SNMG 643	SNMG 190612	.020 (.012-.024)	.197 (.118-.315)													
SNMG 644	SNMG 190616	.022 (.014-.028)	.197 (.118-.315)													
SNMG 854	SNMG 250716	.022 (.014-.028)	.315 (.157-.472)													
SNMG 856	SNMG 250724	.025 (.020-.039)	.315 (.197-.472)													
SNMG 866	SNMG 250924	.025 (.020-.039)	.315 (.197-.472)													

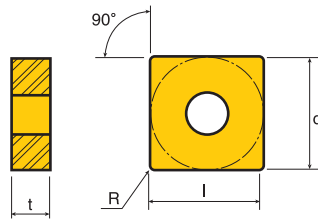
For toolholders, see pages T133, T134, T148, T149, T150, T165

Marked: Stocked Standard Items

- Carbon Steel C: 0.45%
- Austenitic Stainless Steel
- High Tensile Cast Iron
- Aluminum
- Inconel
- Hardened Steel

## NEGATIVE INSERTS - SNMG FG

### CHIPBREAKER/NEGATIVE SQUARE INSERTS FOR FINISHING



Designation	l	d	t	R
SNMG 321	.358	.375	.125	.016
SNMG 322	.343	.375	.125	.031
SNMG 431	.484	.500	.187	.016
SNMG 432	.469	.500	.187	.031

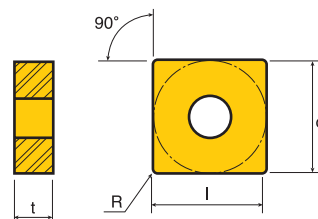
Designation		Recommended Machining Conditions															
		feed (ipr)	ap (inch)	Grades & V <sub>c</sub> (sfm)													
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20	
SNMG 321 FG	SNMG 090304 FG	.004 (.003~.008)	.031 (.020~.079)														
SNMG 322 FG	SNMG 090308 FG	.006 (.004~.010)	.039 (.028~.079)		340		1115		197	787							
SNMG 431 FG	SNMG 120404 FG	.004 (.003~.008)	.031 (.020~.118)		270		885	1017	850	540							
SNMG 432 FG	SNMG 120408 FG	.006 (.004~.010)	.039 (.028~.118)														

• For toolholders, see pages T133, T134, T148, T149, T150, T165

• Marked: Stocked Standard Items

## NEGATIVE INSERTS - SNMG MC

### CHIPBREAKER/NEGATIVE SQUARE INSERTS FOR MEDIUM MACHINING



Designation	l	d	t	R
SNMG 432	.469	.500	.187	.031
SNMG 433	.453	.500	.187	.047

Designation		Recommended Machining Conditions															
		feed (ipr)	ap (inch)	Grades & V <sub>c</sub> (sfm)													
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20	
SNMG 432 MC	SNMG 120408 MC	.012 (.005~.014)	.059 (.028~.138)				1017										
SNMG 433 MC	SNMG 120412 MC	.014 (.006~.016)	.059 (.028~.138)				870	920		705		490					

• For toolholders, see pages T133, T134, T148, T149, T150, T165

• Marked: Stocked Standard Items

Carbon Steel C: 0.45%  
Aluminum

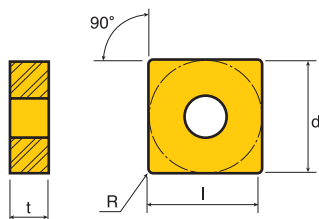
Austenitic Stainless Steel  
Inconel

High Tensile Cast Iron  
Hardened Steel



## NEGATIVE INSERTS - SNMG ML

### CHIPBREAKER/NEGATIVE SQUARE INSERTS FOR MEDIUM LIGHT MACHINING



Designation	L	d	t	R
SNMG 432	.469	.500	.187	.031
SNMG 433	.453	.500	.187	.047

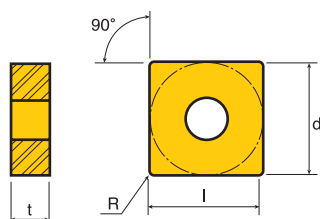
Designation		Recommended Machining Conditions														
		Grades & V <sub>c</sub> (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
SNMG 432 ML	SNMG 120408 ML	.010 (.005~.014)	.059 (.039~.138)				1115	1017		787	705	623				1968
SNMG 433 ML	SNMG 120412 ML	.012 (.006~.014)	.079 (.051~.138)							540		426				

For toolholders, see pages T133, T134, T148, T149, T150, T165

Marked: Stocked Standard Items

## NEGATIVE INSERTS - SNMG MP

### CHIPBREAKER/NEGATIVE SQUARE INSERTS FOR MEDIUM MACHINING/POSITIVE RAKE ANGLE



Designation	L	d	t	R
SNMG 431	.484	.500	.187	.016
SNMG 432	.469	.500	.187	.031
SNMG 433	.453	.500	.187	.047

Designation		Recommended Machining Conditions														
		Grades & V <sub>c</sub> (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
SNMG 431 MP	SNMG 120404 MP	.008 (.004~.012)	.079 (.031~.157)							197	738	590				
SNMG 432 MP	SNMG 120408 MP	.012 (.005~.016)	.079 (.039~.157)				1082	984			689					
SNMG 433 MP	SNMG 120412 MP	.014 (.006~.016)	.079 (.051~.157)						820	525		393				

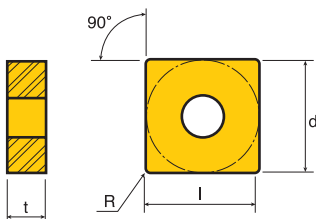
For toolholders, see pages T133, T134, T148, T149, T150, T165

Marked: Stocked Standard Items

<span style="background-color: blue; color: white; padding: 2px;">P</span> Carbon Steel C: 0.45%	<span style="background-color: yellow; padding: 2px;">M</span> Austenitic Stainless Steel	<span style="background-color: red; padding: 2px;">K</span> High Tensile Cast Iron
<span style="background-color: green; padding: 2px;">N</span> Aluminum	<span style="background-color: purple; padding: 2px;">S</span> Inconel	<span style="background-color: grey; padding: 2px;">H</span> Hardened Steel

## ■ NEGATIVE INSERTS - SNMG MT

### ■ CHIPBREAKER/NEGATIVE SQUARE INSERTS FOR MEDIUM ROUGHING/ TOUGH RAKE ANGLE



Designation	L	d	t	R
SNMG 322	.343	.375	.125	.031
SNMG 431	.484	.500	.187	.016
SNMG 432	.469	.500	.187	.031
SNMG 433	.453	.500	.187	.047
SNMG 543	.575	.625	.250	.047
SNMG 642	.717	.750	.250	.031
SNMG 643	.701	.750	.250	.047

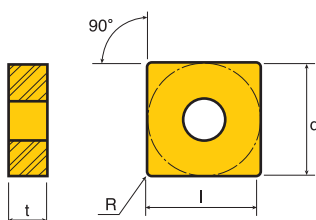
Designation		Recommended Machining Conditions											Grades & V <sub>c</sub> (sfm)			
		feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
ANSI	ISO															
SNMG 322 MT	SNMG 090308 MT	.014 (.007~.020)	.079 (.039~.138)													
SNMG 431 MT	SNMG 120404 MT	.010 (.005~.016)	.118 (.039~.197)													
SNMG 432 MT	SNMG 120408 MT	.014 (.007~.022)	.118 (.047~.197)													
SNMG 433 MT	SNMG 120412 MT	.017 (.008~.022)	.118 (.059~.197)													
SNMG 543 MT	SNMG 150612 MT	.017 (.010~.022)	.157 (.078~.275)													
SNMG 642 MT	SNMG 190608 MT	.014 (.008~.022)	.197 (.118~.315)													
SNMG 643 MT	SNMG 190612 MT	.017 (.010~.022)	.197 (.118~.315)													

• For toolholders, see pages T133, T134, T148, T149, T150, T165

• Marked: Stocked Standard Items

## ■ NEGATIVE INSERTS - SNMG RT

### ■ CHIPBREAKER/NEGATIVE SQUARE INSERTS FOR ROUGHING/ WIDE, TOUGH RAKE ANGLE



Designation	L	d	t	R
SNMG 432	.469	.500	.187	.031
SNMG 433	.453	.500	.187	.047
SNMG 543	.575	.625	.250	.047
SNMG 643	.701	.750	.250	.047
SNMG 644	.685	.750	.250	.063

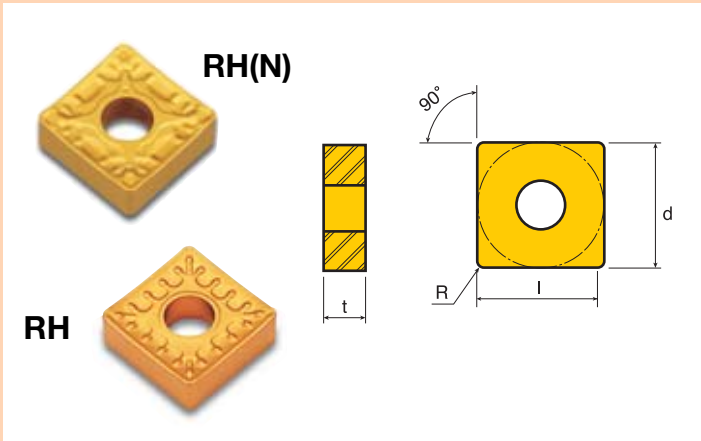
Designation		Recommended Machining Conditions											Grades & V <sub>c</sub> (sfm)			
		feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
ANSI	ISO															
SNMG 432 RT	SNMG 120408 RT	.018 (.010~.028)	.157 (.098~.236)													
SNMG 433 RT	SNMG 120412 RT	.022 (.012~.028)	.157 (.098~.236)													
SNMG 543 RT	SNMG 150612 RT	.022 (.012~.028)	.197 (.118~.276)													
SNMG 643 RT	SNMG 190612 RT	.022 (.012~.030)	.236 (.118~.354)													
SNMG 644 RT	SNMG 190616 RT	.025 (.018~.035)	.236 (.118~.354)													

• For toolholders, see pages T133, T134, T148, T149, T150, T165

• Marked: Stocked Standard Items

# NEGATIVE INSERTS - SNMM RH & RH(N)

## CHIPBREAKER/NEGATIVE SQUARE INSERTS FOR HIGH FEED ROUGHING



Designation	l	d	t	R
SNMM 432	.469	.500	.187	.031
SNMM 433	.453	.500	.187	.047
SNMM 434	.437	.500	.187	.063
SNMM 543	.575	.625	.250	.047
SNMM 642	.717	.750	.250	.031
SNMM 643	.701	.750	.250	.047
SNMM 644	.685	.750	.250	.063
SNMM 646	.654	.750	.250	.094
SNMM 854	.937	1.000	.313	.063
SNMM 856	.906	1.000	.313	.094
SNMM 866	.906	1.000	.375	.094

Designation		Recommended Machining Conditions																
		feed (ipr)	ap (inch)	Grades & Vc (sfm)														
ANSI	ISO			PV3010	CT3000		TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020		P10	P20	K10	K20
SNMM 432 RH	SNMM 120408 RH	.020 (.012~.031)	.157 (.098~.236)															
SNMM 432 RH(N)	SNMM 120408 RH(N)	.016 (.010~.028)	.137 (.098~.196)															
SNMM 433 RH	SNMM 120412 RH	.025 (.012~.031)	.157 (.098~.236)															
SNMM 433 RH(N)	SNMM 120412 RH(N)	.022 (.012~.028)	.137 (.098~.196)															
SNMM 434 RH	SNMM 120416 RH	.028 (.018~.039)	.137 (.098~.196)															
SNMM 543 RH	SNMM 150612 RH	.025 (.012~.031)	.197 (.118~.275)															
SNMM 642 RH	SNMM 190608 RH	.020 (.012~.031)	.236 (.118~.354)															
SNMM 643 RH	SNMM 190612 RH	.025 (.012~.031)	.236 (.118~.354)				885	804			623	558	426					
SNMM 643 RH(N)	SNMM 190612 RH(N)	.022 (.012~.028)	.196 (.118~.314)								443							
SNMM 644 RH	SNMM 190616 RH	.028 (.018~.039)	.236 (.157~.354)															
SNMM 644 RH(N)	SNMM 190616 RH(N)	.028 (.018~.039)	.196 (.157~.314)															
SNMM 646 RH	SNMM 190624 RH	.037 (.022~.047)	.276 (.157~.394)															
* SNMM 854 RH	SNMM 250716 RH	.028 (.022~.039)	.354 (.197~.472)															
* SNMM 856 RH	SNMM 250724 RH	.037 (.022~.047)	.354 (.197~.472)															
* SNMM 866 RH	SNMM 250924 RH	.037 (.022~.047)	.354 (.197~.472)															

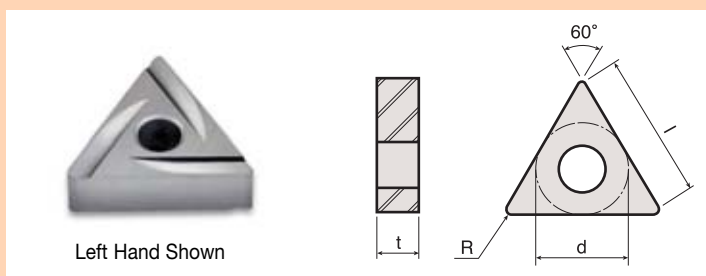
• For toolholders, see pages T133, T134, T148, T149, T150, T165

• Marked: Stocked Standard Items

\* Marked: Chipbreaker shape is not same as the picture in the catalog

## NEGATIVE INSERTS - TNGG

### CHIPBREAKER/NEGATIVE TRIANGULAR GROUND INSERTS FOR MEDIUM LIGHT MACHINING



Designation	l	d	t	R
TNGG 331	.610	.375	.187	.016
TNGG 332	.571	.375	.187	.031
TNGG 431	.827	.500	.187	.016
TNGG 432	.787	.500	.187	.031

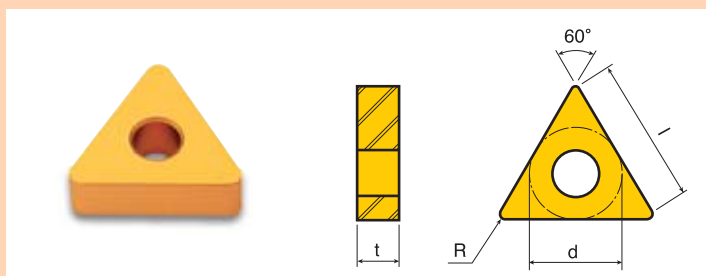
Designation		Recommended Machining Conditions												Grades & Vc (sfm)			
		feed (ipr)	ap (inch)	Grades & Vc (sfm)													
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20	
TNGG 331 R	TNGG 160404 R	.007 (.005~.012)	.079 (.039~.138)														
TNGG 331 L	TNGG 160404 L	.007 (.005~.012)	.079 (.039~.138)														
TNGG 332 R	TNGG 160408 R	.010 (.006~.014)	.079 (.051~.138)														
TNGG 332 L	TNGG 160408 L	.010 (.006~.014)	.079 (.051~.138)		951												
TNGG 431 R	TNGG 220404 R	.007 (.005~.012)	.118 (.039~.197)					1017					590	490			
TNGG 431 L	TNGG 220404 L	.007 (.005~.012)	.118 (.039~.197)		951												
TNGG 432 R	TNGG 220408 R	.010 (.006~.014)	.118 (.051~.197)														
TNGG 432 L	TNGG 220408 L	.010 (.006~.014)	.118 (.051~.197)														

For toolholders, see pages T134, T135, T136, T150, T151, T165, T166

Marked: Stocked Standard Items

## NEGATIVE INSERTS - TNMA

### CHIPBREAKER/NEGATIVE TRIANGULAR INSERTS FOR ROUGHING/



Designation	l	d	t	R
TNMA 221	.394	.250	.125	.016
TNMA 331	.610	.375	.187	.016
TNMA 332	.571	.375	.187	.031
TNMA 333	.531	.375	.187	.047
TNMA 431	.827	.500	.187	.016
TNMA 432	.787	.500	.187	.031
TNMA 433	.748	.500	.187	.047

Designation		Recommended Machining Conditions												Grades & Vc (sfm)			
		feed (ipr)	ap (inch)	Grades & Vc (sfm)													
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20	
TNMA 221	TNMA 110304	.012 (.006~.020)	.039 (.020~.079)														
TNMA 331	TNMA 160404	.012 (.006~.020)	.118 (.039~.197)														
TNMA 332	TNMA 160408	.017 (.006~.026)	.118 (.039~.197)														
TNMA 333	TNMA 160412	.020 (.006~.026)	.118 (.059~.197)		820		1082	820							490		
TNMA 431	TNMA 220404	.012 (.006~.020)	.197 (.039~.276)														
TNMA 432	TNMA 220408	.017 (.006~.026)	.197 (.039~.276)														
TNMA 433	TNMA 220412	.020 (.006~.026)	.197 (.059~.276)														

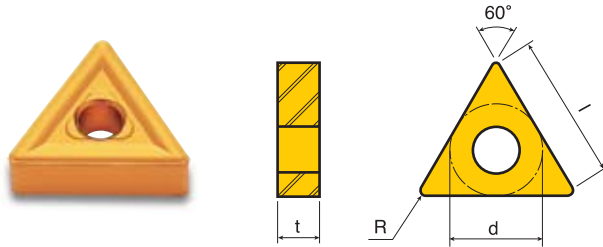
For toolholders, see pages T134, T135, T136, T150, T151, T165, T166

Marked: Stocked Standard Items



## NEGATIVE INSERTS - TNMG COMMON TYPE

### CHIPBREAKER/NEGATIVE TRIANGULAR INSERTS FOR MEDIUM ROUGHING



Designation	l	d	t	R
TNMG 221	.394	.250	.125	.016
TNMG 222	.354	.250	.125	.031
TNMG 331	.610	.375	.187	.016
TNMG 332	.571	.375	.187	.031
TNMG 333	.531	.375	.187	.047
TNMG 431	.827	.500	.187	.016
TNMG 432	.787	.500	.187	.031
TNMG 433	.748	.500	.187	.047
TNMG 434	.717	.500	.187	.063
TNMG 542	1.004	.625	.250	.031
TNMG 543	.965	.625	.250	.047
TNMG 544	.925	.625	.250	.063
TNMG 654	1.142	.750	.313	.063
TNMG 666	1.067	.750	.375	.094

Designation		Recommended Machining Conditions														
		feed (ipr)	ap (inch)	Grades & Vc (sfm)												
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
TNMG 221	TNMG 110304	.009 (.006~.016)	.059 (.047~.118)			•	•	•								
TNMG 222	TNMG 110308	.011 (.007~.016)	.079 (.059~.118)			•	•	•								
TNMG 331	TNMG 160404	.011 (.007~.018)	.098 (.059~.138)		•	•	•	•		•	•			•	•	
TNMG 332	TNMG 160408	.015 (.007~.022)	.098 (.079~.138)		•	•	•	•		•	•			•	•	
TNMG 333	TNMG 160412	.018 (.010~.022)	.098 (.079~.138)			•	•	•				•				
TNMG 431	TNMG 220404	.011 (.007~.018)	.118 (.059~.197)			•	•	•		•	•					
TNMG 432	TNMG 220408	.015 (.007~.022)	.118 (.079~.197)		951	•	1082	• 951	• 870	•	•	•		• 623	• 490	
TNMG 433	TNMG 220412	.018 (.010~.022)	.118 (.079~.197)		820	•	•	• 820	•	• 672	• 640	• 490				
TNMG 434	TNMG 220416	.020 (.012~.025)	.118 (.079~.197)					•								
TNMG 542	TNMG 270608	.015 (.007~.022)	.118 (.079~.197)					•								
TNMG 543	TNMG 270612	.018 (.010~.022)	.197 (.118~.276)					•								
TNMG 544	TNMG 270616	.020 (.012~.025)	.197 (.118~.276)					•								
TNMG 654	TNMG 330716	.021 (.014~.028)	.276 (.118~.354)					•			•					
TNMG 666	TNMG 330924	.024 (.016~.031)	.276 (.118~.354)					•								

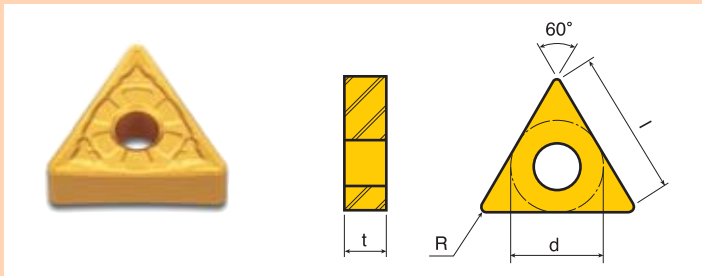
For toolholders, see pages T134, T135, T136, T150, T151, T165, T166

• Marked: Stocked Standard Items

- Carbon Steel C: 0.45%
- Austenitic Stainless Steel
- High Tensile Cast Iron
- Aluminum
- Inconel
- Hardened Steel

## NEGATIVE INSERTS - TNMG FG

### CHIPBREAKER/NEGATIVE TRIANGULAR INSERTS FOR FINISHING



Designation	l	d	t	R
TNMG 221	.394	.250	.125	.016
TNMG 331	.610	.375	.187	.016
TNMG 332	.571	.375	.187	.031
TNMG 333	.531	.375	.187	.047
TNMG 432	.787	.500	.187	.031

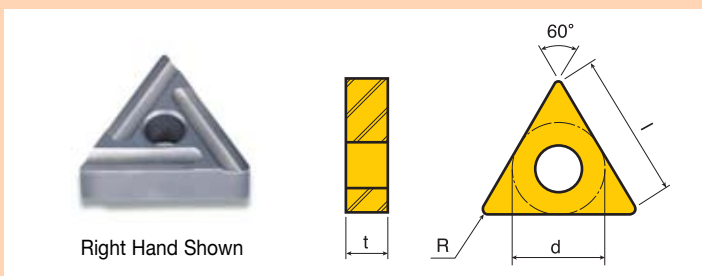
Designation		Recommended Machining Conditions															
		feed (ipr)	ap (inch)	Grades & Vc (sfm)													
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20	
TNMG 221 FG	TNMG 110304 FG	.004 (.003~.008)	.031 (.020~.059)														
TNMG 331 FG	TNMG 160404 FG	.004 (.003~.008)	.031 (.020~.079)														
TNMG 332 FG	TNMG 160408 FG	.006 (.004~.010)	.039 (.028~.079)	1181	1115												
TNMG 333 FG	TNMG 160412 FG	.007 (.005~.012)	.039 (.028~.079)	984	885												
TNMG 432 FG	TNMG 220408 FG	.006 (.004~.010)	.039 (.028~.079)														

For toolholders, see pages T134, T135, T136, T150, T151, T165, T166

Marked: Stocked Standard Items

## NEGATIVE INSERTS - TNMG FS

### CHIPBREAKER/NEGATIVE TRIANGULAR INSERTS FOR SEMI-FINISHING



Designation	l	d	t	R
TNMG 331	.610	.375	.187	.016
TNMG 332	.571	.375	.187	.031

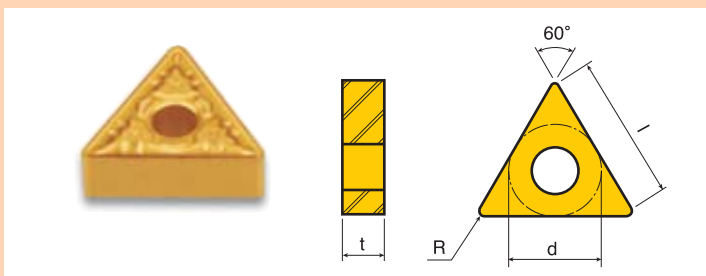
Designation		Recommended Machining Conditions															
		feed (ipr)	ap (inch)	Grades & Vc (sfm)													
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20	
TNMG 331 R-FS	TNMG 160404 R-FS	.008 (.006~.012)	.047 (.031~.118)														
TNMG 332 R-FS	TNMG 160408 R-FS	.012 (.008~.016)	.078 (.040~.137)														
TNMG 331 L-FS	TNMG 160404 L-FS	.008 (.006~.012)	.047 (.031~.118)														
TNMG 332 L-FS	TNMG 160408 L-FS	.012 (.008~.016)	.078 (.040~.137)														

For toolholders, see pages T134, T135, T136, T150, T151, T165, T166

Marked: Stocked Standard Items

## NEGATIVE INSERTS - TNMG MC

### CHIPBREAKER/NEGATIVE TRIANGULAR INSERTS FOR MEDIUM MACHINING



Designation	l	d	t	R
TNMG 332	.571	.375	.187	.031

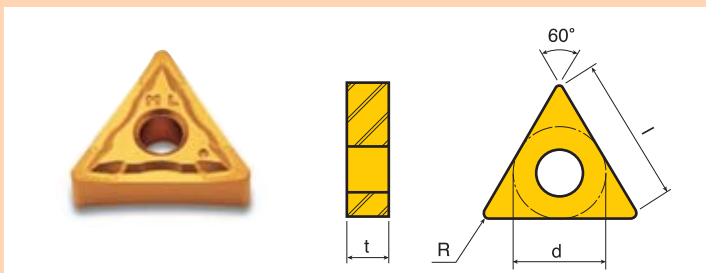
Designation		Recommended Machining Conditions																	
		feed (ipr)	ap (inch)	Grades & Vc (sfm)															
ANSI	ISO			PV3010	CT3000		TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020		P10	P20	K10	K20	
TNMG 332 MC	TNMG 160408 MC	.012 (.005~.014)	.059 (.028~.138)					1017	920		705		490						

For toolholders, see pages T134, T135, T136, T150, T151, T165, T166

Marked: Stocked Standard Items

## NEGATIVE INSERTS - TNMG ML

### CHIPBREAKER/NEGATIVE TRIANGULAR INSERTS FOR LIGHT MACHINING/SHARP



Designation	l	d	t	R
TNMG 331	.610	.375	.187	.016
TNMG 332	.571	.375	.187	.031
TNMG 333	.531	.375	.187	.047
TNMG 431	.827	.500	.187	.016
TNMG 432	.787	.500	.187	.031

Designation		Recommended Machining Conditions																	
		feed (ipr)	ap (inch)	Grades & Vc (sfm)															
ANSI	ISO			PV3010	CT3000		TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020		P10	P20	K10	K20	
TNMG 331 ML	TNMG 160404 ML	.007 (.004~.012)	.059 (.031~.138)																
TNMG 332 ML	TNMG 160408 ML	.010 (.005~.014)	.059 (.039~.138)																
TNMG 333 ML	TNMG 160412 ML	.012 (.006~.014)	.059 (.059~.138)																
TNMG 431 ML	TNMG 220404 ML	.007 (.004~.012)	.098 (.039~.157)																
TNMG 432 ML	TNMG 220408 ML	.010 (.005~.014)	.098 (.039~.157)																

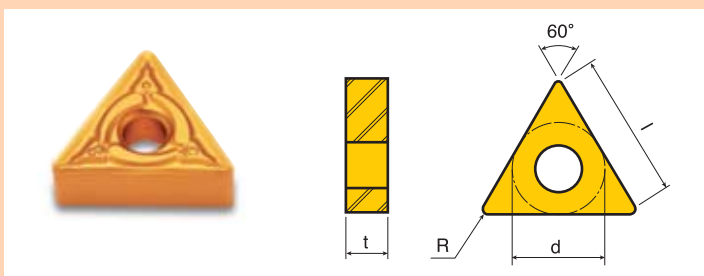
For toolholders, see pages T134, T135, T136, T150, T151, T165, T166

Marked: Stocked Standard Items

- Carbon Steel C: 0.26%
- Austenitic Stainless Steel
- High Tensile Cast Iron
- Aluminum
- Inconel
- Hardened Steel

## NEGATIVE INSERTS - TNMG MP

### CHIPBREAKER/NEGATIVE TRIANGULAR INSERTS FOR MEDIUM MACHINING/POSITIVE RAKE ANGLE



Designation	l	d	t	R
TNMG 331	.610	.375	.187	.016
TNMG 332	.571	.375	.187	.031
TNMG 333	.531	.375	.187	.047
TNMG 431	.827	.500	.187	.016
TNMG 432	.787	.500	.187	.031
TNMG 433	.748	.500	.187	.047

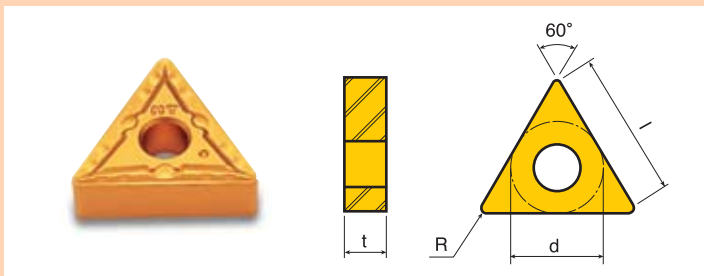
Designation		Recommended Machining Conditions												Grades & Vc (sfm)			
		feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20	
ANSI	ISO																
TNMG 331 MP	TNMG 160404 MP	.008 (.004~.012)	.059 (.031~.138)														
TNMG 332 MP	TNMG 160408 MP	.012 (.005~.016)	.059 (.039~.138)														
TNMG 333 MP	TNMG 160412 MP	.014 (.006~.016)	.059 (.059~.138)														
TNMG 431 MP	TNMG 220404 MP	.010 (.005~.014)	.079 (.039~.138)														
TNMG 432 MP	TNMG 220408 MP	.012 (.005~.016)	.079 (.039~.157)														
TNMG 433 MP	TNMG 220412 MP	.014 (.006~.016)	.079 (.039~.157)														

For toolholders, see pages T134, T135, T136, T150, T151, T165, T166

Marked: Stocked Standard Items

## NEGATIVE INSERTS - TNMG MT

### CHIPBREAKER/NEGATIVE TRIANGULAR INSERTS FOR MEDIUM ROUGHING/TOUGH RAKE ANGLE



Designation	l	d	t	R
TNMG 222	.354	.250	.125	.031
TNMG 331	.610	.375	.187	.016
TNMG 332	.571	.375	.187	.031
TNMG 333	.531	.375	.187	.047
TNMG 431	.827	.500	.187	.016
TNMG 432	.787	.500	.187	.031
TNMG 433	.748	.500	.187	.047
TNMG 543	.965	.625	.250	.047

Designation		Recommended Machining Conditions												Grades & Vc (sfm)			
		feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20	
ANSI	ISO																
TNMG 222 MT	TNMG 110308 MT	.012 (.007~.016)	.059 (.039~.118)														
TNMG 331 MT	TNMG 160404 MT	.010 (.006~.016)	.079 (.039~.138)														
TNMG 332 MT	TNMG 160408 MT	.014 (.007~.020)	.079 (.047~.138)														
TNMG 333 MT	TNMG 160412 MT	.017 (.008~.020)	.079 (.059~.138)	1082	1017												
TNMG 431 MT	TNMG 220404 MT	.010 (.006~.016)	.079 (.047~.197)	935	870												
TNMG 432 MT	TNMG 220408 MT	.014 (.007~.020)	.118 (.047~.197)														
TNMG 433 MT	TNMG 220412 MT	.017 (.008~.020)	.118 (.059~.197)														
TNMG 543 MT	TNMG 270612 MT	.017 (.008~.020)	.197 (.118~.276)														

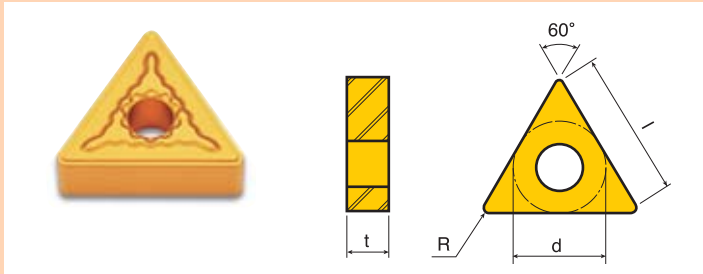
For toolholders, see pages T134, T135, T136, T150, T151, T165, T166

Marked: Stocked Standard Items



## NEGATIVE INSERTS - TNMG RT

### CHIPBREAKER/NEGATIVE TRIANGULAR INSERTS FOR ROUGHING WIDE/TOUGH RAKE ANGLE



Designation	l	d	t	R
TNMG 332	.571	.375	.187	.031
TNMG 333	.531	.375	.187	.047
TNMG 432	.787	.500	.187	.031
TNMG 433	.748	.500	.187	.047

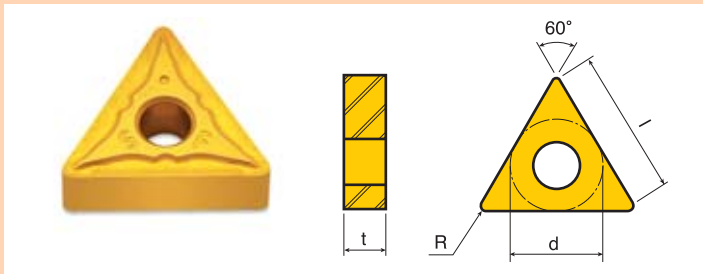
Designation		Recommended Machining Conditions														
		Grades & V <sub>c</sub> (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
TNMG 332 RT	TNMG 160408 RT	.017 (.010~.026)	.118 (.079~.197)													
TNMG 333 RT	TNMG 160412 RT	.020 (.010~.026)	.118 (.079~.197)			1082	951	870		672	640					
TNMG 432 RT	TNMG 220408 RT	.017 (.010~.026)	.157 (.079~.276)													
TNMG 433 RT	TNMG 220412 RT	.020 (.010~.026)	.157 (.098~.276)													

For toolholders, see pages T134, T135, T136, T150, T151, T165, T166

Marked: Stocked Standard Items

## NEGATIVE INSERTS - TNMG SF

### CHIPBREAKER/NEGATIVE TRIANGULAR INSERTS FOR FINISHING



Designation	l	d	t	R
TNMG 332	.571	.375	.187	.031

Designation		Recommended Machining Conditions														
		Grades & V <sub>c</sub> (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
TNMG 332 SF	TNMG 160408 SF	.008 (.004~.012)	.039 (.028~.059)		1115		1115	1017	197	787		98				
									850	540		426				

For toolholders, see pages T134, T135, T136, T150, T151, T165, T166

Marked: Stocked Standard Items

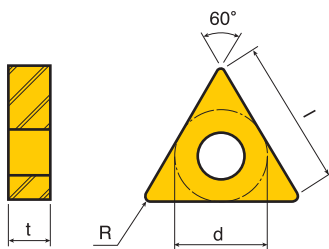
- Carbon Steel C: 0.26%
- Austenitic Stainless Steel
- High Tensile Cast Iron
- Aluminum
- Inconel
- Hardened Steel

## NEGATIVE INSERTS - TNMG VF

### CHIPBREAKER/NEGATIVE TRIANGULAR INSERTS FOR MEDIUM MACHINING WITH VERY LOW CUTTING FORCES



Right Hand Shown



Designation	l	d	t	R
TNMG 331	.610	.375	.187	.016
TNMG 332	.571	.375	.187	.031

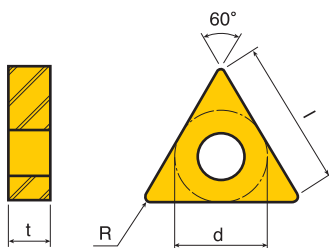
Designation		Recommended Machining Conditions												Grades & V <sub>c</sub> (sfm)			
		feed (ipr)	ap (inch)	Grades & V <sub>c</sub> (sfm)													
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20	
TNMG 331 R-VF	TNMG 160404 R-VF	.007 (.004-.012)	.059 (.028-.138)		•		•	•		•							
TNMG 332 R-VF	TNMG 160408 R-VF	.009 (.005-.014)	.071 (.039-.138)		•		•	•		•							
TNMG 331 L-VF	TNMG 160404 L-VF	.007 (.004-.012)	.059 (.028-.138)		•		•	•		•							
TNMG 332 L-VF	TNMG 160408 L-VF	.009 (.005-.014)	.071 (.039-.138)		•		•	•		•							

• For toolholders, see pages T134, T135, T136, T150, T151, T165, T166

• Marked: Stocked Standard Items

## NEGATIVE INSERTS - TNMM RH

### CHIPBREAKER/NEGATIVE TRIANGULAR INSERTS FOR HIGH FEED ROUGHING



Designation	l	d	t	R
TNMM 332	.571	.375	.187	.031
TNMM 333	.531	.375	.187	.047
TNMM 432	.787	.500	.187	.031
TNMM 433	.748	.500	.187	.047
TNMM 434	.709	.500	.187	.063
TNMM 543	.965	.625	.250	.047

Designation		Recommended Machining Conditions												Grades & V <sub>c</sub> (sfm)			
		feed (ipr)	ap (inch)	Grades & V <sub>c</sub> (sfm)													
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20	
TNMM 332 RH	TNMM 160408 RH	.019 (.012~.028)	.138 (.079~.276)					•									
TNMM 333 RH	TNMM 160412 RH	.024 (.012~.028)	.138 (.079~.276)					•									
TNMM 432 RH	TNMM 220408 RH	.019 (.012~.028)	.157 (.079~.276)					•		•							
TNMM 433 RH	TNMM 220412 RH	.024 (.012~.028)	.157 (.098~.276)				•	•		•							
TNMM 434 RH	TNMM 220416 RH	.027 (.016~.033)	.157 (.118~.276)							•							
TNMM 543 RH	TNMM 270612 RH	.025 (.012~.031)	.197 (.118~.315)							•							

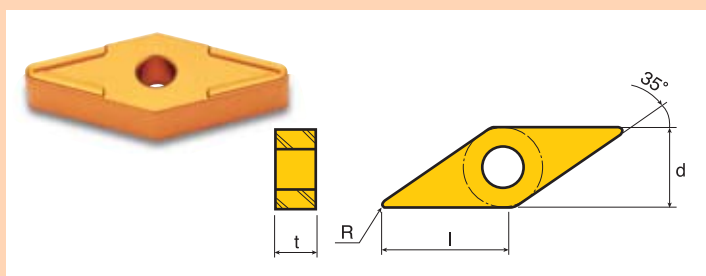
• For toolholders, see pages T134, T135, T136, T150, T151, T165, T166

• Marked: Stocked Standard Items

<span style="background-color: #0070C0; color: white; padding: 2px;"> </span> Carbon Steel C: 0.45%	<span style="background-color: #FFD700; color: black; padding: 2px;"> </span> Austenitic Stainless Steel	<span style="background-color: #DC143C; color: white; padding: 2px;"> </span> High Tensile Cast Iron
<span style="background-color: #3CB371; color: white; padding: 2px;"> </span> Aluminum	<span style="background-color: #800080; color: white; padding: 2px;"> </span> Inconel	<span style="background-color: #A9A9A9; color: black; padding: 2px;"> </span> Hardened Steel

## NEGATIVE INSERTS - VNMG

### COMMON TYPE CHIPBREAKER/NEGATIVE 35° RHOMBIC INSERTS FOR MEDIUM ROUGHING



Designation	l	d	t	R
VNMG 331	.614	.375	.187	.016
VNMG 332	.575	.375	.187	.031
VNMG 333	.535	.375	.187	.047

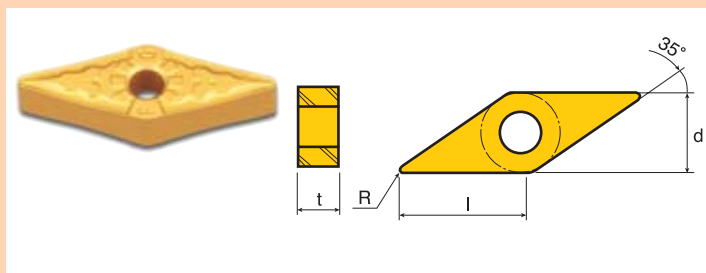
Designation		Recommended Machining Conditions														
		Grades & Vc (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
VNMG 331	VNMG 160404	.010 (.007~.016)	.059 (.039~.118)		951		951									
VNMG 332	VNMG 160408	.013 (.007~.020)	.079 (.059~.118)		820	1082	820	870		672	640					
VNMG 333	VNMG 160412	.016 (.008~.020)	.079 (.059~.118)													

\* For toolholders, see pages T137, T143, T152, T153, T166, T167, T174

• Marked: Stocked Standard Items

## NEGATIVE INSERTS - VNMG FG

### CHIPBREAKER/NEGATIVE 35° RHOMBIC INSERTS FOR FINISHING



Designation	l	d	t	R
VNMG 2.531	.425	.313	.187	.016
VNMG 2.532	.465	.313	.187	.031
VNMG 331	.614	.375	.187	.016
VNMG 332	.575	.375	.187	.031

Designation		Recommended Machining Conditions														
		Grades & Vc (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
* VNMG 2.531 FG	VNMG 130404 FG	.004 (.003~.008)	.028 (.020~.059)													
* VNMG 2.532 FG	VNMG 130408 FG	.005 (.004~.009)	.031 (.020~.079)	1181	1115		1115		197	787		98				
VNMG 331 FG	VNMG 160404 FG	.004 (.003~.008)	.031 (.020~.079)	984	885		885		850	540		426				
VNMG 332 FG	VNMG 160408 FG	.005 (.004~.009)	.031 (.020~.079)													

\* For toolholders, see pages T137, T143, T152, T153, T166, T167, T174

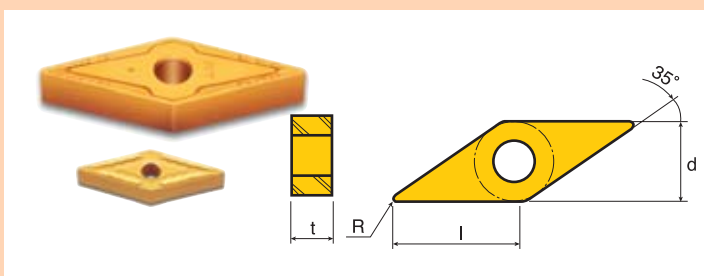
• Marked: Stocked Standard Items

\* RMarked: Insert with Screw Hole

<span style="color: blue;">■</span> Carbon Steel C: 0.45%	<span style="color: yellow;">■</span> Austenitic Stainless Steel	<span style="color: red;">■</span> High Tensile Cast Iron
<span style="color: green;">■</span> Aluminum	<span style="color: maroon;">■</span> Inconel	<span style="color: grey;">■</span> Hardened Steel

## NEGATIVE INSERTS - VNMG MT

### CHIPBREAKER/NEGATIVE 35° RHOMBIC INSERTS FOR MEDIUM ROUGHING/TOUGH RAKE ANGLE



Designation	l	d	t	R
VNMG 2.531	.425	.313	.187	.016
VNMG 2.532	.465	.313	.187	.031
VNMG 331	.614	.375	.187	.016
VNMG 332	.575	.375	.187	.031

Designation		Recommended Machining Conditions															
		feed (ipr)	ap (inch)	Grades & Vc (sfm)													
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20	
* VNMG 2.531 MT	VNMG 130404 MT	.009 (.006~.014)	.047 (.031~.098)														
* VNMG 2.532 MT	VNMG 130408 MT	.011 (.007~.014)	.059 (.039~.118)		1017		1263		1017	197	705		490				
VNMG 331 MT	VNMG 160404 MT	.009 (.006~.014)	.047 (.031~.098)		870			920	771	490	640		360				
VNMG 332 MT	VNMG 160408 MT	.011 (.007~.014)	.059 (.039~.118)														

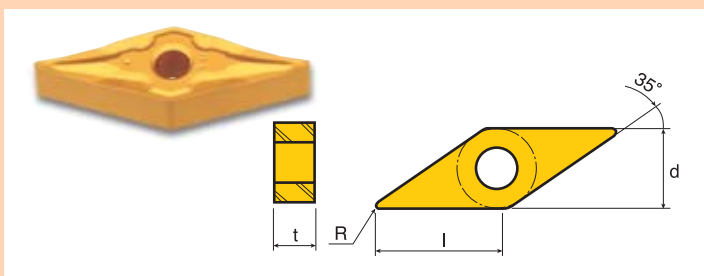
For toolholders, see pages T137, T143, T152, T153, T166, T167, T174

Marked: Stocked Standard Items

\* RMarked: Insert with Screw Hole

## NEGATIVE INSERTS - VNMM ML

### CHIPBREAKER/NEGATIVE 35° RHOMBIC INSERTS FOR MEDIUM LIGHT MACHINING/VERY SHARP



Designation	l	d	t	R
VNMM 331	.614	.375	.187	.016
VNMM 332	.575	.375	.187	.031

Designation		Recommended Machining Conditions															
		feed (ipr)	ap (inch)	Grades & Vc (sfm)													
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20	
VNMM 331 ML	VNMM 160404 ML	.006 (.004~.011)	.047 (.031~.118)							787							
VNMM 332 ML	VNMM 160408 ML	.009 (.005~.013)	.059 (.039~.118)				1115	1017		540	705				1968		

For toolholders, see pages T137, T143, T152, T153, T166, T167, T174

Marked: Stocked Standard Items

Carbon Steel C: 0.45%  
Aluminum

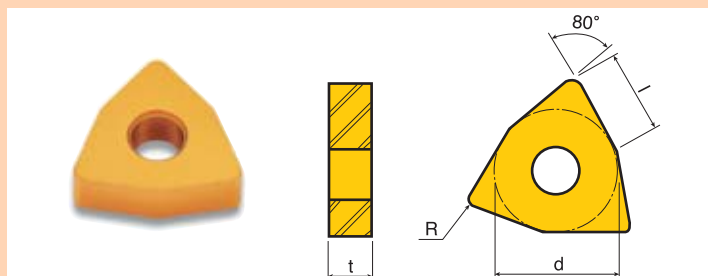
Austenitic Stainless Steel  
Inconel

High Tensile Cast Iron  
Hardened Steel



## NEGATIVE INSERTS - WNMA

### NEGATIVE 80° TRIGON INSERTS FOR ROUGHING



Designation	l	d	t	R
WNMA 332	.240	.375	.187	.031
WNMA 333	.236	.375	.187	.047
WNMA 432	.327	.500	.187	.031
WNMA 433	.323	.500	.187	.047

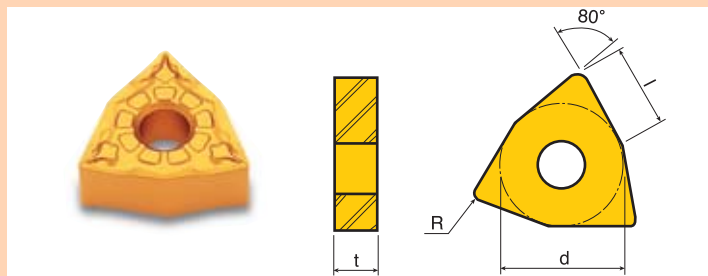
Designation		Recommended Machining Conditions														
		Grades & V <sub>c</sub> (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
WNMA 332	WNMA 060408	.018 (.006~.028)	.098 (.039~.157)			•										
WNMA 333	WNMA 060412	.020 (.008~.031)	.098 (.059~.157)			•	•									
WNMA 432	WNMA 080408	.017 (.006~.028)	.118 (.039~.197)			•	•									
WNMA 433	WNMA 080412	.020 (.008~.031)	.118 (.059~.197)			•	•									

For toolholders, see pages T137, T153, T178

• Marked: Stocked Standard Items

## NEGATIVE INSERTS - WNMG FG

### CHIPBREAKER/NEGATIVE 80° TRIGON INSERTS FOR FINISHING



Designation	l	d	t	R
WNMG 331	.244	.375	.187	.016
WNMG 332	.240	.375	.187	.031
WNMG 431	.331	.500	.187	.016
WNMG 432	.327	.500	.187	.031

Designation		Recommended Machining Conditions														
		Grades & V <sub>c</sub> (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
WNMG 331 FG	WNMG 060404 FG	.004 (.003~.008)	.031 (.020~.079)	•	•	•	•	•	•	•						
WNMG 332 FG	WNMG 060408 FG	.006 (.004~.010)	.039 (.028~.079)	•	•	•	•	•	•	•	•	•				
WNMG 431 FG	WNMG 080404 FG	.004 (.003~.008)	.031 (.020~.079)	•	•	•	•	•	•	•	•	•				
WNMG 432 FG	WNMG 080408 FG	.006 (.004~.010)	.039 (.028~.079)	•	•	•	•	•	•	•	•	•				

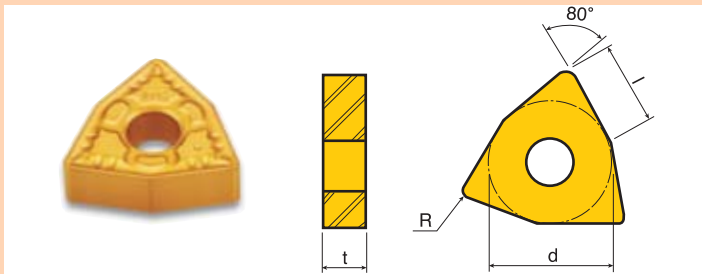
For toolholders, see pages T137, T153, T178

• Marked: Stocked Standard Items

■ Carbon Steel C: 0.45%    
 ■ Austenitic Stainless Steel    
 ■ High Tensile Cast Iron  
■ Aluminum    
 ■ Inconel    
 ■ Hardened Steel

## NEGATIVE INSERTS - WNMG MC

### CHIPBREAKER/NEGATIVE 80° TRIGON INSERTS FOR MEDIUM MACHINING



Designation	l	d	t	R
WNMG 331	.244	.375	.500	.016
WNMG 332	.240	.375	.500	.031
WNMG 432	.327	.500	.500	.031

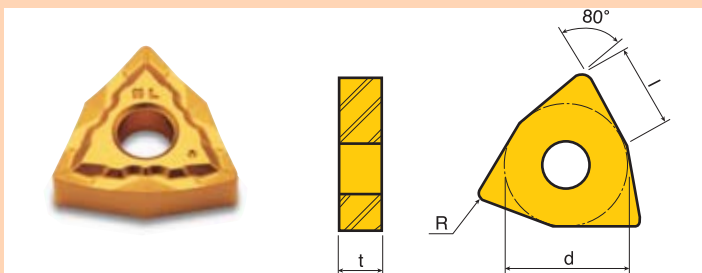
Designation		Recommended Machining Conditions														
		Grades & V <sub>c</sub> (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
WNMG 331 MC	WNMG 060404 MC	.008 (.004~.012)	.047 (.020-.098)		1017		1017									
WNMG 332 MC	WNMG 060408 MC	.012 (.005~.014)	.059 (.028-.118)				920			705						
WNMG 432 MC	WNMG 080408 MC	.012 (.005~.014)	.059 (.028-.138)		870		870									

For toolholders, see pages T137, T153, T178

Marked: Stocked Standard Items

## NEGATIVE INSERTS - WNMG ML

### CHIPBREAKER/NEGATIVE 80° TRIGON INSERTS FOR MEDIUM LIGHT MACHINING/VERY SHARP



Designation	l	d	t	R
WNMG 432	.327	.500	.187	.031
WNMG 433	.323	.500	.187	.047

Designation		Recommended Machining Conditions														
		Grades & V <sub>c</sub> (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
WNMG 432 ML	WNMG 080408 ML	.010 (.005~.014)	.059 (.039~.138)				1115	1017	197	787	705	623				
WNMG 433 ML	WNMG 080412 ML	.012 (.006~.014)	.079 (.051~.138)					850	540	705		426			1968	

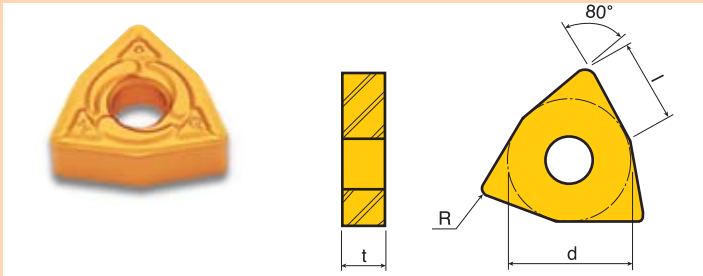
For toolholders, see pages T137, T153, T178

Marked: Stocked Standard Items

<span style="color: blue;">■</span> Carbon Steel C: 0.26%	<span style="color: yellow;">■</span> Austenitic Stainless Steel	<span style="color: red;">■</span> High Tensile Cast Iron
<span style="color: green;">■</span> Aluminum	<span style="color: purple;">■</span> Inconel	<span style="color: grey;">■</span> Hardened Steel

## NEGATIVE INSERTS - WNMG MP

### CHIPBREAKER/NEGATIVE 80° TRIGON INSERTS FOR MEDIUM MACHINING/POSITIVE RAKE ANGLE



Designation	l	d	t	R
WNMG 332	.240	.375	.187	.031
WNMG 333	.236	.375	.187	.047
WNMG 431	.331	.500	.187	.016
WNMG 432	.327	.500	.187	.031
WNMG 433	.323	.500	.187	.047

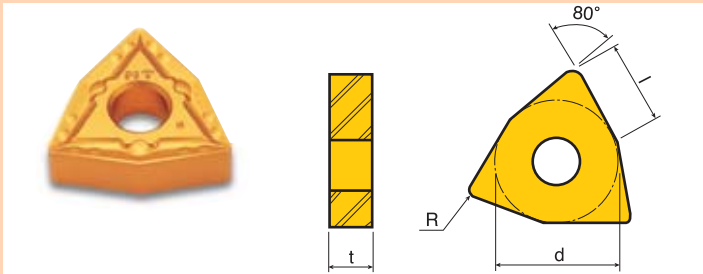
Designation		Recommended Machining Conditions														
		Grades & Vc (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
WNMG 332 MP	WNMG 060408 MP	.012 (.005~.014)	.059 (.039~.118)													
WNMG 333 MP	WNMG 060412 MP	.014 (.006~.016)	.059 (.051~.118)													
WNMG 431 MP	WNMG 080404 MP	.010 (.004~.014)	.079 (.039~.157)				1082	984	197	738	689	590				
WNMG 432 MP	WNMG 080408 MP	.012 (.005~.016)	.079 (.039~.157)						820	525		393				
WNMG 433 MP	WNMG 080412 MP	.014 (.006~.016)	.079 (.051~.157)													

For toolholders, see pages T137, T153, T178

Marked: Stocked Standard Items

## NEGATIVE INSERTS - WNMG MT

### CHIPBREAKER/NEGATIVE 80° TRIGON INSERTS FOR MEDIUM ROUGHING/TOUGH RAKE ANGLE



Designation	l	d	t	R
WNMG 331	.244	.375	.187	.016
WNMG 332	.240	.375	.187	.031
WNMG 333	.236	.375	.187	.047
WNMG 431	.331	.500	.187	.016
WNMG 432	.327	.500	.187	.031
WNMG 433	.323	.500	.187	.047

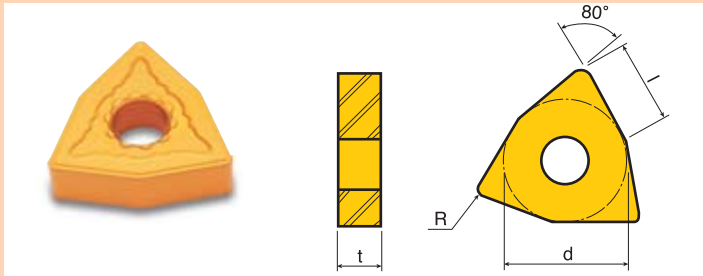
Designation		Recommended Machining Conditions														
		Grades & Vc (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
WNMG 331 MT	WNMG 060404 MT	.010 (.006~.016)	.079 (.039~.118)													
WNMG 332 MT	WNMG 060408 MT	.014 (.006~.018)	.079 (.047~.118)													
WNMG 333 MT	WNMG 060412 MT	.017 (.008~.020)	.079 (.059~.118)		1017		1017		197	705	640	490				
WNMG 431 MT	WNMG 080404 MT	.010 (.005~.016)	.118 (.039~.157)		870	1263	870	920	771	820		360				
WNMG 432 MT	WNMG 080408 MT	.014 (.007~.022)	.118 (.047~.157)													
WNMG 433 MT	WNMG 080412 MT	.017 (.010~.022)	.118 (.059~.157)													

For toolholders, see pages T137, T153, T178

Marked: Stocked Standard Items

## NEGATIVE INSERTS - WNMG RT

### CHIPBREAKER/NEGATIVE 80° TRIGON INSERTS FOR ROUGHING/ WIDE, TOUGH ANGLE



Designation	l	d	t	R
WNMG 432	.327	.500	.187	.031
WNMG 433	.323	.500	.187	.047
WNMG 434	.319	.500	.187	.063

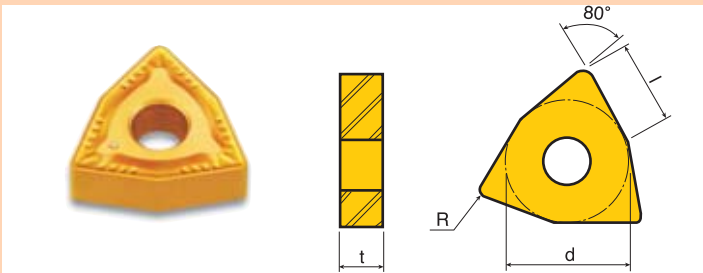
Designation		Recommended Machining Conditions												Grades & V <sub>c</sub> (sfm)				
		feed (ipr)	ap (inch)	Grades & V <sub>c</sub> (sfm)														
ANSI	ISO			PV3010	CT3000		TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020		P10	P20	K10	K20
WNMG 432 RT	WNMG 080408 RT	.018 (.010~.028)	.016 (.098~.157)				•	•	•	•	•	•						
WNMG 433 RT	WNMG 080412 RT	.022 (.010~.028)	.016 (.098~.157)				•	•	•	•	•	•						
WNMG 434 RT	WNMG 080416 RT	.024 (.012~.030)	.016 (.098~.157)				•	•	•	•	•	•						

• For toolholders, see pages T137, T153, T178

• Marked: Stocked Standard Items

## NEGATIVE INSERTS - WNMG WT

### CHIPBREAKER/NEGATIVE 80° TRIGON WIPER INSERTS FOR MEDIUM ROUGHING



Designation	l	d	t	R
WNMG 332	.240	.375	.187	.031
WNMG 432	.327	.500	.187	.031
WNMG 433	.323	.500	.187	.047

Designation		Recommended Machining Conditions												Grades & V <sub>c</sub> (sfm)				
		feed (ipr)	ap (inch)	Grades & V <sub>c</sub> (sfm)														
ANSI	ISO			PV3010	CT3000		TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020		P10	P20	K10	K20
WNMG 332 WT	WNMG 060408 WT	.018 (.006~.024)	.059 (.028~.138)				•	•	•	•	•	•						
WNMG 432 WT	WNMG 080408 WT	.018 (.006~.024)	.079 (.039~.157)				•	•	•	•	•	•						
WNMG 433 WT	WNMG 080412 WT	.020 (.008~.031)	.079 (.039~.157)				•	•	•	•	•	•						

• For toolholders, see pages T137, T153, T178

• Marked: Stocked Standard Items

Carbon Steel C: 0.45%  
Aluminum

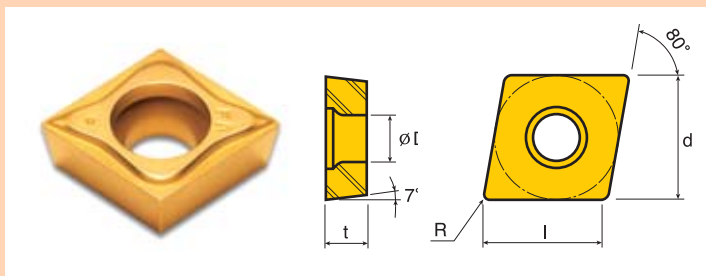
Austenitic Stainless Steel  
Inconel

High Tensile Cast Iron  
Hardened Steel



## POSITIVE INSERTS - CCMT FA

### CHIPBREAKER/POSITIVE 7° RHOMBIC INSERTS FOR SUPER FINISHING



Designation	l	d	t	R	fl D1
CCMT 21.50.5	.244	.250	.094	.008	.110
CCMT 21.51	.236	.250	.094	.016	.110
CCMT 32.50.5	.370	.375	.156	.008	.173
CCMT 32.51	.362	.375	.156	.016	.173
CCMT 32.52	.346	.375	.156	.031	.173

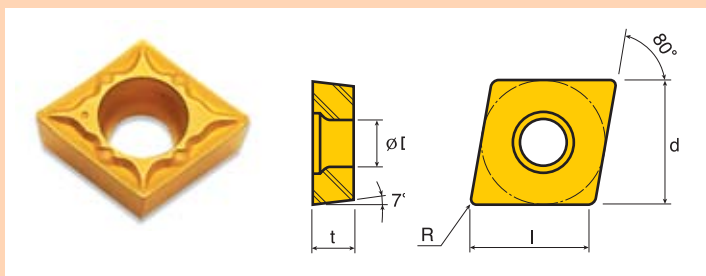
Designation		Recommended Machining Conditions														
		Grades & Vc (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
CCMT 21.50.5 FA	CCMT 060202 FA	.003 (.002~.006)	.012 (.004~.059)													
CCMT 21.51 FA	CCMT 060204 FA	.003 (.002~.006)	.016 (.004~.059)	1181	1115				197	787		623				
CCMT 32.50.5 FA	CCMT 09T302 FA	.003 (.002~.006)	.012 (.004~.079)	984	885				850	540		426				
CCMT 32.51 FA	CCMT 09T304 FA	.004 (.002~.008)	.016 (.004~.079)													
CCMT 32.52 FA	CCMT 09T308 FA	.006 (.004~.010)	.020 (.008~.079)													

For toolholders, see pages T138, T168, T169

Marked: Stocked Standard Items

## POSITIVE INSERTS - CCMT FG

### CHIPBREAKER/POSITIVE 7° CLEARANCE 80° RHOMBIC INSERTS FOR FINISHING



Designation	l	d	t	R	fl D1
CCMT 21.51	.236	.250	.094	.016	.110
CCMT 32.51	.362	.375	.156	.016	.173
CCMT 32.52	.346	.375	.156	.031	.173
CCMT 432	.472	.500	.187	.031	.217

Designation		Recommended Machining Conditions														
		Grades & Vc (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
CCMT 21.51 FG	CCMT 060204 FG	.003 (.002~.006)	.020 (.012~.059)													
CCMT 32.51 FG	CCMT 09T304 FG	.004 (.003~.008)	.028 (.016~.079)	1181	1115			1115	197	787		623				
CCMT 32.52 FG	CCMT 09T308 FG	.006 (.004~.010)	.039 (.024~.079)	951	885			1017	850	540		426				
CCMT 432 FG	CCMT 120408 FG	.006 (.004~.010)	.039 (.024~.079)													

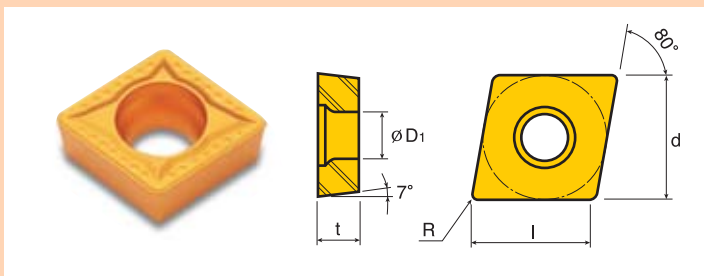
For toolholders, see pages T138, T168, T169

Marked: Stocked Standard Items

- Carbon Steel C: 0.45%
- Austenitic Stainless Steel
- High Tensile Cast Iron
- Aluminum
- Inconel
- Hardened Steel

## ■ POSITIVE INSERTS - CCMT MT

### ■ CHIPBREAKER/POSITIVE 7° CLEARANCE 80° RHOMBIC INSERTS FOR MEDIUM MACHINING



Designation	l	d	t	R	fl D1
CCMT 21.51	.236	.250	.094	.016	.110
CCMT 21.52	.220	.250	.094	.031	.110
CCMT 32.511	.362	.375	.156	.016	.173
CCMT 32.52	.346	.375	.156	.031	.173
CCMT 431	.488	.500	.187	.016	.217
CCMT 432	.472	.500	.187	.031	.217
CCMT 433	.457	.500	.187	.047	.217

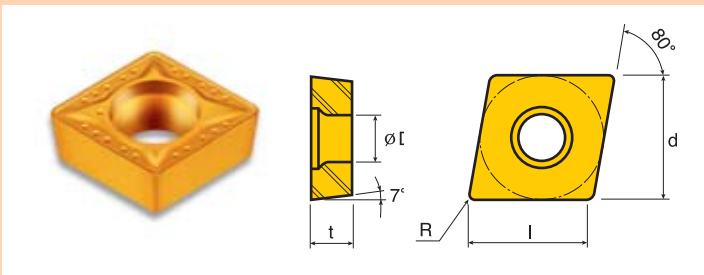
Designation		Recommended Machining Conditions												Legend: P M K N S H			
		feed (ipr)	ap (inch)	Grades & Vc (sfm)													
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20	
CCMT 21.51 MT	CCMT 060204 MT	.004 (.003~.008)	.028 (.020~.079)	•	•	•	•	•	•	•	•	•			•		
CCMT 21.52 MT	CCMT 060208 MT	.007 (.005~.012)	.039 (.028~.079)		•	•	•	•	•	•	•	•					
CCMT 32.51 MT	CCMT 09T304 MT	.006 (.004~.010)	.059 (.028~.138)	1115	1017	•	•	•	•	•	•	•					
CCMT 32.52 MT	CCMT 09T308 MT	.007 (.005~.012)	.059 (.039~.138)	920	820	1263	1017	920	197	705	640	490			490		
CCMT 431 MT	CCMT 120404 MT	.006 (.004~.010)	.079 (.039~.197)	920	820	•	•	•	771	490	640	360					
CCMT 432 MT	CCMT 120408 MT	.007 (.005~.012)	.079 (.051~.197)	•	•	•	•	•	•	•	•	•					
CCMT 433 MT	CCMT 120412 MT	.009 (.007~.014)	.079 (.059~.197)	•	•	•	•	•	•	•	•	•					

• For toolholders, see pages T138, T168, T169

• Marked: Stocked Standard Items

## ■ POSITIVE INSERTS - CCMT WT

### ■ CHIPBREAKER/POSITIVE 80° TRIGON WIPER INSERTS FOR MEDIUM ROUGHING



Designation	l	d	t	R	fl D1
CCMT 32.52	.346	.375	.156	.031	.173

Designation		Recommended Machining Conditions												Legend: P M K N S H			
		feed (ipr)	ap (inch)	Grades & Vc (sfm)													
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20	
CCMT 32.52 WT	CCMT 09T308 WT	.012 (.004~.016)	.059 (.028~.118)		920	•	1132	•	920	•	820	•	640				
					787								443				

• For toolholders, see pages T138, T168, T169

• Marked: Stocked Standard Items

Carbon Steel C: 0.45%  
Aluminum

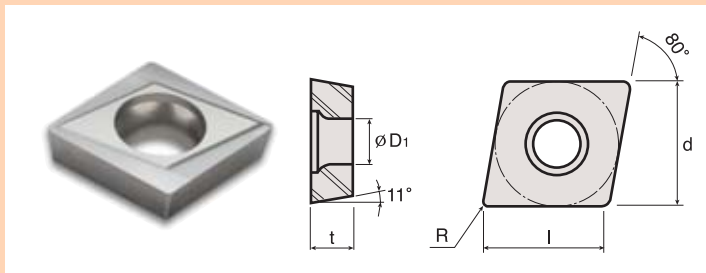
Austenitic Stainless Steel  
Inconel

High Tensile Cast Iron  
Hardened Steel

# TAEGUline

## POSITIVE INSERTS - CPGT C

### CHIPBREAKER/POSITIVE 11° CLEARANCE 80° RHOMBIC GROUND INSERTS FOR FINISHING



Designation	l	d	t	R	fl D <sub>1</sub>
CPGT 2.51.51	.299	.313	.094	.016	.134
CPGT 321	.362	.375	.125	.016	.173

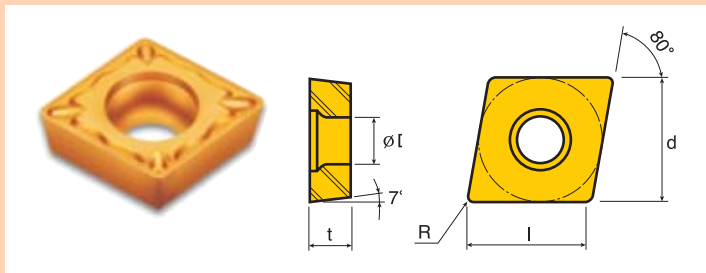
Designation		Recommended Machining Conditions														
		Grades & V <sub>c</sub> (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
CPGT 2.51.51 C	CPGT 080204 C	.003 (.002~.008)	.028 (.016~.059)		885											
					656											
CPGT 321 C	CPGT 090304 C	.003 (.002~.008)	.028 (.016~.079)		787											

• For toolholders, see page T170

• Marked: Stocked Standard Items

## POSITIVE INSERTS - CPMT FG

### CHIPBREAKER/POSITIVE 11° CLEARANCE 80° RHOMBIC INSERTS FOR FINISHING



Designation	l	d	t	R	fl D <sub>1</sub>
CPMT 2.51.51	.299	.313	.094	.016	.134
CPMT 2.51.52	.283	.313	.094	.031	.134
CPMT 321	.362	.375	.125	.016	.173
CPMT 322	.346	.375	.125	.031	.173

Designation		Recommended Machining Conditions														
		Grades & V <sub>c</sub> (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
CPMT 2.51.51 FG	CPMT 080204 FG	.004 (.003~.008)	.027 (.015~.059)													
CPMT 2.51.52 FG	CPMT 080208 FG	.006 (.004~.010)	.039 (.023~.059)		1115		1115			787						
CPMT 321 FG	CPMT 090304 FG	.004 (.003~.008)	.027 (.015~.078)		885		885	1017		540						
CPMT 322 FG	CPMT 090308 FG	.006 (.004~.010)	.039 (.023~.078)													

• For toolholders, see page T170

• Marked: Stocked Standard Items

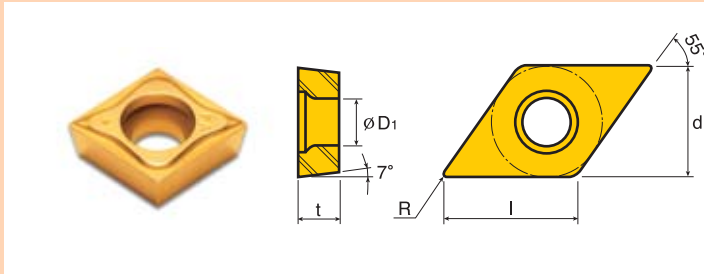
Carbon Steel C: 0.45%  
Aluminum

Austenitic Stainless Steel  
Inconel

High Tensile Cast Iron  
Hardened Steel

## ■ POSITIVE INSERTS - DCMT FA

### ■ CHIPBREAKER/POSITIVE 7° CLEARANCE 80°RHOMBIC INSERTS FOR SUPER FINISHING



Designation	l	d	t	R	fl D <sub>1</sub>
DCMT 21.50.5	.295	.250	.094	.008	.110
DCMT 32.50.5	.445	.375	.156	.008	.173

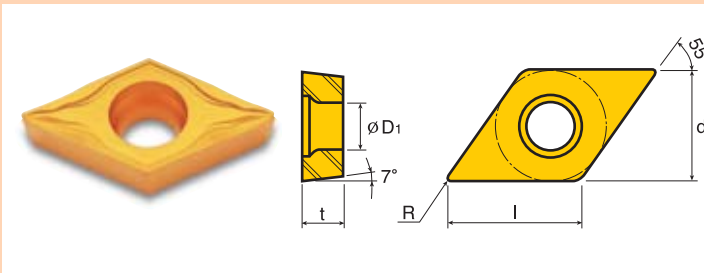
Designation		Recommended Machining Conditions														
		Grades & V <sub>c</sub> (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
DCMT 21.50.5 FA	DCMT 070202 FA	.003 (.002~.006)	.020 (.012~.039)	1181	1115		1115		197	787		623				
DCMT 32.50.5 FA	DCMT 11T302 FA	.003 (.002~.006)	.020 (.012~.039)	951	885		885	1017	850	540		426				

• For toolholders, see pages T138, T139

• Marked: Stocked Standard Items

## ■ POSITIVE INSERTS - DCMT FG

### ■ CHIPBREAKER/POSITIVE 7° CLEARANCE 55°RHOMBIC INSERTS FOR FINISHING



Designation	l	d	t	R	fl D <sub>1</sub>
DCMT 21.51	.287	.250	.094	.016	.110
DCMT 32.51	.441	.375	.156	.016	.173
DCMT 32.52	.425	.375	.156	.031	.173

Designation		Recommended Machining Conditions														
		Grades & V <sub>c</sub> (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
DCMT 21.51 FG	DCMT 070204 FG	.004 (.003~.008)	.028 (.016~.059)	1181	1115		1115		197	787		623				
DCMT 32.51 FG	DCMT 11T304 FG	.004 (.003~.008)	.028 (.016~.079)	951	885		885	1017	850	540		426				
DCMT 32.52 FG	DCMT 11T308 FG	.006 (.004~.010)	.039 (.024~.079)													

• For toolholders, see pages T138, T139

• Marked: Stocked Standard Items

Carbon Steel C: 0.45%  
Aluminum

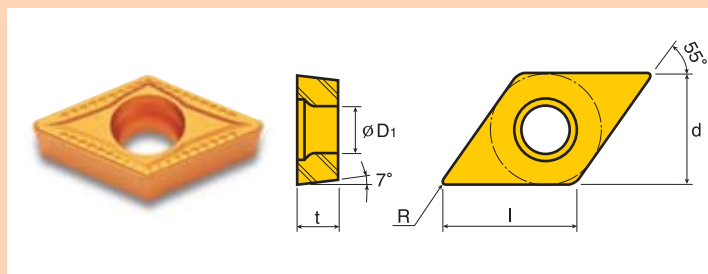
Austenitic Stainless Steel  
Inconel

High Tensile Cast Iron  
Hardened Steel



## POSITIVE INSERTS - DCMT MT

### CHIPBREAKER/POSITIVE 7° CLEARANCE 55° RHOMBIC INSERTS FOR MEDIUM MACHINING



Designation	l	d	t	R	fl D <sub>1</sub>
DCMT 32.51	.441	.375	.156	.016	.173
DCMT 32.52	.425	.375	.156	.031	.173
DCMT 32.53	.413	.375	.156	.047	.173

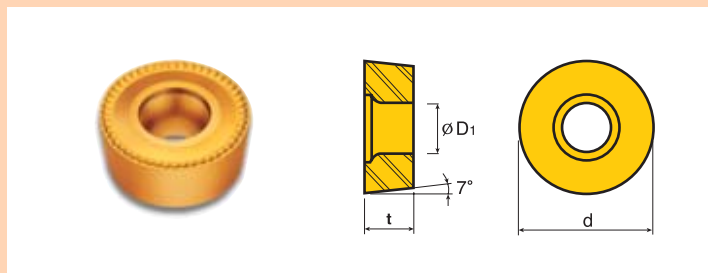
Designation		Recommended Machining Conditions														
		Grades & V <sub>c</sub> (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
DCMT 32.51 MT	DCMT 11T304 MT	.006 (.004~.010)	.039 (.028~.118)													
DCMT 32.52 MT	DCMT 11T308 MT	.007 (.005~.012)	.059 (.039~.118)		885	1263	1017	920	197	705	640	490				393
DCMT 32.53 MT	DCMT 11T312 MT	.009 (.007~.014)	.079 (.059~.118)				820		771	490		360				

For toolholders, see pages T138, T139

Marked: Stocked Standard Items

## POSITIVE INSERTS - RCMT MT

### CHIPBREAKER/POSITIVE 7° CLEARANCE ROUND INSERTS FOR MEDIUM MACHINING



Designation	d	t	fl D <sub>1</sub>
RCMT 10T300	.394	.156	.173
RCMT 120400	.472	.187	.173
RCMT 160600	.630	.250	.217

Designation		Recommended Machining Conditions														
		Grades & V <sub>c</sub> (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
-	RCMT 10T300 MT	.012 (.008~.020)	.079 (.039~.157)													
-	RCMT 120400 MT	.016 (.012~.024)	.118 (.079~.197)			1263	1017	920		705						
-	RCMT 160600 MT	.024 (.016~.032)	.157 (.118~.276)				820			490						

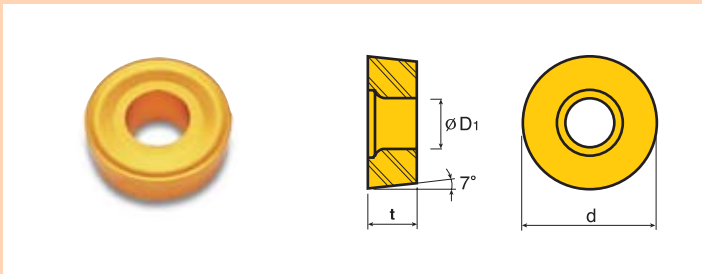
For toolholders, see pages T140

Marked: Stocked Standard Items

- Carbon Steel C: 0.45%
- Austenitic Stainless Steel
- High Tensile Cast Iron
- Aluminum
- Inconel
- Hardened Steel

## ■ POSITIVE INSERTS - RCMX

### ■ CHIPBREAKER/POSITIVE 7° CLEARANCE ROUND INSERTS FOR ROUGHING



Designation	d	t	fl D <sub>1</sub>
RCMX 100300	.394	.125	.142
RCMX 120400	.472	.187	.165
RCMX 160600	.630	.250	.205
RCMX 200600	.787	.250	.256
RCMX 250700	.984	.313	.283
RCMX 320900	1.260	.375	.374

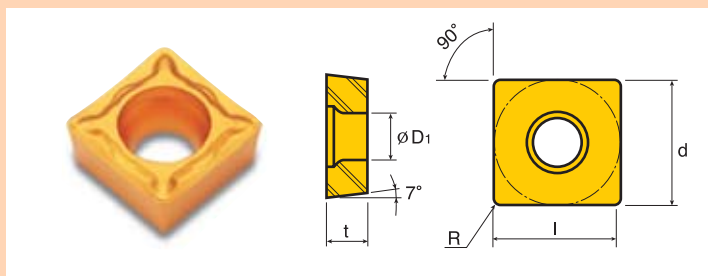
Designation		Recommended Machining Conditions														
		Grades & V <sub>c</sub> (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
-	RCMX 100300	.014 (.010~.020)	.098 (.059~.157)													
-	RCMX 120400	.018 (.012~.024)	.138 (.098~.197)													
-	RCMX 160600	.022 (.016~.030)	.197 (.118~.276)													
-	RCMX 200600	.028 (.019~.035)	.236 (.138~.354)													
-	RCMX 250700	.033 (.022~.047)	.315 (.157~.472)													
-	RCMX 320900	.039 (.026~.059)	.394 (.197~.591)													

• Marked: Stocked Standard Items

<span style="color: blue;">■</span> Carbon Steel C: 0.45%	<span style="color: yellow;">■</span> Austenitic Stainless Steel	<span style="color: red;">■</span> High Tensile Cast Iron
<span style="color: green;">■</span> Aluminum	<span style="color: maroon;">■</span> Inconel	<span style="color: grey;">■</span> Hardened Steel

## POSITIVE INSERTS - SCMT FG

### CHIPBREAKER/POSITIVE 7° CLEARANCE SQUARE INSERTS FOR FINISHING



Designation	l	d	t	R	fl D1
SCMT 32.52	.343	.375	.156	.031	.173

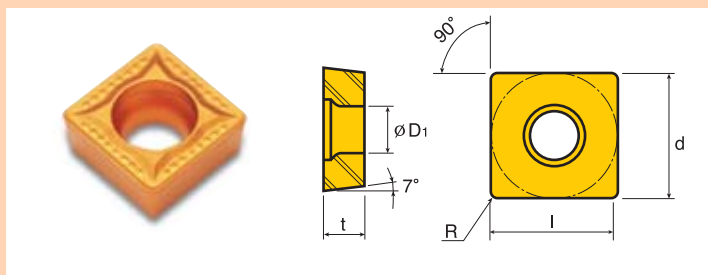
Designation		Recommended Machining Conditions														
		Grades & Vc (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
SCMT 32.52 FG	SCMT 09T308 FG	.006 (.004~.010)	.039 (.024~.079)				1115 885	1017	197 850	787 540	689	623 426				

• For toolholders, see pages T141

• Marked: Stocked Standard Items

## POSITIVE INSERTS - SCMT MT

### CHIPBREAKER/POSITIVE 7° CLEARANCE SQUARE INSERTS FOR MEDIUM MACHINING



Designation	l	d	t	R	fl D1
SCMT 32.51	.358	.375	.156	.016	.173
SCMT 32.52	.343	.375	.156	.031	.173
SCMT 431	.484	.500	.187	.016	.217
SCMT 432	.469	.500	.187	.031	.217
SCMT 433	.453	.500	.187	.047	.217

Designation		Recommended Machining Conditions														
		Grades & Vc (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
SCMT 32.51 MT	SCMT 09T304 MT	.006 (.004~.010)	.059 (.028~.138)													
SCMT 32.52 MT	SCMT 09T308 MT	.007 (.005~.012)	.059 (.039~.138)		1017		1017		197	705		490				
SCMT 431 MT	SCMT 120404 MT	.006 (.004~.010)	.079 (.039~.197)		820	1148	820	920	820	490	640	360				
SCMT 432 MT	SCMT 120408 MT	.007 (.005~.012)	.079 (.039~.197)													
SCMT 433 MT	SCMT 120412 MT	.009 (.006~.014)	.079 (.039~.197)													

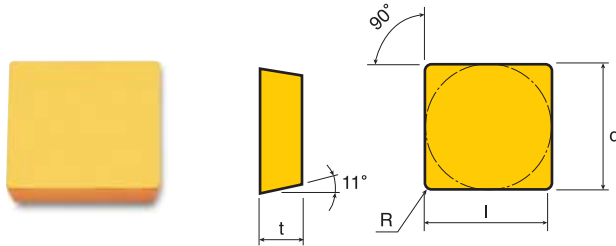
• For toolholders, see pages T141

• Marked: Stocked Standard Items

■ Carbon Steel C: 0.45%   
 ■ Austenitic Stainless Steel   
 ■ High Tensile Cast Iron  
■ Aluminum   
 ■ Inconel   
 ■ Hardened Steel

## ■ POSITIVE INSERTS - SPG

### ■ CHIPBREAKER/POSITIVE 11° CLEARANCE SOLID SQUARE INSERTS FOR FINISHING



Designation	l	d	t	R
SPG 321	.358	.375	.125	.016
SPG 322	.343	.375	.125	.031
SPG 421	.484	.500	.125	.016
SPG 422	.469	.500	.125	.031
SPG 423	.453	.500	.125	.047
SPG 431	.484	.500	.187	.016
SPG 432	.469	.500	.187	.031
SPG 433	.453	.500	.187	.047
SPG 434	.437	.500	.187	.063
SPG 531	.606	.625	.187	.016
SPG 532	.591	.625	.187	.031
SPG 533	.575	.625	.187	.047
SPG 631	.732	.750	.187	.016
SPG 632	.717	.750	.187	.031

Designation		Recommended Machining Conditions												Grades & V <sub>c</sub> (sfm)				
		feed (ipr)	ap (inch)	Grades & V <sub>c</sub> (sfm)														
ANSI	ISO			PV3010	CT3000		TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020		P20	P30	K10	K20
SPG 321	SPGN 090304	.005 (.003~.008)	.059 (.028~.138)					•									•	
SPG 322	SPGN 090308	.006 (.004~.010)	.059 (.028~.138)					•								•	•	•
SPG 421	SPGN 120304	.005 (.003~.008)	.079 (.039~.197)				•								•		•	
SPG 422	SPGN 120308	.006 (.004~.010)	.079 (.039~.197)					•		•					•	•	•	•
SPG 423	SPGN 120312	.008 (.006~.012)	.079 (.039~.197)					•									•	
SPG 431	SPGN 120404	.005 (.003~.008)	.079 (.039~.197)															•
SPG 432	SPGN 120408	.006 (.004~.010)	.079 (.039~.197)						820									•
SPG 433	SPGN 120412	.008 (.006~.012)	.079 (.039~.197)				1082		656	722					558	459	490	393
SPG 434	SPGN 120416	.009 (.007~.013)	.079 (.039~.197)															•
SPG 531	SPGN 150404	.005 (.003~.008)	.118 (.059~.275)					•							•		•	
SPG 532	SPGN 150408	.006 (.004~.010)	.118 (.059~.275)												•			
SPG 533	SPGN 150412	.008 (.006~.012)	.118 (.059~.275)															
SPG 631	SPGN 190404	.005 (.003~.008)	.157 (.059~.354)					•							•			
SPG 632	SPGN 190408	.006 (.004~.010)	.157 (.059~.354)												•		•	

• For toolholders, see pages T128

• Marked: Stocked Standard Items

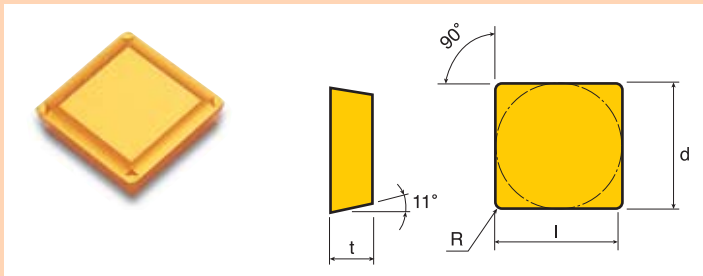
■ Carbon Steel C: 0.45%  
■ Aluminum

■ Austenitic Stainless Steel  
■ Inconel

■ High Tensile Cast Iron  
■ Hardened Steel

## POSITIVE INSERTS - SPMR

### CHIPBREAKER/POSITIVE 11° CLEARANCE SQUARE INSERTS FOR MEDIUM MACHINING



Designation	l	d	t	R
SPMR 321	.358	.375	.125	.016
SPMR 322	.343	.375	.125	.031
SPMR 421	.484	.500	.125	.016
SPMR 422	.469	.500	.125	.031

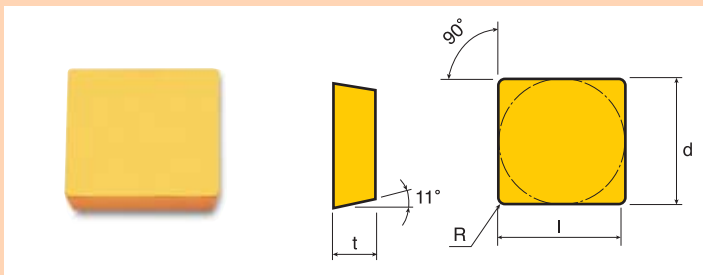
Designation		Recommended Machining Conditions																	
		Grades & V <sub>c</sub> (sfm)																	
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000		TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020		P10	P20	K10	K20	
SPMR 321	SPMR 090304	.006 (.004~.010)	.059 (.028~.138)																
SPMR 322	SPMR 090308	.007 (.005~.012)	.059 (.039~.138)					920			623								
SPMR 421	SPMR 120304	.006 (.004~.010)	.079 (.039~.197)				1115	755	820		459								
SPMR 422	SPMR 120308	.007 (.005~.012)	.079 (.039~.197)																

For toolholders, see pages T128

Marked: Stocked Standard Items

## POSITIVE INSERTS - SPU

### POSITIVE 11° CLEARANCE SQUARE INSERTS FOR MEDIUM MACHINING



Designation	l	d	t	R
SPU 321	.358	.375	.125	.016
SPU 322	.343	.375	.125	.031
SPU 421	.484	.500	.125	.016
SPU 422	.469	.500	.125	.031
SPU 423	.453	.500	.125	.047
SPU 531	.606	.625	.187	.016
SPU 633	.701	.750	.187	.047

Designation		Recommended Machining Conditions																	
		Grades & V <sub>c</sub> (sfm)																	
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000		TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020		P20	P30	K10	K20	
SPU 321	SPUN 090304	.008 (.004~.012)	.059 (.039~.138)																
SPU 322	SPUN 090308	.012 (.006~.016)	.059 (.039~.138)																
SPU 421	SPUN 120304	.008 (.004~.012)	.098 (.039~.197)			820		820											
SPU 422	SPUN 120308	.012 (.006~.016)	.098 (.039~.197)				1082	656	722						558	459	490	393	
SPU 423	SPUN 120312	.016 (.008~.020)	.098 (.039~.197)			656													
SPU 531	SPUN 150404	.008 (.004~.012)	.118 (.059~.276)																
SPU 633	SPUN 190412	.016 (.008~.020)	.157 (.059~.354)																

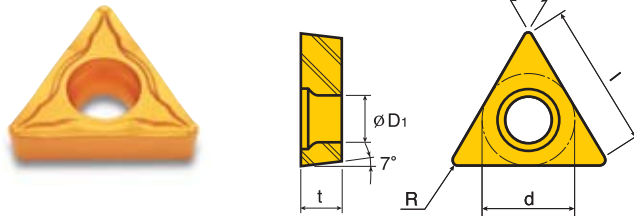
For toolholders, see pages T128

Marked: Stocked Standard Items



## POSITIVE INSERTS - TCMT FG

### CHIPBREAKER/POSITIVE 7° CLEARANCE TRIANGULAR INSERTS FOR ROUGHING



Designation	l	d	t	R	fl D1
TCMT 732	.299	.219	.094	.031	.098
TCMT 21.51	.394	.250	.094	.016	.110
TCMT 21.52	.354	.250	.094	.031	.110
TCMT 32.51	.610	.375	.156	.016	.173
TCMT 32.52	.571	.375	.156	.031	.173

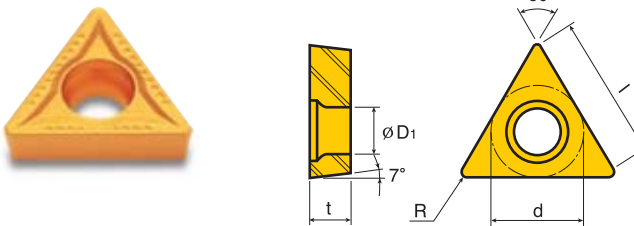
Designation		Recommended Machining Conditions																
		feed (ipr)	ap (inch)	Grades & V <sub>c</sub> (sfm)											P10	P20	K10	K20
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020						
TCMT 732 FG	TCMT 090208 FG	.006 (.004~.010)	.039 (.024~.059)															
TCMT 21.51 FG	TCMT 110204 FG	.004 (.003~.008)	.039 (.016~.059)	1181	1115		1115		197	787		623						
TCMT 21.52 FG	TCMT 110208 FG	.006 (.004~.010)	.039 (.024~.059)					1017			689							
TCMT 32.51 FG	TCMT 16T304 FG	.004 (.003~.008)	.039 (.016~.079)	951	885		885		850	540		426						
TCMT 32.52 FG	TCMT 16T308 FG	.006 (.004~.010)	.039 (.024~.079)															

• For toolholders, see pages T141, T142, T172, T175, T176

• Marked: Stocked Standard Items

## POSITIVE INSERTS - TCMT MT

### CHIPBREAKER/POSITIVE 7° CLEARANCE TRIANGULAR INSERTS FOR MEDIUM MACHINING



Designation	l	d	t	R	fl D1
TCMT 731	.339	.219	.094	.016	.098
TCMT 732	.299	.219	.094	.031	.098
TCMT 21.51	.394	.250	.094	.016	.110
TCMT 21.52	.354	.250	.094	.031	.110
TCMT 32.51	.610	.375	.156	.016	.173
TCMT 32.52	.571	.375	.156	.031	.173
TCMT 32.53	.531	.375	.156	.047	.173

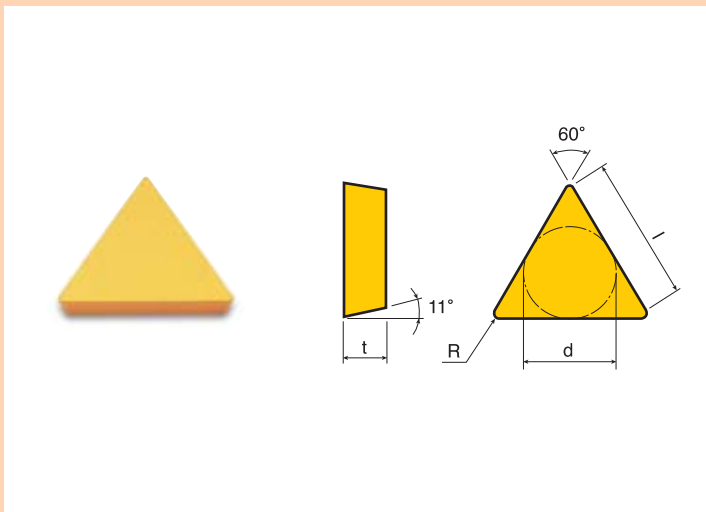
Designation		Recommended Machining Conditions																
		feed (ipr)	ap (inch)	Grades & V <sub>c</sub> (sfm)											P10	P20	K10	K20
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020						
TCMT 731 MT	TCMT 090204 MT	.006 (.004~.010)	.039 (.024~.079)															
TCMT 732 MT	TCMT 090208 MT	.007 (.005~.012)	.039 (.031~.079)															
TCMT 21.51 MT	TCMT 110204 MT	.006 (.004~.010)	.059 (.024~.118)	1115	1017		1017		197	705		490						
TCMT 21.52 MT	TCMT 110208 MT	.007 (.005~.012)	.059 (.031~.118)			1263		920			640					558	490	
TCMT 32.51 MT	TCMT 16T304 MT	.006 (.004~.010)	.079 (.031~.197)	920	820		820		820	490		360						
TCMT 32.52 MT	TCMT 16T308 MT	.007 (.004~.012)	.079 (.039~.197)															
TCMT 32.53 MT	TCMT 16T312 MT	.008 (.004~.012)	0.79 (.059~.197)															

• For toolholders, see pages T141, T142, T172, T175, T176

• Marked: Stocked Standard Items

## POSITIVE INSERTS - TPG

### POSITIVE 11° CLEARANCE TRIANGULAR INSERTS FOR FINISHING



Designation	l	d	t	R
TPG 221	.394	.250	.125	.016
TPG 222	.354	.250	.125	.031
TPG 320.5	.630	.375	.125	.008
TPG 321	.610	.375	.125	.016
TPG 322	.571	.375	.125	.031
TPG 323	.531	.375	.125	.047
TPG 431	.827	.500	.187	.016
TPG 432	.787	.500	.187	.031
TPG 433	.748	.500	.187	.047
TPG 434	.709	.500	.187	.063
TPG 436	.622	.500	.187	.098
TPG 438	.575	.500	.187	.118
TPG 542	1.004	.625	.250	.031

Designation		Recommended Machining Conditions												Grades & Vc (sfm)				
		feed (ipr)	ap (inch)	Grades & Vc (sfm)														
ANSI	ISO			PV3010	CT3000		TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020		P20	P30	K10	K20
TPG 221	TPGN 110304	.005 (.003~.008)	.059 (.028~.118)		•			•	•						•		•	•
TPG 222	TPGN 110308	.006 (.004~.010)	.059 (.039~.118)				•	•								•	•	
TPG 320.5	TPGN 160302	.004 (.002~.007)	.079 (.039~.197)		•				•								•	•
TPG 321	TPGN 160304	.005 (.003~.008)	.079 (.039~.197)					•	•							•	•	•
TPG 322	TPGN 160308	.006 (.004~.010)	.079 (.039~.197)					•								•	•	•
TPG 323	TPGN 160312	.008 (.006~.012)	.079 (.039~.197)		820			820										•
TPG 431	TPGN 220404	.005 (.003~.008)	.118 (.059~.276)				984		722						558	459	490	393
TPG 432	TPGN 220408	.006 (.004~.010)	.118 (.059~.276)		656			656										•
TPG 433	TPGN 220412	.008 (.006~.012)	.118 (.059~.276)															•
TPG 434	TPGN 220416	.010 (.008~.014)	.118 (.059~.276)															•
TPG 436	TPGN 220425	.012 (.010~.016)	.118 (.059~.276)															•
TPG 438	TPGN 220430	.014 (.012~.018)	.118 (.059~.276)															•
TPG 542	TPGN 270608	.006 (.006~.010)	.197 (.118~.315)					•										

• For toolholders, see pages T163, T174

• Marked: Stocked Standard Items

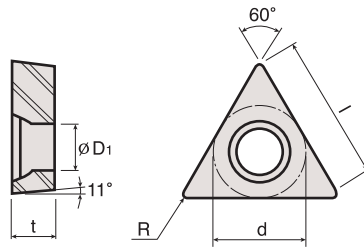
- Carbon Steel C: 0.45%
- Austenitic Stainless Steel
- High Tensile Cast Iron
- Aluminum
- Inconel
- Hardened Steel

## ■ POSITIVE INSERTS - TPGT

### ■ CHIPBREAKER/POSITIVE 11° CLEARANCE TRIANGULAR GROUND INSERTS FOR FINISHING



Right Hand Shown



Designation	l	d	t	R	fl D1
TPGT 731	.339	.219	.094	.016	.098
TPGT 221	.394	.250	.125	.016	.134
TPGT 222	.354	.250	.125	.031	.134
TPGT 331	.610	.375	.187	.016	.173

Designation		Recommended Machining Conditions											Grades & Vc (sfm)									
		feed (ipr)	ap (inch)	P	M	K	N	S	H	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
TPGT 731 L-C	TPGT 090204 L-C	.003 (.002~.008)	.024 (.012~.059)																			
TPGT 221 R-C	TPGT 110304 R-C	.003 (.002~.008)	.031 (.019~.078)																			
TPGT 221 L-C	TPGT 110304 L-C	.003 (.002~.008)	.031 (.019~.078)																			
TPGT 222 L-C	TPGT 110308 L-C	.004 (.003~.010)	.031 (.019~.078)																			
TPGT 331 R-C	TPGT 160404 R-C	.003 (.002~.008)	.059 (.027~.118)																			
TPGT 331 L-C	TPGT 160404 L-C	.003 (.002~.008)	.059 (.027~.118)																			

• For toolholders, see pages T163, T174

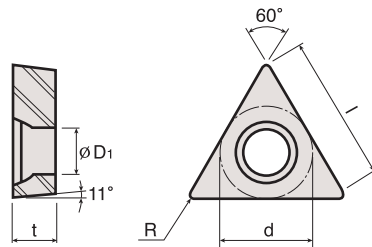
• Marked: Stocked Standard Items

## ■ POSITIVE INSERTS - TPGX

### ■ CHIPBREAKER/POSITIVE 11° CLEARANCE TRIANGULAR GROUND INSERTS FOR FINISHING



Left Hand Shown



Designation	l	d	t	R	fl D1
TPGX 730.5	.358	.219	.094	.008	.118
TPGX 731	.339	.219	.094	.016	.118
TPGX 220.5	.413	.250	.125	.008	.138
TPGX 221	.394	.250	.125	.016	.138

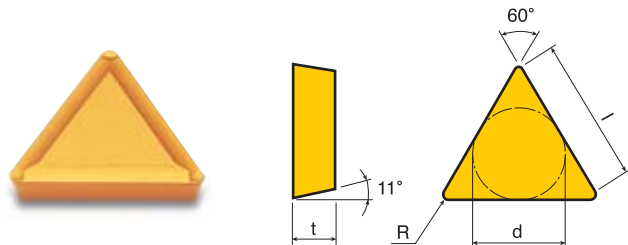
Designation		Recommended Machining Conditions											Grades & Vc (sfm)									
		feed (ipr)	ap (inch)	P	M	K	N	S	H	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P20	P30	K10	K20
TPGX 730.5 L	TPGX 090202 L	.003 (.002~.006)	.028 (.012~.039)																			
TPGX 731 L	TPGX 090204 L	.005 (.003~.008)	.028 (.024~.059)																			
TPGX 220.5 R	TPGX 110302 R	.003 (.002~.006)	.028 (.012~.039)																			
TPGX 220.5 L	TPGX 110302 L	.003 (.002~.006)	.028 (.012~.039)																			
TPGX 221 R	TPGX 110304 R	.005 (.003~.008)	.039 (.024~.079)																			
TPGX 221 L	TPGX 110304 L	.005 (.003~.008)	.039 (.024~.079)																			

• For toolholders, see pages T163, T174

• Marked: Stocked Standard Items

## POSITIVE INSERTS - TPMR

### CHIPBREAKER/POSITIVE 11° CLEARANCE TRIANGULAR INSERTS FOR MEDIUM MACHINING



Designation	l	d	t	R
TPMR 731	.339	.219	.094	.016
TPMR 732	.299	.219	.094	.031
TPMR 221	.394	.250	.125	.016
TPMR 222	.354	.250	.125	.031
TPMR 321	.610	.375	.125	.016
TPMR 322	.571	.375	.125	.031
TPMR 323	.531	.375	.125	.047
TPMR 431	.827	.500	.187	.016
TPMR 432	.787	.500	.187	.031
TPMR 433	.748	.500	.187	.047

Designation		Recommended Machining Conditions														
		Grades & V <sub>c</sub> (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
TPMR 731	TPMR 090204	.006 (.004~.010)	.039 (.020~.079)													
TPMR 732	TPMR 090208	.007 (.005~.012)	.039 (.028~.079)													
TPMR 221	TPMR 110304	.006 (.004~.010)	.059 (.028~.118)													
TPMR 222	TPMR 110308	.007 (.005~.012)	.059 (.039~.118)													
TPMR 321	TPMR 160304	.006 (.004~.010)	.079 (.039~.197)	1017	920											
TPMR 322	TPMR 160308	.007 (.005~.012)	.079 (.039~.197)	820	755	1115	920	1017	820	459	525	490		459		
TPMR 323	TPMR 160312	.008 (.006~.014)	.079 (.039~.197)													
TPMR 431	TPMR 220404	.006 (.004~.010)	.118 (.039~.276)													
TPMR 432	TPMR 220408	.007 (.005~.012)	.118 (.059~.276)													
TPMR 433	TPMR 220412	.008 (.006~.014)	.118 (.059~.276)													

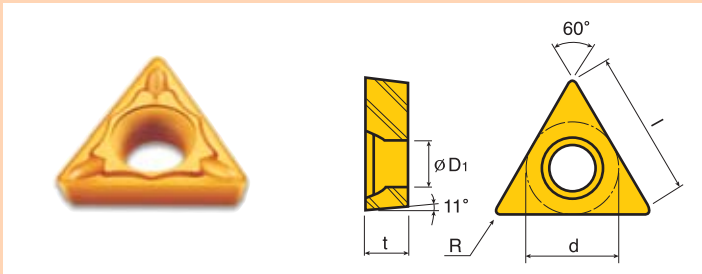
• For toolholders, see pages T128, T130, T174

• Marked: Stocked Standard Items

- Carbon Steel C: 0.45%
- Austenitic Stainless Steel
- High Tensile Cast Iron
- Aluminum
- Inconel
- Hardened Steel

## POSITIVE INSERTS - TPMT FG

### CHIPBREAKER/POSITIVE 11° CLEARANCE TRIANGULAR INSERTS FOR FINISHING



Designation	l	d	t	R	fl D1
TPMT 221	.394	.250	.125	.016	.134

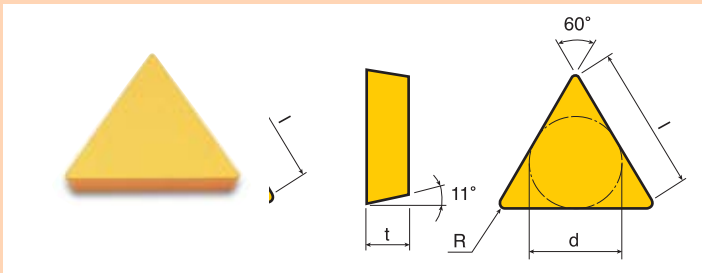
Designation		Recommended Machining Conditions										<span style="color:blue">P</span> <span style="color:yellow">M</span> <span style="color:red">K</span> <span style="color:green">N</span> <span style="color:purple">S</span> <span style="color:gray">H</span>				
		feed (ipr)	ap (inch)	Grades & Vc (sfm)												
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
TPMT 221 FG	TPMT 110304 FG	.004 (.003~.008)	.028 (.016~.059)		1115 885		1115 885	1017		787 540		623 426				

• For toolholders, see pages T129, T130, T174

• Marked: Stocked Standard Items

## POSITIVE INSERTS - TPU

### CHIPBREAKER/POSITIVE 11° CLEARANCE TRIANGULAR INSERTS FOR MEDIUM MACHINING



Designation	l	d	t	R
TPUN 221	.394	.250	.125	.016
TPUN 222	.354	.250	.125	.031
TPUN 321	.610	.375	.125	.016
TPUN 322	.571	.375	.125	.031
TPUN 323	.531	.375	.125	.047
TPUN 324	.492	.375	.125	.063
TPUN 431	.827	.500	.187	.016
TPUN 432	.787	.500	.187	.031
TPUN 433	.748	.500	.187	.047
TPUN 434	.709	.500	.187	.063

Designation		Recommended Machining Conditions										<span style="color:blue">P</span> <span style="color:yellow">M</span> <span style="color:red">K</span> <span style="color:green">N</span> <span style="color:purple">S</span> <span style="color:gray">H</span>				
		feed (ipr)	ap (inch)	Grades & Vc (sfm)												
ANSI	ISO			PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P20	P30	K10	K20
TPU 221	TPUN 110304	.008 (.004~.012)	.059 (.039~.118)													
TPU 222	TPUN 110308	.012 (.006~.016)	.059 (.039~.118)													
TPU 321	TPUN 160304	.008 (.004~.012)	.079 (.039~.197)													
TPU 322	TPUN 160308	.012 (.006~.016)	.079 (.039~.197)													
TPU 323	TPUN 160312	.016 (.008~.020)	.079 (.059~.197)		820		820					393				
TPU 324	TPUN 160316	.018 (.010~.022)	.079 (.059~.197)		656		656					393				
TPU 431	TPUN 220404	.008 (.004~.012)	.118 (.059~.276)													
TPU 432	TPUN 220408	.012 (.006~.016)	.118 (.059~.276)													
TPU 433	TPUN 220412	.016 (.008~.020)	.118 (.059~.276)													
TPU 434	TPUN 220416	.018 (.010~.022)	.118 (.059~.276)													

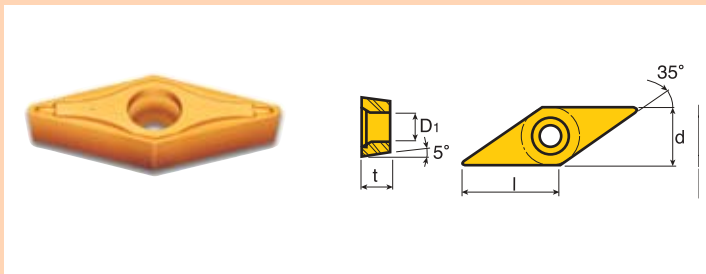
• For toolholders, see pages T174

• Marked: Stocked Standard Items



## POSITIVE INSERTS - VBMT FG

### CHIPBREAKER/POSITIVE 5° CLEARANCE 35° RHOMBIC INSERTS FOR FINISHING



Designation	l	d	t	R	fl D1
VBMT 331	.614	.375	.187	.016	.173
VBMT 332	.575	.375	.187	.031	.173

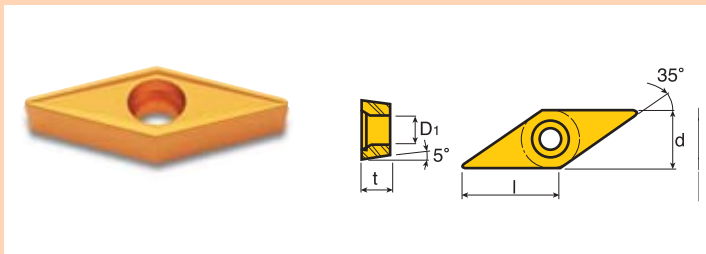
Designation		Recommended Machining Conditions														
		Grades & Vc (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
VBMT 331 FG	VBMT 160404 FG	.004 (.003~.008)	.028 (.020~.059)	1181	1115		1115	1017	197	787		623				
VBMT 332 FG	VBMT 160408 FG	.006 (.004~.010)	.039 (.028~.079)	951	885		885	850	850	540		426				

• For toolholders, see pages T142, T144, T175

• Marked: Stocked Standard Items

## POSITIVE INSERTS - VBMT MT

### CHIPBREAKER/POSITIVE 5° CLEARANCE 35° RHOMBIC INSERTS FOR MEDIUM MACHINING



Designation	l	d	t	R	fl D1
VBMT 331	.614	.375	.187	.016	.173
VBMT 332	.575	.375	.187	.031	.173
VBMT 333	.535	.375	.187	.047	.173

Designation		Recommended Machining Conditions														
		Grades & Vc (sfm)														
ANSI	ISO	feed (ipr)	ap (inch)	PV3010	CT3000	TT1300	TT1500	TT3500	TT5030	TT5100	KT450	TT8020	P10	P20	K10	K20
VBMT 331 MT	VBMT 160404 MT	.006 (.004~.010)	.039 (.024~.118)	1115	1017		1017	920	197	705		490				
VBMT 332 MT	VBMT 160408 MT	.007 (.005~.012)	.059 (.035~.118)			1263		820	656	771	640	360				393
VBMT 333 MT	VBMT 160412 MT	.009 (.006~.012)	.059 (.047~.118)	920	820											

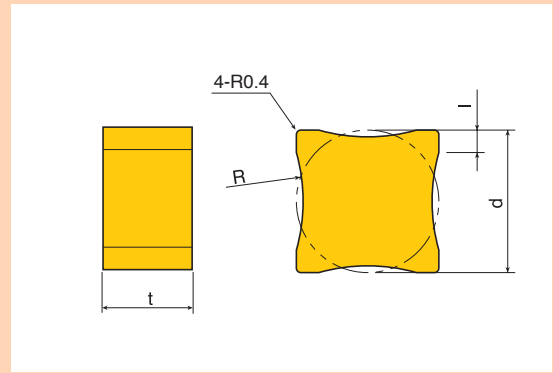
• For toolholders, see pages T142, T144, T175

• Marked: Stocked Standard Items

- Carbon Steel C: 0.45%
- Austenitic Stainless Steel
- High Tensile Cast Iron
- Aluminum
- Inconel
- Hardened Steel

## ■ INSERTS FOR PIPE SKIVING - SNG

### ■ NEGATIVE SQUARE INSERT FOR PIPE SKIVING

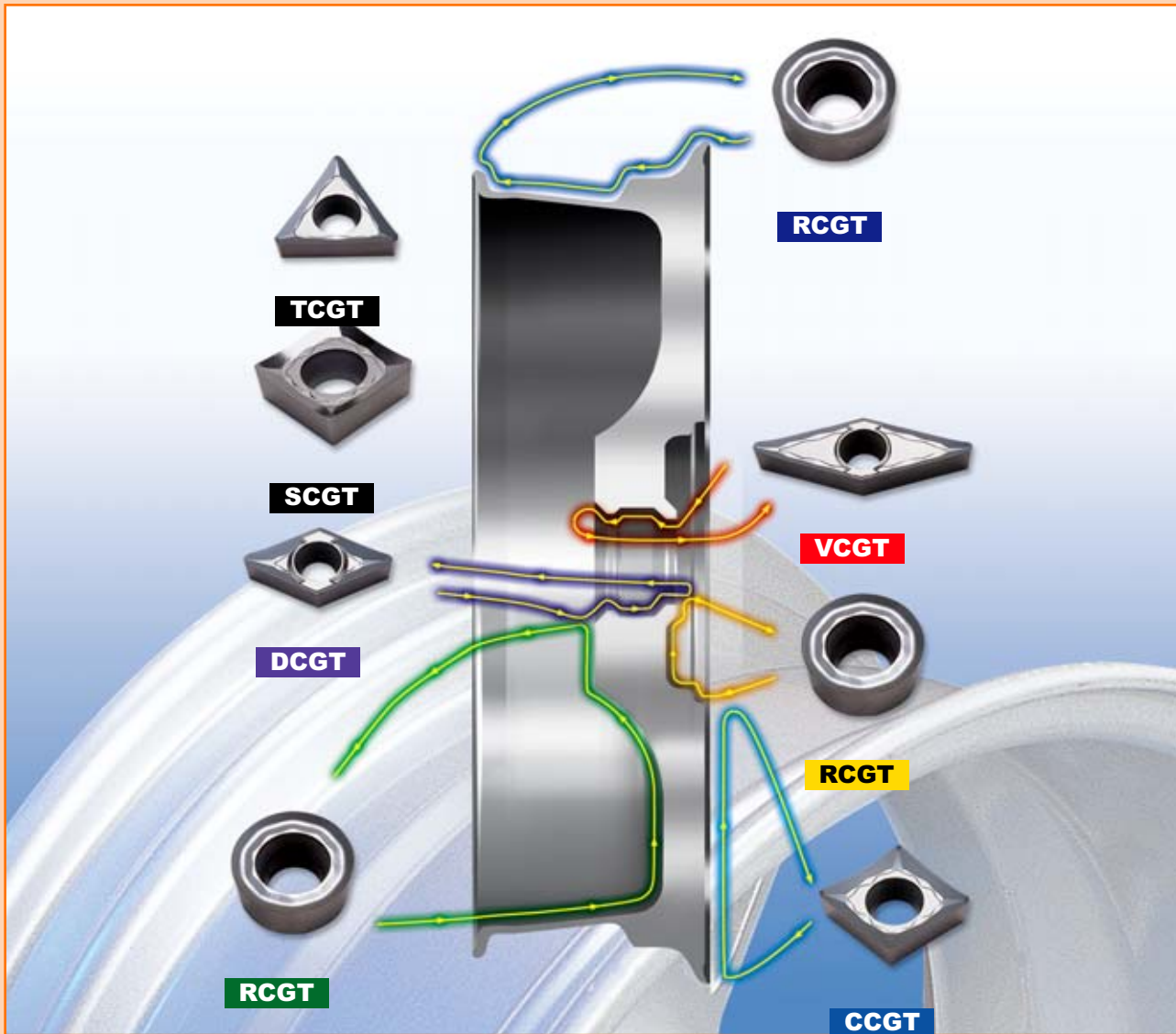


Designation	Grade	Dimension (inch)			
	TT5100	l	d	t	R
SNG 452 10R	•	.079	.500	.313	.394
16R	•	.079	.500	.313	.630
20R	•	.079	.500	.313	.787
25R	•	.079	.500	.313	.984
30R	•	.079	.500	.313	1.181
40R	•	.079	.500	.313	1.575
50R	•	.079	.500	.313	1.969
60R	•	.079	.500	.313	2.362
70R	•	.079	.500	.313	2.756

• Toolholders will be produced by order.

• Marked: Stocked Standard Items

## INSERTS FOR ALUMINUM



### Features

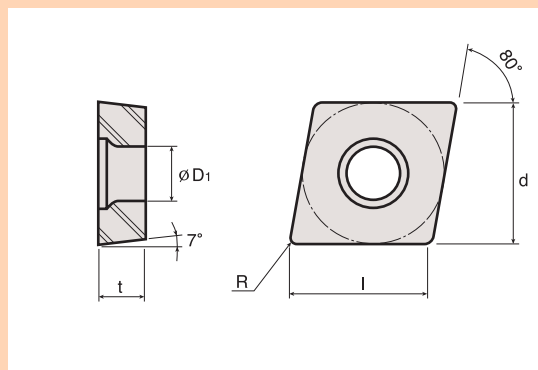
- Wide range of applications for aluminum and other non-ferrous materials
- Very high positive rake geometry to minimize cutting forces and built-up edges

### Machining Conditions with K10 Grade

Materials		Hardness Brinell HB	Kc (KPSI)	Vc (sfm)	f (ipr)
<b>Aluminum Alloys (Forged)</b>	Unhardened	50 - 70	73 ~ 87	8200 ~ 3280	.004 ~ .024
	Hardened	90 - 110	102 ~ 131	3280 ~ 980	.004 ~ .020
<b>Aluminum Alloys (Cast)</b>	Unhardened	70 - 80	102 ~ 116	3280 ~ 980	.004 ~ .020
	Hardened	80 - 100	116 ~ 138	1970 ~ 650	.004 ~ .016
<b>Copper Alloys</b>		90 - 110	102	1970 ~ 820	.004 ~ .020
<b>Bronze</b>		100	247	980 ~ 490	.004 ~ .024

## ■ INSERTS FOR ALUMINUM - CCGT FL

### ■ CHIPBREAKER/NEGATIVE 7° CLEARANCE 80° RHOMBIC INSERT FOR ALUMINUM MACHINING



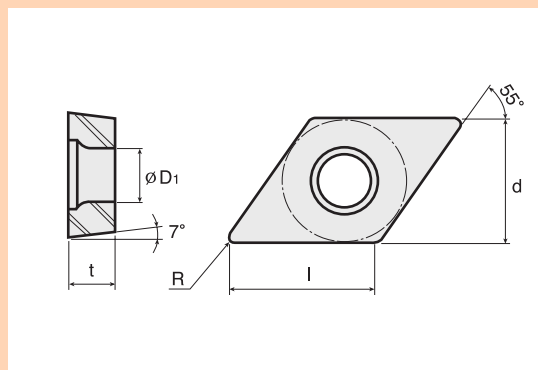
Designation		Grade	Dimension (inch)				
			K10	l	d	t	R
ANSI	ISO						
CCGT 21.50.5 FL	CCGT 060202 FL	•	.244	.250	.094	.008	.110
CCGT 21.51 FL	CCGT 060204 FL	•	.236	.250	.094	.016	.110
CCGT 32.50.5 FL	CCGT 09T302 FL	•	.370	.375	.156	.008	.173
CCGT 32.51 FL	CCGT 09T304 FL	•	.362	.375	.156	.016	.173
CCGT 32.52 FL	CCGT 09T308 FL	•	.346	.375	.156	.031	.173
CCGT 430.5 FL	CCGT 120402 FL	•	.496	.500	.187	.008	.217
CCGT 431 FL	CCGT 120404 FL	•	.488	.500	.187	.016	.217
CCGT 432 FL	CCGT 120408 FL	•	.472	.500	.187	.031	.217

• For toolholders, see pages T138, T168, T169, T170

• Marked: Stocked Standard Items

## ■ INSERTS FOR ALUMINUM - DCGT FL

### ■ CHIPBREAKER/NEGATIVE 7° CLEARANCE 55° RHOMBIC INSERT FOR ALUMINUM MACHINING



Designation		Grade	Dimension (inch)				
			K10	l	d	t	R
ANSI	ISO						
DCGT 21.50.5 FL	DCGT 070202 FL	•	.295	.250	.094	.008	.110
DCGT 21.51 FL	DCGT 070204 FL	•	.287	.250	.094	.016	.110
DCGT 32.50.5 FL	DCGT 11T302 FL	•	.449	.375	.156	.008	.173
DCGT 32.51 FL	DCGT 11T304 FL	•	.441	.375	.156	.016	.173
DCGT 32.52 FL	DCGT 11T308 FL	•	.425	.375	.156	.031	.173

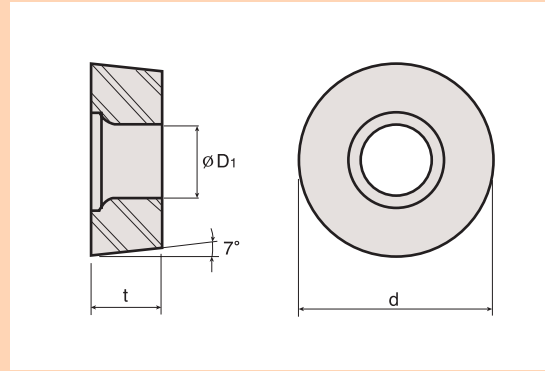
• For toolholders, see pages T138, T139, T171

• Marked: Stocked Standard Items



## ■ INSERTS FOR ALUMINUM - RCGT FL

### ■ CHIPBREAKER/NEGATIVE 7° CLEARANCE ROUND INSERTS FOR ALUMINUM MACHINING



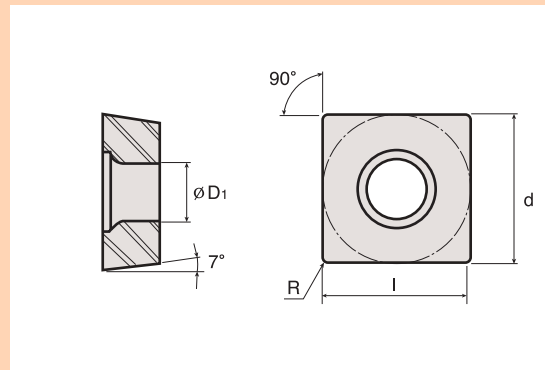
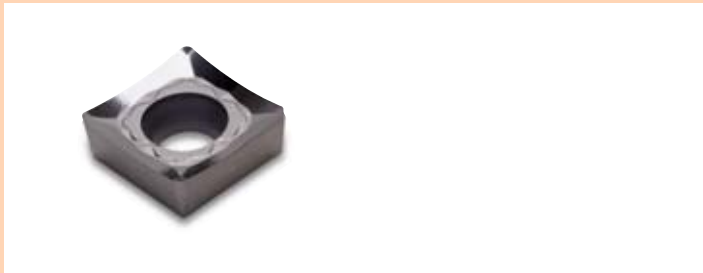
Designation		Grade	Dimension (inch)		
			d	t	fl D1
ANSI	ISO	K10			
	RCGT 0803MO FL	•	.315	.125	.110
	RCGT 1003MO FL	•	.394	.125	.173
	RCGT 10T3MO FL	•	.394	.156	.173

• For toolholders, see pages T140

• Marked: Stocked Standard Items

## ■ INSERTS FOR ALUMINUM - SCGT FL

### ■ CHIPBREAKER/NEGATIVE 7° CLEARANCE SQUARE INSERTS FOR ALUMINUM MACHINING



Designation		Grade	Dimension (inch)				
			l	d	t	R	fl D1
ANSI	ISO	K10					
SCGT 32.52 FL	SCGT 09T308 FL	•	.343	.375	.156	.031	.173
SCGT 430.5 FL	SCGT 120402 FL		.492	.500	.187	.008	.217
SCGT 431 FL	SCGT 120404 FL	•	.484	.500	.187	.016	.217
SCGT 432 FL	SCGT 120408 FL	•	.469	.500	.187	.031	.217

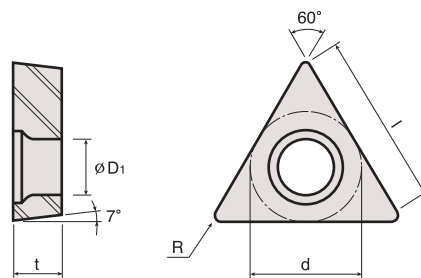
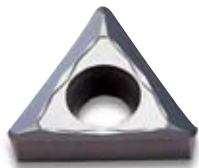
• For toolholders, see pages T141

• Marked: Stocked Standard Items



## ■ INSERTS FOR ALUMINUM - TCGT FL

### ■ CHIPBREAKER/NEGATIVE 7° CLEARANCE TRIANGULAR INSERTS FOR ALUMINUM MACHINING



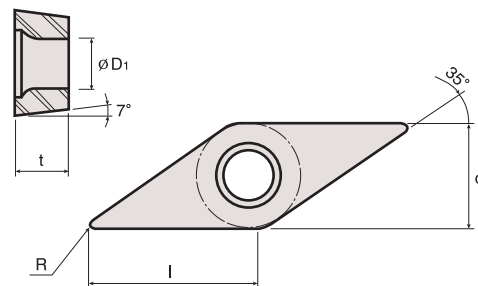
Designation		Grade	Dimension (inch)				
			K10	l	d	t	R
ANSI	ISO						
TCGT 731 FL	TCGT 090204 FL	•	.339	.219	.094	.016	.098
TCGT 21.51 FL	TCGT 110204 FL	•	.394	.250	.094	.016	.110
TCGT 32.51 FL	TCGT 16T304 FL	•	.610	.375	.156	.016	.173
TCGT 32.52 FL	TCGT 16T308 FL	•	.571	.375	.156	.031	.173

• For toolholders, see pages T141, T142, T172, T173

• Marked: Stocked Standard Items

## ■ INSERTS FOR ALUMINUM - VCGT FL

### ■ CHIPBREAKER/NEGATIVE 7° CLEARANCE 35° RHOMBIC INSERTS FOR ALUMINUM MACHINING



Designation		Grade	Dimension (mm)				
			K10	l	d	t	R
ANSI	ISO						
VCGT 220.5 FL	VCGT 110302 FL	•	.413	.250	.125	.008	.110
VCGT 221 FL	VCGT 110304 FL	•	.394	.250	.125	.016	.110
VCGT 330.5 FL	VCGT 160402 FL	•	.634	.375	.187	.008	.173
VCGT 331 FL	VCGT 160404 FL	•	.614	.375	.187	.016	.173
VCGT 332 FL	VCGT 160408 FL	•	.575	.375	.187	.031	.173
VCGT 333 FL	VCGT 160412 FL	•	.535	.375	.187	.047	.173
VCGT 43.57.5 FL	VCGT 220530 FL	•	.575	.500	.219	.118	.217

• For toolholders, see pages T143, T175, T176

• Marked: Stocked Standard Items



## ■ SPECIAL INSERTS



• Special inserts will be produced upon request.



T96

**TAEГУ***line*

## Ceramic Inserts



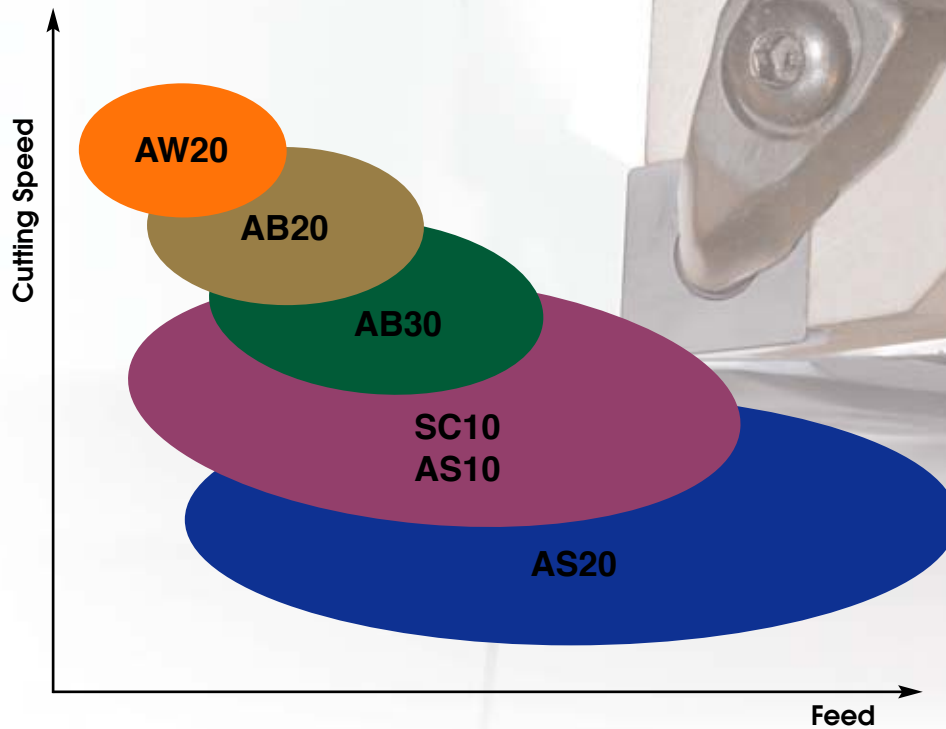
**Cutting Tools for the Next Generation**

## CERAMIC INSERTS

### Physical Properties

Grade	AW20	AB20	AB30	AS10	SC10	AS20	
Composition	Al <sub>2</sub> O <sub>3</sub> ZrO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub> - Ti(C,N)	Al <sub>2</sub> O <sub>3</sub> - TiC	Si <sub>3</sub> N <sub>4</sub>	CVD- Si <sub>3</sub> N <sub>4</sub>	Si <sub>3</sub> N <sub>4</sub> - TiN	
Density (g/cm <sup>3</sup> )	4.05	4.30	4.25	3.22	3.22	3.50	
Hardness	HRA	94.0	94.5	94.5	93.6	93.6	93.0
	Vickers	1,800	2,050	2,050	1,700	1,700	1,500
Fracture Toughness, K <sub>1c</sub> (MPam <sup>1/2</sup> )	4.0	4.5	5.0	8.0	8.0	9.0	
Bending Strength (MPa)	600	650	700	900	900	1,000	

### Application Map of Ceramic Grades



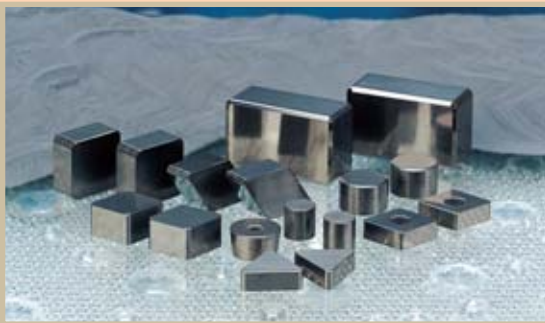


## AW20 ( $\text{Al}_2\text{O}_3+\text{ZrO}_2$ )



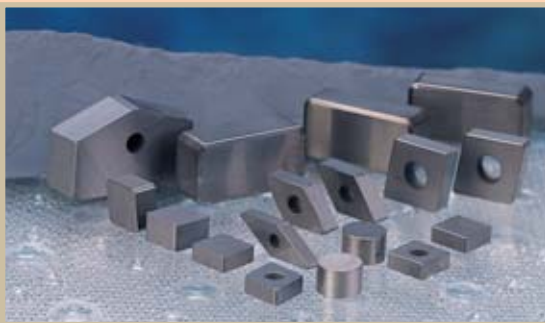
- Excellent wear resistant grade with high chemical stability and temperature resistance.
- Toughened by  $\text{ZrO}_2$
- For high speed continuous turning of cast iron.
- For finishing applications on hardened steels and other hard materials.

## AB20 ( $\text{Al}_2\text{O}_3+\text{TiCN}$ )



- High wear resistant grade with excellent cutting edge stability.
- For high speed continuous turning of hardened steels and other hard materials.
- For cast iron finishing applications.

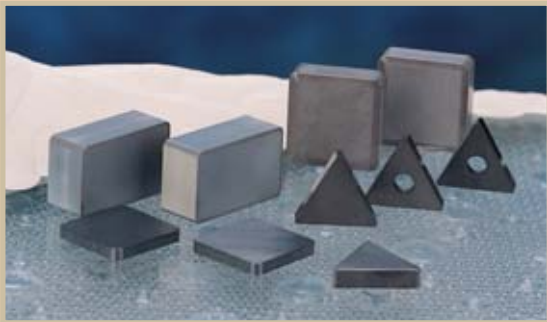
## AB30 ( $\text{Al}_2\text{O}_3+\text{TiC}$ )



- Mixed ceramic with good toughness and wear resistance.
- For hard steels, hard materials and cast iron finishing and roughing applications.
- Can be applied for interrupted cutting.

## ■ CERAMIC INSERTS

### AS10 ( $\text{Si}_3\text{N}_4$ )



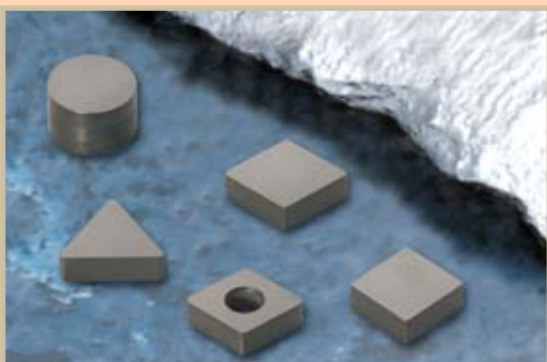
- High wear resistant grade with very good toughness and thermal shock resistance.
- For roughing to finishing cast iron.
- Wet and dry cutting

### SC10 (AS10+CVD)



- Excellent wear resistant grade with very good toughness and thermal shock resistance.
- For roughing to finishing cast iron.
- Wet and dry cutting.

### AS20 ( $\text{Si}_3\text{N}_4$ )



- Very tough  $\text{Si}_3\text{N}_4$  ceramic grade with high cutting edge stability.
- For roughing to finishing applications on nickel based high temperature alloys.
- Wet and dry cutting.

## CERAMIC INSERTS CUTTING EXAMPLES

Work Material & Description	Insert			Cutting Conditions	Tool Life (pcs/edge)
	ANSI	ISO	Grade		
Inconel 718, Body (350HB)	-	RNGN 120700	AS20	V=656 sfm f=.005 ipr ap=.118" Wet, Continuous cut	1pc
GG25, Cylinder Liner (200 - 250HB)	CNGA 432	CNGA 120408	AW20	V=1148 sfm f=.010 ipr ap=.020" Dry, Continuous cut	100pcs
100CrMo6, Ring (58 - 60HRC)	TPGN 221	TPGN 110304	AB20	V=262 sfm f=.002 ipr ap=.008" Dry, Continuous cut	2000pcs
Case Hardened Steel, Bush(58 - 62HRC)	CNMG 432 CE	CNMG 120408 CE	AB30	V=328 sfm f=.004 ipr ap=.008" Dry, Continuous cut	50pcs
GG25, Pump Body (180 - 230HB)	CNMG 431 CE	CNMG 120404 CE	AB30	V=1968 sfm f=.004 ipr ap=.020" Wet, Continuous cut	100pcs
GG25, Cylinder Jam (180 - 230HB)	TNGN 332	TNGN 160408	AB30	V=2625 sfm f=.014 ipr ap=.020" Dry, Continuous cut	90pcs
GG25, Brake Disc (180 - 230HB)	SNGN 453	SNGN 120712	SC10	V=2624 sfm f=.016 ipr ap=.059" Wet, Continuous cut	290pcs
GG25, Brake Disc (180 - 230HB)	SNGN 433	SNGN 120412	AS10	V=1312 sfm f=.010-.012 ipr ap=.079" Wet, Continuous cut	120pcs
GG25, Brake Disc (180 - 230HB)	CNGA 433	CNGA 120412	AS10	V=1640 sfm f=.012 ipr ap=.079-.118" Wet, Continuous cut	30pcs
GG25, Brake Disc (180 - 230HB)	SNGX 454	SNGX 120716 CH	AS10	V=2953 sfm f=.024 ipr ap=.098-.118" Wet, Continuous cut	190pcs
GG25, Brake Disc (180 - 230HB)	CNGX 454	CNGX 120716 CH	AS10	V=2953 sfm f=.029 ipr ap=.098" Wet, Continuous cut	130pcs

## CERAMIC INSERTS

### Recommended Cutting Conditions

Materials	Grade	AW20	AB20	AB30	SC10	AS10	AS20
	V,f	Cutting speed: V (sfm), Feed: f (ipr)					
High Temp Alloy (200 - 400HB)	<b>V</b> <b>f</b>	-	-	-	-	-	328 - 1148 .004 - .012
Hardened Steel (46 - 65HRC)	<b>V</b> <b>f</b>	328 - 820 .004 - .006	164 - 820 .004 - .008	164 - 656 .004 - .010	-	-	-
Chilled Cast Iron (400HB>)	<b>V</b> <b>f</b>	-	164 - 656 .002 - .008	164 - 490 .002 - .008	-	-	-
Gray Cast Iron (180 - 230HB)	<b>V</b> <b>f</b>	1312 - 3281 .002 - .008	984 - 2625 .004 - .012	984 - 2625 .004 - .020	984 - 3281 .008 - .031	984 - 2625 .008 - .031	-
Ductile Cast Iron (200 - 240HB)	<b>V</b> <b>f</b>	984 - 1968 .002 - .006	984 - 1640 .004 - .008	820 - 1640 .004 - .016	820 - 1968 .008 - .024	820 - 1640 .008 - .024	-

### Edge Preparations for Ceramic Inserts

#### 1. Common style (no designation)

Grade	Land specification	
	Width (inch)	Angle ( $\alpha$ )
AB20, AB30, SC10, AS10, AS20	.008	25
AW20	.008	20

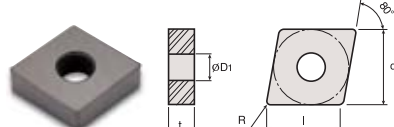
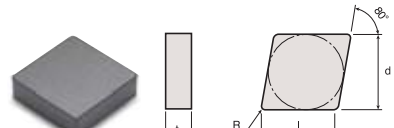
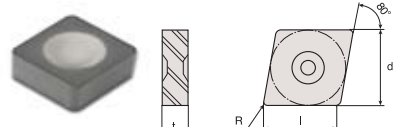
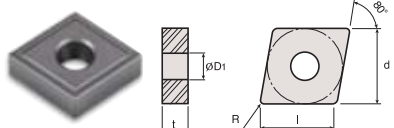
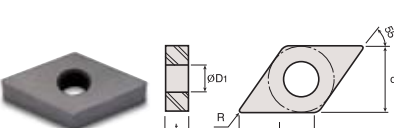
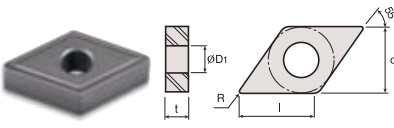
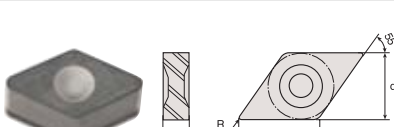
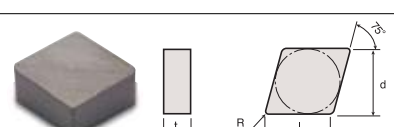
#### 2. Others (single T-land)

Designation	Land specification	
	Width (inch)	Angle ( $\alpha$ )
T2	.004	30
T3	.006	30
T4	.008	30
T5	.012	30
T6	.004	20
T7	.008	20

3. Standard honing size of E type edge preparation is .0016". (only honing without T-land)

4. Many special edge preparations like "Double Land" or "S" can be made upon request.



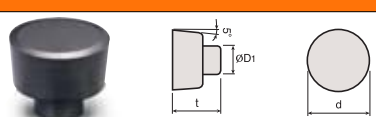
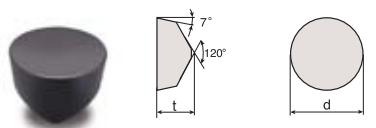
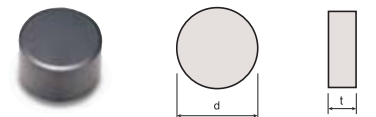
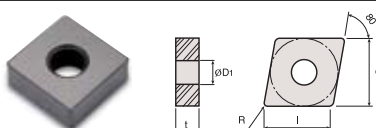
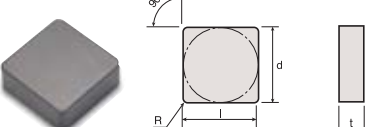
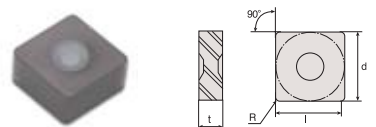
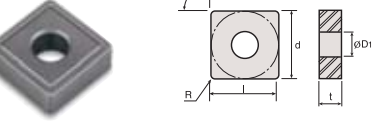
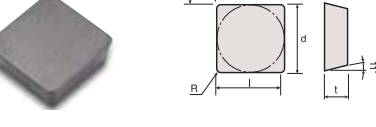
Shape	Designation		Dimension (inch)					Grade						
			l	d	fl D1	t	R	AW20	AB20	AB30	SC10	AS10	AS20	
	ANSI	ISO												
	CNGA 431	CNGA 120404	0.488	0.500	0.203	0.187	0.016	•	•					
	CNGA 431 T2	CNGA 120404 T2	0.488				0.016		•					
	CNGA 432	CNGA 120408	0.472				0.031	•	•		•			
	CNGA 432 E	CNGA 120408 E	0.472				0.031					•		
	CNGA 432 T2	CNGA 120408 T2	0.472				0.031		•					
	CNGA 433	CNGA 120412	0.457				0.047	•	•		•			
	CNGA 433 T3	CNGA 120412 T3	0.457				0.047				•			
	CNGA 434	CNGA 120416	0.441				0.063		•		•			
	CNGA 642	CNGA 190608	0.728				0.750	0.312	0.250	0.031		•		
	CNGN 431	CNGN 120404	0.488	0.500	-	0.187	0.016			•				
	CNGN 432	CNGN 120408	0.472				0.031	•	•					
	CNGN 432 E	CNGN 120408 E	0.472				0.031					•		
	CNGN 452	CNGN 120708	0.472				0.031	•	•					
	CNGN 452 E	CNGN 120708 E	0.472				0.031					•		
	CNGN 453	CNGN 120712	0.457				0.047		•					
	CNGN 453 E	CNGN 120712 E	0.457				0.047					•		
	CNGN 454	CNGN 120716	0.441				0.063							
	CNGN 454 E	CNGN 120716 E	0.441				0.063					•		
	CNGX 453 CH	CNGX 120712 CH	0.457	0.500	-	0.313	0.047					•		
	CNGX 453 T7 CH	CNGX 120712 T7 CH					0.063					•		
	CNGX 454 CH	CNGX 120716 CH	0.441										•	
	CNGX 454 T7 CH	CNGX 120716 T7 CH												•
	CNMG 431 CE	CNMG 120404 CE	0.488	0.500	0.203	0.187	0.016			•				
	CNMG 432 CE	CNMG 120408 CE	0.472				0.031	•	•					
	DNGA 431	DNGA 150404	0.594	0.500	0.203	0.187	0.016			•				
	DNGA 432	DNGA 150408	0.579				0.031	•	•					
	DNGA 441	DNGA 150604	0.594			0.016	•	•						
	DNGA 442	DNGA 150608	0.579			0.031	•	•						
	DNGA 443	DNGA 150612	0.567			0.047	•	•						
	DNMG 442 CE	DNMG 150608 CE	0.579	0.500	0.203	0.250	0.031			•				
	DNGX 352 T7-CH	DNGX 120708 T7-CH	0.437	0.394	-	0.187	0.031							
	DNGX 353 T7-CH	DNGX 120712 T7-CH	0.413				0.047							
	DNGX 452 T7-CH	DNGX 150708 T7-CH	0.579	0.500		0.313	0.031				•			
	DNGX 453 T7-CH	DNGX 150712 T7-CH	0.567				0.047				•			
	DNGX 453 CH	DNGX 150712 CH	0.567									•		
	DNGX 454 CH	DNGX 150716 CH	0.551				0.063							
	ENGN 452	ENGN 130708	0.480	0.500	-	0.313	0.031		•	•				

• Edge preparation: T7=.008" X 20°

• Marked: Stocked Standard Items



# CERAMIC INSERTS

Shape	Designation		Dimension (inch)					Grade								
			l	d	fl D1	t	R	AW20	AB20	AB30	SC10	AS10	AS20			
	ANSI	ISO														
	-	RBGX 12W	-	0.472	0.236	0.354	-									
	-	RBGX 16W	-	0.630	0.315	0.512	-			•						
	-	RBGX 20W	-	0.787	0.394	0.591	-			•						
	RCGX 24 U1	RCGX 060600 U1	-	0.250	-	0.250	-			•						
	RCGX 35 U1	RCGX 090700 U1	-	0.375	-	0.315	-			•						
	RCGX 45 U2	RCGX 120700 U2	-	0.500	-	0.315	-		•	•						
	RCGX 57 U2	RCGX 151000 U2	-	0.625	-	0.394	-			•						
	RCGX 67 U2	RCGX 191000 U2	-	0.750	-	0.394	-			•						
	RNGN 32	RNGN 090300	-	0.375	-	0.125	-			•						
	RNGN 43	RNGN 120400	-	0.500	-	0.187	-		•	•						
	RNGN 43 E	RNGN 120400 E	-	0.500	-	0.187	-							•		
	RNGN 45	RNGN 120700	-	0.500	-	0.313	-		•	•						
	RNGN 45 E	RNGN 120700 E	-	0.500	-	0.313	-							•		
	RNGN 45 T6	RNGN 120700 T6	-	0.500	-	0.313	-								•	
	RNGN 45 W2	RNGN 120700 W2	-	0.500	-	0.313	-		•							
	RNGN 55	RNGN 150700	-	0.625	-	0.313	-		•							
	RNGN 65	RNGN 190700	-	0.750	-	0.313	-			•						
	SNGA 431	SNGA 120404	0.484	0.500	0.203	0.187	0.016		•	•						
	SNGA 432	SNGA 120408	0.469				0.031		•	•						
	SNGA 432 E	SNGA 120408 E	0.469				0.031									
	SNGA 433	SNGA 120412	0.453				0.047									
	SNGN 431	SNGN 120404	0.484	0.500	-	0.187	0.016			•						
	SNGN 432	SNGN 120408	0.469				0.031		•	•						
	SNGN 432 E	SNGN 120408 E	0.469				0.031									
	SNGN 433	SNGN 120412	0.453				0.047		•	•			•			
	SNGN 434	SNGN 120416	0.437				0.063						•			
	SNGN 452	SNGN 120708	0.469				0.031		•	•						
	SNGN 453	SNGN 120712	0.453				0.047						•			
	SNGN 454	SNGN 120716	0.437				0.063						•			
	SNGX 453 CH	SNGX 120712 CH	0.453	0.500	-	0.313	0.047							•		
	SNGX 453 T7-CH	SNGX 120712 T7-CH	0.453				0.047									
	SNGX 454 CH	SNGX 120716 CH	0.437				0.063									•
	SNGX 454 T7-CH	SNGX 120716 T7-CH	0.437				0.063									
	SNGX 554 T7-CH	SNGX 150716 T7-CH	0.591				0.625									•
	SNMG 432 CE	SNMG 120408 CE	0.469	0.500	0.203	0.187	0.031			•						
	SPGN 433	SPGN 120412	0.453	0.500	-	0.187	0.047							•		

• Edge preparation:  
T7=.008" X 20°  
U1=.028" X 15° + .006" X 30°  
W2=.020" X 15° + .006" X 30°  
U2 =.059" X 15° + .008" X 30°  
U3 =.079" X 15° + .008" X 30°

• Marked: Stocked Standard Items



Shape	Designation		Dimension (inch)					Grade					
			l	d	fl D1	t	R	AW20	AB20	AB30	SC10	AS10	AS20
	ANSI	ISO	(l <sub>1</sub> )	(l <sub>2</sub> )									
	TNGA 331	TNGA 160404	0.610	0.375	0.150	0.187	0.016	•	•				
	TNGA 332	TNGA 160408	0.571				0.031	•	•				
	TNGA 332 E	TNGA 160408 E	0.571				0.031						
	TNGA 333	TNGA 160412	0.531	0.047	•	•							
	TNGA 432	TNGA 220408	0.787	0.500	0.031	•	•						
	TNGN 331	TNGN 160404	0.610	0.375	-	0.187	0.016		•				
	TNGN 332	TNGN 160408	0.571				0.031	•	•				
	TNGN 332 E	TNGN 160408 E	0.571				0.031						
	TNGN 333	TNGN 160412	0.531	0.047					•				
	TNGN 351	TNGN 160704	0.531	0.016									
	TNGN 352	TNGN 160708	0.571	0.031									
	TNMG 332 CE	TNMG 160408 CE	0.571	0.375	0.150	0.187	0.031		•				
	TPGN 221	TPGN 110304	0.394	0.250	-	0.125	0.016	•	•				
	TPGN 222	TPGN 110308	0.354				0.031	•	•				
	TPGN 321	TPGN 160304	0.610	0.375			0.016	•	•				
	TPGN 322	TPGN 160308	0.571		0.031	•	•						
	VNGA 331	VNGA 160404	0.610	0.375	0.150	0.187	0.016	•	•				
	VNGA 332	VNGA 160408	0.571				0.031	•	•				
	VNGA 332 E	VNGA 160408 E	0.571				0.031						
	VNGX 353 T7-CH	VNGX 160712 T7-CH	0.535	0.375	-	0.313	0.047				•		
	WNGA 332	WNGA 080408		0.500	0.203	0.187	0.031	•	•				
	WNGA 333	WNGA 080412	0.331				0.047				•		
	WNGA 334	WNGA 080416					0.063						
	-	LNU 6688 T	1.500	0.750	-	0.503	0.126						
	-	T32-32-R2	1.250	0.750	-	0.500	0.079						
	-	T11-3219	1.256	-	0.394	0.750	-	•					

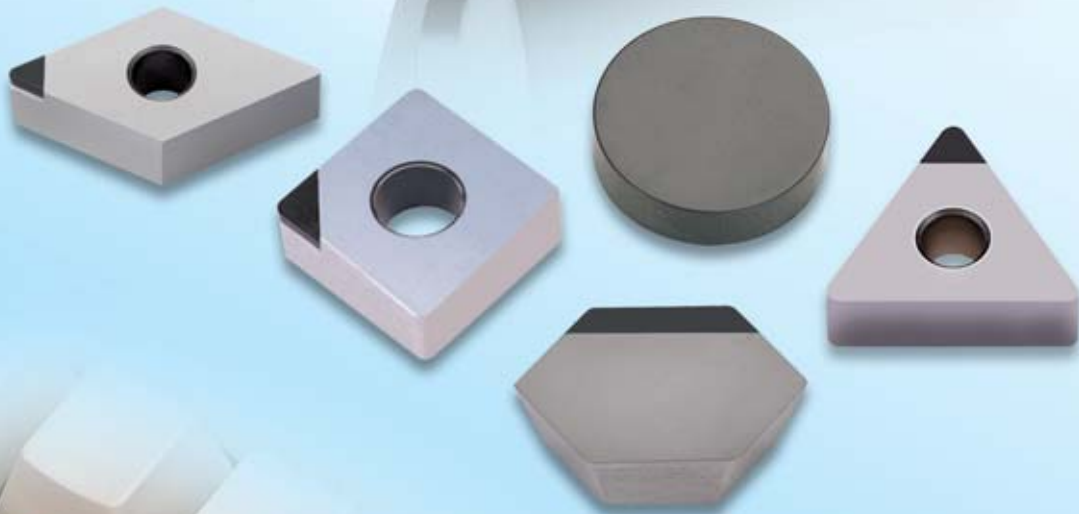
• Edge preparation: T7= .008" X 20°

• Marked: Stocked Standard Items



# CBN Inserts

**Solutions for High Speed Machining**



## KB50, TB650, KB90, KB90A

### Physical Properties

Grade	KB50	TB650	KB90	KB90A
TRS(Gpa)	0.9 - 1.1	1.0 - 1.1	1.1 - 1.2	1.1 - 1.2
Hardness(Gpa)	29 - 31	30 - 32	39 - 42	35 - 38

### KB50

- High wear resistant cubic boron nitride with low CBN content.
- For precision machining of hardened steels (harder than 45HRC) such as hot and cold working tool steels, die steels, case hardened steels, carburized iron and high speed steel.
- For continuous cut.
- For turning.



### TB650

- High wear resistant cubic boron nitride with low CBN content.
- Designed for finishing to roughing applications on hardened steels (harder than 45HRC).
- Can be applied to light interrupted cutting applications.
- For turning.



### KB90

- Tough cubic boron nitride with high CBN content.
- For high speed machining of cast iron.
- Suitable for machining cemented tungsten carbide, sintered metal and heavy alloys.
- Excellent for interrupted cutting of hardened steel.



### KB90A

- Solid CBN with excellent impact resistance.
- For high speed machining of cast iron.
- Can be applied for rough to medium machining of hardened steel.





## ■ CBN INSERTS

### Recommended Cutting Conditions

Materials	Grade	KB50	TB650	KB90	KB90A
	V, f, ap	Cutting speed: V (sfm), Feed: f (ipr), Depth of cut: ap (inch)			
Hardened Steel (46 - 68HRC)	V f ap	328 - 820 .004 - .007 .004 - .020	262 - 656 .004 - .009 .004 - .020	197 - 490 .004 - .012 .008 - .039	197 - 490 .004 - .012 .008 - .079
Chilled Cast Iron (400HB)	V f ap			262 - 490 .004 - .012 .008 - .059	262 - 490 .004 - .012 .008 - .079
Gray Cast Iron (180 - 230HB)	V f ap			1640 - 3937 .004 - .012 .004 - .079	1640 - 3937 .004 - .012 .004 - .079
Sintered Metal	V f ap			328 - 656 .002 - .008 .008 - .039	
DCI Roll, HSS Roll	V f ap	984 - 1968 .002 - .008 .008 - .020	656 - 1640 .002 - .008 .008 - .020		
High Temp. Alloy (200 - 400HB)	V f ap			328 - 984 .002 - .008 .004 - .020	328 - 984 .002 - .008 .004 - .079

### Cutting Examples

Work Material & Description	Insert			Cutting Conditions	Tool Life (pcs/edge)
	ANSI	ISO	Grade		
Hardened Steel, Sleeve (65 - 68HRC)	VNMA 331	VNMA 160404	KB50	V = 459 sfm f = .004 ipr ap = .004" Dry, Continuous Cut	980pcs
Carburized Shaft (60 - 62HRC)	TNMA 332	TNMA 160408	KB50	V = 656 sfm f = .004 ipr ap = .006" Dry, Continuous Cut	1300pcs
Hardened Steel, Ring (60 - 62HRC)	TPGX 221	TPGX 110304	KB50	V = 490 sfm f = .003 ipr ap = .004" Dry, Continuous Cut	400pcs
Hardened Steel, Ring Gear (82HRA)	CNMA 432	CNMA 120408	KB90	V = 360 sfm f = .003 ipr ap = .004" Dry, Interrupted Cut	60pcs
GG25, Engine Block (285 - 305HB)	TCGW 221	TCGW 110204	KB90	V = 1804 sfm f = .005 ipr ap = .020" Wet, Continuous Cut	100pcs
Hardened Steel, Shaft with hole (60 - 62HRC)	CNMA 432	CNMA 120408	KB90	V = 328 sfm f = .004 ipr ap = .008" Dry, Interrupted Cut	20pcs
Hardened Steel, Nozzle (58 - 60HRC)	TNMA 331 LN	TNMA 160404 LN	TB650	V = 262 sfm f = .004 ipr ap = .005" Dry, Continuous Cut	1400pcs
Sintered Metal, Sleeve	TPGH 221	TPGH 110304	KB90	V = 558 sfm f = .005 ipr ap = .020" Dry, Interrupted Cut	1000pcs
Carburized Steel, Flange Body (50 - 62HRC)	CNMA 432	CNMA 120408	TB650	V = 246 sfm f = .006 ipr ap = .003" Wet, Interrupted Cut	33pcs
Nitrified Hardened Steel, Sleeve (40 - 50HRC)	CCGW 32.51 LS	CCGW 09T304 LS	TB650	V = 453 sfm f = .004 ipr ap = .004" Wet, Continuous Cut	1000pcs
Carburized Steel, Middle Sun Gear (58 - 62HRC)	CNMA 432 LN	CNMA 120408 LN	TB650	V = 328 - 393 sfm f = .006 ipr d = .012 - .016" Dry, Continuous Cut	100pcs

**TAEGU**line



## Edge Preparations for CBN Inserts Common style (no designation)

Grade	Land specification		
	Width(inch)	Angle( $\alpha$ )	Honing(inch)
KB50, TB650	0.005	20	.0005-.001
KB90	0.005	20	-
KB90A	0.008	20	.0005-.001

### Technical information for CBN Inserts

CNMA 432 **LN** : Regular Size CBN Tip

CNMA 432 **LS** : Small Size CBN Tip

CNMA 432 **LS2** : Small Size CBN Tip with two corners

RCGX 32 **FT** : Full Top CBN

CNMN 322 **SD** : Solid CBN

Shape	Designation		Dimension (inch)					Grade						
	ANSI	ISO	l	d	fl D <sub>1</sub>	t	R	KB 50	TB650	KB 90	KB 90A			
	CCGW 221.50.5 LS	CCGW 060202 LS	0.094	0.250	0.110	0.094	0.008	•	•					
	CCGW 21.51 LS	CCGW 060204 LS	0.094				0.016	•	•					
	CCGW 32.51 LS	CCGW 09T304 LS	0.094	0.375	0.173	0.156	0.016	•	•					
	CCGW 32.52 LS	CCGW 09T308 LS	0.094				0.031	•	•					
	CCGW 431 LS	CCGW 120404 LS	0.102	0.500	0.217	0.187	0.016	•		•				
	CNMA 431 LN	CNMA 120404 LN	0.157	0.500	0.203	0.187	0.016	•	•	•				
	CNMA 431 LS	CNMA 120404 LS	0.102				0.016	•	•					
	CNMA 431 LS2	CNMA 120404 LS2	0.102				0.016	•						
	CNMA 431 LS4	CNMA 120404 LS4	0.102				0.016							
	CNMA 432 LN	CNMA 120408 LN	0.154				0.031	•	•	•				
	CNMA 432 LS	CNMA 120408 LS	0.098				0.031	•	•					
	CNMA 432 LS2	CNMA 120408 LS2	0.098				0.031	•	•					
	CNMA 432 LS4	CNMA 120408 LS4	0.098				0.031	•						
	CNMA 433 LN	CNMA 120412 LN	0.150				0.047		•					
	CNMA 433 LS	CNMA 120412 LS	0.094				0.047							
	CNMA 433 LS2	CNMA 120412 LS2	0.094				0.047		•					
	CNMN 322 SD	CNMN 090308 SD	0.346	0.375	-	0.125	0.031							
	CNMN 323 SD	CNMN 090312 SD	0.331				0.047			•				
	CNMN 324 SD	CNMN 090316 SD	0.315				0.063							
	DCGW 21.50.5 LS	DCGW 070202 LS	0.102	0.250	0.110	0.094	0.008	•	•					
	DCGW 21.51 LS	DCGW 070204 LS	0.094				0.016	•	•					
	DCGW 21.52 LS	DCGW 070208 LS	0.094				0.031	•						
	DCGW 32.51 LS	DCGW 11T304 LS	0.102				0.375	0.173	0.156	0.016	•	•		
	DCGW 32.52 LS	DCGW 11T308 LS	0.087							0.031	•			

• SD: Solid CBN

• Marked: Stocked Standard Items

## CBN INSERTS

Shape	Designation		Dimension (inch)					Grade				
			l	d	fl D <sub>1</sub>	t	R	KB 50	TB 650	KB 90	KB 90A	
	ANSI	ISO										
	DNMA 431 LN	DNMA 150404 LN	0.161	0.500	0.203		0.187	0.016	•	•		
	DNMA 431 LS	DNMA 150404 LS	0.118				0.187	0.016	•	•		
	DNMA 431 LS2	DNMA 150404 LS2	0.118				0.187	0.016		•		
	DNMA 431 LS4	DNMA 150404 LS4	0.118				0.187	0.016		•		
	DNMA 432 LN	DNMA 150408 LN	0.150				0.187	0.031		•		
	DNMA 432 LS	DNMA 150408 LS	0.102				0.187	0.031	•	•	•	
	DNMA 432 LS2	DNMA 150408 LS2	0.102				0.187	0.031		•		
	DNMA 433 LN	DNMA 150412 LN	0.130				0.187	0.047				
	DNMA 441 LN	DNMA 150604 LN	0.161				0.250	0.016				•
	DNMA 441 LS	DNMA 150604 LS	0.118				0.250	0.016		•		
	DNMA 441 LS2	DNMA 150604 LS2	0.118				0.250	0.016		•		
	DNMA 442 LN	DNMA 150608 LN	0.150				0.250	0.031		•		
	RCGX 22 FT	RCGX 060300 FT	-	0.250	-	0.125	-					
	RCGX 32 FT	RCGX 090300 FT	-	0.375	-	0.125	-				•	
	RCGX 43 FT	RCGX 120400 FT	-	0.500	-	0.187	-					
	RNMN 32 FT	RNMN 090300 FT	-	0.375	-	0.125	-				•	
	RNMN 42 FT	RNMN 120300 FT	-	0.500	-	0.125	-				•	
	RNMN 32 SD	RNMN 090300 SD	-	0.375	-	3.18	-				•	
	RNMN 42 SD	RNMN 120300 SD	-	0.500	-	0.125	-				•	
	SNGN 432 LN	SNGN 120408 LN	0.157	0.500	-		0.187	0.031		•		
	SNGN 433 LN	SNGN 120412 LN	0.157				0.187	0.047				
	SNMA 431 LN	SNMA 120404 LN	0.157	0.500	0.203		0.187	0.016				
	SNMA 431 LS	SNMA 120404 LS	0.094				0.187	0.016				•
	SNMA 432 LN	SNMA 120408 LN	0.157				0.187	0.031		•	•	
	SNMA 432 LS	SNMA 120408 LS	0.094				0.187	0.031				•
	SNMA 432 LS2	SNMA 120408 LS2	0.094				0.187	0.031				
	SNMN 322 SD	SNMN 090308 SD	0.343	0.375	-		0.125	0.031			•	
	SNMN 323 SD	SNMN 090312 SD	0.327				0.125	0.047				•
	SNMN 324 SD	SNMN 090316 SD	0.311				0.125	0.063				•
	SNMN 423 SD	SNMN 120312 SD	0.453	0.500	-		0.125	0.047				
	SNMN 424 SD	SNMN 120316 SD	0.437				0.125	0.063				•

- FT: Full Top CBN.
- SD: Solid CBN.

• Marked: Stocked standard items

# TAEGUline

Shape	Designation		Dimension (inch)					Grade			
			l	d	fl D1	t	R	KB 50	TB 650	KB 90	KB 90A
	ANSI	ISO									
	TCGW 21.51 LN	TCGW 110204 LN	0.154	0.250	0.110	0.094	0.016	•			
	TCGW 21.51 LS	TCGW 110204 LS	0.102				0.016	•	•	•	
	TCGW 21.52 LS	TCGW 110208 LS	0.091				0.031		•	•	
	TCGW 32.51 LS	TCGW 16T304 LS	0.110				0.016		•	•	
	TCGW 32.52 LS	TCGW 16T308 LS	0.098				0.031			•	
	TNMA 331 LN	TNMA 160404 LN	0.157	0.375	0.150	0.187	0.016		•	•	
	TNMA 331 LS	TNMA 160404 LS	0.110				0.016	•	•	•	
	TNMA 332 LN	TNMA 160408 LN	0.150				0.031		•	•	
	TNMA 332 LS	TNMA 160408 LS	0.098				0.031	•	•	•	
	TNMA 332 LS3	TNMA 160408 LS3	0.098				0.031		•	•	
	TNMA 432 LS	TNMA 220408 LS	0.102				0.031				
	TNMA 433 LN	TNMA 220412 LN	0.134				0.047				
	TNMN 222 SD	TNMN 110308 SD	0.354	0.250	-	0.125	0.031				
	TPGN 221 LS	TPGN 110304 LS	0.102	0.250	-	0.125	0.016	•	•	•	
	TPGN 222 LS	TPGN 110308 LS	0.091				0.031		•		
	TPGN 321 LS	TPGN 160304 LS	0.110				0.016		•	•	
	TPGN 322 LS	TPGN 160308 LS	0.098				0.031		•	•	
	TPGN 432 LS	TPGN 220408 LS	0.102				0.031	0.020			
	VBGW 331 LN	VBGW 160404 LN	0.197	0.375	0.173	0.187	0.016		•		
	VBGW 331 LS	VBGW 160404 LS	0.126				0.016	•	•	•	
	VBGW 332 LS	VBGW 160408 LS	0.102				0.031	•	•		
	VNGA 331 LN	VNGA 160404 LN	0.189	0.375	0.150	0.187	0.016		•		
	VNGA 331 LS	VNGA 160404 LS	0.126				0.016		•		
	VNGA 332 LN	VNGA 160408 LN	0.154				0.031		•		
	VNGA 332 LS	VNGA 160408 LS	0.091				0.031			•	
	VNGA 332 LS2	VNGA 160408 LS2	0.091				0.031				

• Marked: Stocked standard items

# PCD Inserts

**High Speed Machining  
Solutions for Aluminum**

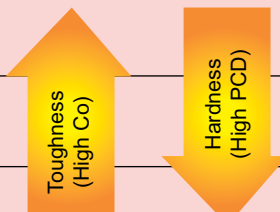


**TAEGL**ine



# Ingersoll

## Physical Properties

Grade	Feature	PCD ( $\mu$ m)	TRS (GPa)	Hardness (GPa)
KP100		4	2.0 - 2.2	80 - 100
KP300		10	1.8 - 2.0	90 - 110
KP500		25	1.0 - 1.2	100 - 120

### KP500

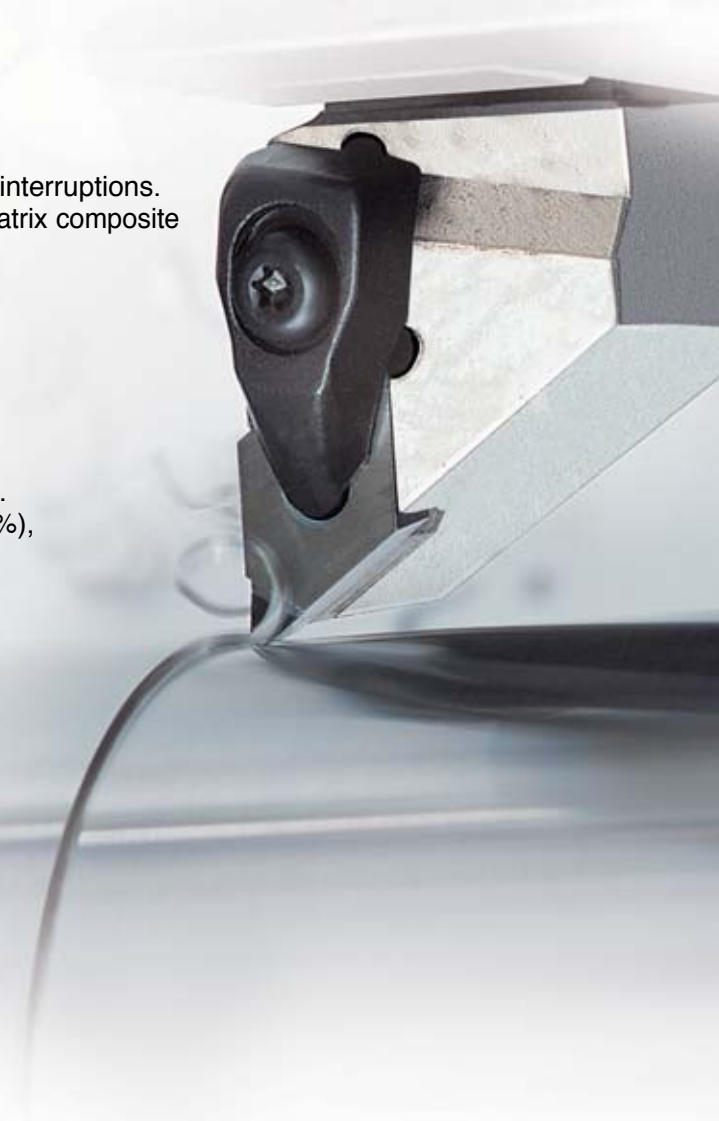
- Super abrasion resistant grade.
- Designed for fine finishing cuts with little or no interruptions.
- For high Si aluminum alloy (Si >12.2%), metal matrix composite and sintered tungsten carbide.

### KP300

- This KP300 is for general machining.
- Well combined wear resistance and toughness.
- For low to medium Si aluminum alloy (Si  $\leq$  12.2%), copper alloy and non-ferrous metal.

### KP100

- Low content poly-crystalline diamond with fine grain.
- High edge strength and good surface finish.
- For plastic, wood and pure aluminum.





## PCD INSERTS

### Recommended Cutting Conditions

Materials	Grade	KP500	KP300	KP100
	V, f, ap	Cutting speed: V (sfm), Feed: f (ipr), Depth of cut: ap=inch		
<b>Al Alloy (12.2%≤Si)</b>	V f ap		1968 - 9842 .002 - .012 .004 - .118	
<b>Al alloy (12.2%&gt;Si)</b>	V f ap	984 - 2625 .002 - .012 .004 - .118	984 - 1968 .002 - .012 .004 - .118	
<b>Sintered Tungsten Carbide</b>	V f ap	33 - 98 .002 - .006 .001 - .020		
<b>Wood</b>	V f ap			3281 - 9842 .004 - .020 .008 - .197
<b>Cu Alloy</b>	V f ap		1968 - 4921 .002 - .012 .004 - .118	
<b>Plastic</b>	V f ap			984 - 3281 .002 - .010 .002 - .079
<b>Carbon (Graphite)</b>	V f ap		328 - 1968 .004 - .039 .008 - .079	
<b>MMC</b>	V f ap	33 - 98 .002 - .012 .004 - .039		

### Cutting Examples

Work Material & Description	Insert			Cutting Conditions	Tool Life (pcs/edge)
	ANSI	ISO	Grade		
<b>9% Si Aluminum Alloy, Cylinder Bore</b>	TPGX 321	TPGX 110304	KP300	V=1345 sfm	6000 pcs
				f=.004 ipr	
				ap=.020"	
				Wet, Continuous cut	
<b>20% Si Aluminum Alloy, Brake Disc</b>	RNMN 32	RNMN 090300	KP500	V=3215 sfm	1300pcs
				f=.005 ipr	
				ap=.020"	
				Wet, Continuous cut	

Shape	Designation		Dimension (inch)					Grade			
			l	d	fl D <sub>1</sub>	t	R	KP 500	KP 300	KP 100	
	ANSI	ISO									
  	CCGW 21.50.5 LN-7	CCGW 060202 LN-7	0.122					0.008		•	
	CCGW 21.51 LN-7	CCGW 060204 LN-7	0.122	0.250	0.110	0.094	0.016			•	
	CCGW 21.52 LN-7	CCGW 060208 LN-7	0.118				0.031				
	CCGW 32.51 LN-7	CCGW 09T304 LN-7	0.157				0.016			•	
	CCGW 32.52 LN-7	CCGW 09T308 LN-7	0.154	0.375	0.173	0.156	0.031				•
	CCGW 431 LN-7	CCGW 120404 LN-7	0.157				0.016				•
	CCGW 432 LN-7	CCGW 120408 LN-7	0.154	0.500	0.217	0.187	0.031				•
  	CNMA 431 LN-10	CNMA 120404 LN-10	0.157					0.016			•
	CNMA 432 LN-10	CNMA 120408 LN-10	0.154	0.500	0.203	0.187	0.031				•
	CNMA 433 LN-10	CNMA 120412 LN-10	0.150				0.047				
  	DCGW 21.50.5 LN-7	DCGW 070202 LN-7	0.134					0.008			
	DCGW 21.51 LN-7	DCGW 070204 LN-7	0.130	0.250	0.110	0.094	0.016				•
	DCGW 32.50.5 LN-7	DCGW 11T302 LN-7	0.154				0.008				•
	DCGW 32.51 LN-7	DCGW 11T304 LN-7	0.146	0.375	0.173	0.156	0.016				•
	DCGW 32.52 LN-7	DCGW 11T308 LN-7	0.130				0.031				•
  	DNMA 431 LN-10	DNMA 150404 LN-10	0.157				0.187	0.016			•
	DNMA 432 LN-10	DNMA 150408 LN-10	0.146				0.031				
	DNMA 441 LN-10	DNMA 150604 LN-10	0.157	0.500	0.203		0.016				•
	DNMA 442 LN-10	DNMA 150608 LN-10	0.146				0.031				
  	SNMA 432 LN-10	SNMA 120408 LN-10	0.157				0.187	0.031			
	SNMA 433 LN-10	SNMA 120412 LN-10	0.157	0.500	0.203	0.187	0.047				
  	SPGN 322 LN-7	SPGN 090308 LN-7	0.154	0.375			0.125	0.031			
	SPGN 422 LN-7	SPGN 120308 LN-7	0.154	0.500			0.031				

• Marked: Stocked standard items



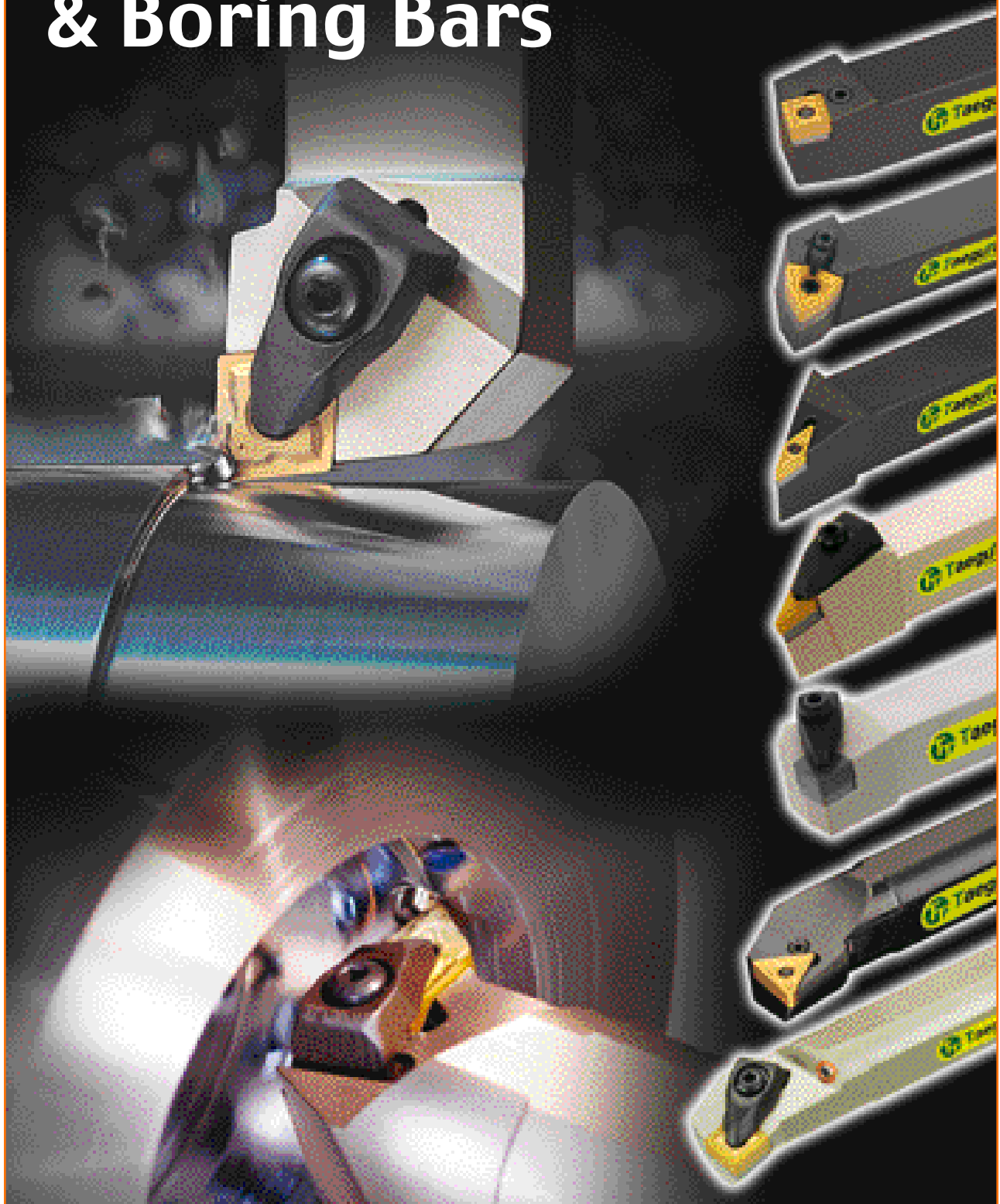
## PCD INSERTS

Shape	Designation		Dimension (inch)					Grade		
			l	d	fl D <sub>1</sub>	t	R	KP 500	KP 300	KP 100
	ANSI	ISO								
	TCGW 731 LN-7	TCGW 090204 LN-7	0.130				0.016		•	
	TCGW 732 LN-7	TCGW 090208 LN-7	0.118	0.219	0.098	0.094	0.031			
	TCGW 21.51 LN-7	TCGW 110204 LN-7	0.150				0.016		•	
	TCGW 21.52 LN-7	TCGW 110208 LN-7	0.138	0.250	0.110	0.094	0.031			
	TCGW 32.51 LN-7	TCGW 16T304 LN-7	0.150				0.016			
	TCGW 32.52 LN-7	TCGW 16T308 LN-7	0.138	0.375	0.173	0.156	0.031			
	TNMA 431 LN-10	TNMA 160404 LN-10	0.169				0.016		•	
	TNMA 432 LN-10	TNMA 160408 LN-10	0.157	0.375	0.150	0.187	0.031			
	TPGN 220.5 LN-7	TPGN 110302 LN-7	0.154				0.008		•	
	TPGN 221 LN-7	TPGN 110304 LN-7	0.150	0.250	-	0.125	0.016		•	
	TPGN 222 LN-7	TPGN 110308 LN-7	0.138				0.031		•	
	TPGN 320.5 LN-7	TPGN 160302 LN-7	0.173				0.008		•	
	TPGN 321 LN-7	TPGN 160304 LN-7	0.169	0.375	-	0.125	0.016		•	
	TPGN 322 LN-7	TPGN 160308 LN-7	0.157				0.031		•	
	VBGW 330.5 LN-7	VBGW 160402 LN-7	0.205				0.008			
	VBGW 331 LN-7	VBGW 160404 LN-7	0.197	0.375	0.173	0.187	0.016		•	
	VBGW 332 LN-7	VBGW 160408 LN-7	0.165				0.031		•	
	VCGW 331 LN-7	VCGW 160404 LN-7	0.197	0.375	0.173	0.187	0.016		•	
	VNGA 331 LN-10	VNGA 160404 LN-10	0.197				0.016		•	
	VNGA 332 LN-10	VNGA 160408 LN-10	0.161	0.375	0.150	0.187	0.031		•	







✎ Marked: Stocked standard items










# TAEGUline

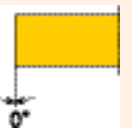
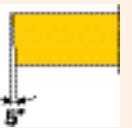
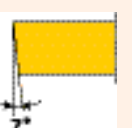

# TaeguTurn External Toolholders & Boring Bars



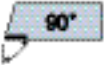


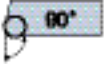
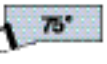

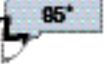
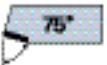
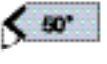
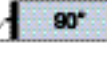




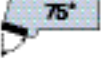

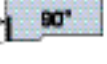
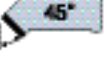

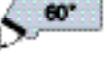
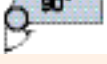
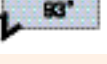
# TOOLHOLDER DESIGNATION SYSTEM

1 Clamping System	
	
P/Lever Lock	C/Top Clamp
	
S/Screw Clamp	M/Multi Lock
	
T,D/Double Clamp	W/Wedge Clamp

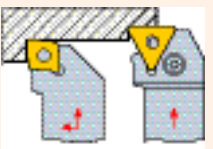
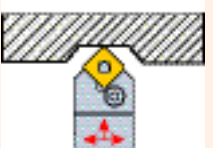
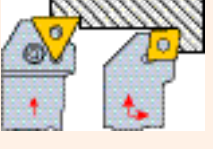
2 Insert Shape		
		
C	D	E
		
K	R	S
		
T	V	W

4 Insert Clearance Angle	
	
N	B
	
C	P



3 Approach Angle								
Symbol	Shape	Offset	Symbol	Shape	Offset	Symbol	Shape	Offset
A								X
								O
B								
								X
D								O
E								O
F								
G								
								

NOTE: ○ = I.S.O.    X = TaeguTec Standard

5 Hand of Tool



Left hand
L

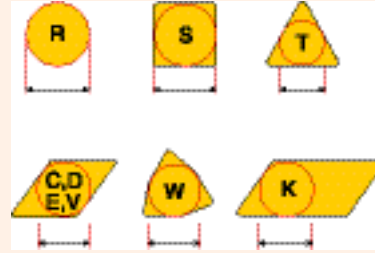


## 6 Shank Height



Digits	Size (inch)	
	h	b
05	.312	.312
06	.375	.375
08	.500	.500
10	.625	.625
12	.750	.750
16	1.00	1.00
20	1.25	1.25
24	1.50	1.50
32	2.00	2.00
44	.500	1.000
66	.750	1.500
85	1.00	1.25
86	1.00	1.50

## 7 Insert I.C.



## 8 Tool Length (inch)



Symbol	L	
K	2.5	
J	3.5	
A	4.0	
B	4.9	
C	5.0	
D	6.0	
E	7.0	
F	8.0	

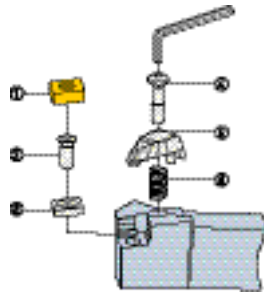
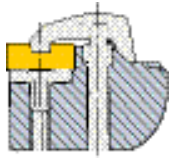
## 9 Manufacturer's Type Designation

Unique to manufacturer

## TOOLHOLDER CLAMPING SYSTEM

### "T" Clamp Type

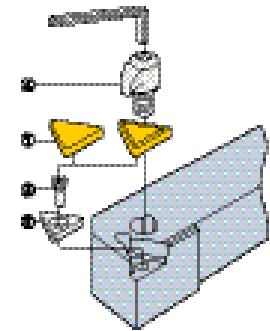
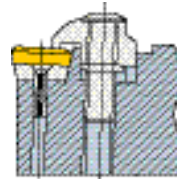
T



- ① Insert
- ② Shim Screw
- ③ Shim
- ④ Clamp Screw
- ⑤ Clamp
- ⑥ Spring

### Top Clamp Type

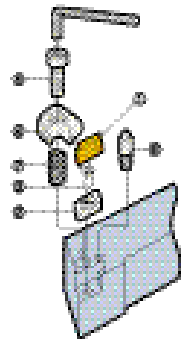
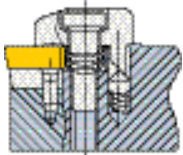
C



- ① Insert
- ② Shim
- ③ Shim Pin
- ④ Clamp Set

### Top Clamp Type

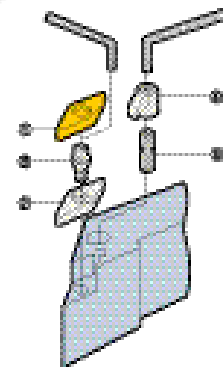
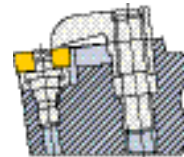
C



- ① Insert
- ② Shim
- ③ Shim Screw
- ④ Clamp
- ⑤ Clamp Screw
- ⑥ Pin and Spring
- ⑦ Clamp Spring

### Multi Lock Type

M



- ① Insert
- ② Shim
- ③ Lock Pin
- ④ Clamp
- ⑤ Clamp Screw

**Lever Lock Type** P

- ① Insert
- ② Shim
- ③ Lever
- ④ Shim Pin
- ⑤ Screw

**Screw Clamp Type** S

- ① Insert
- ② Shim
- ③ Screw
- ④ Shim Screw

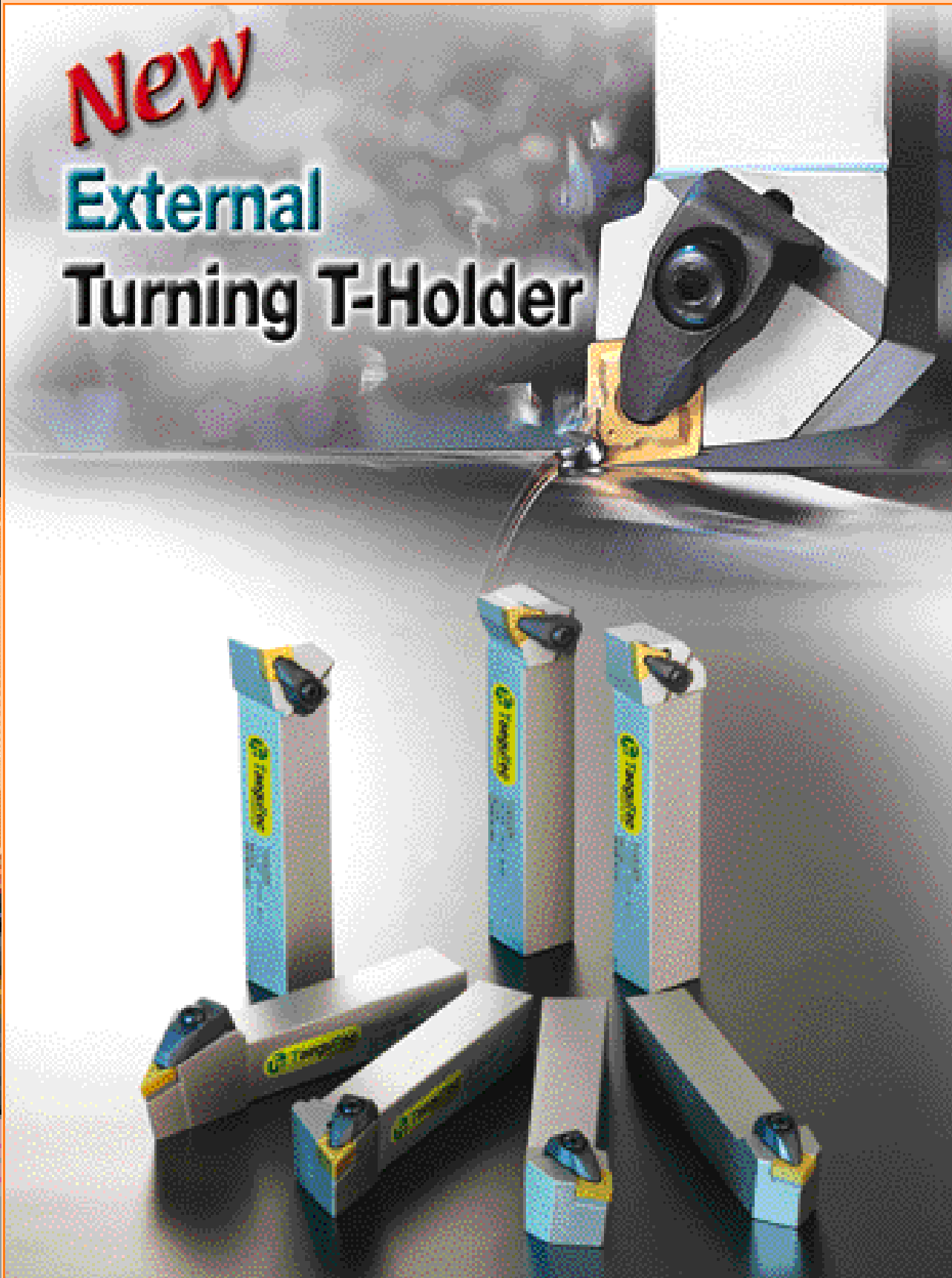
**Ceramic Holder** C

- ① Insert
- ② Shim Screw
- ③ Shim
- ④ Clamp Screw
- ⑤ Clamp

**Ceramic Dimple Holder** T

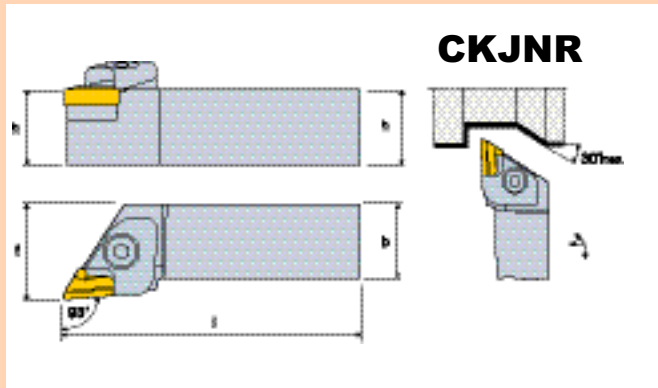
- ① Insert
- ② Shim Screw
- ③ Shim
- ④ Clamp Screw
- ⑤ Clamp
- ⑥ Spring

# New External Turning T-Holder



# TOP CLAMP/EXTERNAL TURNING TOOL HOLDERS

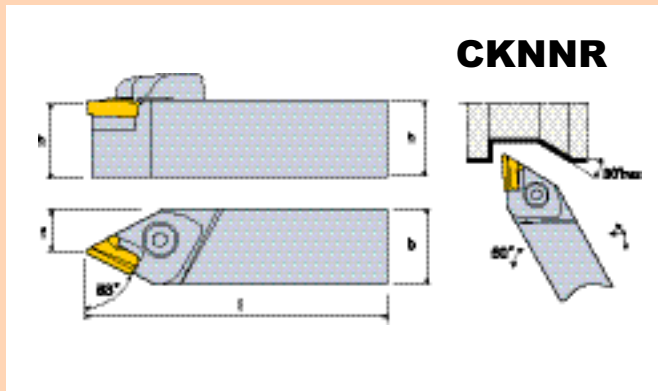
## NEGATIVE 55° PARALLELOGRAM INSERTS



Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Spring	Pin & Spring	Hex Key
	R	L	h	b	l	f								
CKJNR/L 16-3D	•	•	1.00	1.00	6.00	1.250	 KNUX 333 R/L	CSK 1604 R/L	 FHM3X 0.5X10	 CL16K R/L	 CLS16K	 KSP90	 KSP48 KP48S	 L-W4
CKJNR/L 85-3E	•	•	1.25	1.00	7.00	1.250								
CKJNR/L 20-3E	•	•	1.25	1.25	7.00	1.500								

• = Stocked standard items For inserts, see page T58

## NEGATIVE 55° PARALLELOGRAM INSERTS



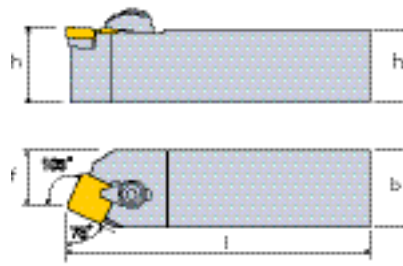
Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Spring	Pin & Spring	Hex Key
	R	L	h	b	l	f								
CKNNR/L 16-3D	•	•	1.00	1.00	6.00	.566	 KNUX 333 R/L	CSK 1604 R/L	 FHM3X 0.5X10	 CL16K R/L	 CLS16K	 KSP90	 KSP48 KSP48S	 L-W4

• = Stocked standard items For inserts, see page T58

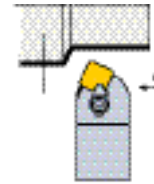


## TOP CLAMP/EXTERNAL TURNING TOOL HOLDERS

### POSITIVE 11° CLEARANCE SQUARE INSERTS



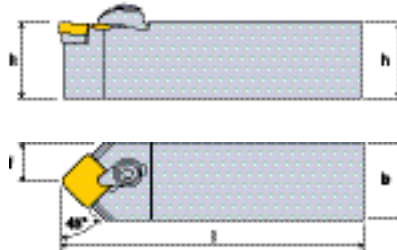
### CSBPR



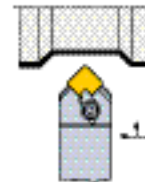
Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Clip
	R	L	h	b	l	f						
CSBPR/L 10-3B	•	•	.625	.625	4.50	.531	SPMR 32	-	-	HC9	CS96	CLP9
CSBPR/L 12-3B	•	•	.750	.750	4.50	.658	SP 32	-	-	HC9	CS96	CLP9
CSBPR/L 12-4B	•	•	.750	.750	4.50	.627	SPMR 42	SM-40	TS-44-2	HC12	CS126	CLP12
CSBPR/L 16-4D	•	•	1.000	1.000	6.00	.877	SP 42	SM-40	TS-44-2	HC12	CS126	CLP12
CSBPR/L 20-6D	•	•	1.250	1.250	6.00	1.065	SP 63	SM-36	TS-10	HC12	CS126	CLP12

• = Stocked standard items For inserts, see page T86, T87

### POSITIVE 11° CLEARANCE SQUARE INSERTS



### CSDPN

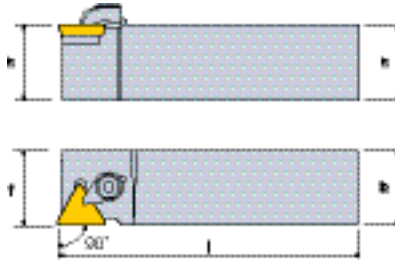


Designation	Stock	Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Clip
		h	b	l	f						
CSDPN 10-3B	•	.625	.625	4.50	.313	SPMR 32	-	-	HC9	CS96	CLP9
CSDPN 12-3B	•	.750	.750	4.50	.375	SP 32	-	-	HC9	CS96	CLP9
CSDPN 12-4B	•	.750	.750	4.50	.375	SPMR 42	SM-40	TS-44-2	HC12	CS126	CLP12
CSDPN 16-4D	•	1.000	1.000	6.00	.500	SP 42	SM-40	TS-44-2	HC12	CS126	CLP12
CSDPN 16-6D	•	1.250	1.250	6.00	.500	SP 63	SM-36	TS-10	HC12	CS126	CLP12

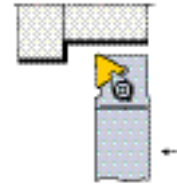
• = Stocked standard items For inserts, see page T86, T87

## TOP CLAMP/EXTERNAL TURNING TOOL HOLDERS

### POSITIVE 11° CLEARANCE TRIANGULAR INSERTS



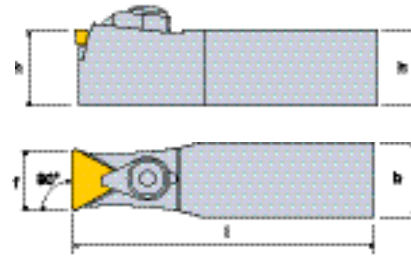
### CTAPR



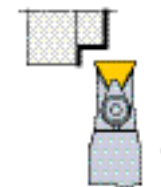
Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Clip
	R	L	h	b	l	f						
CTAPR/L 06-2J	•	•	.375	.375	3.50	0.515	TPMR 22 TP 22	-	-	HC9	CS96	CLP9
CTAPR/L 08-2J	•	•	.500	.500	3.50	0.515						
CTAPR/L 10-2B	•	•	.625	.625	4.50	0.640	TPMR 32 TP 32	SM-41	TS-44-2	HC12	CS126	CLP12
CTAPR/L 12-3B	•	•	.750	.750	4.50	0.765						
CTAPR/L 16-3D	•	•	1.000	1.000	6.00	1.015	TPMR 43 TP 43	SM-37	TS-83-3	HC12	CS126	CLP12
CTAPR/L 16-4D	•	•	1.000	1.000	6.00	1.015						

• = Stocked standard items For inserts, see page T91, T92

### POSITIVE 11° CLEARANCE TRIANGULAR INSERTS



### CTCON

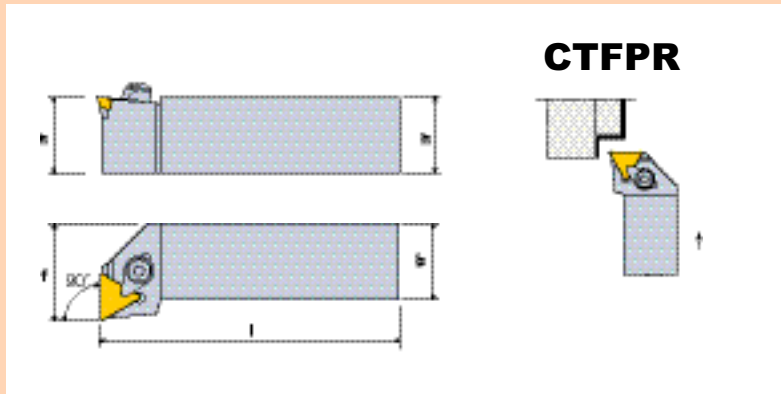


Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Clip
			h	b	l	f						
CTCON 08-3J	•		.500	.500	3.50	-	TPMR 32 TP 32	-	-	HC9	CS96	CLP9
CTCON 44-3F	•		1.000	.500	8.00	-						
CTCON 12-4B	•		.750	.750	4.50	-	TPMR 43 TP 43	SM-37	TS-10	HC12	CS126	CLP12
CTCON 64-4F	•		1.000	.750	8.00	-						
CTCON 66-4F	•		1.500	.750	8.00	-						

• = Stocked standard items For inserts, see page T91, T92

## TOP CLAMP/EXTERNAL TURNING TOOL HOLDERS

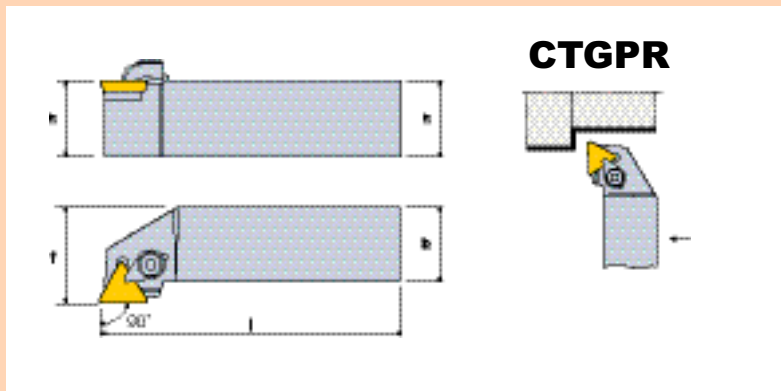
### POSITIVE 11° CLEARANCE TRIANGULAR INSERTS



Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Clip
	R	L	h	b	l	f						
CTFPR/L 10-3B	•	•	.625	.625	4.50	.875	TPMR 32	SM-41	TS-44-2	HC12	CS126	CLP12
CTFPR/L 12-3B	•	•	.750	.750	4.50	1.000	TP 32					
CTFPR/L 16-3D	•	•	1.000	1.000	6.00	1.250	TPMR 43	SM-37	TS-10	HC12	CS126	CLP12
CTFPR/L 12-4D	•	•	.750	.750	4.50	1.000						
CTFPR/L 16-4D	•	•	1.000	1.000	6.00	1.250	TPMR 43	SM-37	TS-10	HC12	CS126	CLP12
CTFPR/L 20-4D	•	•	1.250	1.250	6.00	1.500						

• = Stocked standard items For inserts, see page T91, T92

### POSITIVE 11° CLEARANCE TRIANGULAR INSERTS

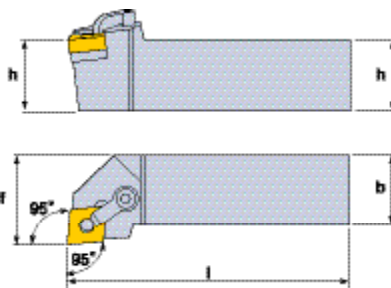


Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Clip
	R	L	h	b	l	f						
CTGPR/L 10-3B	•	•	.625	.625	4.50	.875	TPMR 32	SM-41	TS-44-2	HC12	CS126	CLP12
CTGPR/L 12-3B	•	•	.750	.750	4.50	1.000	TP 32					
CTGPR/L 16-4D	•	•	1.000	1.000	6.00	1.250	TPMR 43	SM-37	TS-10	HC12	CS126	CLP12
CTGPR/L 20-4D	•	•	1.250	1.250	6.00	1.500	TP 43					

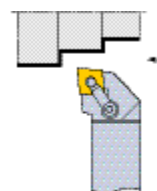
• = Stocked standard items For inserts, see page T91, T92

## MULTI LOCK/EXTERNAL TURNING TOOL HOLDERS

### NEGATIVE 80°/100° RHOMBIC INSERTS



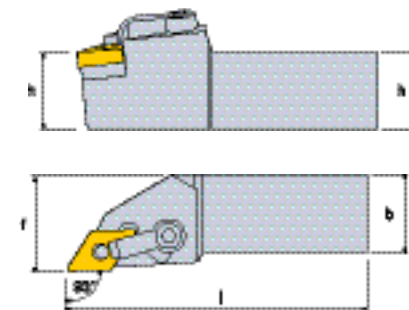
### MCLNR



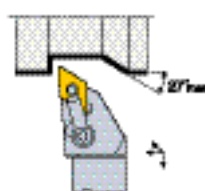
Designation	Stock		Dimensions (inch)				Insert	Seat	Lock Pin	Clamp	Clamp Screw
	R	L	h	b	l	f					
MCLNR/L 08-3A			.500	.500	4.00	.750	CNM 32	-	NL33	CL6	XNS37
MCLNR/L 10-3A			.625	.625	4.00	1.000					
MCLNR/L 10-4B	•	•	.625	.625	4.50	1.000	CNM 43	ICSN433	NL46	CL20	XNS48
MCLNR/L 85-4D	•		1.250	1.000	6.00	1.250					
MCLNR/L 86-5E	•		1.500	1.000	7.00	1.250	CNM 54	ICSN533	NL58	CL12	XNS510
MCLNR/L 85-6D	•		1.250	1.000	6.00	1.250					
MCLNR/L 86-6E	•		1.500	1.000	7.00	1.250	CNM 64	ICSN633	NL68	CL12	XNS510

• = Stocked standard items For inserts, see page T42, T44-T51

### NEGATIVE 55° RHOMBIC INSERTS



### MDJNR

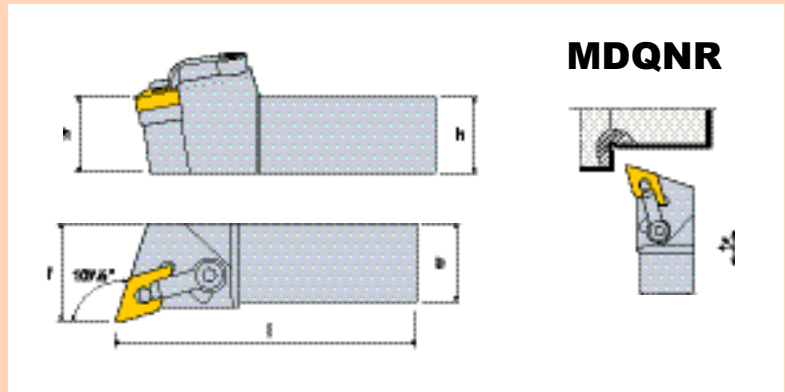


Designation	Stock		Dimensions (inch)				Insert	Seat	Lock Pin	Clamp	Clamp Screw
	R	L	h	b	l	f					
MDJNR/L 08-3A			.500	.500	4.00	.750	DNM 33	-	NL33	CL7	XNS36
MDJNR/L 10-3B	•	•	.625	.625	4.50	.875					
MDJNR/L 24-4D	•	•	1.500	1.500	6.00	2.000	DNM 43	IDSN433	NL46	CL20	XNS48
MDJNR/L 85-4D			1.250	1.000	6.00	1.250					

• = Stocked standard items For inserts, see page T42, T44-T51

## MULTI LOCK/EXTERNAL TURNING TOOL HOLDERS

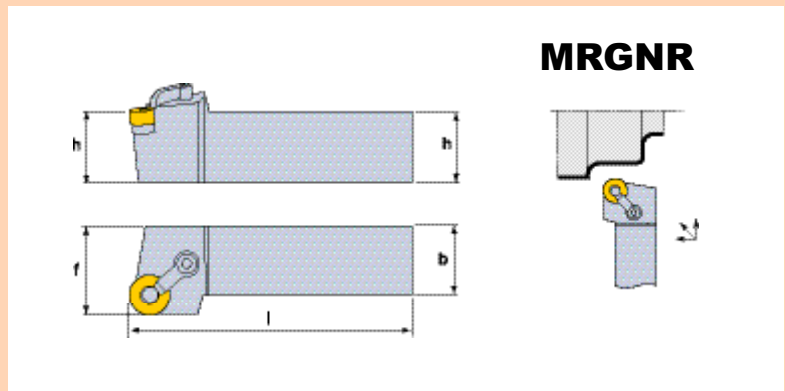
### NEGATIVE 55° RHOMBIC INSERTS



Designation	Stock		Dimensions (inch)				Insert	Seat	Lock Pin	Clamp	Clamp Screw
	R	L	h	b	l	f					
MDQNR/L 12-4B	•	•	.750	.750	4.50	1.000	DNM 43	IDSN433	NL46	CL12	XNS510
MDQNR/L 20-4D	•	•	1.250	1.250	6.00	1.500					

• = Stocked standard items For inserts, see page T53-T57

### NEGATIVE ROUND INSERTS



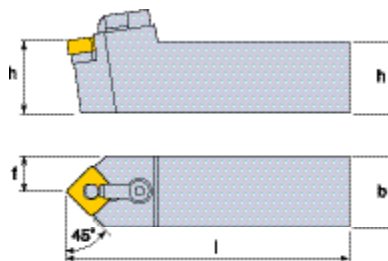
Designation	Stock		Dimensions (inch)				Insert	Seat	Lock Pin	Clamp	Clamp Screw
	R	L	h	b	l	f					
MRGNR/L 12-4B	•	•	.750	.750	4.50	1.000	RNM 43	IRSN43	NL46	CL9	XNS59
MRGNR/L 16-4D	•	•	1.000	1.000	6.00	1.250					
MRGNR/L 20-4D	•	•	1.250	1.250	6.00	1.500					

• = Stocked standard items For inserts, see page T59

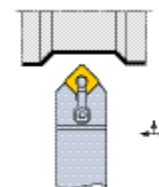


## MULTI LOCK/EXTERNAL TURNING TOOL HOLDERS

### NEGATIVE SQUARE INSERTS



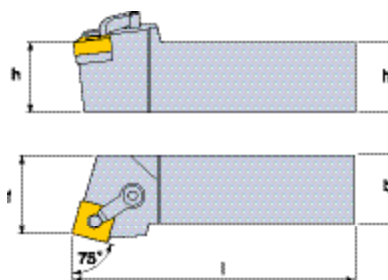
### MSDNN



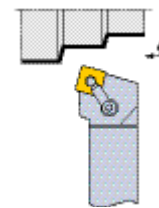
Designation	Stock		Dimensions (inch)				Insert	Seat	Lock Pin	Clamp	Clamp Screw
	R	L	h	b	l	f					
MSDNN 10-3B	•		.625	.625	4.50	.313	SNM 32	ISSN322	NL34	CL6	XNS36
MSDNN 12-3B	•		.750	.750	4.50	.375					
MSDNN 85-4D	•		1.250	1.000	6.00	.500	SNM 43	ISSN433	NL46	CL9	XNS59
MSDNN 16-5D	•		1.000	1.000	6.00	.500	SNM 54	ISSN533	NL58	CL12	XNS510
MSDNN 20-5D	•		1.250	1.250	6.00	.625					
MSDNN 85-5D	•		1.250	1.000	6.00	.500					
MSDNN 20-6E	•		1.250	1.250	7.00	.625	SNM 64	ISSN633	NL68	CL12	XNS510
MSDNN 24-6E	•		1.500	1.500	7.00	.750					
MSDNN 85-6D	•		1.250	1.000	6.00	.500					

• = Stocked standard items For inserts, see page T60-T65

### NEGATIVE SQUARE INSERTS



### MSRNR

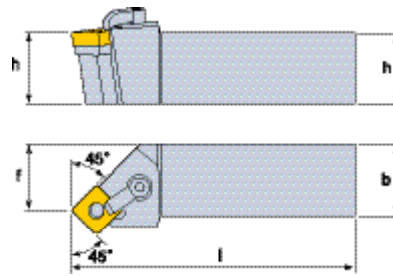


Designation	Stock		Dimensions (inch)				Insert	Seat	Lock Pin	Clamp	Clamp Screw
	R	L	h	b	l	f					
MSRNR/L 10-3B	•	•	.625	.625	4.50	.785	SNM 32	ISSN322	NL34	CL6	XNS36
MSRNR/L 12-3B	•	•	.750	.750	4.50	.910					
MSRNR/L 12-4B	•	•	.750	.750	4.50	.880	SNM 43	ISSN433	NL46	CL9	XNS59
MSRNR/L 16-5D	•	•	1.000	1.000	6.00	1.103	SNM 54	ISSN533	NL58	CL12	XNS510
MSRNR/L 24-6E	•	•	1.500	1.500	7.00	1.821	SNM 64	ICSN633	NL68	CL12	XNS510

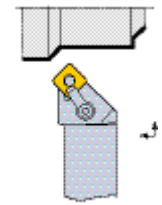
• = Stocked standard items For inserts, see page T60-T65

## MULTI LOCK/EXTERNAL TURNING TOOL HOLDERS

### NEGATIVE SQUARE INSERTS



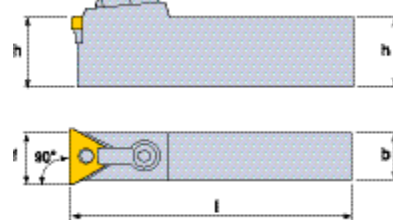
### MSSNR



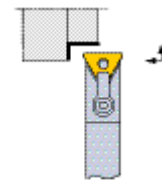
Designation	Stock		Dimensions (inch)				Insert	Seat	Lock Pin	Clamp	Clamp Screw
	R	L	h	b	l	f					
MSSNR/L 12-4B	•	•	.750	.750	4.50	.675	SNM 43	ISSN433	NL46	CL9	XNS59
MSSNR/L 20-5D	•	•	1.250	1.250	6.00	1.097	SNM 54	ISSN533	NL58	CL9	XNS510

• = Stocked standard items For inserts, see page T60-T65

### NEGATIVE TRIANGULAR INSERTS



### MTCNN



Designation	Stock		Dimensions (inch)				Insert	Seat	Lock Pin	Clamp	Clamp Screw
			h	b	l	f					
MTCNN 08-3B	•		.500	.500	4.50	-	TNM 33	ITSN322	NL34L	CL7	XNS36
MTCNN 44-3F			1.000	.500	8.00	-					
MTCNN 12-4B	•		.750	.750	4.50	-					
MTCNN 64-4F			1.000	.750	8.00	-	TNM 43	ITSN433	NL46	CL12	XNS59
MTCNN 66-4F			1.500	.750	8.00	-					

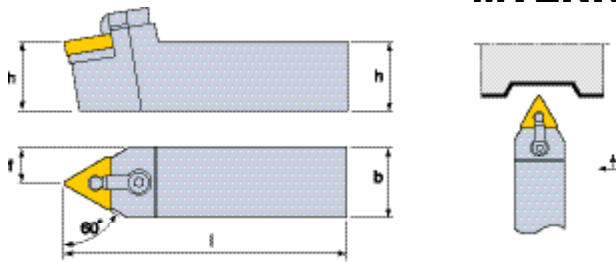
• = Stocked standard items For inserts, see page T66-T72

## MULTI LOCK/EXTERNAL TURNING TOOL HOLDERS

### NEGATIVE TRIANGULAR INSERTS



### MTENN



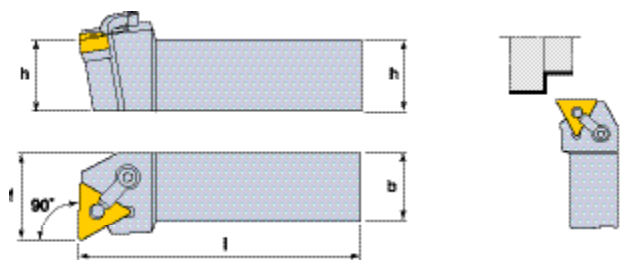
Designation	Stock		Dimensions (inch)				Insert	Seat	Lock Pin	Clamp	Clamp Screw
	R	L	h	b	l	f					
MTENN 10-3B	•		.625	.625	4.50	.312	TNM 33	ITSN322	NL34L	CL6	XNS36
MTENN 12-3B	•		.750	.750	4.50	.375					
MTENN 16-4D	•		1.000	1.000	6.00	.500	TNM 43	ITSN433	NL46	CL9	XNS59
MTENN 85-4D	•		1.250	1.000	6.00	.500	TNM 54	ITSN533	NL58	CL9	XNS510
MTENN 20-5E	•		1.250	1.250	7.00	.625					

• = Stocked standard items For inserts, see page T66-T72

### NEGATIVE TRIANGULAR INSERTS



### MTFNR

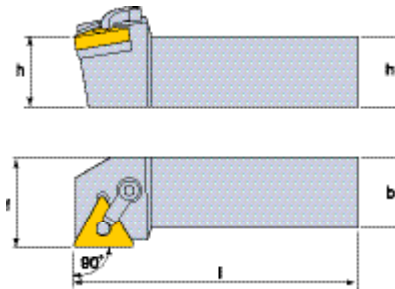


Designation	Stock		Dimensions (inch)				Insert	Seat	Lock Pin	Clamp	Clamp Screw
	R	L	h	b	l	f					
MTFNR/L 10-2B			.625	.625	4.50	.875	TNM 22	-	NL23	CL19	XNS36
MTFNR/L 10-3B			.625	.625	4.50	.875	TNM 33	ITSN322	NL34L	CL6	XNS36
MTFNR/L 20-4D	•		1.250	1.250	6.00	1.500	TNM 43	ITSN433	NL46	CL9	XNS510
MTFNR/L 16-5D	•		1.000	1.000	6.00	1.250	TNM 54	ITSN533	NL58	CL12	XNS510
MTFNR/L 20-5D	•		1.250	1.250	6.00	1.500					
MTFNR/L 24-5E			1.500	1.500	7.00	2.000	TNM 66	ITSN636	NL68L	CL12	XNS510
MTFNR/L 24-6E			1.500	1.500	7.00	2.000					

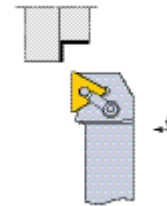
• = Stocked standard items For inserts, see page T66-T72

## MULTI LOCK/EXTERNAL TURNING TOOL HOLDERS

### NEGATIVE TRIANGULAR INSERTS



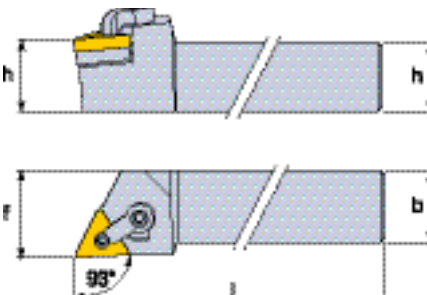
### MTGNR



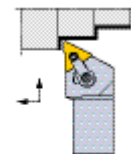
Designation	Stock		Dimensions (inch)				Insert	Seat	Lock Pin	Clamp	Clamp Screw
	R	L	h	b	l	f					
MTGNR/L 10-2B	•		.625	.625	4.50	.875	TNM 22	-	NL23	CL19	XNS36
MTGNR/L 10-3B	•		.625	.625	4.50	.875	TNM 33	ITSN322	NL34L	CL6	XNS36
MTGNR/L 20-4D	•		1.250	1.250	4.50	1.500	TNM 43	ITSN433	NL46	CL9	XNS510
MTGNR/L 16-5D	•		1.000	1.000	6.00	1.250	TNM 54	ITSN533	NL58	CL9	XNS510
MTGNR/L 20-5D	•		1.250	1.250	6.00	1.500					
MTGNR/L 24-5E			1.500	1.500	7.00	2.000	TNM 66	ITSN636	NL68L	CL12	XNS510
MTGNR/L 24-6E			1.500	1.500	7.00	2.000					

• = Stocked standard items For inserts, see page T66-T72

### NEGATIVE TRIANGULAR INSERTS



### MTJNR

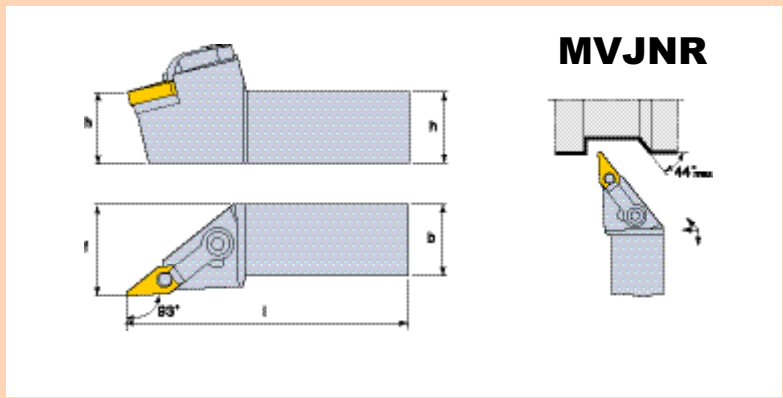


Designation	Stock		Dimensions (inch)				Insert	Seat	Lock Pin	Clamp	Clamp Screw
	R	L	h	b	l	f					
MTJNR/L 10-2B	•	•	.625	.625	4.50	.750	TNM 22	-	NL23	CL19	XNS36
MTJNR/L 10-3B	•	•	.625	.625	4.50	.875	TNM 33	ITSN322	NL34L	CL6	XNS36
MTJNR/L 12-3B	•	•	.750	.750	4.50	1.000					
MTJNR/L 16-3D	•	•	1.000	1.000	6.00	1.250	TNM 43	ITSN433	NL46	CL9	XNS510
MTJNR/L 16-4D	•	•	1.000	1.000	6.00	1.250					
MTJNR/L 20-4D	•	•	1.250	1.250	6.00	1.500	TNM 54	ITSN533	NL58	CL9	XNS510
MTJNR/L 16-5D	•	•	1.000	1.000	6.00	1.250					
MTJNR/L 20-5D	•	•	1.250	1.250	6.00	1.500	TNM 66	ITSN636	NL68L	CL12	XNS510
MTJNR/L 24-5E	•	•	1.500	1.500	7.00	2.000					
MTJNR/L 24-6E	•	•	1.500	1.500	7.00	2.000					

• = Stocked standard items For inserts, see page T66-T72

## MULTI LOCK/EXTERNAL TURNING TOOL HOLDERS

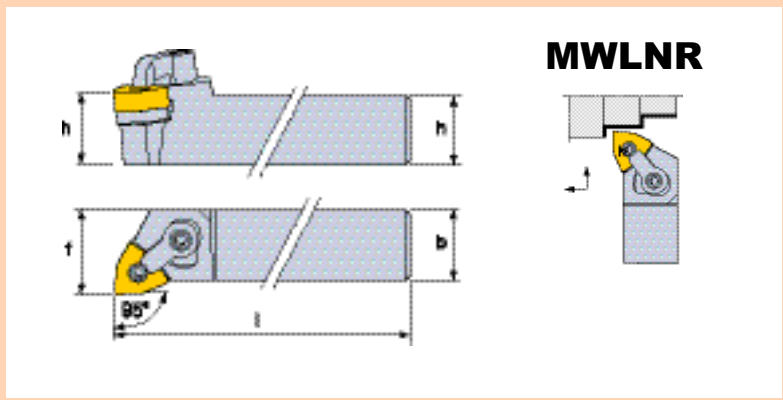
### NEGATIVE 35° RHOMBIC INSERTS



Designation	Stock		Dimensions (inch)				Insert	Seat	Lock Pin	Clamp	Clamp Screw
	R	L	h	b	l	f					
MVJNR/L 12-4B	•		.750	.750	4.50	1.000	VNM 43	IVSN433	NL46	CL30	XNS510
MVJNR/L 16-4D	•	•	1.000	1.000	6.00	1.250					
MVJNR/L 20-4D			1.250	1.250	6.00	1.500					

• = Stocked standard items For inserts, see page T73, T74

### NEGATIVE 80° TRIGON INSERTS



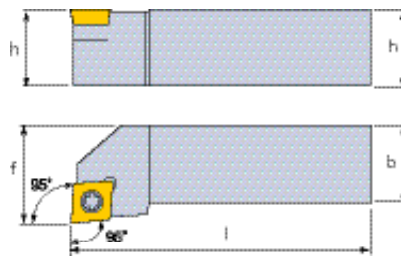
Designation	Stock		Dimensions (inch)				Insert	Seat	Lock Pin	Clamp	Clamp Screw
	R	L	h	b	l	f					
MWLNR/L 12-3B	•	•	.750	.750	4.50	1.000	WNM 33	IWSN322	NL34L	CL6	XNS36
MWLNR/L 16-3C	•	•	1.000	1.000	5.00	1.250					
MWLNR/L 12-4B	•	•	.750	.750	4.50	1.000	WNM 43	IDSN432	NL46	CL9	XNS59
MWLNR/L 16-4D	•	•	1.000	1.000	6.00	1.250	WNM 43	IDSN433	NL46	CL20	XNS48
MWLNR/L 20-4D	•	•	1.250	1.250	6.00	1.500	WNM 43	IDSN432	NL46	CL9	XNS59

• = Stocked standard items For inserts, see page T75, T78

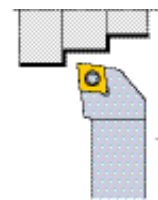


## SCREW CLAMP/EXTERNAL TURNING TOOL HOLDERS

### POSITIVE 7° CLEARANCE 80° RHOMBIC INSERTS



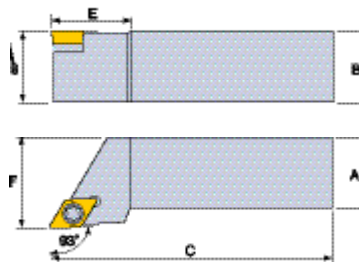
### SCLCR



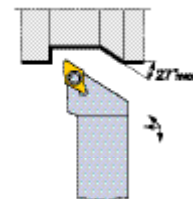
Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Insert Screw	Wrench
	R	L	h	b	l	f					
SCLCR/L 06-2J			.375	.375	3.50	0.500	CC T21.5	-	-	TS-25.45-6M1	DS-T07F
SCLCR/L 06-3K	•	•	.375	.375	2.50	0.500	CC T32.5	-	-	SR16-236	DS-T15S
SCLCR/L 08-3A	•	•	0.500	0.500	4.00	0.625	CC T32.5	-	-	TS-4.7-10M1	DS-T15F
SCLCR/L 10-3B	•		0.625	0.625	4.50	0.750					
SCLCR/L 12-3B	•		0.750	0.750	4.50	1.000					
SCLCR/L 16-3D	•		1.000	1.000	6.00	1.250	CC T32.5	-	-	1240	5515
SCLCR/L 12-4B	•		0.750	0.750	4.50	1.000	CC T43	-	-	TS-5.8-10M1	T20
SCLCR/L 16-4D	•	•	1.000	1.000	6.00	1.250	CC T43	3614	1760	1540	5517
SCLCR/L 20-4D	•		1.250	1.250	6.00	1.500	CC T43	-	-	TS-5.8-10M1	T20

• = Stocked standard items For inserts, see page T79. T80. T96

### POSITIVE 7° CLEARANCE 55° RHOMBIC INSERTS



### SDJCR

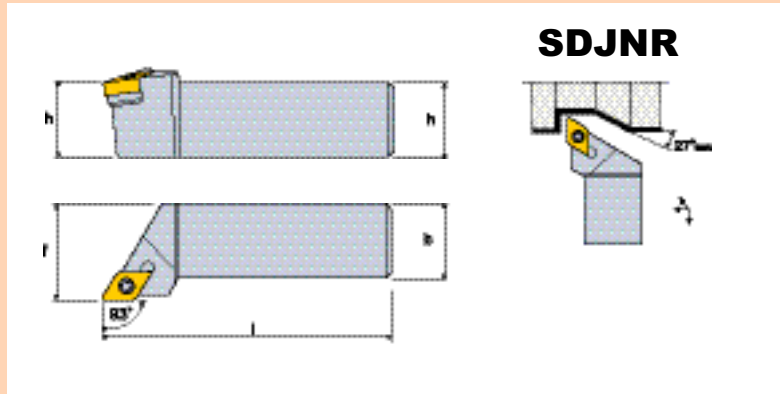


Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Insert Screw	Wrench
	R	L	h	b	l	f					
SDJCR/L 06-2J	•		.375	.375	2.50	0.500	DC T21.5	-	-	TS-25.45-6M1	DS-T07F
SDJCR/L 08-2A	•	•	0.500	0.500	4.00	0.625	DC T32.5	-	-	TS-4.7-10M1	DS-T15F
SDJCR/L 08-3A	•	•	0.500	0.500	4.00	0.625					
SDJCR/L 10-3B	•		0.625	0.625	4.50	0.750					
SDJCR/L 12-3B	•		0.750	0.750	4.50	1.000	DC T32.5	3714	1750	1335	5516
SDJCR/L 16-3D	•	•	1.000	1.000	6.00	1.250					

• = Stocked standard items For inserts, see page T82. T83. T96

## SCREW CLAMP/EXTERNAL TURNING TOOL HOLDERS

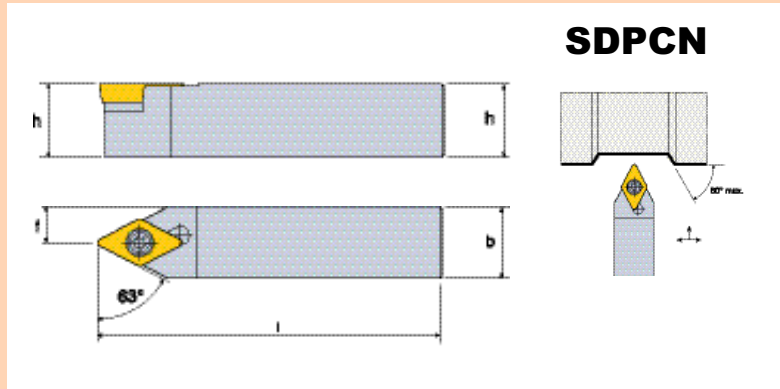
### NEGATIVE 55° RHOMBIC INSERTS



Designation	Stock		Dimension (mm)				Insert	Seat	Seat Screw	Insert Screw	Torx
	R	L	h	b	l	f					
SDJNR/L 10-3A	•		0.625	0.625	4.00	0.750	DNM 33	SSD32	SO50090S	SO35125I	T 10
SDJNR/L 12-3B	•		0.750	0.750	4.50	1.000					
SDJNR/L 16-3D	•		1.000	1.000	6.00	1.250					

• = Stocked standard items For inserts, see page T53-T57

### POSITIVE 7° CLEARANCE 55° RHOMBIC INSERTS

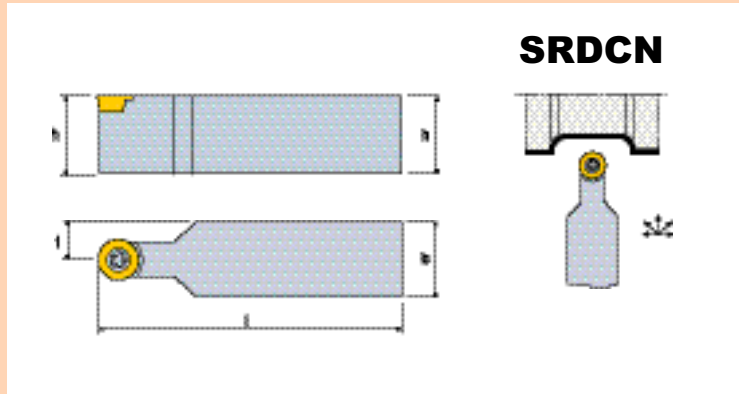


Designation	Stock		Dimension (mm)				Insert	Sea t	Seat Screw	Insert Screw	Torx Key
			h	b	l	f					
SDPCN 08-3D	•		.500	.500	6.00	.250	DCMT 32.5 DCGT 32.5	-	-	SR16-236P	T-15/5
SDPCN 10-3B	•		.625	.625	4.50	.312				SR16-236P	T-15/5
SDPCN 12-3B	•		.750	.750	4.50	.375				SR16-236P	T-15/5
SDPCN 16-3D	•		1.000	1.000	6.00	.500				TDC3-1P	SRTC-3P

• = Stocked standard items For inserts, see page T82, T83, T96

## ■ SCREW CLAMP/EXTERNAL TURNING TOOL HOLDERS

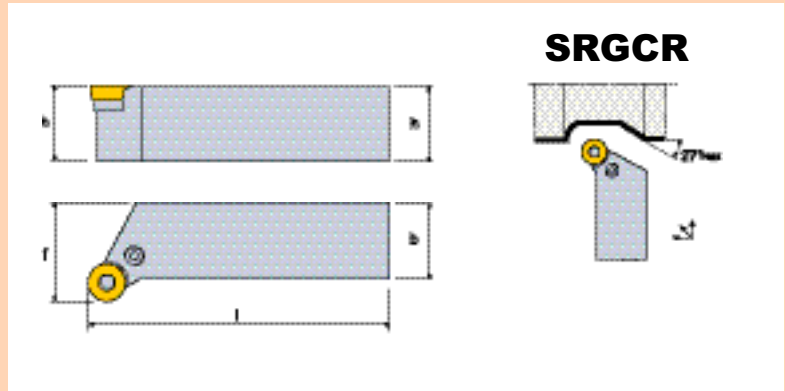
### ■ POSITIVE 7° CLEARANCE ROUND INSERTS



Designation	Stock	Dimensions (inch)				Insert	Seat	Seat Screw	Insert Screw	Driver
		h	b	l	f					
SRDCN 10-10A	•	0.625	.625	4.00	0.312	RC T10T300	3811	1750	1335	5516
SRDCN 12-10B	•	0.750	0.750	4.50	0.375					
SRDCN 16-12D	•	1.000	1.000	6.00	0.500					

• = Stocked standard items For inserts, see page T83. T97

### ■ POSITIVE 7° CLEARANCE ROUND INSERTS

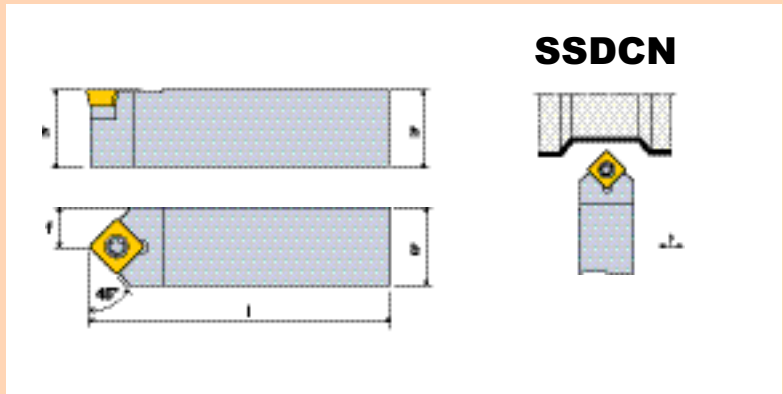


Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Insert Screw	Driver
	R	L	h	b	l	f					
SRGCR/L 12-10C	•		.750	.750	5.00	1.000	RC T10T300	3811	1750	1335	5516
SRGCR/L 16-10D	•		1.000	1.000	6.00	1.250					
SRGCR/L 16-12D	•		1.000	1.000	6.00	1.250					

• = Stocked standard items For inserts, see page T83. T97

## SCREW CLAMP/EXTERNAL TURNING TOOL HOLDERS

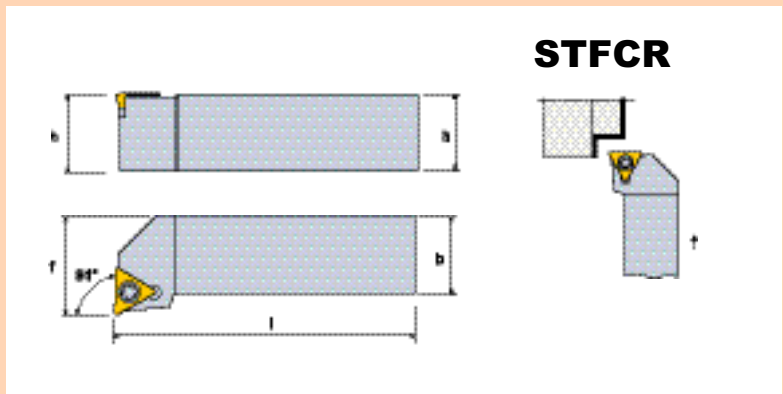
### POSITIVE 7° CLEARANCE SQUARE INSERTS



Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Insert Screw	Driver
	R	L	h	b	l	f					
SSDCN 08-3A			.500	.500	4.00	.250					
SSDCN 10-3B			.625	.625	4.50	.375	SC T32.5	-	-	TS-4.710M1	DS-T15S
SSDCN 12-3B			.750	.750	4.50	.375					
SSDCN 12-4B	•		.750	.750	4.50	.375	SC T43			SR16-212	T20.
SSDCN 16-4D			1.000	1.000	6.00	.500					
SSDCN 20-4D			1.250	1.250	6.00	.625	SC T43	-	-	TS-5.8-10M1	T20

• = Stocked standard items For inserts, see page T85. T97

### POSITIVE 7° CLEARANCE TRIANGULAR INSERTS

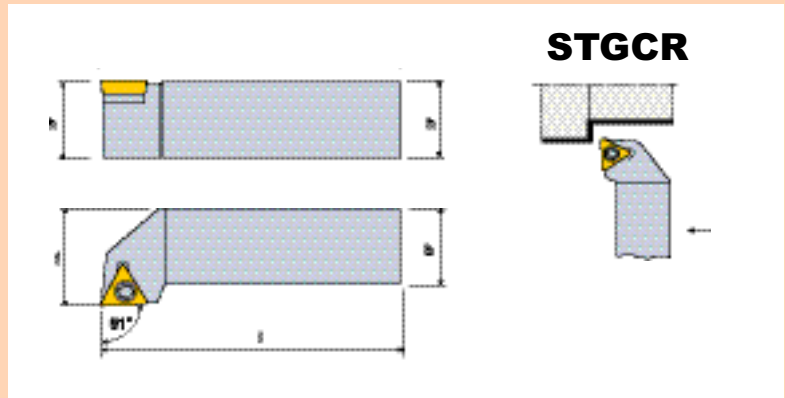
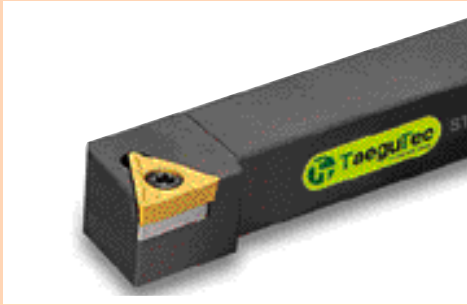


Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Insert Screw	Driver
	R	L	h	b	l	f					
STFCL/L 06-2	•		.375	.375	2.50	.500					
STFCL/L 08-2J			.500	.500	3.50	.625	TC T21.5	-	-	TS-25.45-6M1	DS-T07F
STFCL/L 10-2A			.625	.625	4.00	.750					
STFCL/L 10-3B			.625	.625	4.50	.750	TC T32.5	-	-	TS-4.7-10M1	DS-T15F
STFCL/L 12-3B	•		.750	.750	4.50	1.000					
STFCL/L 16-3D	•		1.000	1.000	6.00	1.250	TC T32.5	3414	1750	1335	5516

• = Stocked standard items For inserts, see page T88. T98

## SCREW CLAMP/EXTERNAL TURNING TOOL HOLDERS

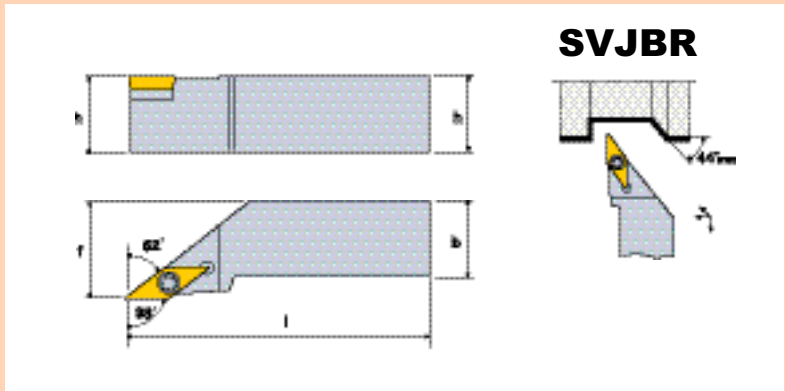
### POSITIVE 7° CLEARANCE TRIANGULAR INSERTS



Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Insert Screw	Driver
	R	L	h	b	l	f					
STGCR/L 06-2	•		.375	.375	2.50	.500	TC T21.5			TS-25.45-6M1	DS-T07F
STGCR/L 08-2J			.500	.500	3.50	.625					
STGCR/L 10-2A			.625	.625	4.00	.750	TC T32.5			TS-4.7-10M1	DS-T15F
STGCR/L 10-3B			.625	.625	4.50	.750					
STGCR/L 12-3B	•		.750	.750	4.50	1.000	TC T32.5	3414	1750	1335	5516
STGCR/L 16-3D	•		1.000	1.000	6.00	1.250					

• = Stocked standard items For inserts, see page T88, T98

### POSITIVE 5° CLEARANCE 35° RHOMBIC INSERTS



Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Insert Screw	Driver
	R	L	h	b	l	f					
SVJBR/L 12-3C	•		.750	.750	5.00	1.000	VBMT 33	3718	1750	1335	5516
SVJBR/L 16-3D	•	•	1.000	1.000	6.00	1.250					
SVJBR/L 20-3D			1.250	1.250	6.00	1.500					

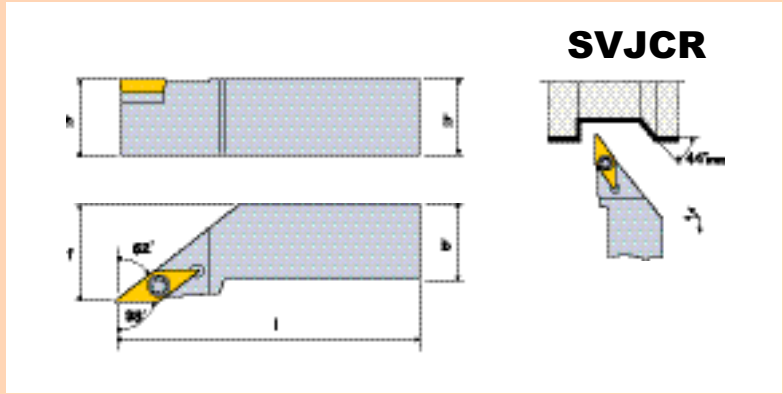
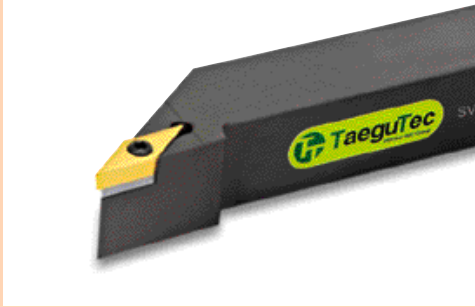
• = Stocked standard items For inserts, see page T93



# Ingersoll

## SCREW CLAMP/EXTERNAL TURNING TOOL HOLDERS

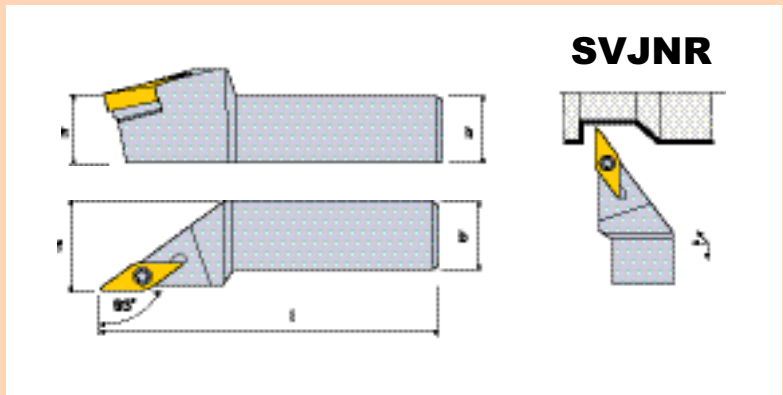
### POSITIVE 7° CLEARANCE RHOMBIC INSERTS



Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Insert Screw	Driver
	R	L	h	b	l	f					
SVJCR/L 08-2A			.500	.500	4.00	.625	VCGT 22	-	-	TS-25.45-6M1	DS-T07F
SVJCR/L 10-2B			.625	.625	4.50	.750					
SVJCR/L 12-3C	•		.750	.750	5.00	1.000	VCGT 33	3718	1750	1335	5516
SVJCR/L 16-3D	•	•	1.000	1.000	6.00	1.250					
SVJCR/L 20-3D			1.250	1.250	6.00	1.500					

• = Stocked standard items For inserts, see page T98

### NEGATIVE 35° RHOMBIC INSERTS

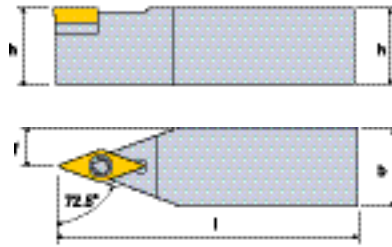


Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Insert Screw	Driver
	R	L	h	b	l	f					
SVJNR/L 10-2.5A	•		.625	.625	4.00	.750	VNM 2.53	SSVN 32	SO 35120I	SO 50090S	T-15
SVJNR/L 12-2.5B	•		.750	.750	4.50	1.000					
SVJNR/L 16-2.5D	•		1.000	1.000	6.00	1.250					

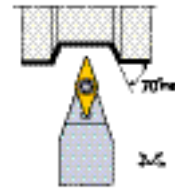
• = Stocked standard items For inserts, see page T73, T74

## SCREW CLAMP/EXTERNAL TURNING TOOL HOLDERS

### POSITIVE 5° CLEARANCE 35° RHOMBIC INSERTS



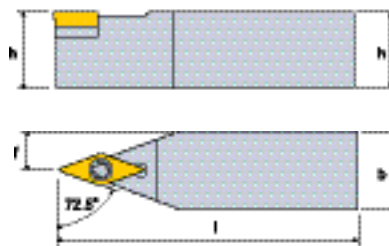
### SVVBN



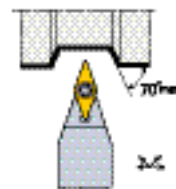
Designation	Stock	Dimensions (inch)				Insert	Seat	Seat Screw	Insert Screw	Driver
		h	b	l	f					
SVVBN 12-3B		.750	.750	4.50	.375	VBMT33	-	-	TS4.7-10M1	DS-T15F
SVVBN 16-3D		1.000	1.000	6.00	.500					
SVVBN 20-3D		1.250	1.250	6.00	.625					

• = Stocked standard items For inserts, see page T93

### POSITIVE 7° CLEARANCE 35° RHOMBIC INSERTS



### SVVCN

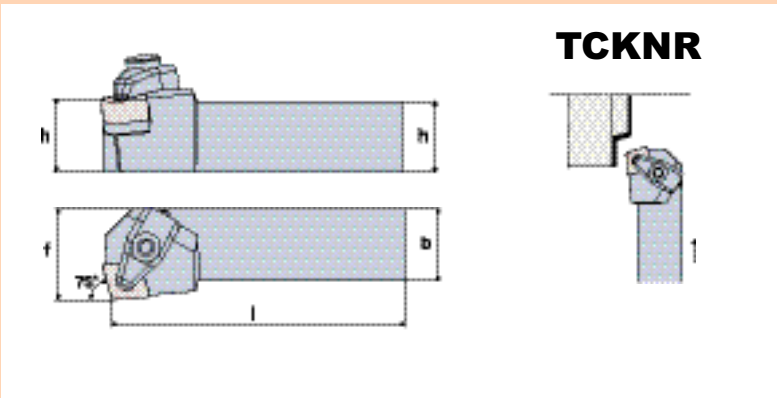


Designation	Stock	Dimensions (inch)				Insert	Seat	Seat Screw	Insert Screw	Driver
		h	b	l	f					
SVVCN 06-2J		.375	.375	3.50	.188	VCGT 22	-	-	TS25.45-6M1	DS-T07F
SVVCN 08-2A		.500	.500	4.00	.250					
SVVCN 10-2B		.625	.625	4.50	.312					
SVVCN 12-3B	•	.750	.750	4.50	.375	VCGT 33	-	-	TS4.7-10M1	DS-T15F
SVVCN 16-3D	•	1.000	1.000	6.00	.500					
SVVCN 20-3D		1.250	1.250	6.00	.625					

• = Stocked standard items For inserts, see page T98

## T-HOLDERS/EXTERNAL TURNING

### NEGATIVE 80°/100° RHOMBIC INSERTS

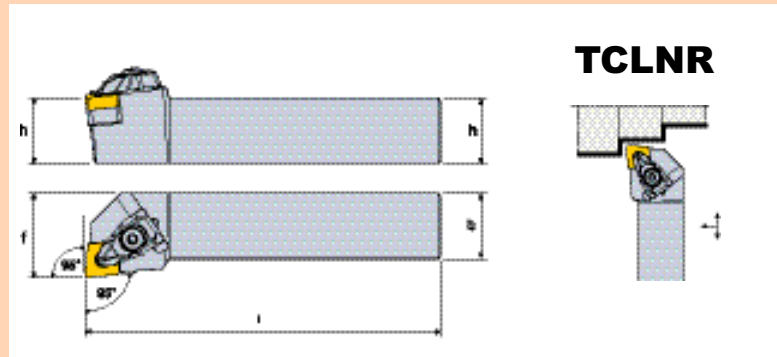


**TCKNR**

Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Spring	Wrench
	R	L	h	b	l	f							
TCKNR/L 12-4B	•	•	0.75	0.75	4.50	1.00	 CNM 43	 TSC44	 SO40050I	 DLM4	 DLS4	 DSP4	 L-W 3
TCKNR/L 16-4D	•	•	1.00	1.00	6.00	1.25							
TCKNR/L 20-4D	•	•	1.25	1.25	6.00	1.50							

• = Stocked standard items For inserts, see page T42, T44-T51

### NEGATIVE 80°/100° RHOMBIC INSERTS



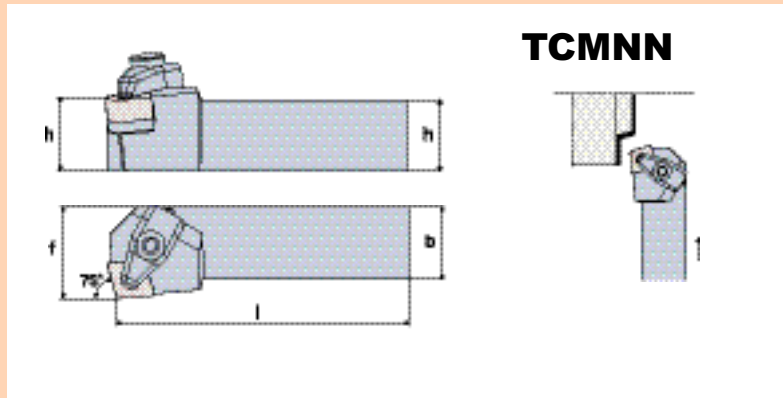
**TCLNR**

Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Spring	Wrench
	R	L	h	b	l	f							
TCLNR/L 12-3B	•	•	0.75	0.75	4.50	1.000	 CNM 32	 LSC32	 SO40085I	 DLM3	 DLS3	 DSP3	 L-W 2.5
TCLNR/L 16-3D	•	•	1.00	1.00	6.00	1.250							
TCLNR/L 12-4B	•	•	0.75	0.75	4.50	1.000							
TCLNR/L 16-4D	•	•	1.00	1.00	6.00	1.250	 CNM 43	 TSC44	 SO40050I	 DLM4	 DLS4	 DSP4	 L-W 3
TCLNR/L 20-4D	•	•	1.25	1.25	6.00	1.500							
TCLNR/L 24-4D	•	•	1.50	1.50	6.00	2.000							
TCLNR/L 16-5D	•	•	1.00	1.00	6.00	1.250	 CNM 54	 TSC54	 SM50-122-50	 DLM5	 DLS5	 DSP5	 L-W 4
TCLNR/L 20-5D	•	•	1.25	1.25	6.00	1.500							
TCLNR/L 24-5D	•	•	1.50	1.50	6.00	2.000							
TCLNR/L 16-6D	•	•	1.00	1.00	6.00	1.250	 CNM 64	 LSC63	 SO80180I	 DLM6	 DLS5	 DSP5	 L-W 4
TCLNR/L 20-6D	•	•	1.25	1.25	6.00	1.500							
TCLNR/L 24-6D	•	•	1.50	1.50	6.00	2.000							

• = Stocked standard items For inserts, see page T42, T44-T51

## T-HOLDERS/EXTERNAL TURNING

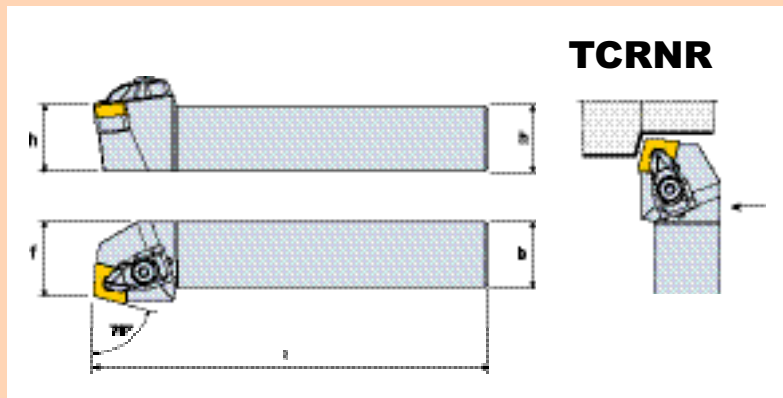
### NEGATIVE 80°/100° RHOMBIC INSERTS



Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Spring	Wrench
	R	L	h	b	l	f							
TCMNN 12-4B	•		0.75	0.75	4.50	.375	 CNM 43	 TSC44	 SO40050I	 DLM4	 DLS4	 DSP4	 L-W 3
TCMNN 16-4D	•		1.00	1.00	6.00	.500							
TCMNN 20-6D	•		1.25	1.25	6.00	.625							

• = Stocked standard items For inserts, see page T42, T44-T51

### NEGATIVE 80°/100° RHOMBIC INSERTS



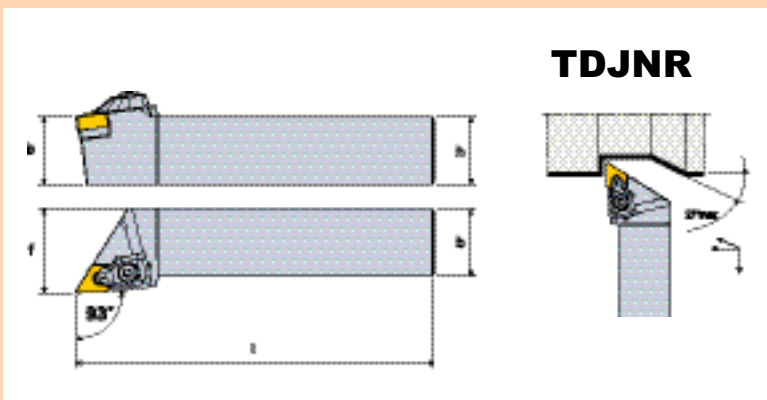
Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Spring	Wrench
	R	L	h	b	l	f							
TCRNR/L 12-4B	•	•	0.75	0.75	4.50	1.000	 CNM 43	 TSC44	 SO40050I	 DLM4	 DLS4	 DSP4	 L-W 3
TCRNR/L 16-4D	•	•	1.00	1.00	6.00	1.250							
TCRNR/L 20-4D	•	•	1.25	1.25	6.00	1.500							

• = Stocked standard items For inserts, see page T42, T44-T51



## T-HOLDERS/EXTERNAL TURNING

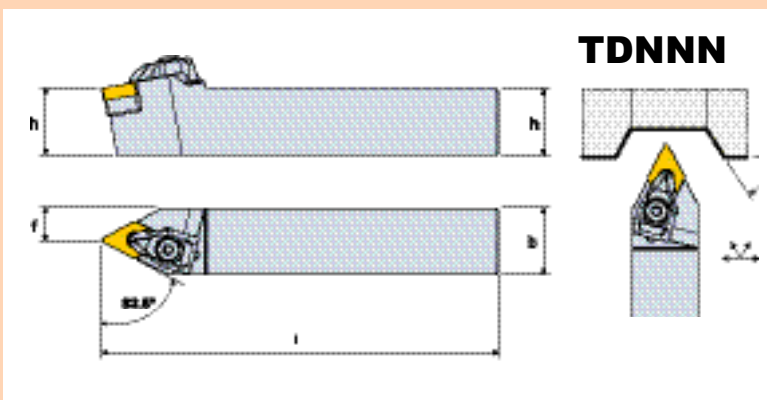
### NEGATIVE 55° RHOMBIC INSERTS



Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Spring	Wrench
	R	L	h	b	l	f							
TDJNR/L 12-3B	•	•	0.75	0.75	4.50	1.000	DLM 33	LSD32	SO40085I	DLM3	DLS3	DSP3	L-W 2.5
TDJNR/L 16-3D	•	•	1.00	1.00	4.50	1.250							
TDJNR/L 12-4B	•	•	0.75	0.75	4.50	1.000	DLM 43	TSD44	SO40050I	DLM4	DLS4	DSP4	L-W 3
TDJNR/L 16-4D	•	•	1.00	1.00	6.00	1.250							
TDJNR/L 20-4D	•	•	1.25	1.25	6.00	1.500	DLM 44	TSD43	SM50-122-50	DLM4	DLS4	DSP4	L-W 3
TDJNR/L 12-44B	•	•	0.75	0.75	4.50	1.250							
TDJNR/L 16-44D	•	•	1.00	1.00	6.00	1.500							

• = Stocked standard items For inserts, see page T53-T57

### NEGATIVE 55° RHOMBIC INSERTS



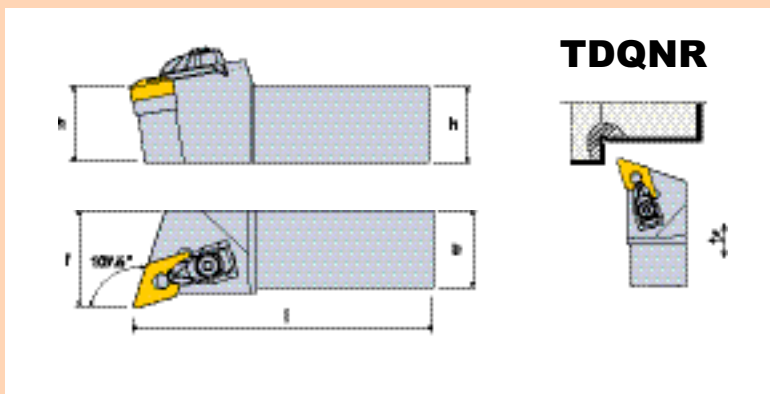
Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Spring	Hex Key
	R	L	h	b	l	f							
TDNNN 16-4D	•	•	1.00	1.00	6.00	0.500	DLM 43	TSD44	SO40050I	ULM4	DLS4	DSP4	L-W 3

• = Stocked standard items For inserts, see page T53-T57



## ■ T-HOLDERS/EXTERNAL TURNING

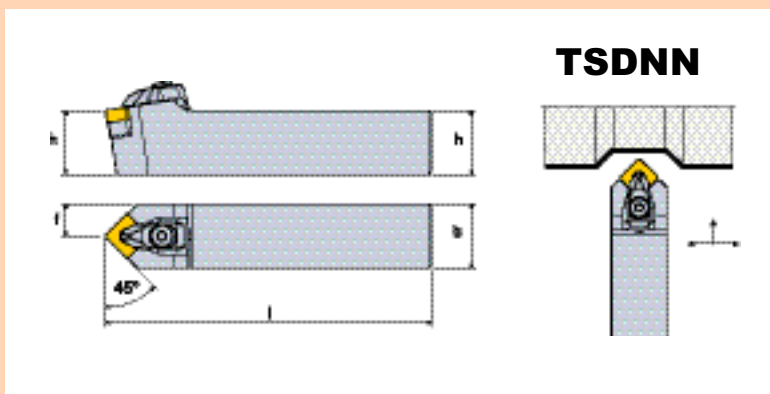
### ■ NEGATIVE 55° RHOMBIC INSERTS



Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Spring	Wrench
	R	L	h	b	l	f							
TDQNR/L 16-4D	•	•	1.00	1.00	6.00	1.25	DNM 43	TSD44	SO40050I	DLM4	DLS4	DSP4	L-W 3

• = Stocked standard items For inserts, see page T53-T57

### ■ NEGATIVE SQUARE INSERTS

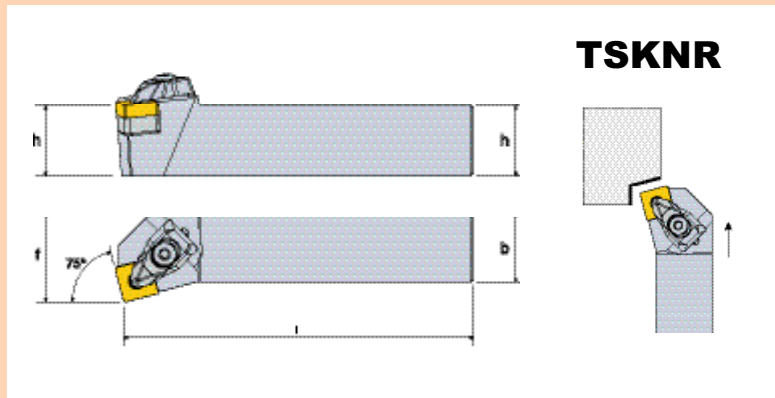


Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Spring	Wrench
			h	b	l	f							
TSDNN 12-4B	•		0.75	0.75	4.50	.375	SNM 43	TSS44	SO40050I	DLM4	DLS4	DSP4	L-W 3
TSDNN 16-4D	•		1.00	1.00	6.00	.500							
TSDNN 20-4D	•		1.25	1.25	6.00	.625	SNM 63	LSC63	SO80180I	DLM6	DLS5	DSP5	L-W 4
TSDNN 20-6D	•		1.25	1.25	6.00	.625							

• = Stocked standard items For inserts, see page T60-T65

## T-HOLDERS/EXTERNAL TURNING

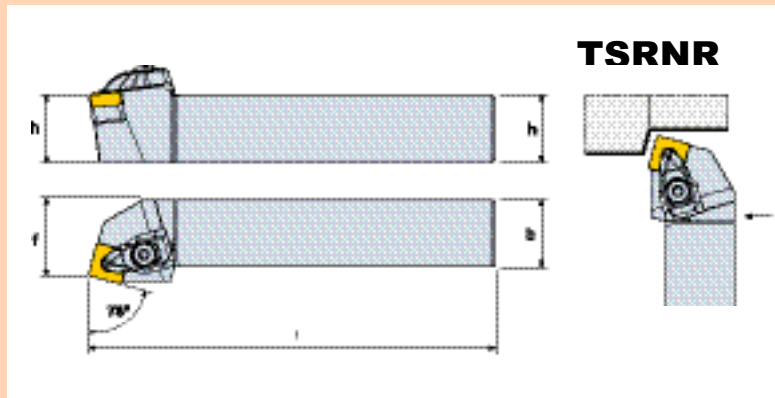
### NEGATIVE SQUARE INSERTS



Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Spring	Wrench
	R	L	h	b	l	f							
TSKNR/L 16-4D	•	•	1.00	1.00	6.00	1.250							

• = Stocked standard items For inserts, see page T60-T65

### NEGATIVE SQUARE INSERTS

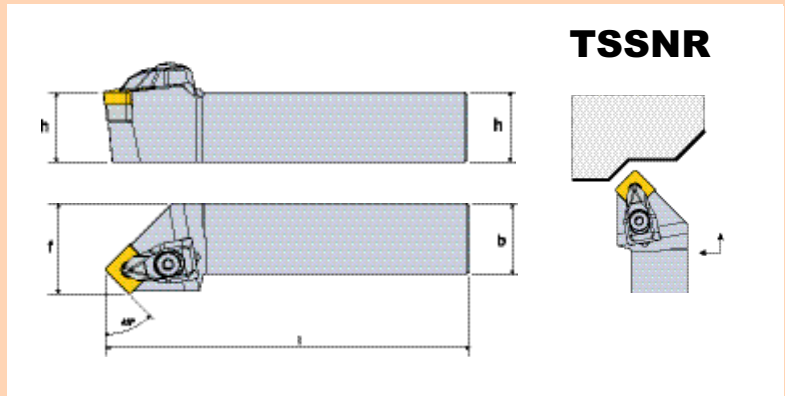


Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Spring	Wrench
	R	L	h	b	l	f							
TSRNR/L 16-4D	•	•	1.00	1.00	6.00	1.130							
TSRNR/L 20-4D	•	•	1.25	1.25	6.00	1.380							
TSRNR/L 20-5D	•	•	1.25	1.25	6.00	1.353							
TSRNR/L 20-6D	•	•	1.25	1.25	6.00	1.321							

• = Stocked standard items For inserts, see page T60-T65

## ■ T-HOLDERS/EXTERNAL TURNING

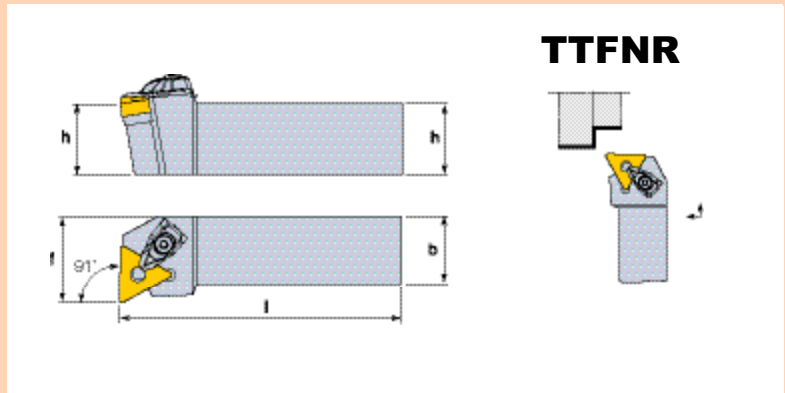
### ■ NEGATIVE SQUARE INSERTS



Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Spring	Wrench
	R	L	h	b	l	f							
TSSNR/L 16-4D	•	•	1.00	1.00	6.00	0.921	SNM 43	TSS44	SO400501	DLM4	DLS4	DSP4	L-W 3
TSSNR/L 20-6D	•	•	1.25	1.25	6.00	1.010	SNM 63	LSC63	SO801801	DLM6	DLS5	DSP5	L-W 4

• = Stocked standard items For inserts, see page T60-T65

### ■ NEGATIVE TRIANGULAR INSERTS

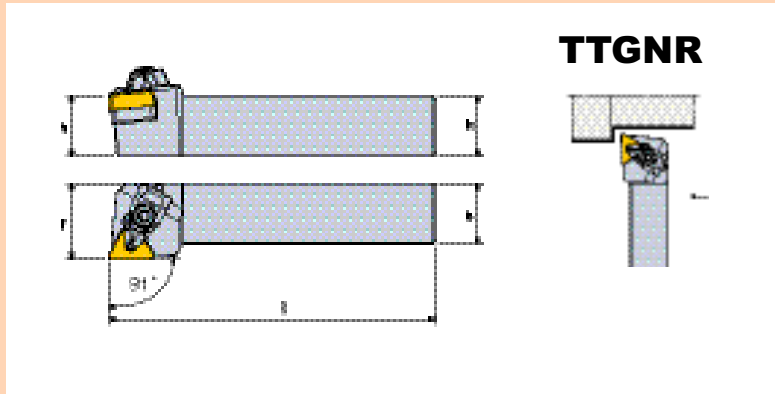


Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Spring	Wrench
	R	L	h	b	l	f							
TTFNR/L 12-3B	•	•	.075	.075	4.50	1.000	TNM 33	TST33	SO350801	DLM3	DLS3	DSP3	L-W 2.5
TTFNR/L 16-3D	•	•	1.00	1.00	6.00	1.250							
TTFNR/L 16-4D	•	•	1.00	1.00	6.00	1.250	TNM 43	TST43	SM50-122-50	DLM4	DLS4	DSP4	L-W 3

• = Stocked standard items For inserts, see page T66-T72

# T-HOLDERS/EXTERNAL TURNING

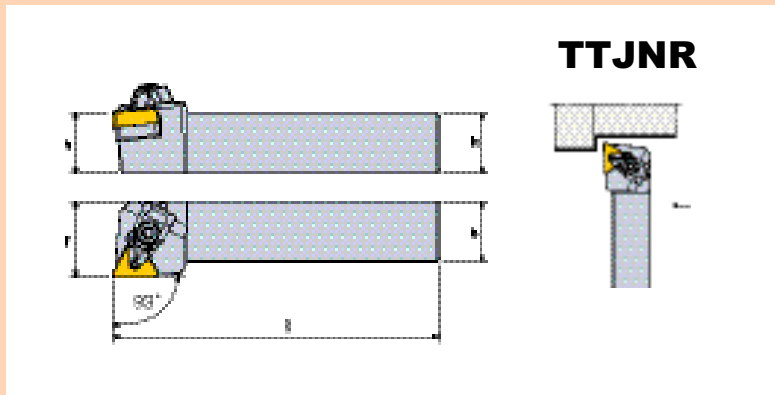
## NEGATIVE TRIANGULAR INSERTS



Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Spring	Wrench							
	R	L	h	b	l	f														
TTGNR/L 12-3B	•	•	.075	.075	4.50	1.000														
TTGNR/L 16-3D	•	•	1.00	1.00	6.00	1.250								TNM 33	TST33	SO35080I	DLM3	DLS3	DSP3	L-W 2.5
TTGNR/L 16-4D	•	•	1.00	1.00	6.00	1.250								TNM 43	TST43	SM50-122-50	DLM4	DLS4	DSP4	L-W 3

• = Stocked standard items For inserts, see page T66-T72

## NEGATIVE TRIANGULAR INSERTS

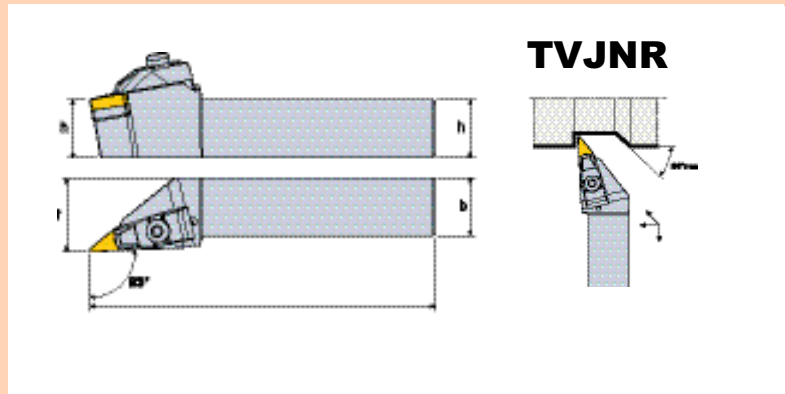


Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Spring	Wrench							
	R	L	h	b	l	f														
TTJNR/L 12-3B	•	•	.075	.075	4.50	1.000														
TTJNR/L 16-3D	•	•	1.00	1.00	6.00	1.250								TNM 33	TST33	SO35080I	DLM3	DLS3	DSP3	L-W 2.5
TTJNR/L 16-4D	•	•	1.00	1.00	6.00	1.250								TNM 43	TST43	SM50-122-50	DLM4	DLS4	DSP4	L-W 3
TTJNR/L 20-4D	•	•	1.25	1.25	6.00	1.516														

• = Stocked standard items For inserts, see page T66-T72

## T-HOLDERS/EXTERNAL TURNING

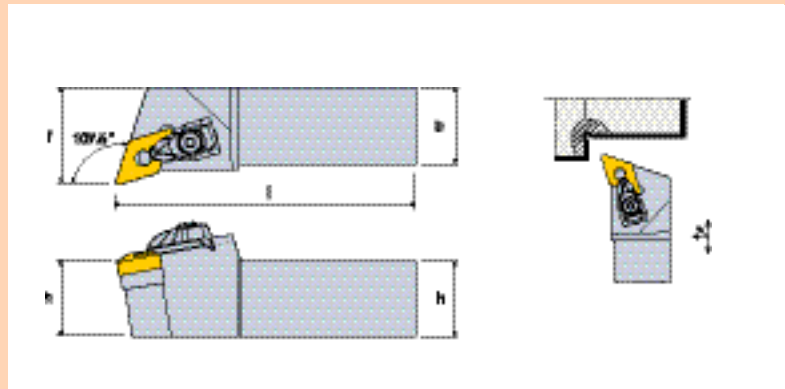
### NEGATIVE 35° RHOMBIC INSERTS



Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Spring	Wrench
	R	L	h	b	l	f							
TVJNR/L 12-3C	•	•	.075	.075	5.00	1.000							
TVJNR/L 16-3D	•	•	1.00	1.00	6.00	1.250	VNM 33	TSV33	SO35080I	DLM3-V16	DLS5	DSP5	L-W 4
TVJNR/L 20-3D	•	•	1.25	1.25	6.00	1.500							

• = Stocked standard items For inserts, see page T73, T74

### NEGATIVE 35° RHOMBIC INSERTS



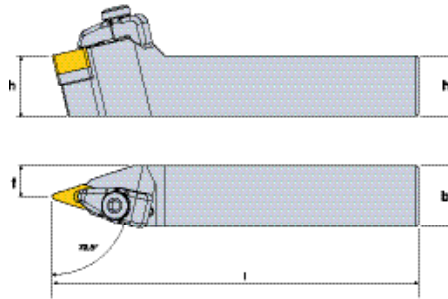
Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Spring	Wrench
	R	L	h	b	l	f							
TVQNR/L 16-3D	•	•	1.00	1.00	6.00	1.250							

• = Stocked standard items For inserts, see page T73, T74

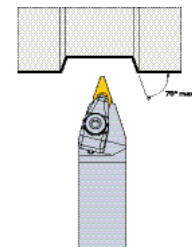


## ■ T-HOLDERS/EXTERNAL TURNING

### ■ NEGATIVE 35° RHOMBIC INSERTS



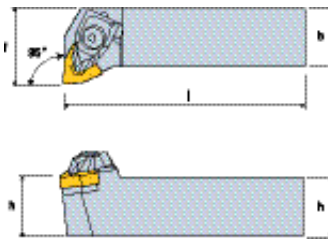
### TVVNN



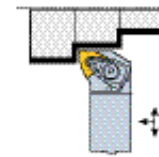
Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Spring	Wrench
	R	L	h	b	l	f							
TVVNN 12-3B	•	•	0.75	0.75	4.50	0.375	VNM 33	TSV33	SO35080I	DLM3-V16	DLS5	DSP5	L-W 4
TVVNN 16-3D	•	•	1.00	1.00	6.00	.500							

• = Stocked standard items For inserts, see page T73, T74

### ■ NEGATIVE 80° TRIGON INSERTS



### TWLNR

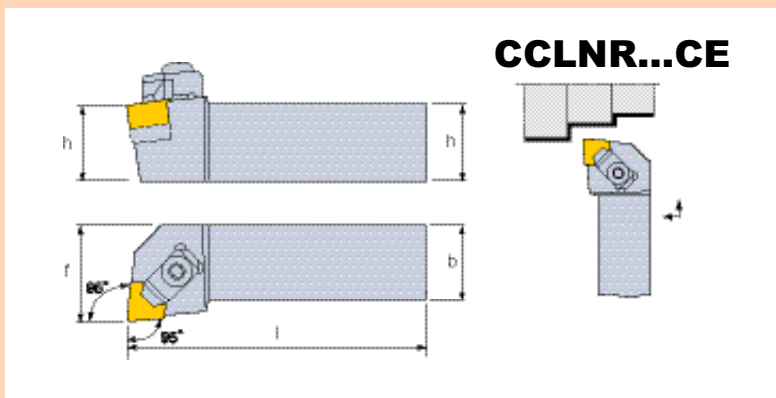


Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Clamp Spring	Wrench
	R	L	h	b	l	f							
TWLNR/L 10-3A	•	•	0.625	0.625	4.00	1.000	WNM 33	PSW32	SO40090I	DLM3	DLS3	DSP3	L-W 2.5
TWLNR/L 12-3B	•	•	0.75	0.75	4.50	1.000							
TWLNR/L 16-3D	•	•	1.00	1.00	6.00	1.250							
TWLNR/L 12-4B	•	•	0.75	0.75	4.50	1.000	WNM 43	TSW44	SO40050I	DLM4	DLS4	DSP4	L-W 3
TWLNR/L 16-4D	•	•	1.00	1.00	6.00	1.250							
TWLNR/L 20-4D	•	•	1.25	1.25	6.00	1.500							

• = Stocked standard items For inserts, see page T75-T78

## TOP CLAMP/EXTERNAL TURNING TOOL HOLDERS

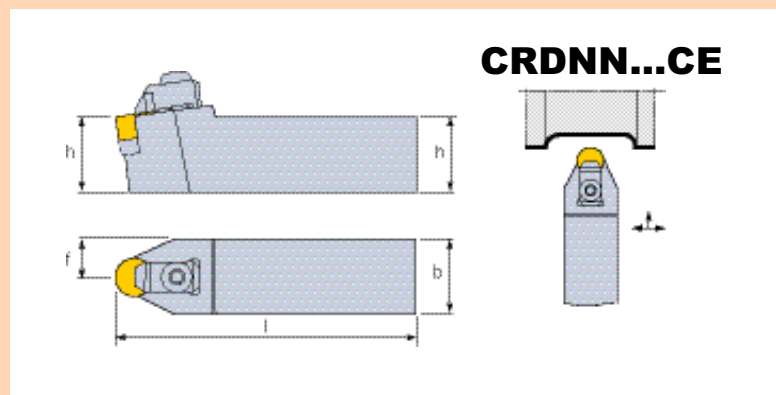
### NEGATIVE 80° RHOMBIC CERAMIC INSERTS



Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Wrench
	R	L	h	b	l	f						
CCLNR/L 12-4B CE	•		.750	.750	4.50	1.000	CNG 45	S 48	BH M5X0.8X8	BCL 6	M6X1X20	L-W 4
CCLNR/L 12-4B CEA	•		.750	.750	4.50	1.000	CNG 43					
CCLNR/L 16-4D CE	•		1.000	1.000	6.00	1.250	CNG 45					
CCLNR/L 16-4B CEA	•		1.000	1.000	6.00	1.250	CNG 43					

• = Stocked standard items For inserts, see page T107

### NEGATIVE ROUND CERAMIC INSERTS

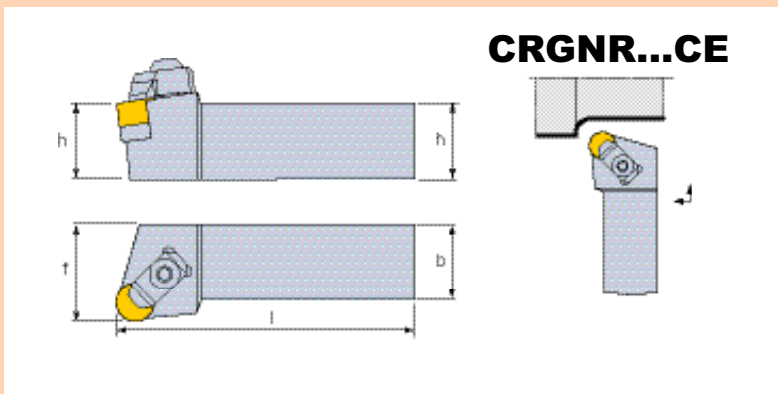


Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Wrench
			h	b	l	f						
CRDNN 12-4B CE	•		.750	.750	4.50	.375	RNG 45	S 43	BH M5x0.8x8	BCL 6	M6x1x20	L-W 4
CRDNN 12-4B CEA	•		.750	.750	4.50	.375	RNG 43					
CRDNN 16-4D CE	•		1.000	1.000	6.00	.500	RNG 45					
CRDNN 16-4D CEA	•		1.000	1.000	6.00	.500	RNG 43					

• = Stocked standard items For inserts, see page T108

## TOP CLAMP/EXTERNAL TURNING TOOL HOLDERS

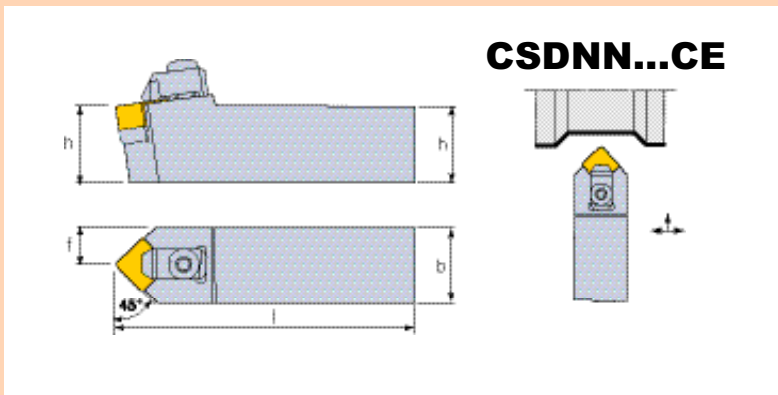
### NEGATIVE ROUND CERAMIC INSERTS



Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Wrench
	R	L	h	b	l	f						
CRGNR/L 12-4B CEA	•		.750	.750	4.50	1.000	RNG 43	S 43	BH M5x0.8x8	BCL 6	M6x1x20	L-W 4
CRGNR/L 16-4D CE	•		1.000	1.000	6.00	1.250	RNG 45					
CRGNR/L 16-4D CEA	•		1.000	1.000	6.00	1.250	RNG 43					
CRGNR/L 20-4E CE	•		1.250	1.250	7.00	1.500	RNG 45					

• = Stocked standard items For inserts, see page T108

### NEGATIVE SQUARE CERAMIC INSERTS

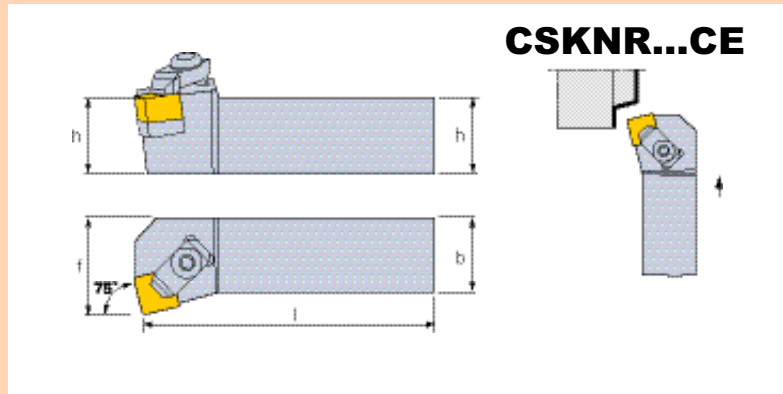


Designation	Stock	Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Wrench
		h	b	l	f						
CSDNN 12-4B CE	•	.750	.750	4.50	.375	SNG 45	S 40	BH M5x0.8x8	BCL 6	M6x1x20	L-W 4
CSDNN 12-4B CEA	•	.750	.750	4.50	.375	SNG 43					
CSDNN 16-4D CE	•	1.000	1.000	6.00	.500	SNG 45					
CSDNN 16-4D CEA	•	1.000	1.000	6.00	.500	SNG 43					
CSDNN 20-4E CE	•	1.250	1.250	7.00	.625	SNG 45					

• = Stocked standard items For inserts, see page T108

## TOP CLAMP/EXTERNAL TURNING TOOL HOLDERS

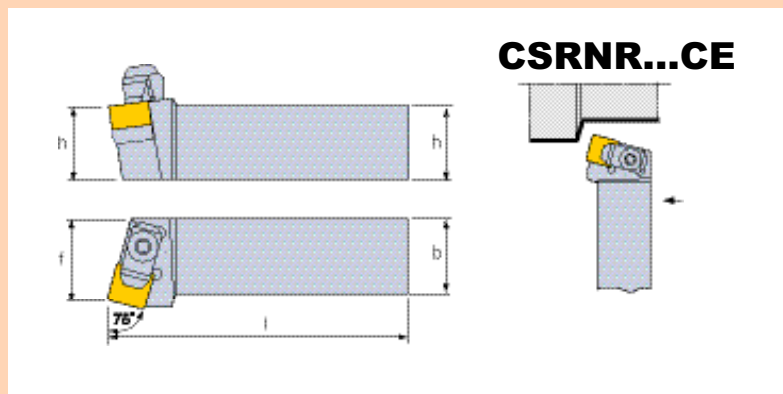
### NEGATIVE SQUARE INSERTS



Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Wrench
	R	L	h	b	l	f						
CSKNR/L 16-4D CE	•		1.000	1.000	6.00	1.250	SNG 45	S 40	BH M5X0.8X10	BCL 6	M6x1x20	L-W 4
CSKNR/L 16-4D CEA	•		1.000	1.000	6.00	1.250	SNG 43					
CSKNR/L 20-4E CE	•		1.250	1.250	7.00	1.500	SNG 45					

• = Stocked standard items For inserts, see page T108

### NEGATIVE SQUARE INSERTS

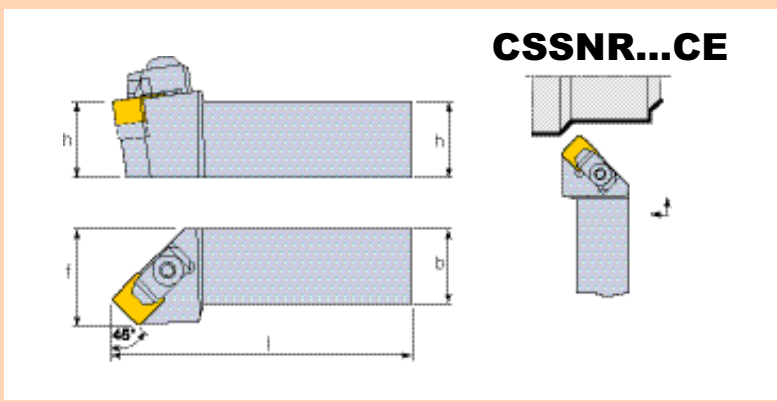


Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Wrench
	R	L	h	b	l	f						
CSRNR/L 12-4B CE	•		.750	.750	4.50	.866	SNG 45	S 40	BH M5x0.8x8	BCL 6	M6x1x20	L-W 4
CSRNR/L 16-4D CE	•		1.000	1.000	6.00	1.063	SNG 45					
CSRNR/L 16-4D CEA	•		1.000	1.000	6.00	1.063	SNG 43					
CSRNR/L 20-4E CE	•		1.250	1.250	7.00	1.313	SNG 45		BH M5x0.8x10			

• = Stocked standard items For inserts, see page T108

## TOP CLAMP/EXTERNAL TURNING TOOL HOLDERS

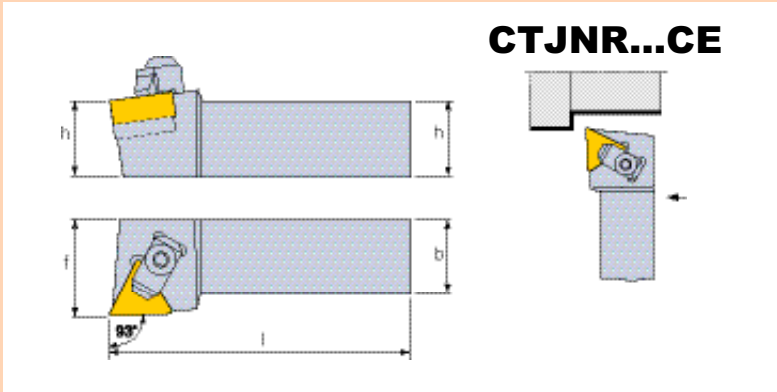
### NEGATIVE SQUARE INSERTS



Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Wrench
	R	L	h	b	l	f						
CSSNR/L 16-4D CE	•		1.000	1.000	6.00	1.250	SNG 45	S 40	BH M5X0.8X10	BCL 6	M6x1x20	L-W 4
CSSNR/L 16-4D CEA	•		1.000	1.000	6.00	1.250	SNG 43					
CSSNR/L 20-4E CE	•		1.250	1.250	7.00	1.500	SNG 45					

• = Stocked standard items For inserts, see page T108

### NEGATIVE TRIANGULAR INSERTS



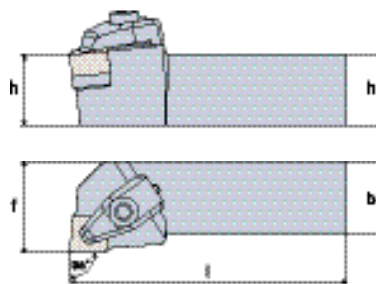
Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Clamp	Clamp Screw	Wrench
	R	L	h	b	l	f						
CTJNR/L 12-3B CEA	•		.750	.750	4.50	1.000	TNG 33	S 3	M4X0.7X10	BCL 6	M6x1x20	L-W 4
CTJNR/L 16-3D CEA	•		1.000	1.000	6.00	1.250	TNG 33					

• = Stocked standard items For inserts, see page T109

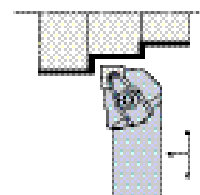


## T-HOLDERS/EXTERNAL TURNING

### NEGATIVE 80° RHOMBIC CERAMIC DIMPLE INSERTS



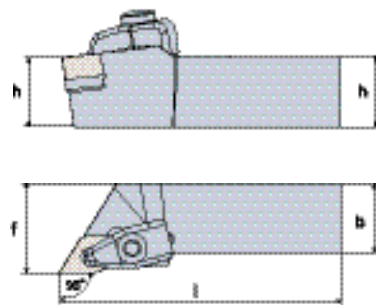
### TCLNR...CH



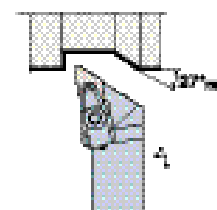
Designation	Stock		Dimension(mm)				Insert	Components					
	R	L	h	b	l	f		Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
TCLNR/L 16-4D CH	•	•	1.00	1.00	6.00	1.25	CNGX 45 CH						
TCLNR/L 20-4D CH	•	•	1.25	1.25	6.00	1.50							

• = Stocked standard items For inserts, see page T107

### NEGATIVE 55° RHOMBIC CERAMIC DIMPLE INSERTS



### TDJNR...CH

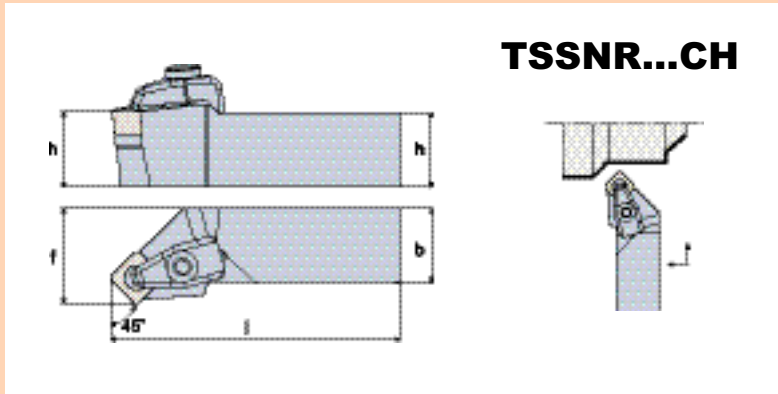


Designation	Stock		Dimension(mm)				Insert	Components					
	R	L	h	b	l	f		Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
TDJNR/L 16-4D-CH	•	•	1.00	1.00	6.00	1.25	DNGX 45 CH						

• = Stocked standard items For inserts, see page T107

# T-HOLDERS/EXTERNAL TURNING

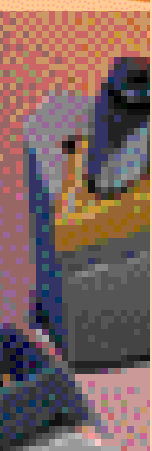
## NEGATIVE SQUARE CERAMIC DIMPLE INSERTS



**TSSNR...CH**

Designation	Stock		Dimension(mm)				Insert		Components					
	R	L	h	b	l	f			Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
TSSNR/L 16-4D-CH	•	•	1.00	1.00	6.00	1.25	SNGX 45 CH		CCL 4	CSC 4	S 40	BH M5x0.8x10	DSP 5	L-W 4

• = Stocked standard items For inserts, see page T108

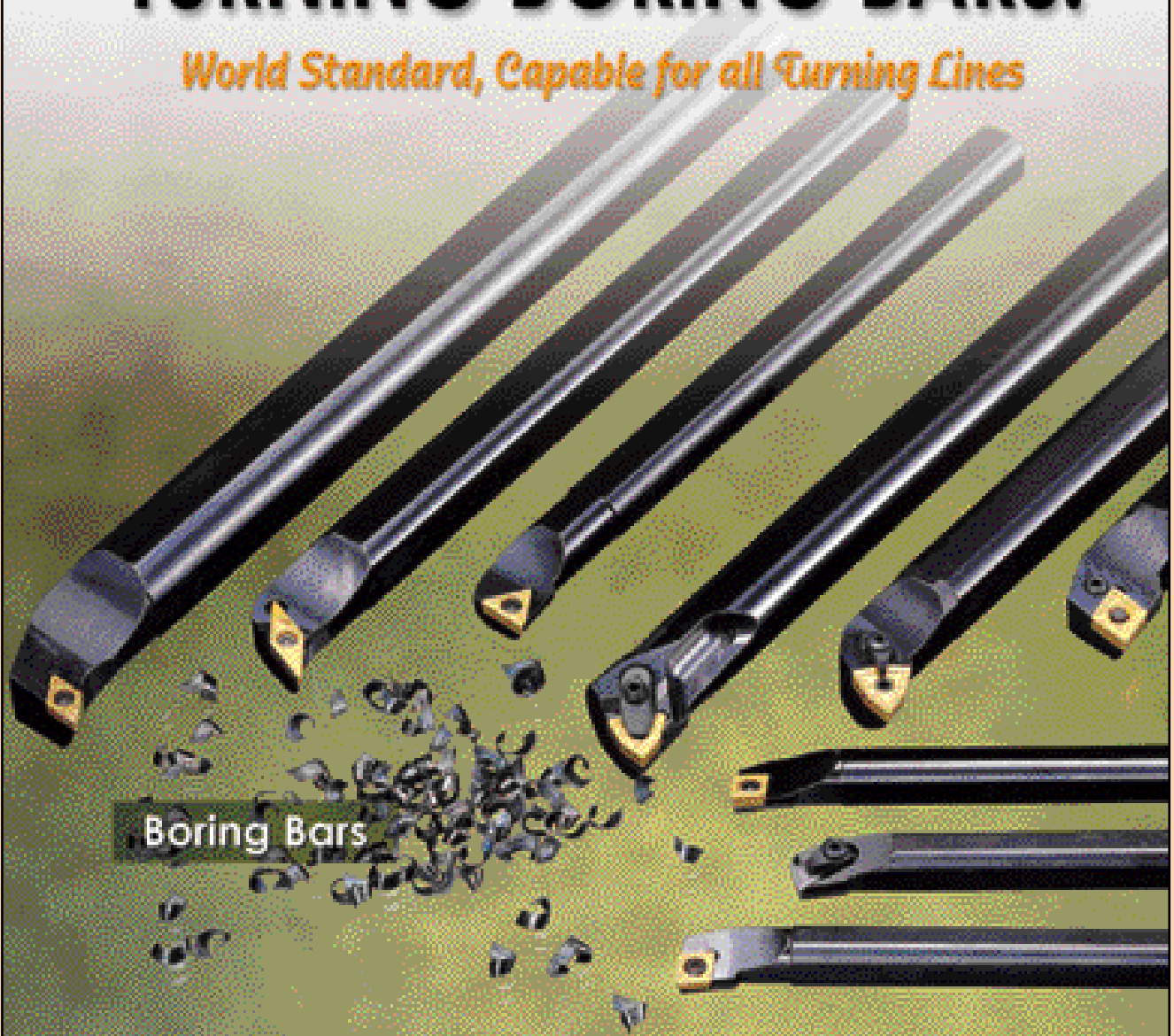


T156

**TAEГУ***line*

# TURNING BORING BARS!

*World Standard, Capable for all Turning Lines*

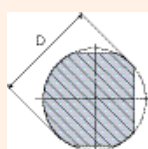


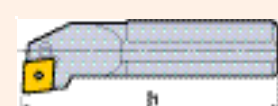
Boring Bars


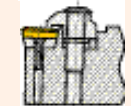
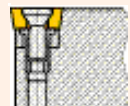

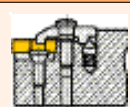

**TAEQU**line

# BORING BAR DESIGNATION SYSTEM










1 Boring Bar	
<b>S</b>	Steel Shank
<b>A</b>	Coolant Through Steel Shank
<b>C</b>	Carbide Shank
<b>E</b>	Coolant Through Carbide Shank
<b>X</b>	Special


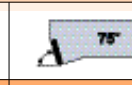
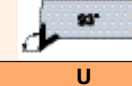
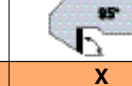
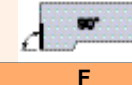
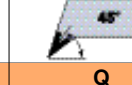
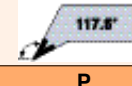
2 Bar Diameter	
	
Digits	Size (inch)
06	.375
08	.500
10	.625
12	.750
16	1.00
20	1.25
24	1.50
28	1.75
32	2.00
36	2.25
40	2.50

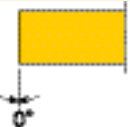
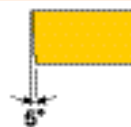
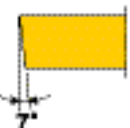
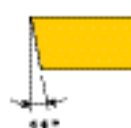
3 Tool Length (inch)			
			
<b>H</b>	4.0	<b>S</b>	10.0
<b>J</b>	4.5	<b>T</b>	12.0
<b>K</b>	5.0	<b>U</b>	14.0
<b>M</b>	6.0	<b>V</b>	16.0
<b>Q</b>	7.0	<b>W</b>	18.0
<b>R</b>	8.0	<b>Y</b>	20.0

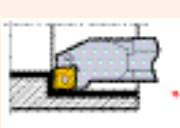
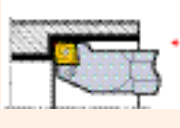
4 Clamping System			
			
<b>P / Lever Lock</b>		<b>C / Top Clamp</b>	
			
<b>S / Screw Clamp</b>		<b>M / Multi Lock</b>	
			
<b>T / T-Clamp</b>		<b>W / Wedge Clamp</b>	






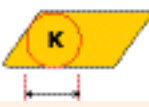


5 Insert Shape		
		
<b>C</b>	<b>D</b>	<b>E</b>
		
<b>K</b>	<b>R</b>	<b>S</b>
		
<b>T</b>	<b>V</b>	<b>W</b>

6 Approach Angle	
	
<b>L</b>	<b>K</b>
	
<b>U</b>	<b>X</b>
	
<b>F</b>	<b>Q</b>
	
<b>P</b>	

7 Insert Clearance Angle	
	
<b>C</b>	<b>P</b>
	

8 Hand of Tool	
<b>R</b>	 <p>Right hand</p>
<b>L</b>	 <p>Left hand</p>

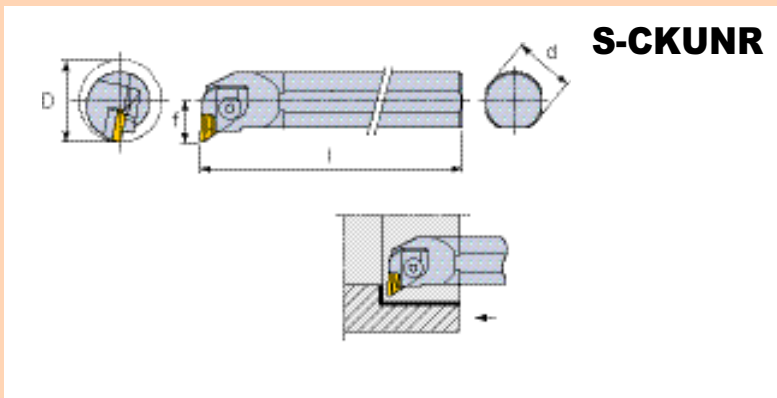
9 Insert I,C.		
		
		

10 Manufacturer's Type Designation	
<p>At the option of the manufacturer</p>	



## TOP CLAMP/BORING BARS

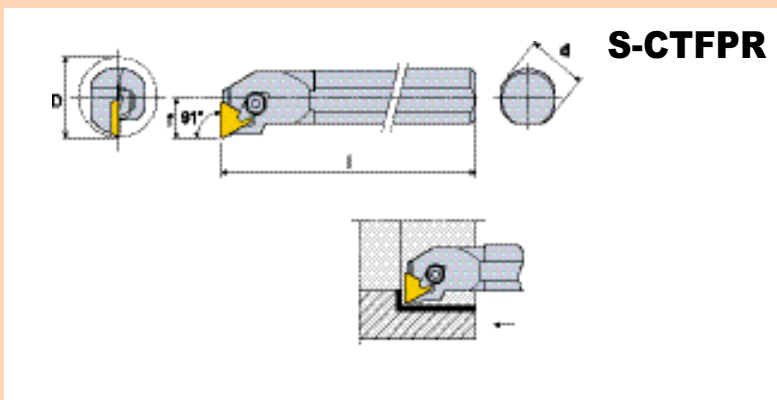
### NEGATIVE 55° PARALLELOGRAM INSERTS



Designation	Stock		Dimensions (inch)				Insert	Clamp	Clamp Screw	Clamp Spring	Shim	Shim Screw	Pin	Spring	Wrench
	R	L	d	Dmin	L	f									
S20U-CKUNR/L-3	•	•	1.250	1.57	14.00	0.765	KNUX333 R/L	CL16KR/L	CLS16K	KSP90	CSK1604R/L	FHM3X0.5X10	KSP48	KP48S	L-W4
S24V-CKUNR/L-3	•		1.500	1.97	16.00	1.063									

• = Stocked standard items For inserts, see page T58

### POSITIVE 11° CLEARANCE TRIANGULAR INSERTS

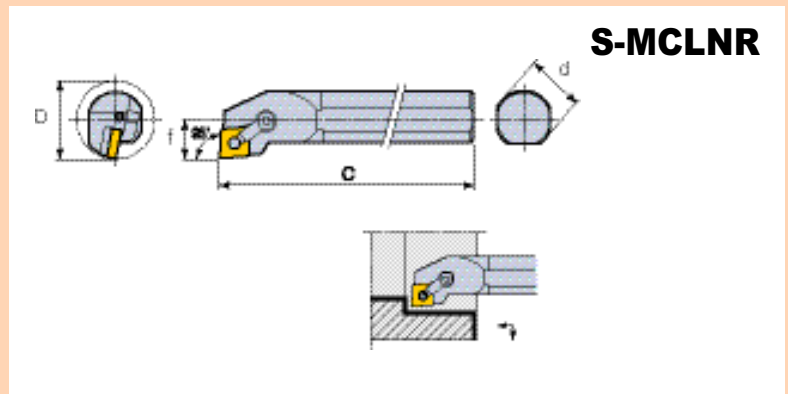







Designation	Stock		Dimensions (inch)				Insert	Clamp	Clamp Screw	Clamp Clip	Shim	Shim Screw
	R	L	d	Dmin	L	f						
S08R-CTFPR/L-2	•		0.500	0.600	8.00	0.312	TPG 22	HC7	SHC7	-	-	-
S12S-CTFPR/L-3	•	•	0.750	1.000	10.00	0.500	TPG 32	HC12	CS126	CLP12	-	-
S16T-CTFPR/L-3	•	•	1.000	1.280	12.00	0.640	TPG 32	HC12	CS126	CLP12	SM-41	TS-44-2
S20U-CTFPR/L-3			1.250	1.530	14.00	0.765						
S24U-CTFPR/L-3			1.500	1.840	14.00	0.890						
S20U-CTFPR/L-4			1.250	1.530	14.00	0.765	TPG 43	HC12	CS126	CLP12	SM-37	S-6
S24U-CTFPR/L-4	•		1.500	2.060	14.00	0.890						

• = Stocked standard items For inserts, see page T89, T90, T92

## ■ MULTI LOCK/BORING BARS

### ■ NEGATIVE 80° RHOMBIC INSERTS



Designation	Stock		Dimensions (inch)				Insert	Seat	Lock Pin	Clamp	Clamp Screw
	R	L	d	Dmin	l	f					
S12S-MCLNR/L-3	*		0.750	1.000	10.00	0.500	CNM 32	-	NL33	CL7	XNS36
S16T-MCLNR/L-3			1.000	1.280	12.00	0.640					
S12S-MCLNR/L-4	*		0.750	1.000	10.00	0.500	CNM 43	-	NL44	CL20	XNS47
S16T-MCLNR/L-4	*	*	1.000	1.280	12.00	0.640					
S20U-MCLNR/L-4	*	*	1.250	1.530	14.00	0.765	CNM 43	ICSN433	NL46	CL20	XNS48
S24U-MCLNR/L-4	*	*	1.500	1.780	14.00	0.890					
S28U-MCLNR/L-4	*	*	1.750	2.030	14.00	1.015					
S32V-MCLNR/L-4	*	*	2.000	2.560	16.00	1.281					
S24U-MCLNR/L-5			1.500	2.374	14.00	1.880	CNM 54	ICSN533	NL58	CL12	XNS510
S32V-MCLNR/L-5			2.000	2.560	16.00	1.281					
S40V-MCLNR/L-5			2.500	3.060	16.00	1.530	CNM 65	ICSN633	NL68	CL12	XNS510
S32V-MCLNR/L-6			2.000	2.560	16.00	1.281					
S40V-MCLNR/L-6			2.500	3.060	16.00	1.530					

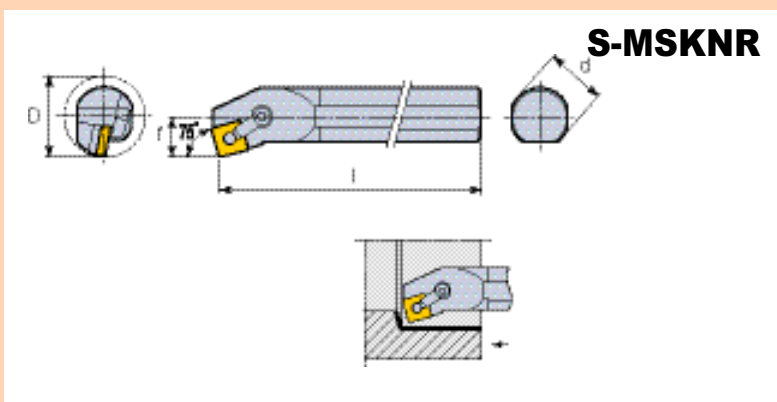
\* = Stocked standard items

\* See T-Type

For inserts, see page T-42, T44-T51

## MULTI LOCK/BORING BARS

### NEGATIVE SQUARE INSERTS



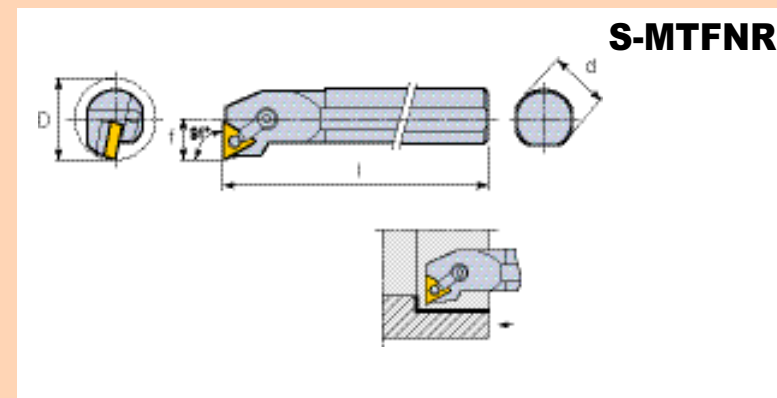
Designation	Stock		Dimensions (inch)				Insert	Seat	Lock Pin	Clamp	Clamp Screw
	R	L	d	Dmin	l	f					
S20U-MSKNR/L-4	*		1.250	1.470	14.00	0.765	SNM 43	-	NL46	CL20	XNS47
S24U-MSKNR/L-4	*		1.500	1.760	14.00	0.890	SNM 43	ISSN433	NL46	CL20	XNS47

\* = Stocked standard items

\* See T-Type

For inserts, see page T60-T65

### NEGATIVE TRIANGULAR INSERTS



Designation	Stock		Dimensions (inch)				Insert	Seat	Lock Pin	Clamp	Clamp Screw
	R	L	d	Dmin	l	f					
S16T-MTFNR/L-3	*	*	1.000	1.280	12.00	0.640	TNM 33	ITSN322	NL34L	CL7	XNS35
S20U-MTFNR/L-3	*	*	1.250	1.530	14.00	0.765					
S24U-MTFNR/L-3			1.500	1.780	14.00	0.890					
S28U-MTFNR/L-3			1.750	2.030	14.00	1.015	TNM 43	ITSN433	NL46	CL9	XNS59
S20U-MTFNR/L-4			1.250	1.530	14.00	0.765					
S24U-MTFNR/L-4			1.500	2.060	14.00	0.890					
S28U-MTFNR/L-4			1.750	2.312	14.00	1.156					
S32V-MTFNR/L-4			2.000	2.562	16.00	1.281					

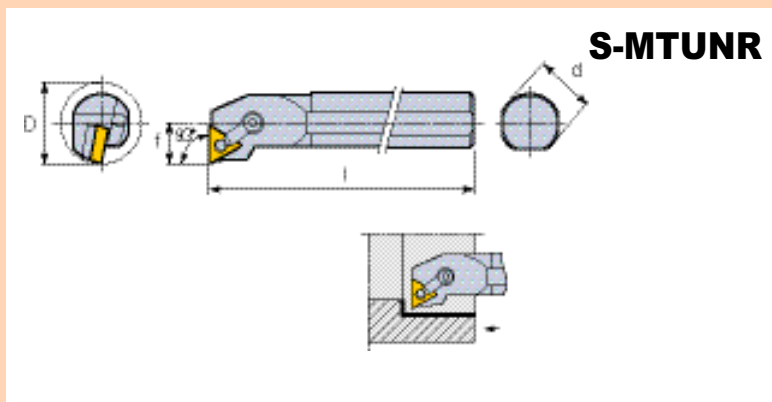
\* = Stocked standard items

\* See T-Type

For inserts, see page T66-T72

## ■ MULTI LOCK/BORING BARS

### ■ NEGATIVE TRIANGULAR INSERTS

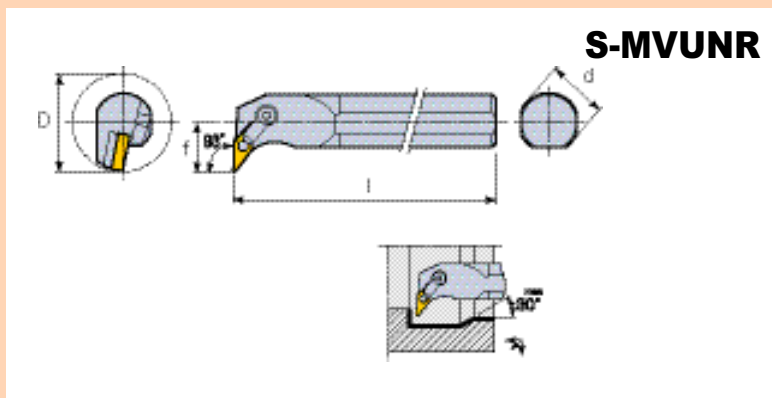


Designation	Stock		Dimensions (inch)				Insert	Seat	Lock Pin	Clamp	Clamp Screw
	R	L	d	Dmin	l	f					
S16T-MTUNR/L-3			1.000	1.280	12.00	0.640	TNM 33	ITSN322	NL34L	CL7	XNS35
S20U-MTUNR/L-3			1.250	1.530	14.00	0.765					
S24U-MTUNR/L-3			1.500	2.060	14.00	0.890					
S20U-MTUNR/L-4			1.250	1.530	14.00	0.765	TNM 43	ITSN433	NL46	CL9	XNS59
S24U-MTUNR/L-4			1.500	2.060	14.00	0.890					
S32V-MTUNR/L-4			2.000	2.562	16.00	1.281					

• = Stocked standard items

For inserts, see page T66-T72

### ■ NEGATIVE 35° RHOMBIC INSERTS



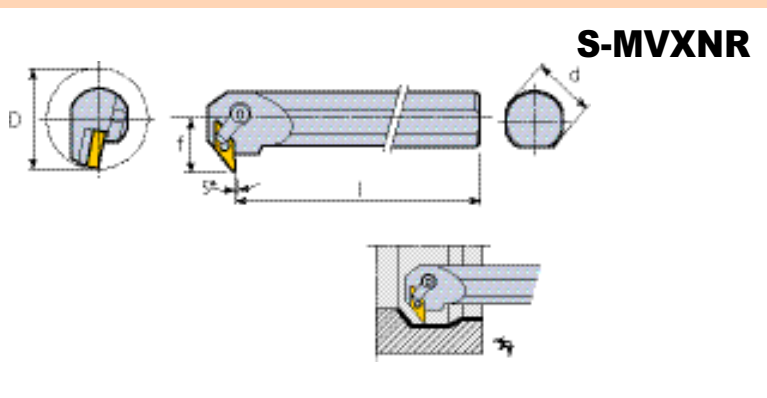
Designation	Stock		Dimensions (inch)				Insert	Seat	Lock Pin	Clamp	Clamp Screw
	R	L	d	Dmin	l	f					
S20U-MVUNR/L-3	•		1.250	2.250	14.00	1.125	VNM 33	IVSN322	NL34L	CL30	XNS510
S24U-MVUNR/L-3	•		1.500	2.500	14.00	1.250					

• = Stocked standard items

For inserts, see page T73, T74

## MULTI LOCK/BORING BARS

### NEGATIVE 35° RHOMBIC INSERTS



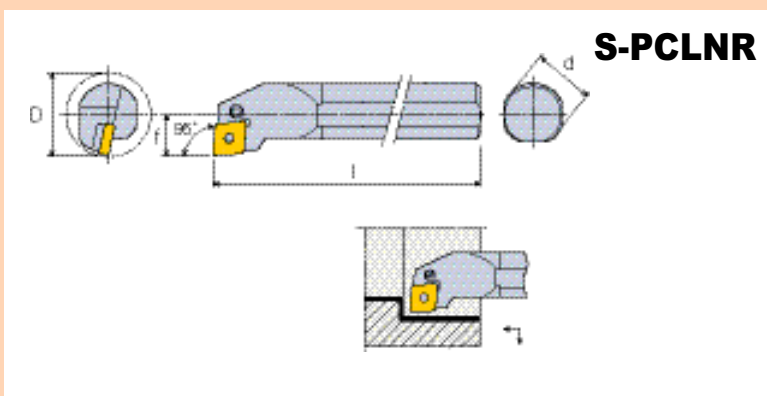
Designation	Stock		Dimensions (inch)				Insert	Seat	Lock Pin	Clamp	Clamp Screw
	R	L	d	Dmin	l	f					
S24U-MVXNR/L-3	•	•	1.500	2.250	14.00	1.125	VNM 33	IVSN322	NL34L	CL20	XNS48
S28U-MVXNR/L-3	•	•	1.750	2.500	14.00	1.250					

• = Stocked standard items

For inserts, see page T73, T74

## LEVER LOCK/BORING BARS

### NEGATIVE 80° RHOMBIC INSERTS



Designation	Stock		Dimensions (inch)				Insert	Seat	Lever	Lever Screw	Clamp Clip	Wrench
	R	L	d	Dmin	l	f						
S10R-PCLNR/L-3	•	•	0.625	0.812	8.00	0.405	CNM 32	-	LCL3B	LCS2B	LSR3B	L-W2
S12S-PCLNR/L-3	•	•	0.750	1.000	10.00	0.500						
S16T-PCLNR/L-3	•	•	1.000	1.250	12.00	0.625						

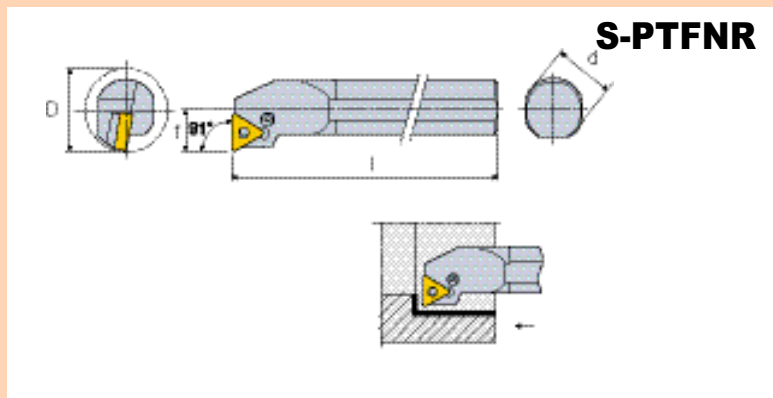
• = Stocked standard items

For inserts, see page T42, T44-T51



## LEVER LOCK/BORING BARS

### NEGATIVE TRIANGULAR INSERTS



Designation	Stock		Dimensions (inch)				Insert	Seat	Lever	Lever Screw	Clamp Clip	Wrench
	R	L	d	Dmin	l	f						
S10R-PTFNR/L-2	•	•	0.625	0.812	8.00	0.405						
S12S-PTFNR/L-2	•	•	0.750	1.000	10.00	0.500						
S16T-PTFNR/L-2	•	•	1.000	1.250	12.00	0.625						

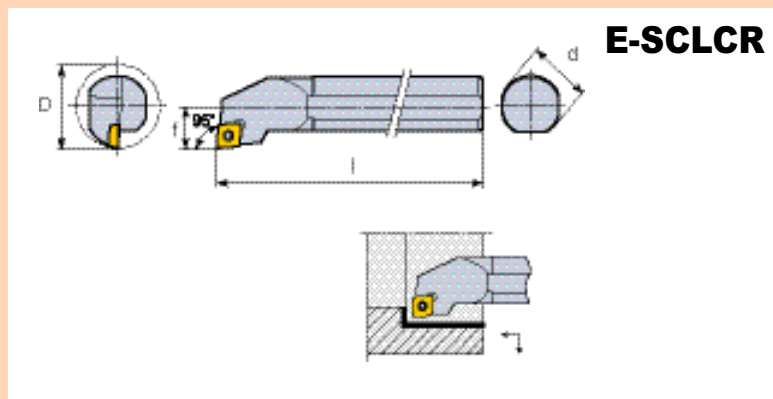
• = Stocked standard items

For inserts, see page T66-T72

### SCREW CLAMP/BORING BARS

#### POSITIVE 7° CLEARANCE 80° RHOMBIC INSERTS

#### CARBIDE SHANK



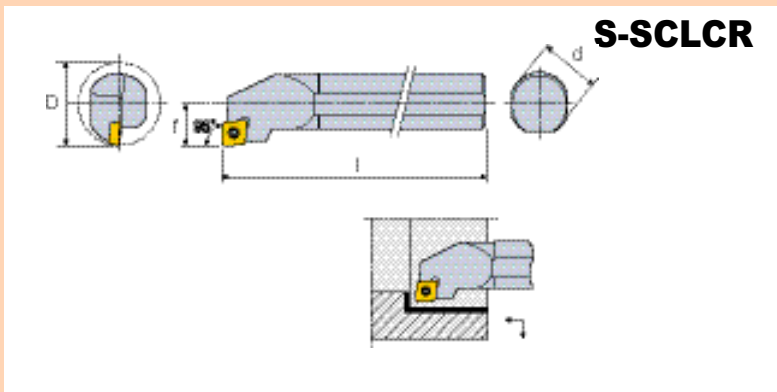
Designation	Stock		Dimensions (inch)				Insert	Screw	Wrench
	R	L	d	Dmin	l	f			
E06M-SCLCR/L-2	•		0.375	0.500	6.00	0.250			
E08M-SCLCR/L-2	•		0.500	0.625	6.00	0.312			
E08R-SCLCR/L-3	•		0.500	0.625	8.00	0.312			
E10R-SCLCR/L-3	•		0.625	0.780	8.00	0.438			
E12S-SCLCR/L-3	•		0.750	0.985	10.00	0.500			

• = Stocked standard items

For inserts, see page T79, T80, T96

## SCREW CLAMP/BORING BARS

### POSITIVE 7° CLEARANCE 80° RHOMBIC INSERTS



**S-SCLCR**

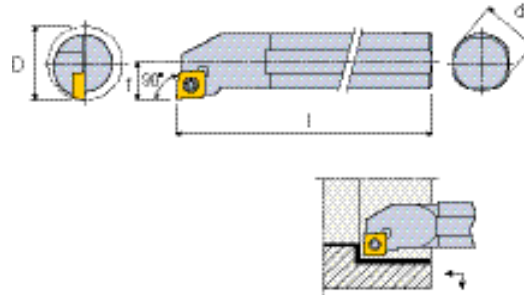
Designation	Stock		Dimensions (inch)				Insert	Screw	Wrench
	R	L	d	Dmin	l	f			
S06H-SCLCR/L-2	•		0.375	0.394	4.00	0.236	CC T21.5	TS-25.45-6M1	DS-T07F
S06M-SCLCR/L-2	•	•	0.375	0.500	6.00	0.250	CC T21.5	1425	5507
S08K-SCLCR/L-2			0.500	0.550	5.00	0.275	CC T21.5	TS-25.45-6M1	DS-T07F
S08M-SCLCR/L-2	•		0.500	0.602	6.00	0.312			
S10M-SCLCR/L-2	•		0.625	0.708	6.00	0.354			
S10R-SCLCR/L-2			0.625	0.812	8.00	0.406			
S08M-SCLCR/L-3	•		0.500	0.625	6.00	0.312	CC T32.5	TS-4.7-8M1	DS-T15S
S10R-SCLCR/L-3	•	•	0.625	0.812	8.00	0.406	CC T32.5	1440	5515
S12S-SCLCR/L-3	•	•	0.750	0.954	10.00	0.500	CC T32.5	TS-4.7-10M1	DS-T15S
S16T-SCLCR/L-3			1.000	1.280	12.00	0.640	CC T32.5	1440	5515
S16T-SCLCR/L-4	•	•	1.000	1.280	12.00	0.640	CC T43	1250	5520
S20U-SCLCR/L-4	•	•	1.250	1.530	14.00	0.765	CC T43	TS-5.8-10M1	T20
S24U-SCLCR/L-4	•	•	1.500	1.780	14.00	0.890			

• = Stocked standard items




For inserts, see page T79, T80, T96

## SCREW CLAMP/BORING BARS

### POSITIVE 11° CLEARANCE 80° RHOMBIC INSERTS



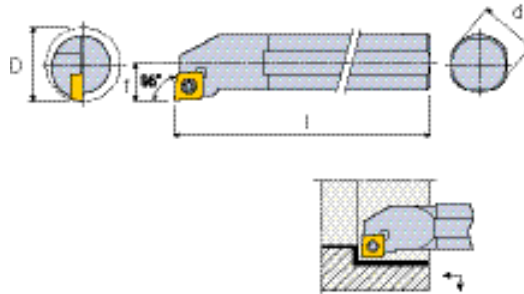
### S-SCFPR

Designation	Stock		Dimensions (inch)				Insert	Screw	Wrench
	R	L	d	Dmin	l	f			
S06M-SCFPR/L-2	•		0.375	0.480	6.00	0.250	 CP T21.5	 TS-25.45-6M1	 DS-T07F
S08R-SCFPR/L-2	•		0.500	0.600	8.00	0.312			
S10S-SCFPR/L-2	•		0.625	0.770	10.00	0.406			




• = Stocked standard items

For inserts, see page T81

### POSITIVE 11° CLEARANCE 80° RHOMBIC INSERTS



### S-SCLPR

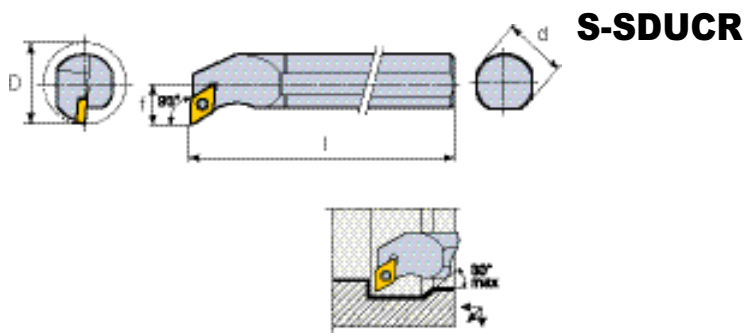
Designation	Stock		Dimensions (inch)				Insert	Screw	Wrench
	R	L	d	Dmin	l	f			
S06M-SCLPR/L-2	•		0.375	0.480	6.00	0.250	 CP T21.5	 TS-25.45-6M1	 DS-T07F
S08R-SCLPR/L-2	•		0.500	0.600	8.00	0.312			
S10S-SCLPR/L-2	•		0.625	0.770	10.00	0.406			
S12S-SCLPR/L-3	•		0.750	0.930	10.00	0.500	CP T32.5	TS-4.7-8M1	DS-T15S

• = Stocked standard items

For inserts, see page T81

## SCREW CLAMP/BORING BARS

### POSITIVE 7° CLEARANCE 55° RHOMBIC INSERTS

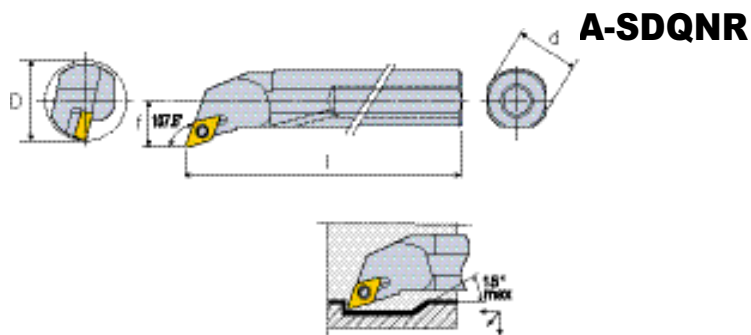


Designation	Stock		Dimensions (inch)				Insert	Screw	Wrench
	R	L	d	Dmin	l	f			
S06M-SDUCR/L-2	•		0.375	0.625	6.00	0.375	DC T21.5	TS-25.45-6M1	DS-T07F
S08M-SDUCR/L-2	•		0.500	0.780	6.00	0.437			
S10R-SDUCR/L-2	•		0.625	0.840	8.00	0.500	DC T32.5	1440 TS-4.7-10M1	5515 DS-T15S
S12S-SDUCR/L-3	•		0.750	1.250	10.00	0.625			
S16T-SDUCR/L-3	•		1.000	1.500	12.00	0.750			
S20U-SDUCR/L-3	•		1.250	1.750	14.00	0.875	DC T32.5	TS-4.7-10M1	DS-T15S

• = Stocked standard items

For inserts, see page T81

### NEGATIVE 55° RHOMBIC INSERTS



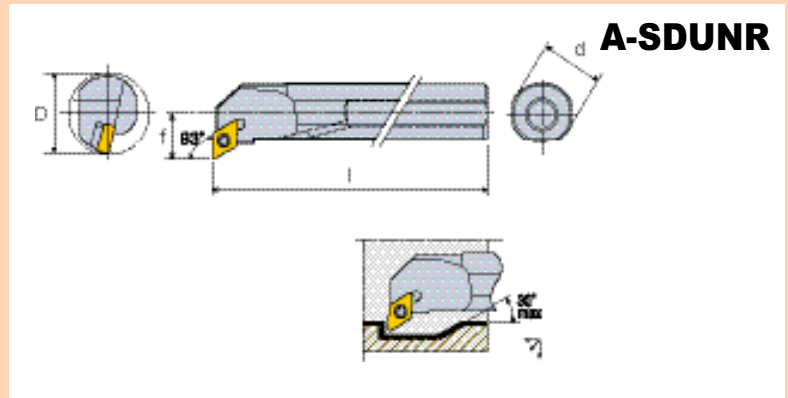
Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Insert Screw	Seal	Driver
	R	L	d	Dmin	l	f						
A12S-SDQNR/L-3	•		0.750	1.00	10.00	-	DNMG33	SSD32	SO50090S	SO35120I	PL075	DS-T15S

• = Stocked standard items

For inserts, see page T53-T57

## ■ SCREW CLAMP/BORING BARS

### ■ NEGATIVE 55° RHOMBIC INSERTS



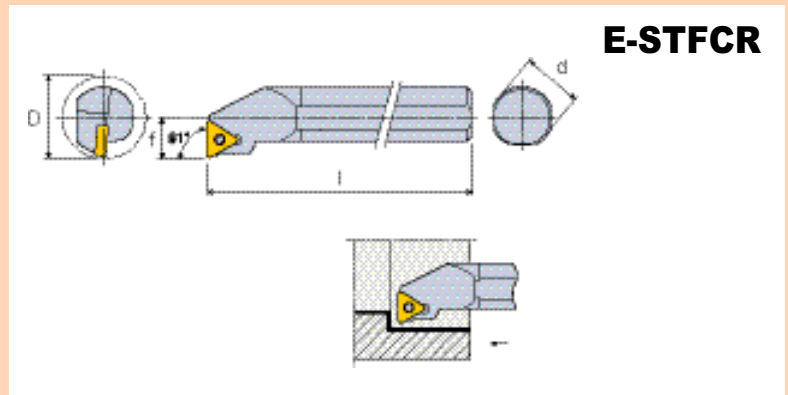
Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Insert Screw	Seal	Driver
	R	L	d	Dmin	l	f						
A12S-SDUNR/L-3	•	•	0.750	1.100	10.00	0.625	DNMG33	SSD32	SO50090S	SO35120I	PI075	DS-T15S
A16T-SDUNR/L-3			1.000	1.300	12.00	0.750						

• = Stocked standard items

For inserts, see page T53-T57

### ■ POSITIVE 7° CLEARANCE TRIANGULAR INSERTS

#### CARBIDE SHANK



Designation	Stock		Dimensions (inch)				Insert	Insert Screw	Driver
	R	L	d	Dmin	l	f			
E06M-STFCR/L-2	•		0.375	0.500	6.00	0.250	TC T21.5	SO25065I	DS-T07F
E08R-STFCR/L-2	•		0.500	0.625	8.00	0.312			
E10R-STFCR/L-2	•		0.625	0.812	8.00	0.406			
E12S-STFCR/L-2	•		0.750	1.000	10.00	0.500			

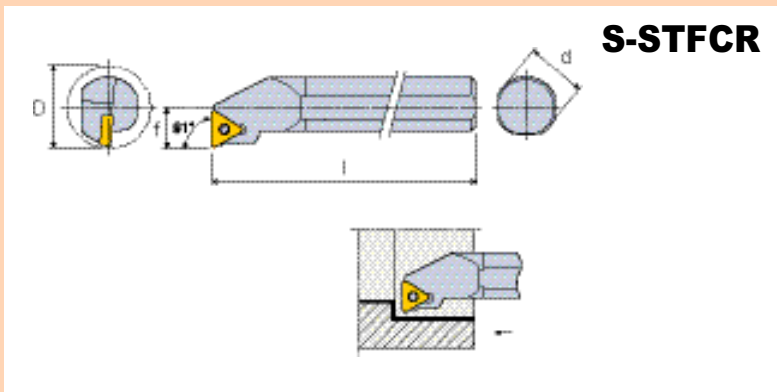
• = Stocked standard items

For inserts, see page T88, T98



## SCREW CLAMP/BORING BARS

### POSITIVE 7° CLEARANCE TRIANGULAR INSERTS



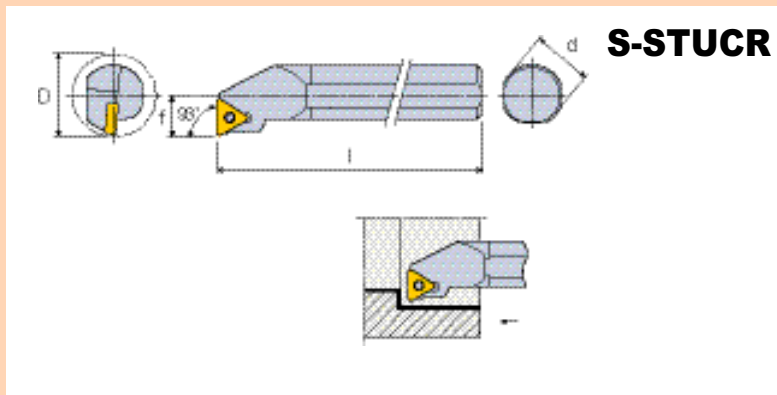
### S-STFCR

Designation	Stock		Dimensions (inch)				Insert	Insert Screw	Driver
	R	L	d	Dmin	l	f			
S06M-STFCR/L-2	•		0.375	0.500	6.00	0.250	TC T21.5	1425	5507
S08M-STFCR/L-2	•		0.500	0.625	6.00	0.312			
S10R-STFCR/L-2	•		0.625	0.812	8.00	0.406	TC T21.5	TS-25.45-6M1	DS-T07F
S12S-STFCR/L-2	•		0.750	1.000	10.00	0.500			
S16T-STFCR/L-3			1.000	1.280	12.00	0.640	TC T32.5	TS-4.7-10M1	DS-T15S
S20U-STFCR/L-3			1.250	1.530	14.00	0.765			
S24U-STFCR/L-3			1.500	1.780	14.00	0.890			

• = Stocked standard items

For inserts, see page T88, T98

### POSITIVE 7° CLEARANCE TRIANGULAR INSERTS



### S-STUCR

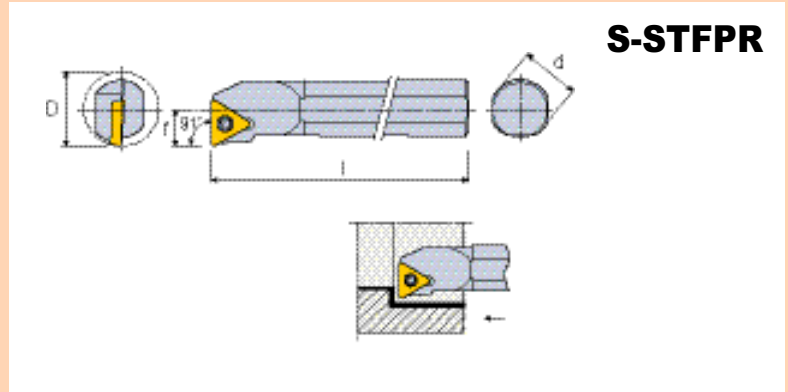
Designation	Stock		Dimensions (inch)				Insert	Insert Screw	Driver
	R	L	d	Dmin	l	f			
S06M-STUCR/L-2			0.375	0.477	6.00	0.250	TC T21.5	TS-25.45-6M1	DS-T07F
S08M-STUCR/L-2			0.500	0.602	6.00	0.312			
S10R-STUCR/L-2			0.625	0.797	8.00	0.406	TC T32.5	TS-4.7-10M1	DS-T15S
S12S-STUCR/L-3			0.750	0.954	10.00	0.500			
S16T-STUCR/L-3	•		1.000	1.280	12.00	0.640			

• = Stocked standard items

For inserts, see page T88, T98

# SCREW CLAMP/BORING BARS

## ■ POSITIVE 11° CLEARANCE TRIANGULAR INSERTS



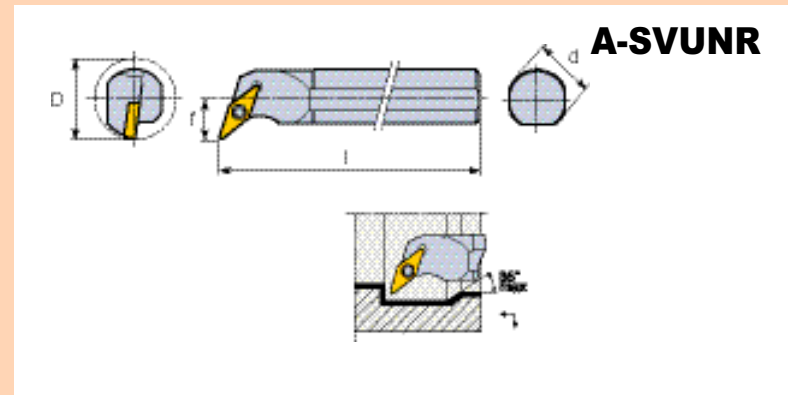
### S-STFPR

Designation	Stock		Dimensions (inch)				Insert	Insert Screw	Driver
	R	L	d	Dmin	l	f			
S06M-STFPR/L-2	•		0.375	0.470	6.00	0.250	TP T21.5	TS-25.45-6M1	DS-T07F
S08M-STFPR/L-2	•		0.500	0.600	6.00	0.312			
S10R-STFPR/L-2	•		0.625	0.770	8.00	0.406			

• = Stocked standard items

For inserts, see page T88, T98

## ■ NEGATIVE 35° RHOMBIC INSERTS



### A-SVUNR

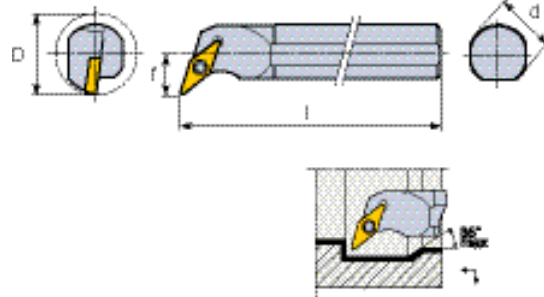
Designation	Stock		Dimensions (inch)				Insert	Seat	Seat Screw	Insert Screw	Seal	Driver
	R	L	d	Dmin	l	f						
A12S-SVUNR/L-2.5	•	•	0.750	1.100	10.00	0.625	VNM 2.53	SSVN2.522	SO50090S	SO35120I	PL075	DS-T15S
A16T-SVUNR/L-2.5	•	•	1.000	1.220	12.00	0.625					PL100	
A20U-SVUNR/L-2.5	•	•	1.250	1.480	14.00	0.750					PL125	

• = Stocked standard items

For inserts, see page T73, T74

## SCREW CLAMP/BORING BARS

### POSITIVE 5° CLEARANCE 35° RHOMBIC INSERTS



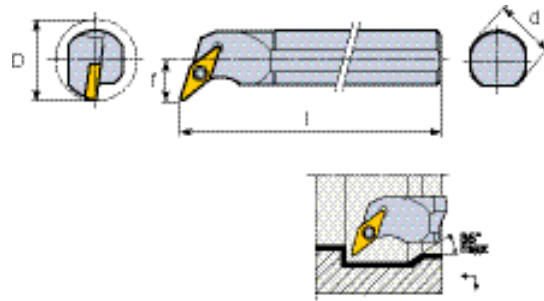
### S-SVQBR

Designation	Stock		Dimensions (inch)				Insert	Screw	Wrench
	R	L	d	Dmin	L	f			
S16T-SVQBR/L-3			1.000	1.300	12.00	0.750	VB T33	TS-4.7-10M1	DS-T15S

• = Stocked standard items

For inserts, see page T93

### POSITIVE 7° CLEARANCE 35° RHOMBIC INSERTS



### S-SVQCR

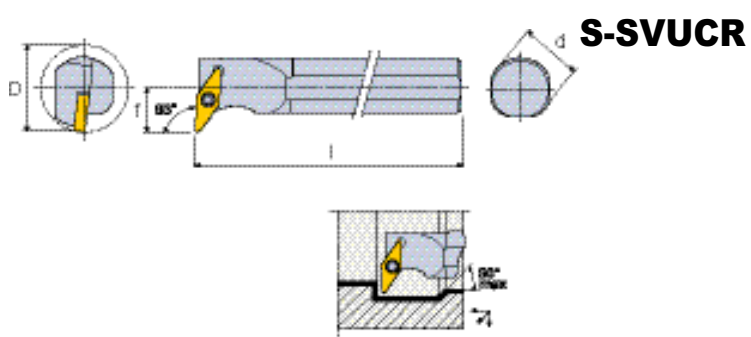
Designation	Stock		Dimensions (inch)				Insert	Insert Screw	Seat	Seat Screw	Driver
	R	L	d	Dmin	L	f					
S12S-SVQCR/L-2			0.750	0.980	10.00	0.562	VC T22	TS-25.45-6M1	-	-	DS-T07F
S16T-SVQCR/L-3			1.000	1.375	12.00	0.750	VC T33	1240	-	-	5515
S24V-SVQCR/L-3	•		1.500	2.000	16.00	1.063	VC T33	1335	3718	1750	5516

• = Stocked standard items

For inserts, see page T98

## SCREW CLAMP/BORING BARS

### POSITIVE 7° CLEARANCE 35° RHOMBIC INSERTS

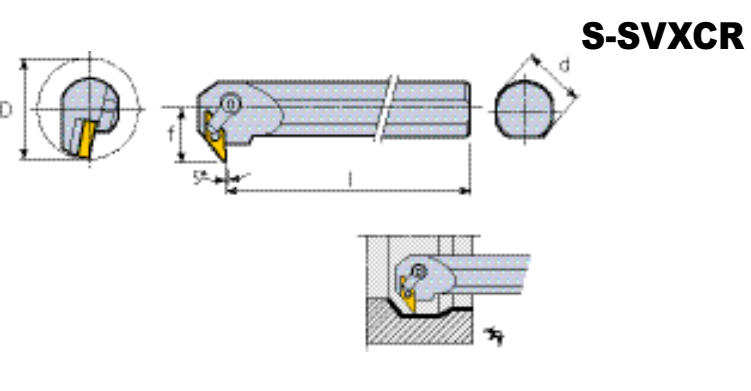


Designation	Stock		Dimensions (inch)				Insert	Insert Screw	Seat	Seat Screw	Driver
	R	L	d	Dmin	l	f					
S12S-SVUCR/L-2			0.750	1.125	10.00	0.625	VC T22	TS-25.45-6M1	-	-	DS-T07F
S16T-SVUCR/L-2			1.000	1.300	12.00	0.750					
S16T-SVUCR/L-3			1.000	2.000	12.00	0.750	VC T33	TS-4.7-10M1	-	-	DS-T15S
S20U-SVUCR/L-3			1.250	2.250	14.00	1.000					
S24U-SVUCR/L-3	•		1.500	2.250	16.00	1.125	VC T33	1335	3718	1750	5516

• = Stocked standard items

For inserts, see page T98

### POSITIVE 7° CLEARANCE 35° RHOMBIC INSERTS



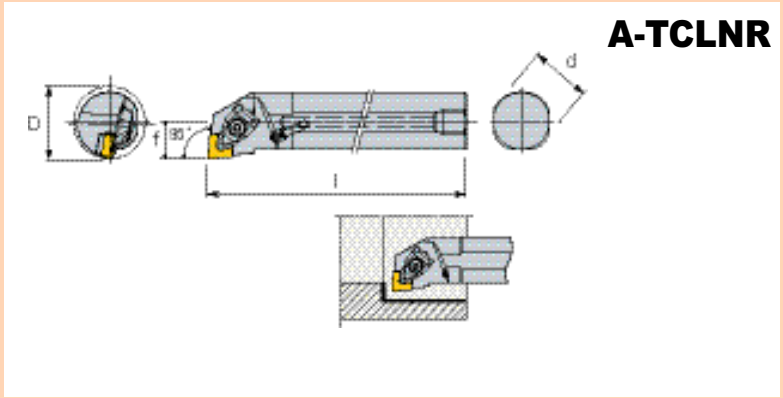
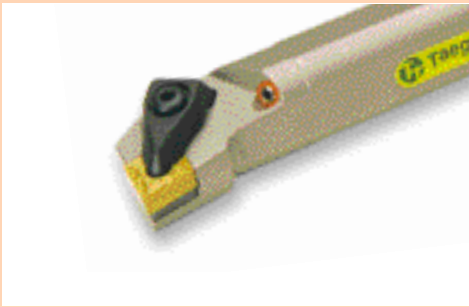
Designation	Stock		Dimensions (inch)				Insert	Insert Screw	Driver
	R	L	d	Dmin	l	f			
S12S-SVXCR/L-2			0.750	1.125	10.00	0.625	VC T22	TS-25.45-6M1	DS-T07F
S16T-SVXCR/L-2			1.000	1.500	12.00	0.750			
S16T-SVXCR/L-3	•		1.000	2.000	12.00	0.750	VC T33	TS-4.7-10M1	DS-T15S
S20U-SVXCR/L-3			1.250	2.250	14.00	1.000			

• = Stocked standard items

For inserts, see page T98

## T-HOLDERS - INTERNAL TURNING

### NEGATIVE 80° RHOMBIC INSERTS

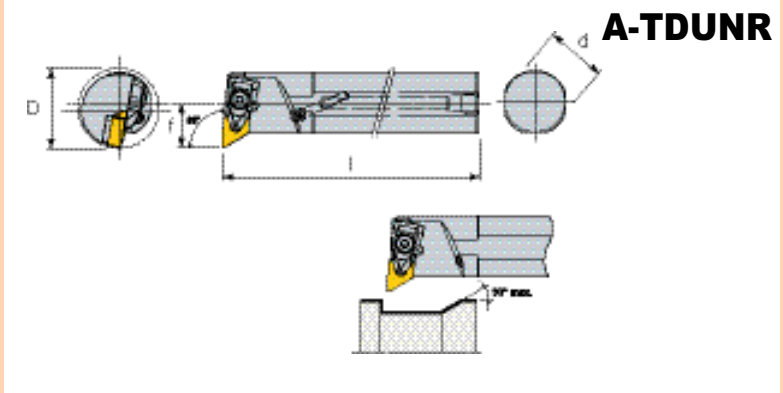


### A-TCLNR

Designation	Stock		Dimensions (inch)				Insert	Clamp	Clamp Screw	Shim	Shim Screw	Clnt Nozzle	Spring	Wrench
	R	L	d	Dmin	l	f								
A16T-TCLNR/L-4	•	•	1.00	1.25	12.00	0.64					TS 50A105I	NZ62		
A20U-TCLNR/L-4	•	•	1.25	1.50	14.00	0.77								
A24U-TCLNR/L-4	•	•	1.50	1.75	14.00	0.89								
A28U-TCLNR/L-4	•	•	1.75	2.00	14.00	1.02								
A32V-TCLNR/L-4	•	•	2.00	2.50	16.00	1.28								
											SO 50090I	NZ 104		

• = Stocked standard items For inserts, see page T42, T44-T51

### NEGATIVE 55° RHOMBIC INSERTS



### A-TDUNR

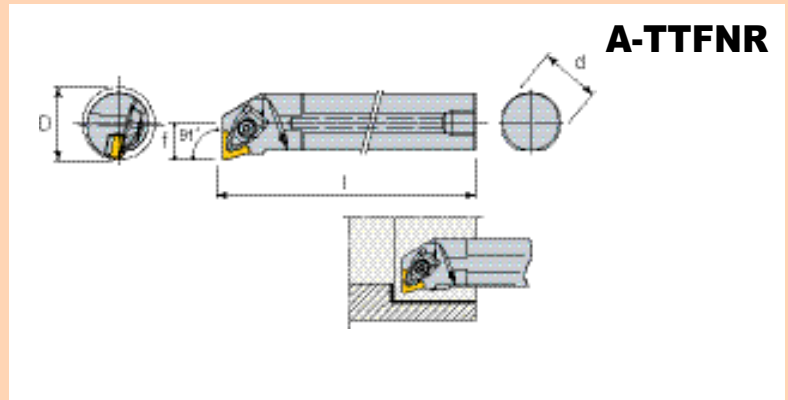
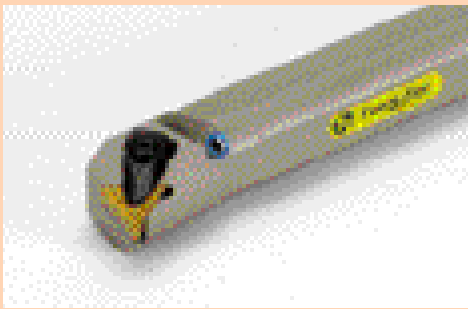
Designation	Stock		Dimensions (inch)				Insert	Clamp	Clamp Screw	Shim	Shim Screw	Clnt Nozzle	Spring	Wrench
	R	L	d	Dmin	l	f								
A16T-TDUNR/L-3	•	•	1.00	1.50	12.00	0.75					SO 40085I	NZ62		
A20U-TDUNR/L-3	•	•	1.25	1.75	14.00	1.00								
A24U-TDUNR/L-4	•	•	1.50	2.00	14.00	1.13					SO 50090I	NZ 104		
A28U-TDUNR/L-4	•	•	1.75	2.25	14.00	1.25								
A32V-TDUNR/L-4	•	•	2.00	2.75	16.00	1.50								

• = Stocked standard items For inserts, see page T53-T57



## ■ T-HOLDERS - INTERNAL TURNING

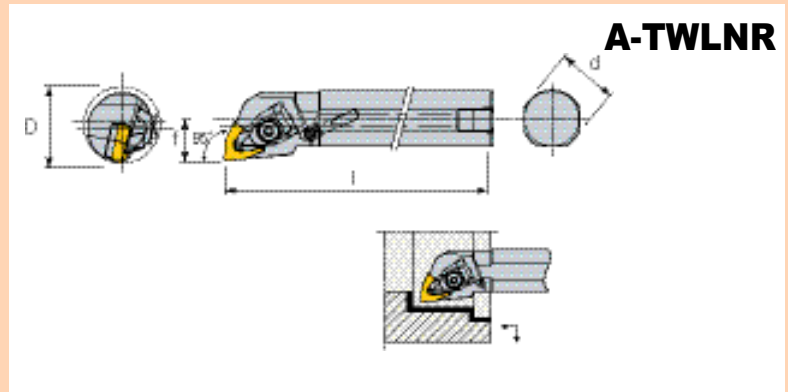
### ■ NEGATIVE TRIANGULAR INSERTS



Designation	Stock		Dimensions (inch)				Insert	Clamp	Clamp Screw	Shim	Shim Screw	Clnt Nozzle	Spring	Wrench
	R	L	d	Dmin	l	f								
A16T-TTFNR/L-3	•	•	1.00	1.25	12.00	0.640	TNM 33	DLM 3	DLS 3	LST 3	SO 40085I	NZ62	DSP 3	L-W 2.5
A20U-TTFNR/L-3	•	•	1.25	1.50	14.00	0.765								

• = Stocked standard items For inserts, see page T66-T72

### ■ NEGATIVE 80° TRIGON INSERTS



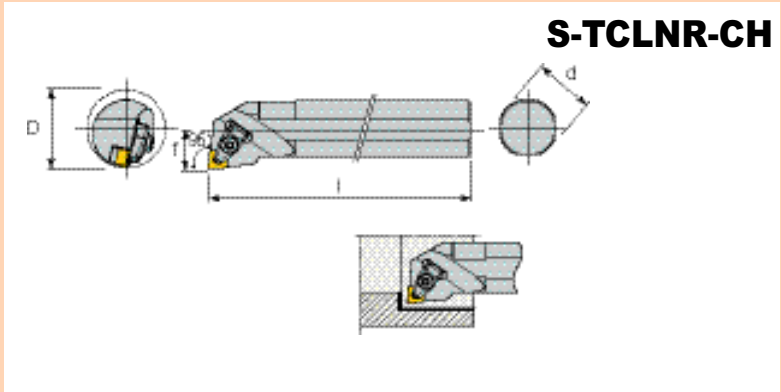
Designation	Stock		Dimensions (inch)				Insert	Clamp	Clamp Screw	Shim	Shim Screw	Clnt Nozzle	Spring	Wrench
	R	L	d	Dmin	l	f								
A12S-TWLNR/L-3	•	•	0.75	1.00	10.00	0.50	WNM 33	DLM 3	DLS 3	-	-	NZ62	DSP 3	L-W 2.5
A16T-TWLNR/L-3	•	•	1.00	1.25	12.00	0.64				PSW 32	SO 40090I			
A16T-TWLNR/L-4	•	•	1.00	1.28	12.00	0.64	WNM 43	DLM 4	DLS 4	PSW 42	TS 50A105I	NZ62	DSP 4	L-W 3
A20U-TWLNR/L-4	•	•	1.25	1.50	14.00	0.77								
A24U-TWLNR/L-4	•	•	1.50	1.78	14.00	0.89								

• = Stocked standard items For inserts, see page T75-T78

# Indersol

## T-HOLDERS - INTERNAL TURNING FOR CERAMIC DIMPLE INSERTS

### NEGATIVE 80° CERAMIC DIMPLE INSERTS



Designation	Stock		Dimensions (inch)				Insert	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Wrench
	R	L	d	Dmin	l	f							
S24U-TCLNR/L-4-CH	•		1.50	2.75	14.00		CNGX45 CH	CCL4	CSC4	S48	BHM5X0.8X1.0	DSP4	L-W4
S32V-TCLNR/L-4-CH	•		2.00	2.75	16.00								

• = Stocked standard items For inserts, see page T107



# Ingersoll





CUTTING TOOLS

# TAE GUT THREAD

*Cutting Tools*



## TAEГУTHREAD

<b>TaeguThread Inserts</b>	
Inserts Designation System	T181
Partial Profile 55°	T182
Partial Profile 60°	T183
ISO Metric Full Profile	T184
American UN Full Profile	T189
Whitworth Full Profile	T193
NPT Full Profile	T197
NPTF Full Profile	T198
BSPT Full Profile	T199
STUB ACME	T200
ACME	T201
UNJ	T202
Trapeze DIN 103	T203
SAGE DIN 513	T204
American Buttress	T205
API - Oil Threads	T206
Round DIN 405	T207





<b>TaeguThread External Toolholders &amp; Boring Bars</b>	
Toolholder Designation System	T208
External Toolholders	T209
Internal Toolholders	T210
Spare Parts	T212
<b>User Guide</b>	
Thread Turning Methods	T214
Anvil Selection	T216
Cutting Data	T219
Trouble Shooting	T222

## ■ THREAD-



## Main Inserts Types



### M-Type Inserts



#### High Profile Accuracy

Indexability on the toolholder of  $\pm 0.0006''$  is guaranteed in all inserts.



#### Cost Advantage

Advanced technology guarantees economical production, high accuracy and improved performance.



#### Excellent Chip Control

A unique chipbreaker gives excellent performance.



#### Clear and Easy Identification

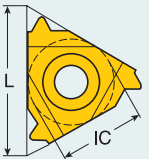
The designation clearly inscribed on the insert surface defines application, thread standard and pitch.



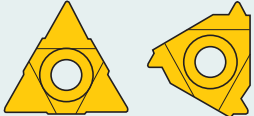
#### Standard Toolholders

Inserts can be mounted with a standard torx screw on most toolholders used in the threading industry.

1 Insert Size	
L (inch)	IC
06	5/32"
08	3/16"
11	1/4"
16	3/8"
22	1/2"
27	5/8"



2 Application	
<b>E</b>	- External
<b>I</b>	- Internal
<b>UE</b>	- U-Type, External
<b>UI</b>	- U-Type, Internal
<b>UEI</b>	- U-Type, External and Internal



**U-Type**      **Regular Type**

3 Hand of Tool	
<b>R</b>	- Right-hand
<b>L</b>	- Left-hand
<b>RL</b>	- Right-hand Left-hand

4 Type	
<b>M</b>	- Pressed chipbreaker
<input type="checkbox"/>	- No indication regular type

<b>16</b>	<b>E</b>	<b>R</b>	<b>M</b>	<b>1.50</b>	<b>ISO</b>	<b>TT9030</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>

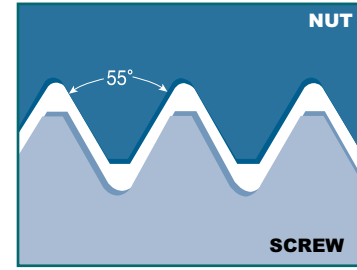
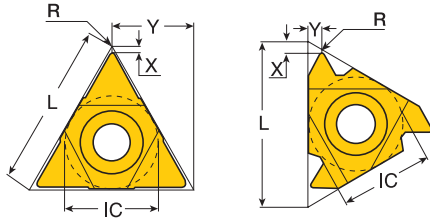
5 Pitch	
<b>Full Profile</b>	
(Value by number)	
0.35 - 9.0	<b>mm</b>
72 - 2	<b>TPI</b>
<b>Partial Profile</b>	
(Range by letter)	
	<b>mm      TPI</b>
<b>A</b>	0.5 - 1.5    48 - 16
<b>AG</b>	0.5 - 3.0    48 - 8
<b>G</b>	1.75 - 3.0   14 - 8
<b>N</b>	3.5 - 5.0    7 - 5
<b>U</b>	5.5 - 9.0    4.5 - 2.75
<b>Q</b>	5.5 - 6.0    4.5 - 4






6 Thread Standard	
<b>60</b>	- Partial Profile 60°
<b>55</b>	- Partial Profile 55°
<b>ISO</b>	- ISO Metric
<b>UN</b>	- American UN
<b>W</b>	- Whitworth
<b>BSPT</b>	- British BSPT
<b>RND</b>	- Round DIN 405
<b>TR</b>	- Trapeze DIN 103
<b>ACME</b>	- ACME
<b>STACME</b>	- Stub ACME
<b>ABUT</b>	- American Buttress
<b>UNJ</b>	- UNJ
<b>NPT</b>	- NPT
<b>API RD</b>	- API Round
<b>BUT</b>	- API Buttress Casing
<b>VAM</b>	- VAM
<b>API</b>	- API
<b>H90</b>	- H-90
<b>EL</b>	- Extreme Line Casing

7 Grade	
<b>Coated</b>	
	TT7010
	TT8010
	TT9030
<b>Uncoated</b>	
	CT3000 (Cermet)
	P30
	UF10
	K10

# THREADING INSERTS

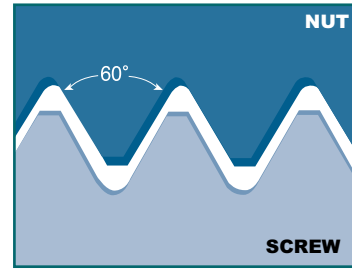
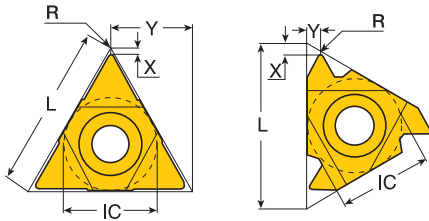
## Partial Profile 55°




Thread Form	IC	Pitch Range		Designation		Dimension			
		mm	TPI	Right Hand	Left Hand	L	R	X	Y
External Regular Type    M - Type  	1/4"	.05-1.5	48 - 16	11 ER A 55	11 EL A 55	.433	.002	.031	.035
	3/8"	.05-1.5	48 - 16	16 ER A 55	16 EL A 55	.630	.002	.031	.035
		1.75-3.0	14 - 8	16 ER G 55	16 EL G 55	.630	.008	.047	.067
		1.75-3.0	14 - 8	<b>16 ERM G 55</b>		.630	.009	.047	.067
		0.5-3.0	48 - 8	16 ER AG 55	16 EL AG 55	.630	.002	.047	.067
	0.5-3.0	48 - 8	<b>16 ERM AG 55</b>		.630	.002	.047	.067	
1/2"	3.5-5.0	7 - 5	22 ER N 55	22 EL N 55	.866	.002	.067	.098	
5/8"	5.5-6.0	4.5 - 4	27 ER Q 55	27 EL Q 55	1.063	.017	.079	.114	
Internal Regular Type    M - Type  	5/32"	0.5-1.25	48 - 20	06 IR A 55	06 IL A 55	.236	.002	.024	.024
	3/16"	.05-1.5	48 - 16	08 IR A 55	08 IL A 55	.315	.002	.024	.028
	1/4"	.05-1.5	48 - 16	11 IR A 55	11 IL A 55	.433	.002	.031	.035
	3/8"	.05-1.5	48 - 16	16 IR A 55	16 IL A 55	.630	.002	.031	.035
		1.75-3.0	14 - 8	16 IR G 55	16 IL G 55	.630	.008	.047	.067
		1.75-3.0	14 - 8	<b>16 IRM G 55</b>		.630	.009	.047	.067
		0.5-3.0	48 - 8	16 IR AG 55	16 IL AG 55	.630	.002	.047	.067
	0.5-3.0	48 - 8	<b>16 IRM AG 55</b>		.630	.003	.047	.067	
1/2"	3.5-5.0	7 - 5	22 IR N 55	22 IL N 55	.866	.017	.067	.098	
5/8"	5.5-6.0	4.5 - 4	27 IR Q 55	27 IL Q 55	1.063	.024	.079	.114	
U - Type  	3/16"	1.75-2.0	14 - 11	08 U IRL U 55		.315	.004	.035	.157
	1/2"	5.5-8.0	4.5 - 3.25	22 U EIRL U 55		.866	.024	.035	.433
	5/8"	6.5-9.0	4 - 2.75	27 U EIRL U 55		1.063	.032	.047	.539

- ERM/IRM with pressed chipbreaker
- Available grades, see page B5

## Partial Profile 60°



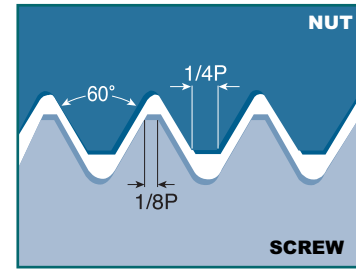
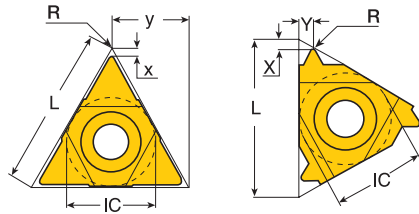
Thread Form	IC	Pitch Range		Designation		Dimension			
		mm	TPI	Right Hand	Left Hand	L	R	X	Y
<b>External</b> Regular Type   M - Type 	1/4"	0.5-1.5	48 - 16	11 ER A 60	11 EL A 60	.433	.002	.031	.035
		0.5-1.5	48 - 16	16 ER A 60	16 EL A 60	.630	.002	.031	.035
	3/8"	0.5-1.5	48 - 16	16 ERM A 60		.630	.002	.031	.035
		1.75-3.0	14 - 8	16 ER G 60	16 EL G 60	.630	.007	.047	.067
		1.75-3.0	14 - 8	16 ERM G 60		.630	.007	.047	.067
		0.5-3.0	48 - 8	16 ER AG 60	16 EL AG 60	.630	.002	.047	.067
	1/2"	0.5-3.0	48 - 8	16 ERM AG 60		.630	.002	.047	.067
		3.5-5.0	7 - 5	22 ER N 60	22 EL N 60	.866	.013	.067	.098
	5/8"	3.5-5.0	7 - 5	22 ERM N 60		.866	.013	.067	.098
		5.5-6.0	4.5 - 4	27 ER Q 60	27 EL Q 60	1.063	.025	.083	.122
<b>Internal</b> Regular Type   M - Type 	5/32"	0.5-1.25	48 - 20	06 IR A 60	06 IL A 60	.236	.002	.020	.024
		0.5-1.25	48 - 20	06 IRM A 60		.236	.002	.020	.024
	3/16"	0.5-1.5	48 - 16	08 IR A 60	08 IL A 60	.315	.002	.024	.028
		0.5-1.5	48 - 16	08 IRM A 60		.315	.002	.024	.028
	1/4"	0.5-1.5	48 - 16	11 IR A 60	11 IL A 60	.433	.002	.031	.035
		0.5-1.5	48 - 16	11 IRM A 60		.433	.002	.031	.035
	3/8"	0.5-1.5	48 - 16	16 IR A 60	16 IL A 60	.630	.002	.031	.035
		0.5-1.5	48 - 16	16 IRM A 60		.630	.002	.031	.035
		1.75-3.0	14 - 8	16 IRM G 60	16 IL G 60	.630	.005	.047	.067
		1.75-3.0	14 - 8	16 IRM G 60		.630	.004	.047	.067
		0.5-3.0	48 - 8	16 IRM AG 60	16 IL AG 60	.630	.002	.047	.067
		0.5-3.0	48 - 8	16 IRM AG 60		.630	.002	.047	.067
	1/2"	3.5-5.0	7 - 5	22 IR N 60	22 IL N 60	.866	.009	.067	.098
		3.5-5.0	7 - 5	22 IRM N 60		.866	.007	.067	.098
5/8"	5.5-6.0	4.5 - 4	27 IR Q 60	27 IL Q 60	1.063	.012	.071	.106	
U - Type 	3/16"	1.75-2.0	14 - 11	08 U IRL U 60		.315	.004	.031	.157
	1/2"	5.5-8.0	4.5 - 3.25	22 U EIRL U 60		.866	.011	.024	.433
	5/8"	6.5-9.0	4 - 2.75	27 U EIRL U 60		1.063	.011	.039	.539



• ERM/IRM with pressed chipbreaker • Available grades, see page B5



# THREADING INSERTS

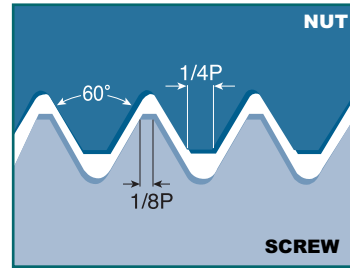
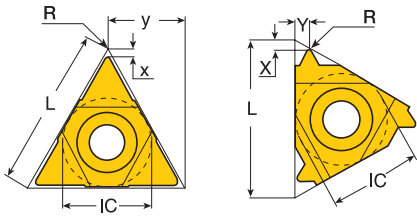
## ISO Metric Full Profile



Thread Form	IC	Pitch	Designation		Dimension				
		mm	Right Hand	Left Hand	L	R	X	Y	
<b>External Regular Type</b>  <b>M - Type</b> 	1/4"	0.35	11 ER 0.35 ISO	11 EL 0.35 ISO	.433	.002	.031	.016	
		0.40	11 ER 0.40 ISO	11 EL 0.40 ISO	.433	.002	.028	.016	
		0.45	11 ER 0.45 ISO	11 EL 0.45 ISO	.433	.002	.028	.016	
		0.50	11 ER 0.50 ISO	11 EL 0.50 ISO	.433	.002	.024	.024	
		0.60	11 ER 0.60 ISO	11 EL 0.60 ISO	.433	.003	.024	.024	
		0.70	11 ER 0.70 ISO	11 EL 0.70 ISO	.433	.003	.024	.024	
		0.75	11 ER 0.75 ISO	11 EL 0.75 ISO	.433	.003	.024	.024	
		0.80	11 ER 0.80 ISO	11 EL 0.80 ISO	.433	.004	.024	.024	
		1.00	11 ER 1.00 ISO	11 EL 1.00 ISO	.433	.005	.028	.028	
		1.25	11 ER 1.25 ISO	11 EL 1.25 ISO	.433	.006	.031	.035	
		1.50	11 ER 1.50 ISO	11 EL 1.50 ISO	.433	.007	.031	.039	
		1.75	11 ER 1.75 ISO	11 EL 1.75 ISO	.433	.008	.031	.043	
		3/8"	0.35	16 ER 0.35 ISO	16 EL 0.35 ISO	.630	.002	.031	.016
			0.40	16 ER 0.40 ISO	16 EL 0.40 ISO	.630	.002	.028	.016
	0.45		16 ER 0.45 ISO	16 EL 0.45 ISO	.630	.002	.028	.016	
	0.50		16 ER 0.50 ISO	16 EL 0.50 ISO	.630	.002	.024	.024	
	0.60		16 ER 0.60 ISO	16 EL 0.60 ISO	.630	.003	.024	.024	
	0.70		16 ER 0.70 ISO	16 EL 0.70 ISO	.630	.003	.024	.024	
	0.75		16 ER 0.75 ISO	16 EL 0.75 ISO	.630	.003	.024	.024	
	0.80		16 ER 0.80 ISO	16 EL 0.80 ISO	.630	.004	.024	.024	
	1.00		16 ER 1.00 ISO	16 EL 1.00 ISO	.630	.004	.028	.028	
	1.00		16 ERM 1.00 ISO		.630	.005	.028	.028	
	1.25		16 ER 1.25 ISO	16 EL 1.25 ISO	.630	.004	.031	.035	
	1.25		16 ERM 1.25 ISO		.630	.006	.031	.035	
	1.50		16 ER 1.50 ISO	16 EL 1.50 ISO	.630	.006	.031	.039	
	1.50		16 ERM 1.50 ISO		.630	.007	.031	.039	
	1.75	16 ER 1.75 ISO	16 EL 1.75 ISO	.630	.007	.035	.047		
	1.75	16 ERM 1.75 ISO		.630	.008	.035	.047		
2.00	16 ER 2.00 ISO	16 EL 2.00 ISO	.630	.008	.039	.051			
2.00	16 ERM 2.00 ISO		.630	.010	.039	.051			
2.50	16 ER 2.50 ISO	16 EL 2.50 ISO	.630	.012	.043	.059			
2.50	16 ERM 2.50 ISO		.630	.012	.043	.059			
3.00	16 ER 3.00 ISO	16 EL 3.00 ISO	.630	.015	.047	.063			
3.00	16 ERM 3.00 ISO		.630	.015	.047	.063			

- ERM/IRM with pressed chipbreaker
- Available grades, see page B5

## ISO Metric Full Profile

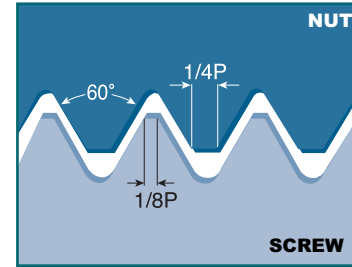
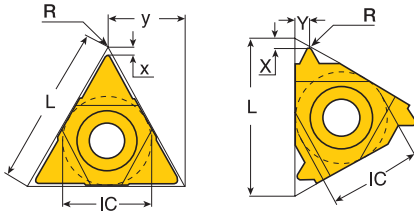




Thread Form	IC	Pitch mm	Designation		Dimension			
			Right Hand	Left Hand	L	R	X	Y
<b>External Regular Type</b> 	1/2"	3.50	22 ER 3.50 ISO	22 EL 3.50 ISO	.866	.017	.063	.091
		4.00	22 ER 4.00 ISO	22 EL 4.00 ISO	.866	.020	.063	.091
		4.50	22 ER 4.50 ISO	22 EL 4.50 ISO	.866	.023	.067	.094
		5.00	22 ER 5.00 ISO	22 EL 5.00 ISO	.866	.025	.067	.098
	5/8"	5.50	27 ER 5.50 ISO	27 EL 5.50 ISO	1.063	.028	.075	.106
		6.00	27 ER 6.00 ISO	27 EL 6.00 ISO	1.063	.031	.079	.114
<b>U - Type</b> 	1/2"	5.50	22 U ERL 5.50 ISO		.866	.028	.091	.433
		6.00	22 U ERL 6.00 ISO		.866	.031	.102	.433
	5/8"	8.00	27 U ERL 8.00 ISO		1.063	.043	.094	.539

- ERM/IRM with pressed chipbreaker
- Available grades, see page B5

# THREADING INSERTS

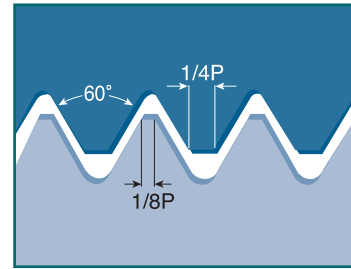
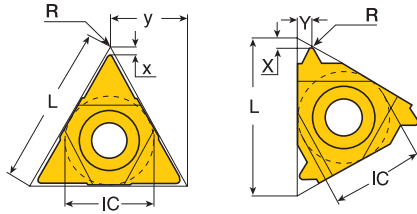
## ISO Metric Full Profile





Thread Form	IC	Pitch	Designation		Dimension			
		mm	Right Hand	Left Hand	L	R	X	Y
<b>Internal Regular Type</b>   <b>M - Type</b> 	5/32"	0.50	06 IR 0.50 ISO	06 IL 0.50 ISO	.236	.001	.020	.020
		0.75	06 IR 0.75 ISO	06 IL 0.75 ISO	.236	.002	.020	.020
		1.00	06 IR 1.00 ISO	06 IL 1.00 ISO	.236	.002	.020	.024
		1.25	06 IR 1.25 ISO	06 IL 1.25 ISO	.236	.003	.024	.024
	3/16"	0.50	08 IR 0.50 ISO	08 IL 0.50 ISO	.315	.002	.024	.020
		0.75	08 IR 0.75 ISO	08 IL 0.75 ISO	.315	.002	.024	.020
		1.00	08 IR 1.00 ISO	08 IL 1.00 ISO	.315	.002	.024	.024
		1.25	08 IR 1.25 ISO	08 IL 1.25 ISO	.315	.003	.024	.028
		1.50	08 IR 1.50 ISO	08 IL 1.50 ISO	.315	.003	.024	.028
		1.75	08 IR 1.75 ISO	08 IL 1.75 ISO	.315	.004	.024	.031
	1/4"	2.00	08 UIRL 2.00 ISO		.315	.005	.039	.157
		0.35	11 IR 0.35 ISO	11 IL 0.35 ISO	.433	.001	.031	.012
		0.40	11 IR 0.40 ISO	11 IR 0.40 ISO	.433	.001	.031	.016
		0.45	11 IR 0.45 ISO	11 IR 0.45 ISO	.433	.001	.031	.016
		0.50	11 IR 0.50 ISO	11 IR 0.50 ISO	.433	.001	.024	.024
		0.60	11 IR 0.60 ISO	11 IR 0.60 ISO	.433	.001	.024	.024
0.70		11 IR 0.70 ISO	11 IR 0.70 ISO	.433	.002	.024	.024	
0.75		11 IR 0.75 ISO	11 IR 0.75 ISO	.433	.002	.024	.024	
0.80		11 IR 0.80 ISO	11 IR 0.80 ISO	.433	.002	.024	.024	
1.00		11 IR 1.00 ISO	11 IR 1.00 ISO	.433	.002	.024	.028	
1.25		11 IR 1.25 ISO	11 IR 1.25 ISO	.433	.003	.031	.035	
1.50		11 IR 1.50 ISO	11 IR 1.50 ISO	.433	.003	.031	.039	
1.50		11 IRM 1.50 ISO		.433	.003	.031	.039	
1.75		11 IR 1.75 ISO	11 IR 1.75 ISO	.433	.004	.035	.043	
2.00	11 IR 2.00 ISO	11 IR 2.00 ISO	.433	.005	.031	.035		

- IRM with pressed chipbreaker
- Available grades, see page B5

## ISO Metric Full Profile

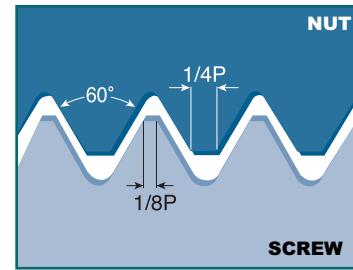
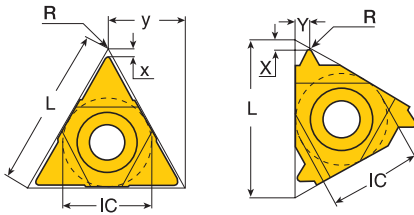


Thread Form	IC	Pitch	Designation		Dimension			
		mm	Right Hand	Left Hand	L	R	X	Y
<b>Internal Regular Type</b>  <b>M - Type</b> 	3/8"	0.35	16 IR 0.35 ISO	16 IL 0.35 ISO	.630	.001	.031	.012
		0.40	16 IR 0.40 ISO	16 IL 0.40 ISO	.630	.001	.031	.016
		0.45	16 IR 0.45 ISO	16 IL 0.45 ISO	.630	.001	.031	.016
		0.50	16 IR 0.50 ISO	16 IL 0.50 ISO	.630	.001	.024	.024
		0.60	16 IR 0.60 ISO	16 IL 0.60 ISO	.630	.001	.024	.024
		0.70	16 IR 0.70 ISO	16 IL 0.70 ISO	.630	.002	.024	.024
		0.75	16 IR 0.75 ISO	16 IL 0.75 ISO	.630	.002	.024	.024
		0.80	16 IR 0.80 ISO	16 IL 0.80 ISO	.630	.002	.024	.024
		1.00	16 IR 1.00 ISO	16 IL 1.00 ISO	.630	.002	.024	.028
		1.00	<b>16 IRM 1.00 ISO</b>		.630	.002	.024	.028
		1.25	16 IR 1.25 ISO	16 IL 1.25 ISO	.630	.003	.031	.035
		1.25	<b>16 IRM 1.25 ISO</b>		.630	.002	.031	.035
		1.50	16 IR 1.50 ISO	16 IL 1.50 ISO	.630	.003	.031	.039
		1.50	<b>16 IRM 1.50 ISO</b>		.630	.003	.031	.039
		1.75	16 IR 1.75 ISO	16 IL 1.75 ISO	.630	.004	.035	.047
		1.75	<b>16 IRM 1.75 ISO</b>		.630	.004	.035	.047
		2.00	16 IR 2.00 ISO	16 IL 2.00 ISO	.630	.005	.039	.051
		2.00	<b>16 IRM 2.00 ISO</b>		.630	.004	.039	.051
		2.50	16 IR 2.50 ISO	16 IL 2.50 ISO	.630	.006	.043	.059
		2.50	<b>16 IRM 2.50 ISO</b>		.630	.006	.043	.059
3.00	16 IR 3.00 ISO	16 IL 3.00 ISO	.630	.007	.043	.059		
3.00	<b>16 IRM 3.00 ISO</b>		.630	.007	.043	.059		

- IRM with pressed chipbreaker
- Available grades, see page B5

# THREADING INSERTS

## ISO Metric Full Profile

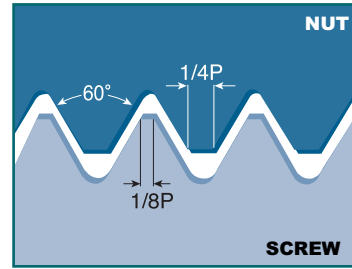
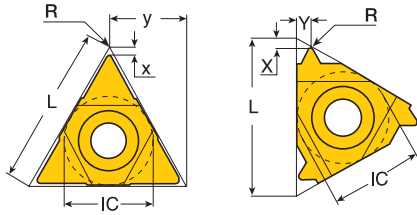




Thread Form	IC	Pitch	Designation		Dimension			
		mm	Right Hand	Left Hand	L	R	X	Y
<b>Internal Regular Type</b> 	1/2"	3.50	22 IR 3.50 ISO	22 IL 3.50 ISO	.866	.009	.063	.091
		4.00	22 IR 4.00 ISO	22 IL 4.00 ISO	.866	.010	.063	.091
		4.50	22 IR 4.50 ISO	22 IL 4.50 ISO	.866	.011	.063	.094
		5.00	22 IR 5.00 ISO	22 IL 5.00 ISO	.866	.013	.063	.091
	5/8"	5.50	27 IR 5.50 ISO	27 IL 5.50 ISO	1.063	.014	.063	.091
		6.00	27 IR 6.00 ISO	27 IL 6.00 ISO	1.063	.015	.071	.098
<b>U - Type</b> 	1/2"	5.50	22 U IRL 5.50 ISO		.866	.014	.094	.433
		6.00	22 U IRL 6.00 ISO		.866	.015	.083	.433
	5/8"	8.00	27 U IRL 8.00 ISO		1.063	.021	.094	.539

- Available grades, see page B5



## American UN Full Profile (UN, UNC, UNF, UNEF)

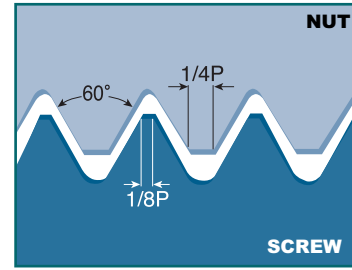
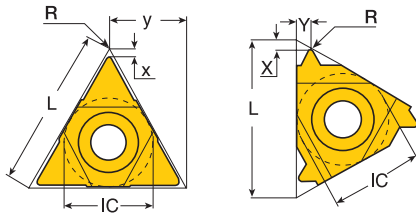


Thread Form	IC	Pitch	Designation				Dimension				
		TPI	Right Hand		Left Hand		L	R	X	Y	
<b>External Regular Type</b>  <b>M - Type</b> 	1/4"	56	11 ER	56 UN	11 EL	56 UN	.433	.002	.028	.016	
		48	11 ER	48 UN	11 EL	48 UN	.433	.002	.024	.024	
		44	11 ER	44 UN	11 EL	44 UN	.433	.002	.024	.024	
		40	11 ER	40 UN	11 EL	40 UN	.433	.002	.024	.024	
		36	11 ER	36 UN	11 EL	36 UN	.433	.003	.024	.024	
		32	11 ER	32 UN	11 EL	32 UN	.433	.004	.024	.024	
		28	11 ER	28 UN	11 EL	28 UN	.433	.004	.024	.028	
		24	11 ER	24 UN	11 EL	24 UN	.433	.005	.028	.031	
		20	11 ER	20 UN	11 EL	20 UN	.433	.006	.031	.035	
		18	11 ER	18 UN	11 EL	18 UN	.433	.007	.031	.039	
		16	11 ER	16 UN	11 EL	16 UN	.433	.007	.035	.043	
		3/8"	56	16 ER	56 UN	16 EL	56 UN	.630	.002	.028	.016
			48	16 ER	48 UN	16 EL	48 UN	.630	.002	.024	.024
			40	16 ER	40 UN	16 EL	40 UN	.630	.002	.024	.024
	36		16 ER	36 UN	16 EL	36 UN	.630	.003	.024	.024	
	32		16 ER	32 UN	16 EL	32 UN	.630	.004	.024	.024	
	28		16 ER	28 UN	16 EL	28 UN	.630	.004	.024	.028	
	24		16 ER	24 UN	16 EL	24 UN	.630	.005	.028	.031	
	24		16 ER	<b>16 ERM 24 UN</b>			.630	.004	.028	.031	
	20		16 ER	20 UN	16 EL	20 UN	.630	.006	.031	.035	
	20		16 ER	<b>16 ERM 20 UN</b>			.630	.006	.031	.035	
	18		16 ER	18 UN	16 EL	18 UN	.630	.007	.031	.039	
	18		16 ER	<b>16 ERM 18 UN</b>			.630	.006	.031	.039	
	16		16 ER	16 UN	16 EL	16 UN	.630	.007	.035	.043	
	16		16 ER	<b>16 ERM 16 UN</b>			.630	.007	.035	.043	
	14	16 ER	14 UN	16 EL	14 UN	.630	.009	.039	.047		
	14	16 ER	<b>16 ERM 14 UN</b>			.630	.009	.039	.047		
	13	16 ER	13 UN	16 EL	13 UN	.630	.009	.039	.051		
12	16 ER	12 UN	16 EL	12 UN	.630	.010	.043	.055			
12	16 ER	<b>16 ERM 12 UN</b>			.630	.010	.043	.055			
11.5	16 ER	11.5 UN	16 EL	11.5 UN	.630	.011	.043	.059			
11	16 ER	11 UN	16 EL	11 UN	.630	.011	.043	.059			
10	16 ER	10 UN	16 EL	10 UN	.630	.013	.043	.059			
9	16 ER	9 UN	16 EL	9 UN	.630	.014	.047	.067			
8	16 ER	8 UN	16 EL	8 UN	.630	.016	.047	.063			
8	16 ER	<b>16 ERM 8 UN</b>			.630	.016	.047	.063			

- IRM with pressed chipbreaker
- Available grades, see page B5

# THREADING INSERTS

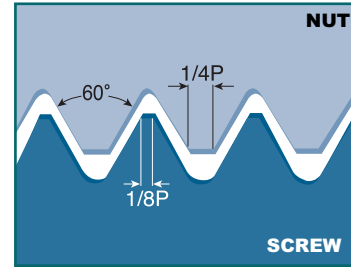
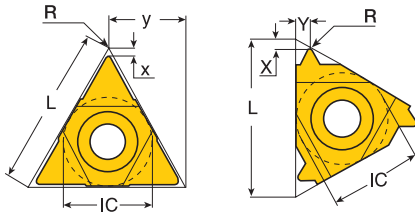
## American UN Full Profile (UN, UNC, UNF, UNEF)




Thread Form	IC	Pitch	Designation		Dimension			
		TPI	Right Hand	Left Hand	L	R	X	Y
<b>External Regular Type</b> 	1/2"	7	22 ER 7 UN	22 EL 7 UN	.866	.019	.063	.091
		6	22 ER 6 UN	22 EL 6 UN	.866	.022	.063	.091
		5	22 ER 5 UN	22 EL 5 UN	.866	.026	.067	.098
	5/8"	4.5	27 ER 4.5 UN	22 EL 4.5 UN	1.063	.030	.075	.106
4		27 ER 4 UN	27 EL 4 UN	1.063	.033	.083	.118	
<b>U - Type</b> 	1/2"	4.5	22 U ERL 4.5 UN		.866	.030	.079	.433
		4	22 U ERL 4 UN		.866	.033	.079	.433
	5/8"	3	27 U ERL 3 UN		1.063	.045	.098	.539

• Available grades, see page B5

## American UN Full Profile (UN, UNC, UNF, UNEF)

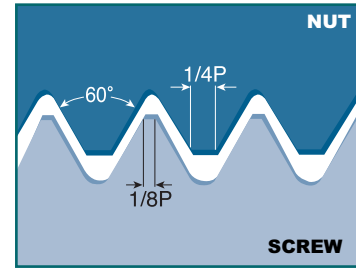
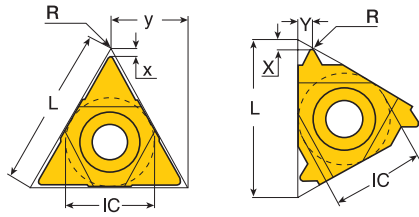





Thread Form	IC	Pitch	Designation		Dimension			
		TPI	Right Hand	Left Hand	L	R	X	Y
<b>Internal</b> 	5/32"	32	06 IR 32 UN	06 IL 32 UN	.236	.002	.020	.020
		28	06 IR 28 UN	06 IL 28 UN	.236	.002	.020	.020
		24	06 IR 24 UN	06 IL 24 UN	.236	.002	.020	.024
		20	06 IR 20 UN	06 IL 20 UN	.236	.002	.024	.024
		18	06 IR 18 UN	06 IL 18 UN	.236	.003	.024	.024
	3/16"	32	08 IR 32 UN	08 IL 32 UN	.315	.002	.024	.020
		28	08 IR 28 UN	08 IL 28 UN	.315	.002	.024	.024
		24	08 IR 24 UN	08 IL 24 UN	.315	.002	.024	.024
		20	08 IR 20 UN	08 IL 20 UN	.315	.002	.024	.028
		18	08 IR 18 UN	08 IL 18 UN	.315	.003	.024	.028
		16	08 IR 16 UN	08 IL 16 UN	.315	.004	.024	.028
		14	08 IR 14 UN	08 IL 14 UN	.315	.004	.024	.031
		13	08 U IRL 13 UN		.315	.004	.039	.157
	12	08 U IRL 12 UN		.315	.005	.035	.157	
	11	08 U IRL 11 UN		.315	.006	.035	.157	
	1/4"	72	11 IR 72 UN	11 IL 72 UN	.433	.001	.031	.012
		64	11 IR 64 UN	11 IL 64 UN	.433	.001	.031	.016
		56	11 IR 56 UN	11 IL 56 UN	.433	.001	.028	.016
		48	11 IR 48 UN	11 IL 48 UN	.433	.001	.024	.024
		40	11 IR 40 UN	11 IL 40 UN	.433	.001	.024	.024
		36	11 IR 36 UN	11 IL 36 UN	.433	.002	.024	.024
		32	11 IR 32 UN	11 IL 32 UN	.433	.002	.024	.024
		28	11 IR 28 UN	11 IL 28 UN	.433	.002	.024	.028
		24	11 IR 24 UN	11 IL 24 UN	.433	.002	.028	.031
		20	11 IR 20 UN	11 IL 20 UN	.433	.002	.031	.035
		18	11 IR 18 UN	11 IL 18 UN	.433	.003	.031	.039
		16	11 IR 16 UN	11 IL 16 UN	.433	.004	.035	.043
	14	11 IR 14 UN	11 IL 14 UN	.433	.004	.035	.043	

• Available grades, see page B5

# THREADING INSERTS

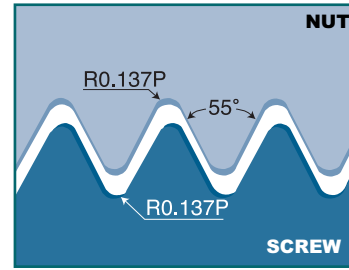
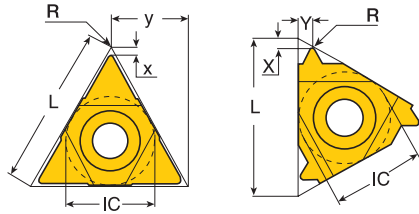
## American UN Full Profile (UN, UNC, UNF, UNEF)





Thread Form	IC	Pitch	Designation		Dimension			
		TPI	Right Hand	Left Hand	L	R	X	Y
<b>Internal Regular Type</b>  <b>M - Type</b> 	3/8"	56	16 IR 56 UN	16 IL 56 UN	.630	.001	.028	.016
		44	16 IR 44 UN	16 IL 44 UN	.630	.001	.024	.024
		40	16 IR 40 UN	16 IL 40 UN	.630	.001	.024	.024
		36	16 IR 36 UN	16 IL 36 UN	.630	.002	.024	.024
		32	16 IR 32 UN	16 IL 32 UN	.630	.002	.024	.024
		28	16 IR 28 UN	16 IL 28 UN	.630	.002	.024	.028
		24	16 IR 24 UN	16 IL 24 UN	.630	.002	.028	.031
		20	16 IR 20 UN	16 IL 20 UN	.630	.002	.031	.035
		20	<b>16 IRM 20 UN</b>		.630	.002	.031	.035
		18	16 IR 18 UN	16 IL 18 UN	.630	.003	.031	.039
		18	<b>16 IRM 18 UN</b>		.630	.003	.031	.039
		16	16 IR 16 UN	16 IL 16 UN	.630	.004	.035	.043
		16	<b>16 IRM 16 UN</b>		.630	.004	.035	.043
		14	16 IR 14 UN	16 IL 14 UN	.630	.004	.035	.047
		14	<b>16 IRM 14 UN</b>		.630	.004	.035	.047
		13	16 IR 13 UN	16 IL 13 UN	.630	.004	.039	.051
		12	16 IR 12 UN	16 IL 12 UN	.630	.005	.043	.055
		12	<b>16 IRM 12 UN</b>		.630	.005	.043	.055
		11.5	16 IR 11.5 UN	16 IL 11.5 UN	.630	.005	.043	.059
		11	16 IR 11 UN	16 IL 11 UN	.630	.006	.043	.059
10	16 IR 10 UN	16 IL 10 UN	.630	.006	.043	.059		
9	16 IR 9 UN	16 IL 9 UN	.630	.007	.047	.067		
8	16 IR 8 UN	16 IL 8 UN	.630	.007	.043	.059		
8	<b>16 IRM 8 UN</b>		.630	.008	.043	.059		
	1/2"	7	22 IR 7 UN	22 IL 7 UN	.866	.009	.063	.091
		6	22 IR 6 UN	22 IL 6 UN	.866	.010	.063	.091
		5	22 IR 5 UN	22 IL 5 UN	.866	.013	.063	.091
	5/8"	4.5	27 IR 4.5 UN	27 IL 4.5 UN	1.063	.014	.067	.094
		4	27 IR 4 UN	27 IL 4 UN	1.063	.016	.071	.106
<b>U - Type</b> 	1/2"	4.5	22 U IRL 4.5 UN		.866	.014	.094	.433
		4	22 U IRL 4 UN		.866	.016	.094	.433
		3	27 U IRL 3 UN		1.063	.022	.106	.539

- IRM with pressed chipbreaker
- Available grades, see page B5

## Whitworth Full Profile (BSW, BSF, BSP)



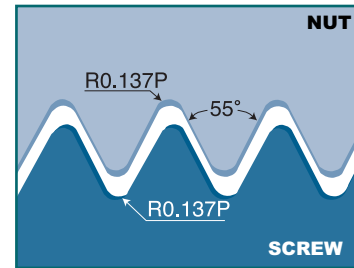
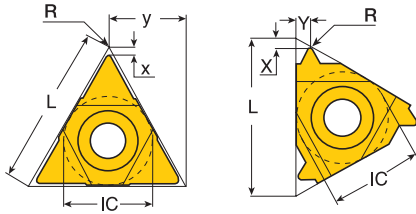
Thread Form	IC	Pitch TPI	Designation		Dimension				
			Right Hand	Left Hand	L	R	X	Y	
<b>External</b> Regular Type  M-Type   	1/4"	48	11 ER 48 W	11 EL 48 W	.433	.002	.024	.024	
		36	11 ER 36 W	11 EL 36 W	.433	.003	.024	.024	
		32	11 ER 32 W	11 EL 32 W	.433	.004	.024	.024	
		28	11 ER 28 W	11 EL 28 W	.433	.004	.024	.028	
		26	11 ER 26 W	11 EL 26 W	.433	.004	.028	.031	
		24	11 ER 24 W	11 EL 24 W	.433	.004	.028	.031	
		22	11 ER 22 W	11 EL 22 W	.433	.005	.031	.035	
		20	11 ER 20 W	11 EL 20 W	.433	.006	.031	.035	
		19	11 ER 19 W	11 EL 19 W	.433	.006	.031	.039	
		18	11 ER 18 W	11 EL 18 W	.433	.006	.031	.039	
		16	11 ER 16 W	11 EL 16 W	.433	.007	.035	.043	
		14	11 ER 14 W	11 EL 14 W	.433	.008	.039	.047	
		3/8"	56	16 ER 56 W	16 EL 56 W	.630	.002	.028	.016
			40	16 ER 40 W	16 EL 40 W	.630	.002	.024	.024
	32		16 ER 32 W	16 EL 32 W	.630	.004	.024	.024	
	28		16 ER 28 W	16 EL 28 W	.630	.004	.024	.028	
	26		16 ER 26 W	16 EL 26 W	.630	.004	.028	.031	
	24		16 ER 24 W	16 EL 24 W	.630	.004	.028	.031	
	22		16 ER 22 W	16 EL 22 W	.630	.005	.031	.035	
	20		16 ER 20 W	16 EL 20 W	.630	.006	.031	.035	
19	16 ER 19 W		16 EL 19 W	.630	.006	.031	.039		
19	16 ERM 19 W			.630	.003	.031	.039		
18	16 ER 18 W		16 EL 18 W	.630	.006	.031	.039		
16	16 ER 16 W		16 EL 16 W	.630	.007	.035	.043		
16	16 ERM 16 W			.630	.008	.035	.043		
14	16 ER 14 W		16 EL 14 W	.630	.008	.039	.047		
14	16 ERM 14 W			.630	.009	.039	.047		
12	16 ER 12 W		16 EL 12 W	.630	.010	.043	.055		
11	16 ER 11 W	16 EL 11 W	.630	.011	.043	.059			
11	16 ERM 11 W		.630	.012	.043	.059			
10	16 ER 10 W	16 EL 10 W	.630	.012	.043	.059			
9	16 ER 9 W	16 EL 9 W	.630	.013	.047	.067			
8	16 ER 8 W	16 EL 8 W	.630	.015	.047	.059			

- ERM with pressed chipbreaker
- Available grades, see page B5



# THREADING INSERTS

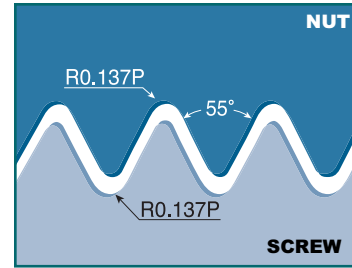
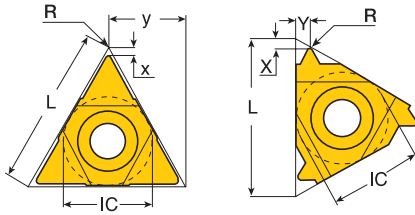
## Whitworth Full Profile (BSW, BSF, BSP)





Application: Fittings and Pipe Couplings

Thread Form	IC	Pitch	Designation		Dimension			
		TPI	Right Hand	Left Hand	L	R	X	Y
<b>External</b> Regular Type 	1/2"	7	22 ER 7 W	22 EL 7 W	.866	.018	.063	.091
		6	22 ER 6 W	22 EL 6 W	.866	.020	.063	.091
		5	22 ER 5 W	22 EL 5 W	.866	.026	.067	.094
	5/8"	4.5	27 ER 4.5 W	27 EL 4.5 W	1.063	.029	.071	.102
		4	27 ER 4 W	27 EL 4 W	1.063	.032	.079	.114
<b>U - Type</b> 	1/2"	4.5	22 U EIRL 4.5 W		.866	.029	.091	.433
		4	22 U EIRL 4 W		.866	.032	.071	.433
	5/8"	3.5	27 U EIRL 3.50 W		1.063	.037	.083	.539
		3.25	27 U EIRL 3.25 W		1.063	.041	.079	.539
		3	27 U EIRL 3.00 W		1.063	.044	.091	.539
		2.75	27 U EIRL 2.75 W		1.063	.048	.094	.539

## Whitworth Full Profile (BSW, BSF, BSP)



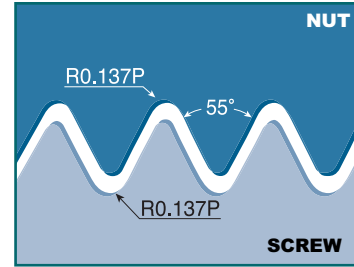
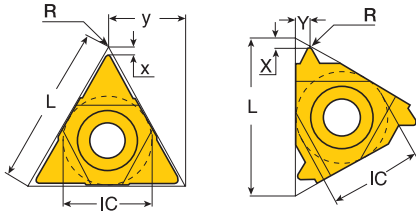
Application: Fittings and Pipe Couplings

Thread Form	IC	Pitch	Designation		Dimension				
		TPI	Right Hand	Left Hand	L	R	X	Y	
<b>Internal Regular Type</b> 	5/32"	26	06 IR 26 W	06 IL 26 W	.236	.004	.028	.024	
		22	06 IR 22 W	06 IL 22 W	.236	.005	.024	.024	
		20	06 IR 20 W	06 IL 20 W	.236	.006	.024	.028	
		18	06 IR 18 W	06 IL 18 W	.236	.006	.024	.028	
	<b>M - Type</b> 	3/16"	28	08 IR 28 W	06 IL 28 W	.315	.004	.024	.024
			24	08 IR 24 W	08 IL 24 W	.315	.004	.024	.024
			20	08 IR 20 W	08 IL 20 W	.315	.006	.024	.028
			19	08 IR 19 W	08 IL 19 W	.315	.006	.024	.028
			18	08 IR 18 W	08 IL 18 W	.315	.006	.024	.028
			16	08 IR 16 W	08 IL 16 W	.315	.007	.024	.028
3/16"	14	08 U IRL 14 UN		.315	.008	.039	.157		
	12	08 U IRL 12 UN		.315	.010	.035	.157		
	11	08 U IRL 11 UN		.315	.011	.035	.157		
1/4"	1/4"	48	11 IR 48 W	11 IL 48 W	.433	.002	.024	.024	
		36	11 IR 36 W	11 IL 36 W	.433	.003	.024	.024	
		32	11 IR 32 W	11 IL 32 W	.433	.004	.024	.024	
		28	11 IR 28 W	11 IL 28 W	.433	.004	.024	.028	
		26	11 IR 26 W	11 IL 26 W	.433	.004	.028	.031	
		24	11 IR 24 W	11 IL 24 W	.433	.004	.028	.031	
		22	11 IR 22 W	11 IL 22 W	.433	.005	.031	.035	
		20	11 IR 20 W	11 IL 20 W	.433	.006	.031	.035	
		19	11 IR 19 W	11 IL 19 W	.433	.006	.031	.039	
		18	11 IR 18 W	11 IL 18 W	.433	.006	.031	.039	
		16	11 IR 16 W	11 IL 16 W	.433	.007	.035	.043	
		14	11 IR 14 W	11 IL 14 W	.433	.008	.035	.043	



• Available grades, see page B5

# THREADING INSERTS

## Whitworth Full Profile (BSW, BSF, BSP)

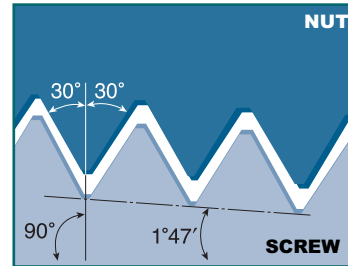
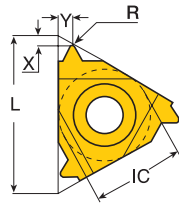


Application: Fittings and Pipe Couplings





Thread Form	IC	Pitch	Designation		Dimension			
		TPI	Right Hand	Left Hand	L	R	X	Y
<b>Internal</b> Regular Type 	3/8"	56	16 IR 56 W	16 IL 56 W	.630	.0016	.028	.016
		40	16 IR 40 W	16 IL 40 W	.630	.0024	.024	.024
		32	16 IR 32 W	16 IL 32 W	.630	.0035	.024	.024
		28	16 IR 28 W	16 IL 28 W	.630	.0035	.024	.028
		26	16 IR 26 W	16 IL 26 W	.630	.0039	.028	.031
		24	16 IR 24 W	16 IL 24 W	.630	.0043	.028	.031
		22	16 IR 22 W	16 IL 22 W	.630	.0051	.031	.035
		20	16 IR 20 W	16 IL 20 W	.630	.0055	.031	.035
		19	16 IR 19 W	16 IL 19 W	.630	.0059	.031	.039
		19	16 IRM 19 W		.630	.0031	.031	.039
		18	16 IR 18 W	16 IL 18 W	.630	.0063	.031	.039
		16	16 IR 16 W	16 IL 16 W	.630	.0071	.035	.043
		16	16 IRM 16 W		.630	.0079	.035	.043
		14	16 IR 14 W	16 IL 14 W	.630	.0083	.039	.047
		14	16 IRM 14 W		.630	.0091	.039	.047
		12	16 IR 12 W	16 IL 12 W	.630	.0098	.043	.055
		11	16 IR 11 W	16 IL 11 W	.630	.0106	.043	.059
		11	16 IRM 11 W		.630	.0118	.043	.059
		10	16 IR 10 W	16 IL 10 W	.630	.0122	.043	.059
		9	16 IR 9 W	16 IL 9 W	.630	.0134	.047	.067
8	16 IR 8 W	16 IL 8 W	.630	.0154	.047	.059		
	1/2"	7	22 IR 7 W	22 IL 7 W	.866	.0177	.063	.091
		6	22 IR 6 W	22 IL 6 W	.866	.0205	.063	.091
		5	22 IR 5 W	22 IL 5 W	.866	.0256	.067	.094
	5/8"	4.5	27 IR 4.5 W	27 IL 4.5 W	1.063	.0287	.071	.102
		4	27 IR 4 W	27 IL 4 W	1.063	.0323	.079	.114
<b>U - Type</b> 	1/2"	4.5	22 U EIRL 4.5 W		.866	.0287	.091	.439
		4	22 U EIRL 4 W		.866	.0323	.071	.439
	5/8"	3.5	27 U EIRL 3.50 W		1.063	.0374	.083	.539
		3.25	27 U EIRL 3.25 W		1.063	.0409	.079	.539
		3	27 U EIRL 3.00 W		1.063	.0441	.091	.539
		2.75	27 U EIRL 2.75 W		1.063	.0476	.094	.539

- IRM with pressed chipbreaker

## NPT (National Pipe Threads) Full Profile



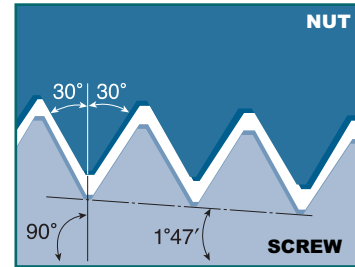
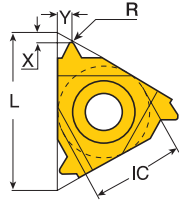
Application: Steam, gas  
and water pipes

Thread Form	IC	Pitch	Designation		Dimension			
		TPI	Right Hand	Left Hand	L	R	X	Y
<b>External</b> Regular Type   M - Type  	3/8"	27	16 ER 27 NPT	16 EL 27 NPT	.630	.002	.028	.031
		18	16 ER 18 NPT	16 EL 18 NPT	.630	.002	.031	.039
		18	16 ERM 18 NPT		.630	.002	.031	.039
		14	16 ER 14 NPT	16 EL 14 NPT	.630	.003	.035	.047
		14	16 ERM 14 NPT		.630	.002	.035	.047
		11.5	16 ER 11.5 NPT	16 EL 11.5 NPT	.630	.004	.043	.059
		11.5	16 ERM 11.5 NPT		.630	.004	.043	.059
		8	16 ER 8 NPT	16 EL 8 NPT	.630	.005	.051	.071
8	16 ERM 8 NPT		.630	.006	.047	.071		
<b>Internal</b> Regular Type   M - Type  	5/32"	27	06 IR 27 NPT	06 IL 27 NPT	.236	.002	.024	.024
	3/16"	27	08 IR 27 NPT	08 IL 27 NPT	.315	.002	.024	.024
		18	08 IR 18 NPT	08 IL 18 NPT	.315	.002	.024	.024
	1/4"	27	11 IR 27 NPT	11 IL 27 NPT	.433	.002	.028	.031
		18	11 IR 18 NPT	11 IL 18 NPT	.433	.002	.031	.039
		14	11 IR 14 NPT	11 IL 14 NPT	.433	.002	.031	.039
	3/8"	27	16 IR 27 NPT	16 IL 27 NPT	.630	.002	.028	.031
		18	16 IR 18 NPT	16 IL 18 NPT	.630	.002	.031	.039
		14	16 IR 14 NPT	16 IL 14 NPT	.630	.003	.035	.047
		14	16 IRM 14 NPT		.630	.002	.035	.047
		11.5	16 IR 11.5 NPT	16 IL 11.5 NPT	.630	.004	.043	.059
		11.5	16 IRM 11.5 NPT		.630	.004	.043	.059
8	16 IR 8 NPT	16 IL 8 NPT	.630	.005	.047	.071		
8	16 IRM 8 NPT		.630	.006	.047	.071		



- ERM/IRM with pressed chipbreaker
- Available grades, see page B5

## THREADING INSERTS

### NPTF (National Pipe Threads-Dryseal) Full Profile



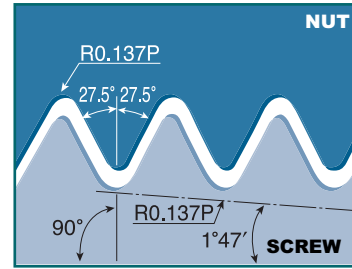
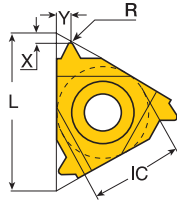
Application: Steam, gas  
and water pipes

Thread Form	IC	Pitch TPI	Designation		Dimension			
			Right Hand	Left Hand	L	X	Y	
<b>External</b> Regular Type 	1/4"	27	11 ER 27 NPTF	11 EL 27 NPTF	.433	.028	.028	
		18	11 ER 18 NPTF	11 EL 18 NPTF	.433	.031	.039	
		14	11 ER 14 NPTF	11 EL 14 NPTF	.433	.031	.039	
	3/8"	27	16 ER 27 NPTF	16 EL 27 NPTF	.630	.028	.028	
		18	16 ER 18 NPTF	16 EL 18 NPTF	.630	.031	.039	
		14	16 ER 14 NPTF	16 EL 14 NPTF	.630	.035	.047	
		11.5	16 ER 11.5 NPTF	16 EL 11.5 NPTF	.630	.043	.059	
		8	16 ER 8 NPTF	16 EL 8 NPTF	.630	.051	.071	
	<b>Internal</b> Regular Type 	5/32"	27	06 IR 27 NPTF	06 IL 27 NPTF	.236	.028	.024
			27	08 IR 27 NPTF	08 IL 27 NPTF	.315	.024	.024
3/16"		18	08 IR 18 NPTF	08 IL 18 NPTF	.315	.024	.024	
		27	11 IR 27 NPTF	11 IL 27 NPTF	.433	.028	.028	
1/4"		18	11 IR 18 NPTF	11 IL 18 NPTF	.433	.031	.039	
		14	11 IR 14 NPTF	11 IL 14 NPTF	.433	.031	.039	
3/8"		27	16 IR 27 NPTF	16 IL 27 NPTF	.630	.028	.028	
		18	16 IR 18 NPTF	16 IL 18 NPTF	.630	.031	.039	
		14	16 IR 14 NPTF	16 IL 14 NPTF	.630	.035	.047	
		11.5	16 IR 11.5 NPTF	16 IL 11.5 NPTF	.630	.043	.059	
		8	16 IR 8 NPTF	16 IL 8 NPTF	.630	.051	.071	

- ERM/IRM with pressed chipbreaker
- Available grades, see page B5



## BSPT (British Standard pipe) Full Profile



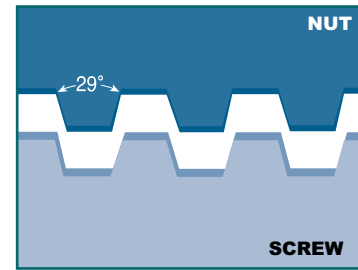
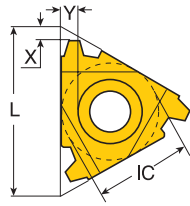
Application: Steam, gas  
and water pipes

Thread Form	IC	Pitch	Designation		Dimension			
		TPI	Right Hand	Left Hand	L	R	X	Y
<b>External</b> 	3/8"	28	16 ER 28 BSPT	16 EL 28 BSPT	.630	.004	.024	.024
		19	16 ER 19 BSPT	16 EL 19 BSPT	.630	.006	.031	.035
		14	16 ER 14 BSPT	16 EL 14 BSPT	.630	.008	.039	.047
		11	16 ER 11 BSPT	16 EL 11 BSPT	.630	.011	.043	.059
<b>Internal</b> 	5/32"	27	06 IR 27 BSPT	06 IL 27 BSPT	.236	.004	.028	.024
		28	11 IR 28 BSPT	11 IL 28 BSPT	.433	.004	.024	.024
	1/4"	19	11 IR 19 BSPT	11 IL 19 BSPT	.433	.006	.031	.035
		14	11 IR 14 BSPT	11 IL 14 BSPT	.433	.008	.035	.039
	3/8"	28	16 IR 28 BSPT	16 IL 28 BSPT	.630	.004	.024	.024
		19	16 IR 19 BSPT	16 IL 19 BSPT	.630	.006	.031	.035
		14	16 IR 14 BSPT	16 IL 14 BSPT	.630	.008	.039	.047
		11	16 IR 11 BSPT	16 IL 11 BSPT	.630	.011	.043	.059



- ERM/IRM with pressed chipbreaker
- Available grades, see page B5

# THREADING INSERTS

## STUB ACME

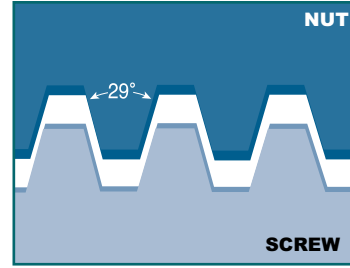
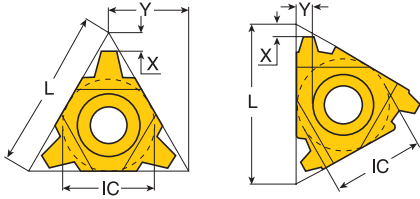


Application: Control Valves and modified ACME thread forms

Thread Form	IC	Pitch	Designation		Dimension		
		TPI	Right Hand	Left Hand	L	X	Y
<b>External</b> 	3/8"	16	16 ER 16 STACME	16 EL 16 STACME	.630	.039	.039
		14	16 ER 14 STACME	16 EL 14 STACME	.630	.043	.043
		12	16 ER 12 STACME	16 EL 12 STACME	.630	.047	.047
		10	16 ER 10 STACME	16 EL 10 STACME	.630	.047	.051
		8	16 ER 8 STACME	16 EL 8 STACME	.630	.055	.059
		6	16 ER 6 STACME	16 EL 6 STACME	.630	.067	.071
	1/2"	5	22 ER 5 STACME	22 EL 5 STACME	.866	.083	.091
	5/8"	4	27 ER 4 STACME	27 EL 4 STACME	1.063	.091	.095
3		27 ER 3 STACME	27 EL 3 STACME	1.063	.114	.114	
<b>Internal</b> 	3/8"	16	16 IR 16 STACME	16 IL 16 STACME	.630	.039	.043
		14	16 IR 14 STACME	16 IL 14 STACME	.630	.043	.043
		12	16 IR 12 STACME	16 IL 12 STACME	.630	.043	.047
		10	16 IR 10 STACME	16 IL 10 STACME	.630	.047	.051
		8	16 IR 8 STACME	16 IL 8 STACME	.630	.055	.059
		6	16 IR 6 STACME	16 IL 6 STACME	.630	.067	.071
	1/2"	5	22 IR 5 STACME	22 IL 5 STACME	.866	.083	.091
	5/8"	4	27 IR 4 STACME	27 IL 4 STACME	1.063	.091	.095
3		27 IR 3 STACME	27 IL 3 STACME	1.063	.114	.114	

• Available grades, see page B5

## ACME



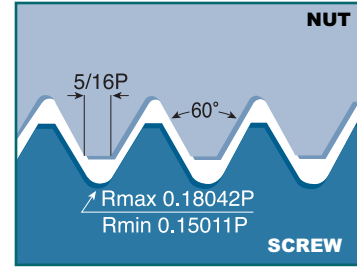
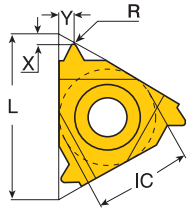
Application: Feed Screws

Thread Form	IC	Pitch	Designation		Dimension			
		TPI	Right Hand	Left Hand	L	X	Y	
<b>External</b> 	3/8"	16	16 ER 16 ACME	16 EL 16 ACME	.630	.039	.043	
		14	16 ER 14 ACME	16 EL 14 ACME	.630	.039	.047	
		12	16 ER 12 ACME	16 EL 12 ACME	.630	.043	.047	
		10	16 ER 10 ACME	16 EL 10 ACME	.630	.051	.051	
		8	16 ER 8 ACME	16 EL 8 ACME	.630	.055	.059	
	1/2"	6	22 ER 6 ACME	22 EL 6 ACME	.866	.071	.083	
		5	22 ER 5 ACME	22 EL 5 ACME	.866	.079	.091	
		4	27 ER 4 ACME	27 EL 4 ACME	1.063	.094	.106	
	<b>Internal</b> 	3/8"	16	16 IR 16 ACME	16 IL 16 ACME	.630	.039	.043
			14	16 IR 14 ACME	16 IL 14 ACME	.630	.043	.047
12			16 IR 12 ACME	16 IL 12 ACME	.630	.047	.047	
10			16 IR 10 ACME	16 IL 10 ACME	.630	.047	.051	
8			16 IR 8 ACME	16 IL 8 ACME	.630	.055	.059	
1/2"		6	22 IR 6 ACME	22 IL 6 ACME	.866	.071	.083	
		5	22 IR 5 ACME	22 IL 5 ACME	.866	.079	.091	
		4	27 IR 4 ACME	27 IL 4 ACME	1.063	.091	.106	
<b>External</b> U - Type 		5/8"	3	27 U ERL 3 ACME		1.063	.118	.539
<b>Internal</b> U - Type 		5/8"	3	27 U IRL 3 ACME		1.063	.114	.539


• Available grades, see page B5

# THREADING INSERTS

## UNJ



Application: Aerospace Industry

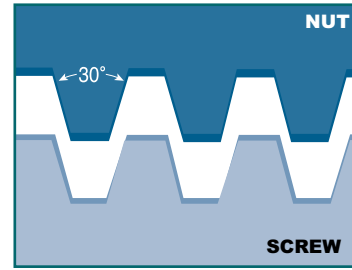
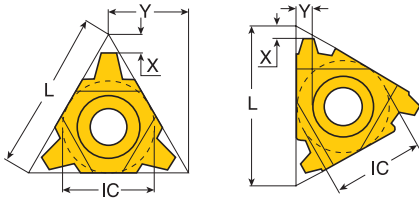
Thread Form	IC	Pitch	Designation		Dimension			
		TPI	Right Hand	Left Hand	L	R	X	Y
<b>External</b> Regular Type 	1/4"	48	11 ER 48 UNJ	11 EL 48 UNJ	.433	.003	.024	.020
		44	11 ER 44 UNJ	11 EL 44 UNJ	.433	.004	.024	.024
		40	11 ER 40 UNJ	11 EL 40 UNJ	.433	.004	.024	.024
		36	11 ER 36 UNJ	11 EL 36 UNJ	.433	.004	.024	.024
		32	11 ER 32 UNJ	11 EL 32 UNJ	.433	.005	.024	.028
		28	11 ER 28 UNJ	11 EL 28 UNJ	.433	.006	.028	.028
		24	11 ER 24 UNJ	11 EL 24 UNJ	.433	.007	.028	.031
		20	11 ER 20 UNJ	11 EL 20 UNJ	.433	.008	.031	.035
		18	11 ER 18 UNJ	11 EL 18 UNJ	.433	.009	.031	.039
		16	11 ER 16 UNJ	11 EL 16 UNJ	.433	.010	.035	.043
		14	11 ER 14 UNJ	11 EL 14 UNJ	.433	.011	.039	.047
	3/8"	48	16 ER 48 UNJ	16 EL 48 UNJ	.630	.003	.024	.020
		44	16 ER 44 UNJ	16 EL 44 UNJ	.630	.004	.024	.024
		40	16 ER 40 UNJ	16 EL 40 UNJ	.630	.004	.024	.024
		36	16 ER 36 UNJ	16 EL 36 UNJ	.630	.004	.024	.024
		32	16 ER 32 UNJ	16 EL 32 UNJ	.630	.005	.024	.028
		28	16 ER 28 UNJ	16 EL 28 UNJ	.630	.006	.028	.028
		24	16 ER 24 UNJ	16 EL 24 UNJ	.630	.007	.028	.031
		20	16 ER 20 UNJ	16 EL 20 UNJ	.630	.008	.031	.035
		18	16 ER 18 UNJ	16 EL 18 UNJ	.630	.009	.031	.039
		16	16 ER 16 UNJ	16 EL 16 UNJ	.630	.010	.035	.043
		14	16 ER 14 UNJ	16 EL 14 UNJ	.630	.011	.039	.047
		13	16 ER 13 UNJ	16 EL 13 UNJ	.630	.012	.039	.051
		12	16 ER 12 UNJ	16 EL 12 UNJ	.630	.013	.043	.051
		11	16 ER 11 UNJ	16 EL 11 UNJ	.630	.014	.047	.059
		10	16 ER 10 UNJ	16 EL 10 UNJ	.630	.016	.047	.059
		9	16 ER 9 UNJ	16 EL 9 UNJ	.630	.017	.051	.067
	8	16 ER 8 UNJ	16 EL 8 UNJ	.630	.020	.047	.063	
	1/2"	7	22 ER 7 UNJ	22 EL 7 UNJ	.866		.067	.091
		6	22 ER 6 UNJ	22 EL 6 UNJ	.866		.067	.091
		5	22 ER 5 UNJ	22 EL 5 UNJ	.866		.071	.098
	5/8"	4.5	27 ER 4.5 UNJ	27 EL 4.5 UNJ	1.063		.079	.106
		4	27 ER 4 UNJ	27 EL 4 UNJ	1.063		.087	.118

### Internal




- For internal UNJ inserts, specify IR instead of ER in the order designation.
- The standard internal UN insert can be used as a partial UNJ profile insert. See page B13 - B14

• Available grades, see page B5

## Trapeze DIN 103



Application: Feed Screws

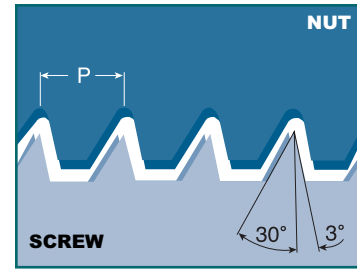
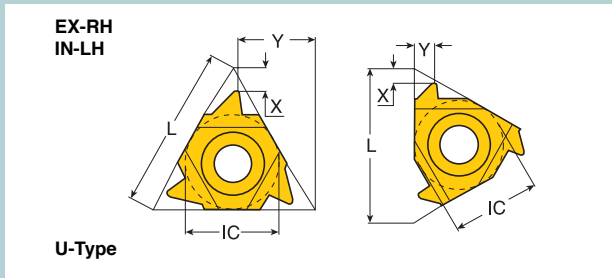
Thread Form	IC	Pitch mm	Designation		Dimension		
			Right Hand	Left Hand	L	X	Y
<b>External</b> 	3/8"	1.50	16 ER 1.5 TR	16 EL 1.5 TR	.630	.039	.043
		2.00	16 ER 2 TR	16 EL 2 TR	.630	.043	.051
		3.00	16 ER 3 TR	16 EL 3 TR	.630	.051	.059
	1/2"	4.00	22 ER 4 TR	22 EL 4 TR	.866	.067	.075
		5.00	22 ER 5 TR	22 EL 5 TR	.866	.083	.098
	5/8"	6.00	27 ER 6 TR	27 EL 6 TR	1.063	.091	.106
		7.00	27 ER 7 TR	27 EL 7 TR	1.063	.087	.102
	<b>Internal</b> 	3/16"	1.50	08 IR 1.5 TR	08 IL 1.5 TR	.315	.024
2.00			16 IR 2 TR	16 IL 2 TR	.630	.043	.051
3/8"		3.00	16 IR 3 TR	16 IL 3 TR	.630	.051	.059
		4.00	22 IR 4 TR	22 IL 4 TR	.866	.067	.075
1/2"		5.00	22 IR 5 TR	22 IL 5 TR	.866	.083	.098
		6.00	27 IR 6 TR	27 IL 6 TR	1.063	.091	.106
5/8"		7.00	27 IR 7 TR	27 IL 7 TR	1.063	.087	.102
		1/2"	6.00	22U ERL 6 TR		.866	.079
7.00	22U ERL 7 TR			.866	.091	.433	
5/8"	8.00		27U ERL 8 TR		1.063	.102	.539
	9.00		27U ERL 9 TR		1.063	.118	.539
<b>Internal U - Type</b> 	3/16"	2.00	08U IRL 2 TR		.315	.035	.157
		1/2"	6.00	22U IRL 6 TR		.866	.079
	7.00		22U IRL 7 TR		.866	.091	.433
	5/8"	8.00	27U IRL 8 TR		1.063	.102	.539
		9.00	27U IRL 9 TR		1.063	.118	.539

• Available grades, see page B5







# THREADING INSERTS

## Sagengengewinde DIN 513

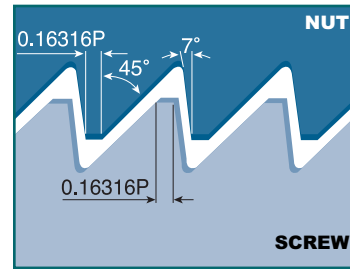
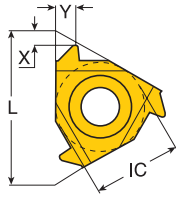


Application: For high forces in one direction





Thread Form	IC	Pitch mm	Designation		Dimension		
			Right Hand	Left Hand	L	X	Y
<b>External</b> 	3/8"	2.00	16 ER 2 SAGE	16 EL 2 SAGE	.630	.043	.063
	1/2"	3.00	22 ER 3 SAGE	22 EL 3 SAGE	.866	.059	.094
		4.00	22 ER 4 SAGE	22 EL 4 SAGE	.866	.075	.122
<b>Internal</b> 	1/2"	5.00*	22 U ER 5 SAGE	22 U EL 5 SAGE	.866	.047	.457
		6.00*	22 U ER 6 SAGE	22 U EL 6 SAGE	.866	.047	.461
<b>External U - Type</b> 	3/8"	2.00	16 IR 2 SAGE	16 IL 2 SAGE	.630	.047	.067
	1/2"	3.00	22 IR 3 SAGE	22 IL 3 SAGE	.866	.075	.114
		4.00	22 IR 4 SAGE	22 IL 4 SAGE	.866	.091	.138
<b>Internal U - Type</b> 	1/2"	5.00*	22 U IR 5 SAGE	22 U IL 5 SAGE	.866	.075	.461
		6.00*	22 U IR 6 SAGE	22 U IL 6 SAGE	.866	.083	.469

\* Requires special anvil

## American Buttress



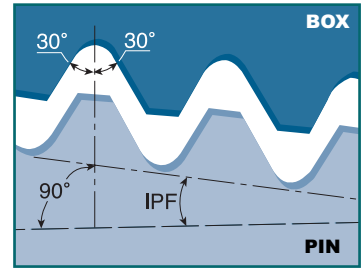
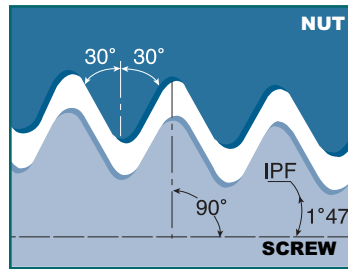
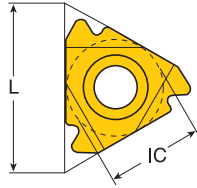
Application: For high forces  
in one direction

Thread Form	IC	Pitch	Designation		Dimension			
		TPI	Right Hand	Left Hand	L	X	Y	
<b>External</b> 	1/4"	20	11 ER 20 ABUT	11 EL 20 ABUT	.433	.039	.055	
		16	11 ER 16 ABUT	11 EL 16 ABUT	.433	.051	.075	
	3/8"	20	16 ER 20 ABUT	16 EL 20 ABUT	.630	.039	.055	
		16	16 ER 16 ABUT	16 EL 16 ABUT	.630	.051	.075	
		12	16 ER 12 ABUT	16 EL 12 ABUT	.630	.055	.079	
		10	16 ER 10 ABUT	16 EL 10 ABUT	.630	.059	.091	
	1/2"	8	22 ER 8 ABUT	22 EL 8 ABUT	.866	.079	.126	
		6	22 ER 6 ABUT	22 EL 6 ABUT	.866	.087	.138	
	<b>Internal</b> 	1/4"	20	11 IR 20 ABUT	11 IL 20 ABUT	.433	.039	.055
			16	11 IR 16 ABUT	11 IL 16 ABUT	.433	.051	.075
3/8"		20	16 IR 20 ABUT	16 IL 20 ABUT	.630	.039	.055	
		16	16 IR 16 ABUT	16 IL 16 ABUT	.630	.051	.075	
		12	16 IR 12 ABUT	16 IL 12 ABUT	.630	.055	.079	
		10	16 IR 10 ABUT	16 IL 10 ABUT	.630	.059	.091	
1/2"		8	22 IR 8 ABUT	22 IL 8 ABUT	.866	.079	.126	
		6	22 IR 6 ABUT	22 IL 6 ABUT	.866	.087	.138	
<b>External</b> U - Type 		1/2"	4	22 U ER 4 ABUT	22 U EL 4 ABUT	.866	.094	.386
		5/8"	3	27 U ER 3 ABUT	27 U EL 3 ABUT	1.063	.122	.476
<b>Internal</b> U - Type 	1/2"	4	22 U IR 4 ABUT	22 U IL 4 ABUT	.866	.094	.386	
	5/8"	3	27 U IR 3 ABUT	27 U IL 3 ABUT	1.063	.122	.476	

• Available grades, see page B5



# THREADING INSERTS

## API - Oil Threads



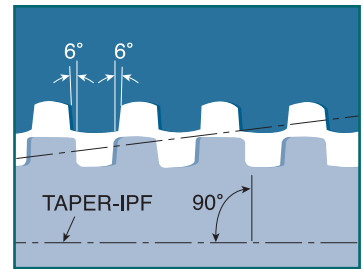
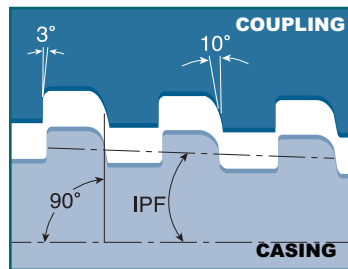
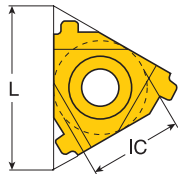
API Round  
Application: Oil & Gas Industry

V 0.038

Thread Form	IC	Pitch	Designation		Dimension		
		TPI	External	Internal	L	Taper IPF	Connection No. or Size
API Round 	3/8"	10	16 ER 10 API RD	16 IR 10 API RD	.630	0.75	-
		8	16 ER 8 API RD	16 IR 8 API RD	.630	0.75	-
V-0.040 V-0.038R V-0.038L V-0.050 V-0.050 	1/2"	5	22 ER 5 API 403	22 IR 5 API 403	.866	3	2-3/8" ÷ 4-1/2" REG
		4	27 ER 4 API 382	27 IR 4 API 382	1.063	2	NC23 ÷ NC50
	5/8"	4	27 ER 4 API 383	27 IR 4 API 383	1.063	3	NC56 ÷ NC77
		4	27 ER 4 API 502	27 IR 4 API 502	1.063	2	6-5/8" REG
		4	27 ER 4 API 503	27 IR 4 API 503	1.063	3	5-1/2" 7-5/8" 8-5/8" REG

• Available grades, see page B5

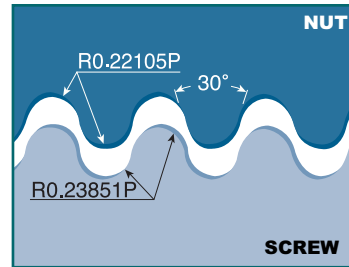
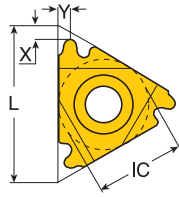
## API - Oil Threads



Buttress Casing  
Application: Oil & Gas Industry

Thread Form	IC	Pitch	Designation		Dimension		
		TPI	External	Internal	L	Taper IPF	Connection No. or Size
	1/2"	5	22 ER 5 BUT 0.75	22 IR 5 BUT 0.75	.866	0.75	4-1/2" ÷ 13-3/8"
		5	22 ER 5 BUT 1.0	22 IR 5 BUT 1.0	.866	1.0	16" ÷ 20"
	1/2"	6	22 ER 6 EL 1.5	22 IR 6 EL 1.5	.866	1.5	5" ÷ 7-5/8"
		5	22 ER 5 EL 1.25	22 IR 5 EL 1.25	.866	1.25	8-5/8" ÷ 10-3/4"

## Round DIN 405



Application: Pipe Couplings for Fire Fighting and Food Industries

Thread Form	IC	Pitch	Designation		Dimension			
		TPI	Right Hand	Left Hand	L	X	Y	
<b>External</b> 	3/8"	10	16 ER 10 RND	16 EL 10 RND	.630	.043	.047	
		8	16 ER 8 RND	16 EL 8 RND	.630	.055	.051	
		6	16 ER 6 RND	16 EL 6 RND	.630	.059	.067	
		6	16 ERM 6 RND		.630	.059	.067	
	1/2"	6	22 ER 6 RND	22 EL 6 RND	.866	.059	.067	
		4	22 ER 4 RND	22 EL 4 RND	.866	.087	.091	
	5/8"	4	27 ER 4 RND	27 EL 4 RND	1.063	.087	.091	
	<b>Internal</b> 	3/8"	10	16 IR 10 RND	16 IL 10 RND	.630	.043	.047
			8	16 IR 8 RND	16 IL 8 RND	.630	.055	.055
6			16 IR 6 RND	16 IL 6 RND	.630	.055	.059	
6			16 IRM 6 RND		.630	.055	.059	
1/2"		6	22 IR 6 RND	22 IL 6 RND	.866	.059	.067	
		4	22 IR 4 RND	22 IL 4 RND	.866	.087	.091	
5/8"		4	27 IR 4 RND	27 IL 4 RND	1.063	.087	.091	

- ERM/IRM with pressed chipbreaker
- Available grades, see page B5

# THREADING TOOLHOLDERS DESTINATION SYSTEM

**1 Clamping System**

S - Screw Clamping  
 C - Exchangeable Heads  
 KM - Exchangeable Heads  
 HSK - Exchangeable Heads

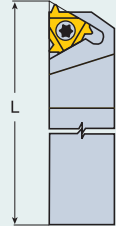
**2 Application**

E - External  
 I - Internal

**5 Tool Length**

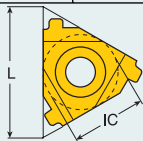
inch

D - 2.5  
 F - 3.25  
 H - 4.0  
 K - 5.0  
 L - 5.5  
 M - 6.0  
 P - 7.0  
 R - 8.0  
 S - 10.0  
 T - 12.0  
 U - 14.0  
 V - 16.0



**6 Insert Size**

L (mm)	IC
06	5/32"
08	3/16"
08U	3/16"
11	1/4"
16	3/8"
22	1/2"
22U	1/2"
27	5/8"
27U	5/8"



**S**  
1


**E**  
2

**R**  
3

**0750**  
4

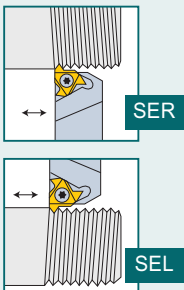
**K**  
5

**16**  
6

  
7

**3 Hand of Tool**

R - Right-hand  
 L - Left-hand



**4 Shank Size**

**External Toolholders**  
 Shank: h x b

0750: .75" x .75"

**Internal Toolholders**  
 Shank: Diameter d

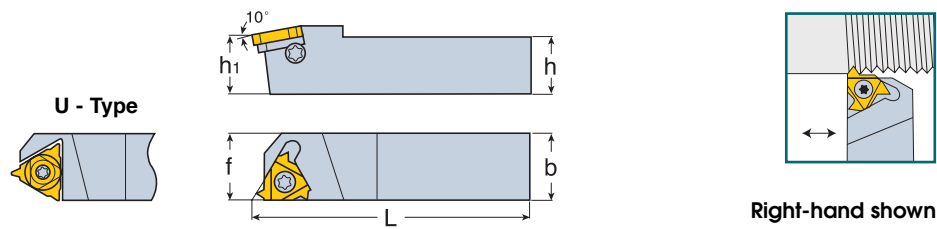
0750: Diameter .75"

**7 Optional Specifications**

U - For U-type inserts  
 B - Bore for coolant  
 C - Carbide shank  
 O - Offset style  
 SP - Special  
 A - API (oil)



# THREADING TOOLHOLDERS EXTERNAL

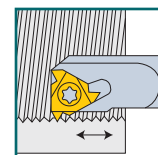
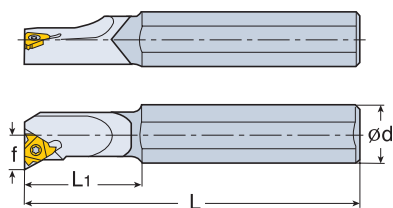
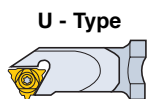
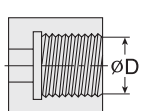


SER/L

Designation	Dimension (inch)				Insert <sup>(2)</sup>
	h=h <sub>1</sub>	b	L	f	
SER/L 0310 H11 <sup>(1)</sup>	.31	.31	4.00	.43	11 ER/L...
SER/L 0375 H11 <sup>(1)</sup>	.38	.38	4.00	.43	
SER/L 0375 D16	.38	.38	2.50	.63	16 ER/L...
SER/L 0500 F16	.50	.50	3.25	.63	
SER/L 0625 H16	.63	.63	4.00	.63	
SER/L 0750 K16	.75	.75	5.00	.75	
SER/L 1000 M16	1.00	1.00	6.00	1.00	
SER/L 1250 P16	1.25	1.25	7.00	1.25	
SER/L 1000 M22	1.00	1.00	6.00	1.00	22 ER/L...
SER/L 1250 P22	1.25	1.25	7.00	1.25	
SER/L 1500 R22	1.50	1.50	8.00	1.50	
SER/L 1250 P22U	1.25	1.25	7.00	1.25	22 UERL...
SER/L 1500 R22U	1.50	1.50	8.00	1.50	
SER/L 1000 M27	1.00	1.00	6.00	1.00	27 ER/L...
SER/L 1250 P27	1.25	1.25	7.00	1.25	
SER/L 1500 R27	1.50	1.50	8.00	1.50	
SER/L 1250 P27U	1.25	1.25	7.00	1.25	27 UERL...
SER/L 1500 R27U	1.50	1.50	8.00	1.50	

- <sup>(1)</sup> Toolholders without anvil <sup>(2)</sup> Right-hand inserts (ER) for right-hand tools (SER)
- All toolholders are made with 1.5° helix angle
- For other helix angles, please see ANVIL SELECTION TABLE, page B40 - B41
- For spare parts see page B36

## THREADING TOOLHOLDERS INTERNAL



Right-hand shown

### SIR/L

Designation	Dimension (inch)					Insert <sup>(2)</sup>
	d	L	L <sub>1</sub>	D <sub>min</sub>	f	
SIR 0205 H06 <sup>(1)</sup>	.500	4.0	.500	.250	.17	06 IR...
SIL 0205 H06 <sup>(1)</sup>	.500	4.0	.500	.250	.17	06 IL...
SIR 0265 K08 <sup>(1)</sup>	.625	5.0	.710	.315	.21	08 IR...
SIL 0265 K08 <sup>(1)</sup>	.625	5.0	.710	.315	.21	08 IL...
SIR 0310 K08U <sup>(1)</sup>	.625	5.0	.825	.355	.25	08 UIRL...
SIL 0310 K08U <sup>(1)</sup>	.625	5.0	.825	.355	.25	08 UIRL...
SIR/L 0375 H11 <sup>(1)</sup>	.38	4.0	-	.470	.29	11 IR/L...
SIR/L 0375 K11 <sup>(1)</sup>	.62	5.0	1.000	.470	.26	
SIR/L 0500 L11 <sup>(1)</sup>	.62	5.5	1.250	.630	.32	
SIR/L 0500 M16 <sup>(1)</sup>	.62	6.0	1.250	.640	.39	16 IR/L...
SIR/L 0625 P16 <sup>(1)</sup>	.75	7.0	1.500	.750	.45	
SIR/L 0750 P16	.75	7.0	-	1.000	.51	
SIR/L 1000 R16	1.00	8.0	-	1.200	.65	16 IR/L...
SIR/L 1250 S16	1.25	10.0	-	1.420	.77	
SIR/L 1500 T16	1.50	12.0	-	1.650	.90	
SIR/L 0750 P22 <sup>(1)</sup>	.75	7.0	-	.950	.51	22 IR/L...
SIR/L 1000 R22	1.00	8.0	-	1.200	.71	
SIR/L 1250 S22	1.25	10.0	-	1.500	.85	
SIR/L 1500 T22	1.50	12.0	-	1.750	.98	22 UIRL...
SIR/L 1250 S22U	1.25	10.0	-	1.500	1.01	
SIR/L 1500 T22U	1.50	12.0	-	1.850	1.12	
SIR/L 1250 S27	1.25	10.0	-	1.560	.88	27 IR/L...
SIR/L 1500 T27	1.50	12.0	-	1.800	1.00	
SIR/L 2000 U27	2.00	14.0	-	2.300	1.25	
SIR/L 2500 V27	2.50	16.0	-	2.700	1.50	27 UIRL...
SIR/L 1250 S27U	1.25	10.0	-	1.560	.98	
SIR/L 1500 T27U	1.50	12.0	-	1.850	1.13	
SIR/L 2000 U27U	2.00	14.0	-	2.300	1.37	27 UIRL...
SIR/L 2500 V27U	2.50	16.0	-	2.700	1.61	

• <sup>(1)</sup> Toolholders without anvil

• <sup>(2)</sup> Right-hand inserts (IR) for right-hand tools (SIR)

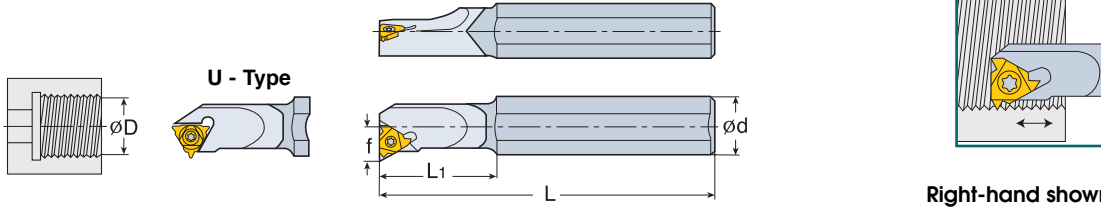
• For RH bars use LH inserts

• All toolholders are made with 1.5° helix angle

• For additional helix angles, please see ANVIL SELECTION TABLE, page B40 - B41

• For spare parts see page B36

# THREADING TOOLHOLDERS SOLID CARBIDE THREADING BARS FOR HIGH RIGIDITY

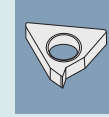
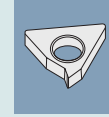
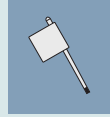


SIR/L

Designation	Dimension (inch)					Insert <sup>(2)</sup>
	d	L	L <sub>1</sub>	Dmin	f	
SIR/L 0205 H06C	.236	4.0	1.0	.250	.170	06 IR...
SIR/L 0265 K08C	.315	5.0	1.2	.315	.210	08 IR...
SIR/L 0310 K08UC	.315	5.0	1.4	.355	.250	08 UIRL...
SIR/L 0375 M11C <sup>(1)</sup>	.380	6.0	-	.500	.290	11 IR/L...
SIR/L 0500 P11C <sup>(1)</sup>	.500	7.0	-	.600	.330	
SIR/L 0625 R16C <sup>(1)</sup>	.630	8.0	-	.750	.460	16 IR/L...

- <sup>(1)</sup> All carbide shank toolholders are without anvil
- <sup>(2)</sup> Right-hand inserts (IR) for right-hand tools (SIR)
- For spare parts see page B36
- All toolholders are made with 1.5° helix angle
- SELECTION TABLE, pages B40 - B41

## THREADING TOOLHOLDERS SPARE PARTS



### External Toolholder

Insert Size	Insert Screw	Anvil Screw	Torx Key	Anvil EX. Right	Anvil EX. Left
11	S11	-	T-8/5	-	-
16	S16	A16	T-10/5	AE16	AI16
22	S22	A22	T-20/5	AE22	AI22
22U	S22	A22	T-20/5	AE22U	AI22U
27	S27	A27	K27(T-25)	AE27	AI27
27U	S27	A27	K27(T-25)	AE27U	AI27U

### Internal Toolholder

Insert Size	Insert Screw	Anvil Screw	Torx Key	Anvil IN. Right	Anvil IN. Left
06	SR-14-552	-	T-6/5	-	-
08	SR-14-558	-	T-6/5	-	-
11	S11	-	T-8/5	-	-
16	S16S	-	T-10/5	-	-
16	S16	A16	T-10/5	AI16	AE16
22	S22S	-	T-20/5	-	-
22	S22	A22	T-20/5	AI22	AE22
22U	S22	A22	T-20/5	AI22U	AE22U
27	S27	A27	K27(T-25)	AI27	AE27
27U	S27	A27	K27(T-25)	AI27U	AE27U

- Torx Key: use only flag type

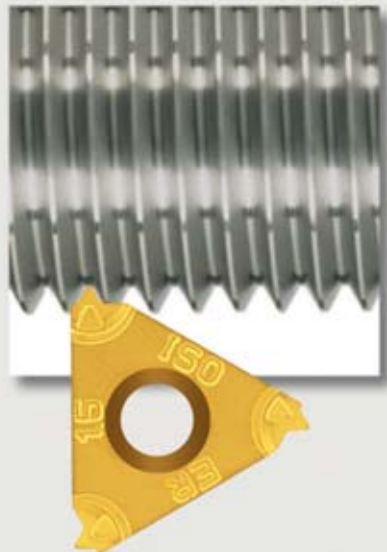
## Threading Inserts - Types and Profiles

Partial Profile



- Suitable for a wide range of pitches with a common angle (60° or 55°)
- Inserts with small root-corner radius suitable for the smallest pitch range.
- Additional operations to complete the outer/internal diameter is necessary.
- Not recommended for mass production.
- Eliminates the need for different inserts.

Full Profile



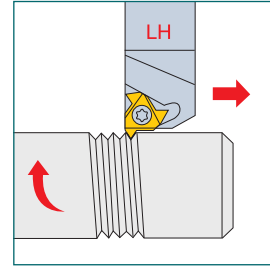
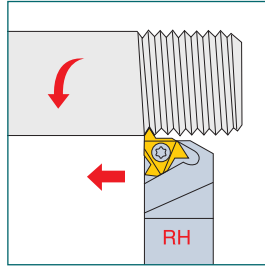
- Performs complete thread profile.
- Root corner radius is suitable only for the relevant pitch.
- Recommended for mass production.
- Suitable for one profile only.



# Thread Turning Methods

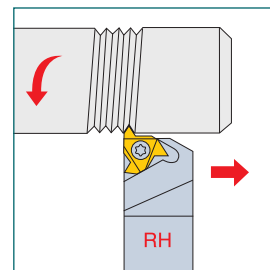
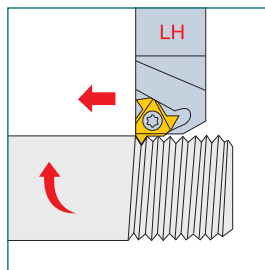
## External Thread

Right-Hand Thread



Change anvil to negative<sup>(1)</sup>

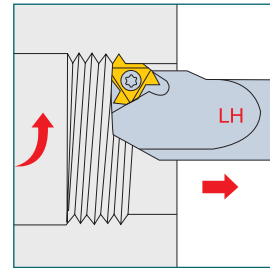
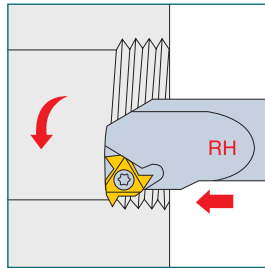
Left-Hand Thread



Change anvil to negative<sup>(1)</sup>

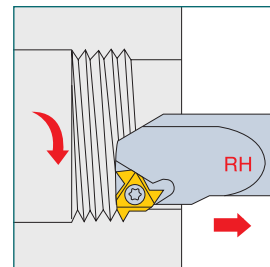
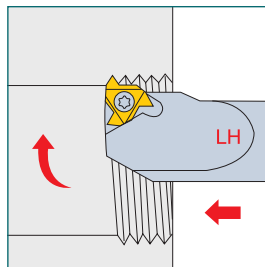
## Internal Thread

Right-Hand Thread



Change anvil to negative<sup>(1)</sup>

Left-Hand Thread



Change anvil to negative<sup>(1)</sup>

<sup>(1)</sup>See page B40 - B41

## Mini - Tool Features

(1)  $\varnothing D \geq M8$ ; 5/16"-UN; 1/16"-NPT

(2) 

4H:8H/1B:3B
-------------

(3) 

	A	.00
--	---	-----

(1) Smallest possible thread  
 (2) All tolerances  
 (3) Minimum run-out  
 (4) High surface quality

## M-Type Threading Insert - Accuracy

$\theta \pm 20^\circ$

$IC \pm 0.02$

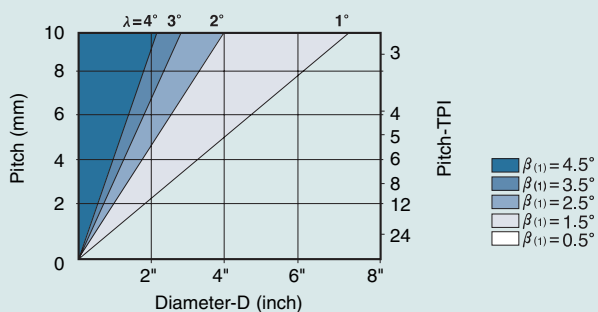
$S \pm 0.02$

(1) Insert indexability accuracy:  $\pm 0.0006''$

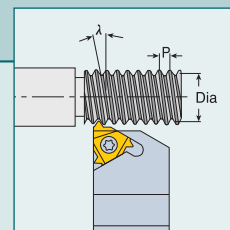
Indexability: (1)  $\pm 0.001''$

## Thread Helix Angle and Anvil Selection

### Helix Angle $\lambda$ Evaluation



<sup>(1)</sup> $\beta$  - Effective inclination angle.



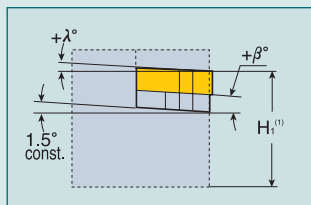
$$\text{tg } \lambda = \frac{1 \times P}{3.14 \cdot D}$$

P - Pitch (TPI)  
D - Effective diameter of thread (inch)  
 $\lambda$  - Angle of inclination

$$\lambda^\circ = \frac{20 \times P}{D}$$

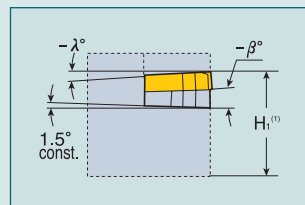
### Anvil Selection According to Thread Helix Angle $\lambda$

		Standard							
Thread Helix Angle $\lambda$		>4°	3° - 4°	2° - 3°	1° - 2°	0° - 1°	Negative Anvils		
Inclination Angle $\beta$		4.5°	3.5°	2.5°	1.5°	0.5°	-0.5°	-1.5°	
I(IC)	Toolholder	Anvil Designation							
16 (3/8)	EX RH OR IN LH	AE 16 +4.5	AE 16 +3.5	AE 16 +2.5	AE 16	AI 16 +0.5	AE 16 -0.5	AE 16 -1.5	
	EX LH OR IN RH	AI 16 +4.5	AI 16 +3.5	AI 16 +2.5	AI 16	AI 16 +0.5	AI 16 -0.5	AI 16 -1.5	
22 (1/2)	EX RH OR IN LH	AE 22 +4.5	AE 22 +3.5	AE 22 +2.5	AE 22	AE 22 +0.5	AE 22 -0.5	AE 22 -1.5	
	EX LH OR IN RH	AI 22 +4.5	AI 22 +3.5	AI 22 +2.5	AI 22	AI 22 +0.5	AI 22 -0.5	AI 22 -1.5	
27 (5/8)	EX RH OR IN LH	AE 27 +4.5	AE 27 +3.5	AE 27 +2.5	AE 27	AE 27 +0.5	AE 27 -0.5	AE 27 -1.5	
	EX LH OR IN RH	AI 27 +4.5	AI 27 +3.5	AI 27 +2.5	AI 27	AI 27 +0.5	AI 27 -0.5	AI 27 -1.5	
22U (1/2U)	EX RH OR IN LH	AE 22U +4.5	AE 22U +3.5	AE 22U +2.5	AE 22U	AE 22U +0.5	AE 22U -0.5	AE 22U -1.5	
	EX LH OR IN RH	AI 22U +4.5	AI 22U +3.5	AI 22U +2.5	AI 22U	AI 22U +0.5	AI 22U -0.5	AI 22U -1.5	
27U (5/8U)	EX RH OR IN LH	AE 27U +4.5	AE 27U +3.5	AE 27U +2.5	AE 27U	AE 27U +0.5	AE 27U -0.5	AE 27U -1.5	
	EX LH OR IN RH	AI 27U +4.5	AI 27U +3.5	AI 27U +2.5	AI 27U	AI 27U +0.5	AI 27U -0.5	AI 27U -1.5	



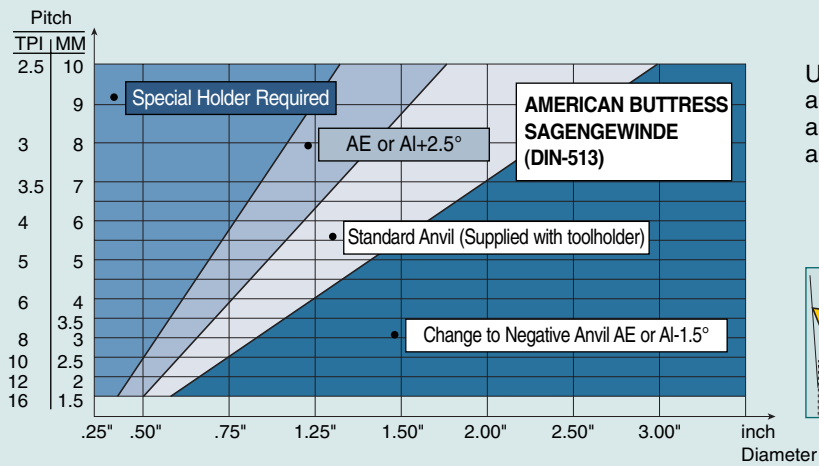
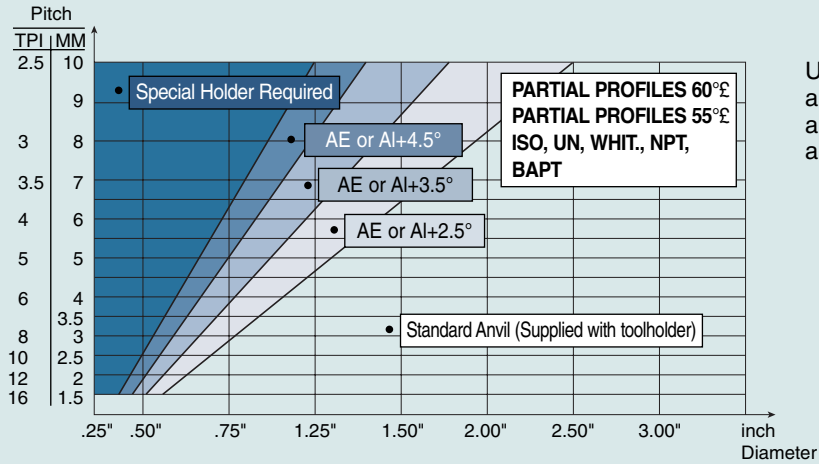
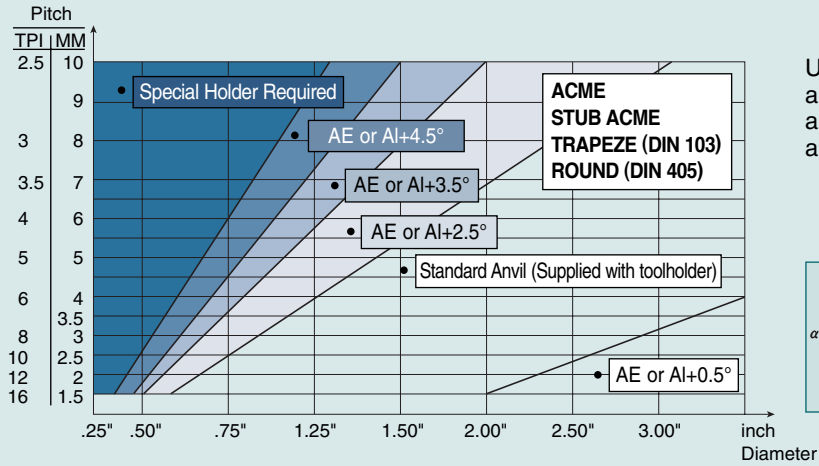
Anvils for negative inclination  $\beta$  used when turning **RH** thread with **LH** holder or **LH** thread with **RH** holder.

<sup>(1)</sup> $H_1$  remains constant for every anvil combination.



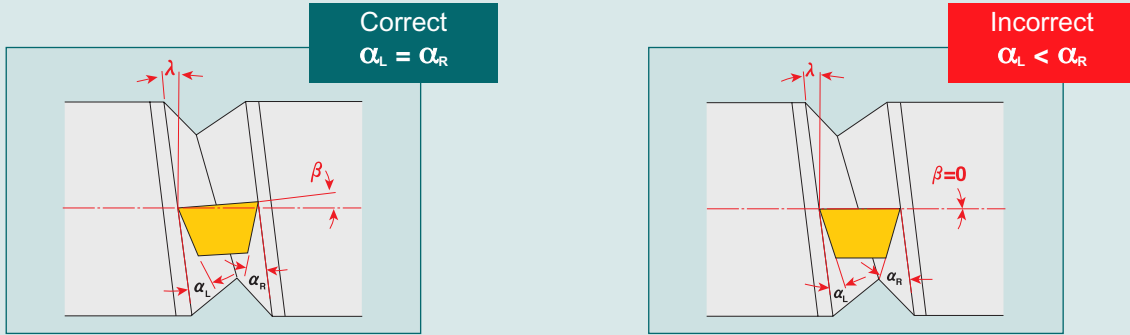
Anvils for positive inclination angle  $\beta$  applicable when turning **RH** thread with **RH** holder or **LH** thread with **LH** holders.

## Thread Helix Angle and Anvil Selection



## Flank Clearance and Effective Inclination Angle

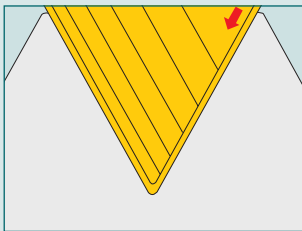
Inclination angle  $\beta$  of the cutting edges correspond to a specific thread helix angle  $\lambda$  and insures equal clearance angle on both sides of insert.



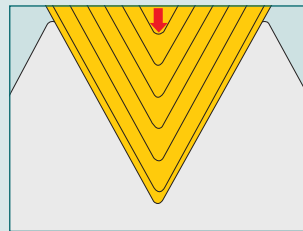
- $\alpha$  - Flank clearance angle
- $\lambda$  - Helix angle
- $\beta$  - Effective inclination angle is achieved by selecting the suitable anvil

## Infeed Methods for Threading Operations

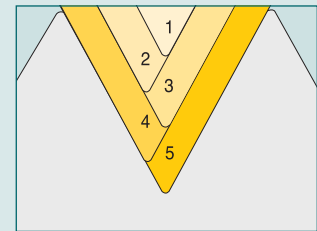
Flank Infeed



Radial Infeed

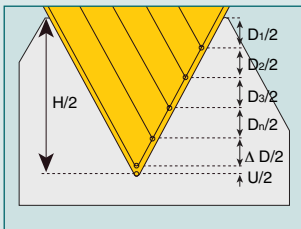


Alternating Flank Infeed



Flank Equal

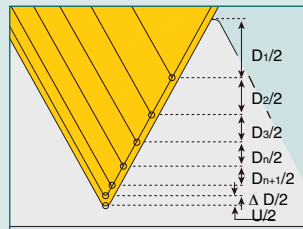
Equal depth of cut for each pass



$$\frac{D_1}{2} = \frac{D_2}{2} = \frac{D_3}{2} = \frac{D_n}{2}$$

Flank Diminishing

Diminished depth of cut for each pass



$$\frac{D_1}{2} > \frac{D_2}{2} > \frac{D_3}{2} > \frac{D_n}{2} > \frac{D_{n+1}}{2}$$

- H - Depth of thread profile (on  $\varnothing$ )
- D - Depth of pass (on  $\varnothing$ )
- U - Depth of finishing pass (on  $\varnothing$ )



## Cutting Data

### Number of Cutting Passes for Regular Type Inserts

Pitch	inch	0.5	1.0	1.5	2.0	2.5	3.0	4.0	6.0
	TPI	48	24	16	12	10	8	6	4
Number of Passes		4-6	5-9	5-12	6-14	7-15	8-17	10-20	11-22

- For mini-tools (061R or 081R) add 1 ÷ 3 passes. Increase for hard materials.

### Maximum depth of first cut for CNC control External Threading - M-Type Inserts

Full Profile	Pitch	TPI	Insert Designation	No. of passes Min. Max.		Max. Depth for First Pass (D <sub>1</sub> ) mm									
						Low Carbon Steel Eq.	Steel Dim.	High Carbon Steel Eq.	Steel Dim.	Alloy Steel Eq.	Steel Dim.	Stainless Steel Eq.	Steel Dim.	Nonferrous Aluminum Eq.	Aluminum Dim.
ISO Metric	1.00		16 ERM 1.00 ISO	5	9	.013	.020	.012	.018	.011	.016	.009	.013	.019	.028
	1.25		16 ERM 1.25 ISO	6	11	.017	.025	.015	.022	.013	.020	.011	.016	.023	.035
	1.50		16 ERM 1.50 ISO	6	12	.018	.027	.016	.024	.015	.022	.012	.018	.025	.038
	1.75		16 ERM 1.75 ISO	8	13	.019	.028	.017	.026	.015	.023	.012	.019	.026	.040
	2.00		16 ERM 2.00 ISO	8	14	.020	.030	.018	.027	.016	.024	.013	.019	.028	.041
	2.50		16 ERM 2.50 ISO	10	15	.021	.031	.019	.028	.017	.025	.013	.020	.029	.044
American UN	3.00		16 ERM 3.00 ISO	12	17	.022	.033	.020	.030	.018	.026	.014	.022	.031	.046
		24	16 ERM 24 UN	5	9	.013	.020	.012	.018	.011	.016	.009	.013	.019	.028
		20	16 ERM 20 UN	6	10	.017	.025	.015	.022	.013	.020	.011	.016	.023	.035
		18	16 ERM 18 UN	6	11	.018	.027	.016	.024	.015	.022	.012	.018	.025	.038
		16	16 ERM 16 UN	7	12	.019	.028	.017	.025	.015	.022	.012	.018	.026	.039
		14	16 ERM 14 UN	7	13	.018	.027	.016	.024	.015	.022	.011	.016	.025	.038
British BSW		12	16 ERM 12 UN	8	14	.022	.033	.018	.027	.016	.024	.013	.019	.028	.041
		8	16 ERM 8 UN	12	17	.019	.028	.020	.030	.018	.026	.014	.022	.031	.046
		19	16 ERM 19 W	6	11	.014	.020	.013	.018	.011	.016	.008	.012	.019	.029
		16	16 ERM 16 W	7	12	.019	.028	.017	.025	.015	.022	.012	.018	.026	.039
NPT		14	16 ERM 14 W	8	13	.020	.030	.018	.027	.016	.024	.013	.019	.028	.041
		11	16 ERM 11 W	9	14	.017	.025	.016	.023	.014	.021	.011	.017	.024	.036
		18	16 ERM 18 NPT	10	20	.009	.014	.009	.013	.007	.011	.006	.009	.013	.020
		14	16 ERM 14 NPT	13	26	.009	.014	.009	.013	.007	.011	.005	.009	.013	.020
Round		11.5	16 ERM 11.5 NPT	15	24	.011	.016	.009	.014	.009	.013	.007	.010	.015	.022
		8	16 ERM 8 NPT	17	30	.012	.018	.011	.016	.010	.015	.008	.012	.017	.025
Partial Profile 60°	0.50-1.50	48-16	16 ERM A 60		(1)	.009	.013	.008	.012	.007	.010	.006	.008	.012	.018
Partial Profile 55°	1.75-3.00	14-8	16 ERM G 60			.020	.030	.018	.027	.016	.024	.013	.019	.028	.041
	0.50-3.00	48-8	16 ERM AG 60			.009	.014	.009	.013	.007	.011	.006	.009	.013	.020
Partial Profile 55°	3.50-5.00	7-5	22 ERM N 60			.016	.024	.015	.022	.013	.020	.011	.016	.022	.034
	1.75-3.00	14-8	16 ERM G 55			.020	.030	.018	.027	.016	.024	.013	.019	.028	.041
	0.50-3.00	48-8	16 ERM AG 55			.009	.013	.008	.012	.007	.010	.006	.008	.012	.018

<sup>(1)</sup> As per the number of passes for the relevant pitch.  
For CT3000, TT6010 and K10, reduce depth of first cut by 30%.

## USER GUIDE

### Cutting Data

#### Maximum depth of first cut for CNC control Internal Threading - M-Type Inserts

Full Profile	Pitch (mm)	TPI	Insert Designation	No. of passes		Max. Depth for First Pass (D <sub>i</sub> ) inch									
				Min.	Max.	Low Carbon Steel Eq.	Steel Dim.	High Carbon Steel Eq.	Steel Dim.	Alloy Steel Eq.	Steel Dim.	Stainless Steel Eq.	Dim.	Nonferrous Aluminum Eq.	Dim.
ISO Metric	1.50		11 IRM 1.50 ISO	10	20	.008	.012	.007	.011	.006	.009	.005	.007	.011	.019
	1.00		16 IRM 1.00 ISO	9	16	.006	.008	.005	.007	.004	.006	.004	.005	.008	.011
	1.25		16 IRM 1.25 ISO	9	16	.007	.011	.007	.010	.006	.009	.005	.007	.011	.015
	1.50		16 IRM 1.50 ISO	10	20	.008	.012	.007	.011	.006	.009	.005	.008	.011	.019
	1.75		16 IRM 1.75 ISO	11	18	.008	.013	.007	.011	.007	.010	.006	.008	.011	.018
	2.00		16 IRM 2.00 ISO	12	21	.009	.013	.008	.012	.007	.010	.006	.008	.012	.018
	2.50		16 IRM 2.50 ISO	14	21	.009	.013	.008	.012	.007	.011	.006	.009	.013	.019
	3.00		16 IRM 3.00 ISO	16	22	.009	.014	.009	.013	.007	.011	.006	.009	.013	.020
American UN		20	16 IRM 20 UN	7	13	.008	.012	.007	.011	.006	.009	.005	.008	.011	.017
		18	16 IRM 18 UN	8	15	.008	.012	.007	.011	.006	.009	.005	.008	.011	.017
		16	16 IRM 16 UN	11	19	.008	.012	.007	.011	.006	.009	.005	.008	.011	.017
		14	16 IRM 14 UN	11	20	.008	.012	.007	.011	.007	.010	.005	.007	.011	.017
		12	16 IRM 12 UN	12	21	.009	.013	.008	.012	.007	.011	.006	.009	.013	.019
		8	16 IRM 8 UN	14	20	.009	.014	.009	.013	.007	.011	.006	.009	.013	.020
British BSW		19	16 IRM 19 W	7	12	.011	.016	.010	.015	.009	.013	.007	.010	.015	.023
		16	16 IRM 16 W	9	14	.010	.015	.009	.014	.008	.012	.007	.010	.014	.022
		14	16 IRM 14 W	10	16	.011	.016	.009	.015	.009	.013	.007	.011	.015	.022
		11	16 IRM 11 W	12	19	.012	.018	.011	.016	.010	.015	.008	.012	.017	.025
NPT		14	16 IRM 14 NPT	21	35	.005	.008	.005	.007	.004	.006	.003	.005	.007	.011
		11.5	16 IRM 11.5 NPT	21	33	.007	.010	.006	.009	.006	.008	.004	.006	.009	.014
		8	16 IRM 8 NPT	20	34	.009	.013	.008	.012	.007	.010	.006	.008	.012	.018
Round		6	16 IRM 6 RND	12	24	.012	.018	.011	.016	.009	.015	.008	.012	.017	.025
Partial Profile 60°	0.50 - 1.25	48-16	06 IRM A 60			.009	.013	.008	.012	.007	.010	.006	.008	.012	.018
	0.50 - 1.50	48-16	08 IRM A 60		(1)	.005	.008	.005	.007	.004	.006	.003	.005	.007	.011
	0.50 - 1.50	48-16	11 IRM A 60			.005	.008	.005	.007	.004	.006	.003	.005	.007	.011
	0.50 - 1.50	48-16	16 IRM A 60			.005	.008	.005	.007	.004	.006	.003	.005	.007	.011
	1.75 - 3.00	14-8	16 IRM G 60			.009	.013	.008	.012	.007	.010	.006	.008	.012	.018
	0.50 - 3.00	48-8	16 IRM AG 60			.006	.008	.005	.007	.004	.007	.004	.006	.008	.011
	3.50 - 5.00	7-5	22 IRM N 60			.009	.013	.008	.012	.007	.011	.006	.009	.013	.019
Partial Profile 55°	1.75 - 3.00	14-8	16 IRM G 55			.013	.020	.012	.018	.011	.016	.009	.013	.019	.028
	0.50 - 3.00	48-8	16 IRM AG 55			.006	.008	.007	.007	.004	.006	.004	.005	.008	.011

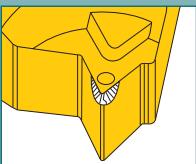
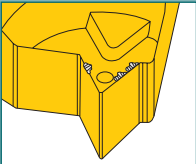
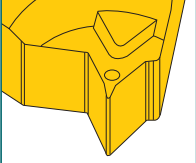
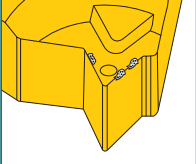
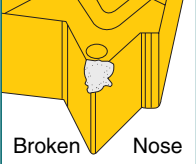
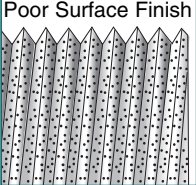
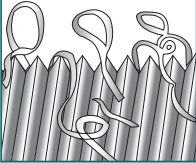
(1) As per the number of passes for the relevant pitch.  
For CT3000, TT6010 and K10, reduce depth of first cut by 30%.

## Cutting Data

### Cutting Speed Range by Workpiece Material and Carbide Grades

	Brinell HB	Coated			Uncoated			
		TT7010	TT9030	TT8010	P30	Cermet CT3000	UF10/K10	
MATERIAL	Hardness	Cutting Speed (SFM)						
Carbon Steel	0.2 %C	150	525	590	341	341	614	
	0.45%C	190	490	525	322	322	577	
	0.83%C	250	426	459	279	279	499	
Alloy Steel	<200		426	426	279	279	499	
	200 - 250		393	393	256	256	459	
	275 - 325		312	328	203	203	364	
	325 - 375		262	262	171	171	308	
	375 - 425		197	197	128	128	230	
Stainless Steel	Mart.	175 - 225	490	525	322	322	577	344
		275 - 325	344	360	171	171	308	180
		135 - 175	262	328	223	223	404	230
	Aust.	375 - 425	230	262	151	151	269	164
Cast Steel	Carbon	<150	490	558	322	322	577	
		150 - 200	360	360	236	236	423	
	Alloyed	200 - 250	328	328	213	213	384	
		250-300	262	164	171	171	308	
Malleable Iron	Short chip	110 - 145		262				180
	Long chip	200 - 250		328				164
Cast Iron	Low tensile	180		426				328
	High tensile	250		328				230
Nodular Iron	Ferritic	160		426				246
	Pearlitic	250		328				230
Chilled Cast Iron		400		66				
Bronze Alloy		120 - 200		393				279
Lead Alloy		80 - 150		490				377
Brass & Red		60 - 110		393				279
Phosphor Bronze		85 - 110		328				197
Aluminum Alloys		150 - 200		820				558
Aluminum Alloys, Cast				984				787

## Trouble Shooting

Problem	Caused by	Solution
 <p>Premature Wear</p>	<ul style="list-style-type: none"> <li>● Cutting speed too high</li> <li>● Infeed depth too small</li> <li>● Highly abrasive material</li> <li>● Inadequate coolant supply</li> <li>● Wrong inclination anvil</li> <li>● Wrong turned dia. prior to threading</li> <li>● Insert is above center line</li> </ul>	<ul style="list-style-type: none"> <li>● Reduce RPM</li> <li>● Increase depth of cut</li> <li>● Modify flank infeed</li> <li>● Use coated grade</li> <li>● Apply coolant</li> <li>● Reselect anvil</li> <li>● Check turned dia.</li> <li>● Check center height</li> </ul>
 <p>Chipped Edge</p>	<ul style="list-style-type: none"> <li>● Cutting speed too high</li> <li>● Depth of cut too large</li> <li>● Wrong grade</li> <li>● Poor chip control</li> <li>● Inadequate coolant supply</li> <li>● Center height incorrect</li> </ul>	<ul style="list-style-type: none"> <li>● Reduce RPM</li> <li>● Reduce depth of cut</li> <li>● Use coated grade</li> <li>● Use tougher grade</li> <li>● Modify flank infeed</li> <li>● Apply coolant</li> <li>● Adjust center height</li> </ul>
 <p>Plastic Deformation</p>	<ul style="list-style-type: none"> <li>● Excessive heat in cutting zone</li> <li>● Wrong grade</li> <li>● Inadequate coolant supply</li> </ul>	<ul style="list-style-type: none"> <li>● Reduce RPM</li> <li>● Reduce depth of cut</li> <li>● Check turned dia.</li> <li>● Use coated grade</li> <li>● Use harder grade</li> <li>● Apply more coolant</li> </ul>
 <p>Built-Up Edge</p>	<ul style="list-style-type: none"> <li>● Cutting edge too cold</li> <li>● Wrong grade</li> <li>● Inadequate coolant supply</li> </ul>	<ul style="list-style-type: none"> <li>● Increase RPM</li> <li>● Increase depth of cut</li> <li>● Use coated grade</li> <li>● Apply coolant</li> </ul>
 <p>Broken Nose during 1st Pass</p>	<ul style="list-style-type: none"> <li>● Cutting edge too cold</li> <li>● Depth of cut too large</li> <li>● Wrong grade</li> <li>● Wrong turned dia. prior to threading</li> <li>● Corner height incorrect</li> <li>● Infeed depth too shallow</li> <li>● Wrong inclination anvil</li> <li>● Tool overhang too long</li> </ul>	<ul style="list-style-type: none"> <li>● Increase RPM</li> <li>● Reduce depth of cut</li> <li>● Increase number of infeed passes</li> <li>● Use tougher grade</li> <li>● Check turned dia.</li> <li>● Adjust center height</li> <li>● Modify flank infeed</li> <li>● Reselect anvil</li> <li>● Reduce tool overhang</li> </ul>
 <p>Poor Surface Finish</p>	<ul style="list-style-type: none"> <li>● Wrong cutting speed</li> <li>● Excessive heat in cutting zone</li> <li>● Poor chip control</li> <li>● Inadequate coolant supply</li> <li>● Wrong inclination anvil</li> <li>● Tool overhang too long</li> <li>● Center height incorrect</li> </ul>	<ul style="list-style-type: none"> <li>● Increase RPM</li> <li>● Reduce RPM</li> <li>● Reduce depth of cut</li> <li>● Modify flank infeed</li> <li>● Apply coolant</li> <li>● Reselect anvil</li> <li>● Reduce tool overhang</li> <li>● Check center height</li> </ul>
 <p>Poor Chip Control</p>	<ul style="list-style-type: none"> <li>● Excessive heat in cutting zone</li> <li>● Wrong grade</li> <li>● Inadequate coolant supply</li> <li>● Wrong turned dia. prior to threading</li> </ul>	<ul style="list-style-type: none"> <li>● Reduce RPM</li> <li>● Change depth of cut</li> <li>● Check turned dia.</li> <li>● Use coated grade</li> <li>● Check turned dia.</li> <li>● Use M-type insert</li> <li>● Apply coolant</li> <li>● Check turned dia.</li> </ul>

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T223

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# Ingersoll





CUTTING TOOLS  
CUTTING TOOLS

# T-CLAMP

*Cutting Tools*



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Cutting Tools

T225

## TAEГУ T-CLAMP

## T-CI

## TAEГ

## T-C

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# T-CLAMP

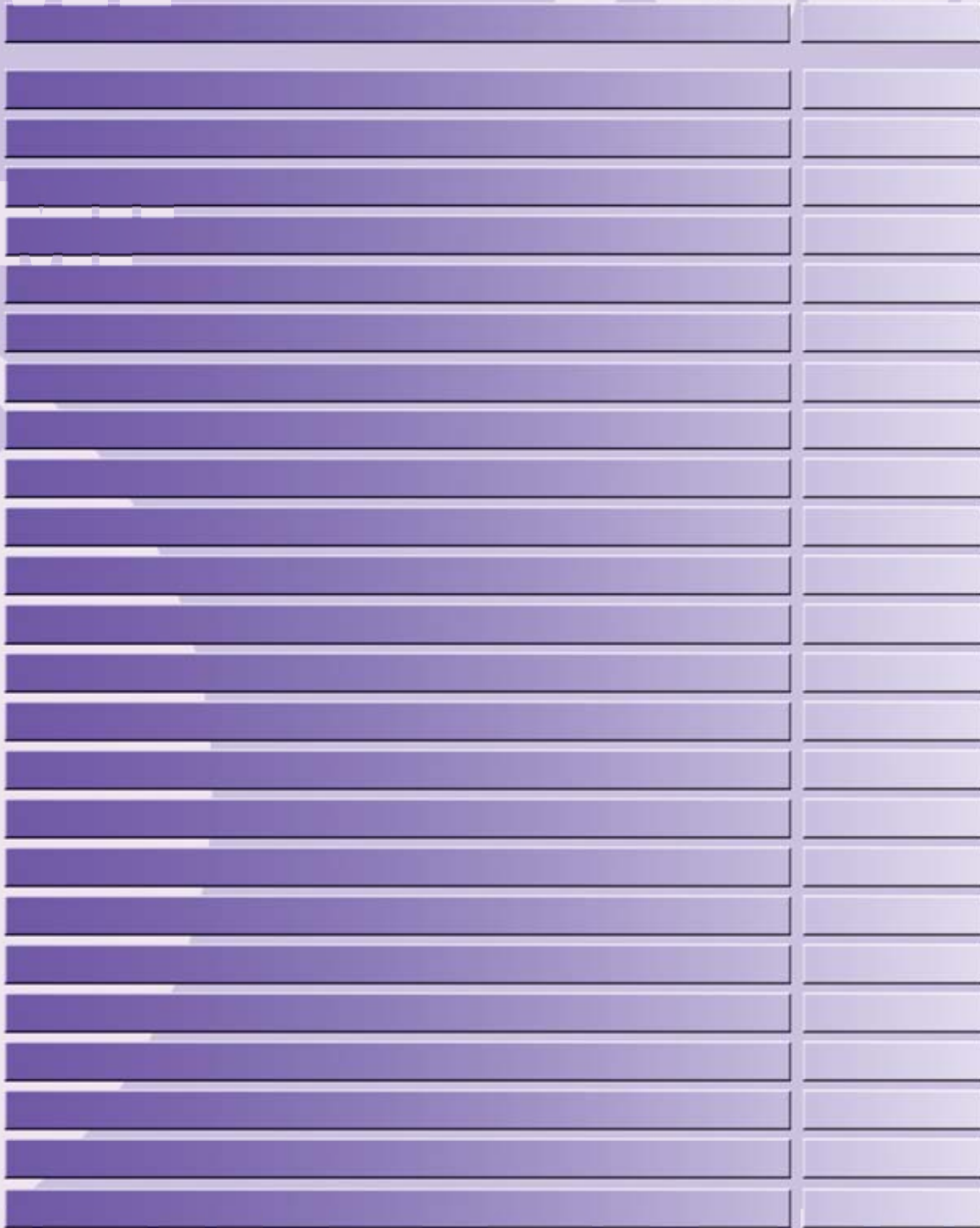
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TOOL

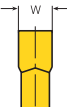
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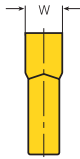
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## Modular System - Parting & Grooving

<b>TI</b>	<b>M</b>	<b>C</b>	<b>1.6</b>	<b>6</b>	<b>R</b>	<b>TT7200</b>
TaeguTec Insert	M: Tolerance W = ±.004	<b>CHIPBREAKER TYPE</b> C: For general purpose parting-off and grooving J: For precision parting-off and grooving with short chips, and positive cutting edge all over	<b>WIDTH</b> Insert "W" width .xxx = inch x.xx = Metric 	<b>LEAD ANGLE</b> 6=6° Blank=0°	<b>CUTTING DIRECTION</b> R: Right Hand L: Left Hand N: Neutral	<b>CARBIDE GRADE</b> CVD Coated : TT7200 : TT5100 Uncoated : K10 : P40A PVD Coated : TT6030 : TT7220

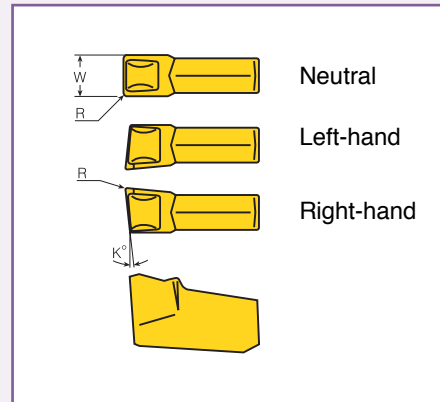
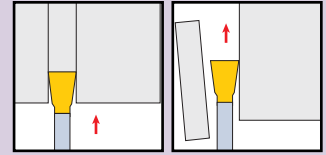
## Modular System - Turning & Grooving

<b>TI</b>	<b>P</b>	<b>V</b>	<b>-.090</b>	<b>E</b>	<b>.007</b>	<b>TT5100</b>
↑	↑	↑	↑	↑	↑	↑
<b>TaeguTec Insert</b>	<b>P</b> : Tolerance W = ±.0008	<b>CHIPBREAKER TYPE</b> <b>V</b> : For precision grooving and turning/profiling with various widths, radii, and shapes.	<b>WIDTH</b> Insert "W" width .xxx = inch x.xx = Metric 	<b>CUTTING EDGE</b> Void-UP Sharp (or minimum coating hone) E - Honed	<b>CUTTING END SHAPE</b> Corner Radius or 1/2 W Full Radius .xxx = inch x.xx = Metric	<b>CARBIDE GRADE</b> <b>CVD Coated</b> : TT7200 : TT5100 <b>Uncoated</b> : K10 : P40A <b>PVD Coated</b> : TT6030 : TT7220

## T-CLAMP ULTRA INSERTS

# TIMC

T-Clamp Ultra Inserts for Parting and Grooving with "C" Type Chipbreakers



Designation		Insert Seat Size	W±.004 (inch) W±0.1 (mm)	K (degrees)	R (inch) (mm)	Grades							
New	Old					New Old	K10 VC121	TT6030 VC902	P40A VC135	TT7220 VC905	TT7200 SV221	TT5100 SV231	TT8020 VC925
TIMC 1.6	VIMC 1.6	1	.063 1.6	0°	.006 0.16		○	○			○		
TIMC 1.6 6L	VIMC 1.6 6L	1	.063 1.6	6°	.006 0.16		○	○			○		
TIMC 1.6 6R	VIMC 1.6 6R	1	.063 1.6	6°	.006 0.16		○	○			○		
TIMC 2	VIMC 2	2	.087 2.2	0°	.008 0.20		○	○		○	○	○	○
TIMC 2 6L	VIMC 2 6L	2	.087 2.2	6°	.008 0.20		○	○		○	○	○	
TIMC 2 6R	VIMC 2 6R	2	.087 2.2	6°	.008 0.20		○	○		○	○	○	
TIMC 2.4	VIMC 2.4	2	.094 2.4	0°	.008 0.20		○	○			○		
TIMC 2.4 6L	VIMC 2.4 6L	2	.094 2.4	6°	.008 0.20		○	○			○		
TIMC 2.4 6R	VIMC 2.4 6R	2	.094 2.4	6°	.008 0.20		○	○			○		
TIMC 3	VIMC 3	4	.122 3.1	0°	.008 0.20		○	○	○	○	○	○	○
TIMC 3 6L	VIMC 3 6L	4	.122 3.1	6°	.008 0.20		○	○	○	○	○	○	○
TIMC 3 6R	VIMC 3 6R	4	.122 3.1	6°	.008 0.20		○	○	○	○	○	○	○

Ordering example: 100 pcs. TIMC 2 TT7200

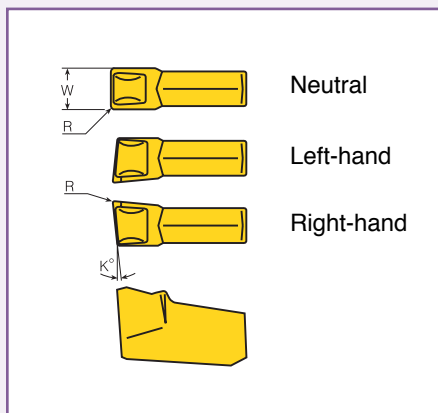
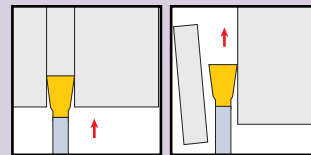
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# T-CLAMP ULTRA INSERTS

## TIMC

T-Clamp Ultra Inserts for Parting and Grooving with "C" Type Chipbreakers



Designation		Insert Seat Size	W±.004 (inch) W±0.1 (mm)	K (degrees)	R (inch) (mm)	Grades							
New	Old					New	K10	TT6030	P40A	TT7220	TT7200	TT5100	TT8020
						Old	VC121	VC902	VC135	VC905	SV221	SV231	VC925
TIMC 4	VIMC 4	4	.161 4.1	0°	.010 0.25		○	○	○	○	○	○	○
TIMC 4 6L	VIMC 4 6L	4	.161 4.1	6°	.010 0.25		○	○	○	○	○	○	
TIMC 4 6R	VIMC 4 6R	4	.161 4.1	6°	.010 0.25		○	○	○	○	○	○	○
TIMC 4.8	VIMC 4.8	4	.189 4.8	0°	.011 0.28		○	○			○	○	○
TIMC 4.8 6L	VIMC 4.8 6L	4	.189 4.8	6°	.011 0.28		○	○			○	○	
TIMC 4.8 6R	VIMC 4.8 6R	4	.189 4.8	6°	.011 0.28		○	○			○	○	○
TIMC 5	VIMC 5	4	.200 5.1	0°	.012 0.30		○	○			○		○
TIMC 5 6L	VIMC 5 6L	4	.200 5.1	6°	.012 0.30		○	○			○		
TIMC 5 6R	VIMC 5 6R	4	.200 5.1	6°	.012 0.30		○	○			○		
TIMC 6	VIMC 6	6	.250 6.4	0°	.014 0.35		○	○			○	○	○
TIMC 6 6L	VIMC 6 6L	6	.250 6.4	6°	.014 0.35		○	○			○	○	
TIMC 6 6R	VIMC 6 6R	6	.250 6.4	6°	.014 0.35		○	○			○	○	

Ordering example: 100 pcs. TIMC 5 TT7200

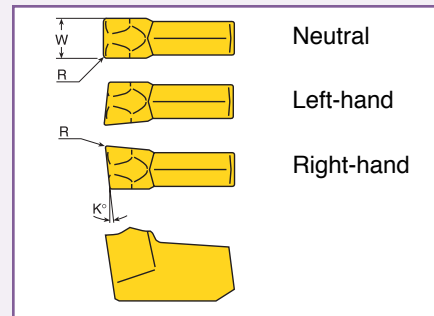
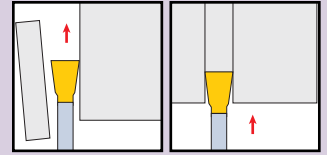
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## T-CLAMP ULTRA INSERTS

# TIMJ

T-Clamp Ultra Inserts for Parting and Grooving with "J" Type Chipbreakers



Designation		Insert Seat Size	W $\pm$ .004 (inch) W $\pm$ 0.1 (mm)	K (degrees)	R (inch) (mm)	Grades							
New	Old					New	K10	TT6030	P40A	TT7220	TT7200	TT5100	TT8020
						Old	VC121	VC902	VC135	VC905	SV221	SV231	VC925
TIMJ 2	VIMJ 2	2	.087 2.2	0°	.008 0.20		○	○				○	
TIMJ 2 6L	VIMJ 2 6L	2	.087 2.2	6°	.008 0.20		○	○				○	
TIMJ 2 6R	VIMJ 2 6R	2	.087 2.2	6°	.008 0.20		○	○				○	
TIMJ 2.4	VIMJ 2.4	2	.094 2.4	0°	.008 0.20		○	○				○	
TIMJ 2.4 6L	VIMJ 2.4 6L	2	.094 2.4	6°	.008 0.20		○	○				○	
TIMJ 2.4 6R	VIMJ 2.4 6R	2	.094 2.4	6°	.008 0.20		○	○				○	
TIMJ 3	VIMJ 3	4	.122 3.1	0°	.008 0.20		○	○				○	○
TIMJ 3 6L	VIMJ 3 6L	4	.122 3.1	6°	.008 0.20		○	○				○	
TIMJ 3 6R	VIMJ 3 6R	4	.122 3.1	6°	.008 0.20		○	○				○	○
TIMJ 4	VIMJ 4	4	.161 4.1	0°	.010 0.25		○	○				○	○
TIMJ 4 6L	VIMJ 4 6L	4	.161 4.1	6°	.010 0.25		○	○				○	
TIMJ 4 6R	VIMJ 4 6R	4	.161 4.1	6°	.010 0.25		○	○				○	
TIMJ 4.8	VIMJ 4.8	4	.189 4.8	0°	.011 0.28		○	○				○	
TIMJ 4.8 6L	VIMJ 4.8 6L	4	.189 4.8	6°	.011 0.28		○	○				○	
TIMJ 4.8 6R	VIMJ 4.8 6R	4	.189 4.8	6°	.011 0.28		○	○				○	
TIMJ 5	VIMJ 5	4	.200 5.1	0°	.012 0.30		○	○				○	
TIMJ 5 6L	VIMJ 5 6L	4	.200 5.1	6°	.012 0.30		○	○				○	
TIMJ 5 6R	VIMJ 5 6R	4	.200 5.1	6°	.012 0.30		○	○				○	

Ordering example: 100 pcs. TIMJ 4 TT5100

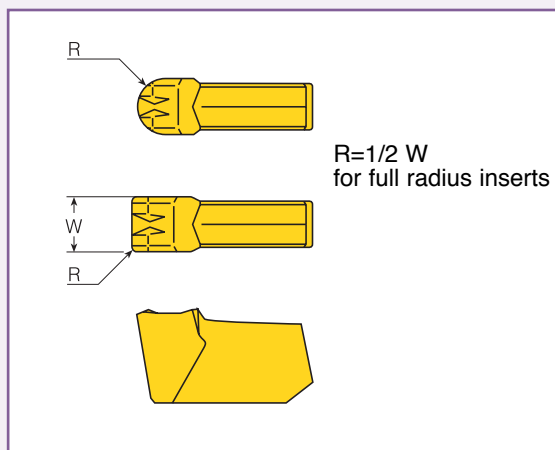
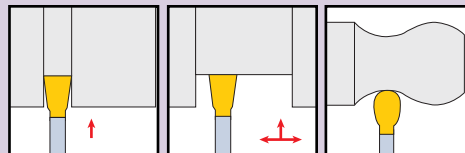
○ : Stock

# TAEGUline

## T-CLAMP ULTRA INSERTS

### TIPV

T-Clamp Ultra Inserts for Precision Turning and Grooving with "V" Type Chipbreakers



Designation		Insert Seat Size	W±.0008 (inch) W±0.02 (mm)	R (inch) (mm)	Grades						
New	Old				New	K10	TT6030	P40A	TT7220	TT7200	TT5100
					Old	VC121	VC902	VC135	VC905	SV221	SV231
TIPV .090E .007	VIPV .090E .007	2	.090 2.29	.007 0.18		○	○				○
TIPV .130E .007	VIPV .130E .007	4	.130 3.30	.007 0.18		○	○				○
TIPV .170E .015	VIPV .170E .015	4	.170 4.32	.015 0.38		○	○				○
TIPV .210E .024	VIPV .210E .024	4	.210 5.33	.024 0.61		○	○				○
TIPV .255E .024	VIPV .255E .024	6	.255 6.48	.024 0.61		○	○				○
TIPV .130E .065	VIPV .130E .065	4	.130 3.30	.065 1.65		○	○				○
TIPV .170E .085	VIPV .170E .085	4	.170 4.32	.085 2.16		○	○				○
TIPV .210E .105	VIPV .210E .105	4	.210 5.33	.105 2.67		○	○				○
TIPV .255E .127	VIPV .255E .127	6	.255 6.48	.127 3.23		○	○				○

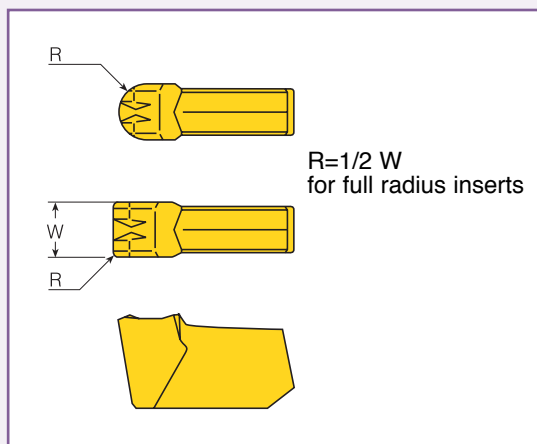
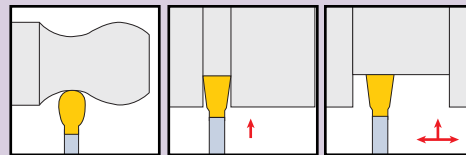
Ordering example: 100 pcs. TIPV .210E .024 TT5100

○ : Stock

## T-CLAMP ULTRA INSERTS

# TIPV

T-Clamp Ultra Inserts for Precision Turning and Grooving with "V" Type Chipbreakers



Designation		Insert Seat Size	W±.0008 (inch) W±0.02 (mm)	R (inch) (mm)	Grades						
New	Old				New	K10	TT6030	P40A	TT7220	TT7200	TT5100
					Old	VC121	VC902	VC135	VC905	SV221	SV231
TIPV 3.00E 0.40	VIPV 3.00E 0.40	4	.118 3.00	.016 0.40		○	○				○
TIPV 4.00E 0.40	VIPV 4.00E 0.40	4	.157 4.00	.016 0.40		○	○				○
TIPV 4.50E 0.40	VIPV 4.50E 0.40	4	.177 4.50	.016 0.40		○	○				○
TIPV 5.00E 0.40	VIPV 5.00E 0.40	4	.197 5.00	.016 0.40		○	○				○
TIPV 6.00E 0.40	VIPV 6.00E 0.40	4	.236 6.00	.016 0.40		○	○				○
TIPV 3.00E 1.50	VIPV 3.00E 1.50	4	.118 3.00	.059 1.50		○	○				○
TIPV 4.00E 2.00	VIPV 4.00E 2.00	4	.157 4.00	.079 2.00		○	○				○
TIPV 5.00E 2.50	VIPV 5.00E 2.50	4	.197 5.00	.098 2.50		○	○				○
TIPV 6.00E 3.00	VIPV 6.00E 3.00	6	.236 6.00	.118 3.00		○	○				○

Ordering example : 100 pcs. TIPV 3.00E 0.40 TT5100

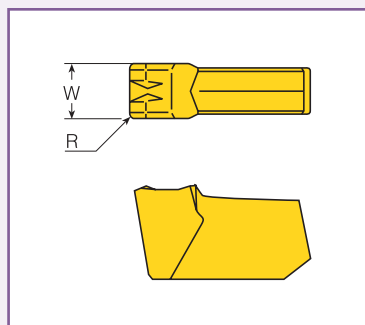
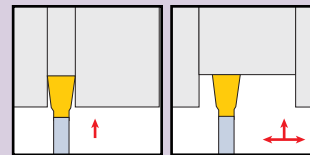
○ : Stock

**TAEGLINE**

# T-CLAMP ULTRA INSERTS

## TIPV

T-Clamp Ultra Inserts for Precision Turning  
Grooving with "V" Type Chipbreakers



Designation		Insert Seat Size	W $\pm$ .0008 (inch) W $\pm$ 0.02 (mm)	R (inch) (mm)	Grades						
New	Old				New	K10	TT6030	P40A	TT7220	TT7200	TT5100
					Old	VC121	VC902	VC135	VC905	SV221	SV231
TIPV .078 .007	VIPV .078 .007	2	.078 1.98	.007 0.18		○	○				○
TIPV .088 .007	VIPV .088 .007	2	.088 2.24	.007 0.18		○	○				○
TIPV .094 .007	VIPV .094 .007	2	.094 2.39	.007 0.18		○	○				○
TIPV .097 .013	VIPV .097 .013	2	.097 2.46	.013 0.33		○	○				○
TIPV .105 .007	VIPV .105 .007	4	.105 2.67	.007 0.18		○	○				○
TIPV .110 .013	VIPV .110 .013	4	.110 2.79	.013 0.33		○	○				○
TIPV .122 .007	VIPV .122 .007	4	.122 3.10	.007 0.18		○	○				○
TIPV .125 .007	VIPV .125 .007	4	.125 3.18	.007 0.18		○	○				○
TIPV .142 .013	VIPV .142 .013	4	.142 3.61	.013 0.33		○	○				○
TIPV .156 .007	VIPV .156 .007	4	.156 3.96	.007 0.18		○	○				○
TIPV .178 .007	VIPV .178 .007	4	.178 4.52	.007 0.18		○	○				○
TIPV .185 .022	VIPV .185 .022	4	.185 4.70	.022 0.56		○	○				○
TIPV .189 .022	VIPV .189 .022	4	.189 4.80	.022 0.56		○	○				○
TIPV .213 .007	VIPV .213 .007	4	.213 5.41	.007 0.18		○	○				○
TIPV .219 .022	VIPV .219 .022	6	.219 5.56	.022 0.56		○	○				○
TIPV .250 .022	VIPV .250 .022	6	.250 6.35	.022 0.56		○	○				○

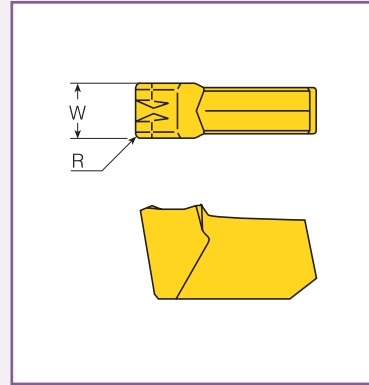
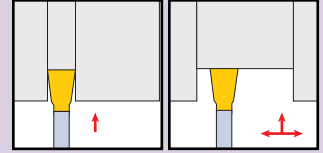
Ordering example: 100 pcs. TIPV .105 .007 TT5100

○ : Stock

## T-CLAMP ULTRA INSERTS

# TIPV

T-Clamp Ultra Inserts for Precision Turning and Grooving with "V" Type Chipbreakers



Designation		Insert Seat Size	W±.0008 (inch) W±0.02 (mm)	R (inch) (mm)	Grades						
New	Old				New	K10	TT6030	P40A	TT7220	TT7200	TT5100
					Old	VC121	VC902	VC135	VC905	SV221	SV231
<b>TIPV 1.85 0.10</b>	VIPV 1.85 0.10	2	.073 1.85	.004 0.10		○	○				○
<b>TIPV 2.00 0.20</b>	VIPV 2.00 0.20	2	.079 2.00	.008 0.20		○	○				○
<b>TIPV 2.15 0.15</b>	VIPV 2.15 0.15	2	.085 2.15	.006 0.15		○	○				○
<b>TIPV 2.65 0.15</b>	VIPV 2.65 0.15	4	.104 2.65	.006 0.15		○	○				○
<b>TIPV 3.00 0.20</b>	VIPV 3.00 0.20	4	.118 3.00	.008 0.20		○	○				○
<b>TIPV 3.18 0.20</b>	VIPV 3.18 0.20	4	.125 3.18	.008 0.20		○	○				○
<b>TIPV 4.00 0.20</b>	VIPV 4.00 0.20	4	.157 4.00	.008 0.20		○	○				○
<b>TIPV 4.15 0.15</b>	VIPV 4.15 0.15	4	.163 4.15	.006 0.15		○	○				○
<b>TIPV 5.00 0.20</b>	VIPV 5.00 0.20	4	.197 5.00	.008 0.20		○	○				○
<b>TIPV 5.15 0.15</b>	VIPV 5.15 0.15	4	.203 5.15	.006 0.15		○	○				○
<b>TIPV 6.00 0.20</b>	VIPV 6.00 0.20	6	.236 6.00	.008 0.20		○	○				○

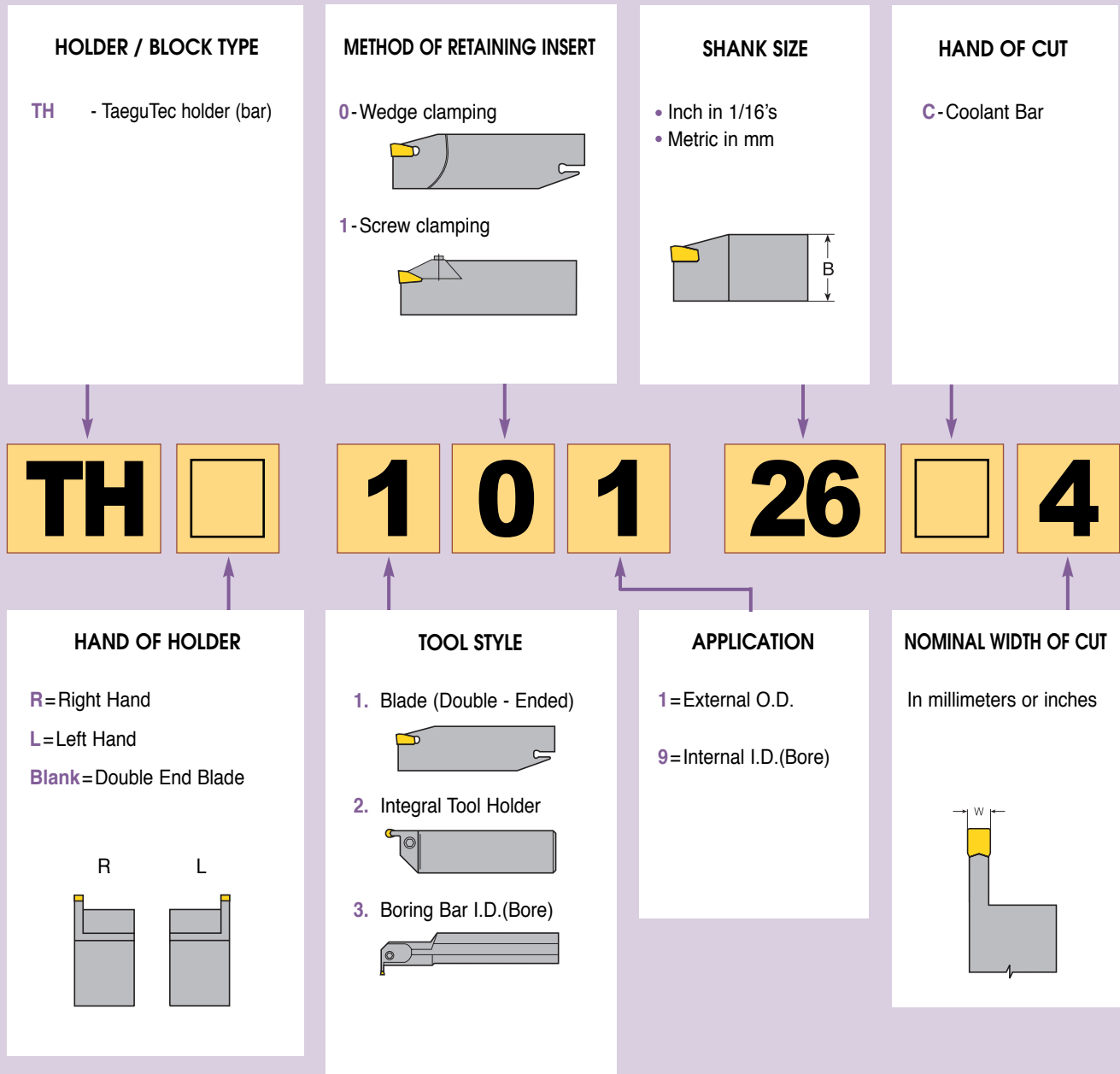
Ordering example: 100 pcs. TIPV 2.15 0.15 TT5100

○ : Stock

# TAEGUline



# T-CLAMP ULTRA BLADE & TOOL HOLDER DESIGNATION SYSTEM



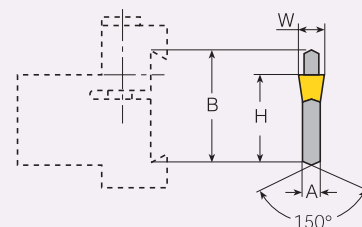
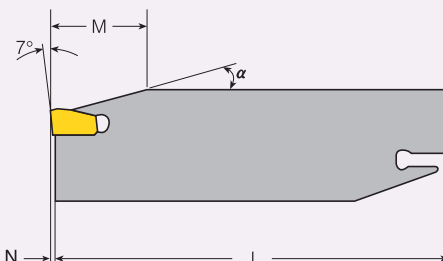
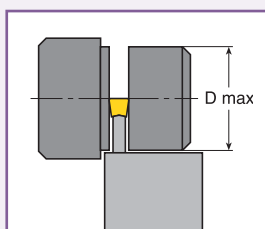
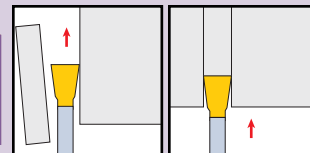
## T-CLAMP ULTRA BLADES

# TH101

T-Clamp Ultra Blades for Parting and Grooving

Use Insert

Style	TIMC : T232, T233
	TIMJ : T234
	TIPV : T235-T238



Designation		Insert Seat Size	W Range (inch) (mm)	B (inch) (mm)	L (inch) (mm)	D <sub>max</sub> (inch) (mm)	H (inch) (mm)	A (inch) (mm)	N (inch) (mm)	∠ (degrees)	M (inch) (mm)	Insert Extractor
New	Old											
TH101 19 1	VH101 19 1	1	.053 - .098 1.3 - 2.4	.75 19	3.38 86	1.25 32	.62 15.7	.047 <sup>ⓐ</sup> 1.2 <sup>ⓑ</sup>	.034 0.9	21°	.446 11.3	DR-0032
TH101 19 2	VH101 19 2	2	.073 - .098 1.85 - 2.5	.75 19	3.38 86	1.57 38	.62 15.7	.063 1.6	.034 0.9	20°	.452 11.5	DR-0032
TH101 26 1	VH101 26 1	1	.053 - .098 1.3 - 2.4	1.02 26	4.33 110	1.37 35	.84 21.4	.047 <sup>ⓐ</sup> 1.2 <sup>ⓑ</sup>	.034 0.9	21°	.586 14.9	DR-0032
TH101 26 2	VH101 26 2	2	.073 - .098 1.85 - 2.5	1.02 26	4.33 110	2.00 50	.84 21.4	.063 1.6	.034 0.9	20°	.592 15.0	DR-0032
TH101 26 3	VH101 26 3	4	.106 - .154 2.7 - 3.9	1.02 26	4.33 110	3.00 75	.84 21.4	.094 2.4	.041 1.0	20°	.707 18.0	DR-0031
TH101 26 4	VH101 26 4	4	.146 - .185 3.7 - 4.7	1.02 26	4.33 110	3.15 80	.84 21.4	.125 3.2	.041 1.0	20°	.629 17.6	DR-0031
TH101 26 5	VH101 26 5	4	.177 - .217 4.5 - 5.5	1.02 26	4.33 110	3.15 80	.84 21.4	.157 4.0	.041 1.0	20°	.691 17.6	DR-0031
TH101 32 1	VH101 32 1	1	.053 - .098 1.3 - 2.4	1.25 32	5.90 150	1.50 38	.98 24.8	.047 <sup>ⓐ</sup> 1.2 <sup>ⓑ</sup>	.034 0.9	21°	.853 21.7	DR-0032
TH101 32 2	VH101 32 2	2	.073 - .098 1.85 - 2.5	1.25 32	5.90 150	2.00 50	.98 24.8	.063 <sup>ⓐ</sup> 1.6 <sup>ⓑ</sup>	.034 0.9	20°	.827 21.0	DR-0032
TH101 32 3	VH101 32 3	4	.106 - .154 2.7 - 3.9	1.25 32	5.90 150	4.00 100	.98 24.8	.094 2.4	.041 1.0	20°	1.039 26.4	DR-0031
TH101 32 4	VH101 32 4	4	.146 - .185 3.7 - 4.7	1.25 32	5.90 150	4.00 100	.98 24.8	.125 3.2	.041 1.0	20°	1.006 25.5	DR-0031
TH101 32 5	VH101 32 5	4	.177 - .217 4.5 - 5.5	1.25 32	5.90 150	5.00 125	.98 24.8	.157 4.0	.041 1.0	20°	1.006 25.5	DR-0031
TH101 32 6	VH101 32 6	6	.224 - .256 5.7 - 6.5	1.25 32	5.90 150	5.00 125	.98 24.8	.205 5.2	.041 1.0	20°	1.006 25.5	DR-0031

<sup>ⓐ</sup> A = .047" (1.2mm) at DOC area only. Overall thickness is .063" (1.6mm).

<sup>ⓑ</sup> A = .047" (1.2mm) or .063" (1.6mm) at DOC area only. Overall thickness is .094" (2.4mm).

Ordering example: 5 pcs. TH101 26 3

Blades supplied with insert extractor. Inserts must be ordered separately.

**Note: Blades should not be used for turning or profiling.**

# TAEGUline

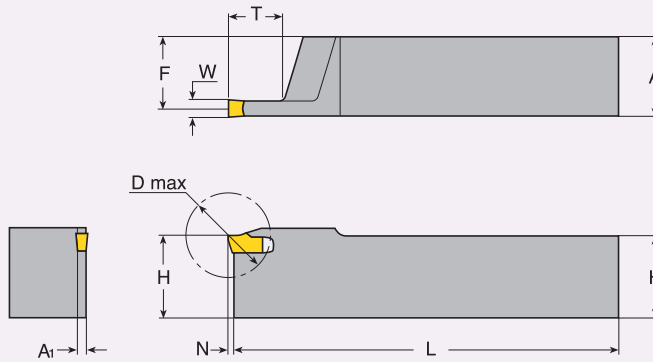
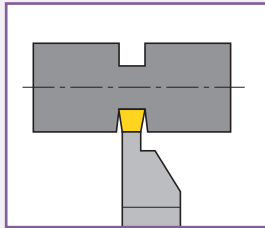
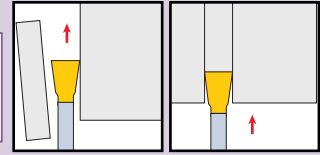
## T-CLAMP ULTRA TOOL HOLDERS

# THR/L 201

T-Clamp Ultra Tool Holders for Parting and Grooving

Use Insert

Style	TIMC : T232, T233
	TIMJ : T234
	TIPV : T235-T238



Designation		Insert Seat Size	W Range (inch)	F (inch)	L (inch)	D <sub>max</sub> (inch)	H (inch)	A (inch)	T (inch)	N (inch)	A <sub>1</sub> (inch)	Insert Extractor
New	Old											
THR/L 201 06 2	VHR/L 201 06 2	2	.073 - .098	.341	3.0	1.125	.375	.375	.35	.034	.066	DR-0032
THR/L 201 08 2	VHR/L 201 08 2	2	.073 - .098	.462	4.3	1.25	.500	.500	.41	.034	.066	DR-0032
THR/L 201 08 3	VHR/L 201 08 3	4	.106 - .154	.458	4.3	1.25	.500	.500	.38	.041	.094	DR-0031
THR/L 201 10 2	VHR/L 201 10 2	2	.073 - .098	.593	4.5	1.25	.625	.625	.41	.034	.066	DR-0032
THR/L 201 10 3	VHR/L 201 10 3	4	.106 - .154	.590	4.5	1.37	.625	.625	.37	.041	.094	DR-0031
THR/L 201 10 4	VHR/L 201 10 4	4	.146 - .185	.562	4.5	1.50	.625	.625	.43	.041	.126	DR-0031
THR/L 201 12 2	VHR/L 201 12 2	2	.073 - .098	.717	4.5	1.375	.750	.750	.38	.034	.066	DR-0032
THR/L 201 12 3	VHR/L 201 12 3	4	.106 - .154	.700	4.5	1.57	.750	.750	.64	.041	.094	DR-0031
THR/L 201 12 4	VHR/L 201 12 4	4	.146 - .185	.686	4.5	2.00	.750	.750	.75	.041	.126	DR-0031
THR/L 201 12 5	VHR/L 201 12 5	4	.177 - .217	.671	4.5	2.00	.750	.750	.76	.041	.161	DR-0031
THR/L 201 16 3	VHR/L 201 16 3	4	.106 - .154	.953	6.0	2.20	1.000	1.000	.93	.041	.094	DR-0031
THR/L 201 16 4	VHR/L 201 16 4	4	.146 - .185	.935	6.0	2.50	1.000	1.000	1.06	.041	.126	DR-0031
THR/L 201 16 5	VHR/L 201 16 5	4	.177 - .217	.921	6.0	3.00	1.000	1.000	1.30	.041	.161	DR-0031
THR/L 201 16 6	VHR/L 201 16 6	6	.224 - .256	.900	6.0	3.00	1.000	1.000	1.30	.041	.189	DR-0031
THR/L 201 20 3	VHR/L 201 20 3	4	.106 - .154	1.203	7.0	2.20	1.250	1.250	.92	.041	.094	DR-0031
THR/L 201 20 4	VHR/L 201 20 4	4	.146 - .185	1.185	7.0	2.75	1.250	1.250	1.10	.041	.126	DR-0031
THR/L 201 20 5	VHR/L 201 20 5	4	.177 - .217	1.171	7.0	3.15	1.250	1.250	1.10	.041	.161	DR-0031
THR/L 201 20 6	VHR/L 201 20 6		.224 - .256	1.150	7.0	3.15	1.250	1.250	1.30	.041	.189	DR-0031

Ordering example: 2pcs. THR 201 12 3

Toolholder supplied with insert extractor. Inserts must be ordered separately.

Note: These toolholders should not be used for turning operations. Please select THR/L 211 style toolholders for turning.

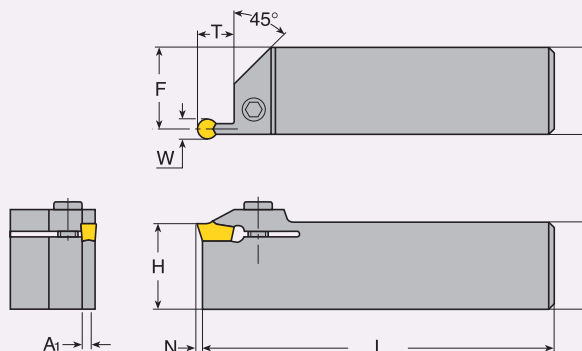
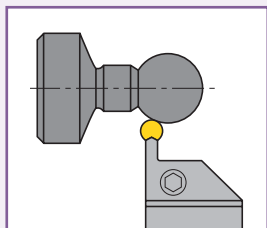
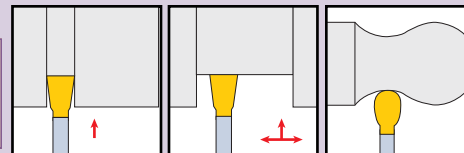
## T-CLAMP ULTRA TOOL HOLDERS

# THR/L 211

T-Clamp Ultra Tool Holders for Turning and Grooving

Use Insert

Style	TIMC : T232, T233
	TIMJ : T234
	TIPV : T235-T238



Designation		Insert Seat Size	W Range (inch)	F (inch)	H (inch)	A (inch)	C (inch)	T (inch)	N (inch)	A1 (inch)	Spare Parts	
New	Old										Screw	Wrench <sup>®</sup>
THR/L 211 06 2	VHR/L 211 06 2	2	.073 - .098	.342	0.375	0.375	4.0	.34	.034	.066	PT-769T	T 20 TORX
THR/L 211 06 3	VHR/L 211 06 3	4	.110 - .142	.328	0.375	0.375	4.0	.39	.041	.094	PT-769T	T 20 TORX
THR/L 211 08 2	VHR/L 211 08 2	2	.073 - .098	.467	0.500	0.500	4.0	.34	.034	.066	PT-770T	T 20 TORX
THR/L 211 08 3	VHR/L 211 08 3	4	.110 - .142	.453	0.500	0.500	4.0	.39	.041	.094	PT-770T	T 20 TORX
THR/L 211 10 3	VHR/L 211 10 3	4	.110 - .142	.578	0.625	0.625	4.0	.39	.041	.094	M5 X 20 DIN 912	5/32 HEX
THR/L 211 10 4	VHR/L 211 10 4	4	.142 - .181	.562	0.625	0.625	4.0	.51	.041	.126	M5 X 20 DIN 912	5/32 HEX
THR/L 211 12 3	VHR/L 211 12 3	4	.110 - .142	.703	0.750	0.750	5.0	.39	.041	.094	M5 X 20 DIN 912	5/32 HEX
THR/L 211 12 4	VHR/L 211 12 4	4	.142 - .181	.687	0.750	0.750	5.0	.51	.041	.126	M5 X 20 DIN 912	5/32 HEX
THR/L 211 16 3	VHR/L 211 16 3	4	.110 - .142	.953	1.000	1.000	6.0	.39	.041	.094	M5 X 25 DIN 912	5/32 HEX
THR/L 211 16 4	VHR/L 211 16 4	4	.142 - .181	.937	1.000	1.000	6.0	.51	.041	.126	M5 X 25 DIN 912	5/32 HEX
THR/L 211 16 5	VHR/L 211 16 5	4	.177 - .217	.919	1.000	1.000	6.0	.51	.041	.161	M5 X 25 DIN 912	M5 DIN 911
THR/L 211 16 6	VHR/L 211 16 6	6	.213 - .256	.906	1.000	1.000	6.0	.63	.041	.189	M5 X 25 DIN 912	M5 DIN 911
THR/L 211 20 3	VHR/L 211 20 3	4	.110 - .142	1.203	1.250	1.250	7.0	.39	.041	.094	M5 X 20 DIN 912	5/32 HEX
THR/L 211 20 4	VHR/L 211 20 4	4	.142 - .181	1.187	1.250	1.250	7.0	.51	.041	.126	M5 X 25 DIN 912	5/32 HEX
THR/L 211 20 5	VHR/L 211 20 5	4	.177 - .217	1.169	1.250	1.250	7.0	.51	.041	.161	M5 X 25 DIN 912	M5 DIN 911
THR/L 211 20 6	VHR/L 211 20 6	6	.213 - .256	1.156	1.250	1.250	7.0	.63	.041	.189	M5 X 25 DIN 912	M5 DIN 911

<sup>®</sup> 5/32"HEX wrench and 4mm DIN 911 wrench are interchangeable.

Ordering example: 2pcs. THR 211 16 3

Toolholders supplied with screw and wrench. Inserts must be ordered separately.

\*TIMC and TIMJ inserts should be used for plunging applications only.

# TAEGUline

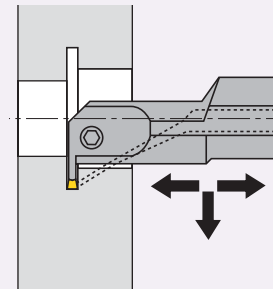
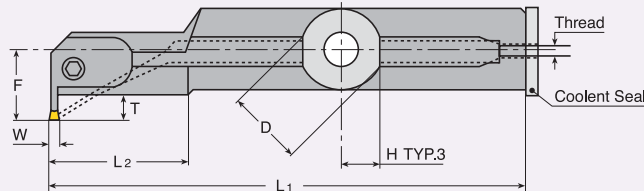
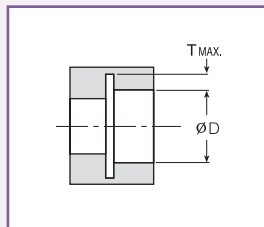
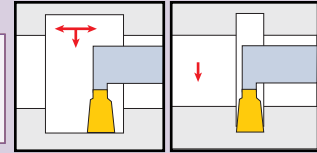
# T-CLAMP ULTRA INSERTS

## THR/L 619

T-Clamp Ultra Tool Holders for ID Turning and Grooving

Use Insert

Style	TIMC*: T232, T233
	TIMJ*: T234
	TIPV : T235-T238



Designation		Dimensions											
New (inch) (mm)	Old (inch) (mm)	Insert Seat Size	W Range (inch) (mm)	Tmax (inch) (mm)	Min. Bore ØD (inch) (mm)	D (inch) (mm)	F (inch) (mm)	H (inch) (mm)	C** (inch) (mm)	L1 (inch) (mm)	L2 (inch) (mm)	Lock Screw	Seal No. (inch) (mm)
THR/L 619 16C 078 THR/L 619 25C 2	VHR/L 619 16C 078 VHR/L 619 25C 2	2	.073 - .098 1.85 - 2.5	.275 7	1.69 43	1.000 25	.803 20	.459 11.5	.012 0.3	8 200	2.00 51	SR-76-1021	PL-100 PL-25
THR/L 619 16C 118 THR/L 619 25C 3	VHR/L 619 16C 118 VHR/L 619 25C 3	4	.110 - .142 2.8 - 3.6	.315 7.8	2.05 52	1.000 25	.827 20.8	.459 11.5	.020 0.5	8 200	2.00 51	SR-76-1022	PL-100 PL-25
THR/L 619 16C 157 THR/L 619 25C 4	VHR/L 619 16C 157 VHR/L 619 25C 4	4	.142 - .181 3.6 - 4.6	.315 7.8	2.05 52	1.000 25	.827 20.8	.459 11.5	.020 0.5	8 200	2.00 51	SR-76-1022	PL-100 PL-25
THR/L 619 20C 078 THR/L 619 32C 2	VHR/L 619 20C 078 VHR/L 619 32C 2	2	.073 - .098 1.85 - 2.5	.315 8	1.69 43	1.250 32	.976 25	.570 14.5	.012 0.3	10 250	2.50 63.5	SR-76-1021	PL-125 PL-32
THR/L 619 20C 118 THR/L 619 32C 3	VHR/L 619 20C 118 VHR/L 619 32C 3	4	.110 - .142 2.8 - 3.6	.390 10	2.05 52	1.250 32	1.043 26.6	.570 14.5	.020 0.5	10 250	2.25 57	SR-76-1022	PL-125 PL-32
THR/L 619 20C 157 THR/L 619 32C 4	VHR/L 619 20C 157 VHR/L 619 32C 4	4	.142 - .181 3.6 - 4.6	.390 10	2.05 52	1.250 32	1.043 26.6	.570 14.5	.020 0.5	10 250	2.00 51	SR-76-1022	PL-125 PL-32
THR/L 619 20C 197 THR/L 619 32C 5	VHR/L 619 20C 197 VHR/L 619 32C 5	4	.177 - .217 4.5 - 5.5	.390 10	2.05 52	1.250 32	1.043 26.6	.570 14.5	.020 0.5	10 250	1.75 45	SR-76-1022	PL-125 PL-32
THR/L 619 24C 078 THR/L 619 40C 2	VHR/L 619 24C 078 VHR/L 619 40C 2	2	.073 - .098 1.85 - 2.5	.354 9	1.69 43	1.500 40	1.138 30	.670 18.0	.012 0.3	12 300	3.00 76	SR-76-1022	PL-150 PL-40
THR/L 619 24C 118 THR/L 619 40C 3	VHR/L 619 24C 118 VHR/L 619 40C 3	4	.110 - .142 2.8 - 3.6	.461 12	2.05 52	1.500 40	1.240 33	.670 18.0	.020 0.5	12 300	2.50 63.5	SR-76-1022	PL-150 PL-40
THR/L 619 24C 157 THR/L 619 40C 4	VHR/L 619 24C 157 VHR/L 619 40C 4	4	.142 - .181 3.6 - 4.6	.461 12	2.05 52	1.500 40	1.240 33	.670 18.0	.020 0.5	12 300	2.00 51	SR-76-1022	PL-150 PL-40
THR/L 619 24C 197 THR/L 619 40C 5	VHR/L 619 24C 197 VHR/L 619 40C 5	4	.177 - .217 4.5 - 5.5	.461 12	2.05 52	1.500 40	1.240 33	.670 18.0	.020 0.5	12 300	1.75 45	SR-76-1022	PL-150 PL-40
THR/L 619 24C 236 THR/L 619 40C 6	VHR/L 619 24C 236 VHR/L 619 40C 6	6	.213 - .256 5.4 - 6.5	.620 16	2.13 54	1.500 40	1.398 36.5	.670 18.0	.020 0.5	12 300	2.00 51	SR-76-1022	PL-150 PL-40

\*TIMC and TIMJ inserts should be used for plunging applications only. \*\*Recommended cutting edge height above center for optimum results.

Ordering example: 2 pcs. THR 619 20C 078

Seal Thread: Inch N.P.T.1/8 Metric R1/8

When using the seal, bar can be shortened by 4inches(100mm) max.

Boring bar supplied complete with lock screw, T20 Torx wrench and seal, less insert.



■ T-CLAMP ULTRA SLOTTING CUTTERS

# NARROW WIDTH SLOTTING CUTTERS



**Inch and Metric Cutting Diameters:**  
3.00", 4.00", 5.00", 6.00", 8.00" 10.00"  
and 75mm, 100mm, 125mm, 160mm

**Cutting Width Ranges:** .063" - .250"

**Geometry:** Positive Rake

**Applications:** Slotting and Sawing

**Materials:** Carbon Steels, Alloy Steels,  
Stainless Steels, Irons, Aluminum, and  
Exotics

**T-Clamp Ultra** cutters are specifically designed to maximize metal removal rates while providing exceptional surface finishes.

The rugged body construction has no wedges, clamps, or screws thereby making machining operations and applications much simpler.

**T-Clamp Ultra** Slotting Cutters are just one element of a totally integrated system that incorporates the well recognized and accepted Double Prism "V" method of insert retention.

This system allows the use of common insert seat sizes throughout the **T-Clamp Ultra** line, thereby reducing insert inventories.

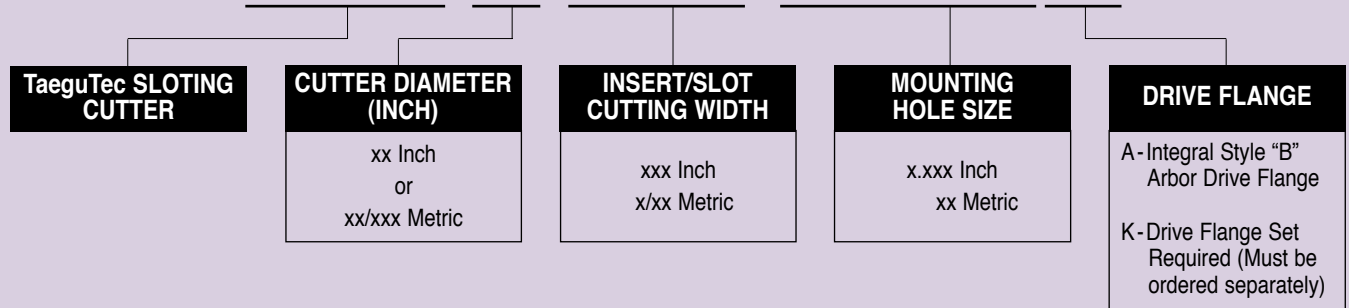
**Features/Benefits of T-Clamp Ultra Slotting Cutters :**

- narrow width applications to .063"
- simple easy-to-mount inserts
- secure insert retention
- self-positioning insert stopper for repeatability

- drive flange mounting for extra stability
- minimal radial runout
- efficient chip evacuation
- reduced cutting forces
- improved tool life
- inserts compatible with **T-Clamp Ultra** system
- economical

## T-Clamp Ultra Slotting Cutter Nomenclature

# TSC-4.122-1.000K



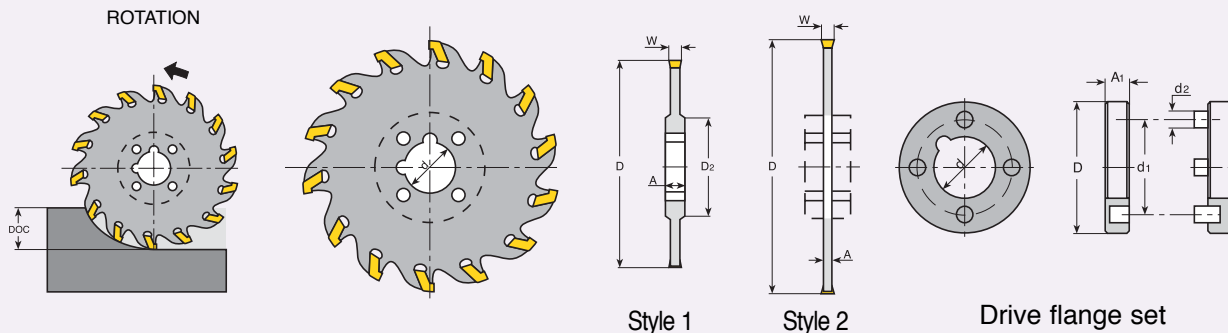
**TAEGU**line

# T-CLAMP ULTRA SLOTTING CUTTERS

## TSC

Use Insert

Style	TIMC : T232, T233
	TIMJ : T234
	TIPV* : T235-T238



Designation	Cutter Dimensions									Drive Flange Dimensions						
	Dia. D (inch)	W Range (inch)	Insert Seat Size (inch)	No. of Teeth	d (inch)	A (inch)	Max. DOC. (inch)	Max. RPM (inch)	Dia. D <sub>2</sub> (inch)	Drive Flange Set	D	d	d <sub>1</sub>	d <sub>2</sub>	A <sub>1</sub>	
Style 1	TSC 3.063 - 1.000A	3.00	0.063	1	8	1.000	.094 <sup>①</sup> (.049)	0.71	1050	1.54	-	-	-	-	-	
	TSC 4.063 - 1.000A	4.00	0.063	1	10	1.000	.094 (.049)	1.21	780	1.54	-	-	-	-	-	
	TSC 3.087 - 1.000A	3.00	.079-.091	2	8	1.000	.094 (.063)	0.71	1050	1.54	-	-	-	-	-	
Style 2	TSC 4.122 - 1.000K	4.00	.110-.138	4	6	1.000	.094	1.08	780	-	FL - 0002	1.81	1.00	1.42	.19	.39
	TSC 5.122 - 1.250K	5.00	.110-.138	4	8	1.250	.094	1.40	630	-	FL - 0003	2.17	1.25	1.77	.23	.39
	TSC 6.122 - 1.500K	6.00	.110-.138	4	10	1.500	.094	1.41	520	-	FL - 0004	3.15	1.50	2.48	.43	.47
	TSC 8.122 - 1.500K	8.00	.110-.138	4	14	1.500	.094	2.41	390	-	FL - 0004	3.15	1.50	2.48	.43	.47
	TSC 4.188 - 1.000K	4.00	.179-.216	4	6	1.000	.157	1.08	780	-	FL - 0002	1.81	1.00	1.42	.19	.39
	TSC 5.188 - 1.250K	5.00	.179-.216	4	8	1.250	.157	1.40	630	-	FL - 0003	2.17	1.25	1.77	.23	.39
	TSC 6.188 - 1.500K	6.00	.179-.216	4	10	1.500	.157	1.41	520	-	FL - 0004	3.15	1.50	2.48	.43	.47
	TSC 8.188 - 1.500K	8.00	.179-.216	4	14	1.500	.157	2.41	390	-	FL - 0004	3.15	1.50	2.48	.43	.47
	TSC 6.236 - 1.500K	6.00	.220-.256	6	10	1.500	.203	1.41	520	-	FL - 0004	3.15	1.50	2.48	.43	.47
	TSC 8.236 - 1.500K	8.00	.220-.256	6	14	1.500	.203	2.41	390	-	FL - 0004	3.15	1.50	2.48	.43	.47
	TSC 10.236 - 1.500K	10.00	.220-.256	6	18	1.500	.203	3.41	310	-	FL - 0004	3.15	1.50	2.48	.43	.47

\* For precision widths and slot forms.

Cutter supplied with insert extractor. Inserts must be ordered separately.

① Width at blade shown in parentheses.

Note: Insert extractor supplied with each cutter. Drive flange set required for all Style 2 cutters.

Caution: These cutters have maximum RPM ratings.



## ■ T-CLAMP ICON SYSTEM

Parting



Grooving



Turning & Grooving



Profiling



Face Grooving



Face Turning  
& Grooving



Undercutting



Internal Grooving



Internal Turning  
& Grooving



Internal Profiling



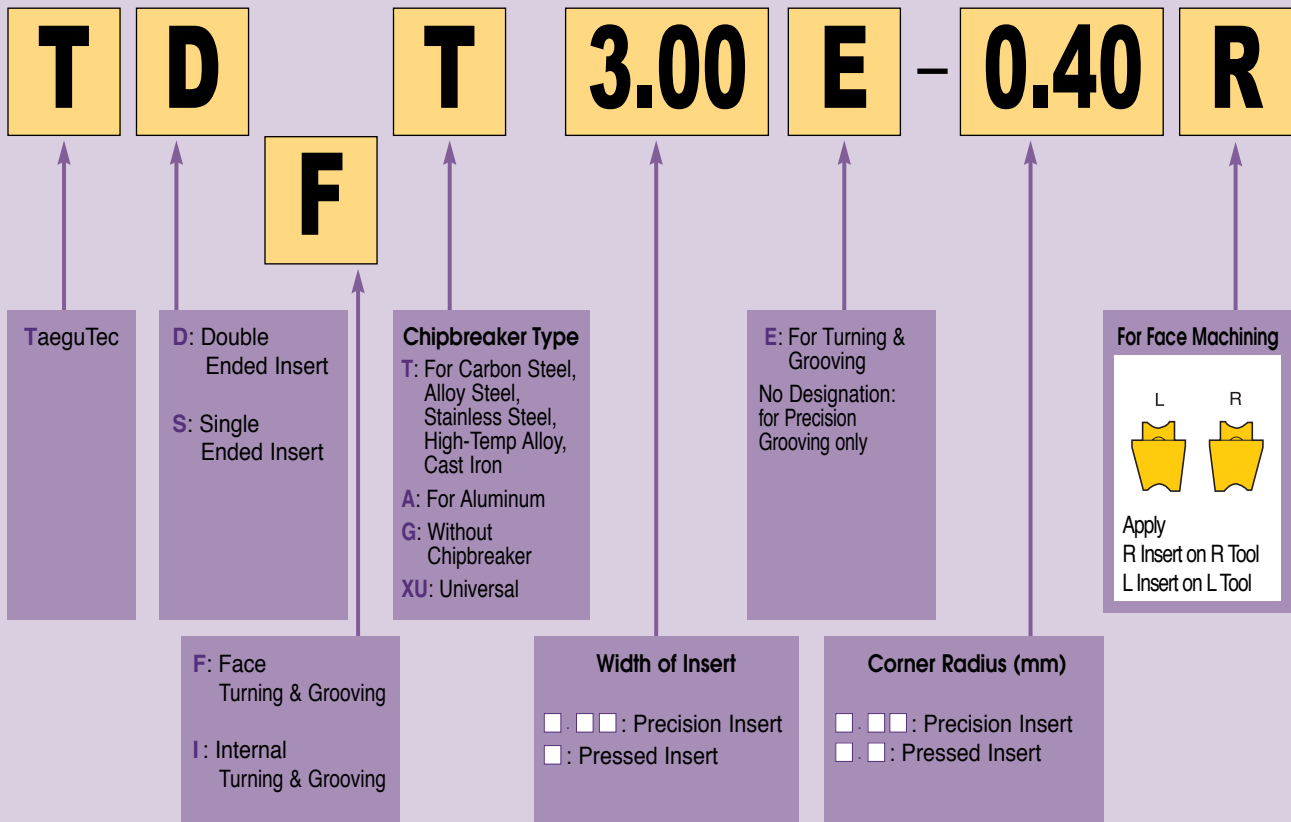
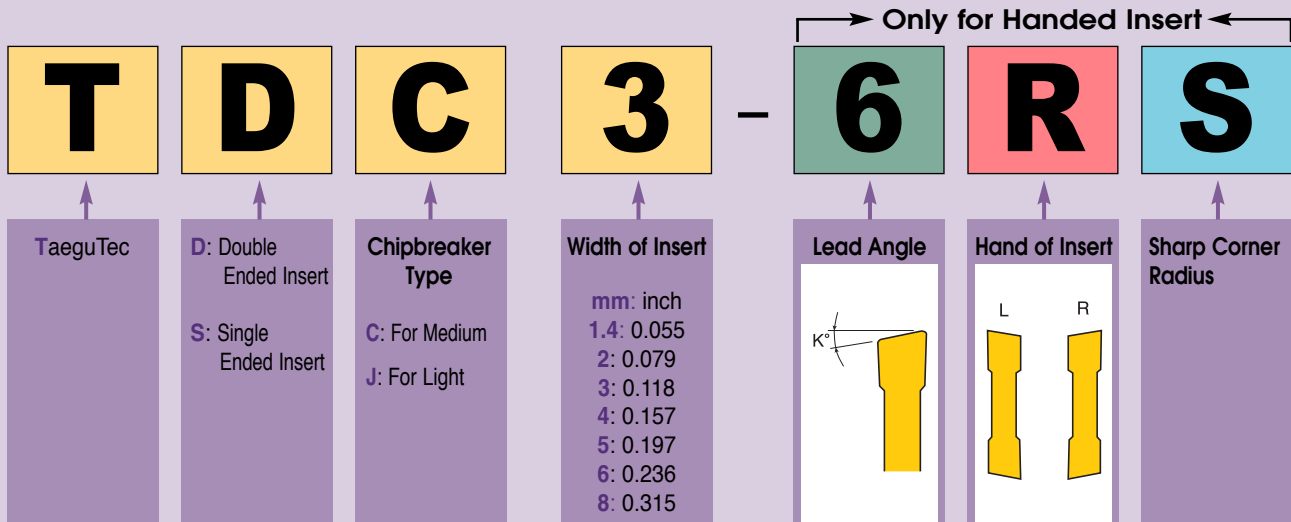
Internal Turning  
& Undercutting



Aluminum Wheel  
Machining



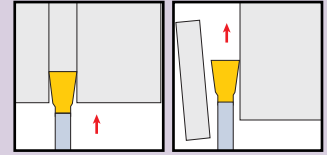
## T-CLAMP ULTRA PLUS INSERT DESIGNATION SYSTEM



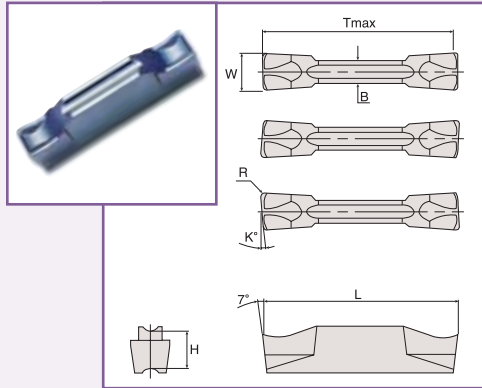
## PARTING & GROOVING

# TDC/TSC with C-Type Chipbreakers

Single and Double Ended Inserts for Deep Grooving and Parting

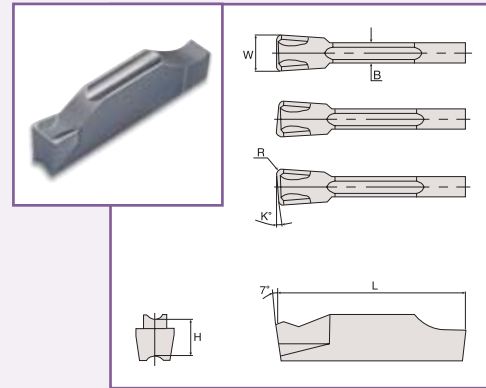


### TDC-Type



Neutral  
Left-hand  
Right-hand

### TSC-Type



Neutral  
Left-hand  
Right-hand

Designation	Insert Seat Size	W ±.002 (inch) W ±0.05 (mm)	R (inch) (mm)	L (inch) (mm)	K (degrees)	H (inch) (mm)	Tmax		Grades					
							TDC	TSC	K10	TT7220	TT8020	TT9030	CT3000	PV3030
TDC/TSC 2	2	.079 2.0	.008 0.20	.79 20	0°	.185 4.7	.748 19		○	○	○	○	○	○
TDC/TSC 2 - 6L	2	.079 2.0	.008 0.20	.79 20	6°	.185 4.7	.748 19		○	○	○			
TDC/TSC 2 - 6R	2	.079 2.0	.008 0.20	.79 20	6°	.185 4.7	.748 19		○	○	○		○	
TDC/TSC 2 - 8L	2	.079 2.0	.008 0.20	.79 20	8°	.185 4.7	.748 19			○	○			
TDC/TSC 2 - 8R	2	.079 2.0	.008 0.20	.79 20	8°	.185 4.7	.748 19			○	○			
TDC/TSC 2 - 15L	2	.079 2.0	.008 0.20	.79 20	15°	.185 4.7	.748 19			○	○			
TDC/TSC 2 - 15R	2	.079 2.0	.008 0.20	.79 20	15°	.185 4.7	.748 19			○	○			
TDC/TSC 2 - 15LS	2	.079 2.0	.0008 0.02	.77 19.6	15°	.185 4.7	.748 19			○	○			
TDC/TSC 2 - 15RS	2	.079 2.0	.0008 0.02	.77 19.6	15°	.185 4.7	.748 19			○	○			

Ordering example: 100 pcs. TDC 2 TT7220

○ : Stock

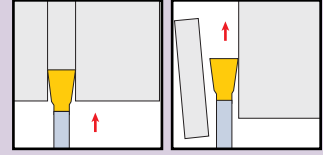
# TAEGUline



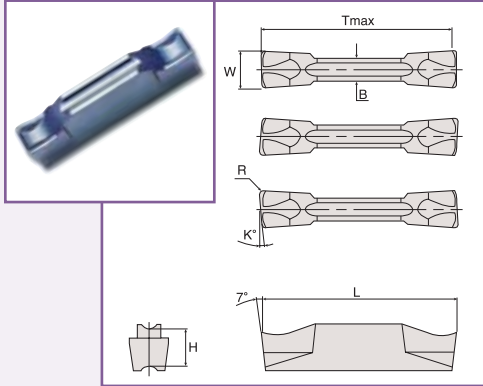
# PARTING & GROOVING

## TDC/TSC with C-Type Chipbreakers

Single and Double Ended Inserts for Deep Grooving and Parting

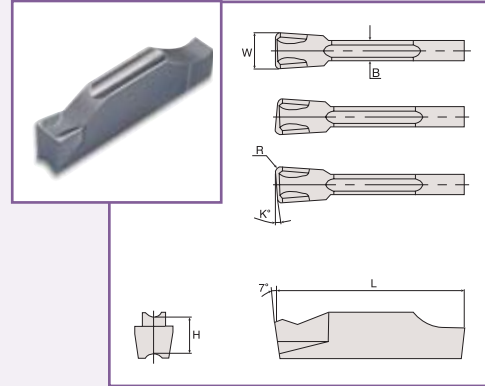


### TDC-Type



Neutral  
Left-hand  
Right-hand

### TSC-Type

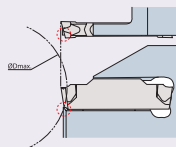


Neutral  
Left-hand  
Right-hand

Designation	Insert Seat Size	W ±.002 (inch) W ±0.05 (mm)	R (inch) (mm)	L (inch) (mm)	K (degrees)	H (inch) (mm)	Tmax		Grades					
							TDC	TSC	K10	TT7220	TT8020	TT9030	CT3000	
TDC/TSC 3	3	.118 3.0	.008 0.20	.79 20	0°	.185 4.7	.748 19			○	○	○	○	○
TDC/TSC 3 - 6L	3	.118 3.0	.008 0.20	.79 20	6°	.185 4.7	.748 19				○	○		○
TDC/TSC 3 - 6R	3	.118 3.0	.008 0.20	.79 20	6°	.185 4.7	.748 19				○	○		
TDC/TSC 3 - 6RS	3	.118 3.0	.0008 0.20	.77 20	6°	.185 4.7	.748 19				○	○		
TDC/TSC 3 - 6LS	3	.118 3.0	.0008 0.20	.77 20	6°	.185 4.7	.748 19				○	○		
TDC/TSC 3 - 15L	3	.118 3.0	.008 0.20	.79 20	15°	.185 4.7	.748 19				○	○		
TDC/TSC 3 - 15R	3	.118 3.0	.008 0.20	.79 20	15°	.185 4.7	.748 19				○	○		
TDC/TSC 3 - 15RS	3	.118 3.0	.0008 0.02	.77 19.6	15°	.185 4.7	.748 19					○		

Ordering example: 100 pcs. TDC 3 TT7220

○ : Stock



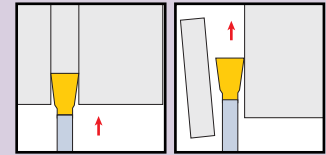
#### Max. Dia.(inch) parting & grooving

TSC 3-15R/L : Ø3.75  
TDC 3-15RS : Ø1.12  
TSC 3-15RS : Ø1.30  
The others : Unlimited

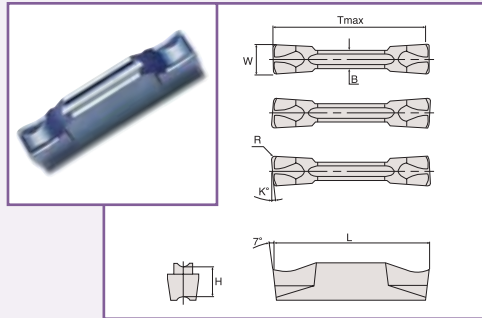
## PARTING & GROOVING

# TDC/TSC with C-Type Chipbreakers

Single and Double Ended Inserts for Deep Grooving and Parting

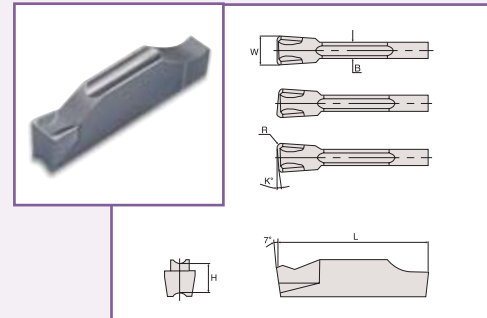


### TDC-Type



Neutral  
Left-hand  
Right-hand

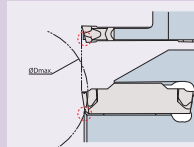
### TSC-Type



Neutral  
Left-hand  
Right-hand

Designation	Insert Seat Size	W ±.002 (inch) W ±0.05 (mm)	R (inch) (mm)	L (inch) (mm)	K (degrees)	H (inch) (mm)	Tmax		Grades					
							TDC	TSC	K10	TT7220	TT8020	TT9030	CT3000	
TDC/TSC 4	4	.157 4.0	.012 0.30	.79 20	0°	.185 4.7	.748 19			○	○	○	○	○
TDC/TSC 4-4L	4	.157 4.0	.012 0.30	.79 20	4°	.185 4.7	.748 19				○	○		
TDC/TSC 4-4R	4	.157 4.0	.012 0.30	.79 20	4°	.185 4.7	.748 19				○	○		
TDC/TSC 4-15L	4	.157 4.0	.012 0.30	.79 20	15°	.185 4.7	.748 19					○		
TDC/TSC 4-15R	4	.157 4.0	.012 0.30	.79 20	15°	.185 4.7	.748 19					○		
TDC/TSC 5	5	.197 5.0	.012 0.30	.98 25	0°	.205 5.2	.945 24			○	○	○		
TDC/TSC 5-4L	5	.197 5.0	.012 0.30	.98 25	4°	.205 5.2	.945 24			○	○	○		
TDC/TSC 5-4R	5	.197 5.0	.012 0.30	.98 25	4°	.205 5.2	.945 24			○	○	○		
TDC/TSC 6	6	.236 6.0	.012 0.30	.98 25	0°	.205 5.2	.945 24			○	○	○		
TDC 8	8	.315 8.0	.016 0.40	1.18 30	0°	.252 6.4	1.142 29					○	○	

Ordering example: 100 pcs. TDC 5 TT7220



#### Max. Dia.(inch) parting & grooving

TDC 4-15R/L : Ø1.14  
TSC 4-15R/L : Ø1.37  
The others : Unlimited

• Standard Holders (except TGFR xxxx) will be damaged if workpiece diameter goes over the dimension of each insert in the table.

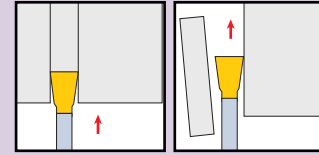
○ : Stock

# INGERSOLL

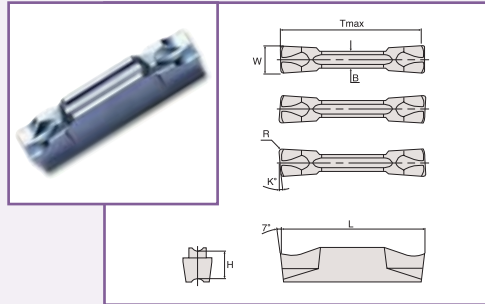
**PARTING & GROOVING**

## TDJ/TSJ with J-Type Chipbreakers

Single and Double Ended Inserts for Deep Grooving and Parting

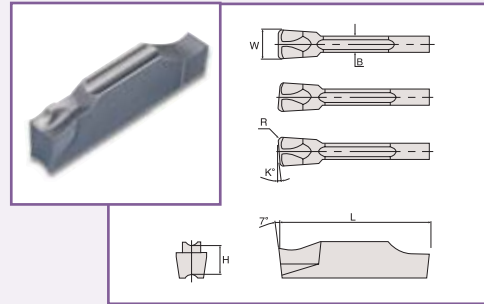


### TDJ-Type



Neutral  
Left-hand  
Right-hand

### TSJ-Type



Neutral  
Left-hand  
Right-hand

Designation	Insert Seat Size	W ±0.002 (inch) W ±0.05 (mm)	R (inch) (mm)	L (inch) (mm)	K (degrees)	H (inch) (mm)	Tmax		Grades				
							TDJ	TSJ	K10	TT7220	TT8020	TT9030	TT5100
TDJ 1.4	1	.055 1.4	.006 0.16	.63 16	0°	.157 4.0	.591 15						
TDJ/TSJ 2	2	.079 2.0	.008 0.20	.79 20	0°	.185 4.7	.748 19		○	○	○	○	○
TDJ/TSJ 2-6L	2	.079 2.0	.008 0.20	.79 20	6°	.185 4.7	.748 19			○	○		
TDJ/TSJ 2-6R	2	.079 2.0	.008 0.20	.79 20	6°	.185 4.7	.748 19	○		○	○		
TDJ/TSJ 2-15L	2	.079 2.0	.008 0.20	.79 20	15°	.185 4.7	.748 19			○	○		
TDJ/TSJ 2-15R	2	.079 2.0	.008 0.20	.79 20	15°	.185 4.7	.748 19			○	○		
TDJ/TSJ 2-15LS	2	.079 2.0	.0008 0.02	.77 19.6	15°	.185 4.7	.748 19			○	○		
TDJ/TSJ 2-15RS	2	.079 2.0	.0008 0.02	.77 19.6	15°	.185 4.7	.748 19			○	○		
TDJ/TSJ 3	3	.118 3.0	.008 0.20	.79 20	0°	.185 4.7	.748 19		○	○	○	○	
TDJ/TSJ 3-6L	3	.118 3.0	.008 0.20	.79 20	6°	.185 4.7	.748 19			○	○		
TDJ/TSJ 3-6R	3	.118 3.0	.008 0.20	.79 20	6°	.185 4.7	.748 19	○		○	○		
TDJ/TSJ 3-15L	3	.118 3.0	.008 0.20	.79 20	15°	.185 4.7	.748 19			○	○		
TDJ/TSJ 3-15R	3	.118 3.0	.008 0.20	.79 20	15°	.185 4.7	.748 19			○	○		
TDJ/TSJ 3-15LS	3	.118 3.0	.008 0.20	.77 19.6	15°	.185 4.7	.748 19			○	○		
TDJ/TSJ 3-15RS	3	.079 3.0	.008 0.20	.77 19.6	15°	.185 4.7	.748 19			○	○		

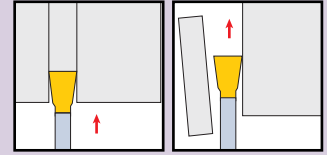
Ordering example: 100 pcs. TDJ 2 TT7220

○ : Stock

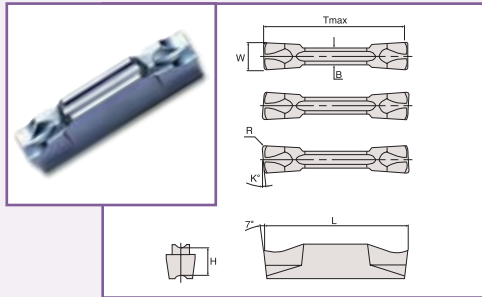
## PARTING & GROOVING

# TDJ/TSJ with J-Type Chipbreakers

Single and Double Ended Inserts for Deep Grooving and Parting

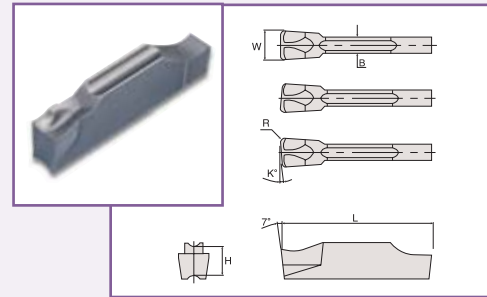


### TDJ-Type



Neutral  
Left-hand  
Right-hand

### TSJ-Type



Neutral  
Left-hand  
Right-hand

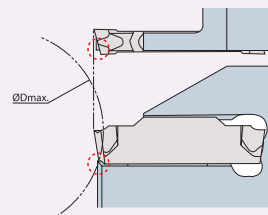
Designation	Insert Seat Size	W ±.002 (inch) W ±0.05 (mm)	R (inch) (mm)	L (inch) (mm)	K (degrees)	H (inch) (mm)	Tmax		Grades			
							TDJ	TSJ	K10	TT7220	TT8020	TT9030
TDJ/TSJ 4	4	.157 4.0	.012 0.30	.79 20	0°	.185 4.7	.748 19		○	○	○	○
TDJ/TSJ 4-4L	4	.157 4.0	.012 0.30	.79 20	4°	.185 4.7	.748 19			○	○	
TDJ/TSJ 4-4R	4	.157 4.0	.012 0.30	.79 20	4°	.185 4.7	.748 19			○	○	
TDJ/TSJ 5	5	.197 5.0	.012 0.30	.98 25	0°	.205 5.2	.945 24		○	○	○	○
TDJ/TSJ 5-4L	5	.197 5.0	.012 0.30	.98 25	4°	.205 5.2	.945 24		○	○	○	
TDJ/TSJ 5-4R	5	.197 5.0	.012 0.30	.98 25	4°	.205 5.2	.945 24		○	○	○	
TDJ/TSJ 6	6	.236 6.0	.012 0.30	.98 25	0°	.205 5.2	.945 24		○	○	○	○



: Only TDJ

Ordering example: 100 pcs. TDJ 5 TT7220

○ : Stock



#### Max. Dia. parting & grooving

TDJ 2-15RS/LS : Ø1.07

TSJ 3-15R/L : Ø4.03

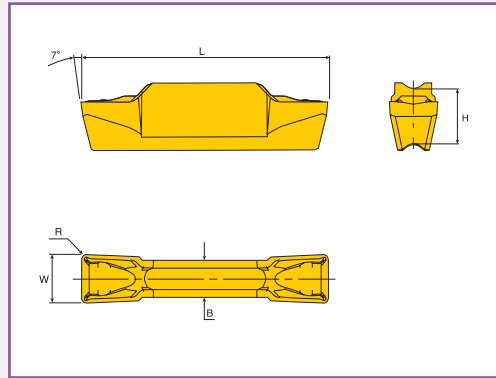
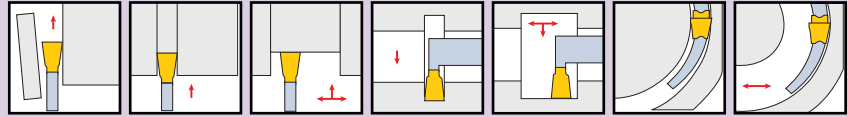
TSJ 3-15RS/LS : Ø1.31

The others : Unlimited

# TURNING & GROOVING

## TDXU-E

Pressed inserts for External, Internal, Face Turning, Grooving and Parting



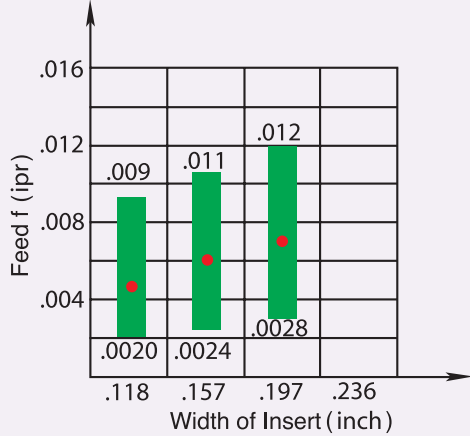
Designation	Insert Seat Size	W±.002 (inch) W±0.05 (mm)	R (inch) (mm)	L (inch) (mm)	H (inch) (mm)	Grades				
						TT7220	K10	TT5100	CT3000	TT9030
TDXU 3E - 0.3	3	.118 3.00	.012 0.30	.79 20	.185 4.7		○	○	○	○
TDXU 4E - 0.4	4	.157 4.00	.016 0.40	.79 20	.185 4.7	○	○	○	○	○
TDXU 5E - 0.4	5	.197 5.00	.016 0.40	.98 25	.205 5.2		○	○	○	○

Ordering example: 100 pcs. TDXU 4E - 0.4 TT5100

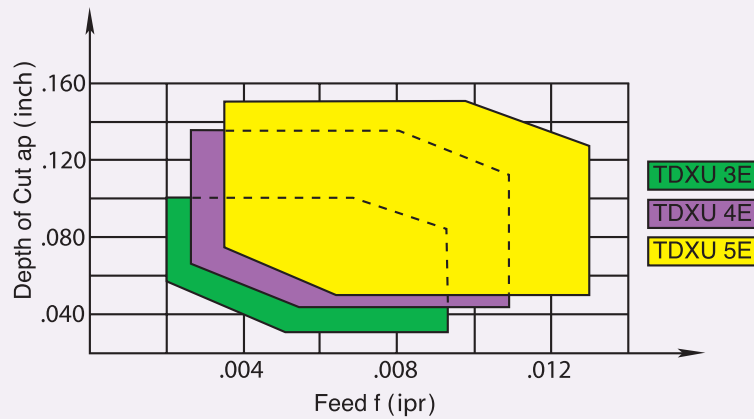
○ : Stock

### Chip Control Range

¥ Grooving Application



¥ Turning Application

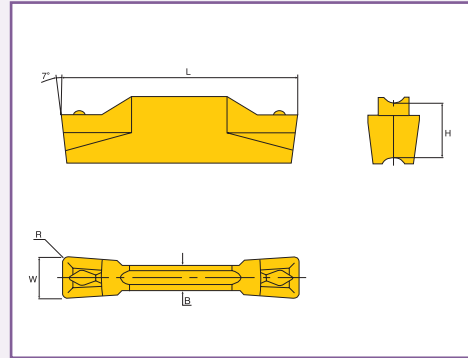
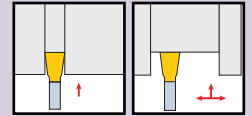




## TURNING & GROOVING

# TDT with T-Type Chipbreakers

Precision Inserts for  
External Turning, Grooving and Profiling



Designation	Insert Seat Size	W±.0008 (inch) W±0.02 (mm)	R±.002 (inch) R±0.05 (mm)	L (inch) (mm)	H (inch) (mm)	Grades			
						K10	TT6030	TT7220	TT5100
TDT 3.00E - 0.20	3	.118 3.00	.008 0.20	.79 20	.185 4.7	○		○	○
TDT 3.00E - 0.40	3	.118 3.00	.016 0.40	.79 20	.185 4.7	○		○	○
TDT 3.18E - 0.40	3	.125 3.18	.016 0.40	.79 20	.185 4.7			○	
TDT 4.00E - 0.40	4	.157 4.00	.016 0.40	.79 20	.185 4.7	○		○	○
TDT 4.00E - 0.80	4	.157 4.00	.031 0.80	.79 20	.185 4.7	○		○	○
TDT 4.75E - 0.40	5	.187 4.75	.016 0.40	.98 25	.205 5.2			○	
TDT 4.78E - 0.55	5	.188 4.78	.022 0.55	.98 25	.205 5.2			○	○
TDT 5.00E - 0.40	5	.197 5.00	.016 0.40	.98 25	.205 5.2	○	○	○	○
TDT 5.00E - 0.80	5	.197 5.00	.031 0.80	.98 25	.205 5.2	○		○	○
TDT 6.00E - 0.40	6	.236 6.00	.016 0.40	.98 25	.205 5.2		○		
TDT 6.00E - 0.80	6	.236 6.00	.031 0.80	.98 25	.205 5.2	○		○	○
TDT 6.00E - 1.20	6	.236 6.00	.047 1.20	.98 25	.205 5.2	○		○	○
TDT 6.35E - 0.40	8	.250 6.35	.016 0.40	1.18 30	.252 6.4			○	
TDT 8.00E - 0.80	8	.315 8.00	.031 0.80	1.18 30	.252 6.4	○		○	○
TDT 8.00E - 1.20	8	.315 8.00	.047 1.20	1.18 30	.252 6.4	○		○	○

Ordering example: 100 pcs. TDT 4.00E-0.40 TT5100

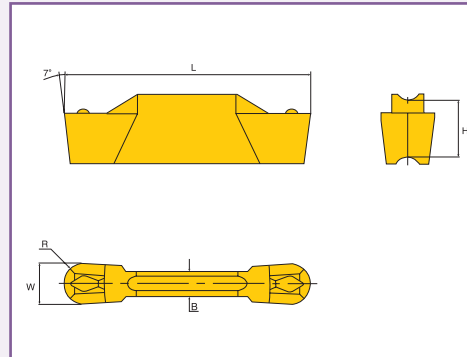
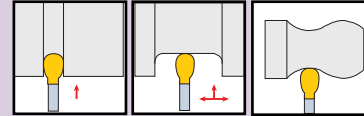
○ : Stock

# TURNING, GROOVING & PROFILING

## TDT (full Radius) with T-Type Chipbreakers

Precision Inserts for

External Turning, Grooving and Profiling



Designation	Insert Seat Size	W±.0008 (inch) W±0.02 (mm)	R±.002 (inch) R±0.05 (mm)	L (inch) (mm)	H (inch) (mm)	Grades			
						K10	TT8020	TT7220	TT5100
TDT 3.00E - 1.50	3	.118 3.00	.059 1.50	.79 20	.185 4.7	○		○	○
TDT 4.00E - 2.00	4	.157 4.00	.079 2.00	.79 20	.185 4.7	○	○	○	○
TDT 4.78E - 2.39	5	.188 4.78	.094 2.39	.98 25	.205 5.2				○
TDT 5.00E - 2.50	5	.197 5.00	.098 2.50	.98 25	.205 5.2	○		○	○
TDT 6.00E - 3.00	6	.236 6.00	.118 3.00	.98 25	.205 5.2	○		○	○

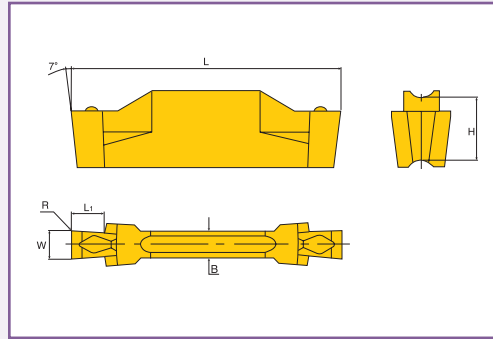
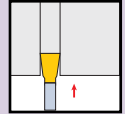
Ordering example : 100 pcs. TDT 3.00E - 1.50 TT5100

○ : Stock

## GROOVING

# TDT with T-Type Chipbreakers

Precision Inserts for External Grooving Only



Designation	Insert Seat Size	W±.0008 (inch)	R±.0012 (inch)	L (inch) (mm)	L1 (inch) (mm)	H (inch) (mm)	Grades			
		W±0.02 (mm)	R±0.03 (mm)				K10	TT7220	TT5100	TT9030
TDT 1.00 - 0.00	2	.039 1.00	.000 0.00	.79 20	.079 2.5	.185 4.7	○	○	○	○
TDT 1.30 - 0.00	2	.051 1.30	.000 0.00	.79 20	.079 2.5	.185 4.7		○	○	○
TDT 1.60 - 0.10	2	.063 1.60	.004 0.10	.79 20	.079 2.5	.185 4.7	○	○	○	○
TDT 1.85 - 0.10	2	.073 1.85	.004 0.10	.79 20	.118 3.5	.185 4.7		○	○	○
TDT 2.15 - 0.15	2	.085 2.15	.006 0.15	.79 20	.118 3.5	.185 4.7	○	○	○	○
TDT 2.65 - 0.15	3	.104 2.65	.006 0.15	.79 20	.197 5.0	.185 4.7	○	○	○	○
TDT 3.15 - 0.15	3	.124 3.15	.006 0.15	.79 20	.197 5.0	.185 4.7	○	○	○	○
TDT 4.15 - 0.15	4	.163 4.15	.006 0.15	.79 20	.197 5.0	.185 4.7		○	○	○
TDT 5.15 - 0.15	5	.203 5.15	.006 0.15	.98 25	.197 5.0	.205 5.2			○	

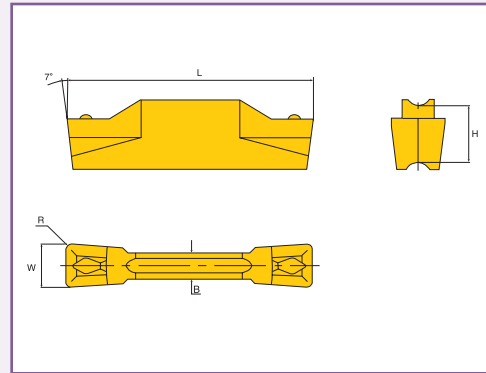
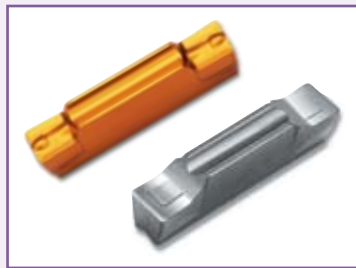
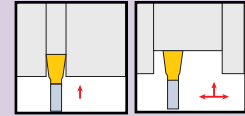
Ordering example: 100 pcs. TDT 1.85 - 0.10 TT5100

○ : Stock

## TURNING & GROOVING

# TDT-E with T-Type Chipbreakers

Pressed Inserts for  
External Turning and Grooving



Designation	Insert Seat Size	W±.002 (inch) W±0.05 (mm)	R (inch) (mm)	L (inch) (mm)	H (inch) (mm)	Grades				
						K10	AB30	TT7220	TT5100	CT3000
TDT 3E - 0.4	3	.118 3.00	.016 0.40	.79 20	.185 4.7	○		○	○	○
TDT 4E - 0.4	4	.157 4.00	.016 0.40	.79 20	.185 4.7	○		○	○	○
TDT 4E - 0.4T CE	4	.157 4.00	.016 0.40	.79 20	.185 4.7		○			
TDT 6E - 0.8T CE	6	.236 6.00	.031 0.80	.98 25	.205 5.2		○			

Ordering example: 100 pcs. TDT 3E - 0.4 TT5100

○ : Stock

## Ceramic Insert (AB30)

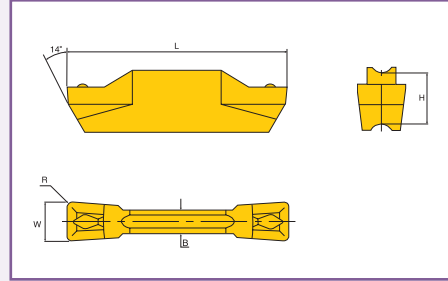
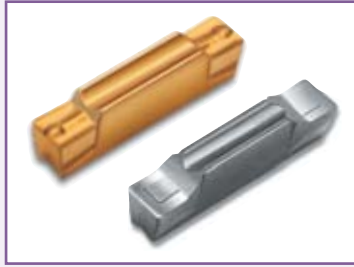
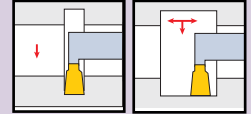
### Application

- **Workpiece:** Cast Iron, Hardened Steel, Graphite
- **Machining:** External, Internal, Face Grooving & Turning
- **Recommended Machining Condition:** Vc: 1950-2600 sfm, F: .004-.008 ipr
- **Features:**
  - Economical Pressed-to-Size
  - Double ended Cutting edge

## TURNING & GROOVING

# TDIT-E with T-Type Chipbreakers

Precision Pressed Inserts for Internal Grooving and Turning



Designation	Insert Seat Size	W±.0008 (inch) W±0.02 (mm)	R±.002 (inch) R±0.05 (mm)	L (inch) (mm)	H (inch) (mm)	Grades			
						K10	AB30 (ceramic)	TT7220	TT5100
TDIT 3.00E - 0.40	3	.118 3.00	.016 0.40	.79 20	.185 4.7	○		○	○
TDIT 4.00E - 0.40	4	.157 4.00	.016 0.40	.79 20	.185 4.7	○		○	○
TDIT 4.00E - 0.80	4	.157 4.00	.031 0.80	.79 20	.185 4.7			○	○
TDIT 5.00E - 0.40	5	.197 5.00	.016 0.40	.98 25	.205 5.2	○		○	○
TDIT 5.00E - 0.80	5	.197 5.00	.031 0.80	.98 25	.205 5.2			○	○
TDIT 6.00E - 0.80	6	.236 6.00	.031 0.80	.98 25	.205 5.2			○	○
TDIT 6.00E - 1.20	6	.236 6.00	.047 1.20	.98 25	.205 5.2			○	○
TDIT 8.00E - 0.80	8	.315 8.00	.031 0.80	1.18 30	.252 6.4			○	○
TDIT 8.00E - 1.20	8	.315 8.00	.047 1.20	1.18 30	.252 6.4			○	○
TDIT 3E - 0.4	3	.118 3.0±0.05	.016 0.40	.79 20	.185 4.7				○
TDIT 4E - 0.4	4	.157 4.0±0.05	.016 0.40	.79 20	.185 4.7				○
TDIT 4E - 0.4T CE <sup>(1)</sup>	4	.157 4.0±0.05	.016 0.40	.79 20	.185 4.7		○		
TDIT 6E - 0.8T CE <sup>(1)</sup>	6	.236 6.0±0.05	.031 0.80	.98 25	.205 5.2		○		

(1) This insert is pressed ceramic insert  
Ordering example: 100 pcs. TDIT 3.00E - 0.40 TT5100

○ : Stock

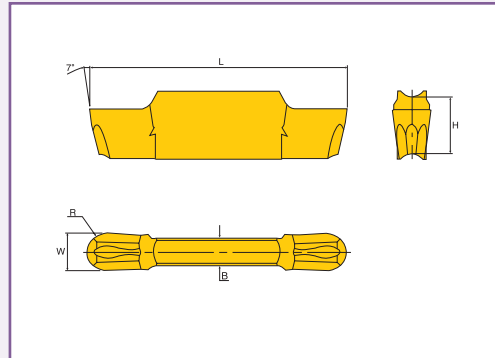
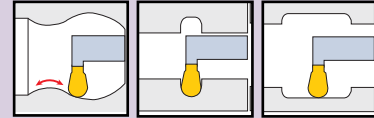
# TAEGUline



# TURNING, GROOVING & PROFILING

## TDIT-E with T-Type Chipbreakers

Precision Pressed Inserts for  
Internal Turning and Grooving



Designation	Insert Seat Size	W±.0008 (inch) W±0.02 (mm)	R±.002 (inch) R±0.05 (mm)	L (inch) (mm)	H (inch) (mm)	Grades		
						K10	TT7220	TT5100
TDIT 3.00E - 1.50	3	.118 3.00	.059 1.50	.79 20	.185 4.7	○	○	○
TDIT 4.00E - 2.00	4	.157 4.00	.079 2.00	.79 20	.185 4.7		○	○
TDIT 5.00E - 2.50	5	.197 5.00	.098 2.50	.98 25	.205 5.2		○	○
TDIT 6.00E - 3.00	6	.236 6.00	.118 3.00	.98 25	.205 5.2		○	○

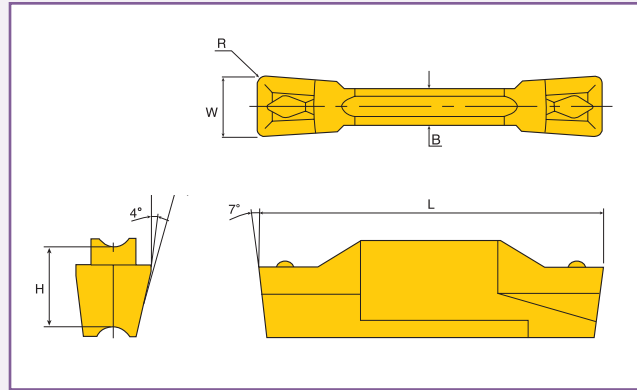
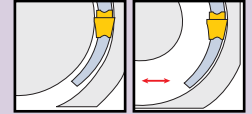
Ordering example : 100 pcs. TDIT 5.00E - 2.50 TT5100

○ : Stock

## TURNING & GROOVING

# TDFT-E with T-Type Chipbreakers

Pressed Inserts for  
Face Grooving and Turning



Right hand shown

Designation	Insert Seat Size	W±.002 (inch) W±0.05 (mm)	R (inch) (mm)	L (inch) (mm)	H (inch) (mm)	Grades			
						K10	AB30 (ceramic)	TT7220	TT5100
TDFT 3E - 0.4R/L	3	.118 3.0	.016 0.4	.79 20	.185 4.7	○		○	○
TDFT 4E - 0.4R/L	4	.157 4.0	.016 0.4	.79 20	.185 4.7	○		○	○
TDFT 4E - 0.4TR/L CE <sup>(1)</sup>	4	.157 4.0	.016 0.4	.79 20	.185 4.7		○		
TDT 6E - 0.8T CE <sup>(1)</sup>	6	.236 6.0	.031 0.8	.98 25	.205 5.2		○		

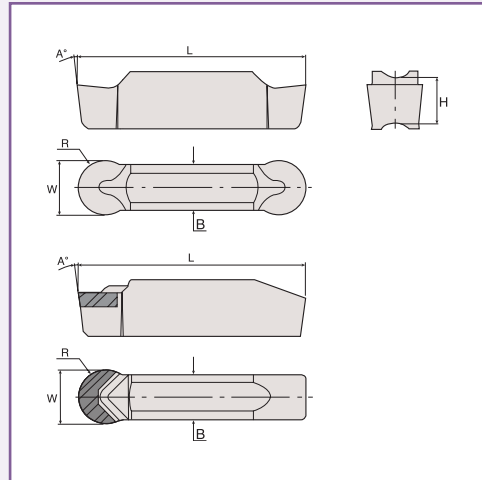
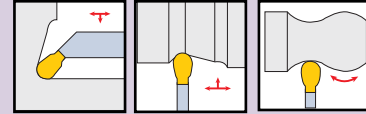
(1) This insert is pressed ceramic.  
Ordering example: 100 pcs. TDFT 4E - 0.4R TT5100

○ : Stock

# TURNING, GROOVING & PROFILING

## TDA/TSA with A-Type Chipbreakers

Inserts for  
Aluminum Wheel Machining



Designation	Insert Seat Size	W		L (inch) (mm)	H (inch) (mm)	A (inch) (mm)	Grades	
		$W \pm .002$ (inch) $W \pm 0.05$ (mm)	$R \pm .002$ (inch) $R \pm 0.05$ (mm)				K10	KP300 (PCD)
<b>TDA 6.00 - 3.00</b>	6	.236 6.00	.118 3.00	.98 25	.205 5.2	7°	○	
<b>TDA 8.00 - 4.00</b>	8	.315 8.00	.157 4.00	1.18 30	.252 6.4	10°	○	
<b>TSA 6.00 - 3.00</b>	6	.236 6.00	.118 3.00	.98 25	.205 5.2	7°		○
<b>TSA 8.00 - 4.00</b>	8	.315 8.00	.157 4.00	1.18 30	.252 6.4	10°		○

Ordering example: 100 pcs. TDA 6.00 - 3.00 K10

○ : Stock

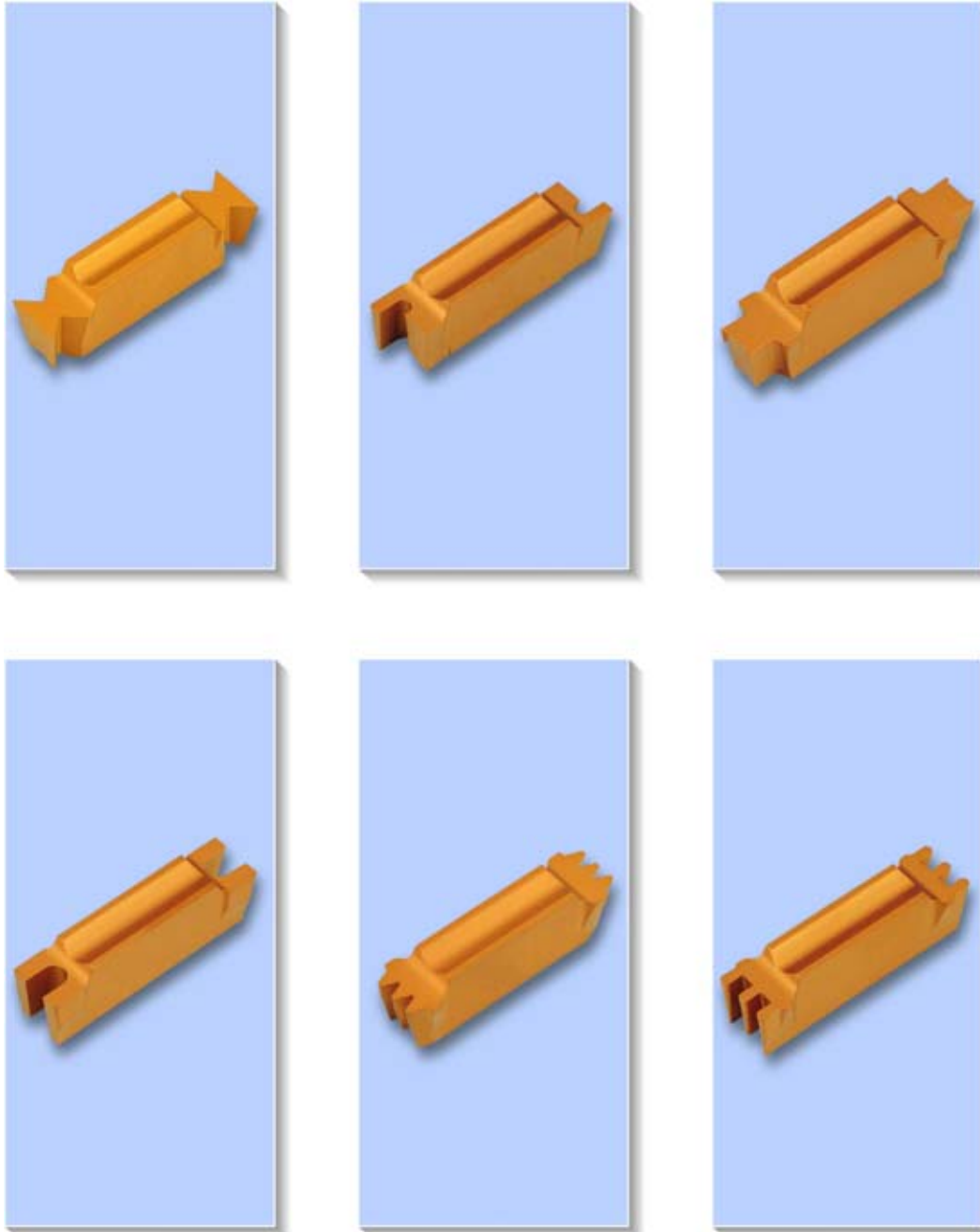


T262

**TAEГУ***line*

## Tailor-Made Inserts

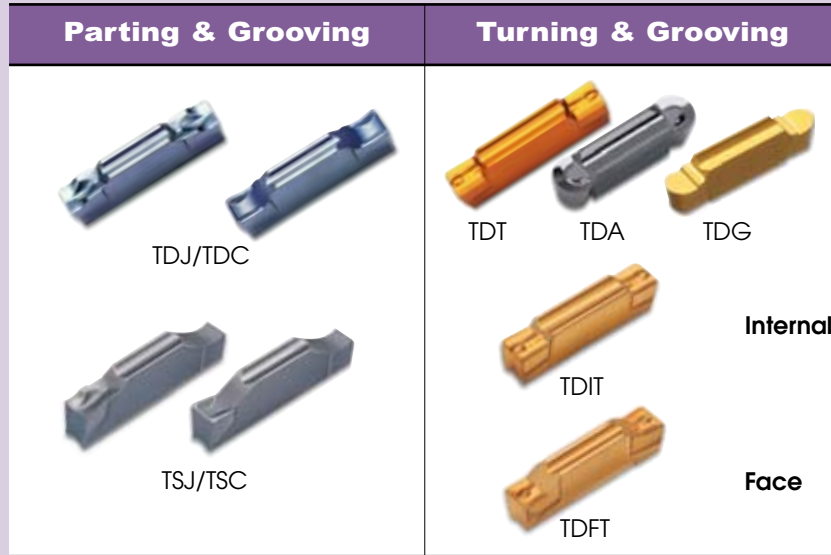
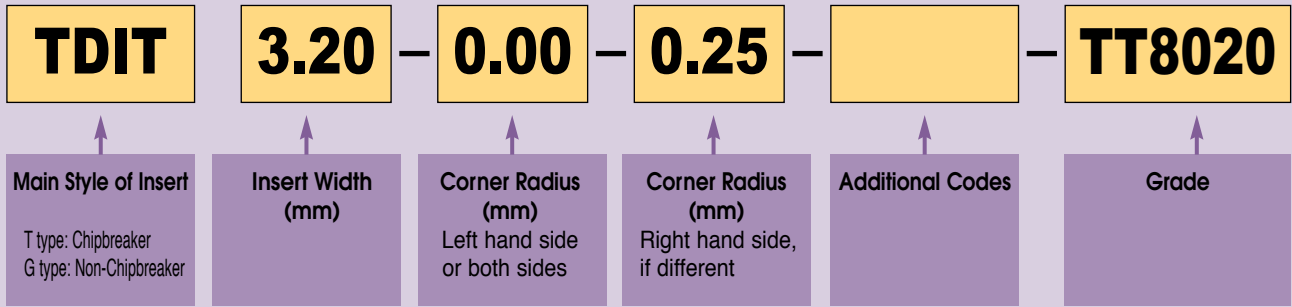
### Special Profile Inserts



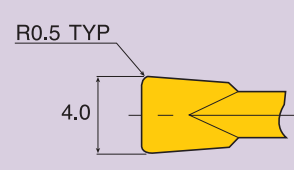
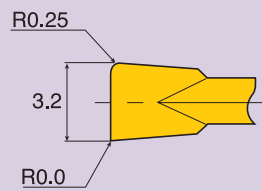
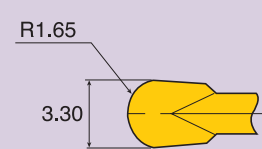
Tailor made inserts are available upon request.

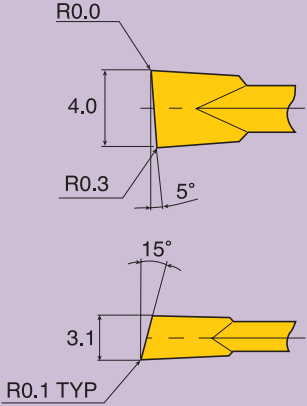
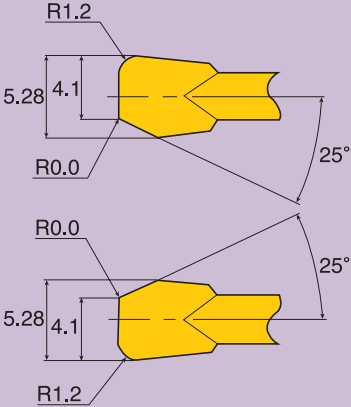
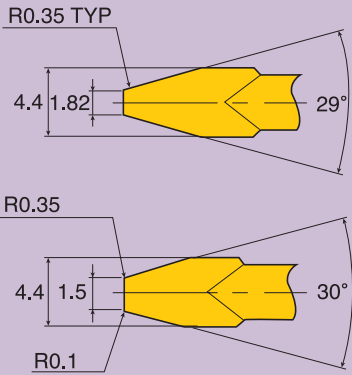
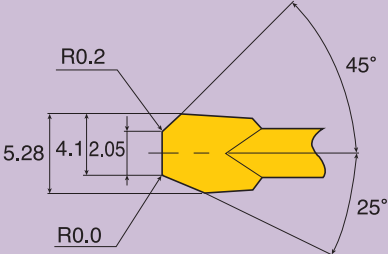


## DESIGNATION SYSTEM FOR TAILOR-MADE INSERTS



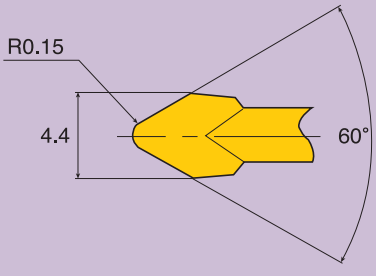
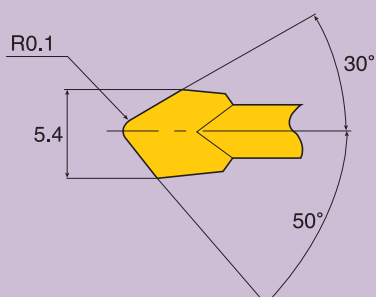
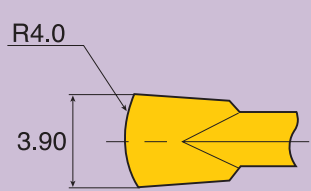
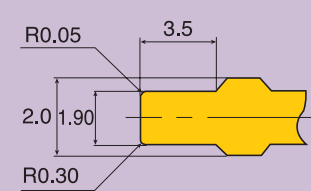
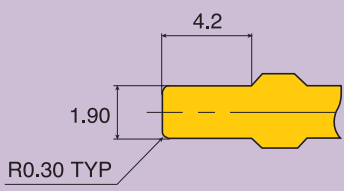
### Examples

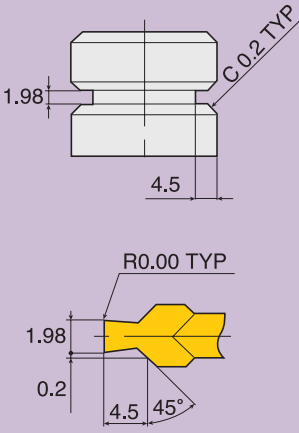
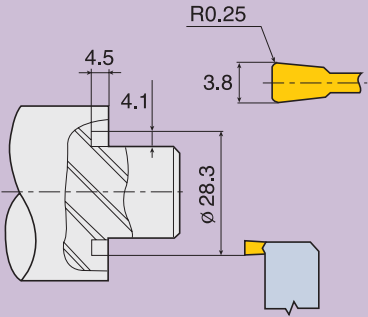
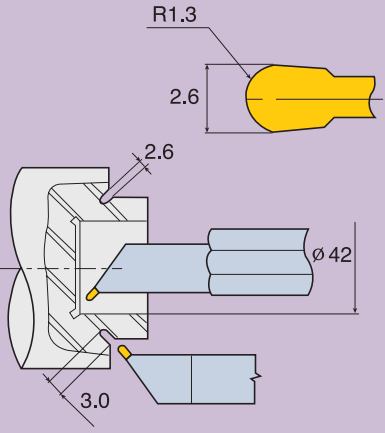
Shape	Designation	Remarks
	<b>TDT 4.00-0.50</b>	Symmetrical Type
	<b>TDIT 3.20-0.00-0.25</b>	Non-Symmetrical Type
	<b>TDT 3.30-1.65</b>	Full-R Type

Shape	Designation	Remarks
	<p>TDT 4.00-0.30-0.00-5RA</p> <p>TDFT 3.10-0.10-0.10-15LA</p>	
	<p>TDG 5.28-4.10-0.00-1.20-R25A</p> <p>TDT 5.28-4.10-1.20-0.00-L25A</p>	<p>L: Chamfer on left hand side</p> <p>R: Chamfer on right hand side</p>
	<p>TDG 4.40-1.82-0.35-29A</p> <p>TDT 4.40-1.50-0.10-0.35-30A</p>	
	<p>TDT 5.28-4.10-2.05-0.00-0.20-L25A-R45A</p>	



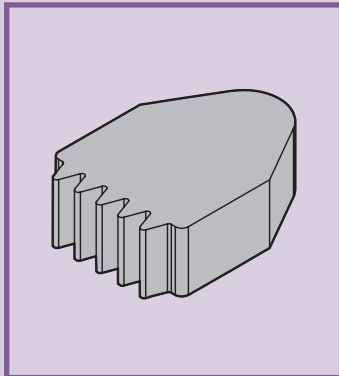
## DESIGNATION SYSTEM FOR TAILOR-MADE INSERTS

Shape	Designation	Remarks
	<b>TDG 4.40-0.15-60A</b>	
	<b>TDG 5.40-0.10-L50A-R30A</b>	
	<b>TDT 3.90-4.00</b>	
	<b>TDT 2.00-1.90-0.30-0.05-3.50T</b>	
	<b>TDT 1.90-0.30-4.20T</b>	

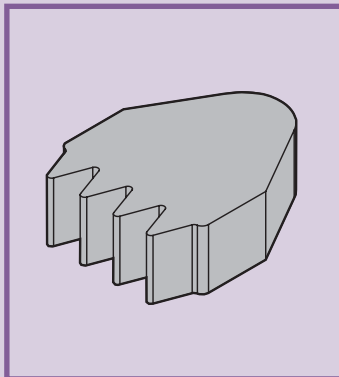
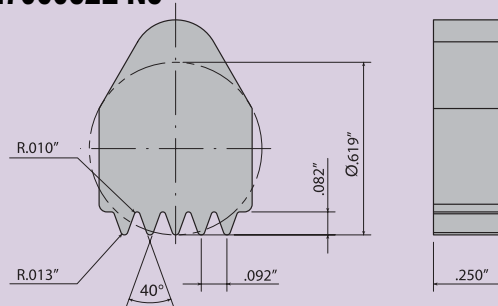
Shape	Designation	Remarks
	<p><b>TDG 1.98-0.00-4.5T-45A-0.2</b></p>	
	<p><b>TDFT 3.80-0.25-4.50T</b></p>	
	<p><b>TDIT 2.60-1.30</b></p>	
<p>The Others</p>	<p>Available upon customer's request</p>	



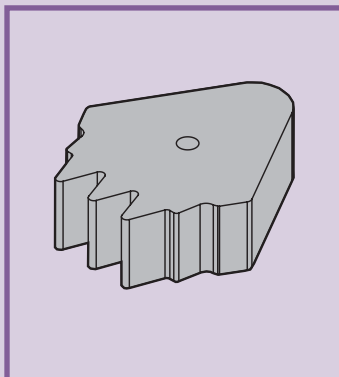
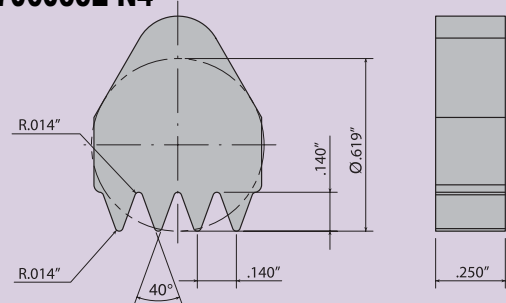
## TAILOR-MADE INSERTS FOR PULLEY MACHINING



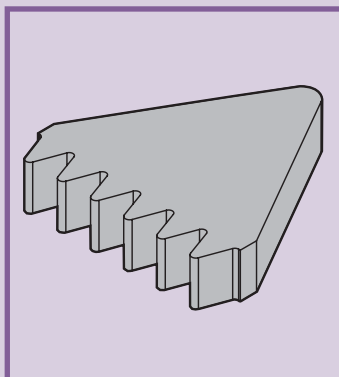
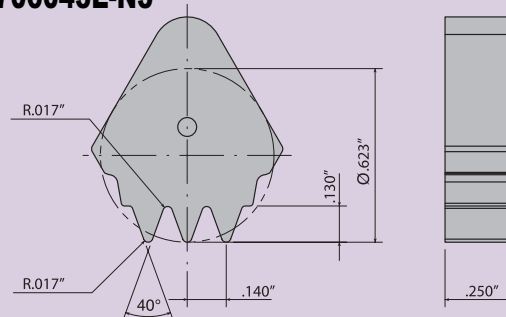
**Description: ZT 2706032E-N5**



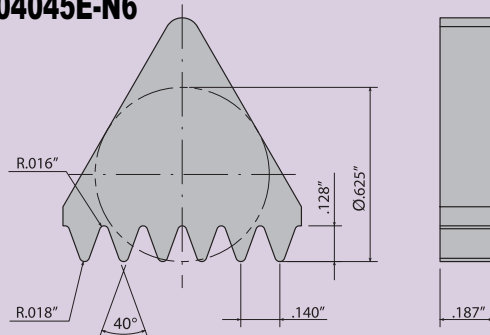
**Description: ZT 2706035E-N4**



**Description: ZT 2706043E-N3**



**Description: ZT 2704045E-N6**

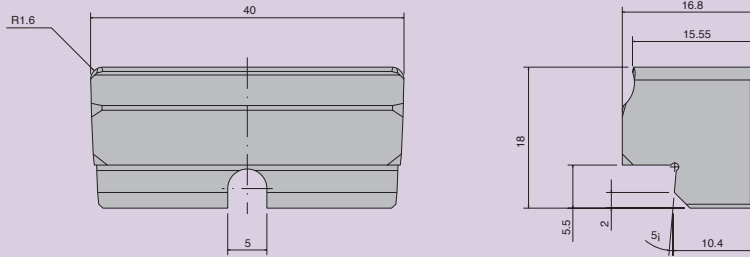




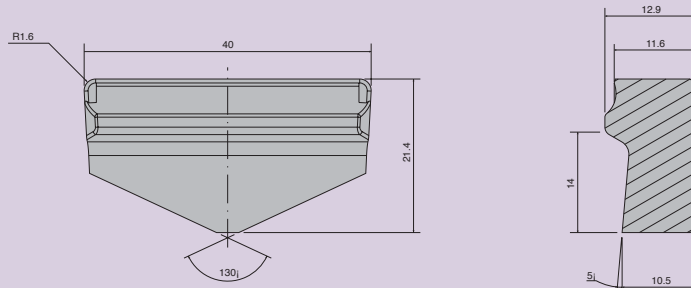
■ TAILOR-MADE FOR HEAVY INDUSTRY



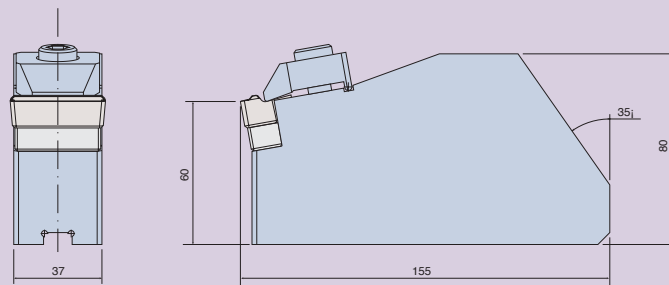
Description: SVN□□□□



Description: XNMR□□□□



Description: WK□□□□





# TaeguTclamp

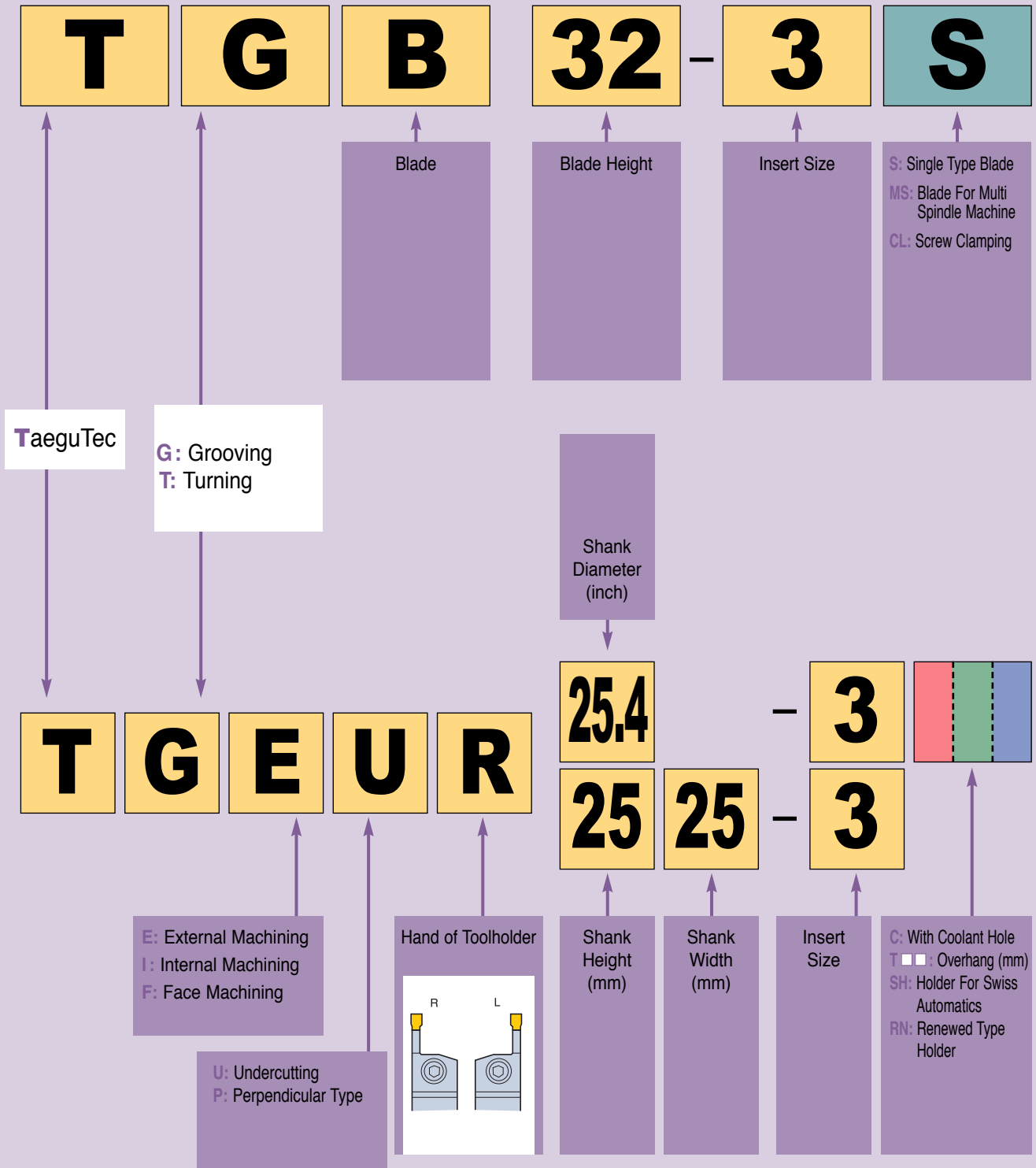
Blade & Toolholder System



T270

**TAEGU**line

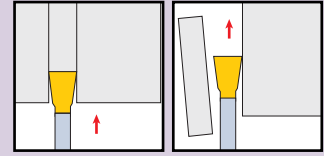
# TAEGU-CLAMP BLADE TOOLHOLDER DESIGNATION SYSTEM



## BLADES

# TGB

Blades for  
Parting and Deep Grooving



Use  
Insert

TDC/TSC: page T248-T250  
TDJ/TSJ : page T251-T252  
TDXU : page T253  
TDT : page T254-T257

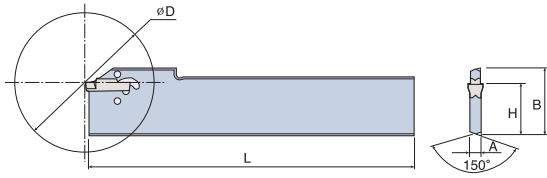


Fig.1

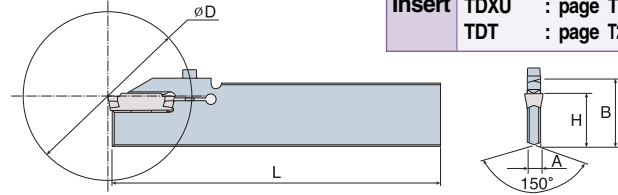


Fig.3

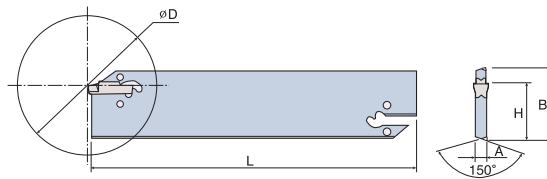


Fig.2

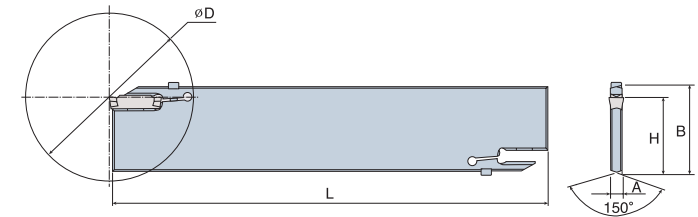


Fig.4

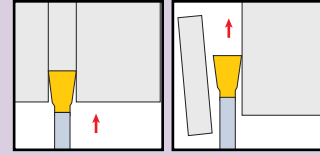
Designation	Insert Seat Size	B (inch) (mm)	L (inch) (mm)	Dmax (inch) (mm)	H (inch) (mm)	A (inch) (mm)	Block	Insert Extractor	Screw	Fig.
TGB 26 - 1.4S $\rightarrow$	1	1.02 26	5.90 150	1.02 26	.84 21.4	.039 1.0	TTBN □□ -26 TTBU □□ -26	EDG - 23B		1
TGB 26 - 2S $\rightarrow$	2	1.02 26	5.90 150	1.57 40	.84 21.4	.071 1.8		EDG - 33B		1
TGB 26 - 3S $\rightarrow$	3	1.02 26	5.90 150	1.97 50	.84 21.4	.094 2.4		EDG - 33B		1
TGB 26 - 4S $\rightarrow$	4	1.02 26	5.90 150	3.15 80	.84 21.4	.126 3.2		EDG - 33B		1
TGB 32 - 1.4	1	1.26 32	5.90 150	.98 25	.98 24.8	.039 1.0	TTBN □□ -32 TTBU □□ -32	EDG - 23B		2
TGB 32 - 2	2	1.26 32	5.90 150	1.97 50	.98 24.8	.071 1.8		EDG - 33B		2
TGB 32 - 3	3	1.26 32	5.90 150	3.94 100	.98 24.8	.094 2.4		EDG - 33B		2
TGB 32 - 4	4	1.26 32	5.90 150	3.94 100	.98 24.8	.126 3.2		EDG - 33B		2
TGB 32 - 5	5	1.26 32	5.90 150	4.72 120	.98 24.8	.157 4.0		EDG - 33B		2
TGB 32 - 6	6	1.26 32	5.90 150	4.72 120	.98 24.8	.205 5.2		EDG - 33B		2
TGB 32 - 8S-CL $\rightarrow$	8	1.26 32	5.90 150	3.15 80	.98 24.9	.244 6.2		L-W3	SH M4 X 0.7 X 20-M0	3
TGB 45 - 4	4	1.77 45	5.90 150	6.30 160	1.5 38.1	.126 3.2		TTBN □□ -45	EDG - 33B	
TGB 52 - 8-CL	8	2.05 52	9.84 250	3.94 100	1.78 45.2	.268 6.8		L-W3	SH M4 X 0.7 X 20-M0	4

- $\rightarrow$  Single ended Blade
- Insert extractor should be ordered separately.

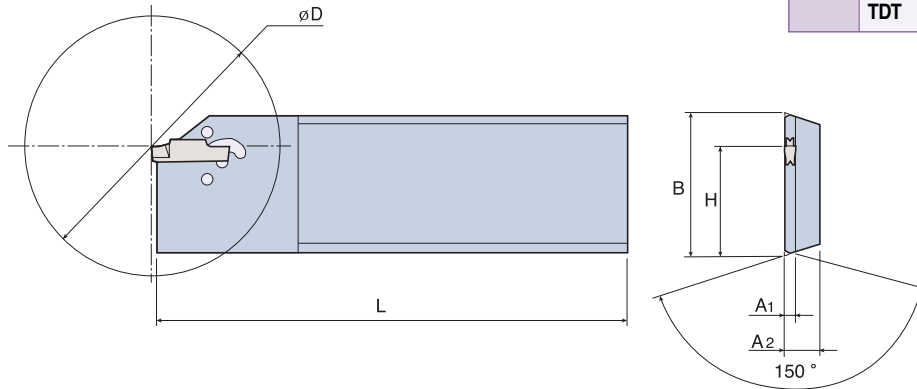
# TAEGUline

## TGBR/L

Reinforced Blades for Parting and Deep Grooving



**Use Insert**  
 TDC/TSC: page T248-T250  
 TDJ/TSJ : page T251-T252  
 TDXU : page T253  
 TDT : page T254-T257



Right hand shown

Designation	Insert Seat Size	B (inch) (mm)	L (inch) (mm)	H (inch) (mm)	A1 (inch) (mm)	A2 (inch) (mm)	ØDmax (inch) (mm)	Insert Extractor	Block
TGBR/L 32T24-2	2				.063 1.8		1.65 42.0		
TGBR/L 32T33-3	3	1.260 32.0	4.33 110.0	0.98 24.9	.094 2.3	.31 7.9	2.36 60.0	EDG-33B	TTBN □□-32 TTBU □□-32
TGBR/L 32T41-4	4				.126 3.3		3.15 80.0		

● Extractor should be ordered separately.

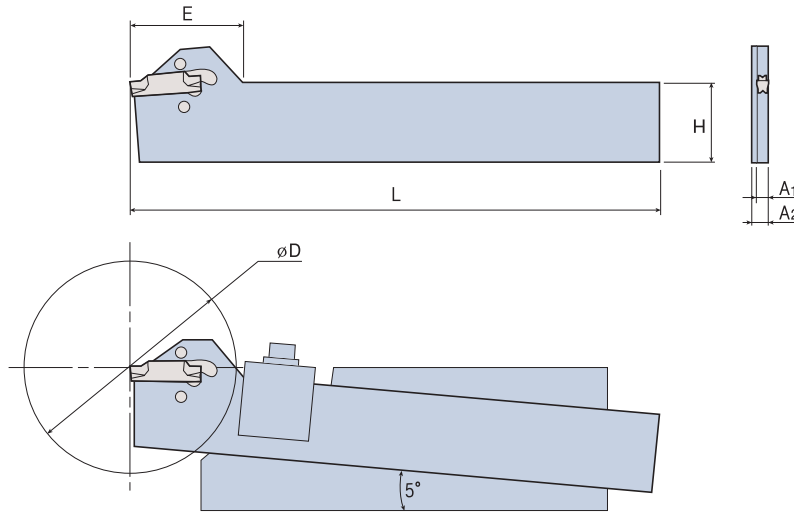
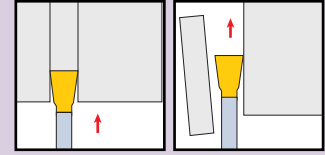




■ BLADES

# TGB-MS

Blades for Multi-Spindle Machines  
Replacement for HSS and Brazed Tools



<b>Use Insert</b>	TDC/TSC: page T248-T250
	TDJ/TSJ : page T251-T252
	TDXU : page T253
	TDT : page T254-T257

Designation	Insert Seat Size	H (inch) (mm)	L (inch) (mm)	E (inch) (mm)	A1 (inch) (mm)	A2 (inch) (mm)	ØDmax (inch) (mm)	Insert Extractor
TGB 5 - 22 - 2 - MS	2				.063 1.6		1.65 42.0	EDG - 33B
TGB 5 - 22 - 3 - MS	3	.87 22.2	5.91 150.0	1.26 32.0	.094 2.4	.126 3.2	2.36 60.0	
TGB 5 - 22 - 4 - MS	4				.126 3.2		3.15 80.0	

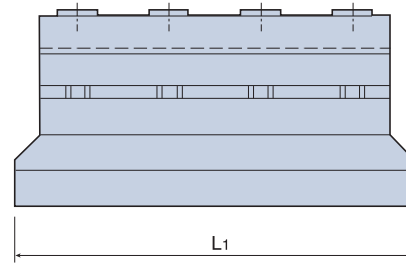
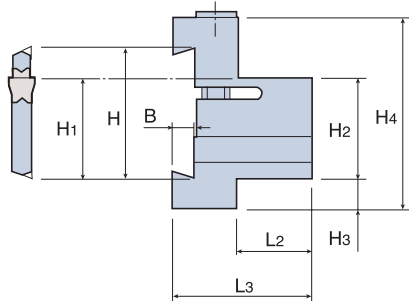
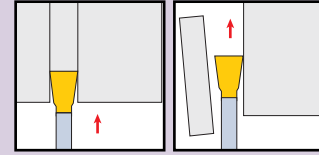
Ordering example: 5 pcs. TGB 5-22-2-MS  
• Insert extractor should be ordered separately



**BLOCKS**

## TTBN

**Blocks for Parting and Deep Grooving Blades**



Designation	H (inch)	H1 (inch)	H2 (inch)	H3 (inch)	H4 (inch)	B (inch)	L1 (inch)	L2 (inch)	L3 (inch)	Screw	Wrench
TTBN 19 - 26	1.02	.84	.75	.35	1.50	.16	3.43	.75	1.30	SH M6 X 1 X 25	L-W5
TTBN 19 - 32	1.26	.98	.75	.55	1.89	.22	3.94	.75	1.38	SH M6 X 1 X 40	L-W5
TTBN 25.4 - 26	1.02	.84	1.00	.10	1.50	.16	4.33	.79	1.34	SH M6 X 1 X 25	L-W5
TTBN 25.4 - 32	1.26	.98	1.00	.30	1.89	.22	4.33	.79	1.42	SH M6 X 1 X 40	L-W5
TTBN 31.8 - 32	1.26	.98	1.25	.13	1.89	.22	4.72	1.10	1.73	SH M6 X 1 X 40	L-W5

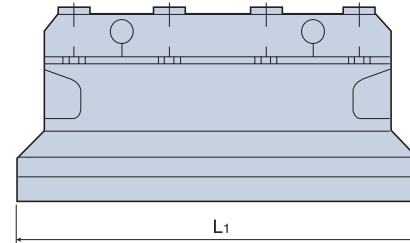
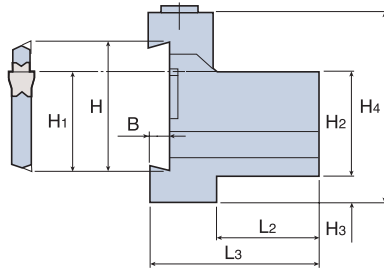
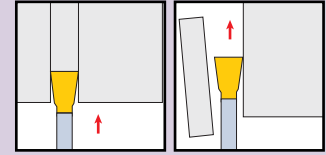
Ordering example : 1 pcs. TTBN 19-26



## ■ BLOCKS

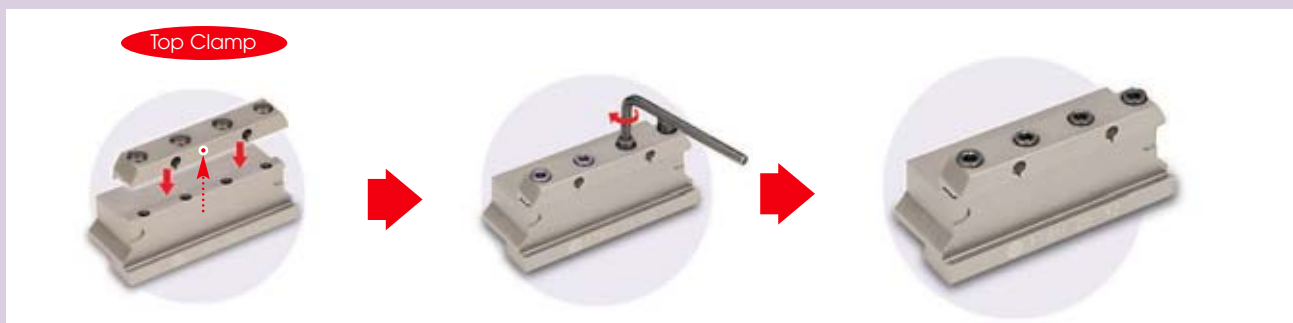
# TTBU

Blocks for  
Parting and Deep Grooving Blades



Designation	H (inch)	H1 (inch)	H2 (inch)	H3 (inch)	H4 (inch)	B (inch)	L1 (inch)	L2 (inch)	L3 (inch)	Screw	Clamp	Wrench
TTBU 19 - 26	1.02	.84	.75	.35	1.69	.16	3.39	.83	1.50	SR M6 X 30	BKU-86	L-W5
TTBU 19 - 32	1.26	.98	.75	.54	1.97	.21	3.94	.75	1.50	SR M6 X 30	BKU-110	L-W5
TTBU 25.4 - 26	1.02	.84	1.00	.19	1.77	.16	4.33	.91	1.65	SR M6 X 30	BKU-100	L-W5
TTBU 25.4 - 32	1.26	.98	1.00	.29	1.97	.21	4.33	.91	1.65	SR M6 X 30	BKU-110	L-W5
TTBU 31.8 - 32	1.26	.98	1.25	.20	2.13	.21	4.33	1.14	1.89	SR M6 X 30	BKU-110	L-W5

Ordering example: 1 pcs. TTBU 25.4-26

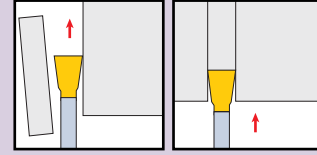


# TAEGLINE

## EXTERNAL HOLDERS

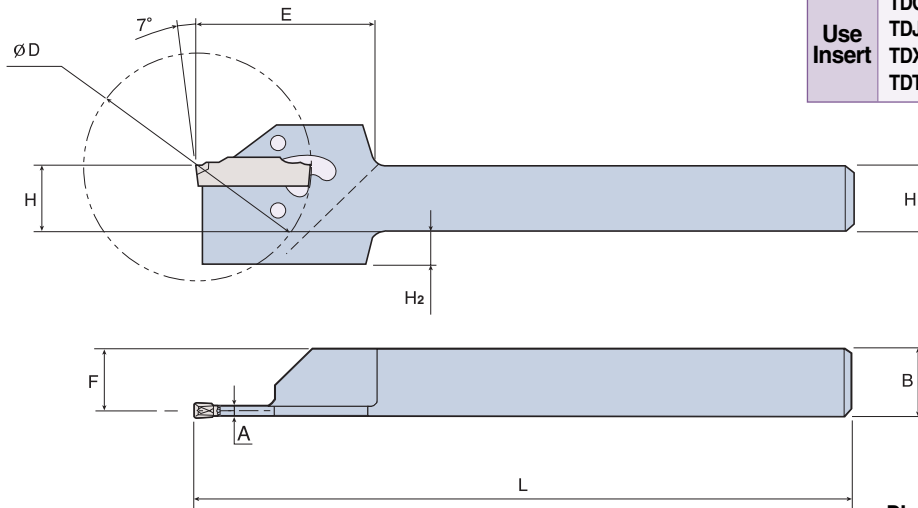
# TGER/L

Holders for  
Parting and Deep Grooving



Use  
Insert

TDC/TSC : page T248-T250  
TDJ/TSJ : page T251-T252  
TDXU : page T253  
TDT : page T254-T257



Right hand shown

Designation	Insert Seat Size	F (inch)	L (inch)	D <sub>max</sub> (inch)		H (inch)	B (inch)	E (inch)	A (inch)	H <sub>2</sub> (inch)	Insert Extractor
				TDJ/C	TSJ/C						
TGER/L 9.5 - 2	2	.340	4.50	1.30	1.30	.375	.375	1.22	.071	.33	EDG-33B
TGER/L 1212 - 2	2	.44	5.91	1.38	1.38	.47	.50	1.22	.071	.24	EDG-33B
TGER/L 1212 - 3	3	.43	5.91	1.50	1.57	.47	.50	1.22	.094	.24	EDG-33B
TGER/L 12.7 - 2	2	.465	4.50	1.38	1.38	.50	.50	1.22	.071	.21	EDG-33B
TGER/L 12.7 - 3	3	.453	4.50	1.50	1.57	.50	.50	1.22	.094	.21	EDG-33B
TGER/L 1616 - 2	2	.594	5.91	1.38	1.38	.63	.63	1.22	.066	.08	EDG-33B
TGER/L 1616 - 3	3	.583	5.91	1.50	1.77	.63	.63	1.22	.094	.24	EDG-33B
TGER/L 19 - 2	2	.715	4.50	1.38	1.38	.75	.75	1.22	.071	.00	EDG-33B
TGER/L 19 - 3	3	.703	4.50	1.50	1.77	.75	.75	1.22	.094	.00	EDG-33B
TGER/L 19 - 4	4	.687	4.50	1.50	2.17	.75	.75	1.30	.126	.00	EDG-33B
TGER/L 25.4 - 3	3	.953	6.00	1.50	1.77	1.00	1.00	1.22	.094	.00	EDG-33B
TGER/L 25.4 - 4	4	.937	6.00	1.50	2.17	1.00	1.00	1.30	.126	.00	EDG-33B

Ordering example: 5 pcs. TGER 12.7-2

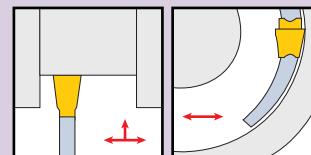
• Insert extractor should be ordered separately



EXTERNAL HOLDERS

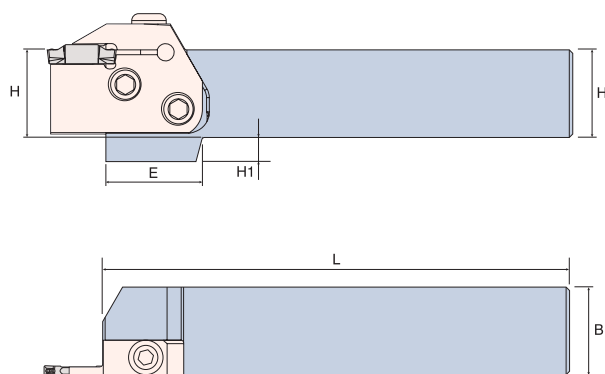
# TCHR/L

Parallel Holders



Use Adapter

TCER/L : page T280  
TCFR/L : page T281



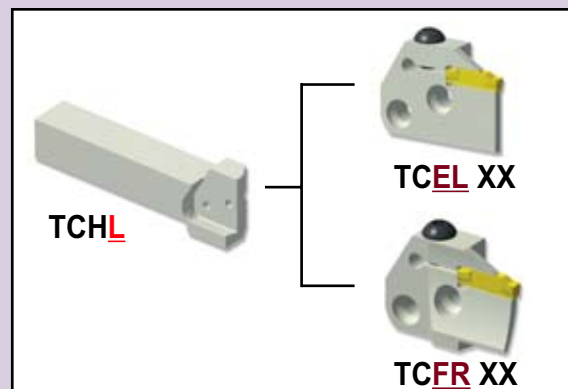
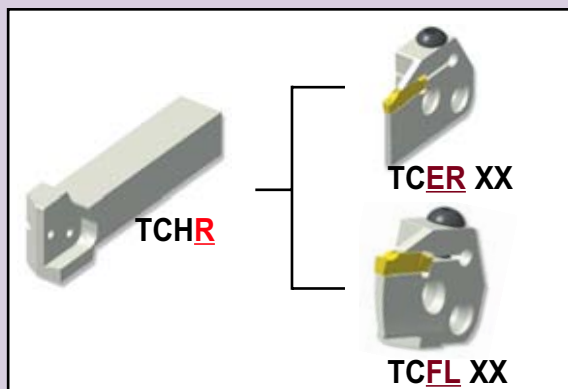
•Right hand shown

Designation	H	B	L	E	H <sub>1</sub>	Clamp Screw	Wrench	Adapter
TCHR/L 19	0.75	0.75	6.00	1.38	0.47	TS 60190I	L-W4	TCER/L TCFR/L
TCHR/L 25.4	1.00	1.00	6.00	1.10	0.28			
TCHR/L 31.8	1.25	1.25	6.00	1.10	-			

Ordering example: 2 pcs. TCHR 25.4



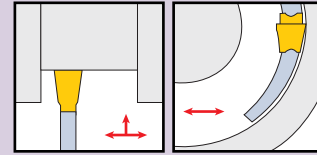
Adapter and holder selection



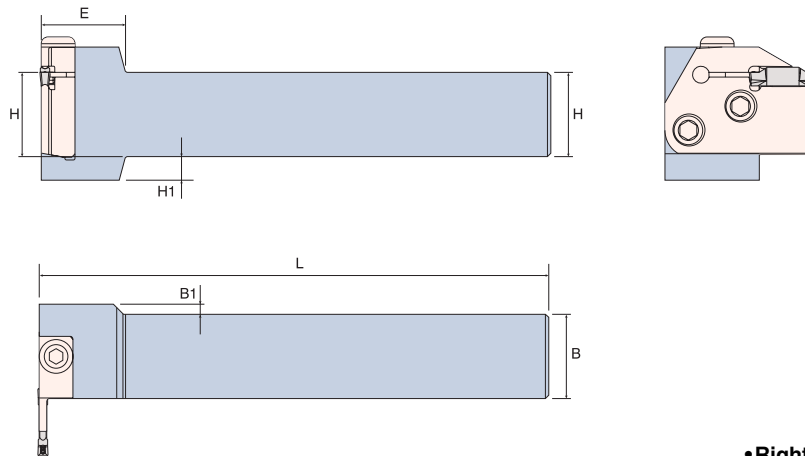


## TCHPR/L

### Perpendicular Holders



Use Adapter TCER/L : page T280  
TCFR/L : page T281



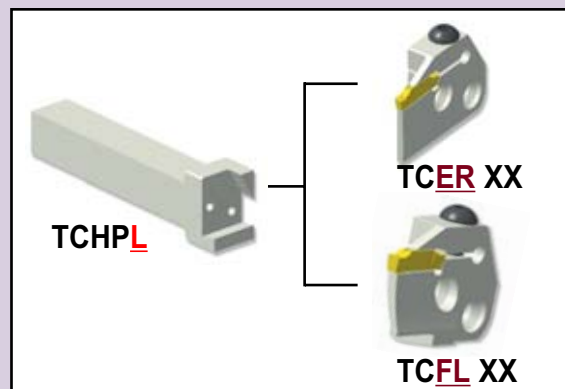
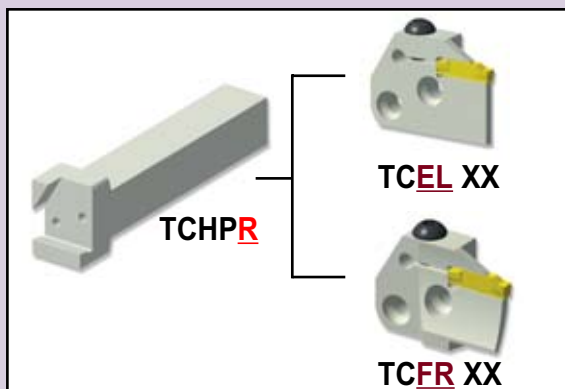
•Right hand shown

Designation	H	B	L	E	B <sub>1</sub>	H <sub>1</sub>	Clamp Screw	Wrench	Cartridge
TCHPR/L 19	0.75	0.75	6.00	0.98	0.295	0.47	TS 60190I	L-W4	TCER/L TCFR/L
TCHPR/L 25.4	1.00	1.00	6.00	0.98	0.118	0.28			
TCHPR/L 31.8	1.25	1.25	6.00	0.98	0.295	-			

Ordering example: 2 pcs. TCHPR 25.4



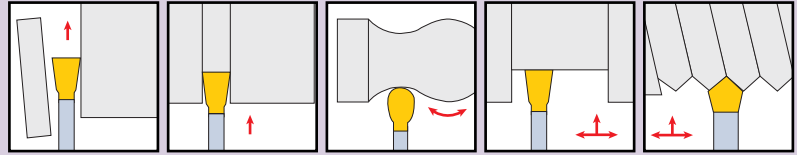
### ■ Adapter and holder selection



## ADAPTERS

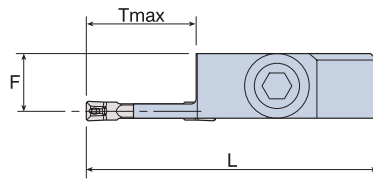
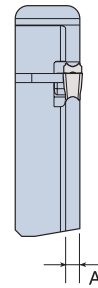
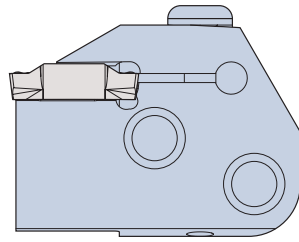
# TCER/L

Adapter for  
External Turning and Grooving



Use  
Insert

TDC/TSC: page T248-T250  
TDJ/TSJ : page T251-T252  
TDXU : page T253  
TDT : page T254-T257



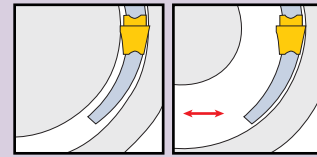
•Right hand shown

Designation	Insert Seat Size	L	A	F	Tmax	Screw	Wrench	Holder
TCER/L 3T16	3	1.77	0.087	0.350	0.63	BH M6x1x20	L-W4	TCHR/L □□□□ TCHPR/L □□□□
TCER/L 4T16	4	1.77	0.118	0.335	0.63			
TCER/L 5T20	5	1.97	0.157	0.315	0.79			
TCER/L 6T20	6	1.97	0.197	0.305	0.79			
TCER/L 8T25	8	2.17	0.236	0.286	0.98			

- For holders, see pages C38 - C39
- Ordering example: 2 pcs. TCER 3T16

## TCFR/L

Adapter for  
External Face Grooving and Turning



Use Insert	TDC/TSC <sup>(1)</sup> : page T248-T250
	TDJ/TSJ <sup>(1)</sup> : page T251-T252
	TDXU : page T253
	TDT : page T254-T257
	TDFT : page T260

<sup>(1)</sup>Insert for Grooving Only

Fig.1

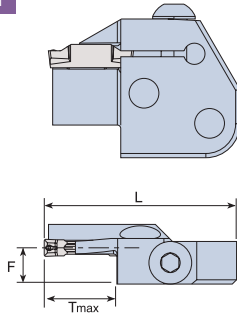
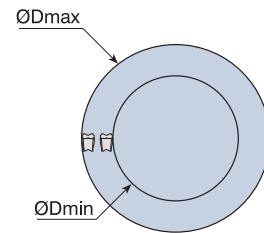
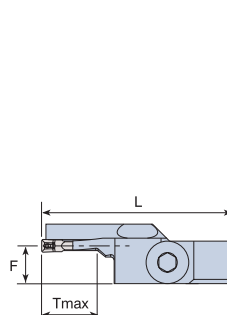


Fig.2



•Right hand shown

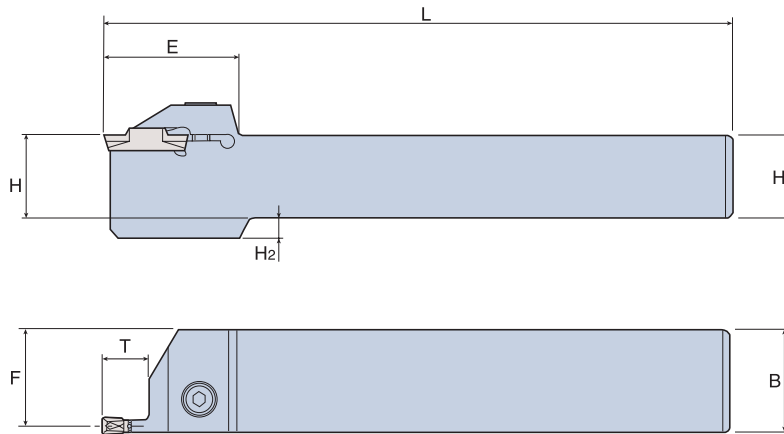
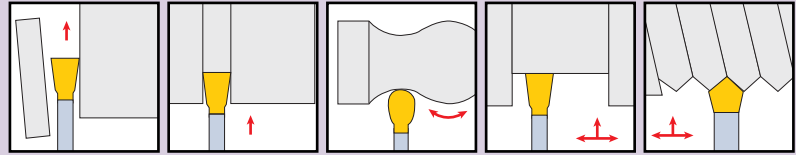
Designation	Insert Seat Size	L	F	Tmax	ØDmin	ØDmax	Screw	Wrench	Holder	Figure								
TCFR/L 3T12-40-55 RN	3	1.77	0.350	0.472	1.58	2.17	BH M6x1x20	L-W4	TCHR/L □□□□ TCHPR/L □□□□	Fig.2								
TCFR/L 3T12-55-75 RN					2.17	2.95												
TCFR/L 3T12-75-100 RN					2.95	3.94												
TCFR/L 3T12-100-140 RN					3.94	5.51												
TCFR/L 3T12-140-200 RN					5.51	7.87												
TCFR/L 4T16-50-70 RN	4	1.77	0.335	0.630	1.97	2.76				BH M6x1x20	L-W4	TCHR/L □□□□ TCHPR/L □□□□	Fig.1					
TCFR/L 4T16-70-100 RN					2.76	3.94												
TCFR/L 4T16-100-150 RN					3.94	5.91												
TCFR/L 4T16-150-250 RN					5.91	9.84												
TCFR/L 5T20-55-80 RN	5	1.97	0.315	0.787	2.17	3.15								BH M6x1x20	L-W4	TCHR/L □□□□ TCHPR/L □□□□	Fig.1	
TCFR/L 5T20-80-120 RN					3.15	4.72												
TCFR/L 5T20-120-180 RN					4.72	7.09												
TCFR/L 5T20-180-300 RN					7.09	11.81												
TCFR/L 6T25-60-90 RN	6	55	0.305	0.984	2.36	3.54	BH M6x1x20	L-W4	TCHR/L □□□□ TCHPR/L □□□□									Fig.1
TCFR/L 6T25-90-150 RN					3.54	5.91												
TCFR/L 6T25-150-250 RN					5.91	9.84												
TCFR/L 6T25-250-400 RN					9.84	15.75												

- For holders, see pages C38 - C39
- Ordering example: 5 pcs. TCFR 3T12-40-55RN

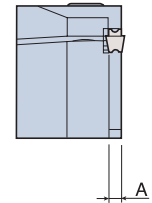
## EXTERNAL HOLDERS

# TTER/L

Short Tmax Holders for  
External Turning and Grooving



**Use Insert**  
 TDC/TSC : page T248-T250  
 TDJ/TSJ : page T251-T252  
 TDXU : page T253  
 TDT : page T254-T257  
 TDA/TSA : page T261



Right hand shown

Designation	Insert Seat Size	F (inch)	L (inch)	H (inch)	B (inch)	E (inch)	Tmax (inch)	A (inch)	Screw	Wrench
TTER/L 1616 - 2T08	2	.60	4.33	.63	.63	1.30	.315	.09	SH M5 X 0.8 X 20	L-W4
TTER/L 1616 - 3T09	3	.59	4.33	.63	.63	1.26	.354	.09	SH M5 X 0.8 X 16	L-W4
TTER/L 1616 - 4T10	4	.57	4.33	.63	.63	1.30	.354	.11	SH M6 X 1 X 16	L-W5
TTER/L 19 - 3T09	3	.75	5.0	.75	.75	1.26	.354	.083	SH M6 X 1 X 16	L-W4
TTER/L 19 - 4T10	4	.73	5.0	.75	.75	1.30	.394	.114	SH M6 X 1 X 20	L-W5
TTER/L 19 - 5T12	5	.71	5.0	.75	.75	1.46	.472	.154	SH M6 X 1 X 20	L-W5
TTER/L 19 - 6T12	6	.69	5.0	.75	.75	1.46	.472	.193	SH M6 X 1 X 20	L-W5
TTER/L 25.4 - 3T09	3	.94	6.0	1.00	1.00	1.26	.354	.083	SH M5 X 0.8 X 25	L-W5
TTER/L 25.4 - 4T10	4	.93	6.0	1.00	1.00	1.30	.394	.114	SH M6 X 1 X 25	L-W4
TTER/L 25.4 - 5T12	5	.91	6.0	1.00	1.00	1.46	.472	.154	SH M6 X 1 X 25	L-W5
TTER/L 25.4 - 6T12	6	.89	6.0	1.00	1.00	1.46	.472	.193	SH M6 X 1 X 25	L-W5

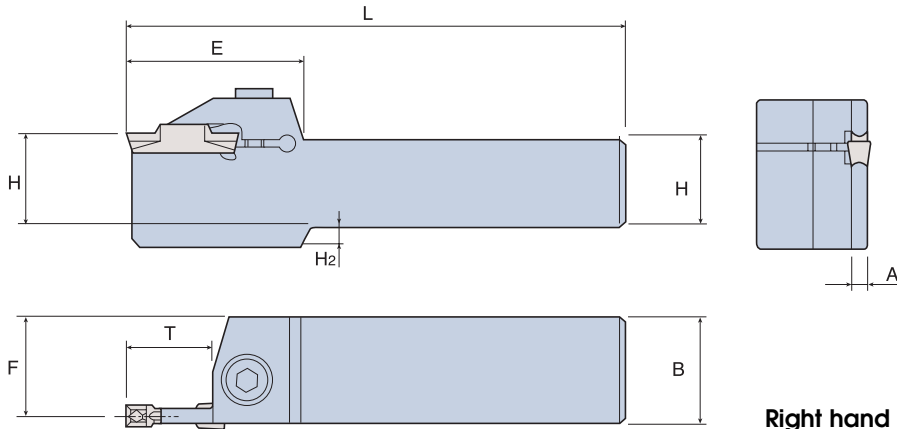
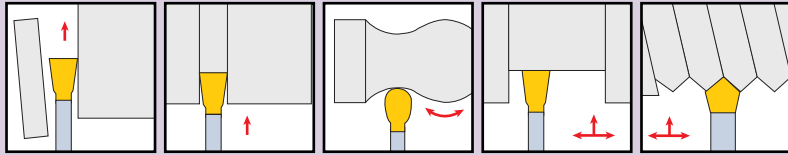
Ordering example: 5 pcs. TTER 19-3T09



# TAEGUline

## TTER/L

Middle Tmax Holders for  
External Turning and Grooving



Use  
Insert

TDC/TSC: page T248-T250  
TDJ/TSJ : page T251-T252  
TDXU : page T253  
TDT : page T254-T257  
TDA/TSA : page T261

Right hand shown

Designation	Insert Seat Size	F (inch)	L (inch)	H (inch)	B (inch)	E (inch)	Tmax (inch)	A (inch)	Screw	Wrench
TTER/L 1616 - 2	2	.59	4.3	.63	.63	1.26	.472	.063	SH M5 X 0.8 X 16	L-W4
TTER/L 1616 - 3	3	.59	4.3	.63	.63	1.26	.472	.083	SH M5 X 0.8 X 16	L-W4
TTER/L 19 - 2	2	.71	5.0	.75	.75	1.26	.472	.063	SH M5 X 0.8 X 20	L-W4
TTER/L 19 - 3	3	.71	5.0	.75	.75	1.26	.472	.083	SH M5 X 0.8 X 20	L-W4
TTER/L 19 - 4	4	.69	5.0	.75	.75	1.30	.590	.114	SH M6 X 1 X 20	L-W5
TTER/L 19 - 5	5	.67	5.0	.75	.75	1.46	.787	.154	SH M6 X 1 X 20	L-W5
TTER/L 19 - 6	6	.65	5.0	.75	.75	1.46	.787	.193	SH M6 X 1 X 20	L-W5
TTER/L 25.4 - 2	2	.96	6.0	1.00	1.00	1.26	.472	.063	SH M5 X 0.8 X 25	L-W4
TTER/L 25.4 - 3	3	.96	6.0	1.00	1.00	1.26	.472	.083	SH M5 X 0.8 X 25	L-W4
TTER/L 25.4 - 4	4	.94	6.0	1.00	1.00	1.30	.590	.114	SH M6 X 1 X 25	L-W5
TTER/L 25.4 - 5	5	.92	6.0	1.00	1.00	1.46	.787	.154	SH M6 X 1 X 25	L-W5
TTER/L 25.4 - 6	6	.90	6.0	1.00	1.00	1.46	.787	.193	SH M6 X 1 X 25	L-W5
TTER/L 25.4 - 8	8	.88	6.0	1.00	1.00	1.65	.984	.232	SH M6 X 1 X 25	L-W5
TTER/L 31.8 - 3	3	1.20	7.0	1.25	1.25	1.26	.472	.083	SH M5 X 0.8 X 25	L-W4
TTER/L 31.8 - 4	4	1.20	7.0	1.25	1.25	1.30	.590	.114	SH M6 X 1 X 25	L-W5
TTER/L 31.8 - 5	5	1.17	7.0	1.25	1.25	1.46	.787	.154	SH M6 X 1 X 25	L-W5
TTER/L 31.8 - 6	6	1.15	7.0	1.25	1.25	1.61	.787	.191	SH M6 X 1 X 25	L-W5
TTER/L 31.8 - 8	8	1.13	7.0	1.25	1.25	1.65	.984	.232	SH M6 X 1 X 25	L-W5

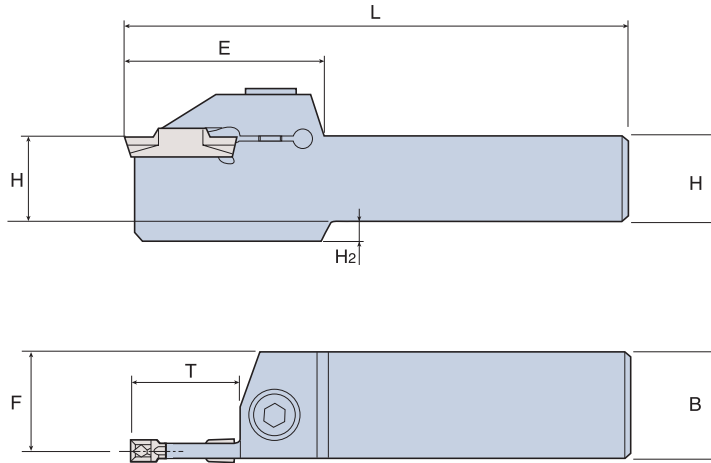
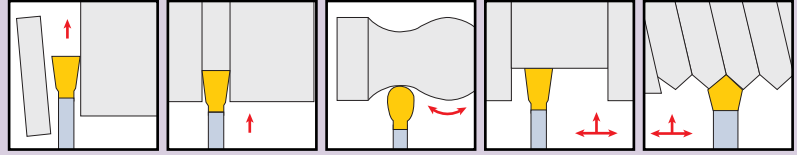
Ordering example: 5 pcs. TTER 25.4 - 4



## EXTERNAL HOLDERS

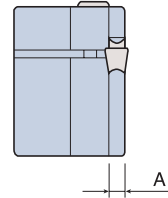
# TTER/L

Long Tmax Holders for  
External Turning and Grooving



Use  
Insert

TDC/TSC : page T248-T250  
TDJ/TSJ : page T251-T252  
TDXU : page T253  
TDT : page T254-T257  
TDATSA : page T261



Right hand shown

Designation	Insert Seat Size	H (inch)	B (inch)	L (inch)	F (inch)	E (inch)	A (inch)	Tmax (inch)	Screw	Wrench
TTER/L 19 - 3T16	3	.75	.75	5.0	.71	1.26	.083	.63	SH M5 X 0.8 X 20	L-W4
TTER/L 25.4 - 3T25	3	1.00	1.00	6.0	.94	1.26	.083	.98	SH M5 X 0.8 X 25	L-W4
TTER/L 25.4 - 4T25	4	1.00	1.00	6.0	.94	1.26	.114	.98	SH M6 X 1X 25	L-W5
TTER/L 25.4 - 5T32	5	1.00	1.00	6.0	.91	1.46	.154	1.26	SH M6 X 1X 25	L-W5
TTER/L 25.4 - 6T32	6	1.00	1.00	6.0	.89	1.46	.193	1.26	SH M6 X 1X 25	L-W5

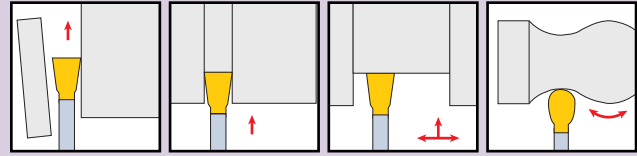
Ordering example: 5 pcs. TTER 25.4 - 4T25



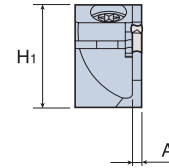
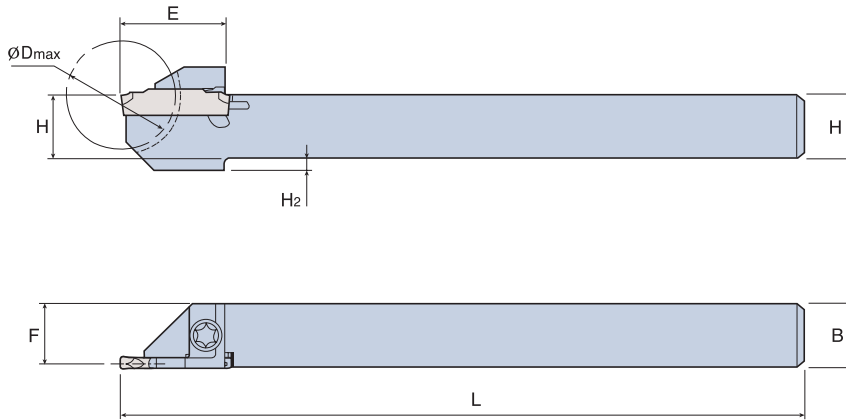
# TAEQUline

## TTER/L-SH

External Turning and Grooving  
Holders for Swiss Automatics



Use Insert  
 TDC/TSC: page T248-T250  
 TDJ/TSJ : page T251-T252  
 TDT : page T254-T257



Right hand shown

Designation	Insert Seat Size	F (inch)	L (inch)	Dmax (inch)	H (inch)	B (inch)	E (inch)	A (inch)	H1 (inch)	H2 (inch)	Screw	Wrench
TTER/L 10-20-1.4SH	1	.35	4.92	.79	.39	.39	.71	.039	.54	-	TS 40A115I <sup>(1)</sup>	T15
TTER/L 12-24-1.4SH	1	.43	4.92	.94	.47	.47	.77	.039	.62	-	TS 40A115I <sup>(1)</sup>	T15
TTER/L 14-24-1.4SH	1	.53	4.92	.94	.55	.55	.77	.039	.70	-	TS 40A115I <sup>(1)</sup>	T15
TTER/L 16-32-1.4SH	1	.59	4.92	1.26	.63	.63	.94	.039	.78	-	TS 40A115I <sup>(1)</sup>	T15
TTER/L 10-20-2SH	2	.36	4.92	.79	.39	.39	.75	.061	.69	.08	TS 40A115I <sup>(1)</sup>	T15
TTER/L 12-24-2SH	2	.44	4.92	.94	.47	.47	.75	.061	.75	.08	TS 40A115I <sup>(1)</sup>	T15
TTER/L 14-24-2SH	2	.52	4.92	.94	.55	.55	.75	.061	.75		TS 40A115I <sup>(1)</sup>	T15
TTER/L 16-32-2SH	2	.60	4.92	1.26	.63	.63	.94	.061	.83		TS 40A115I <sup>(1)</sup>	T15

Ordering example: 5 pcs. TTER 10-20-2SH

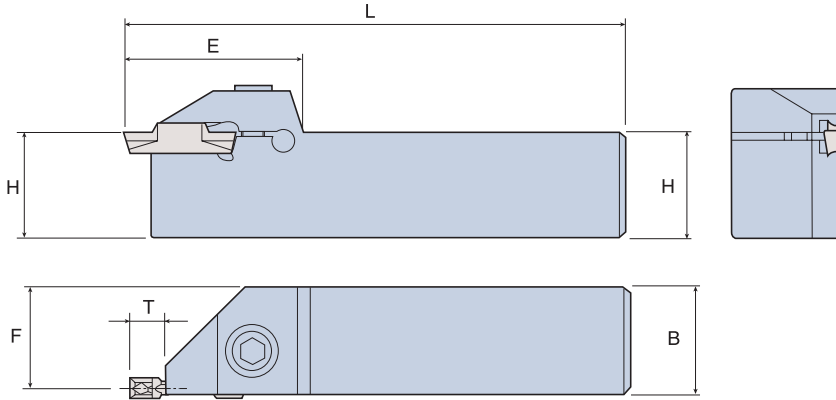
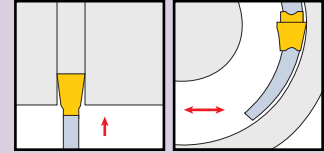
<sup>(1)</sup>Screw change is applied to tools from 2006 onwards.



## EXTERNAL HOLDERS

# TGFR/L

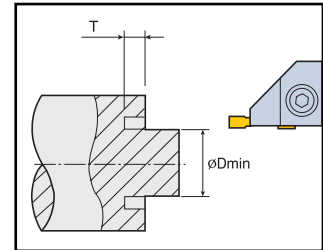
External Holders for  
Shallow Face Precision Grooving and Face Turning



**Use Insert**

- TDC/TSC<sup>(1)</sup>: page T248-T250
- TDJ/TSJ<sup>(1)</sup>: page T251-T252
- TDXU : page T253
- TDT : page T254-T257
- TDFT : page T260

<sup>(1)</sup>Insert for Grooving Only



Right hand shown

Designation	Insert Seat Size	F (inch)	L (inch)	H (inch)	B (inch)	E (inch)	Tmax (inch)	ØDmin (inch)	Screw	Wrench
TGFR/L 1616 - 4	2, 3, 4	.57	4.3	.63	.63	1.30	.236	1.18	SH M6 X 1 X 16	L-W5
TGFR/L 19 - 4	2, 3, 4	.69	5.0	.75	.75	1.30	.236	1.18	SH M6 X 1 X 20	L-W5
TGFR/L 19 - 6	5, 6	.65	5.0	.75	.75	1.46	.236	2.36	SH M6 X 1 X 20	L-W5
TGFR/L 25.4 - 4	2, 3, 4	.94	6.0	1.00	1.00	1.30	.236	1.18	SH M6 X 1 X 25	L-W5
TGFR/L 25.4 - 6	5, 6	.90	6.0	1.00	1.00	1.46	.236	2.36	SH M6 X 1 X 25	L-W5

Ordering example: 5 pcs. TGFR 1616-4

\* Insert for Grooving only.

### • Insert Initial Min. Dia. For Face Grooving

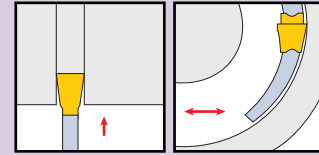
Insert	Min. Diameter	Remark
TDC/J 3	Ø2.52	Use TDFT or TDXU type if a machining diameter is smaller than Dmin.
TDC/J 4	Ø1.26	
TDC/J 5	Ø1.97	
TDC/J 6	Ø1.89	
TDT 3	Ø1.73	
TDT 4	Ø1.65	
TDT 5	Ø1.97	
TDT 6	Ø1.89	



# TAEGUline

## TGFPR/L

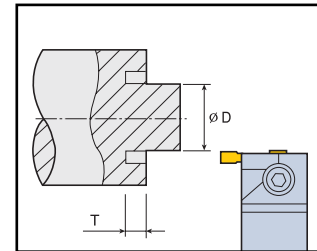
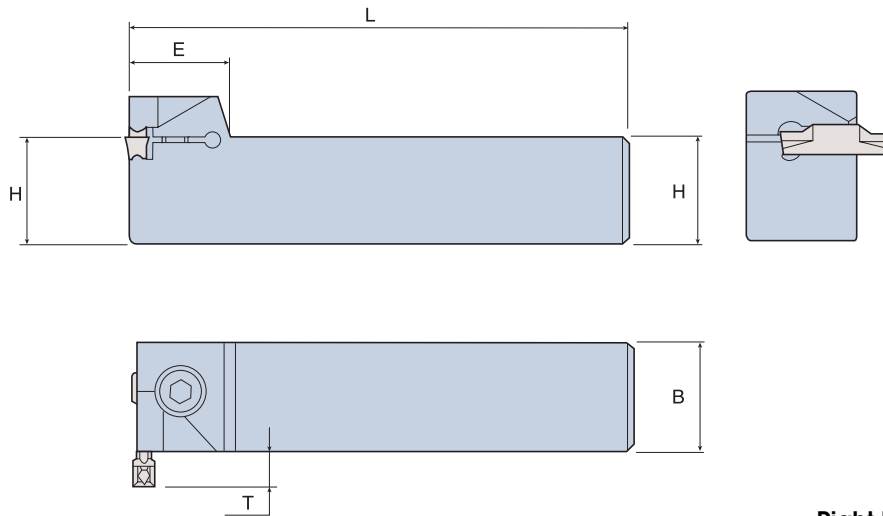
**External Holders for  
Shallow Face Perpendicular Grooving and Face Turning**



**Use Insert**

- TDC/TSC<sup>(1)</sup>: page T248-T250
- TDJ/TSJ<sup>(1)</sup>: page T251-T252
- TDXU : page T253
- TDT : page T254-T257
- TDFT : page T260

<sup>(1)</sup>Insert for Grooving Only



Right hand shown

Designation	Insert Seat Size	L (inch)	H (inch)	B (inch)	E (inch)	T <sub>max</sub> (inch)	ØD <sub>min</sub> (inch)	Screw	Wrench
TGFPR/L 25.4 - 4	2, 3, 4	6.0	1.00	1.00	.72	.189	1.18	SH M6 X1 X 25	L-W5
TGFPR/L 31.8 - 4	2, 3, 4	6.0	1.25	1.25	.72	.189	1.18	SH M6 X1 X 25	L-W5
TGFPR/L 25.4 - 6	5, 6	6.0	1.00	1.00	.87	.189	2.36	SH M6 X 1 X 25	L-W5

Ordering example: 5 pcs. TGFPR 25.4-4

\* Insert for Grooving only.

• **Insert Initial Min. Dia. For Face Grooving**

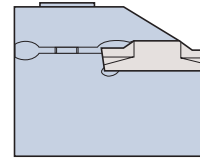
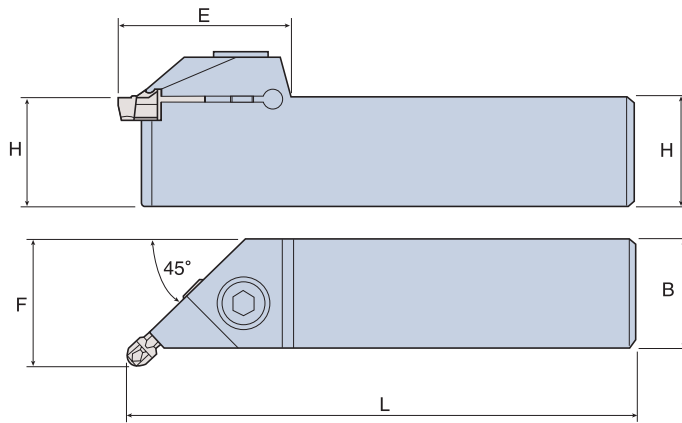
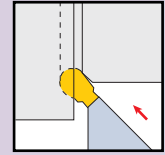
Insert	Min. Diameter	Remark
TDC/J 3	Ø2.52	Use TDFT or TDXU type if a machining diameter is smaller than Dmin.
TDC/J 4	Ø1.26	
TDC/J 5	Ø1.97	
TDC/J 6	Ø1.89	
TDT 3	Ø1.73	
TDT 4	Ø1.65	
TDT 5	Ø1.97	
TDT 6	Ø1.89	



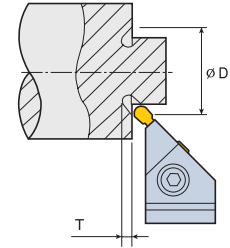
## EXTERNAL HOLDERS

# TGEUR/L

External Undercutting Holders



Use TDT : page T254-T257  
Insert TDIT : page T258-T259



Right hand shown

Designation	Insert Seat Size	F (inch)	L (inch)	H (inch)	B (inch)	E (inch)	Tmax (inch)	ØDmin (inch)	Screw	Wrench
TGEUR/L 1616 - 3	3	.76	4.3	.63	.63	1.18	.11	1.26	SH M5 X 0.8 X 16	L-W4
TGEUR/L 1616 - 4	4	.77	4.3	.63	.63	1.28	.11	1.26	SH M6 X 1 X 16	L-W5
TGEUR/L 19 - 3	3	.92	5.0	.75	.75	1.18	.11	1.26	SH M5 X 0.8 X 20	L-W4
TGEUR/L 19 - 4	4	.92	5.0	.75	.75	1.28	.11	1.26	SH M6 X 1 X 20	L-W5
TGEUR/L 25.4 - 3	3	1.11	6.0	1.00	1.00	1.18	.11	1.26	SH M5 X 0.8 X 25	L-W4
TGEUR/L 25.4 - 4	4	1.12	6.0	1.00	1.00	1.28	.11	1.26	SH M6 X 1 X 25	L-W5
TGEUR/L 25.4 - 6	6	1.14	6.0	1.00	1.00	1.38	.13	1.34	SH M6 X 1 X 25	L-W5

Ordering example: 5 pcs. TGEUR 19-4

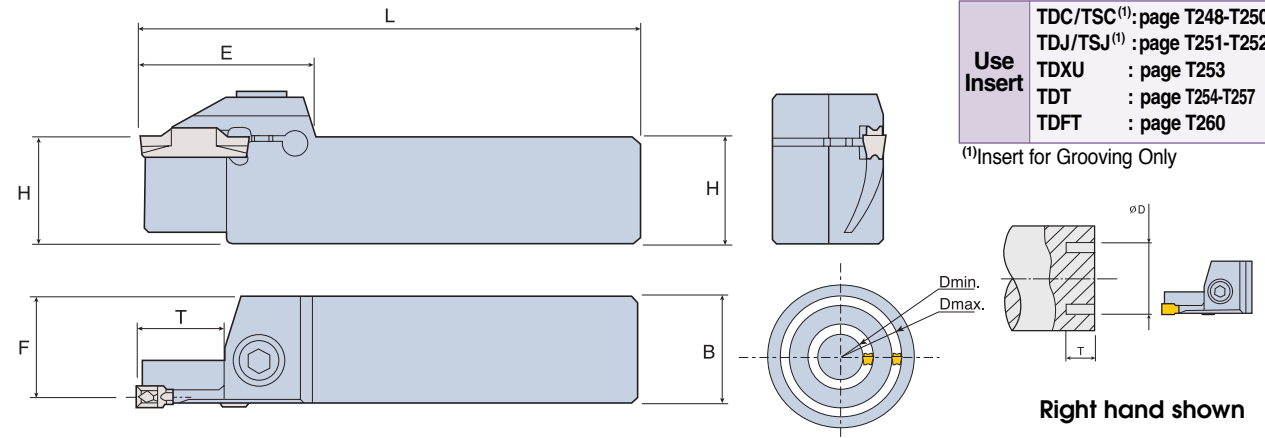
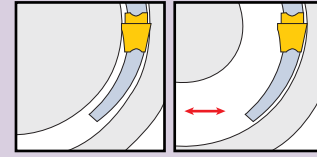
# TAEGUline



# FACE HOLDERS

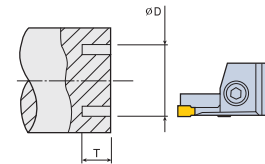
## TTFR/L

Deep Face Grooving and Turning Holders



Use Insert	TDC/TSC <sup>(1)</sup> : page T248-T250
	TDJ/TSJ <sup>(1)</sup> : page T251-T252
	TDXU : page T253
	TDT : page T254-T257
	TDFT : page T260

<sup>(1)</sup>Insert for Grooving Only



Right hand shown

Designation	Insert Seat Size	F (inch)	L (inch)	H (inch)	B (inch)	E (inch)	Tmax (inch)	ØDmin (inch)	ØDmax (inch)	Screw	Wrench
TTFR/L 25.4 - 30 - 3	3	.94	6.0	1.00	1.00	1.50	.39	.94	1.38	SH M5 X 0.8 X 25	L-W4
TTFR/L 25.4 - 35 - 3								1.14	1.57		
TTFR/L 25.4 - 40 - 3								1.34	1.97		
TTFR/L 25.4 - 50 - 3								1.73	2.36		
TTFR/L 25.4 - 60 - 3								2.13	3.35		
TTFR/L 25.4 - 30 - 4	4	.93	6.0	1.00	1.00	1.30	.39	.87	1.57	SH M6 X 1 X 25	L-W5
TTFR/L 25.4 - 40 - 4								1.26	1.97		
TTFR/L 25.4 - 50 - 4								1.65	2.36		
TTFR/L 25.4 - 60 - 4								2.05	3.35		
TTFR/L 25.4 - 60 - 6	6	.93	6.0	1.00	1.00	1.46	.79	1.89	3.35	SH M6 X 1 X 25	L-W5
TTFR/L 25.4 - 85 - 6								2.87	5.91		
TTFR/L 25.4 - 150 - 6								5.43	9.84		

Ordering example: 5 pcs. TTFR 25.4-40-3

\* Insert for Grooving only.

### • Insert Initial Min. Dia. For Face Grooving

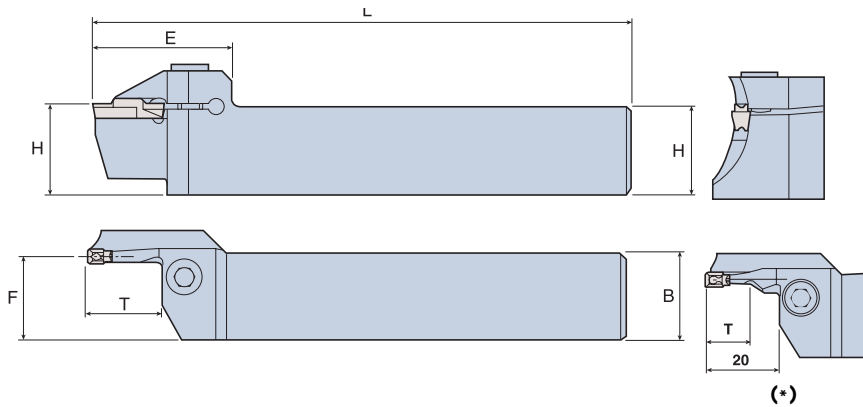
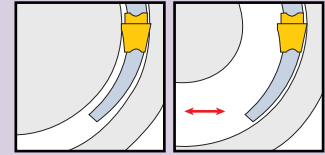
Insert	Min. Diameter	Remark
TDC/J 3	Ø2.52	Use TDFT or TDXU type if a machining diameter is smaller than Dmin.
TDC/J 4	Ø1.26	
TDC/J 5	Ø1.97	
TDC/J 6	Ø1.89	
TDT 3	Ø1.73	
TDT 4	Ø1.65	
TDT 5	Ø1.97	
TDT 6	Ø1.89	



## FACE HOLDERS

# TTFR/L (Renewed Type)

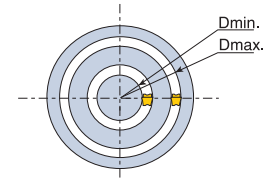
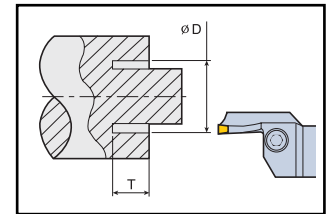
Deep Face Grooving and Turning Holders



(\*) Right hand shown

Use Insert  
 TDC/TSC<sup>(1)</sup>: page T248-T250  
 TDJ/TSJ<sup>(1)</sup>: page T251-T252  
 TD XU : page T253  
 TDT : page T254-T257  
 TDFT : page T260

<sup>(1)</sup>Insert for Grooving Only



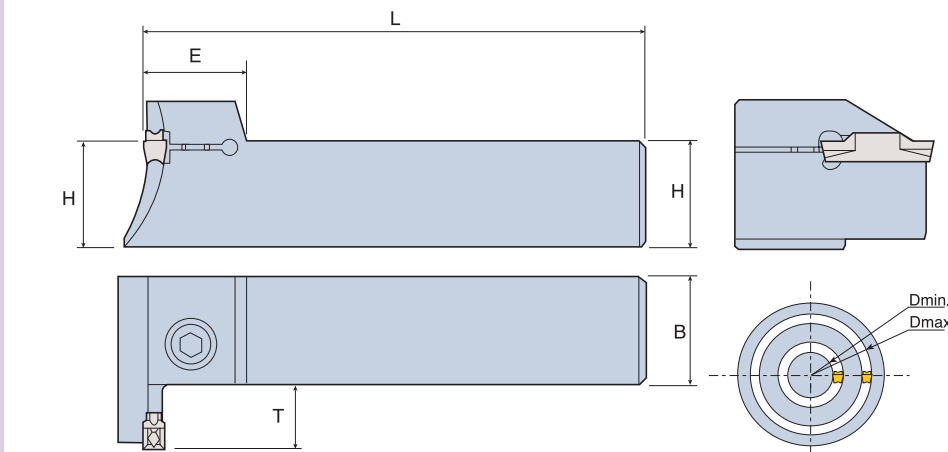
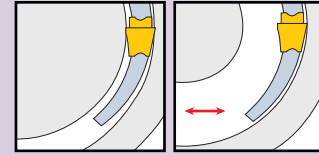
Designation	Insert Seat Size	F (inch)	L (inch)	H (inch)	B (inch)	E (inch)	T <sub>max</sub> (inch)	ØD <sub>min</sub> (inch)	ØD <sub>max</sub> (inch)	Screw	Wrench	
TTFR/L 25.4-30-3 RN(*)	3	.94	6.0	1.00	1.00	1.50	.39	.94	1.38	SH M6 X 1 X 25	L-W5	
TTFR/L 25.4-35-3 RN(*)								1.14	1.57			
TTFR/L 25.4-40-3 RN(*)								1.34	1.97			
TTFR/L 25.4-50-3 RN								.59	1.73			2.76
TTFR/L 25.4-70-3 RN								.59	2.52			3.94
TTFR/L 25.4-30-4 RN(*)	4	.93	6.0	1.00	1.00	1.54	.79	.39	.87			1.42
TTFR/L 25.4-36-4 RN								1.10	1.65			
TTFR/L 25.4-42-4 RN								1.34	1.97			
TTFR/L 25.4-50-4 RN								1.65	2.76			
TTFR/L 25.4-70-4 RN								2.44	4.72			
TTFR/L 25.4-120-4 RN	4.41	7.87										
TTFR/L 25-60-5 RN	5	.91	6.0	1.00	1.00	1.93	.98	1.97	3.15			
TTFR/L 25-80-5 RN								2.76	4.33			
TTFR/L 25-110-5 RN								3.94	5.91			
TTFR/L 25-150-5 RN								5.51	7.87			
TTFR/L 25.4-60-6 RN	6	.89	6.0	1.00	1.00	1.93	.98	1.89	2.76			
TTFR/L 25.4-70-6 RN								2.28	3.94			
TTFR/L 25.4-100-6 RN								3.46	7.09			
TTFR/L 25.4-180-6 RN								6.61	15.75			

Ordering example: 5 pcs. TTFR 25.4-30-4 RN

\* Insert for Grooving only.

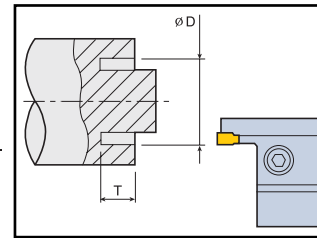
## TTFPR/L

**Deep Face Grooving and Turning  
Perpendicular Holders Against Center**



**Use Insert**  
 TDC/TSC<sup>(1)</sup>: page T248-T250  
 TDJ/TSJ<sup>(1)</sup>: page T251-T252  
 TDXU : page T253  
 TDT : page T254-T257  
 TDFT : page T260

<sup>(1)</sup>Insert for Grooving Only



Right hand shown

Designation	Insert Seat Size	L (inch)	H (inch)	B (inch)	E (inch)	Tmax (inch)	ØDmin (inch)	ØDmax (inch)	Screw	Wrench
TTFPR/L 25.4 - 30 - 3	3	6.0	1.00	1.00	.71	.39	.94	1.38	SH M5X0.8X25	L-W4
TTFPR/L 25.4 - 35 - 3							1.14	1.57		
TTFPR/L 25.4 - 40 - 3							1.34	1.97		
TTFPR/L 25.4 - 50 - 3							1.73	2.36		
TTFPR/L 25.4 - 60 - 3							2.13	3.35		
TTFPR/L 25.4 - 30 - 4	4	6.0	1.00	1.00	.71	.47	.87	1.57	SH M6X1 X25	L-W5
TTFPR/L 25.4 - 40 - 4							1.26	1.97		
TTFPR/L 25.4 - 50 - 4							1.65	2.36		
TTFPR/L 25.4 - 60 - 4							2.05	3.35		
TTFPR/L 25 - 60 - 5	5	6.0	1.00	1.00	.87	.79	1.97	3.15	SH M6 X1 X25	L-W5
TTFPR/L 25 - 80 - 5							2.76	4.33		
TTFPR/L 25 - 110 - 5							3.94	5.91		
TTFPR/L 25 - 150 - 5							5.51	7.87		
TTFPR/L 25.4 - 60 - 6	6	6.0	1.00	1.00	.87	.79	1.89	3.35	SH M6X1 X25	L-W5
TTFPR/L 25.4 - 85 - 6							2.87	5.91		
TTFPR/L 25.4 - 150 - 6							5.43	9.84		

Ordering example: 5 pcs. TTFPR 25.4-60-4

• Insert Initial Min. Dia. For Face Grooving

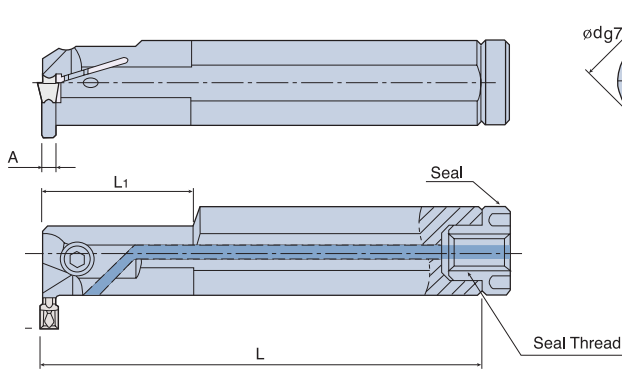
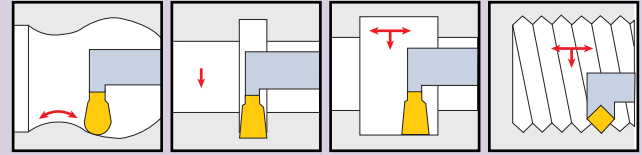
Insert	Min. Diameter	Remark
TDC/J 3	Ø2.52	Use TDFT or TDXU type if a machining diameter is smaller than Dmin.
TDC/J 4	Ø1.26	
TDC/J 5	Ø1.97	
TDC/J 6	Ø1.89	
TDT 3	Ø1.73	
TDT 4	Ø1.65	
TDT 5	Ø1.97	
TDT 6	Ø1.89	



## INTERNAL HOLDERS

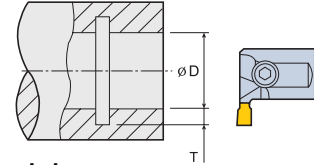
# TTIR/L

Internal Turning, Grooving and Profiling Holders



Use Insert  
 TDC/TSC<sup>(1)</sup>: page T248-T250  
 TDJ/TSJ<sup>(1)</sup>: page T251-T252  
 TDXU : page T253  
 TDT : page T254-T257  
 TDIT : page T258-T259

<sup>(1)</sup>Insert for Grooving Only

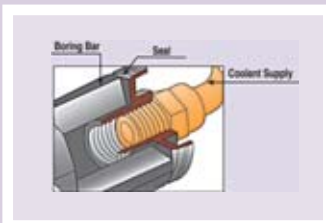


Designation (inch) (mm)	Insert Seat Size	Ød (inch) (mm)	F (inch) (mm)	L (inch) (mm)	L1 (inch) (mm)	H (inch) (mm)	Tmax (inch) (mm)	ØDmin (inch) (mm)	A (inch) (mm)	Seal	Seal Thread	Screw	Wrench
TTIR/L 16 - 2C	2	.63 16	.65 16.5	4.9 125	-	.30 7.5	.33 8.5	.98 25	.063 1.6	PL16	M6	SH M5 X 0.8 X 10	L-W4
TTIR/L 20 - 2C	2	.79 20	.62 15.8	6.3 160	1.57 40	.33 9.0	.24 6.0	.98 25	.063 1.6	PL20	M6	SH M5 X 0.8 X 12	L-W4
TTIR/L 25 - 2C	2	.98 25	.69 17.5	8.0 200	1.57 40	.45 11.5	.20 5.0	.98 25	.063 1.6	PL25	R 1/8"	SH M5 X 0.8 X 16	L-W4
TTIR/L 19 - 3C	3	.75 20	.62 15.8	6.5 160	1.57 40	.33 9.0	.26 6.5	.98 25	.083 2.1	PL20	M6	SH M5 X 0.8 X 16	L-W4
TTIR/L 20 - 3C													
TTIR/L 19 - 4C	4	.75 20	.62 15.8	6.5 160	1.57 40	.33 9.0	.26 6.5	.98 25	.114 2.9	PL20	M6	SH M5 X 0.8 X 16	L-W4
TTIR/L 20 - 4C													
TTIR/L 25.4 - 3C	3	1.00 25	.69 17.5	8.0 200	1.57 40	.45 11.5	.23 5.8	.98 25	.083 2.1	PL25	R 1/8"	SH M5 X 0.8 X 16	L-W4
TTIR/L 25 - 3C													
TTIR/L 25.4 - 4C	4	1.00 25	.69 17.5	8.0 200	1.57 40	.45 11.5	.23 5.8	.98 25	.114 2.9	PL25	R 1/8"	SH M5 X 0.8 X 16	L-W4
TTIR/L 25 - 4C													
TTIR/L 25.4 - 5C	5	1.00 25	.68 17.3	8.0 200	1.57 40	.45 11.5	.26 6.5	1.26 31	.154 3.9	PL25	R 1/8"	SH M6 X 1 X 25	L-W5
TTIR/L 25 - 5C													
TTIR/L 31.7 - 4C	4	1.25 32	.82 20.8	10.0 250	2.36 60	.55 14.0	.26 6.5	1.26 31	.114 .29	PL32	R 1/8"	SH M5 X 0.8 X 16	L-W4
TTIR/L 32 - 4C													
TTIR/L 31.7 - 5C	5	1.25 32	.82 20.8	10.0 250	2.36 60	.55 14.0	.26 6.5	1.26 31	.154 3.9	PL32	R 1/8"	SH M6 X 1 X 25	L-W5
TTIR/L 32 - 5C													
TTIR/L 31.7 - 6C	6	1.25 32	.82 20.8	10.0 250	2.36 60	.55 14.0	.26 6.5	1.26 31	.193 4.9	PL32	R 1/8"	SH M6 X 1 X 25	L-W5
TTIR/L 32 - 6C													
TTIR/L 31.7 - 8C	8	1.25 32	.84 21.3	10.0 250	2.36 60	.57 14.5	.26 6.5	1.46 37	.232 5.9	PL32	R 1/8"	SH M6 X 1 X 25	L-W5
TTIR/L 32 - 8C													
TTIR/L 38.1 - 8C	8	1.50 40	1.02 25.8	12.0 300	2.56 65	.70 19.0	.26 6.5	1.65 42	.232 5.9	PL40	R 1/8"	SH M6 X 1 X 25	L-W5
TTIR/L 40 - 8C													

TDA 6 Insert is only available to TTIR/L 32-6C

Ordering example: 5 pcs. TTIR 19-3C

\* Insert for Grooving only.

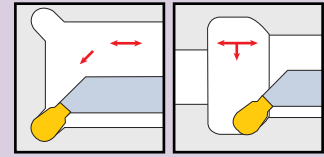


Insert	Min. Diameter	Remark
TDC/J 2	Ø1.57	Use TDIT or TDXU type if a machining diameter is smaller than Dmin.
TDC/J 3	Ø1.97	
TDC/J 4	Ø1.97	
TDC/J 5	Ø2.36	
TDC/J 6	Ø2.36	
TDT 3	Ø1.57	
TDT 4	Ø1.57	
TDT 5	Ø1.97	
TDT 6	Ø1.97	

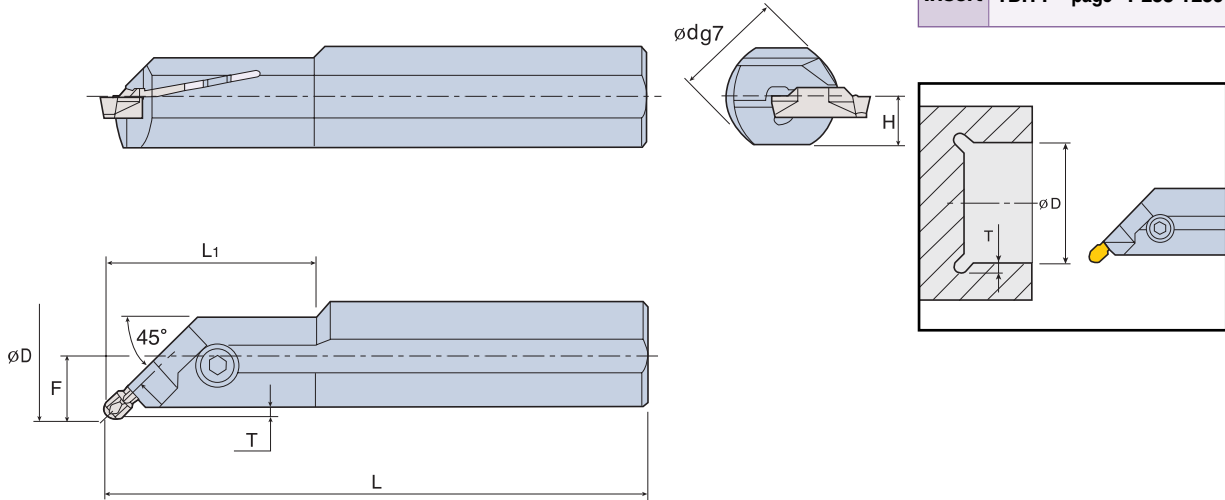
# TAEGLINE

## TGIUR/L

### Internal Undercutting Holders



Use TDT : page T254-T257  
 Insert TDIT: page T-258-T259



Right hand shown

Designation	Insert Seat Size	Ød (inch)	F (inch)	L (inch)	L 1 (inch)	H (inch)	Tmax (inch)	ØDmin (inch)	Screw	Wrench
TGIUR/L 19 - 3	3	.75	.50	6.5		.35	.11	1.50	SH M5 X 0.8 X 12	L-W4
TGIUR/L 19 - 4	4	.75	.51	6.5		.35	.11	1.50	SH M5 X 0.8 X 16	L-W4
TGIUR/L 25.4 - 3	3	1.00	.58	8.0	1.57	.45	.11	1.50	SH M5 X 0.8 X 16	L-W4
TGIUR/L 25.4 - 4	4	1.00	.59	8.0	1.57	.45	.11	1.81	SH M5 X 0.8 X 16	L-W4
TGIUR/L 25.4 - 6	6	1.00	.60	8.0		.45	.11	1.81	SH M6 X 1 X 16	L-W5

Ordering example: 5 pcs. TGIUR 25.4-6



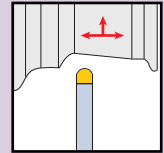




## ALUMINUM WHEELS MACHINING HOLDERS

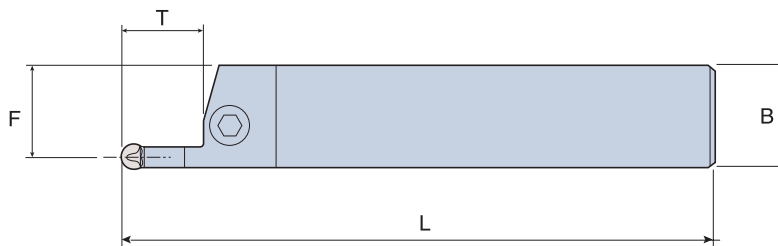
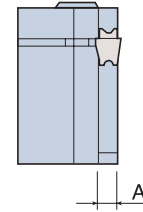
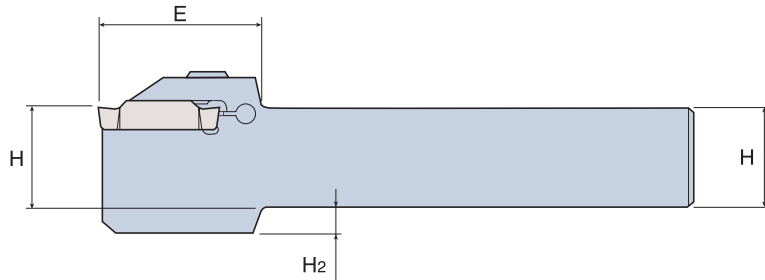
# TTER/L

External Turning Holders



Use  
Insert

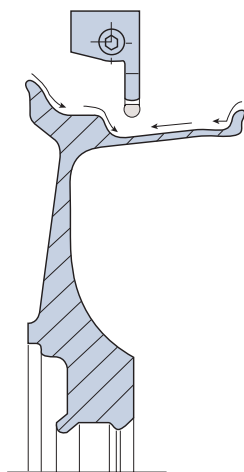
TDA/TSA: page T261



Right hand shown

Designation	Insert Seat Size	B (inch)	L (inch)	F (inch)	E (inch)	A (inch)	H (inch)	H 2 (inch)	Tmax (inch)	Screw	Wrench
TTER/L 25.4 - 6	6	1.00	6.00	.904	1.61	.191	1.00	7	.79	SH M6 X 1 X 25	L-W5
TTER/L 25.4 - 8	8	1.00	6.00	.805	1.83	.230	1.00	7	.79		

Ordering example: 5 pcs. TTER 25.4-6



## TGIUR/L

### Internal Turning Holders

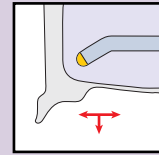
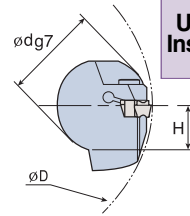
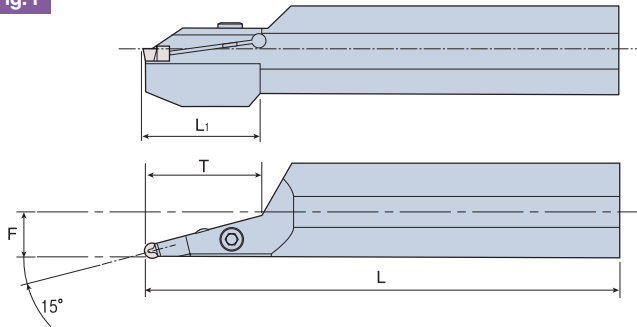


Fig.1

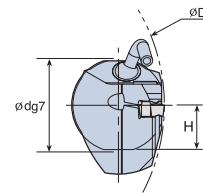
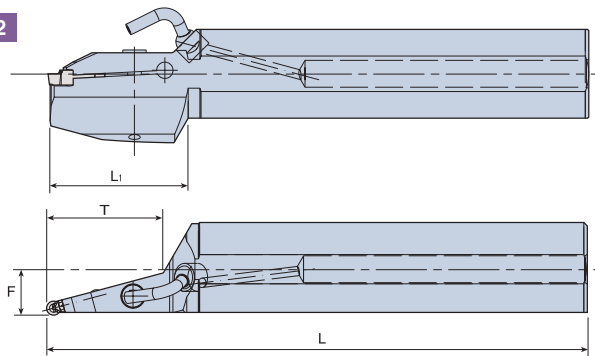


Use  
Insert

TDA/TSA: page T261

Right hand shown

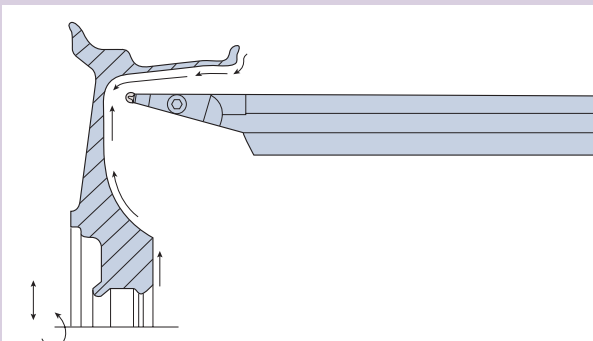
Fig.2



Right hand shown

Designation	Insert Seat Size	Ød (inch)	F (inch)	L (inch)	L <sub>1</sub> (inch)	H (inch)	ØD <sub>min</sub> (inch)	T <sub>max</sub> (inch)	Screw	Wrench	Coolant pipe	Coolant Nozzle	Remark
TGIUR/L 38.1-6-15A	6	1.5	.714	12	1.97	.699	6.30	1.968	SH M6 X 1 X 25	L-W5			Fig.1
TGIUR/L 38.1-8-15A	8	1.5	.694	12	2.36	.699	6.30	3.27					
TGIUR/L 40-6C-15A	6	1.57	.779	12.6	2.36	.75	1.968	6.30					
TGIUR/L 40-8C-15A	8	1.57	.795	12.6	3.94	.75	3.268	6.30					
TGIUR/L 50-6C-15A	6	1.97	.99	13.8	3.35	.93	3.35	7.87					
TGIUR/L 50-8C-15A	8	1.97	1.02	13.8	3.35	.93	3.35	7.87	NZP5	NZ 125	Fig.2		

Ordering example: 5 pcs. TGIUR 38.1-8-15A

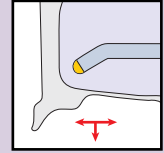




## ALUMINUM WHEELS MACHINING HOLDERS

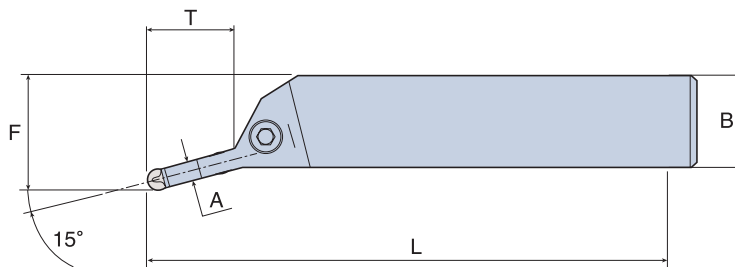
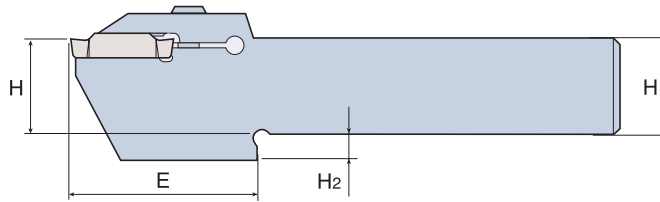
# TTER/L-15A

Internal Turning Holders



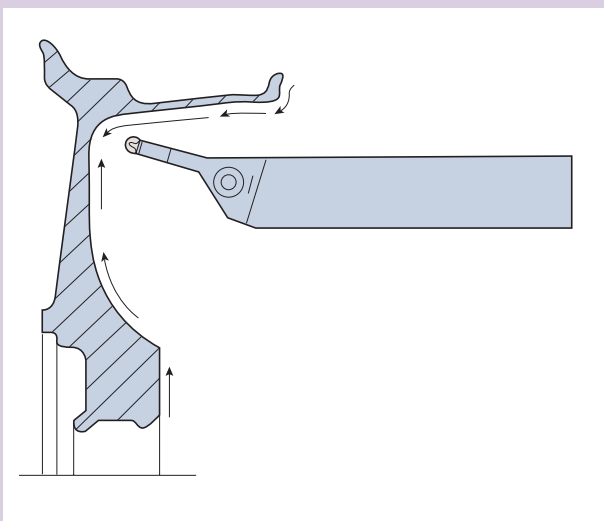
Use  
Insert

TDA/TSA: page T261



Right hand shown

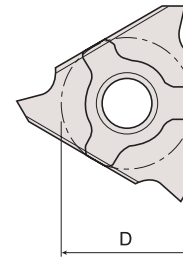
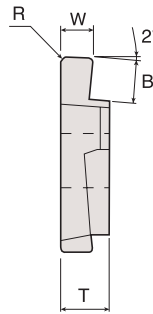
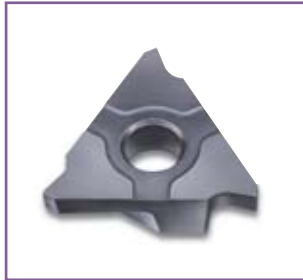
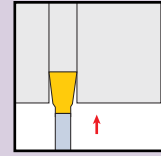
Designation	Insert Seat Size	H (inch)	B (inch)	L (inch)	F (inch)	E (inch)	A (inch)	H2 (inch)	Tmax (inch)	Screw	Wrench
TTER/L 2525-6-15A	6	0.98	0.984	5.91	1.18	2.01	0.19	0.28	0.98	SH M6 x 1 x 25	L-W5
TTER/L 2525-8-15A	8	0.98	0.984	5.91	1.18	2.17	0.23	0.28	1.18	SH M6 x 1 x 25	



# GROOVING INSERTS

## TTG (Lever Lock)

Triple Corner Insert for Shallow Grooving



Right hand shown

Designation	W±.004 (inch)	B (inch)	R (inch)	D (inch)	T (inch)	Grade		
						TT9030	CT3000	PV3030
TTG 22125 R/L	0.049	0.079	0.008	0.500	0.187	○	○	
TTG 22150 R/L	0.059	0.079	0.008			○	○	
TTG 22185 R/L	0.073	0.138	0.008			○	○	
TTG 22200 R/L	0.079	0.138	0.008			○	○	
TTG 22250 R/L	0.098	0.157	0.012			○	○	
TTG 22300 R/L	0.118	0.157	0.012				○	○
TTG 22330 R/L	0.130	0.157	0.012				○	○
TTG 22350 R/L	0.138	0.197	0.012				○	
TTG 22400 R/L	0.157	0.197	0.018				○	
TTG 22430 R/L	0.169	0.197	0.016				○	
TTG 22470 R/L	0.185	0.197	0.016				○	

● For holders, see pages C59, C61

○ : Stock

## GROOVING INSERTS

# TTG (Screw-Clamp)

Triple Corner Insert for Shallow Grooving

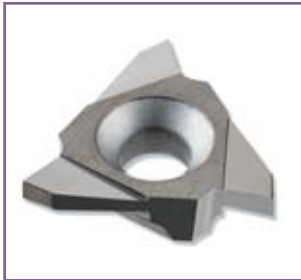
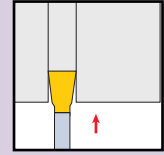


Fig.1

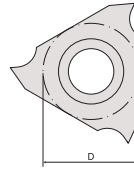


Fig.2

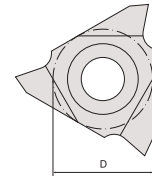
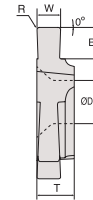
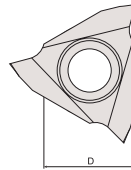
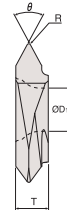


Fig.3



Right hand shown

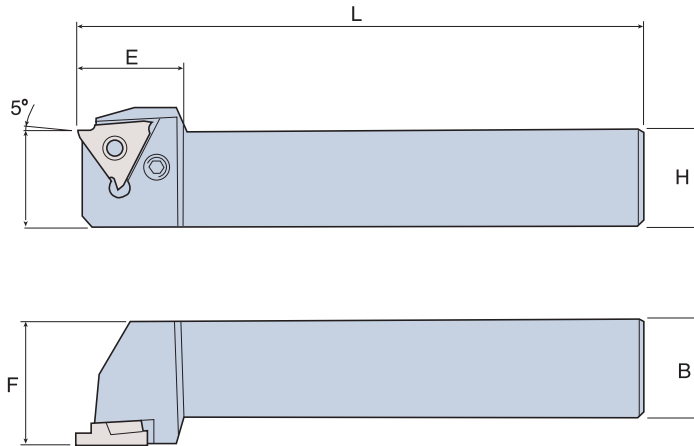
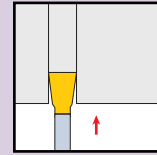
Designation	W±.0001 (inch)	B (inch)	R (inch)	D (inch)	T (inch)	$\theta$ °	ØD1 (inch)	Pitch	Grade		Remark
									CT3000	TT9030	
TTG 32 R/L 03007R05-C	0.012	0.028	0.002	0.375	0.125	-	0.177	-	○	○	Fig 1
TTG 32 R/L 05012R05-C	0.020	0.047	0.002					-	○	○	
TTG 32 R/L 07520R10-C	0.030	0.079	0.004					-	○	○	
TTG 32 R/L 10020R10-C	0.039	0.079	0.004					-	○	○	
TTG 32 R/L 12520R10-C	0.049	0.079	0.004					-	○	○	
TTG 32 R/L 15020R10-C	0.059	0.079	0.004					-	○	○	
TTG 32 R/L 17520R10-C	0.069	0.079	0.004					-	○	○	
TTG 32 R/L 20025R10-C	0.079	0.098	0.004					-	○	○	
TTG 32 R/L 25025R10-C	0.098	0.098	0.004					-	○	○	
TTG 43 R/L 12535R20-C	0.049	0.138	0.008	0.500	0.187	-	0.217	-	○	○	Fig 2
TTG 43 R/L 15035R20-C	0.059	0.138	0.008					-	○	○	
TTG 43 R/L 17535R20-C	0.069	0.138	0.008					-	○	○	
TTG 43 R/L 20035R20-C	0.079	0.138	0.008					-	○	○	
TTG 43 R/L 25040R30-C	0.098	0.157	0.012					-	○	○	
TTG 43 R/L 30040R30-C	0.118	0.157	0.012					-	○	○	
TTG 43 R/L 35050R30-C	0.138	0.197	0.012					-	○	○	
TTG 43 R/L 40050R40-C	0.157	0.197	0.016	-	○	○					
TTH 32 R/L 6005	-	-	0.002	0.375	0.125	60	0.177	0.031	○	○	Fig 3
TTH 32 R/L 6010	-	-	0.004					0.059	○	○	
TTH 32 R/L 6020	-	-	0.008					0.079	○	○	
TTH 32 R/L 6030	-	-	0.010					0.098	○	○	



EXTERNAL HOLDERS

# TGTER/L (Lever Lock)

External Shallow Grooving Holders



Right hand shown

Designation	H (inch)	B (inch)	L (inch)	E (inch)	F (inch)	Insert	Lever	Lever Screw	Snap Ring	Wrench
TGTER/L 19-4-20	0.79	0.787	5.00	1.18	0.98	TTG 22125-TTG 22200 R/L	LCL 4B	LCS 4B-T	LSR 4B	L-W2.5
TGTER/L 19-4-33						TTG 22250-TTG 22330 R/L				
TGTER/L 25.4-4-20	0.98	0.984	5.91	1.18	1.26	TTG 22125-TTG 22200 R/L				
TGTER/L 25.4-4-33						TTG 22250-TTG 22330 R/L				

● For inserts, see page C57





## EXTERNAL HOLDERS

# TGTER/L (Screw-Clamp)

External Shallow Grooving Holders

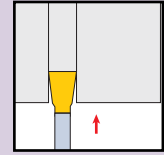


Fig.1

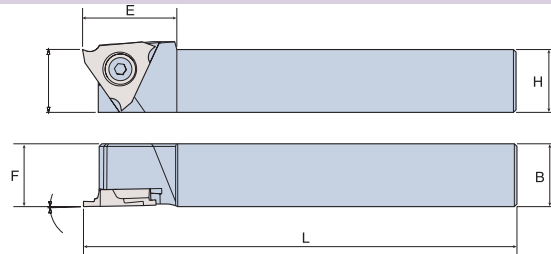


Fig.2

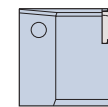
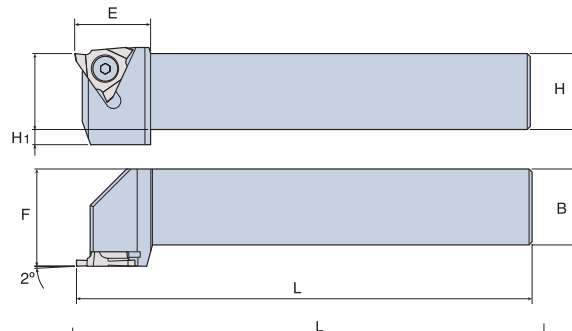
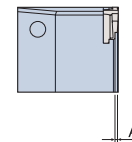
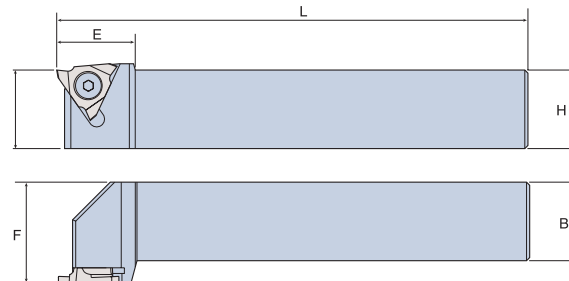


Fig.3



Right hand shown

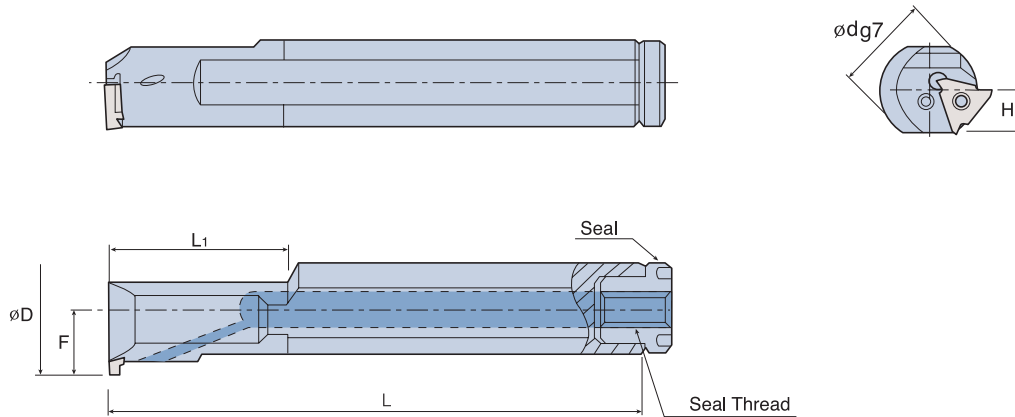
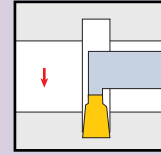
Designation	H (inch)	B (inch)	L (inch)	E (inch)	F (inch)	H <sub>1</sub> (inch)	A (inch)	Insert	Screw	Wrench	Fig
TGTER/L 1010 K16-SH	0.39	0.394	4.92	0.71	-	0.08	-	TTG 32R/L	FH M4 X 0.7 X 8.5-60A	L-W2	Fig 1
1212 M16-SH	0.47	0.472	5.91		-	-	-				
1616 M16-SH	0.63	0.630	5.91		-	-	-				
1010 F16	0.39	0.394	3.15	0.71	-	0.16	-	TTG 32RL TTH 32R/L	FH M4 X 0.7 X 8.5-60A	L-W2	Fig 2
1212 H16	0.47	0.472	3.94		-	0.08	-				
1616 H16	0.63	0.630	3.94		-	-	-				
2020 K16	0.79	0.787	4.92		-	-	-				
2525 M16	0.98	0.984	5.91	0.98	-	-	-	TTG 43R/L	FH M5 X 0.8 X 13-84A	L-W3	Fig 3
2020 K22-23	0.79	0.787	4.92		-	-	0.04				
2525 M22-23	0.98	0.984	5.91		-	-	0.04				
2020 K22-33	0.79	0.787	4.92		-	-	0.08				
2525 M22-33	0.98	0.984	5.91		-	-	0.08				
2020 K22-45	0.79	0.787	4.92		-	-	0.12				
2525 M22-45	0.98	0.984	5.91	-	-	0.12					

● For inserts, see page C58

INTERNAL HOLDERS

# TGTIR/L (Lever Lock)

Internal Shallow Grooving Holders



Right hand shown

Designation	$\varnothing d$ (inch)	L (inch)	L <sub>1</sub> (inch)	F (inch)	H (inch)	$\varnothing D_{min}$ (inch)	Insert	Seal	Seal Thread	Lever	Lever Screw	Wrench
<b>TGTIR/L 31.7-4-33</b>	1.25	10.0	2.36	.83	0.55	1.30	TTG 22125- TTG 22470 R/L	RL 125	NPT1/8"	CLC 4B	CLC 4B-T	L-W3

- Apply R insert on L tool and L insert on R tool
- For inserts, see page C57





T302

**TAEГУ***line*

### TaeguT-Clamp System

**This guide presents basic information that will enable you to obtain full benefit from TaeguTclamp System.**

Tclamp enables multi-functional operations in one system:

- Deep Grooving
- Parting and Grooving
- Shallow Grooving
- Turning and Grooving
- Precision Grooving and Recessing
- Face Grooving and Face Turning
- Undercutting and Recessing



Parting

#### Inserts

- Accuracy with good repeatability
- Molded chipbreaker
- Top and bottom prism hold the insert firmly and accurately in the correct position
- TDJ/C is a unique double-ended insert for grooving and parting
- TSJ/C is a unique single-ended insert for deep grooving and parting
- TDT double-ended insert for side turning and grooving
- TDA double-ended insert for aluminum wheel machining



Turning & Grooving

#### Blades

- Simple, accurate and rapid indexing
- Top and bottom seated insert alignment
- No additional spare parts
- Uses standard tool blocks

#### Integral Shank Tool

- Simple, accurate and rapid indexing
- Top and bottom seated insert alignment
- Stable support against side forces
- No additional spare parts
- Standard shank dimensions



Face Grooving & Turning

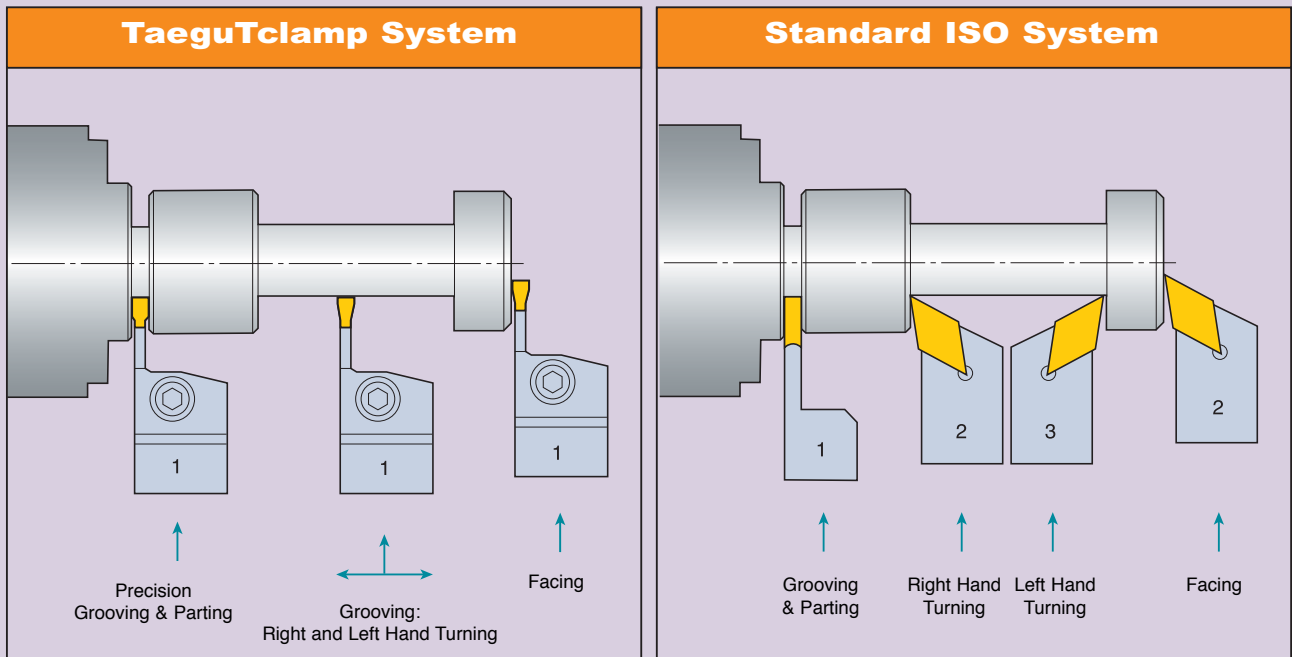


## USER GUIDE

### Advantages of TaeguTclamp System

- Tclamp is available as either double-ended or single ended insert for maximum economy.
- Multifunction use -  
Right-hand and left-hand turning, grooving and parting with a single tool.
- Tclamp replaces a multitude of ISO tools.  
Reduce number of tools per operation.  
Reduces inventory.
- Short cycle time  
Short setup with less downtime.  
Reduce need for turret indexing.
- Less Machining time -  
The excellent surface finish obtained from rough turning may eliminate finish turning.

### TaeguTclamp System vs. Standard ISO System



### Toolholder Screw Clamping Force



Screw	Recommended Torque (N-m)
SH M5x0.8	5.5
SH M6x1	8.0

## USER GUIDE - PARTING & GROOVING

To match the correct insert and cutting condition, the following variables must be considered.

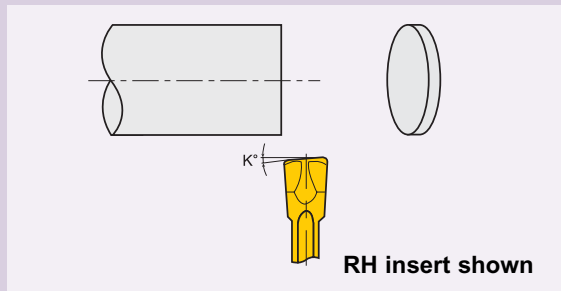
- Width of cut (width of insert)
- Chipbreaker style
- Lead angle
- Corner radii
- Carbide grade

### Width of Cut (WOC) and Depth of Cut (DOC)

- To select the proper width and depth of cut the application must be considered. The ratio  $DOC = 8 \times WOC$  can be used when cutting steel. For example, the maximum DOC for a 0.12" wide insert is 0.94" for parting a 1.89" diameter bar.
- Neutral inserts with a 0 lead angle provide the maximum DOC.

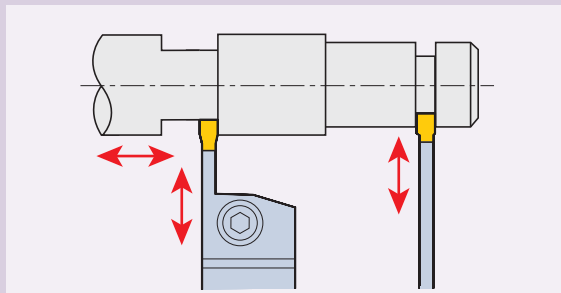
### Lead Angle

- Use inserts with a lead angle to minimize pips or burrs.
- Inserts are available with either R or L hand, with the point of angle toward the finished surface.
- Increasing the lead angle reduces the pips or burrs, but will also produce a poor surface finish and short tool life. Neutral inserts are recommended when a pip/burr is acceptable.



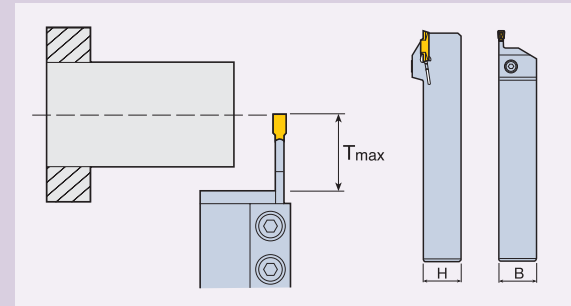
## Insert Support

- Integral shank toolholders offer the best rigidity.
- A self clamp holder is only recommended for radial machining.
- A screw clamp holder is recommended for axial and radial machining.



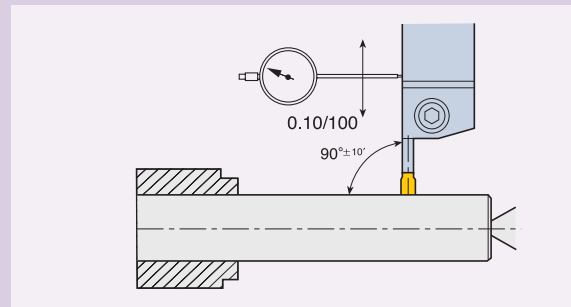
To minimize vibration and deflection choose:

- Blade or toolholder with the smallest possible overhang ( $T_{max}$ ).
- Toolholder with the maximum shank size (H).
- Blade height that is larger than  $T_{max}$ .
- Blade or toolholder with the maximum blade width (largest possible insert seat size).



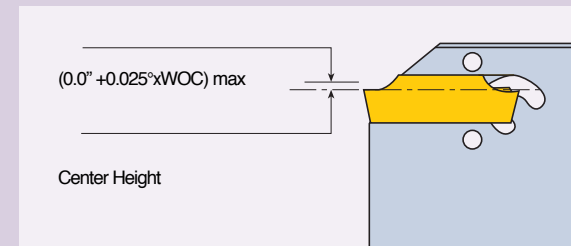
## 90° Mounting

- The insert must be mounted 90° to the workpiece to obtain perpendicular surfaces and minimize vibration.



## Setup

- The center height of the insert should be maintained within  $\pm 0.004$ ".
- The parting operation should be as close to the chuck as possible.



## Selecting Preference Priority

- Use insert with 0° lead angle.
- Use largest blade size possible the largest.
- The smallest appropriate width of cut.

## ■ USER GUIDE - PARTING & GROOVING

- Consistency of speed and feed improves performance.
  - Apply coolant abundantly (excluding Ceramic AB30).
  - Secure insert into clean pockets.
  - Cutting forces on soft workpiece materials may be insufficient to push insert well into pocket.  
Tap insert into place using a plastic hammer.
  - On a conventional lathe, lock the carriage to prevent axial motion during parting-off.
- 
- Replace worn inserts immediately.  
The price of a new insert is much less than the risk of damage from continuing with a worn edge.
  - Replace blades having worn or damaged pockets.
  - Never try to repair damaged pockets.

The chipbreaker's function is to narrow the chip - it occurs near the cutting at high temperature.

Producing chips that are narrower than the groove gives the following advantages:

- Eliminates friction with groove walls.
- Prevents chip overload.
- Permits higher feeds.
- Produces unscratched surfaces, eliminating additional facing.

Curling chips into compact spirals or breaking chips simplifies disposal.

Curling is affected by the chipbreaker type and the machining conditions.

Select an appropriate chipformer for the specific application.

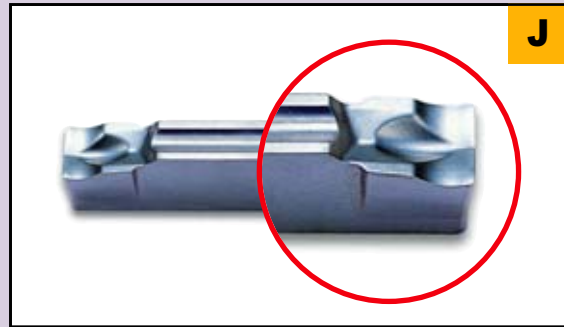
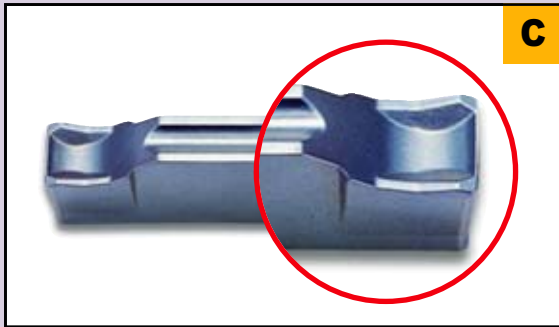
## ■ Extraction of Insert

### Insert Clamping

Extractor (EDG-23B, EDG-33B) for Blades



## Selection of Chipbreakers



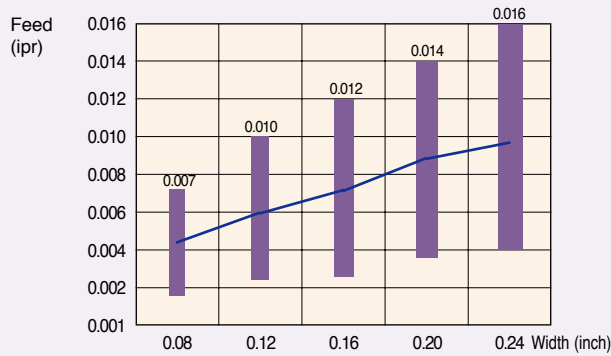
- For hard materials and tough applications.
- For general applications on steel, alloy steel and stainless steel.
- Medium-to-high feeds.

- For soft materials, parting of tubes, small diameters and thin-walled parts.
- Low forces and smaller burrs.
- Improved straightness.
- Low-to-medium feeds.

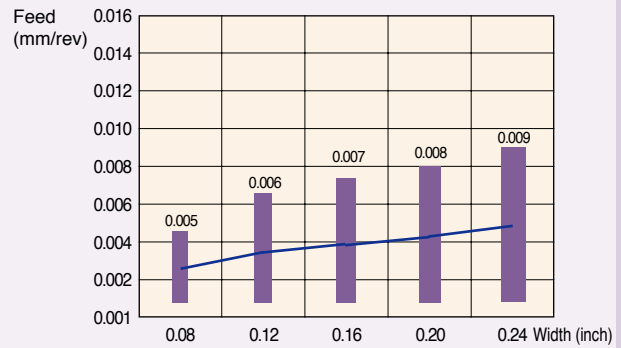
### Recommended feed range as a function of insert width

Material; SAE4140 (HB240)

Recommendations are for neutral inserts - for R/L inserts reduce feeds by 20 - 40%



“C”



“J”

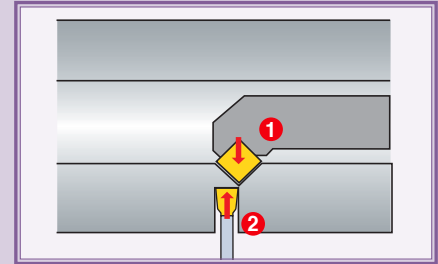
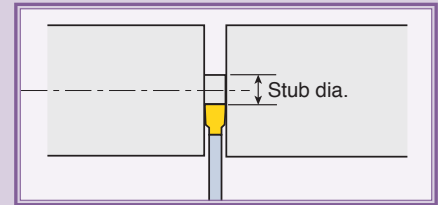
### Workpiece Materials

	Alloy Steel	Austenitic Stainless	High - Temp Alloys	Nonferrous Materials	Cast Iron
<b>High</b>	C	C	C	C Brass	C
<b>Feed</b>					
<b>Low</b>	J	J	J Titanium	J Aluminum	

## USER GUIDE - PARTING & GROOVING

### 1. To Reduce Burr

- On CNC reduce feed by 50% when approaching center stub diameters WOC.
- Check center height of cutting edge.
- Use insert with lead angle.
- If 0° lead angle must be used for whatever reason, apply narrow WOC.
- Apply a supporting part-catcher (or adjust concentricity).
- For hollow bars, it is better to machine chamfers using ID boring tool prior to parting operation. (See picture)

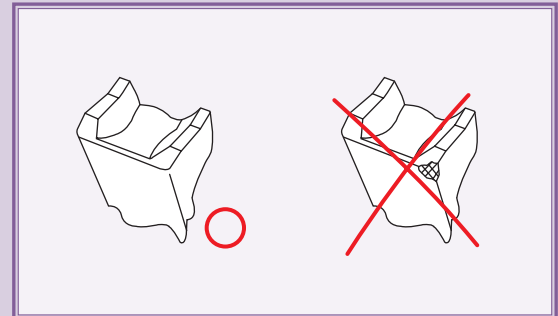


### 2. To Improve Surface Finish

- Increase cutting speed.
- Use neutral inserts.
- Select chipformer that provides optimum chip control.
- Use coated carbide.
- Improve coolant application
- Eliminate chatter.

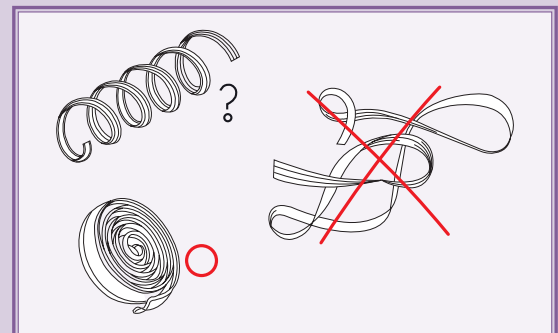
### 3. To Improve Flatness

- Check inserts and replace any that show wear.
- Use neutral inserts.
- Use largest blade possible, i.e., TGB 32- instead of TGB 26-.
- Increase blade thickness and insert width.
- Minimize blade overhang.
- Check alignment and perpendicularity of tool to machine axis.
- Optimize workpiece chucking.
- Lock the carriage on manually operated lathes.
- Apply coolant abundantly (excluding Ceramic AB30).
- Reduce feed.



### 4. To Improve Chip Control

- Replace worn inserts.
- Choose a more appropriate chipbreaker.
- Use a neutral insert.
- Check alignment and perpendicularity of tool to machine axis.
- Apply coolant abundantly.
- Increase feed.
- At initial groove depth, interrupt feed momentarily to let the chip enter slot.



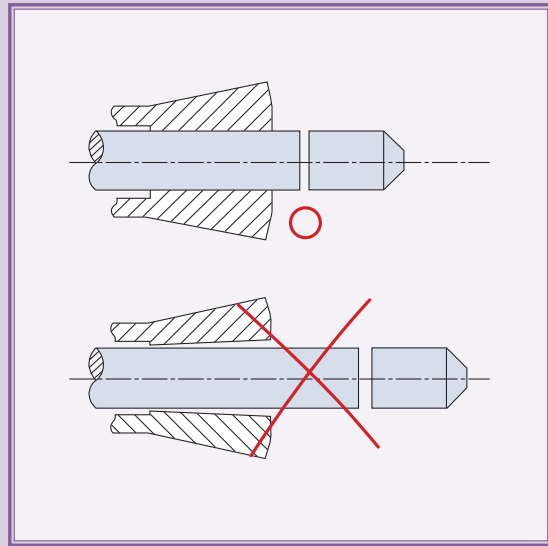


## 5. To Eliminate Chatter

- Part-off as close to chuck as possible.
- Minimize blade overhang.
- Improve chucking and monitor tool setup.
- Change the RPM.
- Increase the feed.
- Lock the carriage on manually operated lathes.

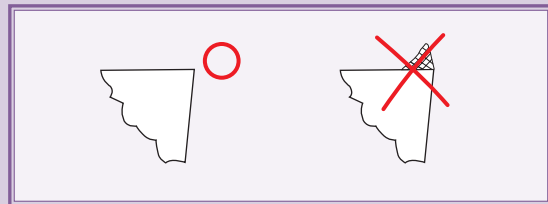
## 6. To Prevent Chipping of Cutting Edge

- Use appropriate carbide grade and geometry.
- Use insert with larger corner radii.
- Reduce feed at end of cut.
- Eliminate chatter.
- Increase speed.
- Use strong grade.
- Increase tool and setup rigidity.
- Eliminate built-up edges.



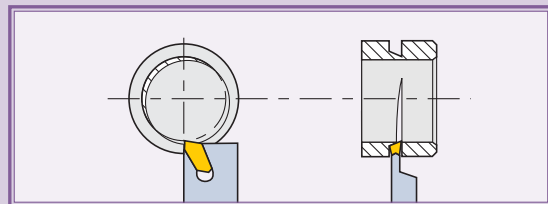
## 7. To Prevent or Reduce Built-up Edge

- Use appropriate carbide grade and geometry.
- Increase speed.
- Reduce feed.
- Increase coolant flow/concentration.



## 8. Parting on Eccentric Tubes

- Inserts with 4 degree lead angle are usually recommended for tubes. However, the combination of an eccentric bore and machine resiliency may increase feed-snap on breakthrough and damage the cutting edge. Changing to a 8 degree lead angle insert will moderate the breakthrough.



## ■ USER GUIDE - PARTING & GROOVING

### ■ Recommended Cutting Speeds with ISO K Grades Cast Iron and Nonferrous Materials

Material		Hardness Brinell HB	Grade K10	TDC 2	TDC 3	TDC 4	TDC 5	TDC 6	TDC 8
			Cutting Speed (sfm)						
Carbon Steel	Low tensile, gray	180	197 - 262	.002 - .006	.003 - .008	.003 - .011	.003 - .014	.004 - .016	.006 - .018
	High tensile, gray, alloy	250	164 - 230						
Malleable Iron	Short-Chip	110 - 145	230 - 328						
	Long-Chip	200 - 250	230 - 295						
Nodular Iron	Ferritic	160	197 - 279						
	Pearlitic	250	148 - 246						
	Chilled Cast Iron	400	49 - 82						
Bronze	Lead Alloy	110	492 - 722						
	Brass, Red Brass	100	394 - 591						
	Phosphor-Bronze	100	328 - 459						
Magnesium		40 - 90HRB	820 - 886						
Aluminum		40 - 90HRB	820 - 1476						

### Titanium - Base Alloys

Material		Hardness Brinell HB	Grade K10	TDC 2	TDC 3	TDC 4	TDC 5	TDC 6	TDC 8
			Cutting Speed (sfm)						
Ti5Al - 2.5Sn		Annealed 310 - 370	131 - 164	.002 - .006	.003 - .008	.003 - .011	.003 - .014	.004 - .016	.006 - .018
Ti6Al - 4V		Annealed 310 - 370 S & A 370 - 410	131 - 164 82 - 131						
Ti6Al - 6V - 2Sn		Annealed 380 - 420	98 - 131						
Ti7Al - 4Mo Ti8AlMo - 1V		S & A 380 - 420	98 - 131						
TiA55 Ti75A Ti140A		Annealed 110 - 175 Annealed 300 - 350	459 - 525 131 - 164						

### Nickel - Base Alloys

Material		Hardness Brinell HB	Grade K10	TDC 2	TDC 3	TDC 4	TDC 5	TDC 6	TDC 8
			Cutting Speed (sfm)						
Astroloy, Rene41		Sol 240 - 300	213 - 328	.002 - .006	.003 - .008	.003 - .011	.003 - .014	.004 - .016	.006 - .018
Udimet 500, 700		S & A 310 - 400	164 - 262						
Inconel W, X, 702, 718		Sol 240 - 300	164 - 328						
M252, Waspaloy		S & A 400 - 410	164 - 262						
Hastelloy		Annealed 90 - 100 HRB	262 - 427						
Inconel 600		Cold drawn 250 - 330	213 - 377						
TD2		Stress relieved 300	541 - 689						

### Cobalt - Base Alloys

Material		Hardness Brinell HB	Grade K10	TDC 2	TDC 3	TDC 4	TDC 5	TDC 6	TDC 8
			Cutting Speed (sfm)						
HS21, HS31, HS36		As Cast 90 - 98 HRB	66 - 82	.002 - .006	.003 - .008	.003 - .011	.003 - .014	.004 - .016	.006 - .018
L605		Sol 90 - 98 HRB	66 - 82						
Stellite 6		S & A 280 - 330	49 - 66						
		370 - 420	49 - 66						

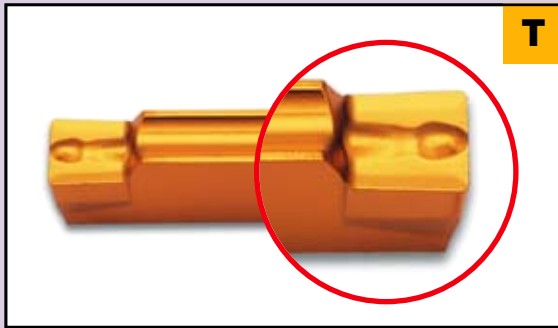
S & A - Solution and aging  
Sol - Solution treatment

## USER GUIDE - TURNING & GROOVING

### Chipbreaker Style: "T" Chipbreaker

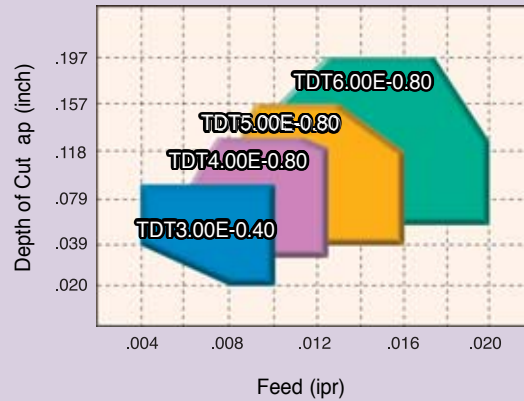
- The "T" chipbreaker is available for turning and grooving of steel, alloy steel and stainless steel.
- Inserts with "T" style chipbreaker contain a central chipbreaking island for multi-direction chip control.

#### "T" Type



- For turning applications, inserts are available with various corner radii. And for profiling, inserts are ground with a full radius.

Workpiece: SAE 1045 (C45)  
Cutting Speed:  $V_c=328 - 591$  sfm



Reduce cutting speed 20 - 30% for Internal & Face machining

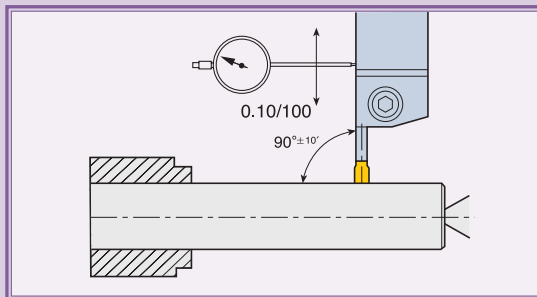
### Toolholder or Blade Size

To minimize risk of vibration and deflection always choose:

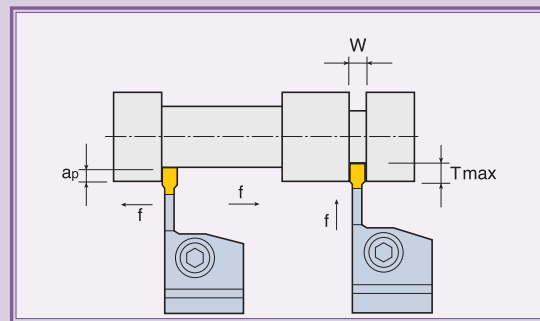
- Toolholder or Blade with the smallest possible overhang.
- Toolholder with maximum shank dimension.

### 90° Mounting

It's very important that the insert is mounted at 90° to the center line of the workpiece in order to obtain a perpendicular surface and reduce the risk of vibration.



### Machining Definitions



#### Grooving

- $V_c$  - Cutting Speed (m/min)
- $T$  - Maximum Depth (mm)
- $f$  - Feed in Radial Direction (mm/rev)

#### Turning

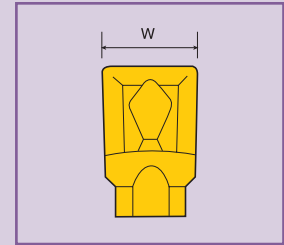
- $V_c$  - Cutting Speed (m/min)
- $a_{pmax}$  - Maximum Depth of Cut (mm)
- $f$  - Feed in Lateral Direction (mm/rev)

## ■ USER GUIDE - TURNING & GROOVING

### ■ Selecting Inserts

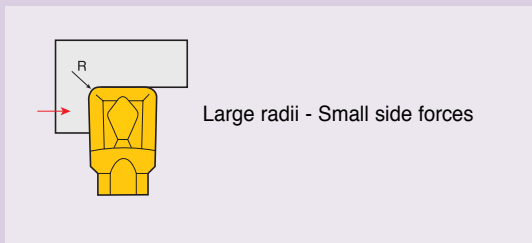
#### Insert Width

- Insert width strongly affects strength.
- For most efficient machining select the widest possible insert.
- Chipbreaking range depends on insert width.
- A narrow width improves chipbreaking at lower feed rates.
- Wide inserts and strong blades require high forces and feed rates to achieve a frontal clearance angle.

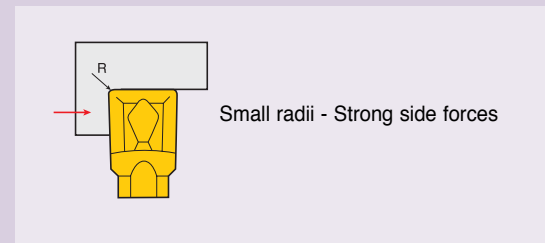


#### Corner Radii - Lateral Turning

- Choose large corner radii for long tool life.

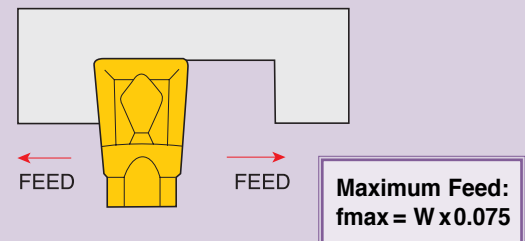


- Choose small corner radii to reduce cutting load and lower feed with narrow inserts.



#### Turning Feed

- Feed depends on chipbreaking range of the insert.
- Maximum feed depends on insert width and is a function of maximum load.
- High feed with small corner radii may reduce tool life.
- Maximum feed should not exceed the corner radii.
- For better chip formation when grooving, feed can be interrupted at small intervals.

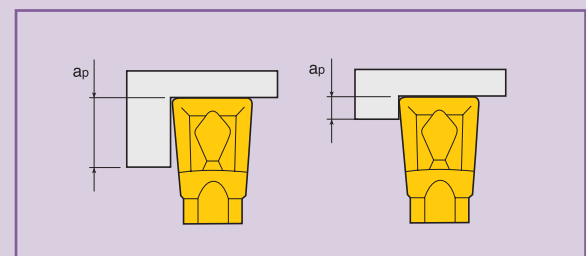


#### Depth of Cut

- Minimum depth of cut equals the corner radii.
- Maximum depth of cut depends on maximum possible load.
- Depth of cut depends on chipbreaking range.

Large depth of cut causes large deflection and large frontal clearance.

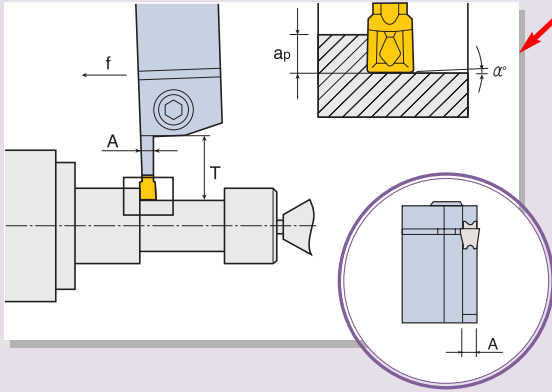
With small depth of cut, deflection and frontal clearance may be too small.



**Maximum Depth of Cut:  $a_{pmax} = W \times 0.8$**

## USER GUIDE - PARTING & GROOVING

- The clearance angle  $\alpha^\circ$  is a function of the side cutting forces and is not constant as is the case ISO inserts.



Clearance angle between the insert and workpiece

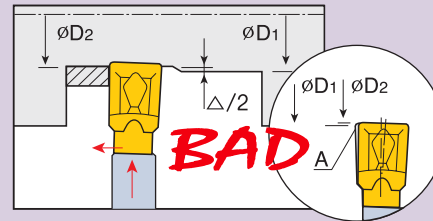
### The deflection is influenced BY:

- **Feed: f**
- **Depth of cut:  $a_p$**
- **Overhang: T**
- **Cutting speed:  $V_c$**
- **Workpiece Material**

\* When these factors are properly applied, the insert ( $\alpha^\circ$ ) creates a "Wiper" action providing excellent surface quality and tolerance.

## Finishing Operation: Diameter Compensation

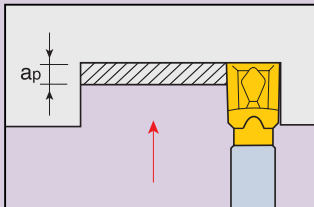
- A compensation factor for the finish diameter must be used in the final machining operation. After grooving to the desired diameter, the machining direction changes to longitudinal turning. At this point deflection occurs. If machining continues without tool compensation, corner A will penetrate the workpiece as a result of the deflection phenomenon. (See picture) This will result in two different diameters  $\varnothing D_1$  from the grooving operation and  $\varnothing D_2$  from the turning operation. The difference between  $\varnothing D_1$  and  $\varnothing D_2$  is the change in diameter, designated at Delta  $\Delta$ .



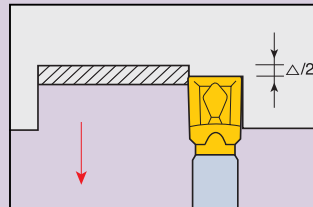
Tool compensation factor is calculated as shown:

$$\frac{\Delta}{2} = \frac{\varnothing D_1 - \varnothing D_2}{2}$$

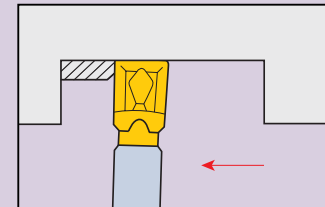
- Using the compensation factor will eliminate the difference in part diameter. Follow this simple procedure during machining.



1. Groove to the final diameter.



2. Pull the tool back, a distance equal to the value of  $\Delta/2$



3. Continue the finish turning operation

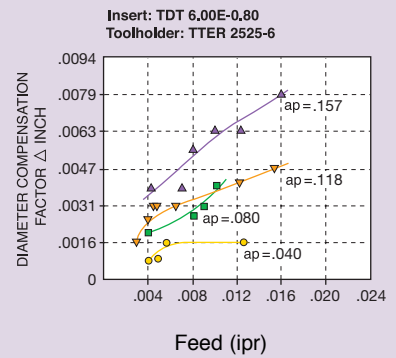
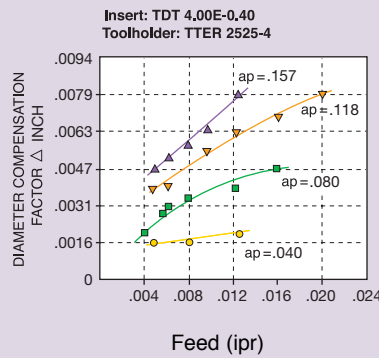
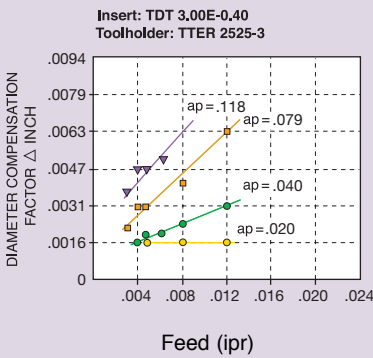


## USER GUIDE - TURNING & GROOVING

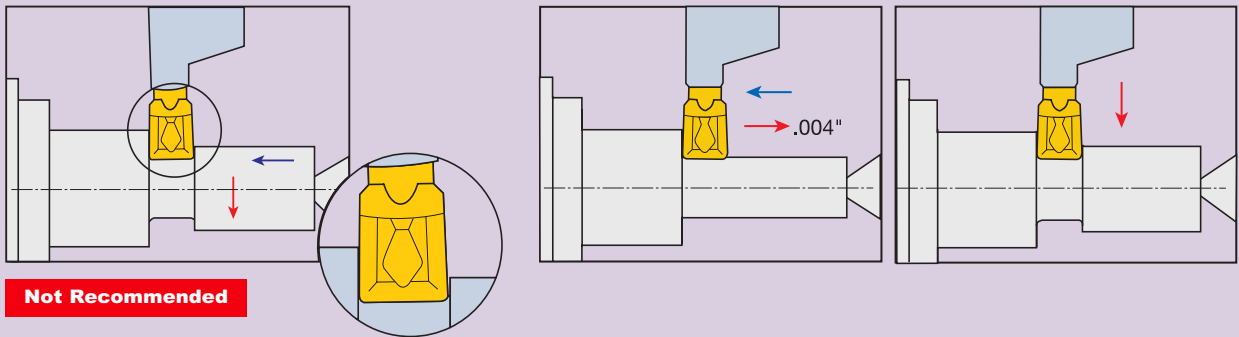
- The diagrams show experimental results for specific machining conditions. These are sample values that will vary with different workpiece materials and different holder types.

### Recommendation:

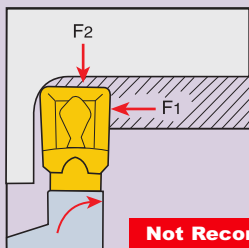
Measure the  $\Delta$  value for your finishing operation in a short test using your selected finishing conditions. Do not run your test using the final diameter.



## Multifunction Operations

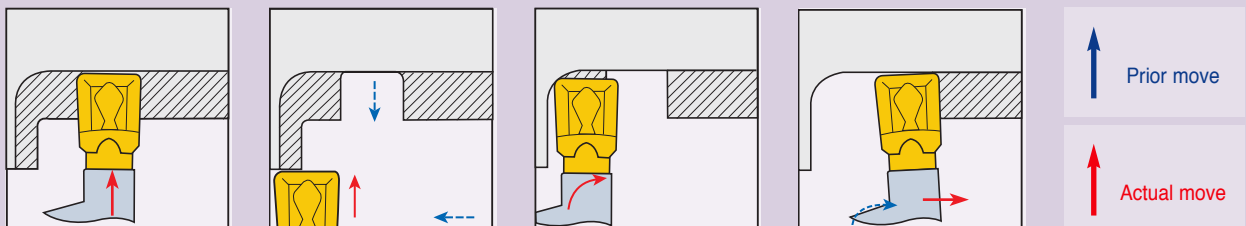


The tools are multifunctional tools able to operate in a sequence of grooving and turning modes. Moving from turning to grooving requires consideration of the basic principle to eliminate the possibility of insert breakage. In this situation one must release the side deflection necessary in turning but not recommended in grooving.



The machining of a corner with a radius or a chamfer larger than the radius of the insert always requires the combination of movement in two directions. Problems, such as insert breakage, result when this combined operation is used while the insert is plunged into the workpiece with material on all sides. Insert breakage is caused by forces acting simultaneously in two different directions  $F_1$  and  $F_2$  as shown.

### Recommended procedure to optimize machining and eliminate insert breakage

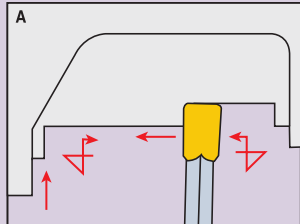


# Ingersoll

One of the most important advantages of TaeguTclamp system is the ability to machine between walls. To achieve the best result - follow recommended sequence:

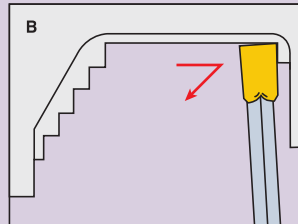
Leave steps near a wall. Don't arrive at the same Z value!!!

**Roughing 1**

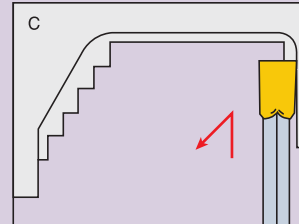


Z value= .008" - .012"

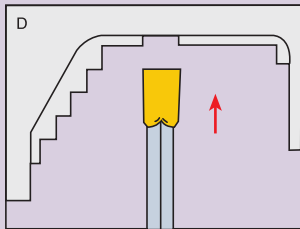
**Roughing 2**



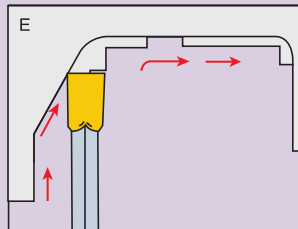
**Finishing 3**



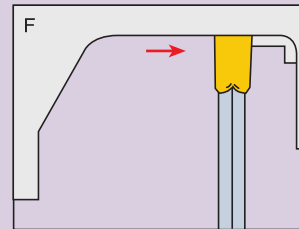
**Finishing 4**



**Finishing 5**



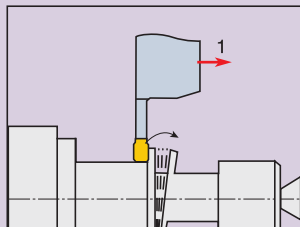
**Finishing 6**



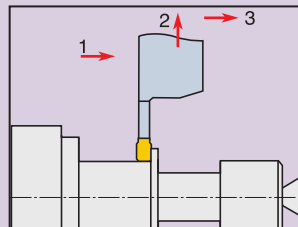
When turning at the end of a bar or toward a recess between two walls, a 'Hanging Ring' may be formed.

To eliminate the 'Hanging Ring':

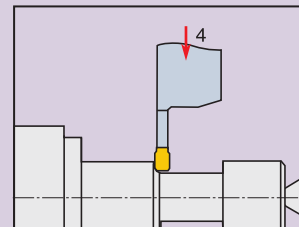
**Roughing (Incorrect)**



**Roughing (correct)**

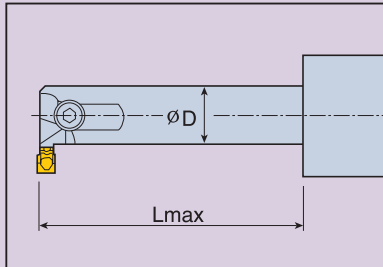


**Finishing (correct)**



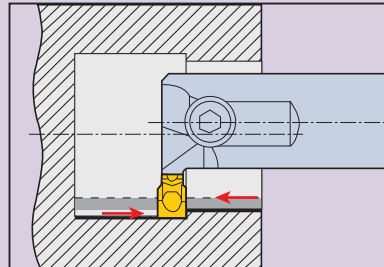
## USER GUIDE - TURNING & GROOVING

### Toolholder Overhang



**L max.  $\leq 3D$**

### Efficient use of Insert corners

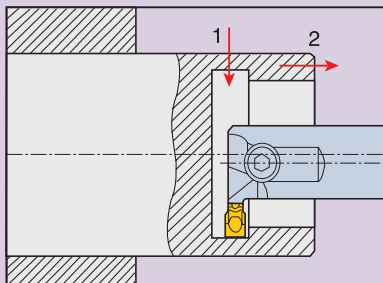


1. The first pass uses one corner for roughing.
2. The other corner is used on the return path for semi-finishing or finishing.
3. Tool position looks out of sequence with the amount of material that is removed.
4. Rapid position back to initial groove, continue with face turning toward center.

Internal turning in a blind hole brings about the problem of chip evacuation.

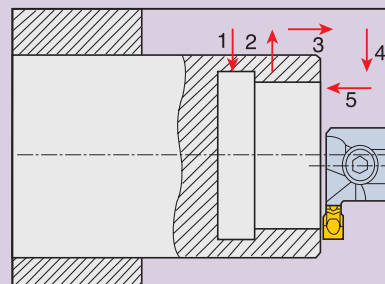
When the tool reaches the rear side wall, chips may be caught between the wall and the insert, causing breakage.

Two solutions that can eliminate this problem:



#### First Solution

1. Start by grooving at the rear wall
2. Continue by turning from the inside toward the outside.



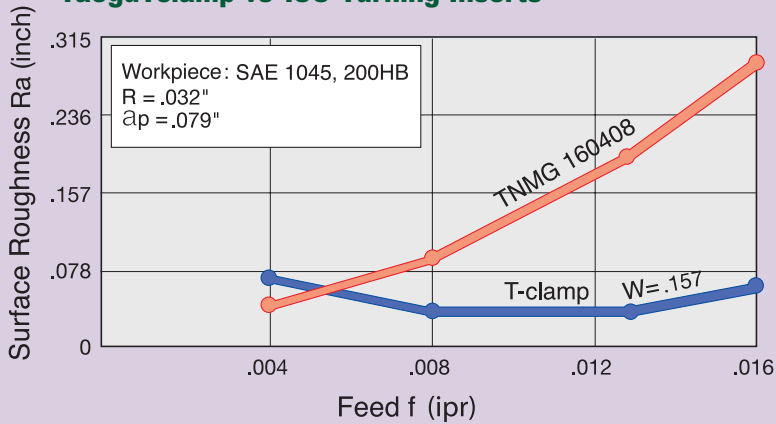
#### Second Solution

1. Start by grooving at the rear wall.
2. Pull the tool back to the outside. Turn the final diameter from outside toward the groove.

## Eliminating Grinding Operations

Turning with TaeguTclamp Tools gives a surface quality superior to anything possible when using standard ISO tools. In fact, turning with TaeguTclamp tools can produce a surface quality comparable to grinding.

### TaeguTclamp vs ISO Turning Inserts

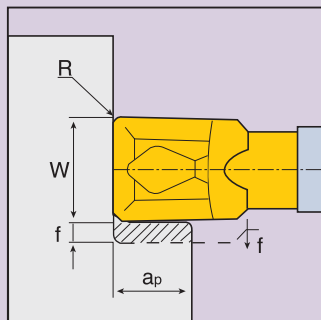


#### Turning

$$P = \frac{K_c \cdot a_p \cdot f \cdot V_c}{\eta \cdot 45 \cdot 10^3} \quad [\text{HP}]$$

#### Turning

$$P = \frac{K_c \cdot a_p \cdot f \cdot V_c}{\eta \cdot 61 \cdot 10^3} \quad [\text{kw}]$$

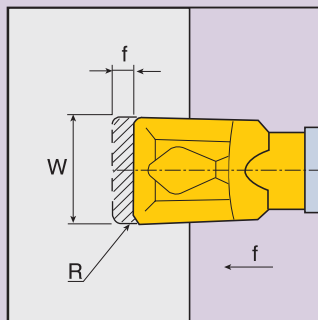


#### Grooving/Parting

$$P = \frac{K_c \cdot W \cdot f \cdot V_c}{\eta \cdot 45 \cdot 10^3} \quad [\text{HP}]$$

#### Grooving/Parting

$$P = \frac{K_c \cdot W \cdot f \cdot V_c}{\eta \cdot 61 \cdot 10^3} \quad [\text{kw}]$$

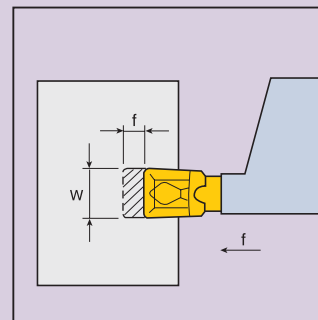


#### Face Grooving

$$P = \frac{K_c \cdot W \cdot f \cdot V_c}{\eta \cdot 45 \cdot 10^3} \quad [\text{HP}]$$

#### Face Grooving

$$P = \frac{K_c \cdot W \cdot f \cdot V_c}{\eta \cdot 61 \cdot 10^3} \quad [\text{kw}]$$



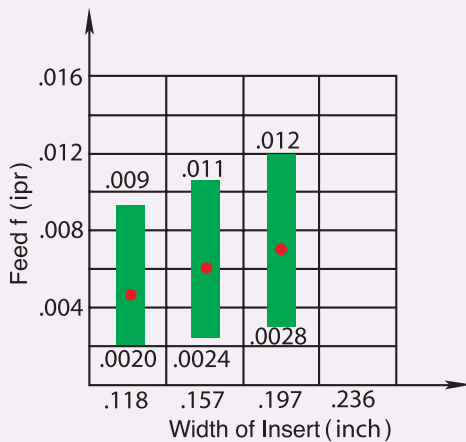
Where  $K_c$  appears - Specific Cutting Forces (N/mm<sup>2</sup>) could be used.  
 $\eta$  - Efficiency ( $\eta \approx 0.8$ )

## USER GUIDE - TURNING & GROOVING

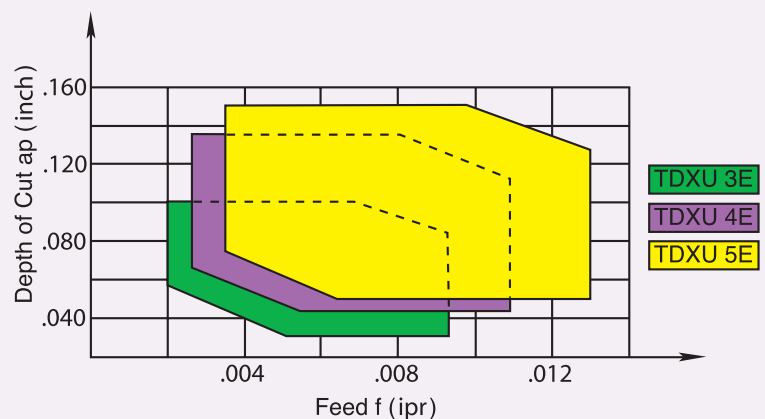
Materials		Hardness Brinell HB	External Turning			External Grooving			Internal Turning			Internal Grooving			Face Turning			Face Grooving		
			Feed (ipr)																	
<b>TDXU 3E-0.3 TT5100</b>			.004	.006	.008	.004	.006	.008	.004	.006	.008	.004	.006	.008	.004	.006	.008	.004	.006	.008
<b>TDXU 4E-0.4 TT5100</b>			.004	.008	.010	.004	.008	.010	.004	.008	.010	.004	.008	.010	.004	.008	.010	.004	.008	.010
<b>TDXU 5E-0.4 TT5100</b>			.004	.008	.012	.004	.008	.012	.004	.008	.012	.004	.008	.012	.004	.008	.012	.004	.008	.012
			Cutting Speed (sfm)																	
<b>Carbon</b>	0.2%C	150	689	574	361	492	410	262	541	459	279	377	328	197	558	459	295	492	410	262
<b>Steel</b>	0.45%C	190	656	525	328	459	361	230	509	410	262	361	295	180	525	427	262	459	361	230
	0.83%C	250	623	492	295	443	344	213	492	394	230	344	279	164	492	394	230	443	344	197
<b>Alloy Steel</b>		≤ 200	623	492	295	443	344	213	492	394	230	344	279	164	492	394	230	443	344	197
		200 - 250	607	476	279	427	335	197	476	377	213	328	262	164	492	377	230	427	344	197
		275 - 325	591	459	262	413	328	184	459	361	197	328	262	148	476	361	213	410	328	180
		325 - 375	410	246	164	295	180	115	328	197	131	230	131	98	328	197	131	295	180	131
		375 - 425	279	197	131	197	131	98	230	164	98	164	115	66	230	164	98	197	131	98
<b>Stainless Steel</b>	Mart	175 - 225	558	476	312	394	328	230	443	377	246	312	262	164	459	394	262	394	328	230
		275 - 325	427	377	279	295	262	197	328	295	213	230	213	164	344	295	230	295	262	197
	Aust	135 - 175	492	410	328	344	289	230	394	328	262	279	230	180	394	328	262	344	295	230

### Chip Control Range

#### • Grooving Applications



#### • Turning Applications





Turning with <b>TDT-E</b> Type Inserts		TT5100 ( <b>P20</b> - <b>P40</b> ) and TT7220 ( <b>P25</b> - <b>P45</b> ) Coated Carbide Grade <b>P</b> Steel															
Insert		3.00E-0.4			4.00E-0.8			5.00E-0.8			6.00E-0.8			6.00E-1.20			
		Feed (ipr)															
Materials	Hardness Brinell HB	.004	.006	.010	.006	.010	.016	.010	.016	.020	.010	.016	.022	.012	.018	.022	
		Cutting Speed (sfm)															
<b>Carbon Steel</b>	0.2%C	150	640	591	459	689	574	361	607	443	344	640	443	344	656	492	410
	0.45%C	190	591	541	427	656	525	328	558	394	262	591	394	262	591	410	328
	0.83%C	250	558	509	410	623	492	295	541	344	246	558	344	246	492	361	279
<b>Alloy Steel</b>	≤ 200	558	509	410	623	492	295	541	328	246	558	328	246	558	361	279	
	200-250	525	476	394	607	476	279	525	312	230	541	312	230	541	344	262	
	275-325	492	443	377	591	459	262	492	295	197	525	295	197	525	328	230	
	325-375	377	295	164	410	246	164	361	213	164	377	230	164	361	262	197	
	375-425	230	197	98	279	197	131	197	164	115	262	197	131	279	213	164	
<b>Stainless Steel</b>	Mart	175-225	541	476	394	558	476	312	591	443	295	607	427	262	541	459	295
		275-325	410	377	295	427	377	279	492	361	279	525	361	230	492	377	279
	Aust	135-175	443	394	328	492	410	328	525	377	279	525	377	246	541	394	279
<b>Cast Steel</b>	Carbon	≤ 150	427	377	328	443	377	262	410	295	246	427	312	230	443	344	262
		150-200	344	295	246	361	295	246	328	279	213	361	295	213	394	312	246
	Alloyed	200-250	312	279	197	328	246	213	279	230	197	295	262	197	344	262	230

Turning with <b>TDT-E</b> Type Inserts		<b>K10</b> Uncoated Carbide Grade <b>K</b> Cast Iron <b>N</b> Nonferrous Materials			
Insert		TDT-E	K10		
			Feed (ipr)		
Materials	Hardness Brinell HB	.004	.006	.008	
		Cutting Speed (sfm)			
<b>Malleable Iron</b>	Short-chipping	110 - 145	459	361	295
	Long-chipping	200 - 250	443	344	262
<b>Cast Iron</b>	Low tensile, gray	180	525	344	262
	High tensile, gray, alloy	250	394	295	213
<b>Nodular Iron</b>	Ferritic	160	427	328	230
	Pearlitic	250	410	295	213
<b>Chilled Cast Iron</b>		400	66	49	-
		600	49	33	-
<b>Bronze-Brass-Alloys:</b>		120 - 200	427	344	230
<b>Lead Alloy</b>		80 - 150	591	558	541
<b>Brass, Red Brass</b>		60 - 110	459	443	410
<b>Phosphor-Bronze</b>		85 - 110	328	312	295
<b>Aluminum Alloys:</b>		150 - 200	787	722	656
<b>Non-heat Treatable</b>		30 - 80	2822	2723	2625
<b>Heat Treatable</b>		80 - 120	1083	1050	984
<b>Aluminum Alloys, Cast</b>			1148	1083	984
<b>Magnesium</b>		40 - 60HRB	1132	1050	919
		60 - 90HRB	820	787	755
<b>Electrolytic Copper</b>		50 - 85	427	410	394

• For Grooving, reduce cutting speed by 20 - 30%

## USER GUIDE TURNING & GROOVING

### Turning with **TDT-E** Type Inserts

**TT7220 ( P25 - P45 ) & TT5100 ( P20 - P40 ) Coated Carbide Grade, **K10** Uncoated Carbide Grade  
**M** Stainless Steel**

Materials		TT7220(P25 - P45) TT5100(P20 - P40)			K10		
		Feed (ipr)					
Commercial Designation	Hardness	.004	.006	.010	.004	.006	.008
		Cutting Speed (sfm)					
<b>V 57, A286</b>	Sol	-	-	-	164	115	82
	81 HRB	-	-	-	-	-	-
<b>Incoloy 800, 801</b>	S & A	-	-	-	180	131	98
	24 - 34HRC	-	-	-	-	-	-
<b>Austenitic Stainless Steel 302, 303, 304, 310 316, 321, 347</b>	Annealed	295	279	246	213	180	164
	135 - 175 HB	-	-	-	-	-	-
<b>Martensitic Stainless Steel</b>	Annealed	443	410	328	230	213	197
	135 - 175 HB	-	-	-	-	-	-
<b>403, 405, 410, 420 430, etc.</b>	Q & T	328	295	279	-	-	-
	28 - 35 HRC	-	-	-	-	-	-
<b>17-4 PH</b>	Sol	443	427	410	-	-	-
	28 - 35 HRC	-	-	-	-	-	-
<b>17-7 PH</b>	S & A	262	246	230	-	-	-
	36 - 40 HRC	-	-	-	-	-	-
<b>Maraging Steel 120, 180, 200, 250 300, 350 Grade</b>	Annealed	427	410	394	-	-	-
	26 - 34 HRC	-	-	-	-	-	-
<b>120, 180 Grade</b>	Maraged	230	213	197	-	-	-
	38 - 45 HRC	-	-	-	-	-	-
<b>200, 250, 300 350 Grade</b>	Maraged	-	-	-	98	82	-
	50 - 52 HRC	-	-	-	-	-	-

- Sol-Solution
- S&A-Solution and Aging
- Q&T-Quenched and Tempered

Material		Grooving	Turning
<b>Cast Iron</b>	Vc (sfm)	1969 - 2625	1969 - 2625
	F (ipr)	.004 - .008	.004 - .009
<b>High hardened steel</b>	Vc (sfm)	Not recommended	820 - 1148
	F (ipr)		.003 - .008

- Above condition is adapted to TDT 4E-0.4T CE AB30.

High - Temp Alloys							
K10 Uncoated Carbide Grade							
S Titanium - Base Alloys							
		Turning			Grooving and Undercutting		
Materials		K10					
		Feed (sfm)					
		.004	.006	.008	.002	.004	.006
Commercial Designation	Hardness	Cutting Speed (ipr)					
Ti6 - 2 - 4 - 2	Annealed 32 - 38 HRC	180	164	148	164	148	131
Ti6Al - 4V	Annealed 32 - 38 HRC Solution & Aging 38 - 42 HRC	164	131	115	164	148	131
		131	115	98	131	98	82
Ti6Al - 6V - 2Sn Ti7Al - 4Mo Ti8Al - 1Mo - 1V	Annealed 34 - 38 HRC Solution & Aging 40 - 44 HRC	148	131	115	148	131	115
		131	115	98	131	115	98
TiA55 Ti75A	Annealed 110 - 175 HB	525	509	492	525	492	459
Ti140A	Annealed 30 - 36 HRC	164	148	131	164	148	131

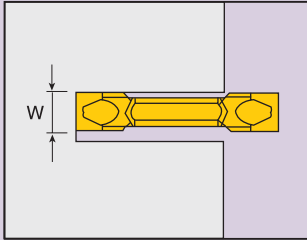
Nickel - Base Alloys							
		K10					
Materials		Feed (sfm)					
		.004	.006	.008	.002	.004	.006
		Cutting Speed (ipr)					
Commercial Designation	Hardness	Cutting Speed (ipr)					
Astroloy, Rene 41	Solution 20 - 30 HRC	-	82	66	98	82	66
Udimet 500, 700	Solution & Aging 32 - 42 HRC	-	66	49	82	66	49
Inconel W, X, 702, 718	Solution 20 - 30 HRC	-	82	66	98	82	66
M 252, Waspalloy	Solution & Aging 40 - 42 HRC	-	66	49	82	66	49
Hastolloy B, C, X	Annealed 90 - 100 HRB	-	98	82	115	98	82
Inconel 600	Cold drawn 24 - 34 HRC	-	82	66	98	82	66
TD 2	Stress relieved 30 HRC	-	213	197	213	197	164

Cobalt - Base Alloys							
		K10					
Materials		Feed (sfm)					
		.004	.006	.008	.002	.004	.006
		Cutting Speed (ipr)					
Commercial Designation	Hardness	Cutting Speed (ipr)					
HS 21, HS 31, HS 36	As cast 20 - 30 HRC	-	66	49	-	66	49
L 605	Solution 90 - 98 HRB Solution & Aging 28 - 34 HRC	-	82	66	-	82	66
		-	66	49	-	66	49
Stellite 6	39 - 43 HRB	-	49	33	-	49	49

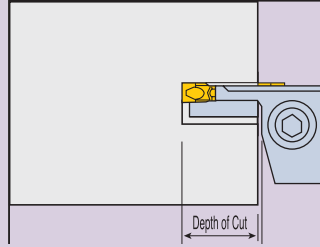
Iron Base Alloys							
		TT7220(P25 - P45) TT5100(P20 - P40)			K10		
Materials		Feed (sfm)					
		.004	.006	.010	.004	.006	.008
		Cutting Speed (ipr)					
Commercial Designation	Hardness	Cutting Speed (ipr)					
V57, A286	Solution 81 HRB	-	-	-	541	361	262
Incoloy 800, 801	Solution & Aging 24-34 HRC	-	-	-	591	427	328

## USER GUIDE - FACE MACHINING

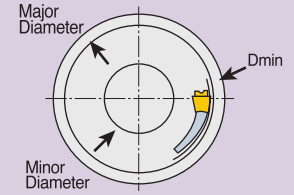
Follow these three recommendations to selecting the correct cutting tool:



Choose the widest possible insert and tool, according to the cutting width and geometry to be machined.

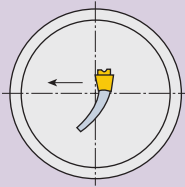


Choose the shortest tool blade overhang, according to the maximum depth required.

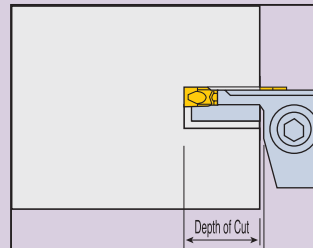


Choose the tool range with the largest diameter depending on the initial grooving diameter required in the application.

Prior to machining, check and adjust the following tool positions



Check the cutting-edge height at center line, machine in light turning down to center, and check for burr.

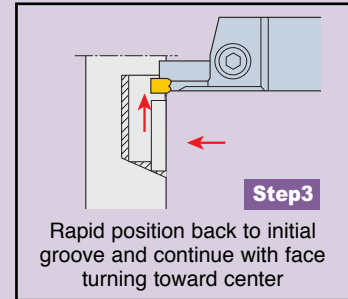
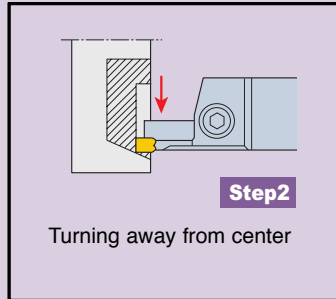
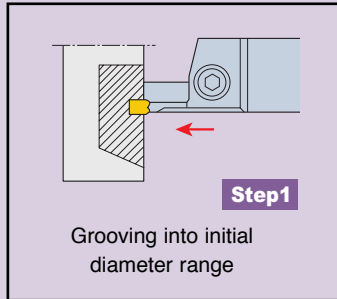


Check parallelism of cutting edge and the machined surface. Correct position can guarantee good surface quality when face turning in both directions.

## ■ Optimizing the Machining Procedure

### For Roughing

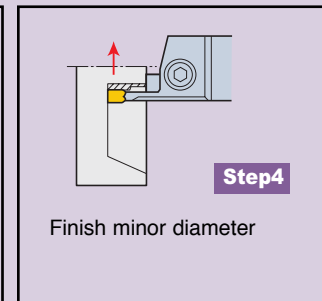
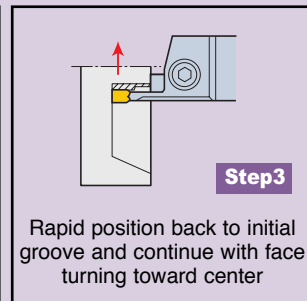
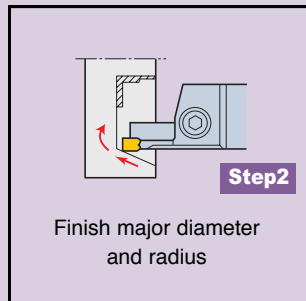
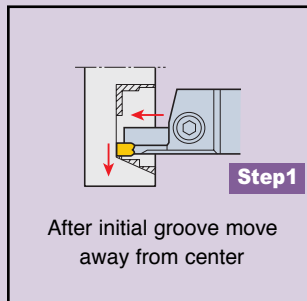
Basic steps for roughing operations when face turning with TaeguTclamp tools:



- When face grooving, reduce the speed by 40% in relation to that used in face turning.

### For Finishing

Basic steps for finishing operations when face turning with TaeguTclamp tools:



- When face grooving, reduce the speed by 40% in relation to that used in face turning.

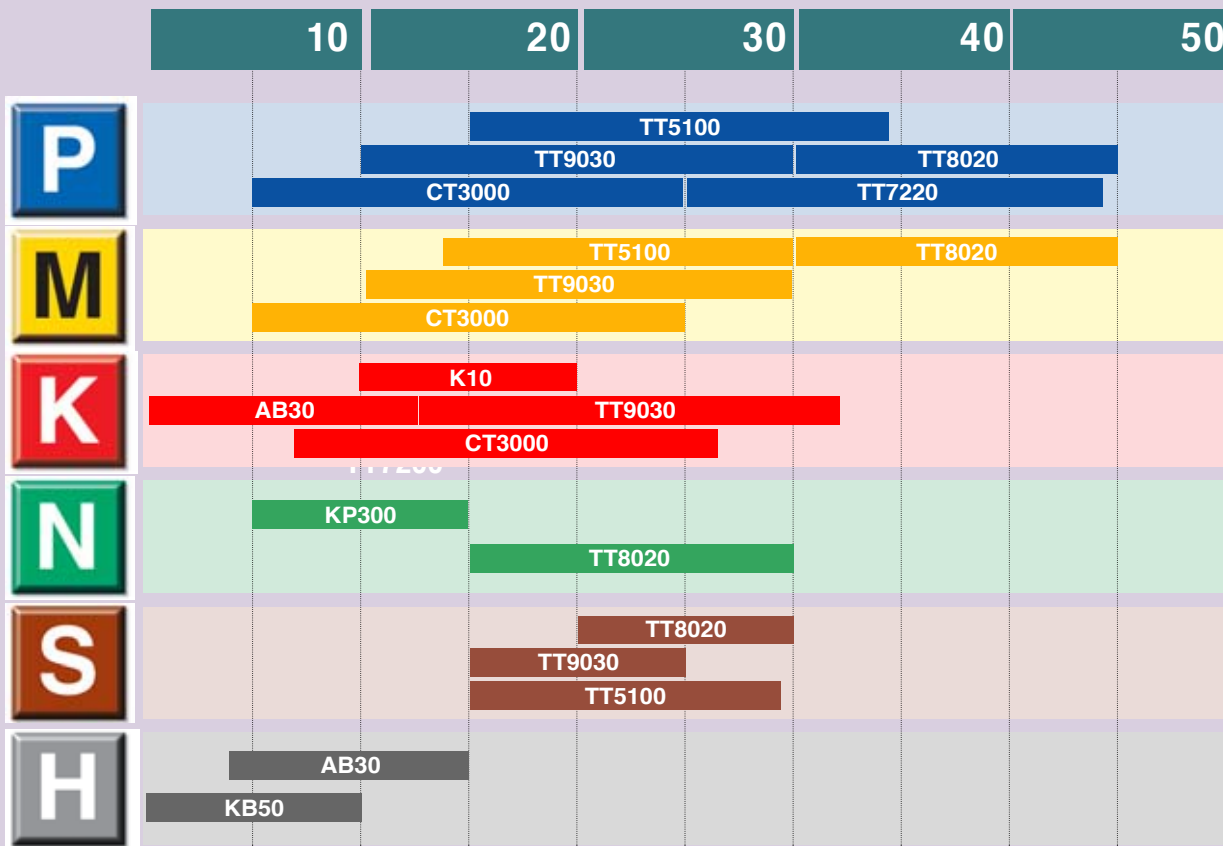


## USER GUIDE - FACE MACHINING

Material		Hardness Brinell HB	Cutting Speed (sfm)		Feed (ipr)				
			K10	TT7220	TDT 3	TDT 4	TDT 5	TDT 6	TDT 8
<b>Carbon Steel</b>	0.2%C	150		361 - 459					
	0.45%C	190		328 - 427					
	0.83%C	250		295 - 361					
<b>Alloy Steel</b>	< 200			262 - 427					
	200 - 250			246 - 394					
	275 - 325			230 - 295					
	325 - 375			197 - 246					
	375 - 425			148 - 180					
<b>Stainless Steel</b>	Martensitic	175 - 225		328 - 443					
	Austenitic	135 - 175		164 - 213					
<b>Cast Steel</b>	Carbon	> 150		344 - 443					
	Alloyed	200 - 250		279 - 328					
<b>Malleable Iron</b>	Short chip	110 - 145	295 - 328						
	Long chip	200 - 250	230 - 295						
<b>Cast Iron</b>	Low tensile	180	377 - 459		.004 - .010	.006 - .013	.008 - .016	.008 - .019	.008 - .024
	High tensile	250	262 - 328						
<b>Nodular Iron</b>	Ferritic	160	279 - 344						
	Pearlitic	250	262 - 328						
<b>Chilled Cast Iron</b>		400	66						
<b>Bronze Alloy</b>		120 - 200	361 - 394						
<b>Lead Alloy</b>		80 - 150	492 - 541						
<b>Brass &amp; Red</b>		60 - 110	377 - 410						
<b>Phosphor Bronze</b>		85 - 110	262 - 295						
<b>Aluminum Alloy</b>		150 - 200	656 - 787						
<b>Non-heat Treatable</b>		30 - 80	1969 - 2297						
<b>Heat-Treatable</b>		80 - 120	820 - 984						
<b>Aluminum Alloys, Cast</b>			984 - 1115						
<b>Magnesium</b>	40 - 60 HRB		738 - 869						
	60 - 90 HRB		755 - 820						
<b>Electrolytic Copper</b>		50 - 85	295 - 328						

- For turning, increase cutting speed by 20 - 30%

## USER GUIDE - APPLICATION RANGE



### **TT8020**

TaeguTec's toughest PVD grade for severely interrupted cuts and stainless steel and exotic alloy machining.

### **TT7220**

A PVD coated grade for machining in carbon steel and alloy steel.

### **TT9030**

A tough PVD coated grade with excellent wear resistance. Very good performance in alloy steels, stainless steels and exotic alloys.

### **TT5100**

A CVD coated grade for machining carbon steels, alloy steels and stainless steels with outstanding tool life.

### **CT3000**

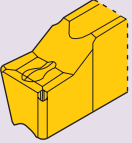
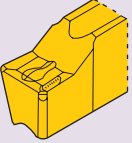
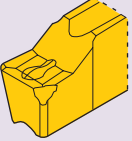
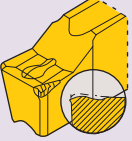
A tough new reinforced cermet grade with excellent wear resistance. Recommended for grooving, parting & turning alloy steels and stainless steels with good surface quality and long tool life.

### **AB30**

A mixed ceramic grade for high productivity when machining cast iron, hard material and graphite. Also good results in grooving & parting inconel 718.

## ■ USER GUIDE

### ■ Trouble Shooting Insert failure and tool life

Problem	Possible Cause	Solution
<b>1. Rapid flank wear</b> <b>Short tool life</b> 	Excessively high cutting speed. Carbide with too low wear resistance	<ul style="list-style-type: none"> <li>• Decrease cutting speed.</li> <li>• Use a carbide with higher hardness or a coated carbide</li> </ul>
<b>2. Cratering</b> <b>Short tool life</b> 	High cutting temperature on insert rake face at high feed and speed	<ul style="list-style-type: none"> <li>• Decrease feed and speed.</li> <li>• Use coated grade.</li> </ul>
<b>3. Cutting edge/</b> <b>Insert fracture</b> 	High load on insert. Insert width too narrow. Grade too brittle.	<ul style="list-style-type: none"> <li>• Use wider insert for maximum support.</li> <li>• Decrease feed and speed.</li> <li>• Choose a tougher grade.</li> </ul>
<b>4. Plastic deformation</b> 	High heat pressure decreasing carbide hardness.	<ul style="list-style-type: none"> <li>• Use a bigger corner radius and decrease feed and speed.</li> <li>• Choose carbide with higher hardness.</li> </ul>
<b>5. Chip control</b> <b>Spaghetti-like chips coil under holder and interfere with operation</b>	Small depth of cut. Feed too slow. Insert width too large. Insert radius too large.	<ul style="list-style-type: none"> <li>• Check chipbreaking range.</li> <li>• Increase depth of cut.</li> <li>• Increase feed rate.</li> <li>• Use narrower insert with a smaller radius.</li> </ul>
<b>6. Poor surface finish</b>	Small depth of cut, i.e. less than corner radius.	<ul style="list-style-type: none"> <li>• Increase depth of cut to minimum radius size.</li> </ul>
<b>7. Vibration and poor surface quality</b>	Small front clearance angle between insert and workpiece leads to rubbing action.	<ul style="list-style-type: none"> <li>• Increase feed to get suitable clearance.</li> <li>• Before starting, check that the front cutting edge is parallel to workpiece.</li> </ul>

# Ingersoll



T327

**TAEGL**line



# Ingersoll



T328



CUTTING TOOLS

CUTTING TOOLS

# T-CAP

*Cutting Tools*



Member IMC Group  
**Ingersoll**  
Cutting Tools

T329

# TAEQU T-CAP

<b> Holders and Inserts - T-Cap </b>	
Features	<b>T333</b>
Holders	<b>T335</b>
Inserts	<b>T336</b>
Clamping units	<b>T337</b>
Sleeves for clamping units	<b>T338</b>
T-CAP Kits	<b>T339</b>
<b>User Guide</b>	
Comparison test results	<b>T340</b>
Surface finish	<b>T341</b>
Tool life comparison	<b>T342</b>
Chip control range	<b>T343</b>
Set-up	<b>T344</b>
Recommended cutting conditions	<b>T345</b>
User Guide	

TAEQU T-



# T-CAP

# CUTTING TOOLS

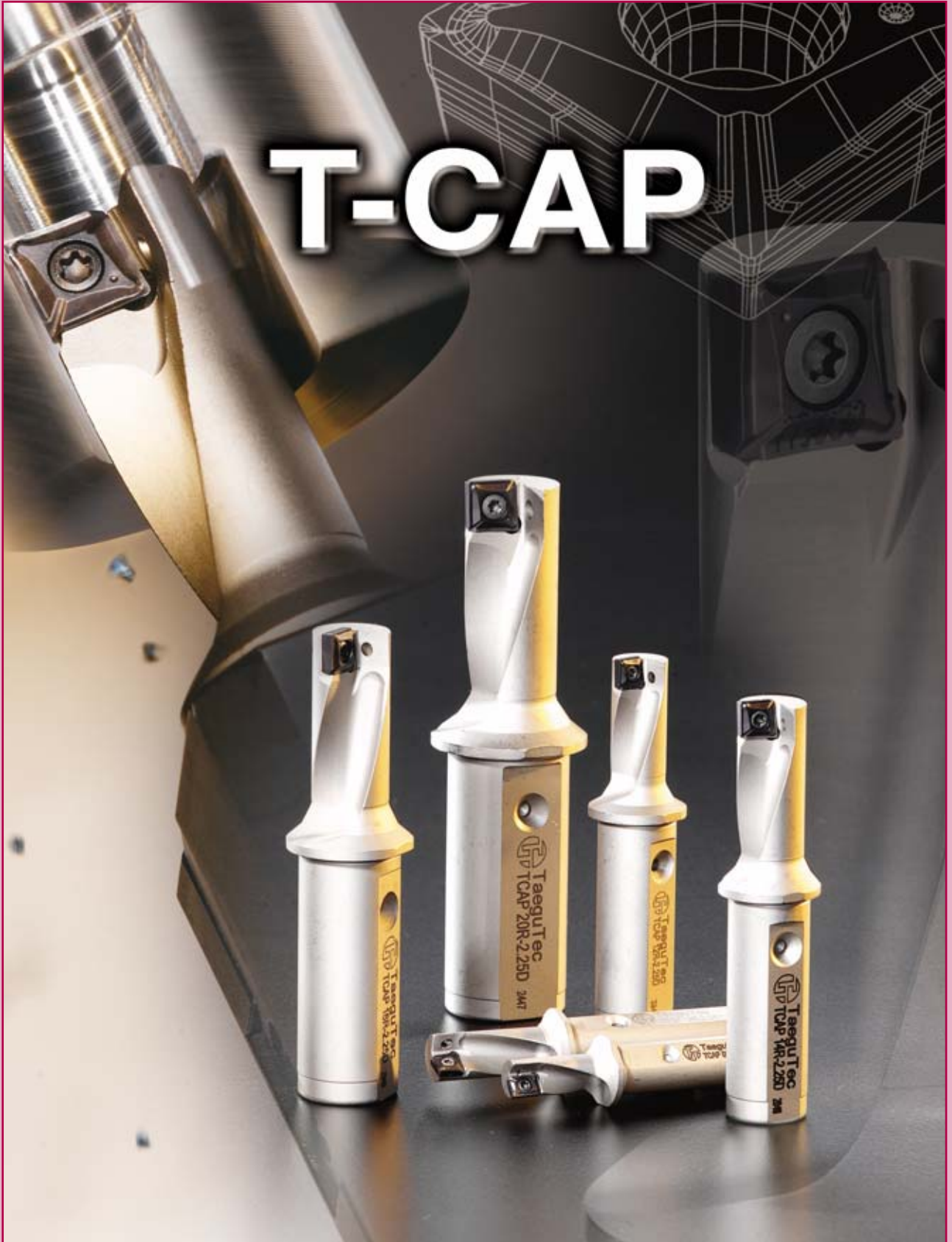
# TAEGU T-CAP

Introduction		
Product Guide		
Product Selection		
Product Details		
Technical Data		
Application		
Maintenance		
Appendix		
Index		

T331

# TAEGU T-CAP

Member IMC Group  
**Ingersoll**  
Cutting Tools



**TAEQU**line

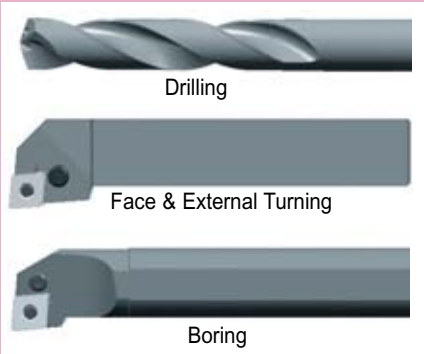
# Features

## Multi-function system

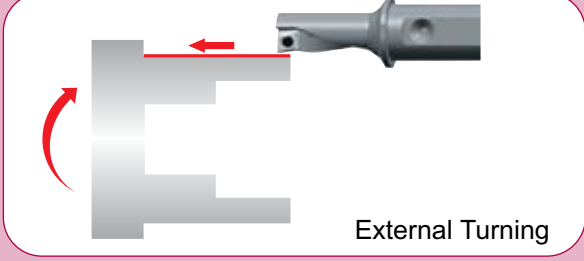
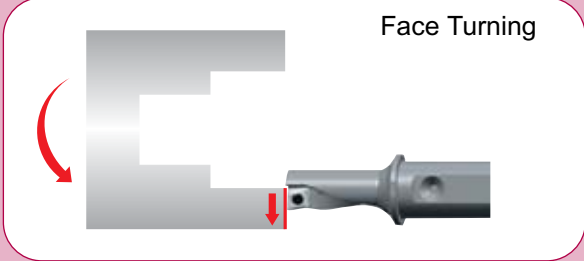
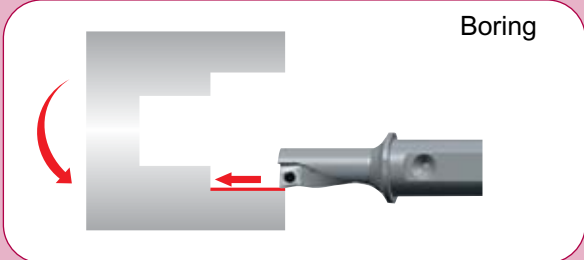
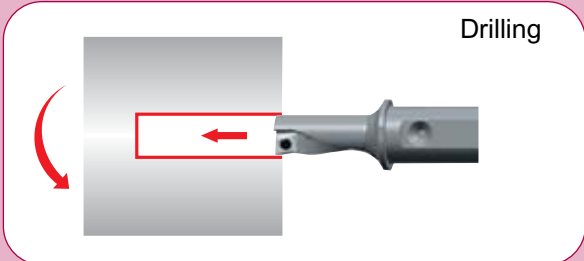
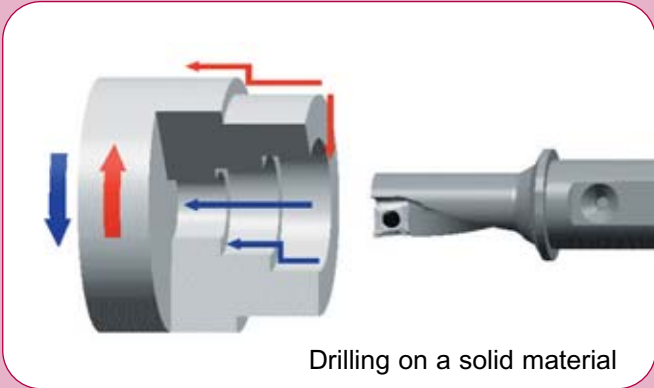
- Turning, boring and drilling with one tool
- Short set-up and cycle time
- Minimized tool positions and reduced tooling cost

## Application

- Conventional



### T-Cap





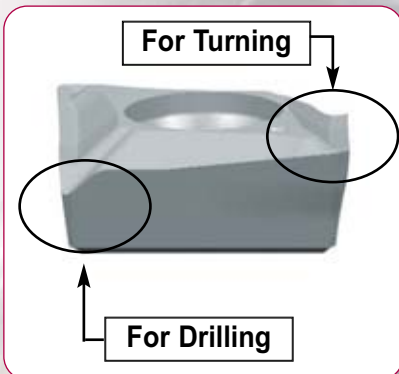
# Features

## ■ Multi-function System



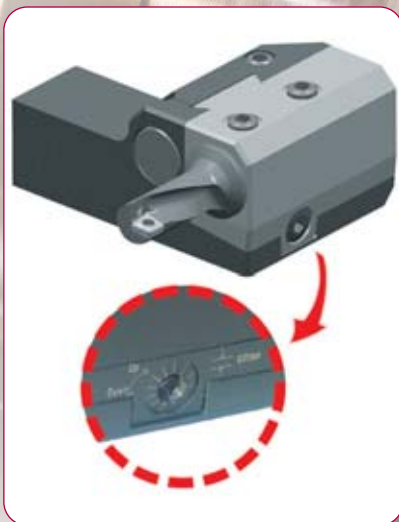
### Body

- Internal coolant supply
- Cylindrical shank with one flat clamping surface
- Two face contact for strong clamping
- Helical flute for smooth chip flow
- Large chip gullet for good chip evacuation
- Secure clamping feature



### Inserts

- Two different unique geometries for drilling and turning
- High helix cutting edge to minimize cutting forces
- Excellent chip control at low feed and small d.o.c.
- Optimum chip formation in drilling operations

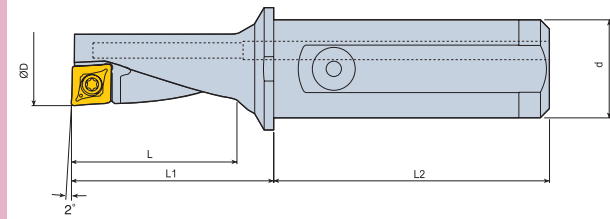


### Clamping Units

- Center height of tool is adjustable on a lathe.
- Dovetail slide design provides strong secure clamping and rigidity.
- Micro adjustment scale: .0004"
- Y-axis adjustment range: +.008" to -.016"

# T-CAP HOLDERS & INSERTS

## ■ Holders



### Metric Shanks

Designation	Stock		Dimension (mm)					Insert	Spare Parts	
	R	L	ØD	Ød	L	L1	L2		Screw	Wrench
<b>TCAP 08R/L-2.25D</b>	●	●	8mm	10mm	.708	.866	1.50	XCMT 0401□□	SO 18034I/HG	T 6
<b>TCAP 10R/L-2.25D</b>	●	●	10mm	12mm	.886	1.083	1.65	XCMT 0502□□	TS 20038I	T 6
<b>TCAP 12R/L-2.25D</b>	●	●	12mm	16mm	1.063	1.300	1.77	XCMT 0602□□	TS 22052I	T 7
<b>TCAP 14R/L-2.25D</b>	●	●	14mm	16mm	1.240	1.516	1.77	XCMT 0703□□	SM-25-064-00	T 8
<b>TCAP 16R/L-2.25D</b>	●	●	16mm	20mm	1.417	1.732	1.97	XCMT 0803□□	SO 30100I	TD 9
<b>TCAP 20R/L-2.25D</b>	●	●	20mm	25mm	1.772	2.165	2.20	XCMT 10T3□□	SM-35-088-60	DS-T10T

### Inch Shanks

Designation	Stock		Dimension (mm)					Insert	Spare Parts	
	R	L	ØD	Ød	L	L1	L2		Screw	Wrench
<b>TCAP 08R/L-2.25D-IN</b>	●	●	.315	.375	.708	.866	1.50	XCMT 0401□□	SO 18034I/HG	T 6
<b>TCAP 10R/L-2.25D-IN</b>	●	●	.394	.500	.886	1.083	1.65	XCMT 0502□□	TS 20038I	T 6
<b>TCAP 12R/L-2.25D-IN</b>	●	●	.472	.625	1.063	1.300	1.77	XCMT 0602□□	TS 22052I	T 7
<b>TCAP 14R/L-2.25D-IN</b>	●	●	.551	.625	1.240	1.516	1.77	XCMT 0703□□	SM-25-064-00	T 8
<b>TCAP 16R/L-2.25D-IN</b>	●	●	.630	.750	1.417	1.732	1.97	XCMT 0803□□	SO 30100I	TD 9
<b>TCAP 20R/L-2.25D-IN</b>	●	●	.787	1.000	1.772	2.165	2.20	XCMT 10T3□□	SM-35-088-60	DS-T10T

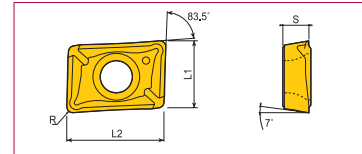
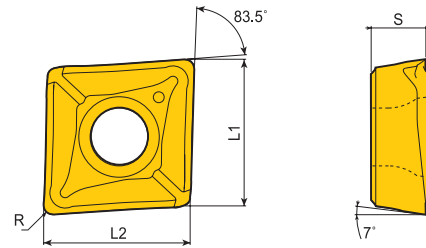


## ■ T-CAP HOLDERS & INSERTS

### ■ Inserts



Right Hand Shown (XCMT 0401)



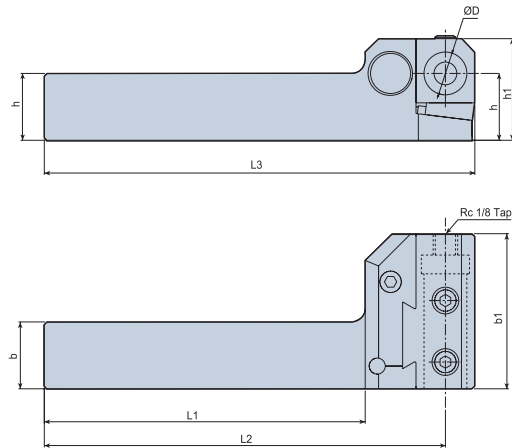
Designation	Stock			Dimension (inch)			
	TT6030	TT 9030	TT 8020	L1	L2	S	R
<b>XCMT 040104R TC</b>		●	●	.173	.252	.067	.016
<b>XCMT 040104L TC</b>		●	●	.173	.252	.067	.016
<b>XCMT 050204 TC</b>		●	●	.220	.220	.083	.016
<b>XCMT 060204 TC</b>		●	●	.252	.252	.094	.016
<b>XCMT 070304 TC</b>		●	●	.295	.295	.125	.016
<b>XCMT 080304 TC</b>	●	●	●	.331	.331	.125	.016
<b>XCMT 10T304 TC</b>	●	●	●	.413	.413	.156	.016

TT9030 - General purpose applications

TT8020 - Stainless steel applications.

TT6030 - Cast iron applications. Not recommended for drilling.

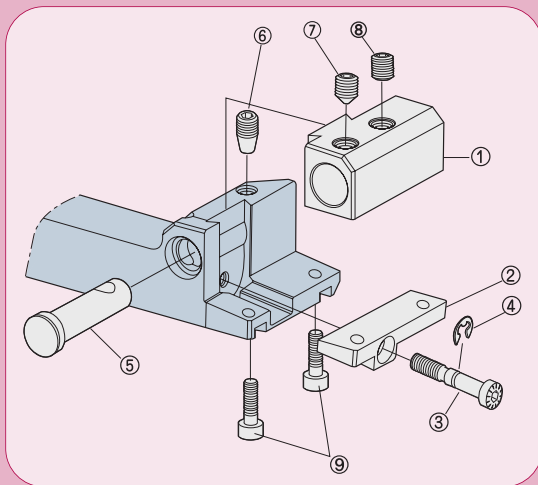
## Clamping Units (Center Alignment System)



Designation	Stock	Dimension (mm)								Tool Holders
		h	b	ØD	h1	b1	L1	L2	L3	
<b>TGHR 19.05-D15.88</b>	●	.750	.750	.625	1.50	2.28	4.72	5.91	6.34	TCAP 08R/L-IN* TCAP 10R/L-IN*
<b>TGHR 25.4-D15.88</b>	●	1.00	1.00	.625	1.50	2.28	4.72	5.91	6.34	TCAP 12R/L-IN TCAP 14R/L-IN
<b>TGHR 25.4-D25.4</b>	●	1.00	1.00	1.00	2.20	2.95	4.72	6.18	6.85	TCAP 16R/L-IN* TCAP 20R/L-IN

\*Requires sleeve.

Designation	Spare Parts									
	Block	Wedge	Snap Ring	Wedge Screw	Mounting Pin	Mounting Pin Screw	Mounting Screw		Lock Screw	Wrench
<b>TGHR 19.05-D15.88</b>										
	TGHR-D15.88-BL	TGHR-WD	WSR 4	TGH-WS	TGH-MPI	TGH-MPS	SS X M8 X1.25 X10-C	SS X M8 X1.25 X8	-	L-W 4
<b>TGHR 25.4-D15.88</b>										
<b>TGHR 25.4-D25.4</b>	TGHR-D25.4-BL	TGHR-WD-25	WSR 4	TGH-WS -25	TGH-MPI -25	TGH-MPS -25	SS M10X 1.5X12-C	SS M10X 1.5X10	SH M6X 1X20	L-W 4 L-W 5



Number	Spare Parts
1	Block
2	Wedge
3	Wedge Screw
4	Snap Ring
5	Mounting Pin
6	Mounting Pin Screw
7	Mounting Screw
8	
9	Lock Screw

• Center height adjustment is possible on the lathe.

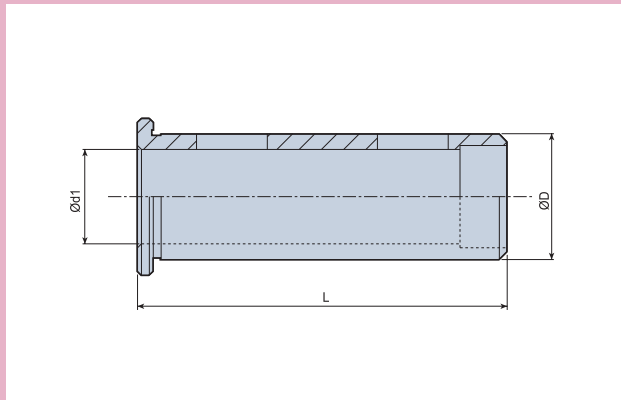
• Dovetail slide design provides strong secure clamping and rigidity.

• Micro adjustment scale: .0004"

• Y-axis adjustment range: +.008" to -.016"

## ■ T-CAP HOLDERS & INSERTS

### ■ Sleeves for Clamping Units



#### Metric to Metric

Designation	Stock	Dimension			Tool Holders
		ØD	Ød1	L	
<b>TSL 16-10</b>	●	16mm	10mm	47mm	TCAP 08R/L
<b>TSL 16-12</b>	●	16mm	12mm	47mm	TCAP 10R/L
<b>TSL 25-20</b>	●	25mm	20mm	55mm	TCAP 16R/L

#### Inch to Metric

<b>TSL19.05-10</b>	●	3/4"	10 mm	2.00"	TCAP 08R/L
<b>TSL19.05-12</b>	●	3/4"	12 mm	2.00"	TCAP 10R/L
<b>TSL25.4-10</b>	●	1"	10 mm	2.75"	TCAP 08R/L
<b>TSL25.4-12</b>	●	1"	12 mm	2.75"	TCAP 10R/L
<b>TSL25.4-16</b>	●	1"	16 mm	2.75"	TCAP 12R/L or TCAP 14R/L
<b>TSL25.4-20</b>	●	1"	20 mm	2.75"	TCAP 16R/L
<b>TSL31.75-10</b>	●	1 1/4"	10 mm	3.25"	TCAP 08R/L
<b>TSL31.75-12</b>	●	1 1/4"	12 mm	3.25"	TCAP 10R/L
<b>TSL31.75-16</b>	●	1 1/4"	16 mm	3.25"	TCAP 12R/L or TCAP 14R/L
<b>TSL31.75-20</b>	●	1 1/4"	20 mm	3.25"	TCAP 16R/L
<b>TSL31.75-25</b>	●	1 1/4"	25 mm	3.25"	TCAP 20R/L
<b>TSL38.1-10</b>	●	1 1/2"	10 mm	3.375"	TCAP 08R/L
<b>TSL38.1-12</b>	●	1 1/2"	12 mm	3.375"	TCAP 10R/L
<b>TSL38.1-16</b>	●	1 1/2"	16 mm	3.375"	TCAP 12R/L or TCAP 14R/L
<b>TSL38.1-20</b>	●	1 1/2"	20 mm	3.375"	TCAP 16R/L
<b>TSL38.1-25</b>	●	1 1/2"	25 mm	3.375"	TCAP 20R/L
<b>TSL50.8-25</b>	●	2"	25mm	4.315"	TCAP 20R/L

#### Inch to Inch

<b>TSL 15.88-9.52</b>	●	5/8"	3/8"	1.85"	TCAP 08R/L (-IN)
<b>TSL 15.88-12.7</b>	●	5/8"	1/2"	1.85"	TCAP 10R/L (-IN)
<b>TSL 25.4-19.05</b>	●	1"	3/4"	2.75"	TCAP 16R/L (-IN)



## ■ Multifunctional tools in a convenient kit (right-hand tools only)



Each kit contains:

- T-CAP holder (1)
- XCMT inserts (10)
- Insert screws (5)
- Driver (1)

### Metric

EDP #	Kit Item Number	Description
3104037	KITTCAP08R-2.25D TT9030	8 mm diameter, 10 mm shank
3104038	KITTCAP10R-2.25D TT9030	10 mm diameter, 12 mm shank
3104039	KITTCAP12R-2.25D TT9030	12 mm diameter, 16 mm shank
3104040	KITTCAP14R-2.25D TT9030	14 mm diameter, 16 mm shank
3104041	KITTCAP16R-2.25D TT9030	16 mm diameter, 20 mm shank
3104042	KITTCAP20R-2.25D TT9030	20 mm diameter, 25 mm shank

### Inch

EDP #	Kit Item Number	Description
3104043	KITTCAP08R-2.25DIN TT9030	8 mm diameter, .375" shank
3104044	KITTCAP10R-2.25DIN TT9030	10 mm diameter, .500" shank
3104064	KITTCAP12R-2.25DIN TT9030	12 mm diameter, .625" shank
3104065	KITTCAP14R-2.25DIN TT9030	14 mm diameter, .625" shank
3104066	KITTCAP16R-2.25DIN TT9030	16 mm diameter, .750" shank
3104067	KITTCAP20R-2.25DIN TT9030	20 mm diameter, 1.00" shank



## ■ USER GUIDE

### ■ Comparison Test Results

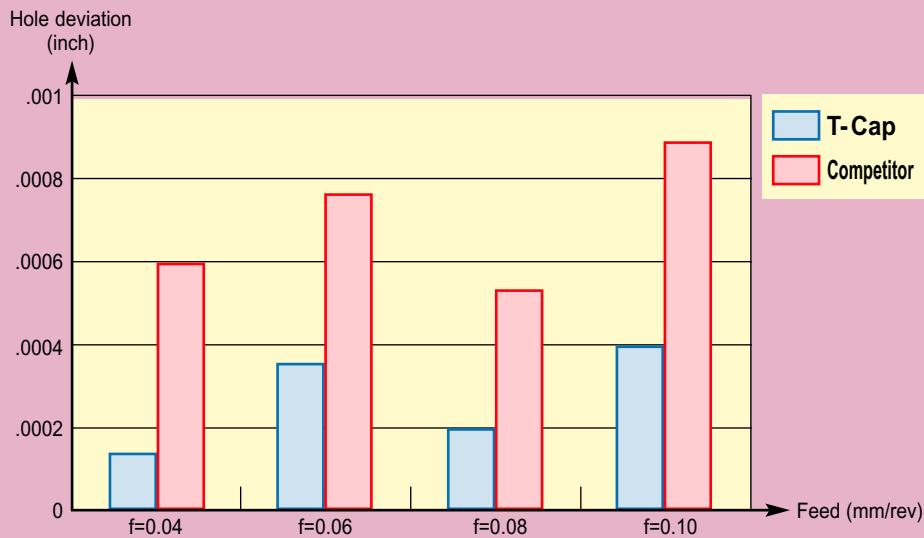
#### ■ Chip shape in Drilling

- Material=SAE 4140 (220BHN)
- Diameter of tool = .472"
- V = 393 sfm • Drilling depth = .984" • Blind hole • Wet cutting

Maker	F=0.05mm/rev	F=0.10mm/rev	
T-Cap			Optimal chips
Competitor			Chips that occur during vibration

#### ■ Hole deviation in Drilling

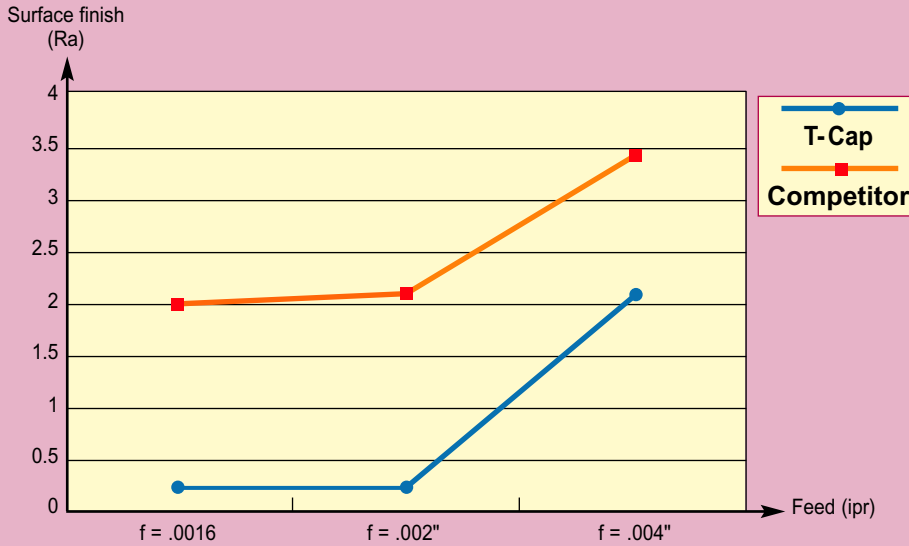
- Material = SAE 4140 (220BHN) • Diameter of tool = .394"
- V = 393 sfm • Drilling depth = .787" • Blind hole • Wet cutting



T-Cap shows less deviation in each feed rate.

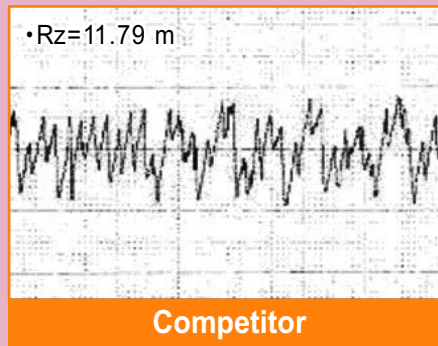
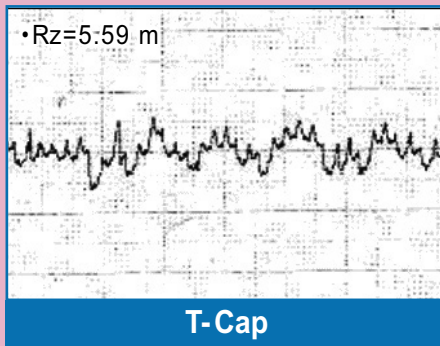
## Surface Finish in Drilling

- Material = SAE 4140 (220BHN) • Diameter of tool = .394",
- V = 393 sfm • Drilling depth = .008" • Blind hole • Wet cutting



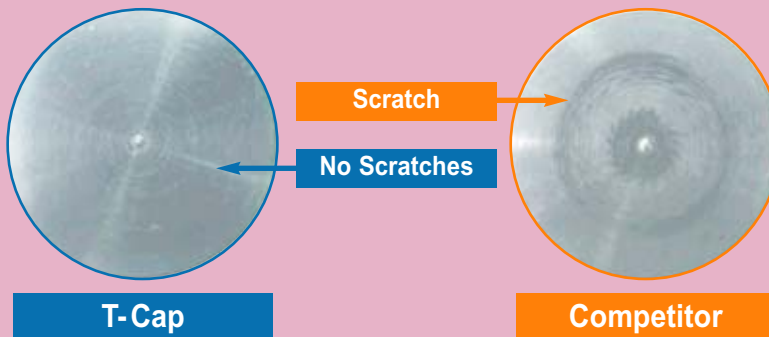
## Surface Finish in External Turning

- Material=SAE 1045 (220BHN)
- V = 490 sfm • f = .004 ipr • Ap = .020" • Wet cutting



## Interference Between Insert and Workpiece in Face Turning

- Material = SAE 1045 (220BHN)
- V = 490 sfm • f = .004 ipr • Ap = .020" • Dry cutting



## ■ USER GUIDE

### ■ Tool Life Comparison

#### ■ Drilling & Chamfering on Tool Steel

- Holder: TCAP 14R-2.25D
- Insert: XCMT 070304 TC TT9030

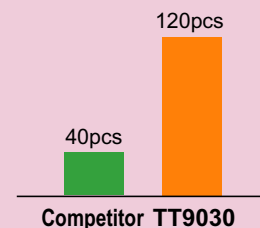
##### Part

- Tool body, SAE4340 (34HRC)

##### Cutting parameters

- Drilling: 1200rpm (D = .551")  
f = .002 ipr  
d.o.c = .906"  
Wet cutting
- Boring & Chamfering: V = 590 sfm  
f = .008"  
Ap = .020  
Wet cutting

Tool life (pcs/edge)



#### ■ Turning on Steel

- Holder: TCAP 12R-2.25D
- Insert: XCMT 060204 TC TT9030

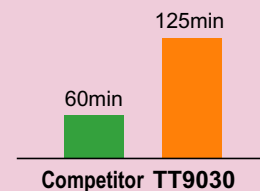
##### Material

- SAE 4140 (220BHN)

##### Cutting parameters

- V = .590 sfm
- f = .004 ipr
- Ap = .028"
- Wet cutting

Tool life (min)



#### ■ Turning on Stainless Steel

- Holder: TCAP 12R-2.25D
- Insert: XCMT 060204 TC TT8020

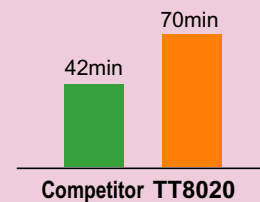
##### Material

- 316 stainless steel (200BHN)

##### Cutting parameters

- V = 426 sfm
- f = .004 ipr
- Ap = .028"
- Wet cutting

Tool life (min)



#### ■ Turning on Gray Cast Iron

- Holder: TCAP 12R-2.25D
- Insert: XCMT 060204 TC TT9030

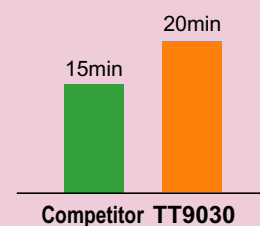
##### Material

- GG25 (200BHN)

##### Cutting parameters

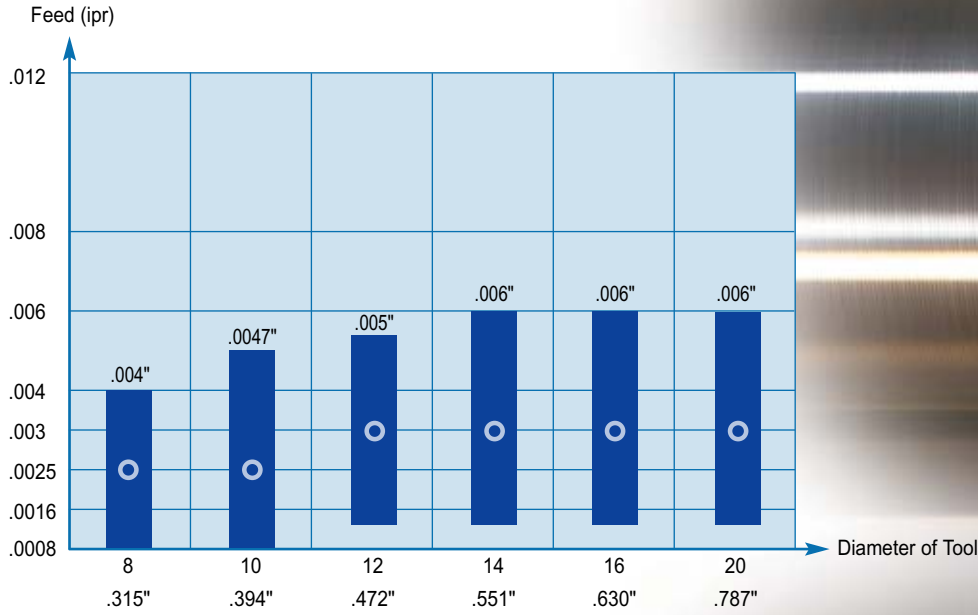
- V = 590 sfm
- f = .004 ipr
- Ap = .028"
- Wet cutting

Tool life (min)

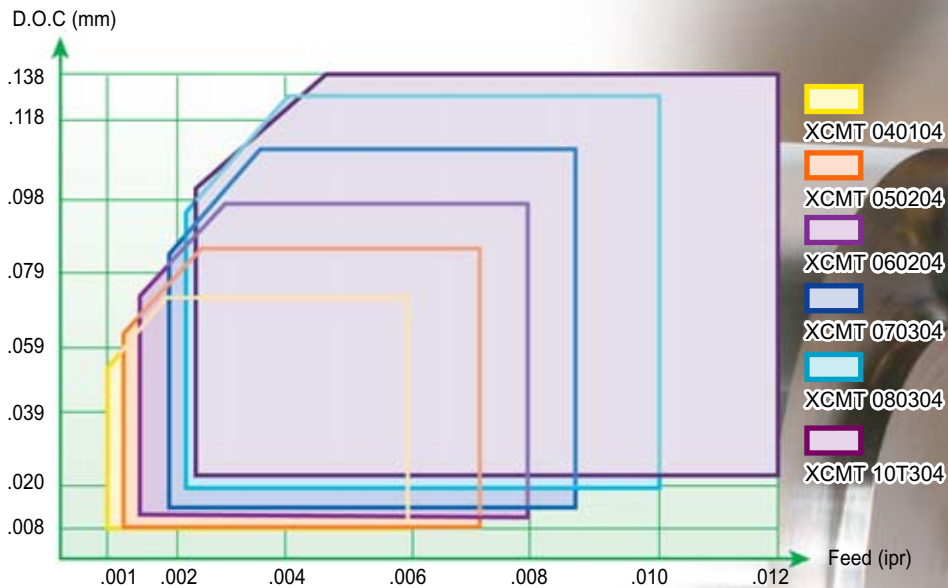


## ■ Chip Control Range

■ Drilling (Material: SAE 4140 (220BHN), V=393 sfm)



■ Turning (Material: SAE 1045 (220BHN), V=490 sfm)







## ■ USER GUIDE

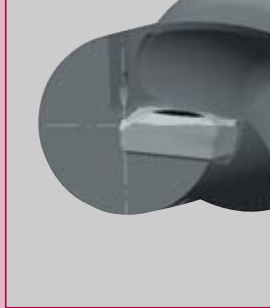
### ■ Set-Up

#### ■ Insert positioning

- Cutting edge for drilling should be positioned in the center of tool body.



Correct



Correct



Wrong

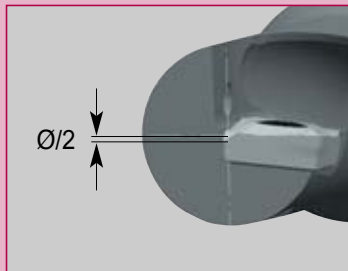
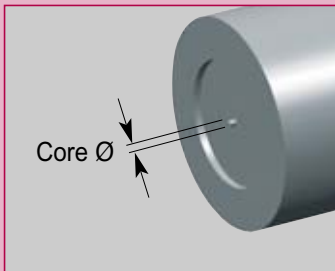
#### ■ Coolant pressure

- Must be above 30 psi in 2.25xD drills, regardless of drilling diameter. (Optimal pressure is above 70 psi)

#### ■ Optimization of chip shape

- **Material with low carbon content (Low Carbon Steel/Low Carbon Alloy Steel)**  
High speed machining is recommended to make the chips thinner as many problems are caused by thick chips.
- **Material with medium to high carbon content (Carbon Steel/Alloy Steel)**  
**If too tight (thick chip)?** Increase speed if the speed is slow or reduce feed.  
**If too loose (long chip)?** Reduce speed if the speed is high or increase feed.

#### ■ Set-Up



Please check formation of core and its size after drilling .125" to .250" depth and diameter. Core should be within .006"-.018".

If you are using a clamping unit, adjustment is easy and accurately performed by adjusting the Y-axis of the clamping unit.

If the TCAP is being held in a fixed turret location, reverse the tool by 180° and test again to see if core size is within acceptable tolerances.

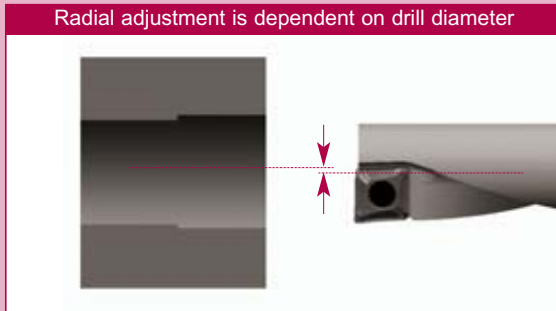
**If a core does not appear,**

- It can cause breakage of insert and vibration when drilling or turning.

**If the size of core is over the recommendation,**

- It will cause overload and vibration.

## Radial adjustment (Off-center drilling)



(inch)

Holder	Drill Dia.	Dmin	Dmax
<b>TCAP 08 -</b>	0.315	0.309	0.329
<b>TCAP 10 -</b>	0.394	0.387	0.417
<b>TCAP 12 -</b>	0.472	0.465	0.496
<b>TCAP 14 -</b>	0.551	0.543	0.575
<b>TCAP 16 -</b>	0.630	0.620	0.650
<b>TCAP 20 -</b>	0.787	0.780	0.811

## Recommended Cutting Conditions

### Cutting speed (Vc)

Workpiece Materials	Hardness (BHN)	Cutting speed: Vc (sfm)	
		In Drilling	In Turning & Boring
<b>Low Carbon Steel (-0.25% C)</b>	- 150	425 - 790	490 - 895
<b>Carbon Steel (0.25% &lt; C)</b>	150 - 250	295 - 525	330 - 590
<b>Low Alloy Steel</b>	- 180	395 - 690	460 - 755
<b>Medium Alloy Steel</b>	200 - 250	230 - 460	260 - 525
<b>High Alloy Steel</b>	250 - 350	165 - 330	200 - 395
<b>Martensitic Stainless Steel</b>	200	360 - 590	425 - 655
<b>Austenitic Stainless Steel</b>	200	295 - 525	330 - 590
<b>Gray Cast Iron</b>	180 - 220	360 - 590	395 - 655
<b>Ductile Cast Iron</b>	200 - 240	295 - 525	330 - 590
<b>Aluminum Alloy</b>	60 - 130	330 - 1640	490 - 1970
<b>Copper Alloy</b>	90 - 100	330 - 1310	330 - 1640

### Feed (f)

Designation	Application	Cutting Conditions	
		ap (inch)	f (ipr)
<b>XCMT 040104</b>	External Turning	.023" (.008" - .070")	.002" (.001" - .006")
	Drilling	-	.002" (.001" - .004")
<b>XCMT 050204</b>	External Turning	.031" (.008" - .087")	.003" (.001" - .007")
	Drilling	-	.002" (.001" - .005")
<b>XCMT 060204</b>	External Turning	.039" (.012" - .098")	.003" (.001" - .008")
	Drilling	-	.003" (.001" - .005")
<b>XCMT 070304</b>	External Turning	.047" (.016" - .110")	.005" (.002" - .009")
	Drilling	-	.003" (.001" - .006")
<b>XCMT 080304</b>	External Turning	.059" (.016" - .126")	.005" (.002" - .010")
	Drilling	-	.003" (.001" - .006")
<b>XCMT 10T304</b>	External Turning	.071" (.020" - .138")	.005" (.002" - .012")
	Drilling	-	.003" (.001" - .006")

# TECHNICAL INFORMATION



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CUTTING TOOLS  
CUTTING TOOLS

**TECHNICAL  
INFORMATION**

TECHNICAL INFORMATION  
*Cutting Tools*  
TECHNICAL  
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INFORMATION

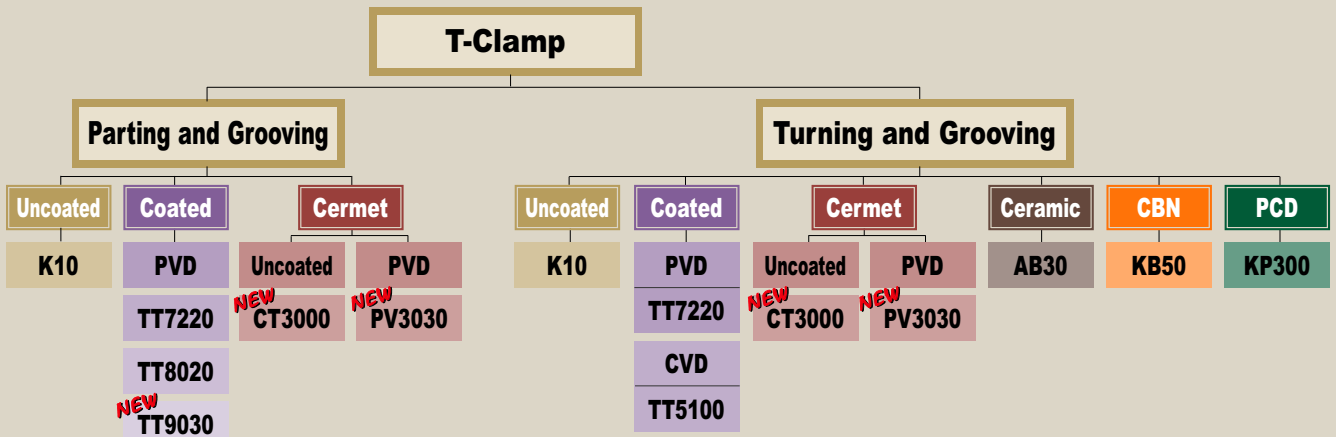
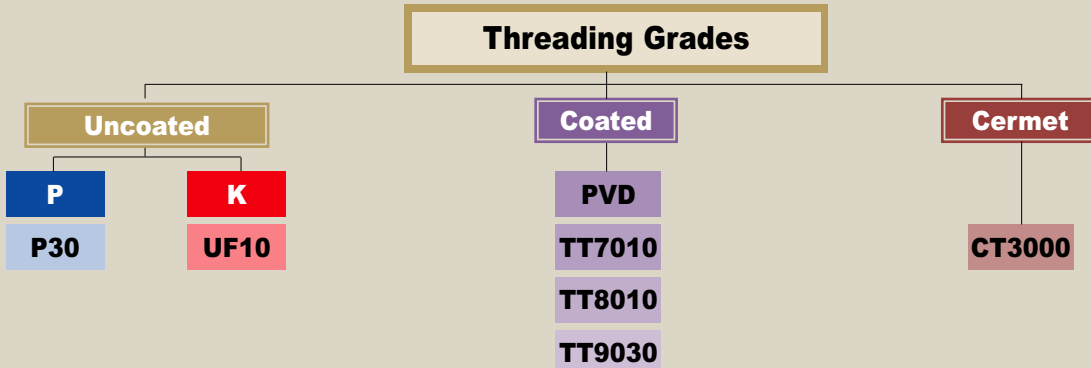
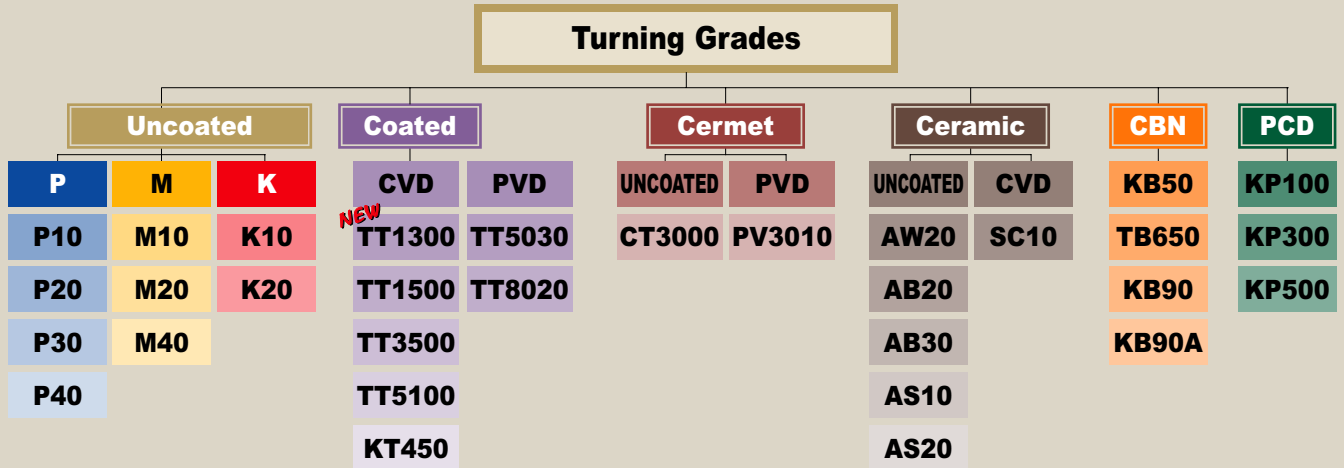
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## GRADES - GRADE CLASSIFICATION

TaeguTec cutting tool grades are classified according to application and type of materials.

There are uncoated P.M.K types based on ISO classification, coated grades for high efficiency cutting, cermet for finishing to medium cutting, ceramics, CBN & PCD for high speed cutting.

The ideal choice of grade depends on the workpiece materials, cutting condition, insert geometry and the machine.





## GRADES - GRADE RECOMMENDATION

### For Turning

Materials	Carbon Steel, Alloy Steel, Mild Steel						Cast Iron					
	Finish-Light		Medium	Rough			High Speed	Finish	Medium			
	P01	P10	P20	P30	P40	P50		K01	K10	K20	K30	
Coated	TT1500		TT3500			TT5100		TT1300 <sup>NEW</sup>		TT1500		
Coated	PV3010		KT450			TT8020						
Cermet	CT3000						CT3000					
Uncoated	P10		P20	P30	P40							
Coated							SC10					
Ceramic							AW20		AB30		AS10	
CBN							KB90		KB90A			
PCD												

Materials	Hardened Steel		Stainless Steel		Heat Resistant Alloy		Non-Ferrous	
	Finish	Medium	Finish Light	Medium	Finish	Medium	Finish	Medium
Coated			TT5030		TT5030			
Coated			TT5100		TT5100			
Coated			PV3010					
Cermet			CT3000					
Uncoated							K10	
Coated								
Ceramic	AW20				AS20			
	AB20							
	AB30							
CBN	KB50				KB90			
	TB650				KB90A			
PCD							KP100	
							KP300	
							KP500	

# GRADES - GRADE RECOMMENDATION

## For Threading

Materials	Carbon Steel, Alloy Steel, Mild Steel					Cast Iron					
	Cutting Condition	High Speed	Finish-Light		Medium	Rough		High Speed	Finish	Medium	
			ISO	P01	P10	P20	P30		P40	K01	K10
Coated					TT7010						
						TT8010					
						TT9030				TT9030	
Cermet			CT3000								
Uncoated						P30				UF10	

Materials	Hardened Steel		Stainless Steel		Heat Resistance Alloy		Non-Ferrous			
	Cutting Condition	Finish	Medium	Finish Light	Medium	Finish	Medium	Finish	Medium	
Coated			TT7010		TT9030		TT9030		TT9030	
			TT9030							
Cermet				CT3000						
Uncoated						UF10			UF10	

## For T-Clamp

Materials	Carbon Steel, Alloy Steel, Mild Steel							Cast Iron					
	Cutting Condition	High Speed	Finish-Light		Medium	Rough			High Speed	Finish	Medium		
			ISO / ANSI	P01	P10	P20	P30	P40		P50	K01	K10	K20
Coated					TT9030							TT9030	
						TT7220							
						TT5100							
						TT8020							
Coated			PV3030						PV3030				
Cermet			CT3000						CT3000				
Uncoated										K10			
Ceramic									AB30				
CBN													
PCD													

Materials	Hardened Steel		Stainless Steel		Heat Resistance Alloy		Non-Ferrous		
	Cutting Condition	Finish	Medium	Finish Light	Medium	Finish	Medium	Finish	Medium
Coated				TT9030		TT9030			
				TT5100		TT5100			
				TT8020		TT8020			
Coated				PV3030					
Cermet				CT3000					
Uncoated						K10			K10
Coated									
Ceramic			AB30						
CBN		KB50							
PCD								KP300	

## GRADES - PVD COATED

### PVD Coatings

TaeguTec has 8 coated grades produced with the Physical Vapor Deposition (PVD) process.

These products are coated with TiN, TiCN or TiAlN on the specially manufactured substrate at relatively low temperature. This process has less reaction between coating layer and substrate and less thermal stress. This dramatically improves edge strength.

TaeguTec Grade	ISO	Characteristics	Application
<b>TT5030</b> PVD Coated	<b>S05</b> – <b>S20</b> <b>M05</b> – <b>M20</b>	<ul style="list-style-type: none"> <li>For a wide range of turning of high-temp alloys</li> <li>For high speed machining of stainless steel</li> <li>Very hard submicron substrate with good fracture toughness</li> </ul>	Turning
<b>TT7010</b>	<b>P20</b> – <b>P30</b>	<ul style="list-style-type: none"> <li>For threading steel</li> <li>TiCN/TiN</li> </ul>	Threading
<b>TT7220</b> PVD Coated	<b>P20</b> – <b>P35</b>	<ul style="list-style-type: none"> <li>For semi-roughing and medium cutting of steel</li> <li>TiCN</li> </ul>	Parting, Grooving and Turning
<b>TT8010</b>	<b>M30</b> – <b>M40</b> <b>S30</b> – <b>S40</b> <b>P30</b> – <b>P45</b>	<ul style="list-style-type: none"> <li>For a wide range of threading on stainless steel &amp; exotic materials</li> <li>Toughest grade in threading product line</li> </ul>	Threading
<b>TT8020</b> PVD Coated	<b>M30</b> – <b>M40</b> <b>S30</b> – <b>S40</b> <b>P30</b> – <b>P45</b>	<ul style="list-style-type: none"> <li>For medium to low speed turning of stainless steel, exotic alloys &amp; low carbon steel</li> <li>Toughest grade in turning product line</li> <li>First choice for interrupted cutting on stainless steel &amp; exotic alloys</li> </ul>	Turning, Parting and Grooving
<b>PV3010</b> PVD Coated Cermet	<b>P05</b> – <b>P15</b> <b>K05</b> – <b>K15</b> <b>M05</b> – <b>M15</b>	<ul style="list-style-type: none"> <li>Greatly improved cutting performance in wet conditions especially where the thermal stability is needed</li> <li>Combining TiN coating layer having low affinity with cutting material and special substrate with improved toughness result in long tool life and superior cutting performance</li> <li>TiN</li> </ul>	Turning
<b>PV3030</b> PVD Coated Cermet	<b>P01</b> – <b>P15</b> <b>M01</b> – <b>M25</b> <b>K01</b> – <b>K15</b>	<ul style="list-style-type: none"> <li>Better Surface Roughness, longer tool life</li> <li>For high speed machining</li> <li>TiAlN coated on cermet</li> </ul>	Parting and Grooving
<b>TT9030</b>	<b>P15</b> – <b>P35</b> <b>M10</b> – <b>M30</b>	<ul style="list-style-type: none"> <li>For semi-roughing and medium cutting on all kinds of materials</li> <li>High mechanical shock resistance</li> <li>TiAlN coated on sub-micron substrate</li> </ul>	Parting and Grooving, Threading

## ■ GRADES - CVD COATED

### ■ CVD Coatings

TaeguTec has 6 coated grades produced with the Chemical Vapor Deposition (CVD) process.

These coated products are metallurgically coated with multi-layer substrate applicable to every work material and machining condition.

TaeguTec Grade	ISO	Characteristics	Application
<b>TT1300</b> CVD Coated	<b>K05</b> – <b>K15</b> <b>P05</b> – <b>P15</b>	<ul style="list-style-type: none"> <li>For high speed turning of cast iron and steel</li> <li>Coated with alumina on a highly wear resistant substrate</li> <li>TiCN-Al<sub>2</sub>O<sub>3</sub></li> </ul>	Turning
<b>TT1500</b> CVD Coated	<b>K10</b> – <b>K20</b> <b>P10</b> – <b>P25</b>	<ul style="list-style-type: none"> <li>For medium to high speed turning of steel, ductile cast iron and cast iron</li> <li>High wear resistance and heat resistance</li> <li>TiN - TiCN - TiC - Al<sub>2</sub>O<sub>3</sub> - TiN</li> </ul>	Turning
<b>TT3500</b> CVD Coated	<b>P15</b> – <b>P35</b>	<ul style="list-style-type: none"> <li>For general turning of steel</li> <li>Strengthened chipping resistance and breakage resistance</li> <li>TiN - TiCN - Al<sub>2</sub>O<sub>3</sub> - TiN</li> </ul>	Turning
<b>TT5100</b> CVD Coated	<b>P20</b> – <b>P40</b> <b>M15</b> – <b>M35</b> <b>S15</b> – <b>S35</b>	<ul style="list-style-type: none"> <li>For general turning of stainless steel</li> <li>Excellent chipping resistance and adhesion resistance</li> <li>TiN - TiCN - Al<sub>2</sub>O<sub>3</sub> - TiN</li> </ul>	Turning and Grooving
<b>KT450</b> CVD Coated	<b>P25</b> – <b>P45</b> <b>M20</b> – <b>M40</b>	<ul style="list-style-type: none"> <li>For roughing or interrupted cuts of steel</li> <li>High toughness grade</li> <li>TiN - TiCN - TiC - TiCN - TiN</li> </ul>	Turning
<b>SC10</b> CVD Coated Ceramic	<b>K01</b> – <b>K10</b>	<ul style="list-style-type: none"> <li>High speed turning of cast iron</li> <li>Multi-layer coating on AS10</li> <li>Al<sub>2</sub>O<sub>3</sub> - TiN</li> </ul>	Turning

## GRADES - CERMETS

### Cermets

Cermets are very hard grades made of solid Titanium Carbide or Carbon Nitride, providing longer tool life at higher speed than coated tungsten carbide inserts.

### Features

- High speed cutting through high hardness at high temperatures.
- Long tool life due to excellent anti-oxidation characteristics.
- Excellent surface finish.

### Physical Properties

Grade	Properties	Density (g/cm <sup>3</sup> )	Hardness (HRA)	T.R.S (kg/mm <sup>2</sup> )
CT3000		6.7	93.0	160

### Application

TaeguTec Grade	Cutting Methods	Application
<b>CT3000</b> <b>P05</b> — <b>P15</b> <b>M05</b> — <b>M15</b> <b>K05</b> — <b>K15</b>	Finishing Semi-finishing General turning	Suitable for finishing to semi-finishing of steel, cast iron and stainless steel. General turning and grooving of steel



## ■ GRADES - UNCOATED GRADE P.M.K

### ■ Features

- Very hard at normal temperature.
- Hardness can be maintained at high temperature.
- High compressive strength compared with steel.

### ■ Application

ISO class	TaeguTec grade	Materials	Cutting Methods	Application	Composition	Features
<b>P</b>	<b>P10</b>	Steel Cast Steel	Threading Turning	Medium-high speed	WC + Co + TiC + TaC	TiC & TaC is added for improving heat & crater resistance
	<b>P20</b>			General cutting		
	<b>P30</b>			Low-medium speed Roughing		
<b>M</b>	<b>M10</b>	Steel Cast Iron Stainless Steel	Turning	Medium speed	WC + Co + TiC + TaC	Less TiC and TaC is added. Better wear and shock resistance, but less heat and crater resistance than P grades.
	<b>M20</b>			Low speed		
	<b>M40</b>			Heavy cutting		
<b>K</b>	<b>K10</b>	Cast iron Hardened Steel Nonferrous Materials Non-Metallics	Turning Grooving	Finishing	WC + Co	No TiC or TaC. Excellent mechanical wear resistance and shock resistance.
	<b>K20</b>			Medium speed		

### ■ Mechanical and Physical Properties

ISO class	TaeguTec Grade	Hardness (HRA)	Transverse Rupture Strength (kg/mm <sup>2</sup> )	Young's modulus (10 <sup>3</sup> kg/mm <sup>2</sup> )	Thermal conductivity (cal/cm•sec•K)	Compressive strength (kg/mm <sup>2</sup> )	Thermal expansion coefficient (10 <sup>-6</sup> /°C)
<b>P</b>	<b>P10</b>	92.7	> 200	53	0.07	460	6.5
	<b>P20</b>	92.5	> 210	54	0.08	480	6.0
	<b>P30</b>	91.2	> 250	57	0.10	480	5.5
<b>M</b>	<b>M10</b>	92.8	> 200	58	0.12	500	5.5
	<b>M20</b>	92.1	> 250	57	0.15	490	5.5
	<b>M40</b>	89.1	> 330	54	0.14	440	5.5
<b>K</b>	<b>K10</b>	92.7	> 240	64	0.19	620	4.7
	<b>K20</b>	92.1	> 260	62	0.19	530	5.0

# GRADES - GRADE COMPARISON TABLE

## Coated Grade

Materials	TaeguTec	SANDVIK	KENAMETAL	Valenite	MITSUBISHI	SUMITOMO	TOSHIBA	KYOCERA	SECO	Korloy	ISCAR	
<b>P M K</b>	<b>TT1300</b>	GC3205 GC3210	KC9315	SV510 SV305	UC5105 UC5015 UC5115	AC300G	T5010	CA4010	TX1000 TP1000 TP100	NC305K NC6010	IC9007 IC4028 IC428	
	<b>TT1500</b>	GC4005 GC4015 GC3025	KC9325 KC9110	SV515 SV310 SV525 SV315 SV405	UE6005 UC6010 UE6010	AC500G AC400G AC1000	T5020 T9005 T7005 T9015 TD905 T715X T7020 T9025 TD920 T725X	CA5515 CR7015 CA5025 CA4115	TX2000 TP2000 TP200	NC315K NC310	IC9015 IC9025	
	<b>TT3500</b>	GC4025	KC9125	SV320 SV410 SV325	UE6020 UC6025	AC2000	EH10Z EH510Z	CA5525 CR7025 CA225	TP3000 TP300			IC8048 IC907
	<b>TT5030</b>	GC1025 GC2015	KC5410 KC5010 KC5025	VC929 VC901	VP05RT VP15TF US7020	EH10Z EH510Z	AH110 AH120 T6020	CA6015	CP200		NC325S NC320	
	<b>TT5100</b>	GC2025		SV415		EH520Z AC304	T6030	CR9025 PR630			NC330	IC656
	<b>KT450</b>	GC4035	KC9040	SV230 SV330 SV235	UE6035 UP20M	AC3000	T930 TD930	PR660	TP400 TP40		PC9030	
	<b>TT8020</b>	GC2035	KC9240 KC9245		US735		AH140		CP50			IC3028
	<b>TT7010</b>											IC250
	<b>TT7220</b>	GC4025 GC1025	KC810 KC850		AP25N UP35N	T2000Z T130Z	UX30	PR630 CR9025 TW60M	T25M S25M			IC354
	<b>TT8010</b>	GC2135 GC235	KC850		US735			PR660	T25M			IC358
	<b>TT9030</b>	GC1020 GC4125						PV30 PV60	CP50			IC520N

## GRADES - GRADE COMPARISON TABLE

### Uncoated Grade

ISO Classification	TaeguTec	SANDVIK	SECO	SUMITOMO	MITSUBISHI	TOSHIBA	ISCAR
<b>P</b>	<b>P01</b>	CT3000	S1P	F1F		NS530	IC20N
	<b>P10</b>	P10	S10T	S1F, S10M	ST10P	STi10T TX10D TX10S	
	<b>P20</b>	P20	SMA	S25M	ST20E	STi20 TX20 TX25 UX25	IC70
	<b>P30</b>	P30	S30 SM30	375 S35M	A30N A30		TX30 UX30 IC50M
	<b>P40</b>	P40	S6 R4, SMA	S60M	ST40E		TX40 IC54
<b>M</b>	<b>M10</b>	M10	S1P, H10A	SM10	U10E		TU10 IC70
	<b>M20</b>	M20	H13A	HX, S25M	U2	UTi20T	TU20/UX25 IC08
	<b>M30</b>		H10F	HX, S35M	A30, A30N	UTi20T	UX30
	<b>M40</b>	M40	R4	S60M	A40		TU40 IC28
<b>K</b>	<b>K01</b>	UF1	H1P		H2	HTi05T	TH03 IC07
	<b>K10</b>	K10	HM H10, H10A	HX	H1 EH10	HTi10	G1F H10T TH10 IC20
	<b>K20</b>	K20	H13A	H15 HK 883	EH20 G10E	HTi20T	G2F KS20 G2 IC10
	<b>K30</b>	K30			G3		

### Cermet Grade

ISO Classification	TaeguTec	SANDVIK	KYOCERA	SUMITOMO	MITSUBISHI	TOSHIBA	DIJET	KENAMETAL	HITACHI	ISCAR
<b>P</b>	<b>P01</b>	PV3010 PV3030 CT3000	CT5005 CT5015	TN30 PV30	T110A	NX1010 AP25N	NS520 AT520 GT520	LN10 CX50	KT125	CH350 IC20N
	<b>P10</b>	PV3010 PV3030 CT3000	CT5015	TN60 PV60 TN6020 PV7020	T1200A T2000Z	NX1010 NX2525 AP25N UP35N	NS520 AT520 AT530	LN10 CX50 NIT CX75	KT315 KT175 HT2	CH350 CH550 CH7030 CZ1025 IC20N
	<b>P20</b>	PV3010 CT3000 CT5000	GC1525	TN6020 TN90 TN100M PV90 PV7020	T1200A T2000Z T3000Z	NX2525 NX4545 UP35N	NS530 AT530 GT530	CX50 CX75 CX90 NAT	PS5	CH7030 CH7035 CZ1025 CZ25 IC20N IC30N
	<b>P30</b>	CT5000	CT530		T130A T3000Z	NX4545	NS530 NS540 NS740	CX90 CX99 SUZ		CH7035 CZ25 IC30N
<b>M</b>	<b>M10</b>	PV3010 PV3030 CT3000	CT525	TN60 PV60 TN6020 PV7020	T1200A T2000Z	NX2525	NS520 AT530 GT530	LN10	KT315 KT125	CH550 CH7030 CZ1025 IC20N
	<b>M20</b>	PV3010 PV3030 CT3000 CT5000	GC1525		T1200A T2000Z T3000Z	NX2525	NS530	CX50 CX75 NIT	KT175 HT2 PS5	CH7030 CH7035 CZ1025 CZ25 IC20N IC30N
	<b>M30</b>	CT5000	CT530	TN30 PV30		NX4545	NS540 NS740	CX75 CX90 CX99 SUZ		CH7035 CZ25 IC30N
<b>K</b>	<b>K01</b>	PV3010 PV3030 CT3000	CT5015 CT515		T110A	NX1010 AP25N	NS520 AT520 GT520	LN10		CH550 IC20N
	<b>K10</b>	PV3030 CT3000		PN60 PV60 TN6020 PV7020	T110A	NX2525 AP25N	NS530 AT530 GT530	LN10	KT315 HTX	CH7030 CH7035 CZ1025 CZ25 IC20N
	<b>K20</b>	CT5000				NX2525 AP25N		NIT	KT315	CH7035 CZ25

## GRADES - GRADE COMPARISON TABLE

### Ceramic Grade

Application	TaeguTec	ISCAR	KENAMETAL	KYOCERA	NTK	SANDVIK	SUMITOMO	TUNGALOY	
<b>Cast Iron</b>	<b>Finishing</b>	AW20	IN11	KW80	KA30	HW2 HC1	CC620	-	-
	<b>General</b>	AB30	IN23	KY1615	A65	HC2 HC5 HC6	CC650	NB90S NB90M	LX21
	<b>Roughing</b>	AS10 SC10	IS8 IS80	KY1310 KY3000 KY3500 KY3400	KS500 KS6000	SX1 SX8 SP2	CC690 CC6090 GC1690	NS260 NS260C	FX105 CX710
<b>Hardened Steel</b>	AB20	IN22	KY4300	A66N	HC4 ZC4	CC650	NB100C	LX11	
<b>Heat Resistant Alloy</b>	AS20	IS9	KY2000 KY2100 KY1540	-	WA1	CC670	-	WG300	

### CBN

Application	TaeguTec	KENAMETAL	KYOCERA	NTK	SANDVIK	SECO	SUMITOMO	TUNGALOY	
<b>Cast Iron</b>	<b>Finishing</b>	TB650	KD120	KBN65B	B20	CB7050	CBN20	BN500	BX930
	<b>General</b>	KB90 KB90A	KD120	KBN410 KBN900	B22	CB50	CBN300	BN600 BN700	BX950
<b>Hardened Steel</b>	<b>Finishing</b>	KB50	KD050 KD120 KB1615	KBN10B KBN10N	B24	CB7020	CBN100	BNX10 BNC80 BNC150	BX310
	<b>General</b>	TB650	KB1340 KB5625	KBN25B KBN525 KBN25N	B26	CB20	CBN150 CBN200	BNX20 BN250 BNX25 BN300 BN350 BNC200 BNC300	BX330 BX360 BX380 BXC50

### PCD

Grade	TaeguTec	KENAMETAL	KYOCERA	NTK	SANDVIK	SECO	SUMITOMO	TOSHIBA
<b>Fine</b>	KP100	PD100	KPD001			PD10	DA2200 DA90	DX180
<b>Medium</b>	KP300	KD100	KPD010	PD1	CD10	PD20	DA150	DX160 DX140
<b>Coarse</b>	KP500	KD1415	KPD025			PD30	DA200	DX120

# CHIPBREAKER COMPARISON TABLE



TaeguTec	Sandvik	Kennametal	Seco	Walter	Valenite	Mitsubishi	Sumitomo	Toshiba	Kyocera	Korloy	Iscar
<b>NEGATIVE</b>											
<b>FA</b>		FF FS	FF1		LF,PF	FH FS	FL,FA		GP DP	HU	SF
<b>FG</b>	PF	FP	MF2				LU	ZF			
<b>SF</b>	QF	FN		NF3	MF,GF	SH	SU	ZM,TS,NS	HQ	HF,GF	NF
<b>VF,FS</b>	MF	LF		NF4	C2,UF,LC	SA	SX	27,NM	GU,CQ,XP		
	K		95			ES	GX	S	ST		
<b>ML</b>		GP-K,MS- MS GP	MF1	NS4 NS5,NS6,G1	1W,2W SR	FJ MJ		CB,17	XP	HA	12 PP
<b>MP</b>	NGP 23 MM QM	P	MF3	NM4		MS	EX		HU SU	HS,GS	TF VL
<b>MC</b>	SM	MN	MR3		RM SL	MV		AS	CS,GS	HC	
<b>MT</b>	PM KF	MP	M3	NM6 NS8	MM,LM,TM HF	MH MA	GU UX,UG	TM	PS HS	HM,GM	GN
<b>MG-</b>	KM			MG-		MG-	UZ	38 DM,MG- 33,37	MG- C	B20,B25	MG-
<b>RT</b>	MR PR KR	RP UM RN,MG-	M5 MR7	NR4 NM5,NM7 NM9	UM,RH GM,M8 GR	GJ GH HAS,HDS	MU,MX		XS ZS,GC GT HT	HR GR	TNM NR
<b>RH</b>	PR QR MR	RM	R6,RR9 R4,37	NR5,NR6 NR7	UR,HS	HZ HA HH	MP HG			GH	RP NM
	HR	RH	R8,56,57 R7		R4	HX,HBS HV,HDS,HXD	HP	57 TU 65		HH B40	
<b>WS</b>	WF	FW	W-MF2			SW	LUW	AFW	WP		
<b>WT</b>	WM	MW	W-M3			MW	GUW	ASW	WQ	HW	WG
<b>POSITIVE</b>											
<b>FA</b>	PF,UF	UF,11,GM	FF1	PF4 PF5	FL	FV	LU FP		CF DP	HFP	38,PF
<b>FG</b>	PM,UM	LF	F1	PS4 PS5	PM3 FH PM2,FF	SQ,SV	FK SU SC,SK	PF	GP,XP DP,XQ,HQ	HMP,C05	SM 16,GT- 14,17 19,MT-
<b>MT</b>	PR,UR	MF	F2	PM5 MT-	PM4,FR	MQ,MV MT- G	SF,MU	PM	MT-	C25	
<b>PMR-</b>	PMR-	PMR-		PMR-	FM	PMR-	UJ		GP,HQ G,PMR-		
<b>FL</b>	AL	HP	AL	PM2			AG	AL	AH	AK	AF,AS
<b>WT</b>	WM	MW	W-M3			MW					WG
TaeguTec	Sandvik	Kennametal	Seco	Walter	Valenite	Mitsubishi	Sumitomo	Toshiba	Kyocera	Korloy	Iscar



# HARDNESS COMPARISON TABLE

VICKERS 50kg HV	BRINELL HB10mm BALL LOAD 3000kgf		ROCKWELL				SHORE'S HS	TENSILE STRENGTH N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	VICKERS 50kg HV	BRINELL HB10mm BALL LOAD 3000kgf		ROCKWELL				SHORE'S HS	TENSILE STRENGTH N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )
	STANDARD BALL	TUNGSTEN CARBIDE BALL	A SCALE 60kgf Diamond brale HRA	B SCALE 100kgf 1/16in BALL HRB	C SCALE 150kgf Diamond brale HRC	D SCALE 100kgf Diamond brale HRD				STANDARD BALL	TUNGSTEN CARBIDE BALL	A SCALE 60kgf Diamond brale HRA	B SCALE 100kgf 1/16in BALL HRB	C SCALE 150kgf Diamond brale HRC	D SCALE 100kgf Diamond brale HRD		
1900			93.1		80.5			470	441	442	74.1		46.9	60.7		1570(160)	
1800			92.6		79.2			460	433	433	73.6		46.1	60.1	62	1530(156)	
1700			91.9		77.9			450	425	425	73.3		45.3	59.4		1459(153)	
1600			91.3		76.6			440	415	415	72.8		44.5	58.8	59	1460(149)	
1500			90.5		75.3			430	405	405	72.3		43.6	58.2		1410(144)	
1450			90.1		74.6			420	397	397	71.8		42.7	57.5	57	1370(140)	
1400			89.6		74.0			410	388	388	71.4		41.8	56.8		1330(136)	
1350			89.1		73.4			400	379	379	70.8		40.8	56.0	55	1290(131)	
1300			88.7		72.7			390	369	369	70.3		39.8	55.2		1240(127)	
1250			88.3		72.1			380	360	360	69.8	(110.0)	38.8	54.4	52	1250(123)	
1200			87.9		71.5			370	350	350	69.2		37.7	53.6		1170(120)	
1150			87.5		70.9			360	341	341	68.7	(109.0)	36.6	52.8	50	1130(115)	
1100			87.1		70.3			350	331	331	68.1		35.5	51.9		1095(112)	
1050			86.6		69.6			340	322	322	67.6	(108.0)	34.4	51.1	47	1070(109)	
1000			86.2		68.9			330	313	313	67.0		33.3	50.2		1035(105)	
940			85.6		68.0	76.9	97	320	303	303	66.4	(107.0)	32.2	49.4	45	1005(103)	
920			85.3		67.5	76.5	96	310	294	294	65.8		31.0	48.4		980(100)	
900			85.0		67.0	76.1	95	300	284	284	65.2	(105.5)	29.8	47.5	42	950(97)	
880		(767)	84.7		66.4	75.7	93	295	280	280	64.8		29.2	47.1		935(96)	
860		(757)	84.4		65.9	75.3	92	290	275	275	64.5	(104.5)	28.5	46.5	41	915(94)	
840		(745)	84.1		65.3	74.8	91	285	270	270	64.2		27.8	46.0		905(92)	
820		(733)	83.8		64.7	74.3	90	280	265	265	63.8	(103.5)	27.1	45.3	40	890(91)	
800		(722)	83.4		64.0	74.8	88	275	261	261	63.5		26.4	44.9		875(89)	
780		(710)	83.0		63.3	73.3	87	270	256	256	63.1	(102.0)	25.6	44.3	38	855(87)	
760		(698)	82.6		62.5	72.6	86	265	252	252	62.7		24.8	43.7		840(86)	
740		(684)	82.2		61.8	72.1	84	260	247	247	62.4	(101.0)	24.0	43.1	37	825(84)	
720		(670)	81.8		61.0	71.5	83	255	243	243	62.0		23.1	42.2		805(82)	
700		(656)	81.3		60.1	70.8	81	250	238	238	61.6	99.5	22.2	41.7	36	795(81)	
690		(647)	81.1		59.7	70.5		245	233	233	61.2		21.3	41.1		780(79)	
680		(638)	80.8		59.2	70.1	80	240	228	228	60.7		20.3	40.3	34	765(78)	
670			630	80.6	58.8	69.8		230	219	219		98.1	20.3	40.3		765(78)	
660			620	80.3	58.3	69.4	79	220	209	209		96.7	(18.0)		33	730(75)	
650			611	80.0	57.8	69.0		210	200	200		95.0	(15.7)		32	695(71)	
640			601	79.8	57.3	68.7	77	200	190	190		93.4	(13.4)		30	670(68)	
630			591	79.5	56.8	68.3		190	181	181		91.5	(11.0)		29	635(65)	
620			582	79.2	56.3	67.9	75	180	171	171		89.5	(8.5)		28	605(62)	
610			573	78.9	55.7	67.5		170	162	162		87.1	(6.0)		26	580(59)	
600			564	78.6	55.2	67.0	74	160	152	152		85.0	(3.0)		25	545(56)	
590			554	78.4	54.7	66.7		150	143	143		81.7	(0.0)		24	515(53)	
580			515	78.0	54.1	66.2	72	140	133	133		78.7			22	490(50)	
570			535	77.8	53.6	65.8		130	124	124		75.0			21	455(45)	
560			525	77.4	53.0	65.4	71	120	115	115		71.2			20	425(44)	
550	(505)		517	77.0	52.3	64.8		110	106	106		69.8			19	(42)	
540	(496)		507	76.7	51.7	64.4	69	100	101	101		67.6			18	(41)	
530	(488)		497	76.4	51.1	66.2		90	97	97		65.7			15	(39)	
520	(480)		488	76.1	50.5	63.5	67										
510	(473)		479	75.7	49.8	62.9											
500	(465)		471	75.3	49.1	62.2	66										
490	(456)		460	74.9	48.4	61.6											
480	488	452	74.5		47.7	61.3	64										

Note: Gothic figures come from ASTM E 140 Table.(calculated by SAE-ASM-ASTM together)

## MATERIAL CONVERSION TABLE

France	Germany	Italy	Japan	Country Spain	Sweden	U.K	USA	Korea
AFNOR	DIN	UNI	JIS	Standard UNF	SS	BS	AISI/SAE	KS
<b>Carbon Steel</b>								
S250	1.0175	CF9Mn28	SUM22	11SMn28	1912	230M07	1213	SUM22
CC12	1.0301			F.111			1010	SM10C
XC12	1.0401	C15C16	S15C		1350	080M15	1015	SM15C
CC20	1.0402	C20C21	S20C	F.112	1450	050A20	1020	SM20C
	1.0406		S25C				1025	SM25C
CC35	1.0501	C35	S35C	F.113	1550	060A35	1035	SM35C
CC45	1.0503	C45	S45C	F.114	1650	080M46	1045	SM45C
XC55	1.0535	C55	S55C	C55K	1655	070M55	1055	SM55C
XC60	1.0601	C60	S58C		1678	080A62	1060	SM58C
<b>Alloy Steel</b>								
12C3	1.7015	16MnCr5	SCr415	16MnCr5	2511	523M15	5115	SCr415
	1.7027		SCr420				5120	SCr420
32C4	1.7033	34Cr4(KB)	SCr430	35Cr4		530A32	5132	SCr430
42C4	1.7035	41Cr4	SCr440	43Cr4		530M40	5140	SCr440
14NC11	1.5732	16NiCr11	SNC415	15NiCr11			3115	SNC415
	1.5736		SNC631				3130	SNC631
	1.5736		SNC236			640A35	3135	SNC236
12CD4	1.7262		SCM415	12CrMo4	2216		4115	SCM415
	1.7264		SCM420				4120	SCM420
	1.7220		SCM430				4130	SCM430
42CD4	1.7225	42CrMo4	SCM440	42CrMo4	2244	708M40	4140	SCM440
20NCD2	1.6523	20NiCrMo2	SNCM220	20NiCrMo2	2506	805M20	8620	SNCM220
		SNCM240				8640	SNCM240	
	1.6657		SNCM415				4315	SNCM415
	1.6571		SNCM420				4320	SNCM420
			SNCM439				4340	SNCM439
			SMn420				1520	SMn420
	1.1157		SMn443				1547	SMn443
	1.1133		SMnC420					SMnC420
	1.2067		SUJ2				52100	STB2
<b>Tool Steel</b>								
			SK3			WI-10	STC3	
Y105V	1.2833		SKS43			BW2	W2	STS43
Z200C12	1.2080	X210Cr13KU	SKD11	X210Cr12		BD3	D3	STD11
Z40CDV5	1.2344	X35CrMoV05KU	SKD61	X40CrMoV5	2242	BH13	H13	STD61
Z80WKCVCV	1.3255	X78WCo1805KU	SKH3	HS18-1-1-5		BT4	T4	SKH3
Z85WDCV	1.3343	X82WMo0605KU	SKH9	HS6-5-2	2722	BM2	M2	SKH51

## HARDNESS COMPARISON TABLE

France	Germany	Italy	Japan	Country Spain	Sweden	U.K	USA	Korea
AFNOR	DIN	UNI	JIS	Standard	SS	BS	AISI/SAE	KS
<b>Stainless Steel</b>								
			SUS201				201	STS201
			SUS202				202	STS202
			SUS301				301	STS301
			SUS302				302	STS302
Z6CN18.09	1.4301	X5CrNi18-10	SUS304	F.3551	2332	304S15	304	STS304
	1.4303		SUS304L		2333	304C12	304L	STS304L
Z6CND17.11	1.4401	X5CrNiMo17-12	SUS316	F.3543	2347	316S16	316	STS316
	1.4404		SUS316L				316L	STS316L
Z6CNNb18.10	1.4550	X6CrNiNb18-10	SUS347	F.3552	2338	347S17	347	STS347
Z10C13	1.4000	X6CrAl13	SUS405			405S17	405	STS405
Z8C17	1.4016	X6Cr17	SUS430	F.3113	2320	430S15	430	STS430
	1.4006		SUS403	F.3110	2301	403S17	403	STS403
Z15CrNi6.02	1.4057	X16CrNi16	SUS431	F.3427	2321	431S29	431	STS431
<b>Malleable Cast Iron</b>								
			SUH31					STR31
Z12NCS35.16	1.4864		SUH330				330	STR330
Z10CAS24	1.4749		SUH446		2322		446	STR446
			SUH616				616	STR616
<b>Gray Cast Iron</b>								
F110D	0.6010	G10	FC100		0110		No 20B	GC100
F115D	0.6015	G14	FC150		0115	Grade 150	No 25B	GC150
F120D	0.6020	G20	GC200		0120	Grade 220	No 30B	GC200
F125D	0.6025	G25	FC250		0125	Grade 260	No 35B	GC250
F130D	0.6030	G30	FC300		0130	Grade 300	No 45B	GC300
F135D	0.6035	G35	FC350		0135	Grade 350	No 50B	GC350
<b>Nodular Cast Iron</b>								
FGS 400-12	0.7040	GS400/12	FCD400		0717-02	SNG 420/12	60-40-18	GCD400
FGS 500-7	0.7050	GS500/7	FCD500		0727-02	SNG 500/7	80-55-06	GCD500
FGS 600-3	0.7060	GS600/3	FCD600		0732-03	SNG 600/3		GCD600
FGS 700-2	0.7070	GS700/2	FCD700		0737-01	SNG 700/2	100-70-03	GCD700
<b>Heat Resistant Steel</b>								
MN 35-10	0.8135				0815	B 340/12	32510	BMC340
	0.8145				0852	P 440/7	40010	PMC440
MP 50-5	0.8155				0854	P 510/4	50005	PMC540
MP 60-3	0.8165				0858	P 570/3	70003	
<b>Aluminum Alloy</b>								
	3.2982				4247		A413.0	
	3.2162				4250	LM24	A380.1	
	3.2583				4260	LM20	A413.1	
	3.2581				4261	LM6	A413.2	
	3.2383				4253	LM9	A360.2	



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DNMG MC	T50
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**NOTES:**

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