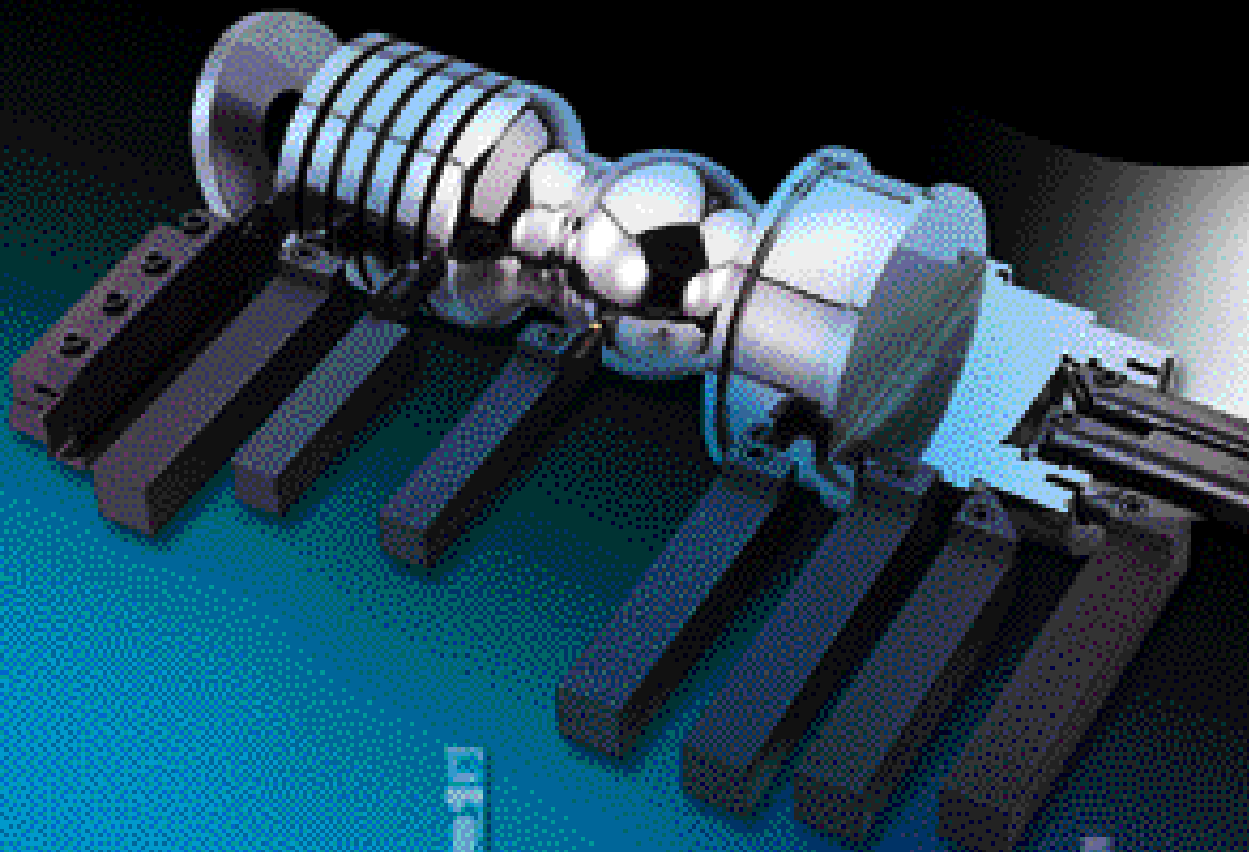


Member IMC Group
Ingersoll
Cutting Tools

Tclamp

Ultra & Ultra Plus

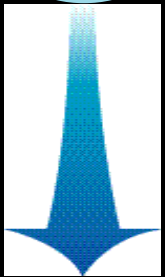


TaeguTec

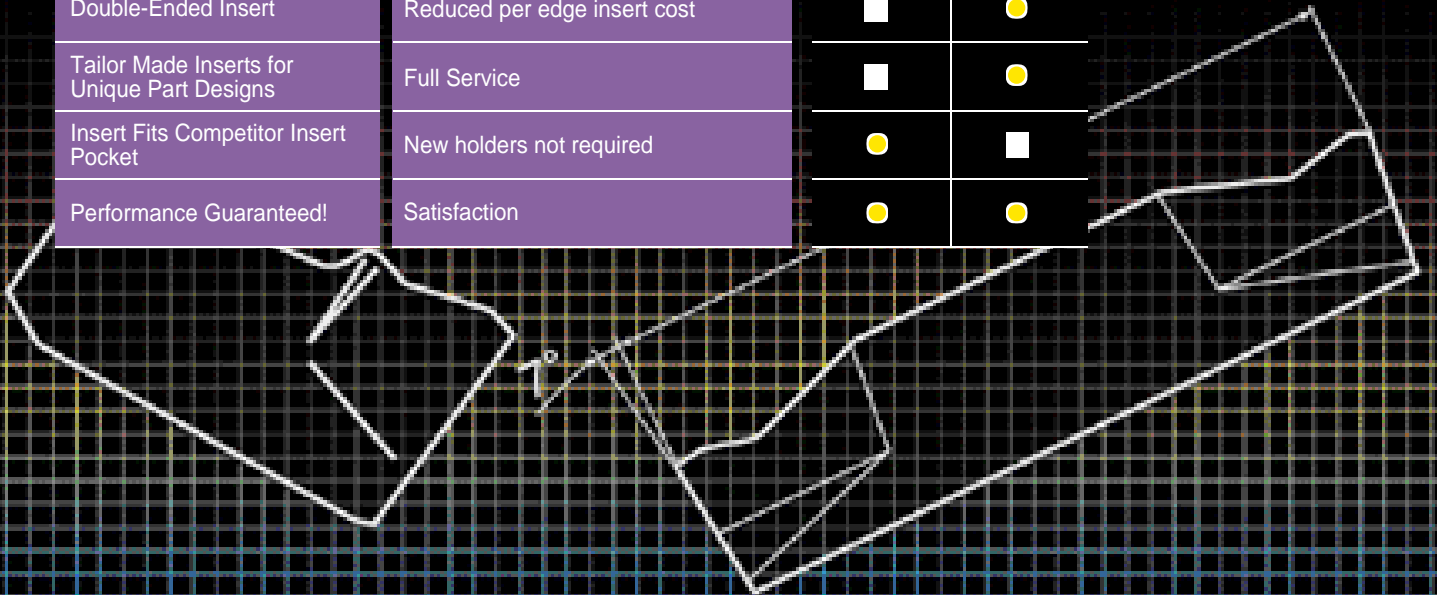
T-Clamp Ultra & T-Clamp Ultra Plus

FEATURE	ADVANTAGE	T-Clamp ULTRA	T-Clamp ULTRA PLUS
All Inserts fits in Holders, Blades & Bars	Reduce Costs	●	●
Turning, Profiling, Grooving & Cut Off	A Complete System	●	●
ID Turning & Grooving	A Complete System	●	●
Face Turning & Grooving	A Complete System	■	●
Undercutting	A Complete System	■	●
Excellent Chip Control	Safe, Efficient Chip Disposal. Chip Doesn't mark part	●	●
Precision Insert Tolerances	Maintains closer part tolerances & Reduces scrap	●	●
Standard Inserts for Aluminum	Reduces Chip Welding, Cutting edge build-up	■	●
Pressed to size ceramic insert for Turning & Grooving	High Speed Machining	■	●
Less Tools Required versus ISO Insert Process	Reduces Cycle Time up to 50%	●	●
Multiple Carbide Grades	Best Tool Life & Insert Edge Strength	●	●
Unique Cam Operated Insert Change on Cut-Off Blade	Fast Insert change without machine offset & fear of insert moving	■	●
Superior Insert Clamping Stability	Insert will not move in holder especially during side cutting and profiling	■	●
Comprehensive User and Application Guide	Eliminates confusion choosing correct Speeds&Feeds for Material&Application	●	●
Available Inch and Metric	Can use same insert World wide	■	●
Single Ended Insert for Deep Grooving Applications	Depth of Part-off or Groove not limited to insert length	●	●
Single Ended Insert	Expands Deep Grooving and Cut-Off Capacity	●	●
Double-Ended Insert	Reduced per edge insert cost	■	●
Tailor Made Inserts for Unique Part Designs	Full Service	■	●
Insert Fits Competitor Insert Pocket	New holders not required	●	■
Performance Guaranteed!	Satisfaction	●	●

Check and compare your present sources- Seco, Sandvik, Valenite, Iscar



Only T-Clamp Ultra & T-Clamp Ultra Plus provides All the Advantages for Maximum Productivity



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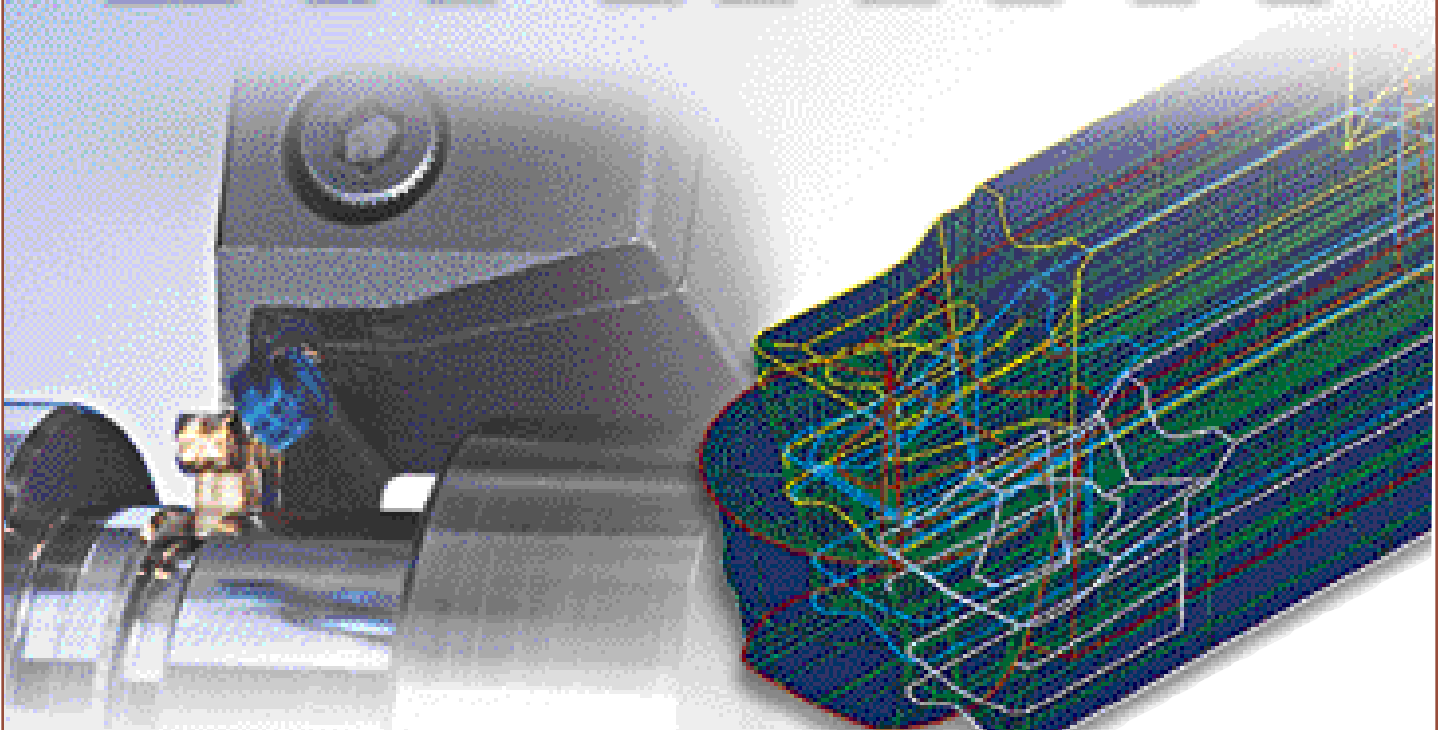
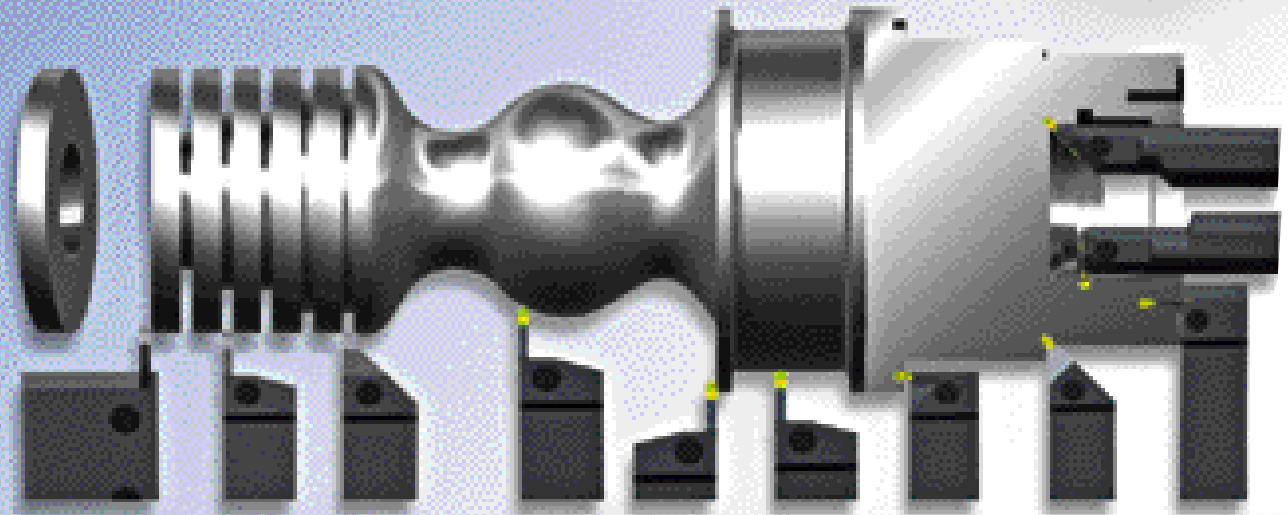
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B

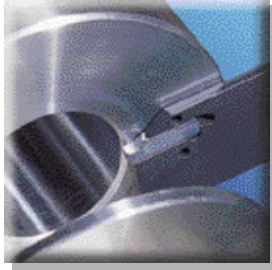
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T-Clamp Ultra & Ultra Plus System

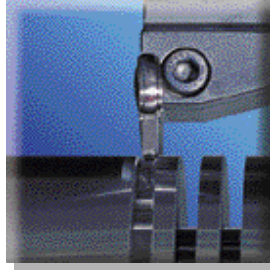
*Reduced cost by Advanced Solutions
in Parting-off & Grooving Application*



PARTING



GROOVING



TURNING & GROOVING



PROFILING



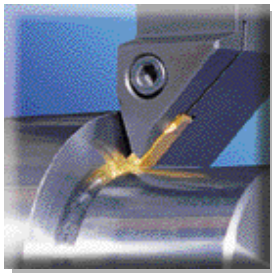
FACE GROOVING



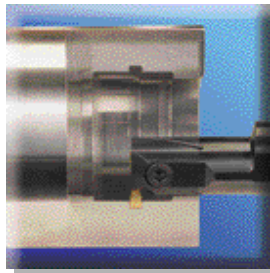
FACE TURNING & GROOVING



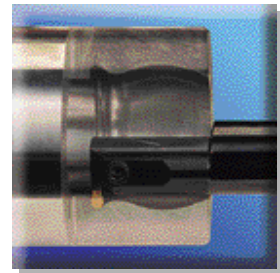
UNDERCUTTING



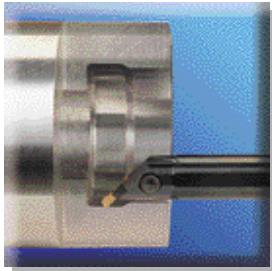
INTERNAL GROOVING



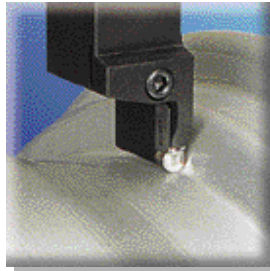
INTERNAL PROFILING



INTERNAL TURNING & UNDERCUTTING



ALUMINIUM WHEEL MACHINING



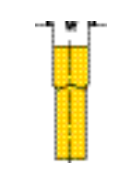
SLOTTING



T-Clamp Ultra INSERT DESIGNATION SYSTEM

A

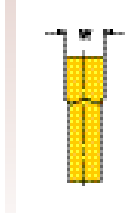
TI M C 1.6 6 R TT7200

<p>TaeguTec Insert</p>	<p>M:Tolerance W= ±.004</p> <p>P:Tolerance W= ±.0008</p>	<p>CHIPBREAKER TYPE</p> <p>C:For general purpose cut off and grooving</p> <p>J:For precision cut off and grooving with short chips, and positive cutting edge all over</p> <p>V:For precision grooving and turning/profiling with various widths, radii, and shapes.</p>	<p>WIDTH</p> <p>Insert "W" width .xxx = inch x.xx = Metric</p> 	<p>LEAD ANGLE</p> <p>6=6° Void=0°</p>	<p>CUTTING DIRECTION</p> <p>R:Right Hand L:Left Hand N:Neutral</p>	<p>CARBIDE GRADE</p> <p>CVD Coated :TT7200 :TT5100</p> <p>Uncoated :K10 :P40A</p> <p>PVD Coated :TT6030 :TT7220</p>
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CUT OFF & GROOVING

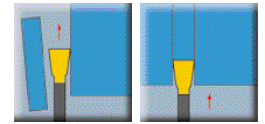
TURNING & GROOVING

TI P V -.090 E .007 TT5100

<p>TaeguTec Insert</p>	<p>M:Tolerance W= ±.004</p> <p>P:Tolerance W= ±.0008</p>	<p>CHIPBREAKER TYPE</p> <p>C:For general purpose cut off and grooving</p> <p>J:For precision cut off and grooving with short chips, and positive cutting edge all over</p> <p>V:For precision grooving and turning/profiling with various widths, radii, and shapes.</p>	<p>WIDTH</p> <p>Insert "W" width .xxx=inch x.xx=Metric</p> 	<p>CUTTING EDGE</p> <p>Void-UP Sharp (or minimum coating hone) E- Honed</p>	<p>CUTTING END SHAPE</p> <p>Corner Radius or 1/2 W Full Radius</p> <p>.xxx=inch x.xx=Metric</p>	<p>CARBIDE GRADE</p> <p>CVD Coated :TT7200 :TT5100</p> <p>Uncoated :K10 :P40A</p> <p>PVD Coated :TT6030 :TT7220</p>
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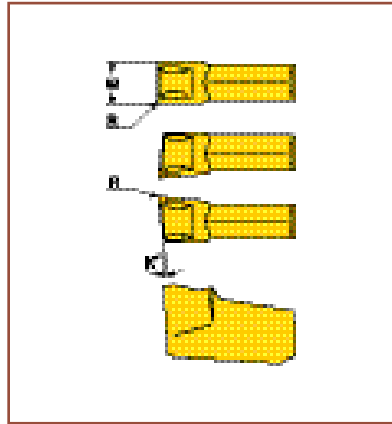
T-Clamp Ultra INSERTS

Cut Off and Grooving



TIMC

with C-type Chipbreakers



Neutral

Left-hand

Right-hand

A

Designation		Insert Seat Size	W±.004 (inch) W±0.1 (mm)	K (degrees)	R (inch) (mm)	Grades							
						ISO	K		P			PM	
New	Old					New	K10	TT6030	P40A	TT7220	TT7200	TT5100	TT8020
						Old	VC121	VC902	VC135	VC905	SV221	SV231	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		○	○	○	○	○	○	○

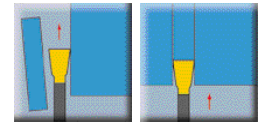
Ordering example : 100 pcs. TIMC 2 TT7200

○:Stock

:Tailor Made

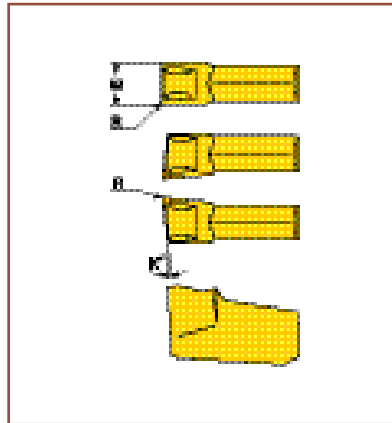
T-Clamp Ultra INSERTS

Cut Off and Grooving



A

TIMC with C-type Chipbreakers



Neutral

Left-hand

Right-hand

Designation		Insert Seat Size	W±.004 (inch) W±0.1 (mm)	K (degrees)	R (inch) (mm)	Grades							
						ISO	K		P			PM	
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	VIMC4.86R	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		○	○			○	○	

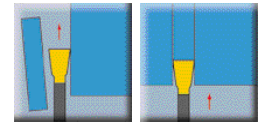
Ordering example : 100 pcs. TIMC 5 TT7200

○:Stock

:Tailor Made

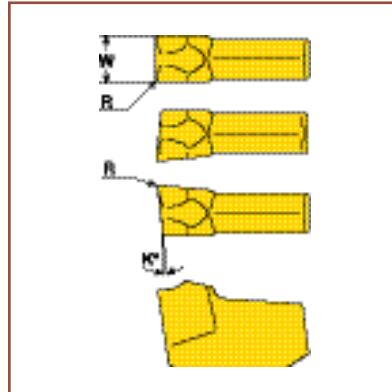
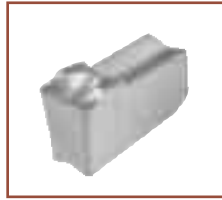
T-Clamp Ultra INSERTS

Cut Off and Grooving



TIMJ

with J-type Chipbreakers



Neutral

Left-hand

Right-hand

A

Designation		Insert Seat Size	W±.004 (inch) W±0.1 (mm)	K (degrees)	R (inch) (mm)	Grades							
						ISO	K		P			PM	
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		○	○				○	

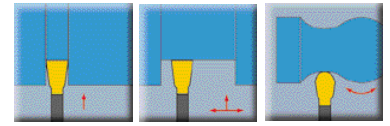
Ordering example : 100 pcs. TIMJ 4 TT5100

○:Stock

:Tailor Made

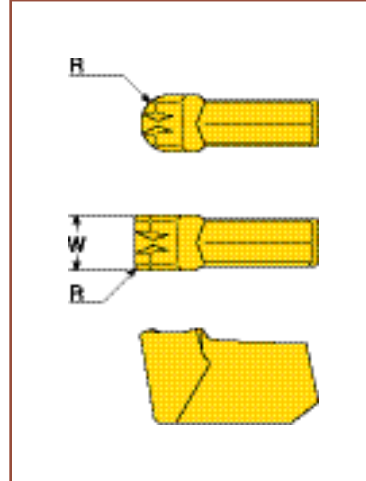
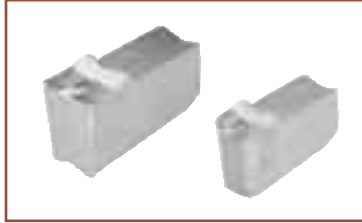
T-Clamp Ultra INSERTS

Precision Turning and Grooving



TIPV

with V-type Chipbreakers



R=1/2 W
for full radius inserts

Designation		Insert Seat Size	W±.0008 (inch) W±0.02 (mm)	R (inch) (mm)	Grades						
					ISO	K		P			PM
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		○	○				○

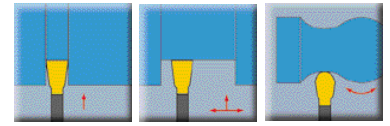
Ordering example : 100 pcs. TIPV .210E .024 TT5100

○:Stock

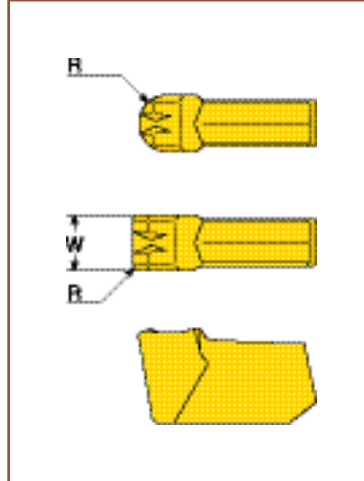
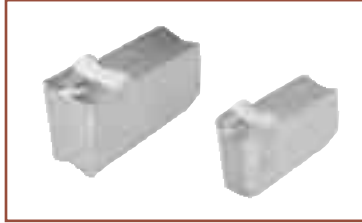
:Tailor Made

T-Clamp Ultra INSERTS

Precision Turning and Grooving



TIPV with V-type Chipbreakers



R=1/2 W
for full radius inserts

A

Designation		Insert Seat Size	W±.0008 (inch) W±0.02 (mm)	R (inch) (mm)	Grades						
					ISO	K		P			PM
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		○	○				○

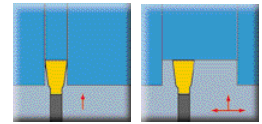
Ordering example : 100 pcs. TIPV 3.00E 0.40 TT5100

○:Stock

:Tailor Made

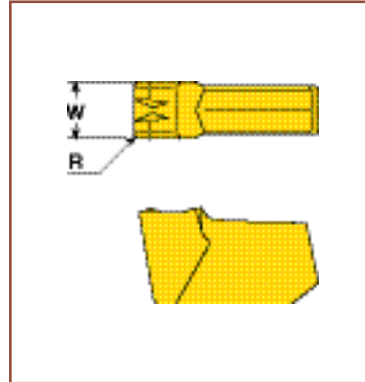
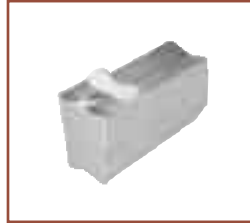
T-Clamp Ultra INSERTS

Precision Turning and Grooving



TIPV

with V-type Chipbreakers



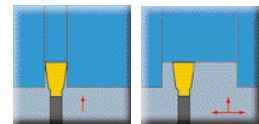
Designation		Insert Seat Size	W \pm .0008 (inch) W \pm 0.02 (mm)	R (inch) R (mm)	Grades						
					ISO	K		P		PM	
New	Old				New	K10	TT6030	P40A	TT7220	TT7200	TT5100
					Old	VC121	VC902	VC135	VC905	SV221	SV231
TIPV .078 .007	VIPV .078 .007	2	.078 1.98	.007 0.18		○	○				○
TIPV .088 .007	VIPV .088 .007	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 :Tailor Made

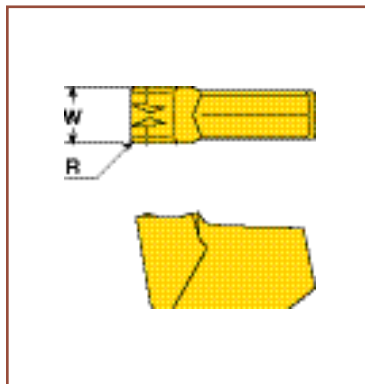
T-Clamp Ultra INSERTS

Precision Turning and Grooving



TIPV

with V-type Chipbreakers



A

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

Ordering example : 100 pcs. TIPV 2.15 0.15 TT5100

○:Stock

:Tailor Made

T-Clamp Ultra BLADE & TOOLHOLDER DESIGNATION SYSTEM

A

HOLDER / BLOCK TYPE

TH - TaeguTec holder (bar)

TTB - TaeguTec tool block

TTBN - TaeguTec tool block
Screw clamp blade locking and screw lock retention turrets only

TTBU - TaeguTec tool block
Screw and clamp wedge blade locking and universal wedge lock or screw lock retention turrets

METHOD OF RETAINING INSERT

0-Wedge clamping

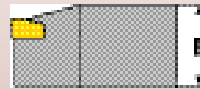


1-Screw clamping



SHANK SIZE

- Inch in 1/16's
- Metric in mm



HAND OF CUT

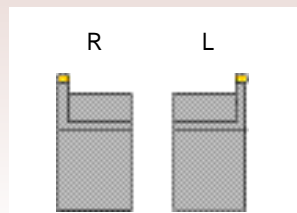
C-Coolant Bar

HAND OF HOLDER

R=Right Hand

L=Left Hand

Blank=Double End Blade



TOOL STYLE

1. Blade (Double - Ended)



2. Integral Tool Holder



3. Blade (Single - Ended)



6. Boring Bar I.D.(Bore)



9. Manchester Replacement Blade



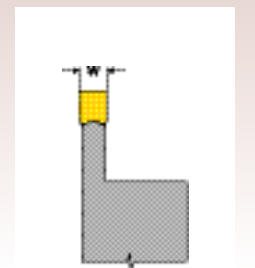
APPLICATION

1=External O.D.

9=Internal I.D.(Bore)

NOMINAL WIDTH OF CUT

In millimeters or inches



TH □

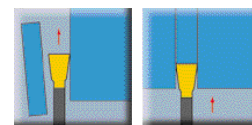
1 0 1

26

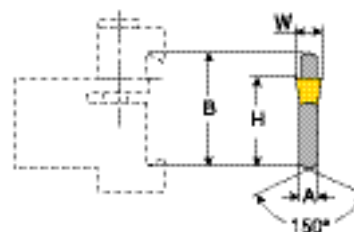
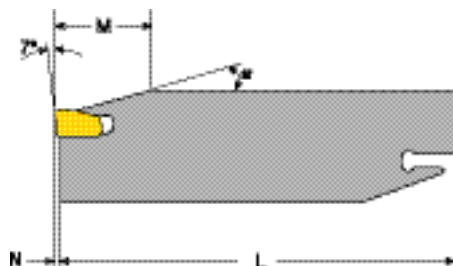
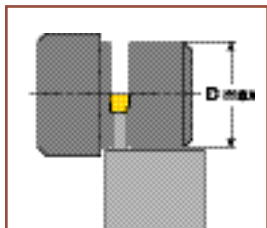
□ 4

T-Clamp Ultra BLADES

Cut Off and Grooving



TH101



Use Insert

Style	TIMC : _____	page
	TIMJ : _____	page
	TIPV : _____	page

Designation		Insert Seat Size	W Range (inch / mm)	B (inch / mm)	L (inch / mm)	D _{max} (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 [Ⓢ] 1.2 [Ⓢ]	.034 0.9	21°	.446 11.3	ESG 05
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	ESG 05
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 [Ⓢ] 1.2 [Ⓢ]	.034 0.9	21°	.586 14.9	ESG 05
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	ESG 05
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	ESG1
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	ESG1
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	ESG1
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 [Ⓢ] 1.2 [Ⓢ]	.034 0.9	21°	.853 21.7	ESG 05
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 [Ⓢ] 1.6 [Ⓢ]	.034 0.9	20°	.827 21.0	ESG 05
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	ESG1
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	ESG1
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	ESG1
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	ESG1

Ⓢ A = .047" (1.2mm) at DOC area only. Overall thickness is .063" (1.6mm).

Ⓢ 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

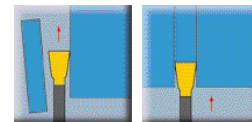
Blades supplied with insert extractor. Inserts must be ordered separately.

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

A

T-Clamp Ultra TOOLHOLDERS

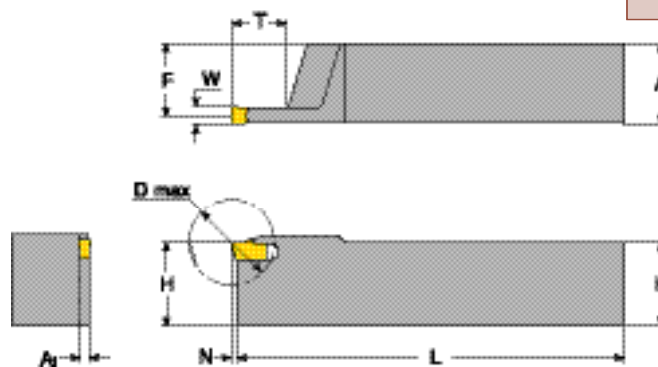
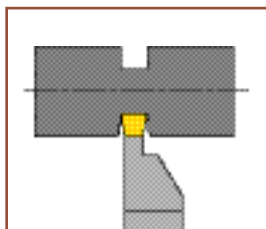
Cut Off and Grooving



THR/L 201

Use Insert

Style	TIMC : _____	page
	TIMJ : _____	page
	TIPV : _____	page



Designation		Insert Seat Size	W Range (inch)	F (inch)	L (inch)	D _{max} (inch)	H (inch)	A (inch)	T (inch)	N (inch)	A ₁ (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	ESG 05
THR/L 201 08 2	VHR/L 201 08 2	2	.073 - .098	.462	4.3	1.25	.500	.500	.41	.034	.066	ESG 05
THR/L 201 08 3	VHR/L 201 08 3	4	.106 - .154	.458	4.3	1.25	.500	.500	.38	.041	.094	ESG 1
THR/L 201 10 2	VHR/L 201 10 2	2	.073 - .098	.593	4.5	1.25	.625	.625	.41	.034	.066	ESG 05
THR/L 201 10 3	VHR/L 201 10 3	4	.106 - .154	.590	4.5	1.37	.625	.625	.37	.041	.094	ESG 1
THR/L 201 10 4	VHR/L 201 10 4	4	.146 - .185	.562	4.5	1.50	.625	.625	.43	.041	.126	ESG 1
THR/L 201 12 2	VHR/L 201 12 2	2	.073 - .098	.717	4.5	1.375	.750	.750	.38	.034	.066	ESG 05
THR/L 201 12 3	VHR/L 201 12 3	4	.106 - .154	.700	4.5	1.57	.750	.750	.64	.041	.094	ESG 1
THR/L 201 12 4	VHR/L 201 12 4	4	.146 - .185	.686	4.5	2.00	.750	.750	.75	.041	.126	ESG 1
THR/L 201 12 5	VHR/L 201 12 5	4	.177 - .217	.671	4.5	2.00	.750	.750	.76	.041	.161	ESG 1
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	ESG 1
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	ESG 1
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	ESG 1
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	ESG 1
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	ESG 1
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	ESG 1
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	ESG 1
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	ESG 1

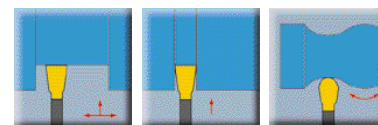
Ordering example : 2pcs. THR 201 12 3

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

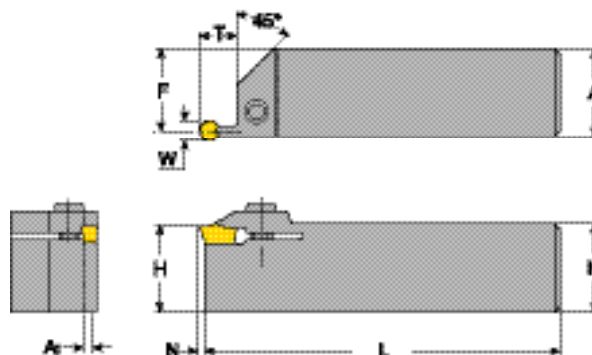
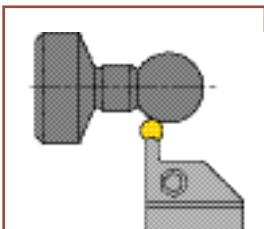
Note : These toolholders should not be used for turning operations. Please select THR/L 211 style toolholders for turning.

T-Clamp Ultra TOOLHOLDERS

Turning and Grooving



THR/L 211



Use Insert

Style	TIMC :	page
	TIMJ :	page
	TIPV :	page

A

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 [®]
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

[®] 5/32"HEX wrench and 4mm DIN 911 wrench are interchangeable.

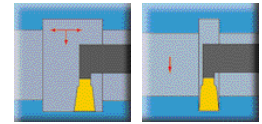
Ordering example : 2pcs. THR 211 16 3

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

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

T-Clamp Ultra TOOLHOLDERS

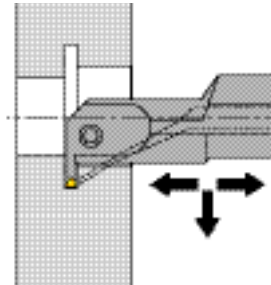
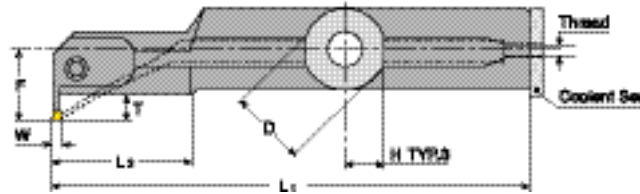
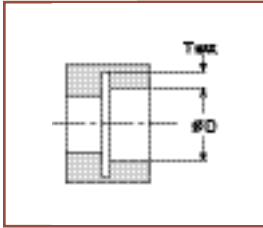
ID Turning and Grooving



THR/L 619

Use Insert

Style	TIMC* :	page
	TIMJ* :	page
	TIPV :	page



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	.256 6.5	1.69 43	1.000 25	.803 20	.459 11.5	.012 0.3	8 200	2.00 51	PT-769T	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 8	2.05 52	1.000 25	.827 20.8	.459 11.5	.020 0.5	8 200	2.00 51	PT-769T	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 8	2.05 52	1.000 25	.827 20.8	.459 11.5	.020 0.5	8 200	2.00 51	PT-769T	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	.295 7.5	1.69 43	1.250 32	.976 25	.570 14.5	.012 0.3	10 250	2.50 63.5	PT-770T	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	.394 10	2.05 52	1.250 32	1.043 26.6	.570 14.5	.020 0.5	10 250	2.25 57	PT-770T	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	.394 10	2.05 52	1.250 32	1.043 26.6	.570 14.5	.020 0.5	10 250	2.00 51	PT-770T	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	.394 10	2.05 52	1.250 32	1.043 26.6	.570 14.5	.020 0.5	10 250	1.75 45	PT-770T	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	.335 8.5	1.69 43	1.500 40	1.138 30	.670 18.0	.012 0.3	12 300	3.00 76	PT-770T	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	.472 12	2.05 52	1.500 40	1.240 33	.670 18.0	.020 0.5	12 300	2.50 63.5	PT-770T	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	.472 12	2.05 52	1.500 40	1.240 33	.670 18.0	.020 0.5	12 300	2.00 51	PT-770T	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	.472 12	2.05 52	1.500 40	1.240 33	.670 18.0	.020 0.5	12 300	1.75 45	PT-770T	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	.630 16	2.13 54	1.500 40	1.398 36.5	.670 18.0	.020 0.5	12 300	2.00 51	PT-770T	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

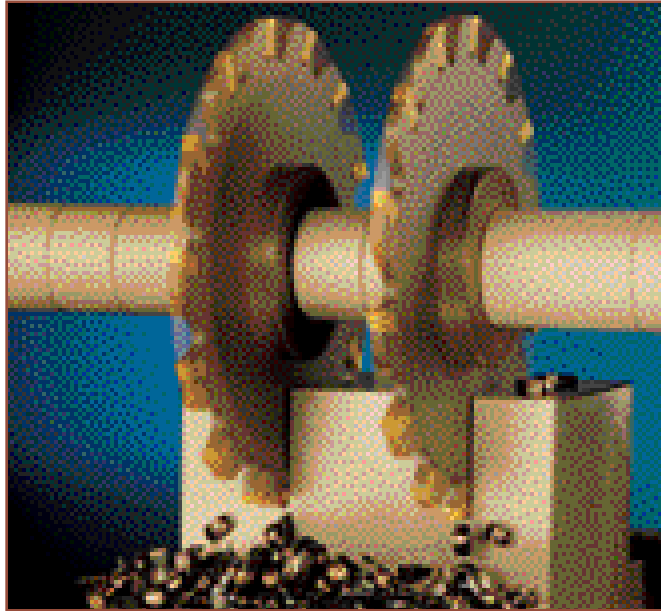
When using the seal, bar can be shortened by 4inches(100mm) max.

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

T-Clamp Ultra

SLOTING CUTTERS

NARROW WIDTH SLOTING 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-ClampUltra 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-ClampUltra 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-ClampUltra** line, thereby reducing insert inventories.

Features/Benefits of T-ClampUltra 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

TaeguTec SLOTTING CUTTER

CUTTER DIAMETER (INCH)

xx Inch
or
xx/xxx Metric

INSERT/SLOT CUTTING WIDTH

xxx Inch
x/xx Metric

MOUNTING HOLE SIZE

x.xxx Inch
xx Metric

DRIVE FLANGE

A-Integral Style "B"
Arbor Drive Flange

K-Drive Flange Set
Required (Must be
ordered separately)

A

T-Clamp Ultra

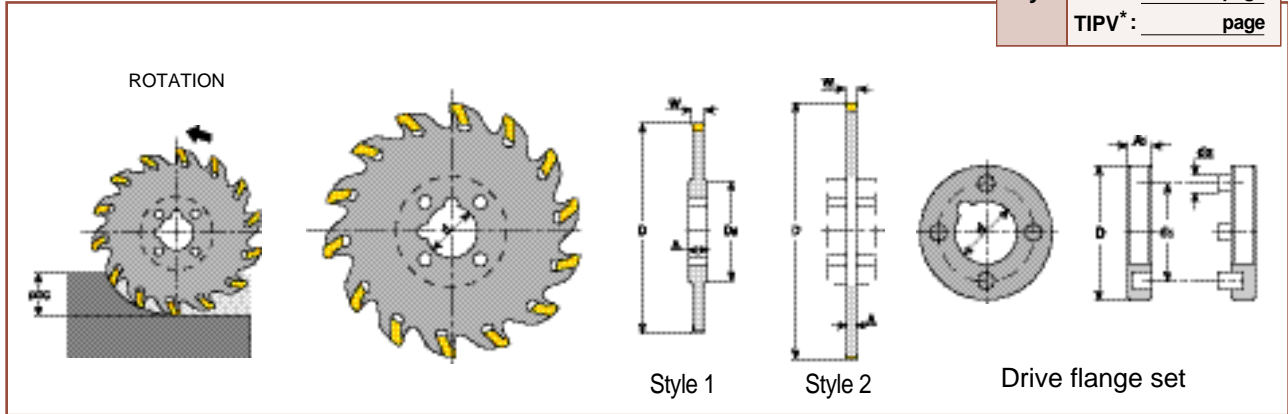
SLOTING CUTTERS

A

TSC

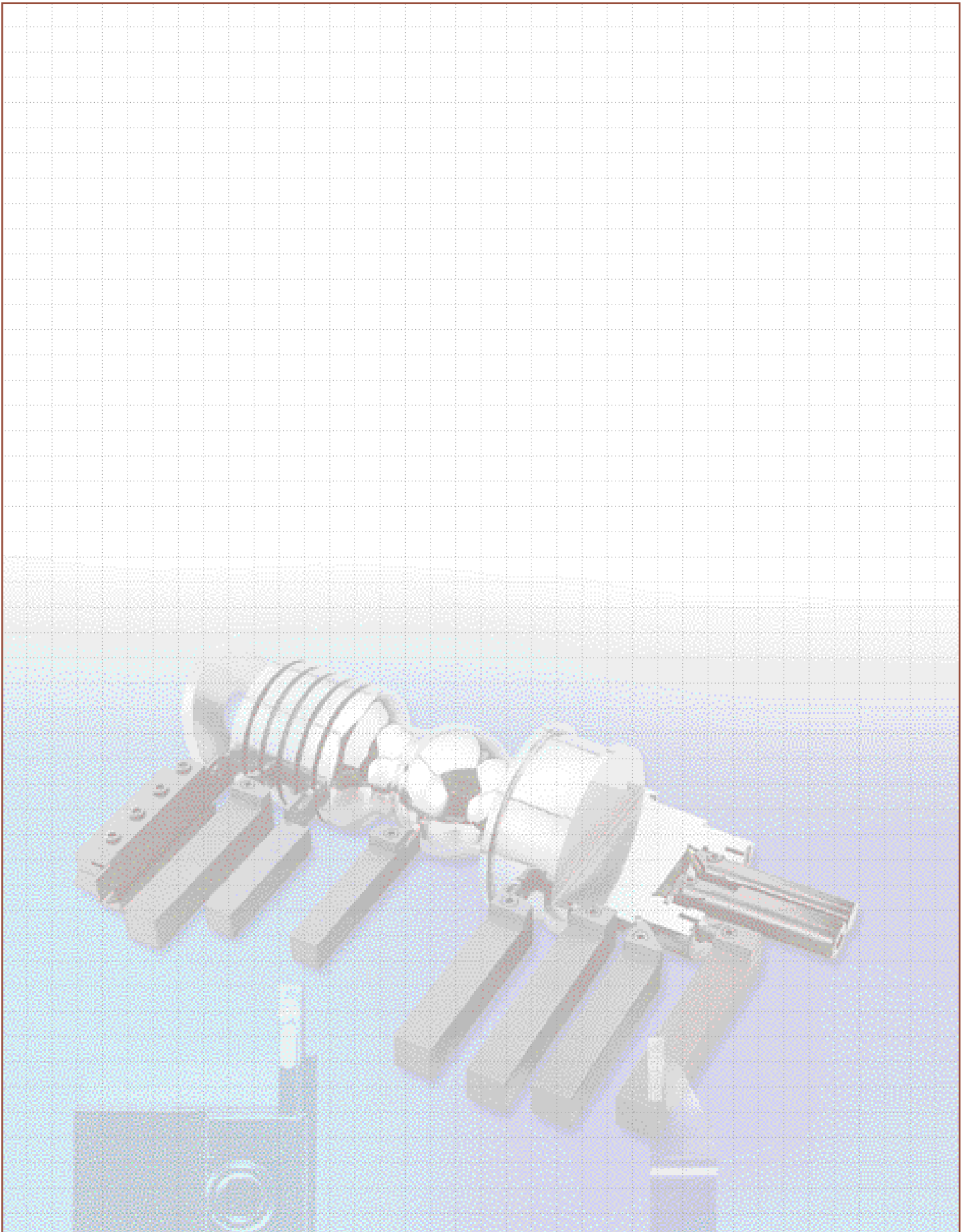
Use Insert

Style	TIMC :	page
	TIMJ :	page
	TIPV* :	page



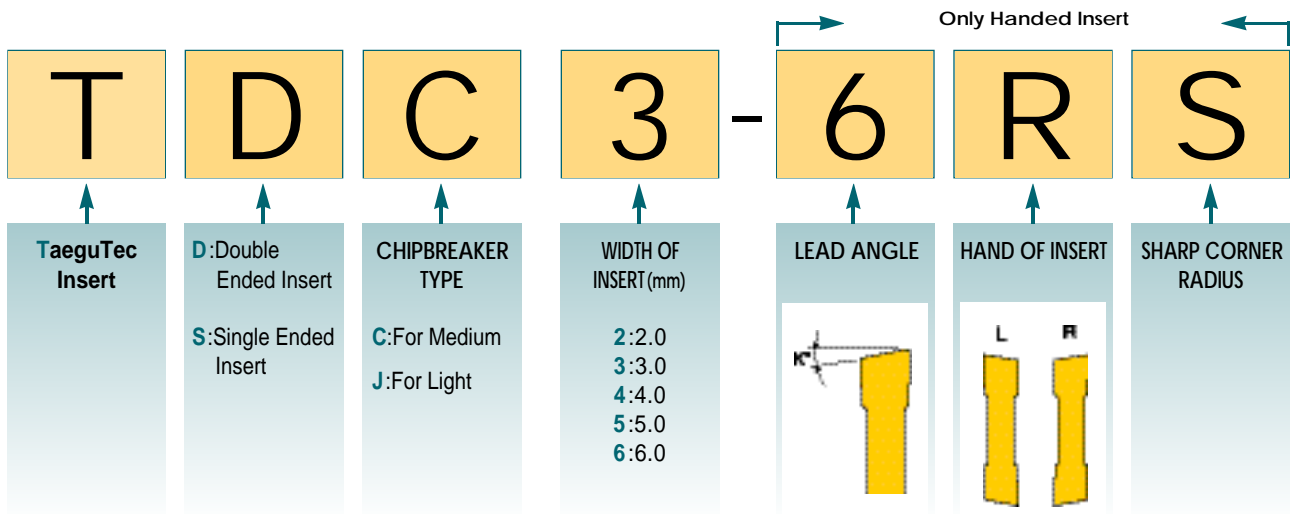
Designation	Cutter Dimensions									Drive Flange Dimensions						
	Dia. D (inch)	W Range (inch)	Insert Seat Size (inch)	No. of Teeth	d (inch)	A (inch)	Max. DOC. (inch)	Max. RPM (inch)	Dia. D ₂ (inch)	Drive Flange Set	D	d	d ₁	d ₂	A ₁	
Style 1	TSC 3.063 - 1.000A	3.00	0.063	1	8	1.000	.094 ⁽¹⁾ (.049)	0.71	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.



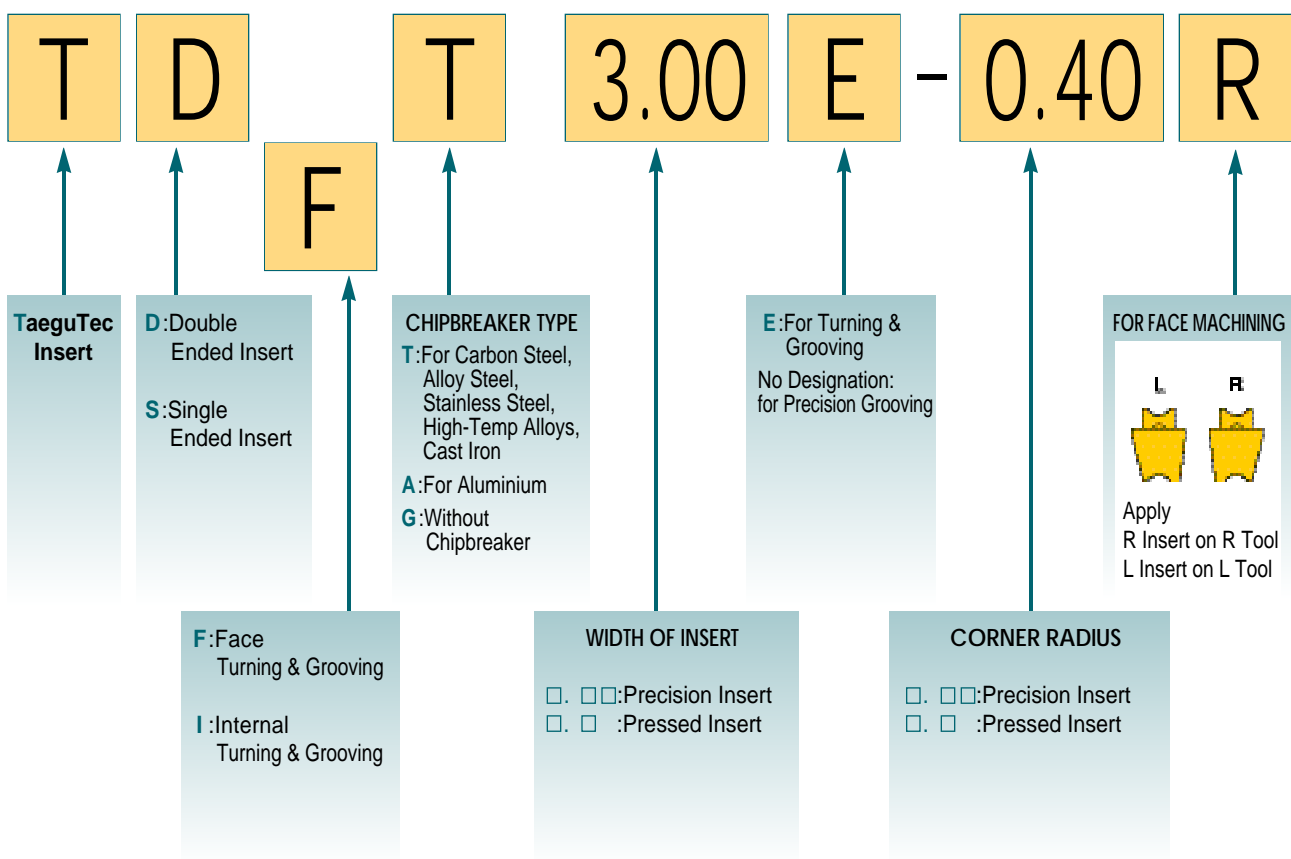
T-Clamp Ultra Plus INSERT DESIGNATION SYSTEM

B



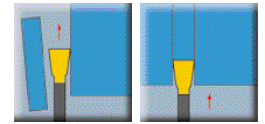
CUT OFF & GROOVING

TURNING, GROOVING & FACE MACHINING



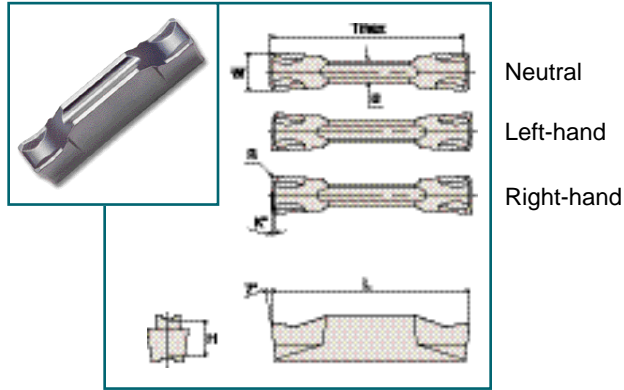
T-Clamp Ultra Plus INSERTS

Cut Off and Grooving

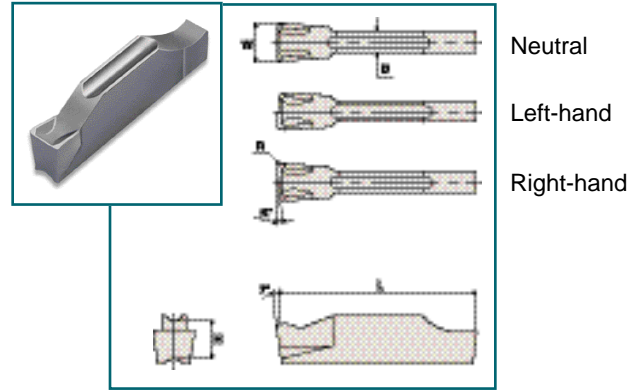


TDC / TSC with C-type Chipbreakers

TDC-Type



TSC-Type



Designation	W \pm .002 (inch) W \pm 0.05 (mm)	R (inch) (mm)	L (inch) (mm)	K (degrees)	H (inch) (mm)	Tmax		Grades				
						TDC	TSC	ISO	K	P	PM	PMK
									K10	TT7220	TT8020	TT9030
TDC/TSC 2	.079 2.0	.008 0.20	.79 20	0°	.185 4.7	.748 19			○	○	○	○
TDC/TSC 2 - 6L	.079 2.0	.008 0.20	.79 20	6°	.185 4.7	.748 19			○	○	○	
TDC/TSC 2 - 6R	.079 2.0	.008 0.20	.79 20	6°	.185 4.7	.748 19			○	○	○	
TDC/TSC 2 - 8L	.079 2.0	.008 0.20	.79 20	8°	.185 4.7	.748 19				○	○	
TDC/TSC 2 - 8R	.079 2.0	.008 0.20	.79 20	8°	.185 4.7	.748 19				○	○	
TDC/TSC 2 - 15L	.079 2.0	.008 0.20	.79 20	15°	.185 4.7	.748 19				○	○	
TDC/TSC 2 - 15R	.079 2.0	.008 0.20	.79 20	15°	.185 4.7	.748 19				○	○	
TDC/TSC 2 - 15LS	.079 2.0	.0008 0.02	.77 19.6	15°	.185 4.7	.748 19				○	○	
TDC/TSC 2 - 15RS	.079 2.0	.0008 0.02	.77 19.6	15°	.185 4.7	.748 19				○	○	

Ordering example : 100 pcs. TDC 2 TT7220

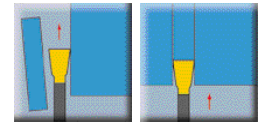
○:Stock

:Tailor Made

B

T-Clamp Ultra Plus INSERTS

Cut Off and Grooving

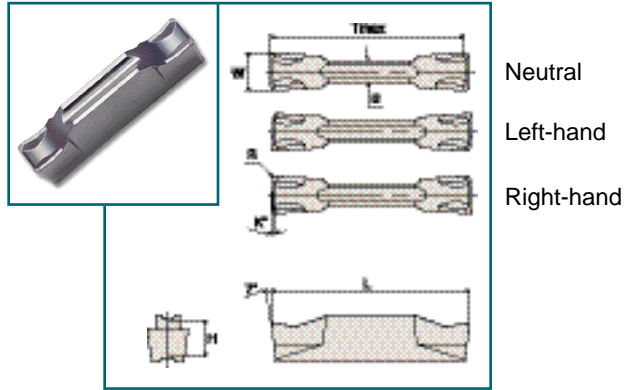


TDC / TSC with C-type Chipbreakers

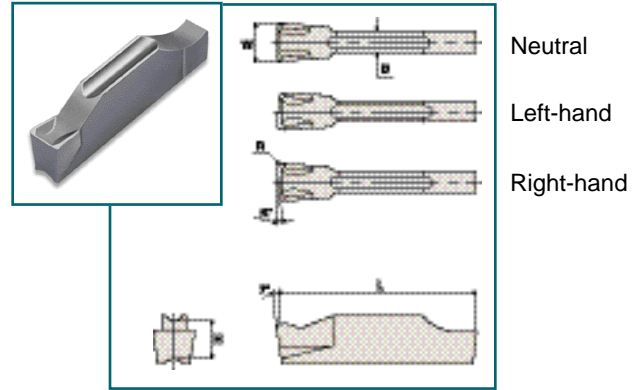
Max. Dia(mm), cut off & grooving

TSC 3-15R/L :Ø95.3
 TDC 3-15RS/LS:Ø28.4
 TSC 3-15RS/LS:Ø33.2
 The others :unlimited

TDC-Type



TSC-Type



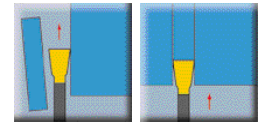
Designation	W±.002 (inch) W±0.05 (mm)	R (inch) (mm)	L (inch) (mm)	K (degrees)	H (inch) (mm)	Tmax		Grades				
						TDC	TSC	ISO	K	P	PM	PMK
									K10	TT7220	TT8020	TT9030
TDC/TSC 3	.118 3.0	.008 0.20	.79 20	0°	.185 4.7	.748 19		○	○	○	○	
TDC/TSC 3 - 6L	.118 3.0	.008 0.20	.79 20	6°	.185 4.7	.748 19		○	○	○		
TDC/TSC 3 - 6R	.118 3.0	.008 0.20	.79 20	6°	.185 4.7	.748 19		○	○	○		
TDC/TSC 3 - 15L	.118 3.0	.008 0.20	.79 20	15°	.185 4.7	.748 19			○	○		
TDC/TSC 3 - 15R	.118 3.0	.008 0.20	.79 20	15°	.185 4.7	.748 19			○	○		
TDC/TSC 3 - 15LS	.118 3.0	.0008 0.02	.77 19.6	15°	.185 4.7	.748 19			○	○		
TDC/TSC 3 - 15RS	.118 3.0	.0008 0.02	.77 19.6	15°	.185 4.7	.748 19			○	○		

Ordering example : 100 pcs. TDC 3 TT7220

○:Stock :Tailor Made

T-Clamp Ultra Plus INSERTS

Cut Off and Grooving

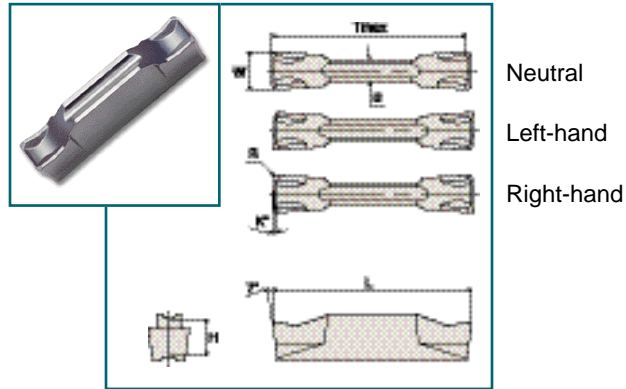


TDC / TSC with C-type Chipbreakers

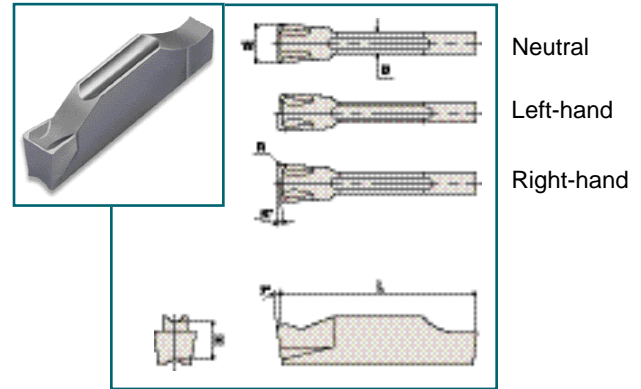
Max. Dia(mm), cut off & grooving

TDC 4-15R/L	:Ø28.9
TSC 4-15R/L	:Ø34.7
The others	:unlimited

TDC-Type



TSC-Type



Designation	W±.002 (inch) W± 0.05 (mm)	R (inch) (mm)	L (inch) (mm)	K (degrees)	H (inch) (mm)	Tmax		Grades				
						TDC	TSC	ISO	K	P	PM	PMK
									K10	TT7220	TT8020	TT9030
TDC/TSC 4	.157 4.0	.012 0.30	.79 20	0°	.185 4.7	.748 19		○	○	○	○	
TDC/TSC 4-4L	.157 4.0	.012 0.30	.79 20	4°	.185 4.7	.748 19		○	○	○		
TDC/TSC 4-4R	.157 4.0	.012 0.30	.79 20	4°	.185 4.7	.748 19		○	○	○		
TDC/TSC 4-15L	.157 4.0	.012 0.30	.79 20	15°	.185 4.7	.748 19			○	○		
TDC/TSC 4-15R	.157 4.0	.012 0.30	.79 20	15°	.185 4.7	.748 19			○	○		
TDC/TSC 5	.197 5.0	.012 0.30	.98 25	0°	.205 5.2	.945 24		○	○	○		
TDC/TSC 5-4L	.197 5.0	.012 0.30	.98 25	4°	.205 5.2	.945 24		○	○	○		
TDC/TSC 5-4R	.197 5.0	.012 0.30	.98 25	4°	.205 5.2	.945 24		○	○	○		
TDC/TSC 6	.236 6.0	.012 0.30	.98 25	0°	.205 5.2	.945 24		○	○	○		

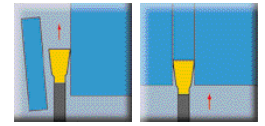
Ordering example : 100 pcs. TDC 5 TT7220

○:Stock :Tailor Made

B

T-Clamp Ultra Plus INSERTS

Cut Off and Grooving

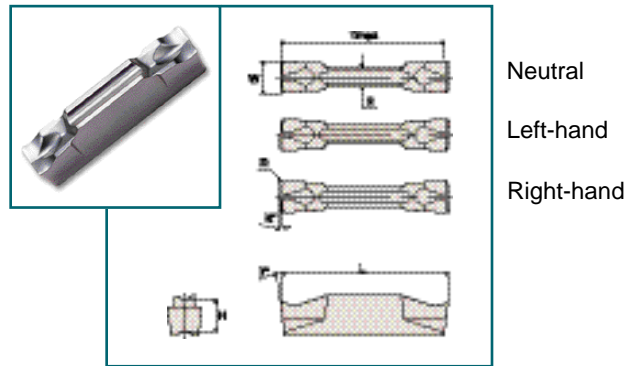


TDJ / TSJ with J-type Chipbreakers

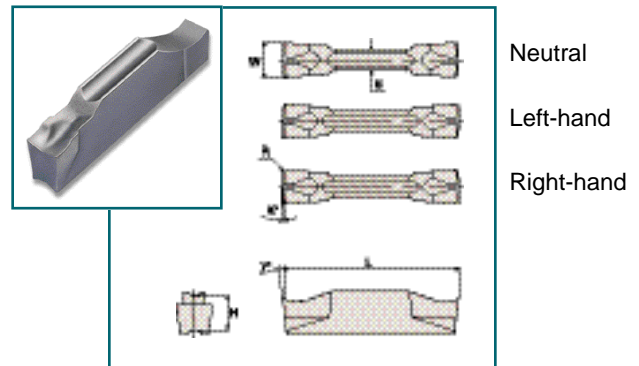
Max. Dia(mm), cut off & grooving

TDJ 2-15RS/LS:Ø27.2
 TSJ 3-15R/L :Ø102.4
 TSJ 3-15RS/LS:Ø33.4
 The others :unlimited

TDJ-Type



TSJ-Type



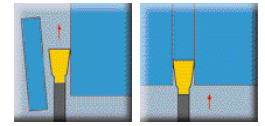
Designation	W±.002 (inch) W± 0.05 (mm)	R (inch) (mm)	L (inch) (mm)	K (degrees)	H (inch) (mm)	Tmax		Grades				
						TDC	TSC	ISO	K	P	PM	PMK
									K10	TT7220	TT8020	TT9030
TDJ/TSJ 2	.079 2.0	.008 0.20	.79 20	0°	.185 4.7	.748 19		○	○	○	○	
TDJ/TSJ 2-6L	.079 2.0	.008 0.20	.79 20	6°	.185 4.7	.748 19		○	○	○		
TDJ/TSJ 2-6R	.079 2.0	.008 0.20	.79 20	6°	.185 4.7	.748 19		○	○	○		
TDJ/TSJ 2-8L	.079 2.0	.008 0.20	.79 20	8°	.185 4.7	.748 19			○	○		
TDJ/TSJ 2-8R	.079 2.0	.008 0.20	.79 20	8°	.185 4.7	.748 19			○	○		
TDJ/TSJ 2-15L	.079 2.0	.008 0.20	.79 20	15°	.185 4.7	.748 19			○	○		
TDJ/TSJ 2-15R	.079 2.0	.008 0.20	.79 20	15°	.185 4.7	.748 19			○	○		
TDJ/TSJ 2-15LS	.079 2.0	.0008 0.02	.77 19.6	15°	.185 4.7	.748 19			○	○		
TDJ/TSJ 2-15RS	.079 2.0	.0008 0.02	.77 19.6	15°	.185 4.7	.748 19			○	○		
TDJ/TSJ 3	.118 3.0	.008 0.20	.79 20	0°	.185 4.7	.748 19		○	○	○	○	
TDJ/TSJ 3-6L	.118 3.0	.008 0.20	.79 20	6°	.185 4.7	.748 19		○	○	○		
TDJ/TSJ 3-6R	.118 3.0	.008 0.20	.79 20	6°	.185 4.7	.748 19		○	○	○		
TDJ/TSJ 3-15L	.118 3.0	.008 0.20	.79 20	15°	.185 4.7	.748 19			○	○		
TDJ/TSJ 3-15R	.118 3.0	.008 0.20	.79 20	15°	.185 4.7	.748 19			○	○		
TDJ/TSJ 3-15LS	.118 3.0	.008 0.20	.77 19.6	15°	.185 4.7	.748 19		○	○	○	○	
TDJ/TSJ 3-15RS	.079 3.0	.008 0.20	.77 19.6	15°	.185 4.7	.748 19		○	○	○		

Ordering example : 100 pcs. TDJ 2 TT7220

○:Stock :Tailor Made

T-Clamp Ultra Plus INSERTS

Cut Off and Grooving

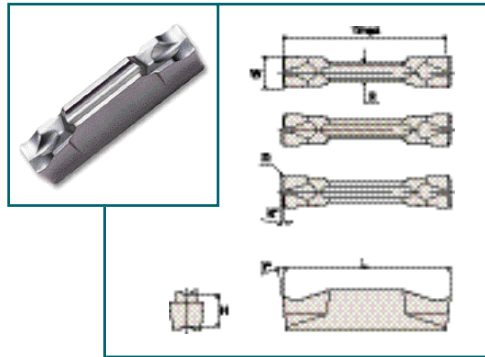


TDJ / TSJ with J-type Chipbreakers

Max. Dia(mm), cut off & grooving

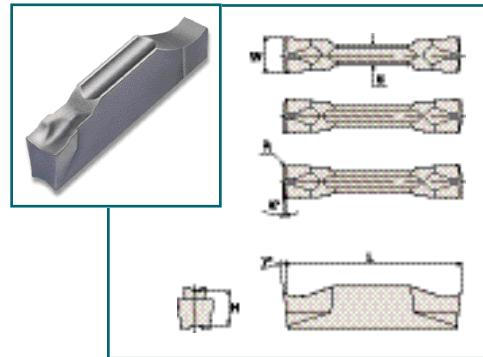
TDJ 4-15R/L : Ø31.6
 TSJ 4-15R/L : Ø35.2
 The others : unlimited

TDJ-Type



Neutral
 Left-hand
 Right-hand

TSJ-Type



Neutral
 Left-hand
 Right-hand

Designation	W±.002 (inch) W±0.05 (mm)	R (inch) (mm)	L (inch) (mm)	K (degrees)	H (inch) (mm)	Tmax		Grades				
						TDC	TSC	ISO	K	P	PM	PMK
									K10	TT7220	TT8020	TT9030
TDJ/TSJ 4	.157 4.0	.012 0.30	.79 20	0°	.185 4.7	.748 19		○	○	○	○	
TDJ/TSJ 4-4L	.157 4.0	.012 0.30	.79 20	4°	.185 4.7	.748 19		○	○	○		
TDJ/TSJ 4-4R	.157 4.0	.012 0.30	.79 20	4°	.185 4.7	.748 19		○	○	○		
TDJ/TSJ 4-15L	.157 4.0	.012 0.30	.79 20	15°	.185 4.7	.748 19			○	○		
TDJ/TSJ 4-15R	.157 4.0	.012 0.30	.79 20	15°	.185 4.7	.748 19			○	○		
TDJ/TSJ 5	.197 5.0	.012 0.30	.98 25	0°	.205 5.2	.945 24		○	○	○	○	
TDJ/TSJ 5-4L	.197 5.0	.012 0.30	.98 25	4°	.205 5.2	.945 24		○	○	○		
TDJ/TSJ 5-4R	.197 5.0	.012 0.30	.98 25	4°	.205 5.2	.945 24		○	○	○		
TDJ/TSJ 6	.236 6.0	.012 0.30	.98 25	0°	.205 5.2	.945 24		○	○	○	○	

: Only TDJ

Ordering example : 100 pcs. TDJ 5 TT7220

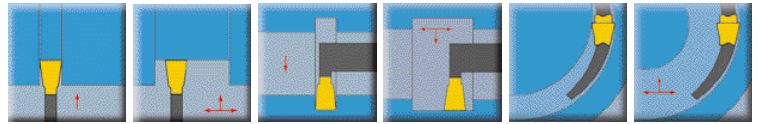
○:Stock

○:Tailor Made

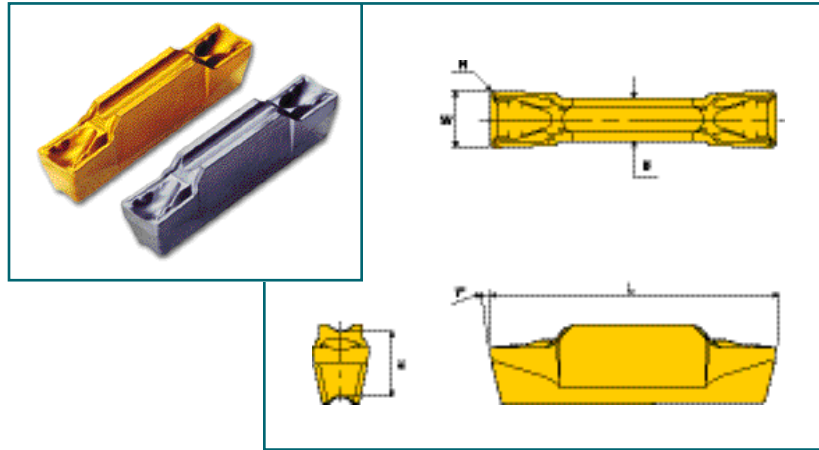
B

T-Clamp Ultra Plus INSERTS

Pressed Turning and Grooving



TDXU-E



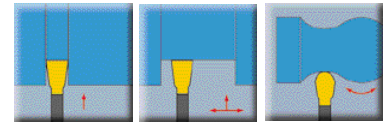
Designation	W±.0008 (inch) W±0.02 (mm)	R±.002 (inch) R±0.05 (mm)	B (inch) (mm)	L (inch) (mm)	H (inch) (mm)	Grades			
						ISO	K	P	PM
							K10	TT7220	TT5100
TDXU 4E - 0.4	.157 4.00	.016 0.40	.118 3.0	.79 20	.185 4.7			○	○

Ordering example : 100 pcs. TDXU 4E - 0.4 TT5100

○:Stock :Tailor Made

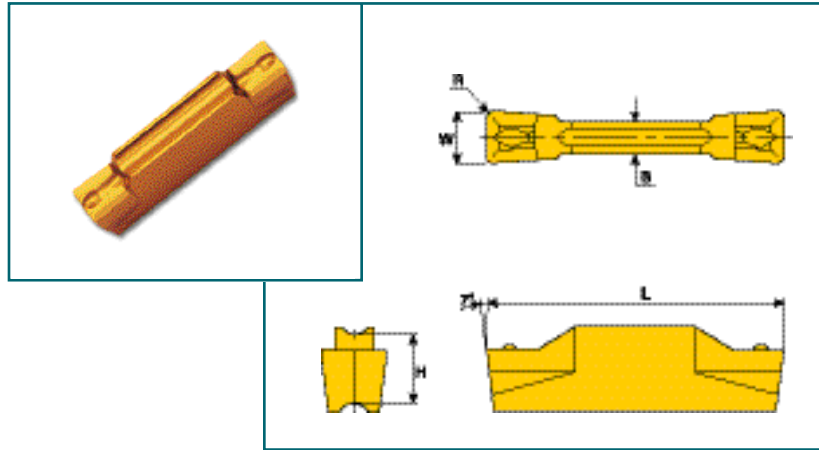
T-Clamp Ultra Plus INSERTS

Precision Turning and Grooving



TDT

with T-type Chipbreakers



B

Designation	W±.0008 (inch) W±0.02 (mm)	R±.002 (inch) R±0.05 (mm)	B (inch) (mm)	L (inch) (mm)	H (inch) (mm)	Grades			
						ISO	K	P	PM
							K10	TT7220	TT5100
TDT 1.98-0.18	.078 1.98	.007 0.18	.087 2.2	.79 20	.185 4.7				
TDT 2.24-0.18	.088 2.24	.007 0.18	.087 2.2	.79 20	.185 4.7				
TDT 2.29E-0.18	.090 2.29	.007 0.18	.087 2.2	.79 20	.185 4.7				
TDT 2.39-0.18	.094 2.39	.007 0.18	.087 2.2	.79 20	.185 4.7				
TDT 2.46-0.33	.097 2.46	.013 0.33	.087 2.2	.79 20	.185 4.7				
TDT 2.67-0.18	.105 2.67	.007 0.18	.087 2.2	.79 20	.185 4.7				
TDT 2.79-0.33	.110 2.79	.013 0.33	.087 2.2	.79 20	.185 4.7				
TDT 3.00E-0.20	.118 3.00	.008 0.20	.087 2.2	.79 20	.185 4.7		○	○	○
TDT 3.00E-0.40	.118 3.00	.016 0.40	.087 2.2	.79 20	.185 4.7		○	○	v
TDT 3.10-0.18	.122 3.10	.007 0.18	.087 2.2	.79 20	.185 4.7				
✓ TDT 3.18E-0.40	.125 3.18	.016 0.40	.087 2.2	.79 20	.185 4.7			○	○
TDT 3.18-0.18	.125 3.18	.007 0.18	.087 2.2	.79 20	.185 4.7				
TDT 3.30E-0.18	.130 3.30	.007 0.18	.118 3.0	.79 20	.185 4.7				
TDT 3.61-0.33	.142 3.61	.013 0.33	.118 3.0	.79 20	.185 4.7				
TDT 3.96-0.18	.156 3.96	.007 0.18	.118 3.0	.79 20	.185 4.7				
✓ TDT 3.96E-0.40	.156 3.96	.016 0.40	.118 3.0	.79 20	.185 4.7			○	○
TDT 4.00E-0.40	.157 4.00	.016 0.40	.118 3.0	.79 20	.185 4.7		○	○	○
TDT 4.00E-0.80	.157 4.00	.031 0.80	.118 3.0	.79 20	.185 4.7		○	○	○
TDT 4.32E-0.38	.170 4.32	.015 0.38	.157 4.0	.98 25	.205 5.2				

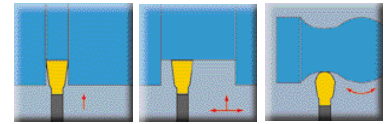
Ordering example : 100 pcs. TDT 3.30E-0.18 TT5100

○:Stock

:Tailor Made

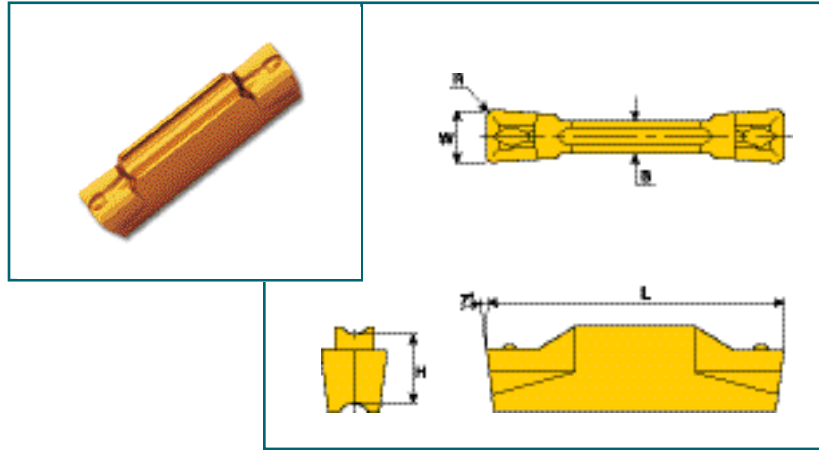
T-Clamp Ultra Plus INSERTS

Precision Turning and Grooving



TDT

with T-type Chipbreakers



Designation	W±.0008 (inch) W±0.02 (mm)	R±.002 (inch) R±0.05 (mm)	B (inch) (mm)	L (inch) (mm)	H (inch) (mm)	Grades			
						ISO	K	P	PM
							K10	TT7220	TT5100
TDT 4.50E - 0.40	.177 4.50	.016 0.40	.157 4.0	.98 25	.205 5.2				
TDT 4.52 - 0.18	.178 4.52	.007 0.18	.157 4.0	.98 25	.205 5.2				
TDT 4.70 - 0.56	.185 4.70	.022 0.56	.157 4.0	.98 25	.205 5.2		○	○	○
✓ TDT 4.75E - 0.40	.187 4.75	.016 0.40	.157 4.0	.98 25	.205 5.2			○	○
TDT 4.78E - 0.55	.188 4.78	.022 0.55	.157 4.0	.98 25	.205 5.2		○	○	○
TDT 4.80 - 0.56	.189 4.80	.022 0.56	.157 4.0	.98 25	.205 5.2				
TDT 5.00E - 0.40	.197 5.00	.016 0.40	.157 4.0	.98 25	.205 5.2		○	○	○
TDT 5.00E - 0.80	.197 5.00	.031 0.80	.157 4.0	.98 25	.205 5.2		○	○	○
TDT 5.33E - 0.61	.210 5.33	.024 0.61	.197 5.0	.98 25	.205 5.2				
TDT 5.41 - 0.18	.213 5.41	.007 0.18	.187 5.0	.98 25	.205 5.2				
TDT 5.56 - 0.56	.219 5.56	.022 0.56	.187 5.0	.98 25	.205 5.2				
TDT 6.00E - 0.40	.236 6.00	.016 0.40	.197 5.0	.98 25	.205 5.2				
TDT 6.00E - 0.80	.236 6.00	.031 0.80	.197 5.0	.98 25	.205 5.2		○	○	○
TDT 6.00E - 1.20	.236 6.00	.047 1.20	.197 5.0	.98 25	.205 5.2		○	○	○
TDT 6.35 - 0.56	.250 6.35	.022 0.56	.236 6.0	1.18 30	.252 6.4				
✓ TDT 6.35E - 0.40	.250 6.350	.016 0.40	.236 6.0	1.18 30	.252 6.4			○	○
TDT 6.48E - 0.61	.255 6.48	.127 3.23	.236 6.0	1.18 30	.252 6.4				
✓ TDT 7.93E - 0.40	.312 7.925	.016 0.40	.236 6.0	1.18 30	.252 6.4			○	○
TDT 8.00E - 0.80	.315 8.00	.031 0.80	.236 6.0	1.18 30	.252 6.4		○	○	○
TDT 8.00E - 1.20	.315 8.00	.047 1.20	.236 6.0	1.18 30	.252 6.4		○	○	○

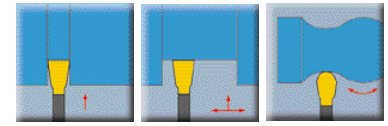
Ordering example : 100 pcs. TDT 5.00E - 0.40 TT5100

○:Stock

:Tailor Made

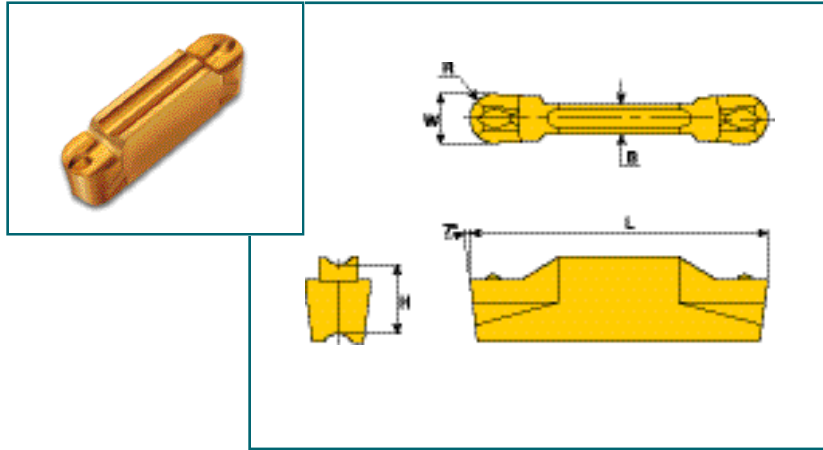
T-Clamp Ultra Plus INSERTS

Precision Turning and Grooving



TDT

with T-type Chipbreakers



Designation	W±.0008 (inch) W±0.02 (mm)	R±.002 (inch) R±0.05 (mm)	B (inch) (mm)	L (inch) (mm)	H (inch) (mm)	Grades			
						ISO	K	P	PM
							K10	TT7220	TT5100
TDT 3.00E - 1.50	.118 3.00	.059 1.50	.087 2.2	.79 20	.185 4.7		○	○	○
TDT 3.30E - 1.65	.130 3.30	.065 1.65	.118 3.0	.79 20	.185 4.7				
TDT 4.00E - 2.00	.157 4.00	.079 2.00	.118 3.0	.79 20	.185 4.7		○	○	○
TDT 4.32E - 2.16	.170 4.32	.085 2.16	.157 4.0	.98 25	.205 5.2				
TDT 4.78E - 2.39	.188 4.78	.094 2.39	.157 4.0	.98 25	.205 5.2		○	○	○
TDT 5.00E - 2.50	.197 5.00	.098 2.50	.157 4.0	.98 25	.205 5.2		○	○	○
TDT 5.33E - 2.67	.210 5.33	.105 2.67	.197 5.0	.98 25	.205 5.2				
TDT 6.00E - 3.00	.236 6.00	.118 3.00	.157 5.0	.98 25	.205 5.2		○	○	○
TDT 6.48E - 3.23	.255 6.48	.127 3.23	.236 6.0	1.18 30	.252 6.4				

Ordering example : 100 pcs. TDT 3.30E - 1.65 TT5100

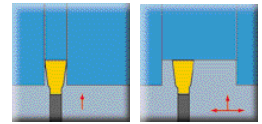
○:Stock

:Tailor Made

B

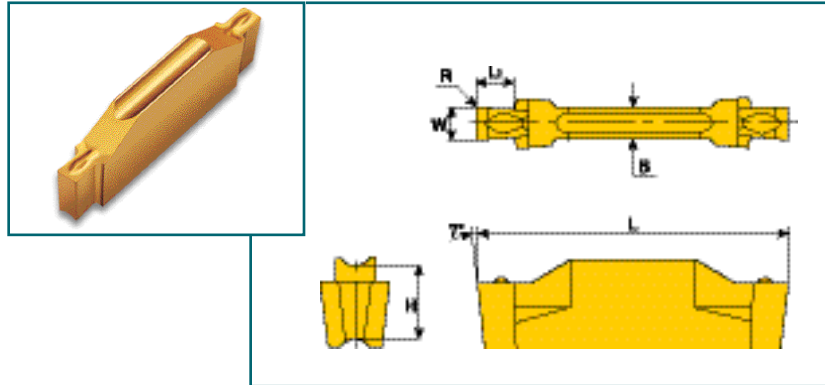
T-Clamp Ultra Plus INSERTS

Precision Turning and Grooving



TDT

with T-type Chipbreakers



Designation	W±.0008 (inch) W±0.02 (mm)	R±.0012 (inch) R±0.03 (mm)	B (inch) (mm)	L (inch) (mm)	L1 (inch) (mm)	H (mm)	Grades			
							ISO	K	P	PM
								K10	TT7220	TT5100
TDT 1.00 - 0.00	.039 1.00	.000 0.00	.087 2.2	.79 20	.079 2.5	.185 4.7		○	○	○
TDT 1.30 - 0.00	.051 1.30	.000 0.00	.087 2.2	.79 20	.079 2.5	.185 4.7		○	○	○
TDT 1.60 - 0.10	.063 1.60	.004 0.10	.087 2.2	.79 20	.079 2.5	.185 4.7		○	○	○
TDT 1.85 - 0.10	.073 1.85	.004 0.10	.087 2.2	.79 20	.118 3.5	.185 4.7		○	○	○
TDT 2.00 - 0.20	.079 2.00	.008 0.20	.087 2.2	.79 20	.118 3.5	.185 4.7				
TDT 2.15 - 0.15	.085 2.15	.006 0.15	.087 2.2	.79 20	.118 3.5	.185 4.7		○	○	○
TDT 2.65 - 0.15	.104 2.65	.006 0.15	.087 2.2	.79 20	.197 5.0	.185 4.7		○	○	○
TDT 3.00 - 0.20	.118 3.00	.008 0.20	.087 2.2	.79 20	.197 5.0	.185 4.7				
TDT 3.15 - 0.15	.124 3.15	.006 0.15	.087 2.2	.79 20	.197 5.0	.185 4.7		○	○	○
TDT 3.18 - 0.20	.125 3.18	.008 0.20	.087 2.2	.79 20	.197 5.0	.185 4.7				
TDT 4.00 - 0.20	.157 4.00	.008 0.20	.118 3.0	.79 20	.197 5.0	.185 4.7				
TDT 4.15 - 0.15	.163 4.15	.006 0.15	.118 3.0	.79 20	.197 5.0	.185 4.7		○	○	○
TDT 5.00 - 0.20	.197 5.00	.008 0.20	.157 4.0	.98 25	.197 5.0	.205 5.2				
TDT 5.15 - 0.15	.203 5.15	.006 0.15	.157 4.0	.98 25	.197 5.0	.205 5.2		○	○	○
TDT 6.00 - 0.20	.236 6.00	.008 0.20	.197 5.0	.98 25	.197 5.0	.205 5.2				

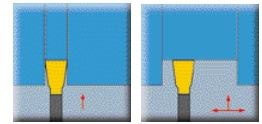
Ordering example : 100 pcs. TDT 1.85 - 0.10 TT5100

○:Stock

:Tailor Made

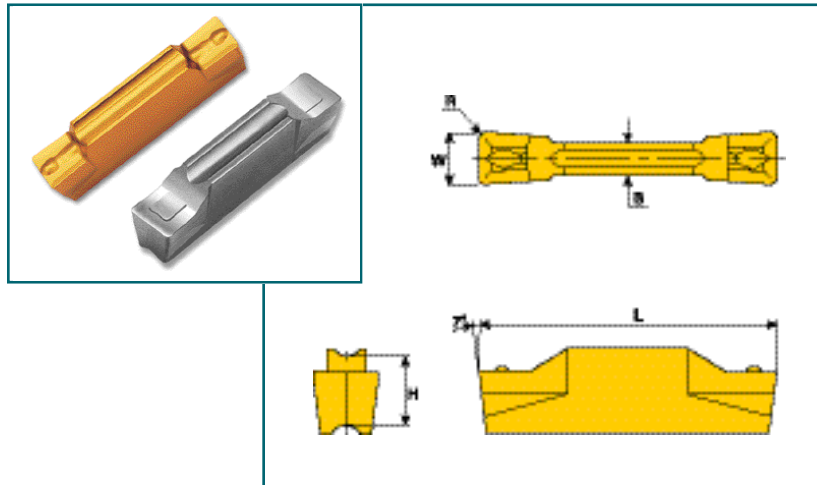
T-Clamp Ultra Plus INSERTS

Pressed Turning and Grooving



TDT-E

with T-type Chipbreakers



Designation	W±.002 (inch) W±0.05 (mm)	R (inch) (mm)	B (inch) (mm)	L (inch) (mm)	H (inch) (mm)	Grades				
						ISO	K		P	PM
							K10	AB30	TT7220	TT5100
TDT 3E - 0.4	.118 3.00	.016 0.40	.087 2.2	.79 20	.185 4.7		○		○	○
TDT 4E - 0.4	.157 4.00	.016 0.40	.118 3.0	.79 20	.185 4.7		○		○	○
TDT 4E - 0.4T CE	.157 4.00	.016 0.40	.118 3.0	.79 20	.185 4.7			○		
TDT 6E - 0.8T CE	.236 6.00	.031 0.80	.157 5.0	.98 25	.205 5.2			○		

Ordering example : 100 pcs. TDT 3E - 0.4 TT5100

○:Stock

:Tailor Made

Ceramic Insert (AB30)

Application

- Workpiece:** Cast Iron, Hardened Steel, Graphite
- Machining:** External, Internal, Face Grooving & Turning

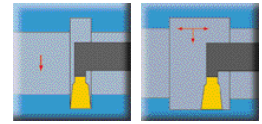
- Recommended Machining Condition :**
Vc:600~800m/min, F:0.1~0.25mm/rev

- Feature :**
-Economical Press-to-Size
-Double ended Cutting edge

B

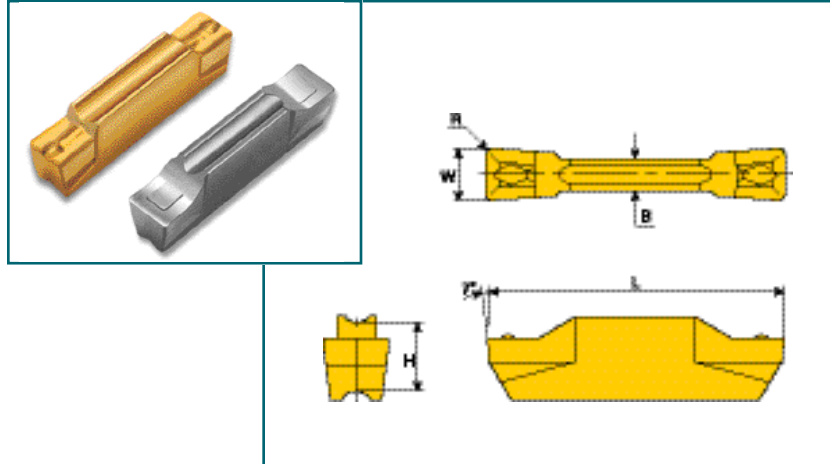
T-Clamp Ultra Plus INSERTS

Precision Internal Turning and Grooving



TDIT-E

with T-type Chipbreakers



Designation	W±.0008 (inch) W±0.02 (mm)	R±.002 (inch) R±0.05 (mm)	B (inch) (mm)	L (inch) (mm)	H (inch) (mm)	Grades				
						ISO	K		P	PM
							K10	AB30 (ceramic)	TT7220	TT5100
TDIT 3.00E - 0.40	.118 3.00	.016 0.40	.087 2.2	.79 20	.185 4.7		○		○	○
TDIT 4.00E - 0.40	.157 4.00	.016 0.40	.118 3.0	.79 20	.185 4.7		○		○	○
TDIT 4.00E - 0.80	.157 4.00	.031 0.80	.118 3.0	.79 20	.185 4.7		○		○	○
TDIT 5.00E - 0.40	.197 5.00	.016 0.40	.157 4.0	.98 25	.205 5.2		○		○	○
TDIT 5.00E - 0.80	.197 5.00	.031 0.80	.157 4.0	.98 25	.205 5.2		○		○	○
TDIT 6.00E - 0.80	.236 6.00	.031 0.80	.197 5.0	.98 25	.205 5.2		○		○	○
TDIT 6.00E - 1.20	.236 6.00	.047 1.20	.197 5.0	.98 25	.205 5.2		○		○	○
TDIT 8.00E - 0.80	.315 8.00	.031 0.80	.236 6.0	1.18 30	.252 6.4		○		○	○
TDIT 8.00E - 1.20	.315 8.00	.047 1.20	.236 6.0	1.18 30	.252 6.4		○		○	○
TDIT 4E - 0.4T CE ⁽¹⁾	.157 4.0±0.05	.016 0.40	.118 3.0	.79 20	.185 4.7			○		
TDIT 6E - 0.8T CE ⁽¹⁾	.236 6.0±0.05	.031 0.80	.197 5.0	.98 25	.205 5.2			○		

(1) This insert is pressed ceramic insert

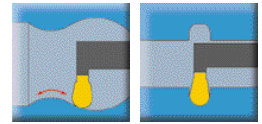
Ordering example : 100 pcs. TDIT 3.00E - 0.40 TT5100

○:Stock

○:Tailor Made

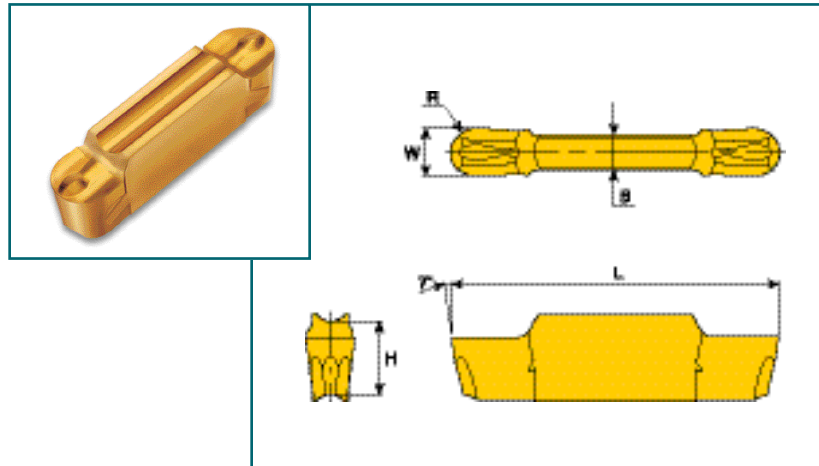
T-Clamp Ultra Plus INSERTS

Precision Internal Turning and Grooving



TDIT-E

with T-type Chipbreakers



Designation	W±.0008 (inch) W±0.02 (mm)	R±.002 (inch) R±0.05 (mm)	B (inch) (mm)	L (inch) (mm)	H (inch) (mm)	Grades			
						ISO	K	P	PM
							K10	TT7220	TT5100
TDIT 3.00E - 1.50	.118 3.00	.059 1.50	.087 2.2	.79 20	.185 4.7		○	○	○
TDIT 4.00E - 2.00	.157 4.00	.079 2.00	.118 3.0	.79 20	.185 4.7		○	○	○
TDIT 5.00E - 2.50	.197 5.00	.098 2.50	.157 4.0	.98 25	.205 5.2		○	○	○
TDIT 6.00E - 3.00	.236 6.00	.118 3.00	.197 5.0	.98 25	.205 5.2		○	○	○

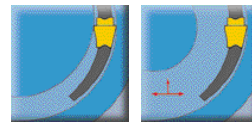
Ordering example : 100 pcs. TDIT 5.00E - 2.50 TT5100

○:Stock :Tailor Made

B

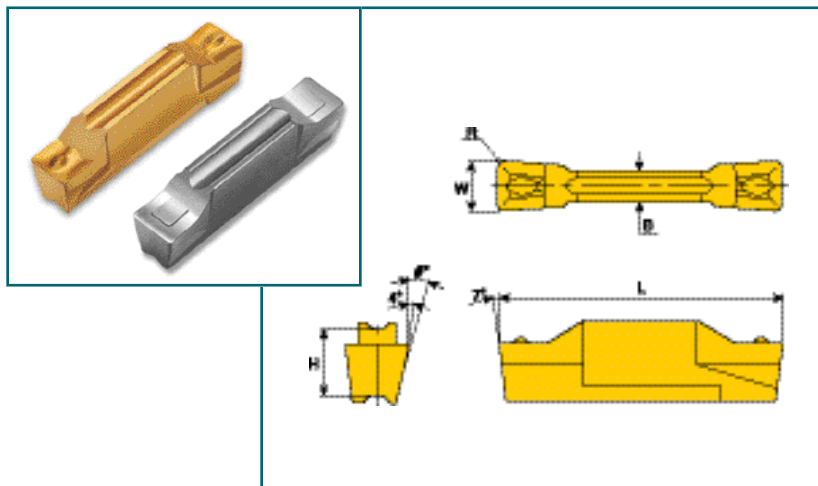
T-Clamp Ultra Plus INSERTS

Pressed Face Turning and Grooving



TDFT-E

with T-type Chipbreakers



Designation	W±.002 (inch) W±0.05 (mm)	R (inch) (mm)	B (inch) (mm)	L (inch) (mm)	H (inch) (mm)	Grades				
						ISO	K		P	PM
							K10	AB30 (ceramic)	TT7220	TT5100
TDFT 3E - 0.4R/L ⁽¹⁾	.118 3.0	.016 0.4	.087 2.2	.79 20	.185 4.7		○		○	○
TDFT 4E - 0.4R/L	.157 4.0	.016 0.4	.118 3.0	.79 20	.185 4.7		○		○	○
TDFT 4E - 0.4TR/L CE	.157 4.0	.016 0.4	.118 3.0	.79 20	.185 4.7			○		
TDT 6E - 0.8T CE ⁽²⁾	.236 6.0	.031 0.8	.197 5.0	.98 25	.205 5.2			○		

Ordering example : 100 pcs. TDFT 4E - 0.4R TT5100

(1) This insert can be mounted on TGFR/L...-4, and TGFPR/L 2525-4

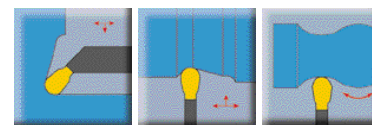
(2) This insert can be mounted on all kinds of holder for face machining.

○:Stock

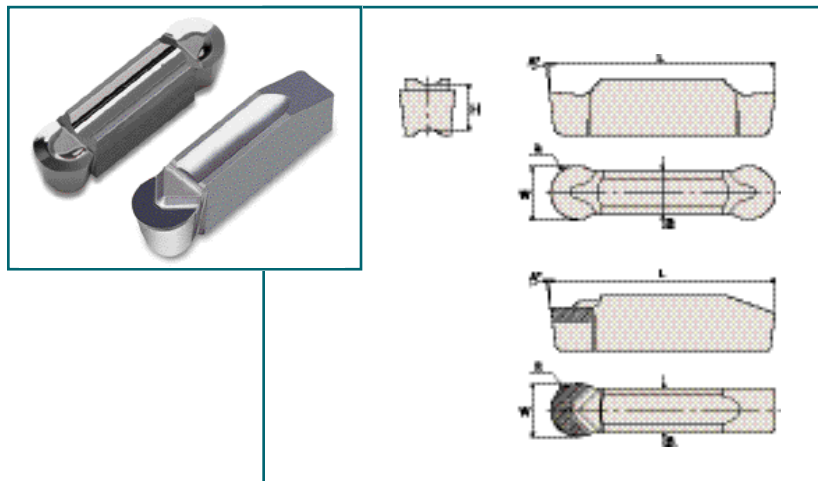
:Tailor Made

T-Clamp Ultra Plus INSERTS

Precision Turning and Grooving



TDA/TSA with A-type Chipbreakers



Designation	W±.002 (inch) W±0.05 (mm)	R±.002 (inch) R±0.05 (mm)	B (inch) (mm)	L (inch) (mm)	H (inch) (mm)	A (inch) (mm)	Grades	
							ISO	K
								K10
TDA 6.00 - 3.00	.236 6.00	.118 3.00	.197 5.0	.98 25	.205 5.2	7°	○	
TDA 8.00 - 4.00	.314 8.00	.157 4.00	.236 6.0	1.18 30	.252 6.4	10°	○	
TSA 6.00 - 3.00	.236 6.00	.118 3.00	.197 5.0	.98 25	.205 5.2	7°		○
TSA 8.00 - 4.00	.314 8.00	.157 4.00	.236 6.0	1.18 30	.252 6.4	10°		○

Ordering example : 100 pcs. TDA 6.00 - 3.00 K10

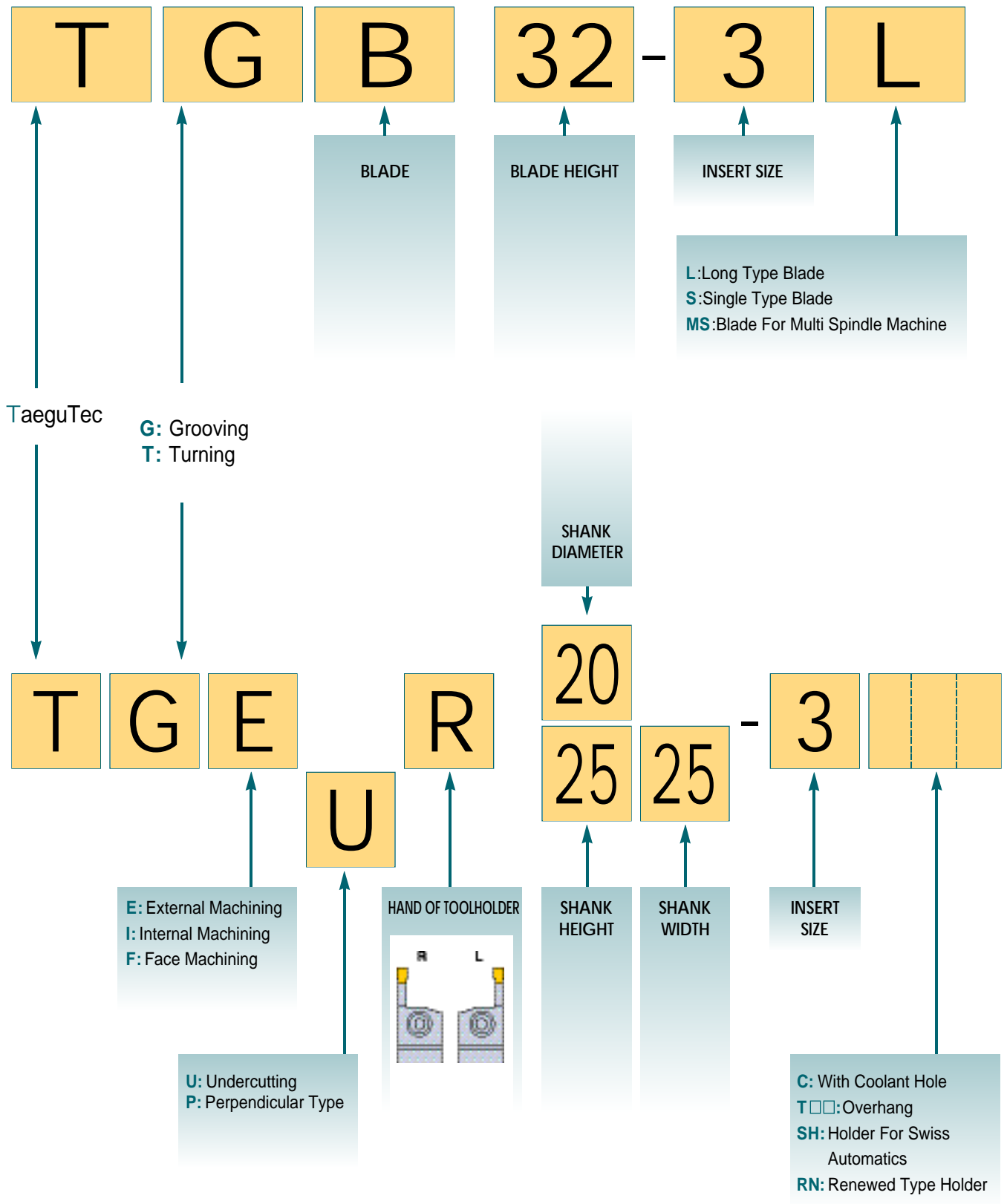
○:Stock

:Tailor Made

B

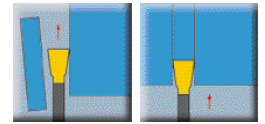
T-Clamp Ultra Plus BLADE & TOOLHOLDER DESIGNATION SYSTEM

B



T-Clamp Ultra Plus BLADES

Cut Off and Grooving



TGB

Use Insert

Style	TDC/TSC: B18-B20	page
	TDJ/TSJ : B21-B22	page
	TDXU: B23	page
	TDT: B24-B28	page

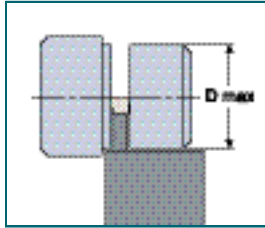


Fig.1

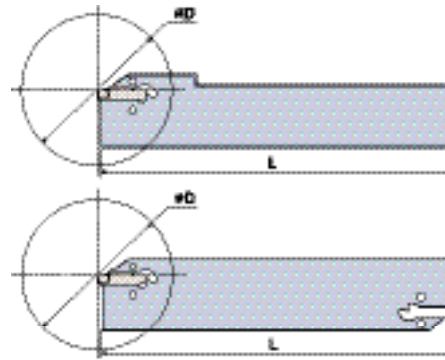
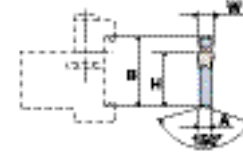


Fig.2



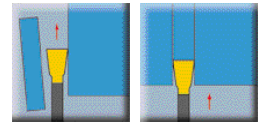
Designation	W (inch) (mm)	B (inch) (mm)	L (inch) (mm)	D _{max} (inch) (mm)	H (inch) (mm)	A (inch) (mm)	Block	Insert Extractor	Fig.
TGB 26 - 2S ^①	.075 - .095 1.90 - 2.40	1.02 26	5.90 150	1.97 50	.84 21.4	.071 1.8	TTBN□□-26 TTBU□□-26	EDG - 33B	1
TGB 26 - 3S ^①	.095 - .126 2.41 - 3.20	1.02 26	5.90 150	1.97 50	.84 21.4	.094 2.4		EDG - 33B	1
TGB 26 - 4S ^①	.126 - .165 3.21 - 4.20	1.02 26	5.90 150	3.15 80	.84 21.4	.126 3.2		EDG - 33B	1
TGB 32 - 2	.075 - .095 1.90 - 2.40	1.26 32	5.90 150	1.57 40	.98 24.8	.071 1.8	TTBN□□-32 TTBU□□-32	EDG - 33B	2
TGB 32 - 3	.095 - .126 2.41 - 3.20	1.26 32	5.90 150	3.94 100	.98 24.8	.094 2.4		EDG - 33B	2
TGB 32 - 4	.126 - .165 3.21 - 4.20	1.26 32	5.90 150	3.94 100	.98 24.8	.126 3.2		EDG - 33B	2
TGB 32 - 5	.166 - .205 4.21 - 5.20	1.26 32	5.90 150	4.72 120	.98 24.	.157 4.0		EDG - 33B	2
TGB 32 - 6	.205 - .244 5.21 - 6.20	1.26 32	5.90 150	4.72 120	.98 24.8	.205 5.2		EDG - 33B	2
TGB 45 - 4	.126 - .165 3.21 - 4.20	1.77 45	5.90 150	6.30 160	1.5 38.1	.126 3.2		EDG - 33B	2

^① Single ended Blade
 Ordering example : 5 pcs. TGB 32-2
 •Insert extractor should be ordered separately

B

T-Clamp Ultra Plus BLADES

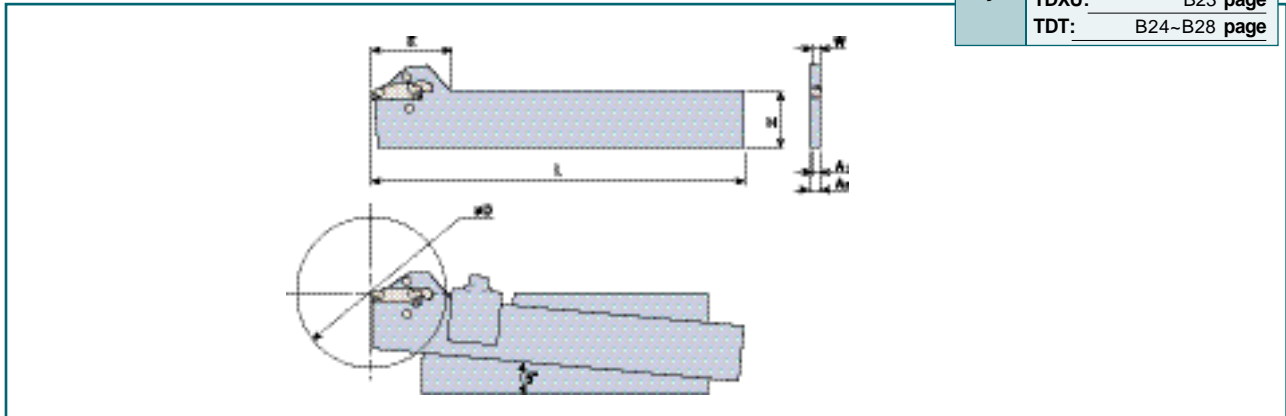
Cut Off and Grooving



TGB-MS

Use Insert

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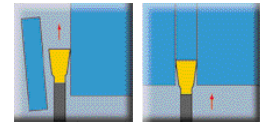


Designation	W (inch)	H (inch)	L (inch)	E (inch)	A1 (inch)	A2 (inch)	ØDmax (inch)	Insert Extractor
TGB 5 - 22 - 2 - MS	.075 - .098				.063		1.65	
TGB 5 - 22 - 3 - MS	.099 - .129	.874	5.905	1.26	.094	.126	2.36	EDG - 33B
TGB 5 - 22 - 4 - MS	.130 - .169				.126		3.15	

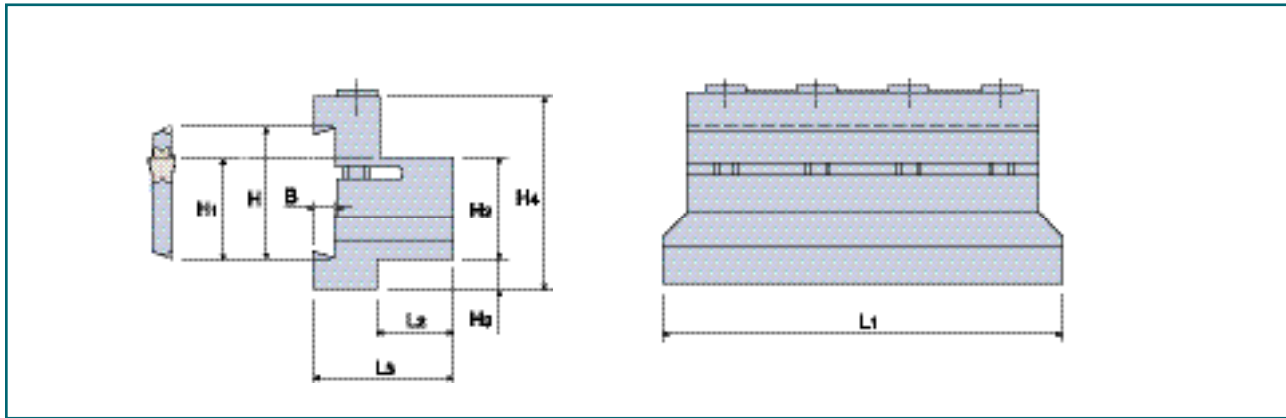
Ordering example : 5 pcs. TGB 5-22-2-MS
 •Insert extractor should be ordered separately

T-Clamp Ultra Plus BLOCKS

Cut Off and Grooving



TTBN



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

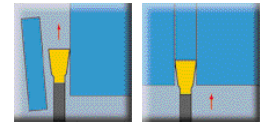
Ordering example : 1 pcs. TTBN 19-26



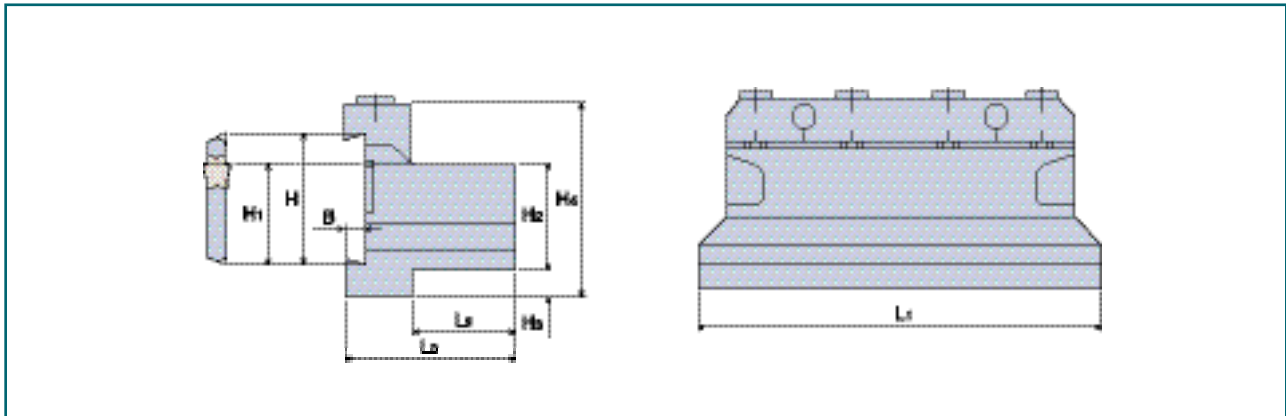
B

T-Clamp Ultra Plus BLOCKS

Cut Off and Grooving

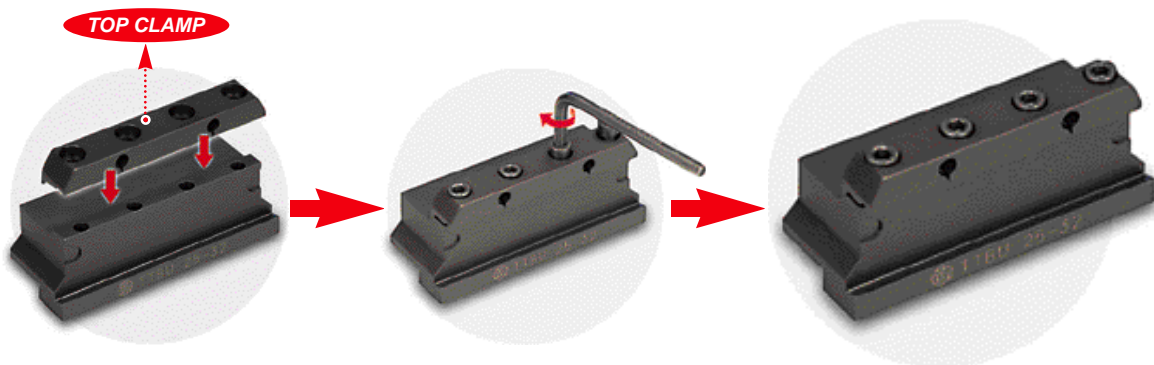


TTBU



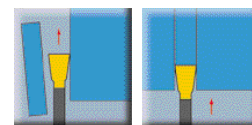
Designation	H (inch)	H1 (inch)	H2 (inch)	H3 (inch)	H4 (inch)	B (inch)	L1 (inch)	L2 (inch)	L3 (inch)	Screw	Clamp	Wrench
TTBU 19 - 26	1.02	.84	.75	.35	1.69	.16	3.39	.83	1.50	SR M6 X 30	BKU-86	L-W5
TTBU 19 - 32	1.26	.98	.75	.54	1.97	.21	3.94	.75	1.50	SR M6 X 30	BKU-110	L-W5
TTBU 25.4 - 26	1.02	.84	1.00	.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



T-Clamp Ultra Plus TOOLHOLDERS

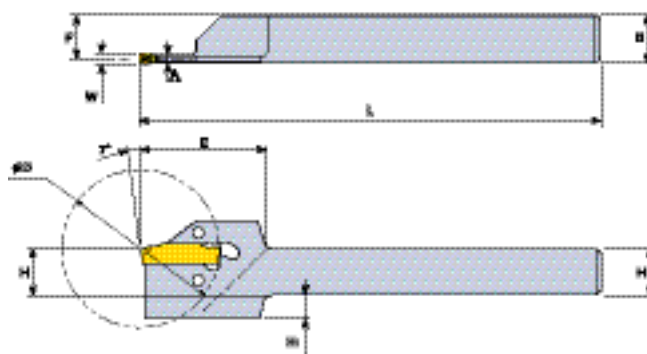
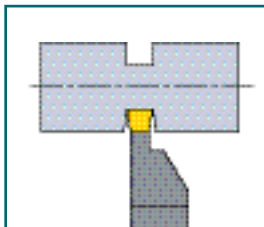
Cut Off and Grooving



TGER/L

Use Insert

Style	TDXU:	B23 page
	TDC/ TSC:	B18-B20 page
	TDJ/ TSJ :	B21-B22 page
	TDT:	B24-B28 page



•Right hand shown

Designation	W (inch)	F (inch)	L (inch)	Dmax (inch)		H (inch)	B (inch)	E (inch)	A (inch)	H1 (inch)	Insert Extractor
				TDJ/C	TSJ/C						
TGER/L 9.5-2	.075 - .095	.340	4.50	1.30	1.30	.375	.375	1.22	.071	.33	EDG-33B
TGER/L 12.7-2	.075 - .095	.465	4.50	1.38	1.38	.50	.50	1.22	.071	.21	EDG-33B
TGER/L 12.7-3	.095 - .126	.453	4.50	1.50	1.57	.50	.50	1.22	.094	.21	EDG-33B
TGER/L 1616 -2	.075 - .095	.594	5.91	1.38	1.38	.63	.63	1.22	.066	.08	EDG-33B
TGER/L 1616-3	.095 - .126	.583	5.91	1.50	1.77	.63	.63	1.22	.094	.24	EDG-33B
TGER/L 19 - 2	.075 - .095	.715	4.50	1.38	1.38	.75	.75	1.22	.071	.00	EDG-33B
TGER/L 19-3	.095 - .126	.703	4.50	1.50	1.77	.75	.75	1.22	.094	.00	EDG-33B
TGER/L 19 -4	.126 - .165	.687	4.50	1.50	2.17	.75	.75	1.30	.126	.00	EDG-33B
TGER/L 25.4-3	.095 - .126	.953	6.00	1.50	1.77	1.00	1.00	1.22	.094	.00	EDG-33B
TGER/L 25.4-4	.126 - .165	.937	6.00	1.50	2.17	1.00	1.00	1.30	.126	.00	EDG-33B

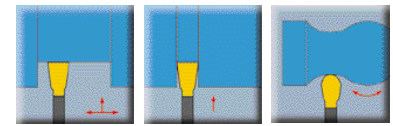
Ordering example : 5 pcs. TGER 12.7-2

•Insert extractor should be ordered separately

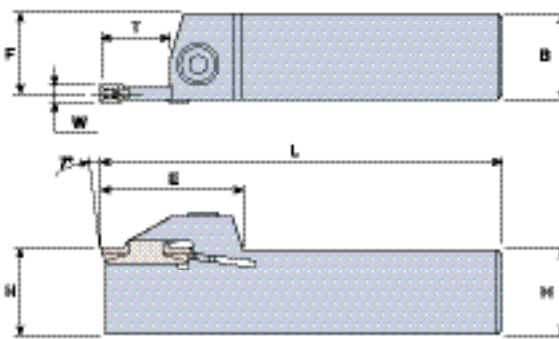
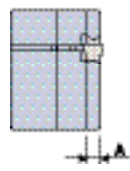
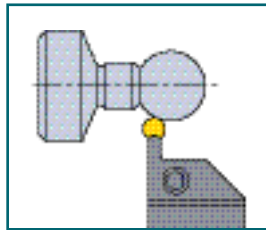
B

T-Clamp Ultra Plus TOOLHOLDERS

Turning and Grooving



TTER/L



Use Insert

Style	TDC/TSC: B18-B20 page
	TDJ/TSJ : B21-B22 page
	TDXU: B23 page
	TDT: B24-B28 page

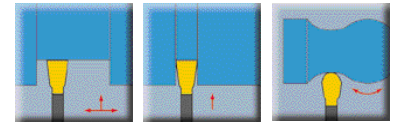
•Right hand shown

Designation	W (inch)	F (inch)	L (inch)	H (inch)	B (inch)	E (inch)	T _{max} (inch)	A (inch)	Screw	Wrench
TTER/L 1616 - 2	.071 - .095	.59	4.3	.63	.63	1.26	.472	.063	SH M5 X 0.8 X 16	L-W4
TTER/L 1616 - 3	.095 - .126	.59	4.3	.63	.63	1.26	.472	.083	SH M5 X 0.8 X 16	L-W4
TTER/L 1616 - 3T09	.095 - .126	.75	5.0	.75	.75	1.26	.354	.083	SH M5 X 0.8 X 16	L-W4
TTER/L 1616 - 4	.126 - .165	.57	4.3	.63	.63	1.26	.590	.114	SH M5 X 0.8 X 16	L-W4
TTER/L 1616 - 4T10	.126 - .165	.57	4.3	.63	.63	1.26	.394	.114	SH M5 X 0.8 X 16	L-W4
TTER/L 19 - 2	.071 - .095	.71	5.0	.75	.75	1.26	.472	.063	SH M5 X 0.8 X 20	L-W4
TTER/L 19 - 3	.095 - .126	.71	5.0	.75	.75	1.26	.472	.083	SH M5 X 0.8 X 20	L-W4
TTER/L 19 - 3T09	.095 - .126	.75	5.0	.75	.75	1.26	.354	.083	SH M5 X 0.8 X 20	L-W4
TTER/L 19 - 4	.126 - .165	.69	5.0	.75	.75	1.26	.590	.114	SH M5 X 0.8 X 20	L-W4
TTER/L 19 - 4T10	.126 - .165	.73	5.0	.75	.75	1.26	.394	.114	SH M5 X 0.8 X 25	L-W4
TTER/L 19 - 5	.166 - .205	.67	5.0	.75	.75	1.46	.787	.154	SH M6 X 1 X 20	L-W5
TTER/L 19 - 5T12	.166 - .205	.71	5.0	.75	.75	1.46	.472	.154	SH M6 X 1 X 20	L-W5
TTER/L 19 - 6	.205 - .244	.65	5.0	.75	.75	1.46	.787	.193	SH M6 X 1 X 20	L-W5
TTER/L 19 - 6T12	.205 - .244	.69	5.0	.75	.75	1.46	.472	.193	SH M6 X 1 X 20	L-W5
TTER/L 25.4 - 2	.071 - .095	.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	.095 - .126	.96	6.0	1.00	1.00	1.26	.472	.083	SH M5 X 0.8 X 25	L-W4
TTER/L 25.4 - 3T09	.095 - .126	.94	6.0	1.00	1.00	1.26	.354	.083	SH M5 X 0.8 X 25	L-W4

Ordering example : 5 pcs. TTER 19-3

T-Clamp Ultra Plus TOOLHOLDERS

Turning and Grooving

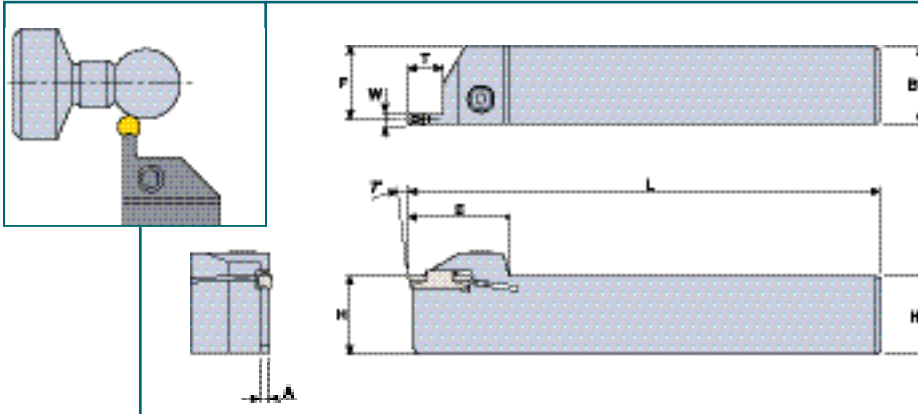


TTER/L

Use Insert

Style

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 TDT: B24-B28 page



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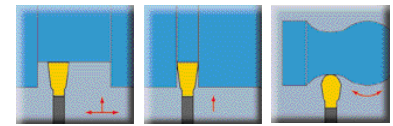
Designation	W (inch)	F (inch)	L (inch)	H (inch)	B (inch)	E (inch)	T _{max} (inch)	A (inch)	Screw	Wrench
TTER/L 25.4 - 4	.126 - .165	.94	6.0	1.00	1.00	1.26	.590	.114	SH M5 X 0.8 X 25	L-W4
TTER/L 25.4 - 4T10	.126 - .165	.93	6.0	1.00	1.00	1.26	.394	.114	SH M5 X 0.8 X 25	L-W4
TTER/L 25.4 - 5	.165 - .205	.92	6.0	1.00	1.00	1.46	.787	.154	SH M6 X 1 X 25	L-W5
TTER/L 25.4 - 5T12	.166 - .205	.91	6.0	1.00	1.00	1.46	.472	.154	SH M6 X 1 X 25	L-W5
TTER/L 25.4 - 6	.205 - .244	.90	6.0	1.00	1.00	1.46	.787	.193	SH M6 X 1 X 25	L-W5
TTER/L 25.4 - 6T12	.205 - .244	.89	6.0	1.00	1.00	1.46	.472	.193	SH M6 X 1 X 25	L-W5
TTER/L 25.4 - 8	.244 - .327	.88	6.0	1.00	1.00	1.65	.984	.232	SH M6 X 1 X 25	L-W5
✓ TTER/L 31.8 - 3	.095 - .126	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 - 5	.165 - .205	1.17	7.0	1.25	1.25	1.46	.787	.154	SH M6 X 1 X 25	L-W5
✓ TTER/L 31.8 - 8	.244 - .327	1.13	7.0	1.25	1.25	1.65	.984	.232	SH M6 X 1 X 25	L-W5
✓ TTER/L 38.1 - 3	.095 - .126	1.45	7.0	1.5	1.5	1.26	.475	.083	SH M5 X 0.8 X 25	L-W4
✓ TTER/L 38.1 - 4	.126 - .165	1.44	7.0	1.5	1.5	1.26	.592	.114	SH M5 X 0.8 X 25	L-W4
✓ TTER/L 38.1 - 5	.165 - .205	1.42	7.0	1.5	1.5	1.46	.787	.154	SH M6 X 1 X 25	L-W5
✓ TTER/L 38.1 - 6	.205 - .244	1.40	7.0	1.5	1.5	1.46	.787	.193	SH M6 X 1 X 25	L-W5
✓ TTER/L 38.1 - 8	.244 - .325	1.38	7.0	1.5	1.5	1.65	.984	.232	SH M6 X 1 X 25	L-W5
TTER/L 3232 - 8	.244 - .327	1.14	7.0	1.26	1.26	1.65	.984	.232	SH M6 X 1 X 25	L-W5

Ordering example : 5 pcs. TTER 25.4 - 4

B

T-Clamp Ultra Plus TOOLHOLDERS

Turning and Grooving



TTER/L

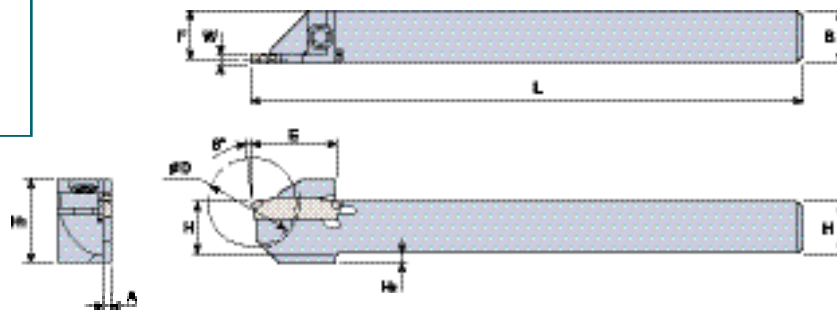
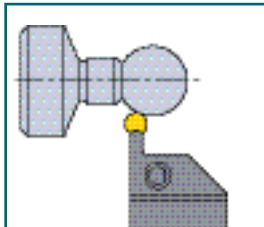
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TDT: B24-B28 page



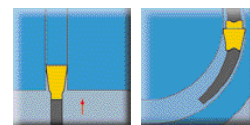
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Designation	W (inch)	F (inch)	L (inch)	Dmax (inch)	H (inch)	B (inch)	E (inch)	A (inch)	H1 (inch)	H2 (inch)	Screw	Wrench
TTER/L 10-20-2SH	.039 - .124	.36	4.92	.79	.39	.39	.75	.061	.69	.08	CSTB 4	T15
TTER/L 12-24-2SH	.039 - .124	.44	4.92	.94	.47	.47	.75	.061	.75	.08	CSTB 4	T15
TTER/L 14-24-2SH	.039 - .124	.52	4.92	.94	.55	.55	.75	.061	.75		CSTB 4	T15
TTER/L 16-32-2SH	.039 - .124	.60	4.92	1.26	.63	.63	.94	.061	.83		CSTB 4	T15

Ordering example : 5 pcs. TTER 10-20-2SH

T-Clamp Ultra Plus TOOLHOLDERS

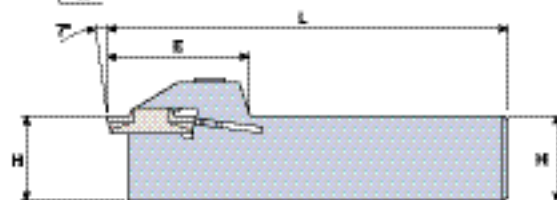
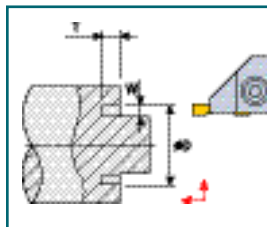
Face and External Grooving



TGFR/L

Use Insert

Style	TDC/TSC: B18-B20	page
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	TDFT:	B31 page



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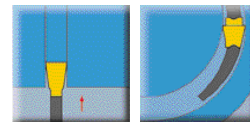
B

Designation	Wmax (inch)	F (inch)	L (inch)	H (inch)	B (inch)	E (inch)	Tmax (inch)	ØDmin (inch)	Screw	Wrench
TGFR/L 1616 - 4	.165	.57	4.3	.63	.63	1.26	.236	1.18	SH M5 X 0.8 X 16	L-W4
TGFR/L 19 - 4	.165	.69	5.0	.75	.75	1.26	.236	1.18	SH M5 X 0.8 X 20	L-W4
TGFR/L 19 - 6	.166 - .244	.65	5.0	.75	.75	1.46	.236	2.36	SH M6 X 1 X 20	L-W5
TGFR/L 25.4 - 4	.165	.94	6.0	1.00	1.00	1.26	.236	1.18	SH M5 X 0.8 X 25	L-W4
TGFR/L 25.4 - 6	.166 - .244	.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

T-Clamp Ultra Plus TOOLHOLDERS

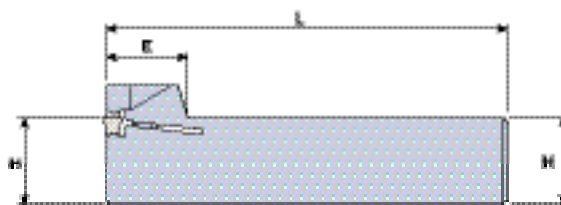
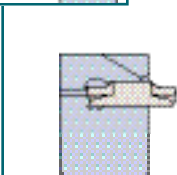
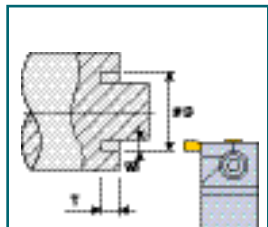
Face and External Grooving



TGFPR/L

Use Insert

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	TDT:	B24-B28
	TDFT:	B31



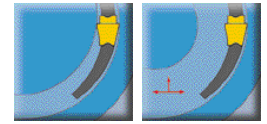
•Right hand shown

Designation	Wmax (inch)	L (inch)	H (inch)	B (inch)	E (inch)	Tmax (inch)	ØDmin (inch)	Screw	Wrench
TGFPR/L 25.4 - 4	.165	6.0	1.00	1.00	.71	.189	1.18	SH M5 X 0.8 X 25	L-W4
TGFPR/L 25.4 - 6	.166 - .244	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

T-Clamp Ultra Plus TOOLHOLDERS

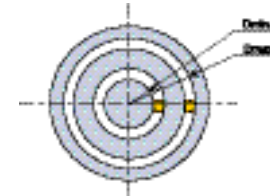
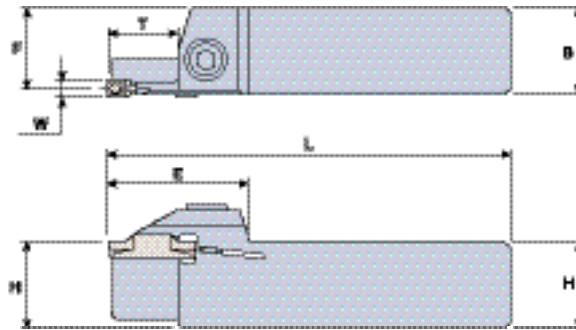
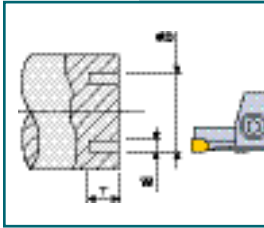
Deep Face Turning and Grooving



TTFR/L

Use Insert

Style	TDXU:	B23 page
	TDT:	B24-B28 page
	TDFT:	B31 page



•Right hand shown

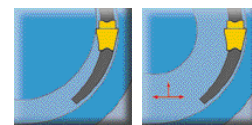
Designation	W (inch)	F (inch)	L (inch)	H (inch)	B (inch)	E (inch)	T _{max} (inch)	ØD _{min} (inch)	ØD _{max} (inch)	Insert	Screw	Wrench
TTFR/L 25.4 - 30 - 3	.118	.94	6.0	1.00	1.00	1.50	.39	.94	1.38	TDFT-3E R/L	SH M5 X0.8X 25	L-W4
TTFR/L 25.4 - 35 - 3								1.14	1.57			
TTFR/L 25.4 - 40 - 3								1.34	1.97			
TTFR/L 25.4 - 50 - 3								1.73	1.97			
TTFR/L 25.4 - 60 - 3								2.13	3.35			
TTFR/L 25.4 - 30 - 4	.157	.93	6.0	1.00	1.00	1.26	.39	.87	1.57	TDFT-4E R/L TDT 4 TDXU 4E-0.4	SH M5 X0.8X 25	L-W4
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	.236	.93	6.0	1.00	1.00	1.46	.79	1.89	3.35	TDT 6	SH M6 X1 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

B

T-Clamp Ultra Plus TOOLHOLDERS

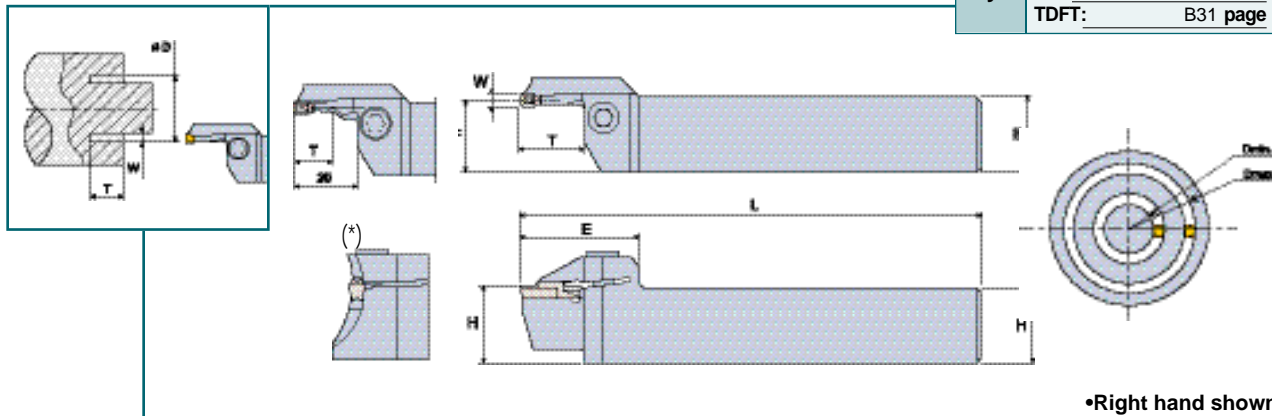
Deep Face Turning and Grooving



TTFR/L - RN

Use Insert

Style	TDXU:	B23 page
	TDT:	B24~B28 page
	TDFT:	B31 page

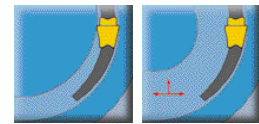


Designation	W (inch)	F (inch)	L (inch)	H (inch)	B (inch)	E (inch)	T _{max} (inch)	ØD _{min} (inch)	ØD _{max} (inch)	Insert	Screw	Wrench						
TTFR/L 25.4-30-3 RN(*)	.118	.94	6.0	1.00	1.00	1.50		.94	1.38	TDFT-3E R/L	SH M6X1X25	L-W5						
TTFR/L 25.4-35-3 RN(*)								.39	1.14				1.57					
TTFR/L 25.4-40-3 RN(*)									1.34				1.97					
TTFR/L 25.4-50-3 RN								.59	1.73				2.76					
TTFR/L 25.4-70-3 RN									2.52				3.74					
TTFR/L 25.4-30-4 RN(*)	.157	.93				6.0	1.00	1.00	1.54				.39	1.42	TDFT-4E R/L TDT 4 TDXU 4E-0.4	SH M6X1X25	L-W5	
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													.79	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 25.4-60-6 RN	.236	.89	6.0	1.00	1.00				1.93		1.89	3.11	TDT 6	SH M6X1X25	L-W5			
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

T-Clamp Ultra Plus TOOLHOLDERS

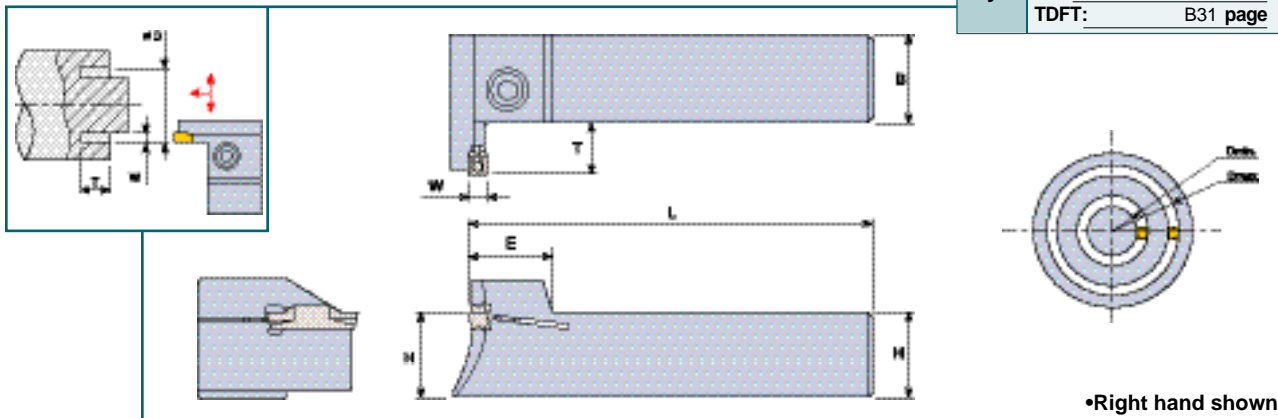
Deep Face Turning and Grooving



TTFPR/L

Use Insert

Style	TDXU:	B23 page
	TDT:	B24-B28 page
	TDFT:	B31 page



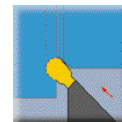
B

Designation	W (inch)	L (inch)	H (inch)	B (inch)	E (inch)	T _{max} (inch)	ØD _{min} (inch)	ØD _{max} (inch)	Insert	Screw	Wrench
TTFPR/L 25.4 - 30 - 3	.118	6.0	1.00	1.00	.71	.39	.94	1.38	TDFT-3E R/L	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	1.97			
TTFPR/L 25.4 - 60 - 3							2.13	3.35			
TTFPR/L 25.4 - 30 - 4	.157	6.0	1.00	1.00	.71	.47	.87	1.57	TDFT-4E R/L	SH M5X0.8X25	L-W4
TTFPR/L 25.4 - 40 - 4							1.26	1.97	TDXU 4E-0.4		
TTFPR/L 25.4 - 50 - 4							1.65	2.36			
TTFPR/L 25.4 - 60 - 4							2.05	3.35	TDT 4		
TTFPR/L 25.4 - 60 - 6	.236	6.0	1.00	1.00	.87	.79	1.89	3.35	TDT 6	SH M6X1X25	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

T-Clamp Ultra Plus TOOLHOLDERS

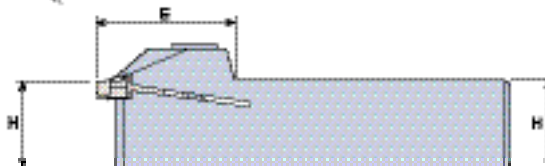
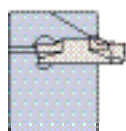
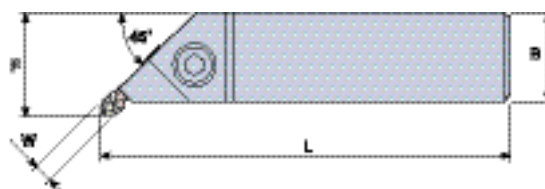
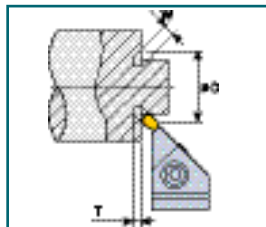
External Undercutting



TGEUR/L

Use Insert

Style	TDT:	B24~B28 page
	TDIT:	B29~B30 page



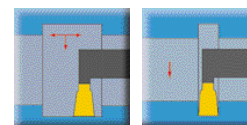
•Right hand shown

Designation	W (inch)	F (inch)	L (inch)	H (inch)	B (inch)	E (inch)	T _{max} (inch)	ØD _{min} (inch)	Screw	Wrench
TGEUR/L 1616 - 3	.118	.76	4.3	.63	.63	1.18	.11	1.26	SH M5 X 0.8 X 16	L-W4
TGEUR/L 1616 - 4	.157	.77	4.3	.63	.63	1.18	.11	1.26	SH M5 X 0.8 X 16	L-W4
TGEUR/L 19 - 3	.118	.92	5.0	.75	.75	1.18	.11	1.26	SH M5 X 0.8 X 20	L-W4
TGEUR/L 19 - 4	.157	.92	5.0	.75	.75	1.18	.11	1.26	SH M5 X 0.8 X 20	L-W4
TGEUR/L 25.4 - 3	.118	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	.157	1.12	6.0	1.00	1.00	1.18	.11	1.26	SH M5 X 0.8 X 25	L-W4
TGEUR/L 25.4 - 6	.236	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

T-Clamp Ultra Plus TOOLHOLDERS

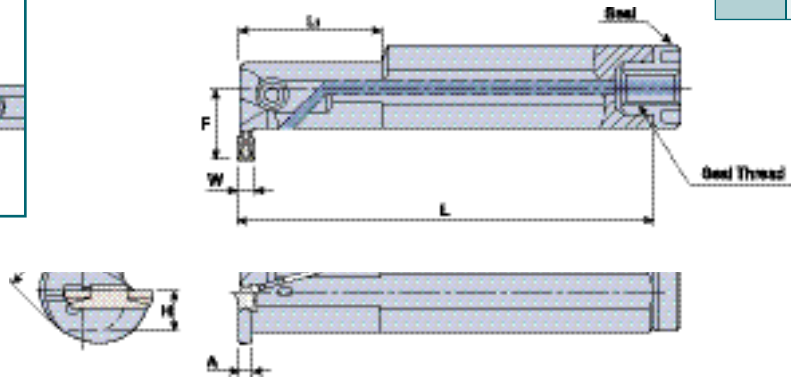
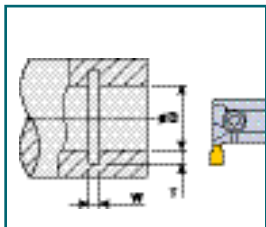
ID Turning and Grooving



TTIR/L

Use Insert

Style	TDXU:	B23 page
	TDIT:	B29-B30 page
	TDA/TSA:	B31 page



•Right hand shown

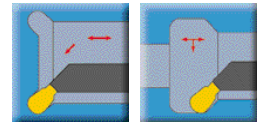
Designation (inch mm)	W Range (inch mm)	Ød (inch mm)	F (inch mm)	L (inch mm)	L1 (inch mm)	H (inch mm)	Tmax (inch mm)	ØDmin (inch mm)	A (inch mm)	Seal	Seal Thread	Screw	Wrench
TTIR/L 19 - 3C TTIR/L 20 - 3C	.095 - .126 2.41 - 3.20	.75 20	.62 15.8	6.5 160	1.57 40	.33 9.0	.26 6.5	.98 25	.083 2.1	PL20	M6	SH M5 X 0.8 X 16	L-W4
TTIR/L 19 - 4C TTIR/L 20 - 4C	.126 - .165 3.21 - 4.20	.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 25.4 - 3C TTIR/L 25 - 3C	.095 - .126 2.41 - 3.20	1.00 25	.69 17.5	8.0 200	1.57 40	.45 11.5	.23 5.8	.98 25	.083 2.1	PL25	R1/8"	SH M5 X 0.8 X 16	L-W4
TTIR/L 25.4 - 4C TTIR/L 25 - 4C	.126 - .165 3.21 - 4.20	1.00 25	.69 17.5	8.0 200	1.57 40	.45 11.5	.23 5.8	.98 25	.114 2.9	PL25	R1/8"	SH M5 X 0.8 X 16	L-W4
TTIR/L 25.4 - 5C TTIR/L 25 - 5C	.166 - .205 4.21 - 5.20	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	R1/8"	SH M6 X 1 X 25	L-W5
TTIR/L 31.7 - 4C TTIR/L 32 - 4C	.126 - .165 3.21 - 4.20	1.25 32	.82 20.8	10.0 250	2.36 60	.55 14.0	.26 6.5	1.26 31	.114 .29	PL32	R1/8"	SH M5 X 0.8 X 16	L-W4
TTIR/L 31.7 - 5C TTIR/L 32 - 5C	.166 - .205 4.21 - 5.20	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	R1/8"	SH M6 X 1 X 25	L-W5
TTIR/L 31.7 - 6C TTIR/L 32 - 6C	.205 - .244 5.21 - 6.20	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	R1/8"	SH M6 X 1 X 25	L-W5
TTIR/L 31.7 - 8C TTIR/L 32 - 8C	.244 - .327 6.21 - 8.30	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	R1/8"	SH M6 X 1 X 25	L-W5
TTIR/L 38.1 - 8C TTIR/L 40 - 8C	.244 - .327 6.21 - 8.30	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	R1/8"	SH M6 X 1 X 25	L-W5

TDA 6 Insert is only available to TTIR/L 32-6C
Ordering example : 5 pcs. TTIR 19-3C

B

T-Clamp Ultra Plus TOOLHOLDERS

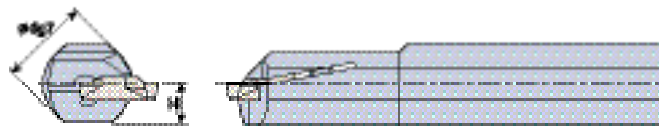
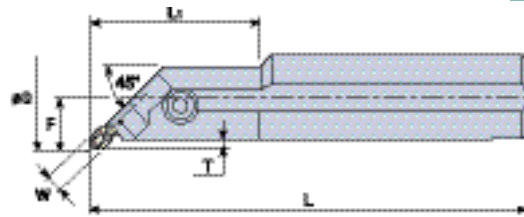
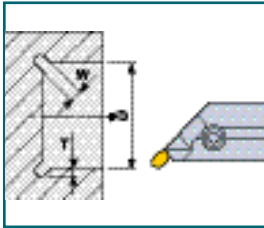
Internal Undercutting



TGIUR/L

Use Insert

Style TDIT: B29-B30 page



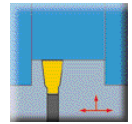
•Right hand shown

Designation	W (inch)	Ød (inch)	F (inch)	L (inch)	L 1 (inch)	H (inch)	T _{max} (inch)	ØD _{min} (inch)	Screw	Wrench
TGIUR/L 19 - 3	.118	.75	.50	6.5		.35	.11	1.50	SH M5 X 0.8 X 12	L-W4
TGIUR/L 19 - 4	.157	.75	.51	6.5		.35	.11	1.50	SH M5 X 0.8 X 16	L-W4
TGIUR/L 25.4 - 3	.118	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	.157	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	.236	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

T-Clamp Ultra Plus TOOLHOLDERS

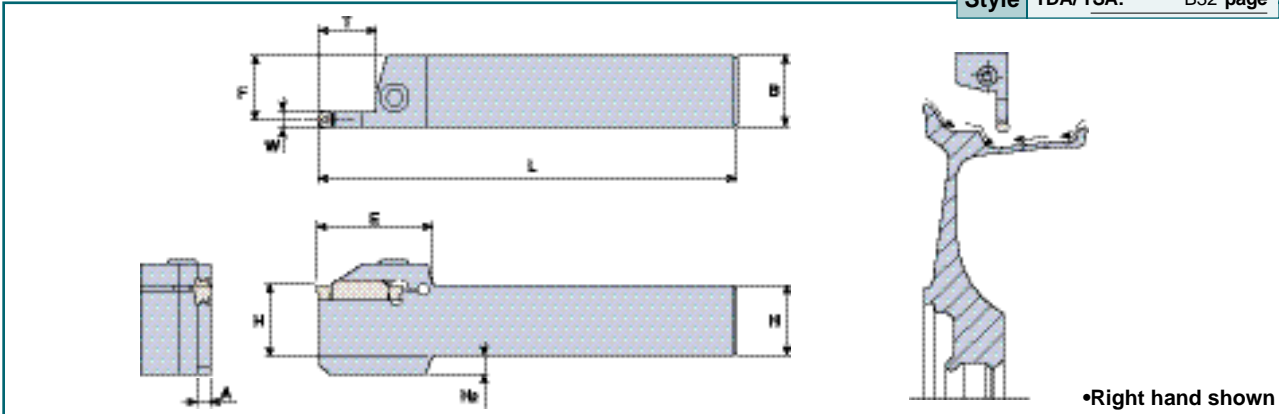
External Turning for Aluminum Wheel Machining



TTER/L

Use Insert

Style TDA/TSA: B32 page



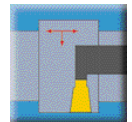
Designation	W (inch)	B (inch)	L (inch)	F (inch)	E (inch)	A (inch)	H (inch)	H2 (inch)	Tmax (inch)	Screw	Wrench
TTER/L 25.4 - 6	.236	1.00	6.00	.904	1.61	.191	1.00	7	.79	SH M6 X 1 X 25	L-W5
TTER/L 25.4 - 8	.315	1.00	6.00	.805	1.83	.230	1.00	7	.79		

Ordering example : 5 pcs. TTER 25.4-6

B

T-Clamp Ultra Plus TOOLHOLDERS

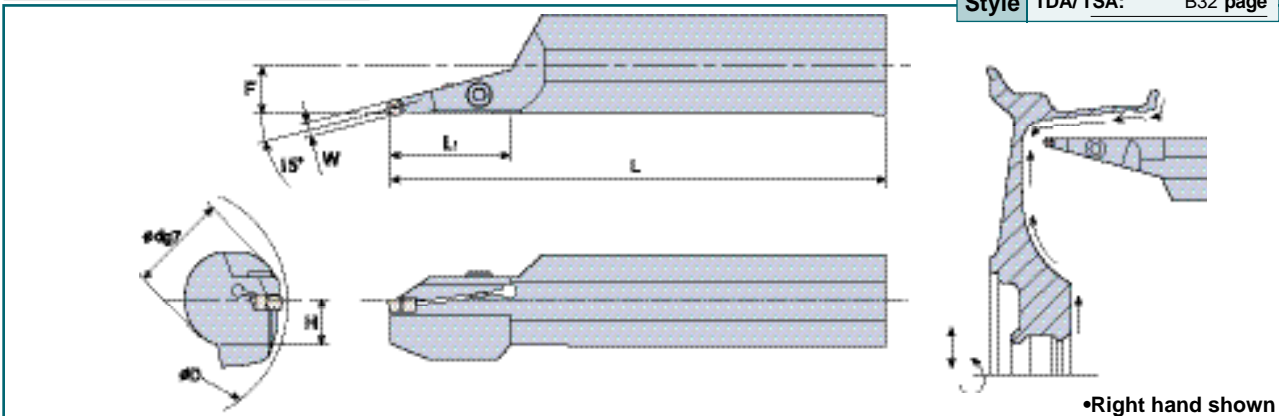
Internal Turning for Aluminum Wheel Machining



TGIUR/L

Use Insert

Style TDA/TSA: B32 page



Designation	W (inch)	Ød (inch)	F (inch)	L (inch)	L1 (inch)	H (inch)	ØDmin (inch)	Tmax (inch)	Screw	Wrench
TGIUR/L 38.1-6-15A	.236	1.5	.714	12	1.97	.699	6.30	1.968	SH M6 X 1 X 25	L-W5
TGIUR/L 38.1-8-15A	.315	1.5	.694	12	2.36	.699	6.30	3.27		

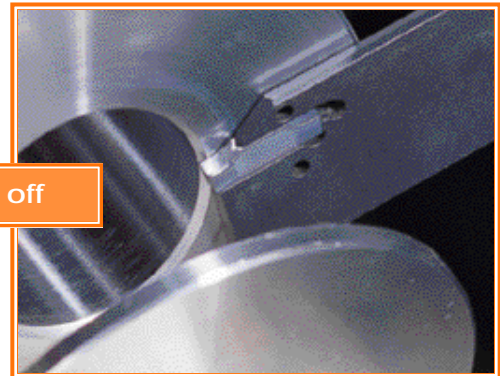
Ordering example : 5 pcs. TGIUR 38.1-8-15A

Presentation of the T-Clamp Ultra & T-Clamp Ultra Plus System

- **The User's Guide presents basic information that will enable the user to derive full benefit from the T-Clamp Ultra & T-Clamp Ultra Plus advantage.**

T-Clamp enables multifunctional operations in one system :

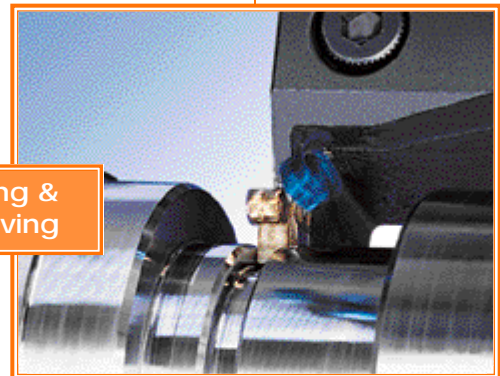
- Deep grooving
- Cut off and grooving
- Shallow grooving
- Turning and grooving
- Precision grooving and recessing
- Face grooving and face turning
- Undercutting and recessing



Cut off

■ Inserts

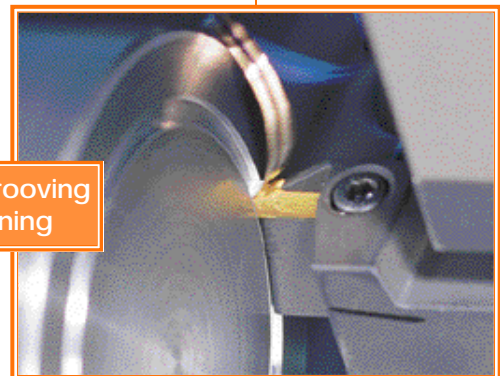
- Accuracy with good repeatability
- Molded chipformer
- Top and bottom prism hold insert firmly and accurately in right place
- TDJ/C-unique, double-ended insert for grooving and cut off
- TIMJ/C, TSJ/C-unique, single-ended insert for deep grooving and cut off
- TDT-unique, double-ended insert for side turning and grooving
- TIPV-unique, single-ended insert for side turning and grooving
- TDA-unique, double-ended insert for aluminum wheels machining



Turning & Grooving

■ Blades

- Simple, accurate and rapid indexing
- Top and bottom seated insert alignment
- No additional spare parts
- Uses standard tool blocks



Face Grooving & Turning

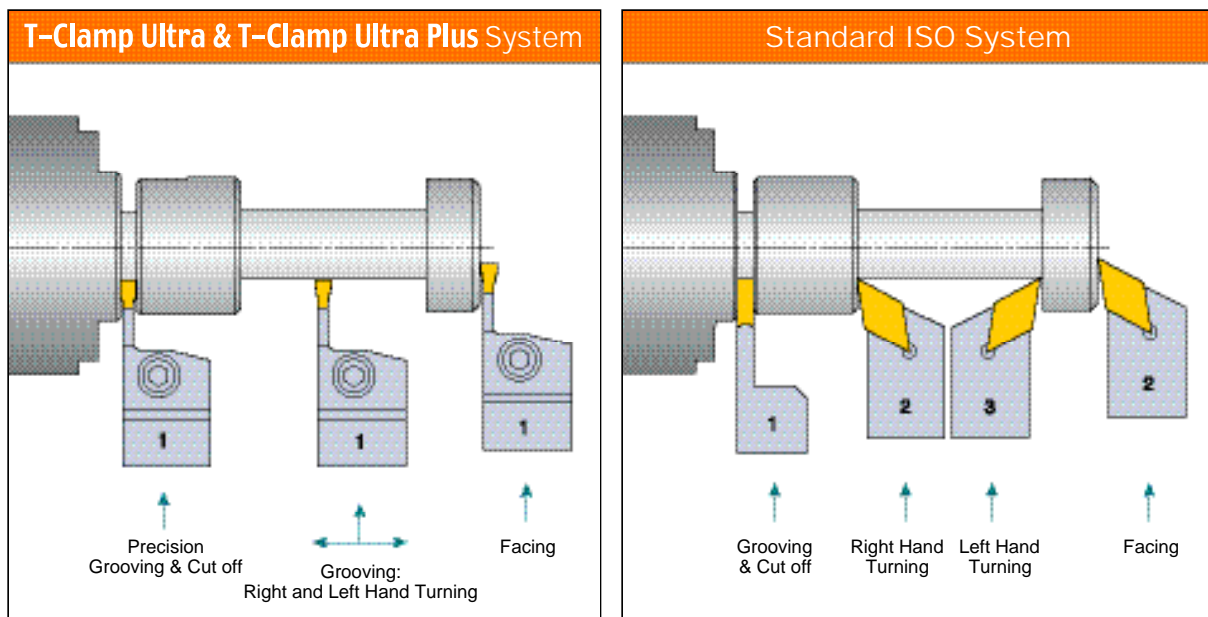
■ Integral Shank Tool

- Simple, accurate and rapid indexing
- Top and bottom seated insert alignment
- Stable support against side forces
- No additional spare parts
- Standard shank dimensions

■ Advantage of the T-Clamp Ultra & T-Clamp Ultra Plus

- **T-Clamp** is available as either double-ended or single ended insert for maximum economy.
- Multifunctional use.
 - Right-hand and left-hand turning, grooving and parting with a single tool.
- **T-Clamp** replaces one or more ISO tools.
 - Reduces number of tools per operation.
 - Fewer insert and toolholder types in inventory.
- Shorter cycle time
 - Shorter setup with less downtime.
 - Reduces requirement for turret indexing.
- Less machining time
 - The excellent surface finish from rough turning may eliminate finish turning.

■ T-Clamp Ultra & T-Clamp Ultra Plus System vs. Standard ISO System



Selecting Inserts

For a proper match of insert and cutting condition, the following variables must be considered.

- Width of cut (width of insert)
- Chipformer style
- Lead angle
- Corner radii
- Carbide grade

Width of Cut (WOC) and Depth of Cut (DOC)

In selecting WOC, the main factor to consider is the required DOC.

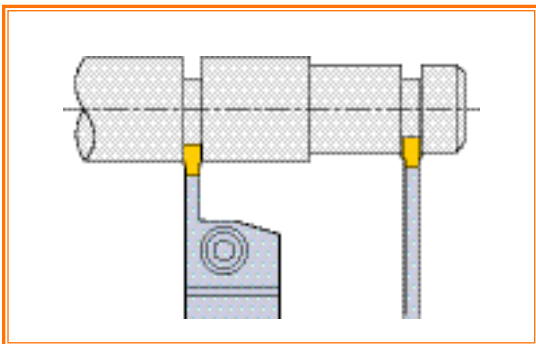
The ratio $DOC \approx 8 \times WOC$ is of practical use for alloy steel of average machinability :
for example .118inch WOC insert TSC3 to cut off a $\varnothing 1.89$ inch solid bar

* A neutral insert with 0° lead angle increases DOC capacity

Insert Support

A Self-Clamp tool (Blade) is recommended for deep radial machining.

A screw clamp holder is recommended for axial and small DOC machining.

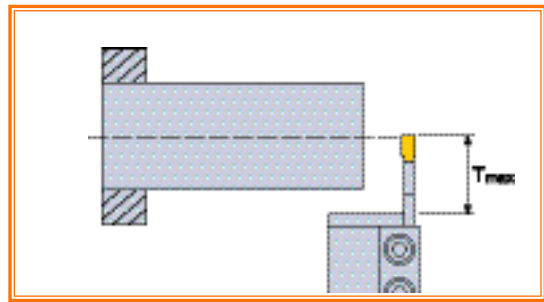


Blade or Holder Size

To minimize risk of vibration and deflection, always choose :

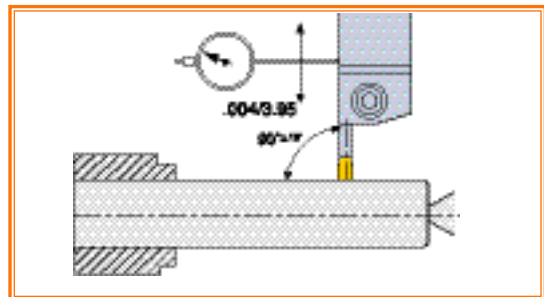
- Blade or toolholder with smallest possible overhang
- Toolholder with maximum shank dimension
- Blade or holder with maximum width

Also recommend that T_{max} is less than Blade height(B)



90° Mounting

It's very important that the insert is mounted at 90° to the centerline of the workpiece in order to obtain perpendicular surfaces and reduce the risk of vibration.



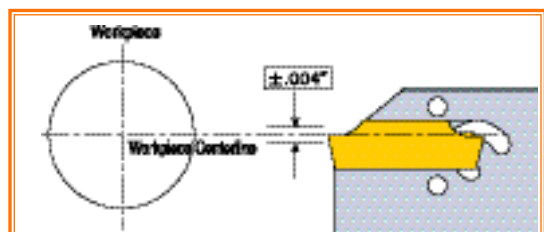
- Workpiece machinability

The workpiece material affects all of the above factors.

- Machine power and setup rigidity

Excessive WOC on a light-cut will yield vibration and may even stop spindle rotation.

Setup



- Cut off as close to chuck as possible.
- On new applications, machine first in the low or middle range of recommended speeds and feeds.

■ Machining

- 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 cut off.

■ Usage

- Replace worn inserts promptly.
The price of a new one is much less than the risk of damage from continuing with one that is worn out.
- Replace blades having worn or damaged pockets.
- Never try to repair damaged pockets.

■ Chipbreaker

The chipbreaker's function is to narrow the chip- it occurs near the cutting edge in the region of high temperature.

Producing chips that are narrower than the groove gives the following advantages :

- Eliminates frictions with groove walls
- Prevents chip overload
- Permits higher feeds
- Produces unscratched surfaces, eliminating additional facing.

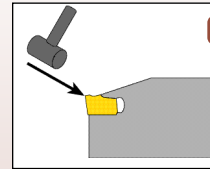
Curling the chips into compact spirals or breaking them short is ideal for easy disposal.

Curling is affected by the chipbreaker type and the machining conditions.

Facilitate ease of cut by selection of an appropriate chipformer for the specific application.

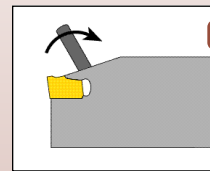
■ Insertion and Extraction of Insert

T-Clamp Ultra Insert Clamping



Insert mounting

By hand or with plastic hammer.

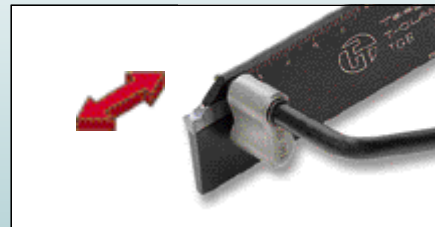


Insert Extraction

With extractor key.

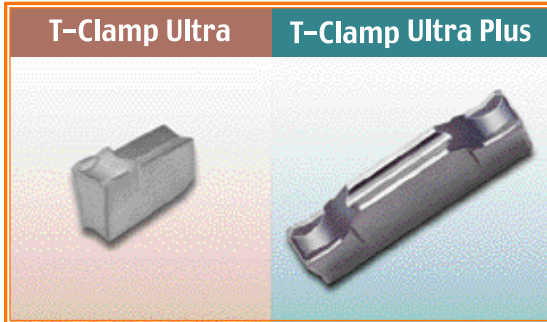
T-Clamp Ultra Plus Insert Clamping

EDG-33B Extractor for TGB Blades



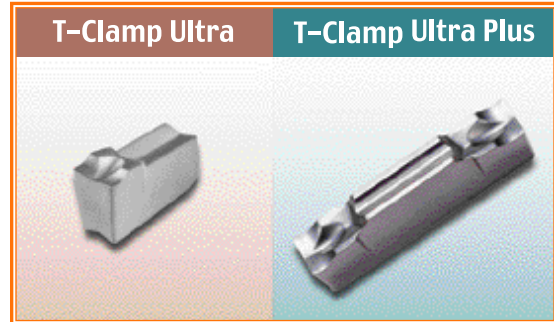
■ Selection of Chipbreakers

"C" Type



- First choice for hard materials and tough applications.
- For general application on steel, alloy steel and stainless steel.
- Medium-to-high feeds.

"J" Type

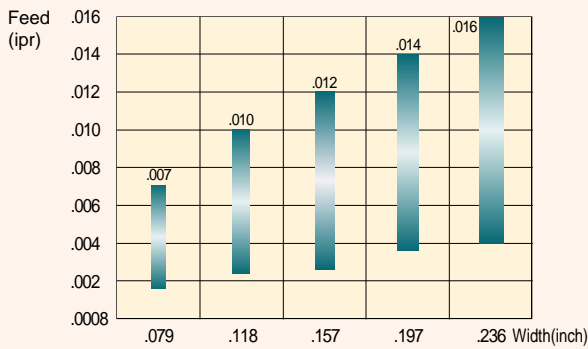


- First choice for soft materials, parting of tubes, small diameters and thin-walled parts.
- Low forces and smaller burrs.
- Improved straightness.
- Low-to-medium feeds.

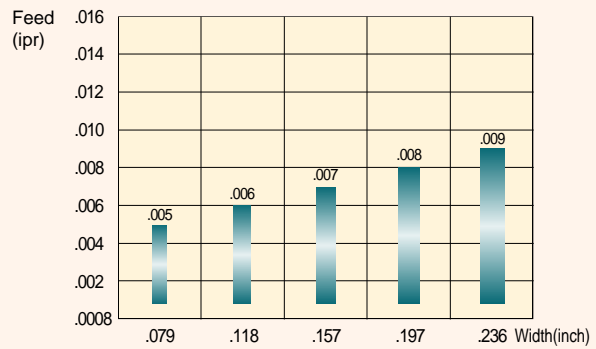
Recommended feed range as a function of insert width

Material ; SAE4140 (HB240)

Recommendations are for neutral inserts ; for R/L inserts, reduce feeds by 20-40%



" C "



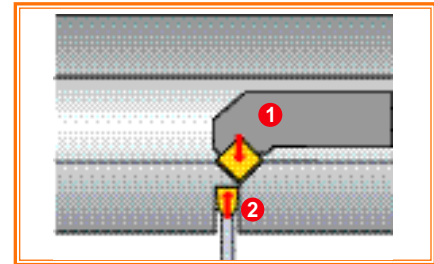
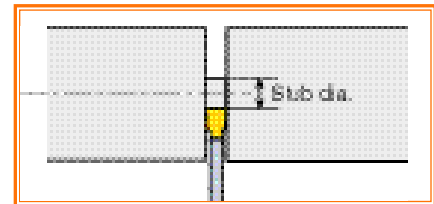
" J "

Workpiece Materials					
	Alloy Steel	Austenitic Stainless	High-Temp Alloys	Nonferrous Materials	Cast Iron
High ↑ Feed ↓ Low	C	C	C	C Brass	C
	J	J	J Titanium	J Aluminium	

■ Practical Troubleshooting

1. TO REDUCE BURR

- On CNC reduce feed by 50% on approaching center when stub diameters \cong 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)

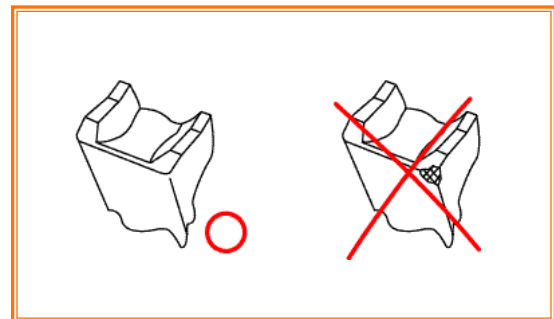


2. TO IMPROVE SURFACE FINISH

- Increase cutting speed.
- Use neutral inserts.
- Select chipformer that provides optimum chip control.
- Use coated carbide.
- Improve coolant application
- Eliminate chatter.

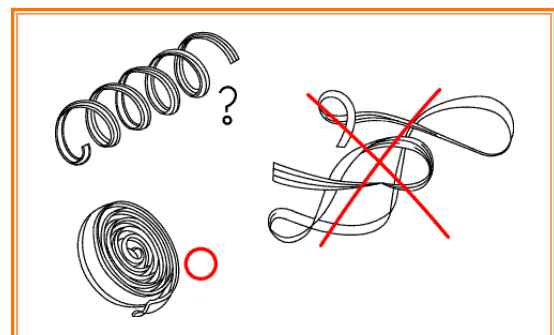
3. TO IMPROVE FLATNESS

- Check inserts and replace any that show wear or chipping at corners.
- Use neutral inserts.
- Use as large a blade as possible, i.e., TH101 32 instead of TH101 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.



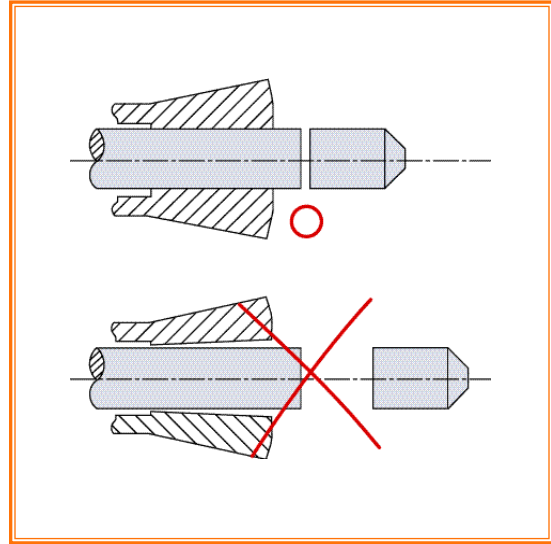
4. TO IMPROVE CHIP CONTROL

- 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

- Cut 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.

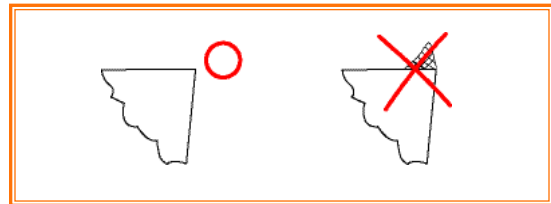


6. TO PREVENT CHIPPING OF CUTTING EDGE

- Use appropriate carbide grade and geometry.
- Use insert with larger corner radii.
- Prevent chatter.
- Prevent feed-snap at end of cut. A sturdy backlash eliminator must function in resilient feed-systems.
- Fluid in hydraulic systems must be 100% free of air.
- Prevent or reduce built-up edge. To identify built-up edge as the cause of chipping, interrupt the cut and check edge.

7. TO PREVENT OR REDUCE BUILT-UP EDGE

- Use appropriate carbide grade and geometry.
- Increase cutting speed.
- Apply coolant abundantly. An oil-base coolant is recommended.



8. PARTING ON ECCENTRIC TUBES

Inserts with a 4° lead angle are usually recommended for tubes. However, the combination of eccentric bore and machine resiliency may increase feed-snap on breakthrough and damage the cutting edge. Changing to a 8° lead angle insert will moderate breakthrough. Alternatively, inserts with an extra negative rake-land that strengthens the cutting edge are available on request.

■ Nominal Cutting Speed (SFM) for Cut off & Grooving - **T-Clamp Ultra**

Chipbreaker ①		TIMC												
Width		1.6	2, 2.4		3	4.8, 5, 6			2	3	4.8, 6			
Grade		TT7200						TT5100						
Feed (ipr)		.002 .003 .005	.002 .004 .008	.004 .008 .012	.004 .008 .012 .016	.002 .004 .008	.004 .008 .012	.004 .008 .012	.004 .008 .012	.004 .008 .012 .016				
Workpiece Material	Brinell Hardness	Cutting Speed (SFM)												
Carbon Steel	0.2 %C 150	460 460 425	490 490 425	560 460 425	590 525 440 395	430 430 360	475 395 360	490 440 380 360						
	0.45 %C 190	440 410 395	460 460 380	510 430 380	540 475 395 330	395 395 330	425 360 330	460 395 330 295						
	0.83 %C 250	360 360 330	410 410 280	440 360 -	475 395 330 -	360 360 295	380 310 260	395 330 280 230						
Alloy Steel	200	360 360 330	410 410 280	440 360 310	475 395 330 250	360 360 295	380 310 260	395 330 280 230						
	200 ~ 250	310 310 280	360 360 200	360 310 250	395 345 280 200	310 310 230	310 260 250	330 295 260 200						
	275 ~ 325	295 295 260	345 345 180	345 295 -	380 330 260 -	295 295 215	295 245 200	280 250 230 150						
	325 ~ 375	230 230 200	260 260 -	260 230 -	260 250 200 -	230 230 130	230 200 -	230 215 165 -						
	375 ~ 425	150 150 -	180 180 -	180 150 -	260 165 - -	165 165 -	165 130 -	165 150 - -						
Martensitic Stainless Steel	175 ~ 225	425 360 330	490 330 230	460 330 260	525 425 - -	420 405 330	475 390 280	490 460 360 -						
	275 ~ 325	345 345 295	360 360 -	410 345 -	440 395 295 -	295 295 -	345 295 210	380 330 245 -						
	375 ~ 425	165 165 -	165 165 -	180 130 -	195 165 - -	165 165 -	265 115 -	180 130 - -						
Austenitic	135 ~ 175	425 425 395	440 440 360	490 425 -	525 460 - -	345 345 110	425 380 260	460 390 310 -						
Cast Steel	Carbon 150	440 440 410	460 460 395	540 440 330	575 490 380 295	395 395 330	460 380 280	490 395 330 250						
	150 ~ 200	260 260 250	280 280 230	330 280 -	345 301 215 115	235 235 200	280 230 -	295 260 180 -						
	200 ~ 250	230 230 215	215 215 200	280 245 -	295 260 165 -	- - -	- - -	- - - -						
	250 ~ 300	- - -	- - -	- - -	- - - -	180 180 165	230 215 -	260 230 130 -						

① For TIMJ chipbreaker reduce feed by approximately 30%

Iron-base Alloys (TIMC inserts)

Workpiece Material	Brinell Hardness	Feed (ipr)	Cutting Speed (SFM)	Carbide (Grade)
V57 .A286	solution treated	.006 - .008	98 - 130	P40A
Incoloy 800, 801	81Rb	.004 - .006	82 - 98	K10
	Solution aged 24 - 34Rc	.006 - .008	82 - 115	P40A
Austenitic Stainless Steel	24 - 34Rc	.004 - .006	65 - 80	K10
	Annealed	.004 - .006	395 - 425	TT5100, P40A
302, 303, 304, 310, 316, 321, 347	135 - 175HBN	.004 - .006	590 - 625	TT7200, TT5100, P40A
	Annealed 135 - 175HBN	.004 - .006	655 - 690	P40A
403, 405, 410, 420, 430, etc.	Q & T 28 - 35Rc	.004 - .006	360 - 394	P40A
	28 - 35Rc	.004 - .006	425 - 460	TT7200, TT5100, P40A
17-4PH	Solution treated	.004 - .006	360 - 394	P40A
17-7PH	28 - 35Rc	.004 - .006	425 - 460	P40A
Maraging Steel, Maraging	Solution aged 36 - 40 Rc	.004 - .006	195 - 260	TT7200, P40A
	Annealed 26 - 34Rc	.006 - .008	295 - 330	P40A
120, 180, 200, 250, 300, 350	26 - 34Rc	.004 - .006	360 - 390	TT7200, P40A
120, 180	Maraged 38 - 45Rc	.004 - .006	165 - 200	P40A
	38 - 45Rc	.004 - .006	197 - 230	TT7200, P40A
200, 250, 300, 350	Maraged 50 - 52Rc	.002 - .004	65 - 100	K10

■ Recommended Cutting Conditions

- Recommendations given are normal machining conditions. If excessive wear occurs, select an insert in a harder grade. If chipping or breakage occurs, select an insert in a tougher grade.
- The high end of the cutting speed recommendations given here are for insert widths of .118inch and over at low-to-medium feeds. For smaller insert widths or machining at high feeds, choose a lower cutting speed.
- Optimal grade selection depends also on workpiece material, diameter and rigidity of the system.

■ Recommended Conditions - **T-Clamp Ultra Plus**

Materials	Hardness Brinell HB	Grade TT8020	Grade TT7220	Grade TT9030
		← Tougher		Harder →
Cutting Speed (sfm)				
Carbon Steel	0.2%C		360 ~ 560	
	0.45%C		330 ~ 490	
	0.83%C		280 ~ 460	
Alloy Steel	200		280 ~ 460	
	200 ~ 250		230 ~ 460	
	275 ~ 325		200 ~ 360	
	325 ~ 375		165 ~ 330	
Cast Steel, Carbon Alloy	375 ~ 425		130 ~ 200	
	150		260 ~ 430	
	150 ~ 200		230 ~ 390	
Stainless Steel	250 ~ 300		200 ~ 330	
	Martensitic		330 ~ 490	
	275 ~ 325		230 ~ 380	
	375 ~ 425		200 ~ 330	
Austenitic	135 ~ 175		200 ~ 430	

■ Recommended Cutting Speed with ISO K Grades - **T-Clamp Ultra** & **T-Clamp Ultra Plus**

Cast Iron and Nonferrous Materials

Materials		Hardness Brinell HB	Grade K10
			Cutting Speed (sfm)
Carbon Steel	Low tensile, grey	180	200 ~ 265
	High tensile, grey, alloy	250	165 ~ 230
Malleable Iron	Short-Chipping	110 ~ 145	230 ~ 330
	Long-Chipping	200 ~ 250	230 ~ 295
Nodular Iron	Ferritic	160	200 ~ 280
	Pearlitic	250	150 ~ 250
	Chilled Cast Iron	400	50 ~ 80
Bronze	Lead Alloy	110	490 ~ 720
	Brass, Red brass	100	390 ~ 590
	Phosphor-bronze	100	330 ~ 460
Magnesium		40 ~ 90HRB	820 ~ 885
Aluminum		40 ~ 90HRB	820 ~ 1475

Nickel - base Alloys

Materials	Hardness Brinell HB	Grade K10
		Cutting Speed (sfm)
Astroloy, Rene41	Sol 240 ~ 300	65 ~ 100
Udimet 500, 700	S & A 310 ~ 400	50 ~ 80
Inconel W, X, 702, 718	Sol 240 ~ 300	50 ~ 100
M252, Waspaloy	S & A 400 ~410	50 ~ 80
Hastelloy	Annealed 90~100 HRB	80 ~ 130
Inconel 600	Cold drawn 250 ~ 330	65 ~ 115
TD2	Stress relieved 300	165 ~ 210

Titanium - base Alloys

Materials	Hardness Brinell HB	Grade K10
		Cutting Speed (sfm)
Ti5Al - 2.5Sn	Annealed 310 ~ 370	130 ~ 165
Ti6Al - 4V	Annealed 310 ~ 370	130 ~ 165
	S & A 370 ~ 410	80 ~ 130
Ti6Al - 6V - 2Sn	Annealed 380 ~ 420	100 ~ 135
Ti7Al - 4MO Ti8AlMO - 1V	S & A 380 ~420	100 ~ 130
TiA55 Ti75A Ti140A	Annealed 110 ~175	460 ~ 525
	Annealed 300 ~350	130 ~ 165

Cobalt - base Alloys

Materials	Hardness Brinell HB	Grade K10
		Cutting Speed (sfm)
HS21, HS31, HS36	As Cast 90 ~98 HRB	65 ~ 80
L605	Sol 90 ~98 HRB	65 ~ 80
	S & A 280 ~330	50 ~ 65
Stellite 6	370 ~ 420	50 ~ 65

S&A-Solution and aging
Sol-Solution treatment

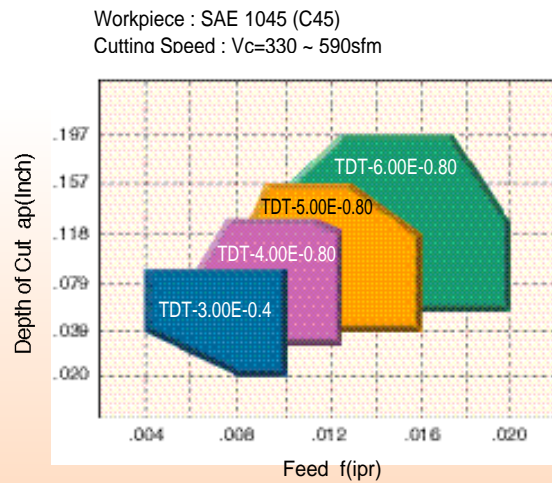
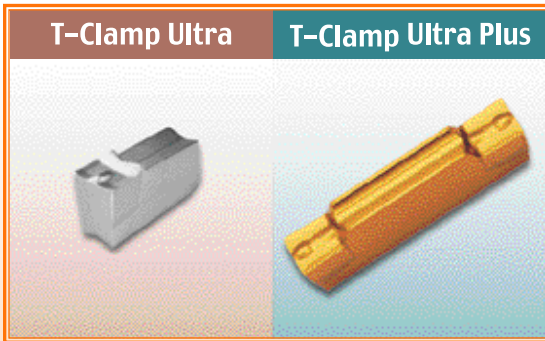


■ Chipbreaker Style : "T" Chipbreaker

- A type of chipbreaker is available for turning and grooving of steel, alloy steel and stainlesssteel - the T type-

- Operating range in Turning as a function of insert Width

"T" Type



Reduce 20~30% of cutting speed for Internal & Face machining

■ Toolholder or Blade Size

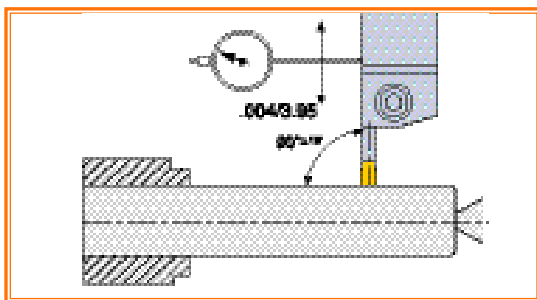
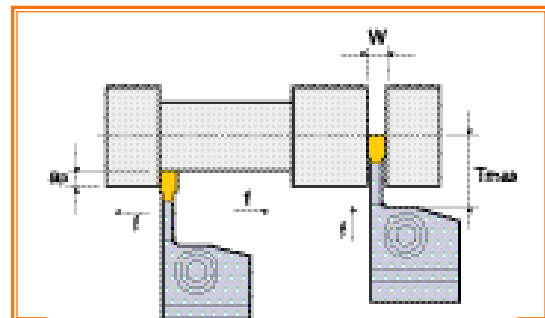
To minimize risk of vibration and deflection always choose :

- Toolholder or Blade with smallest possible overhang.
- Toolholder with maximum shank dimension.

■ Machining Conditions Definition

■ 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.



Grooving

- Vc-Cutting Speed (sfm)
- T_{max} -Maximum Depth (inch)
- f -Feed in Radial Direction (ipr)

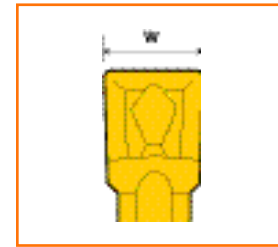
Turning

- Vc -Cutting Speed (sfm)
- a_p -Depth of Cut (inch)
- f -Feed in Lateral Direction (ipr)

■ Selecting Inserts

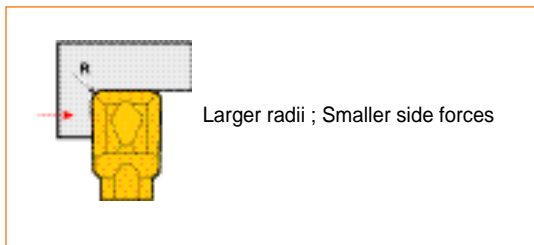
INSERT WIDTH

- Insert width strongly affects strength.
- For most efficient machining, select the widest possible insert.
- Chipbreaking range depends on insert width.
- A narrower width means better chipbreaking at lower feed rates.
- Wider inserts and stronger blades require higher forces and higher feed rates to achieve a frontal clearance angle.

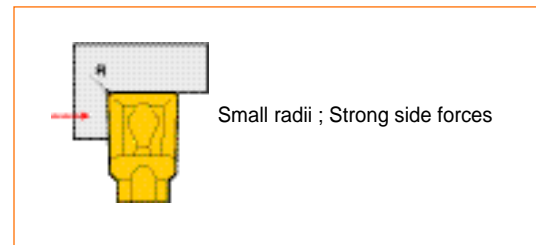


CORNER RADII ; LATERAL TURNING

- Choose large corner radii for longer tool life.

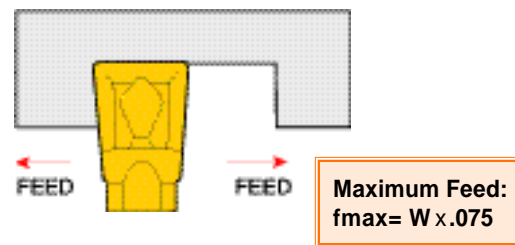


- Choose small corner radii to reduce cutting load and lower feed with narrow inserts



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 too small corner radii may reduce tool life.
- Maximum feed should not exceed the corner radii.
- For better chip formation in grooving, feed can be interrupted at small intervals.

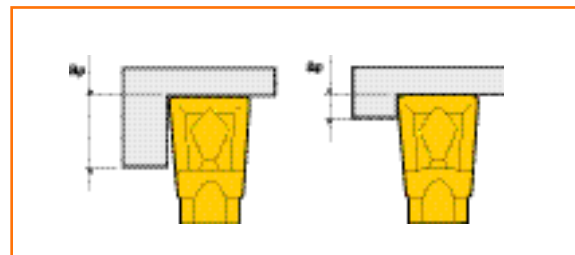


DEPTH OF CUT

- 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 larger deflection and larger frontal clearance.

With small depth of cut, deflection and frontal clearance may be too small.

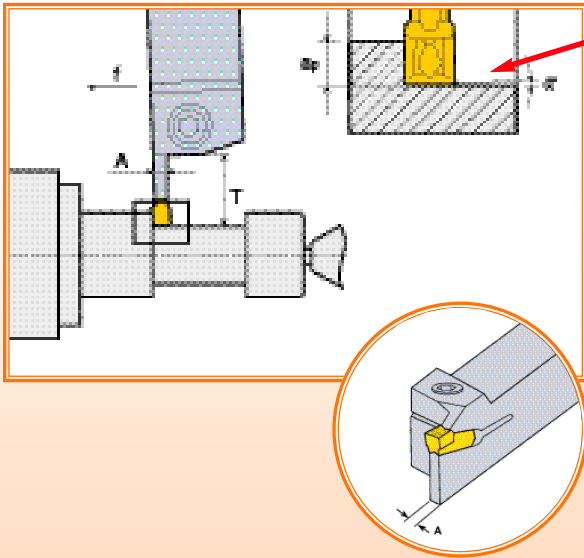


Maximum Depth of Cut : $a_{pmax} = W \times .8$



■ Principle of Turning With **T-Clamp Ultra** & **T-Clamp Ultra Plus**

- The clearance angle ϕ is a function of the side cutting forces and is not constant as is the case with ISO inserts.



Clearance angle between the insert and the workpiece

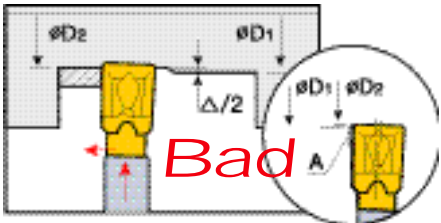
The deflection is influenced BY :

- Feed : f
- Depth of cut : ap
- Overhang : T
- Width of Insert Support : A
- Cutting speed : Vc
- Workpiece Material

* When these factors are properly applied, the insert (ϕ) creates a "Wiper" action providing excellent part surface quality and tolerance

■ Finishing Operation : Diameter Compensation

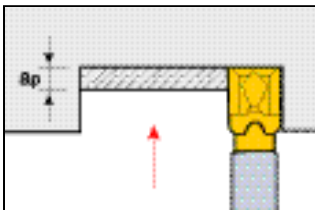
- A compensation factor for the final diameter must be used in the final machining operation. After the groove to the desired diameter, the machining direction changes to longitudinal turning. It is at this point when the deflection occurs. If machining continues without tool compensation, corner A will penetrate the workpiece as a result of the deflection phenomenon. (See picture) This will result in two different diameters $\phi D1$ from the grooving operation and $\phi D2$ from the turning operation. The difference between $\phi D1$ and $\phi D2$ is the change in diameter, designated at Delta Δ .



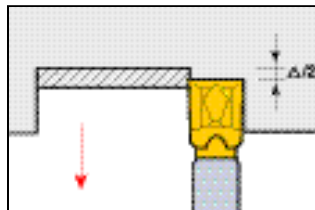
Tool compensation factor is calculated as shown :

$$\frac{\phi D1 - \phi D2}{2} = \frac{\Delta}{2}$$

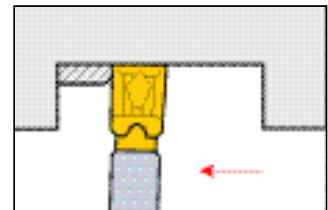
- Using the compensation factor will eliminate the difference in part diameter. Follow this simple procedure during machining.



1. Groove to the final diameter.

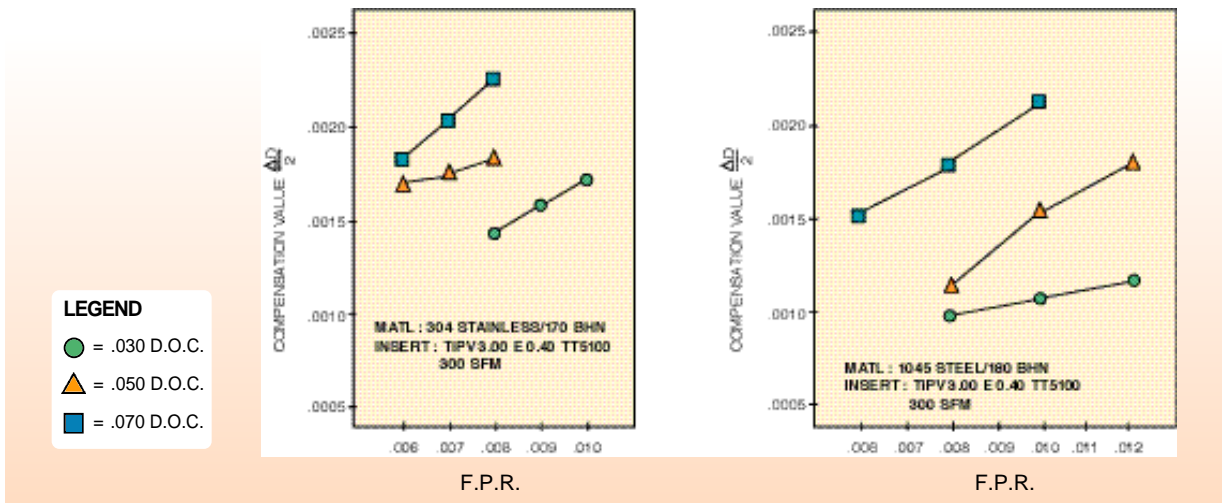


2. Pull the tool back, a distance equal to the value of $\Delta/2$



3. Continue the finish turning operation

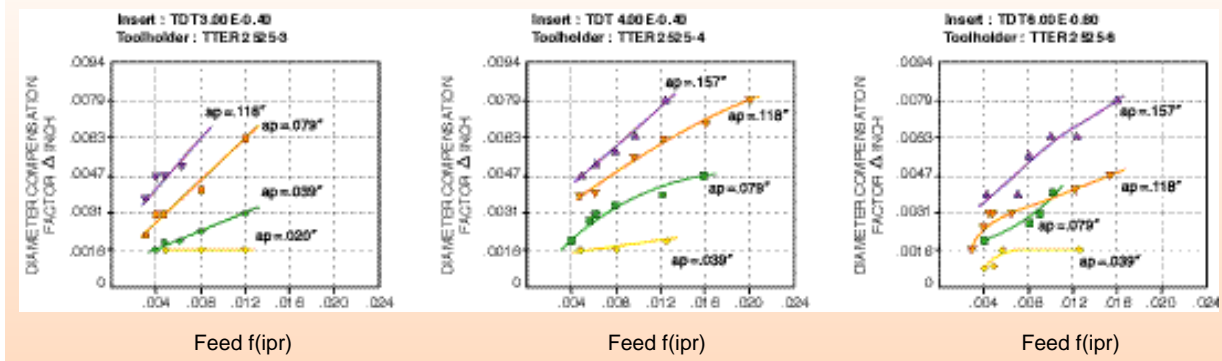
• Examples Of Compensation Values Based On Specific Work Materials



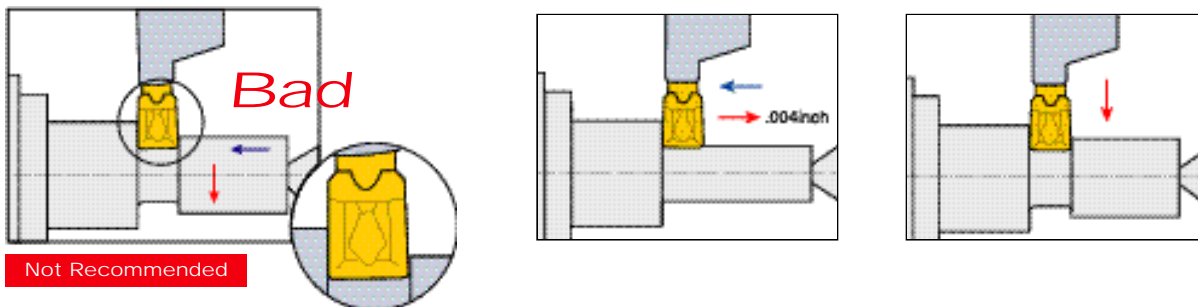
• The diagrams show experimental results for specific machining conditions. These are sample values that will vary with different workpiece materials and different holder types.

Recommendation:

Measure the ΔD value for your finishing operation in a short test using your selected finishing conditions. Do not run your test using the final diameter.

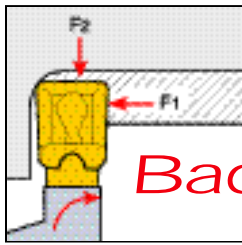


■ Multifunction Operations



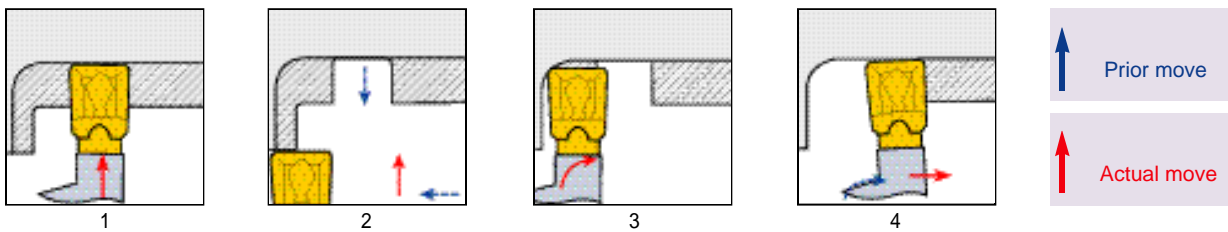
The **T-Clamp** tools are multifunctional tools, able to operate in a sequence of grooving and turning modes. Moving from turning to grooving requires consideration of the basic **T-Clamp** principle, thereby eliminating the possibility of insert breakage. In this situation one must release the side deflection which is necessary in turning, but not recommended in grooving.

■ Machining a Radius or a Chamfer



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 F1 and F2 as shown.

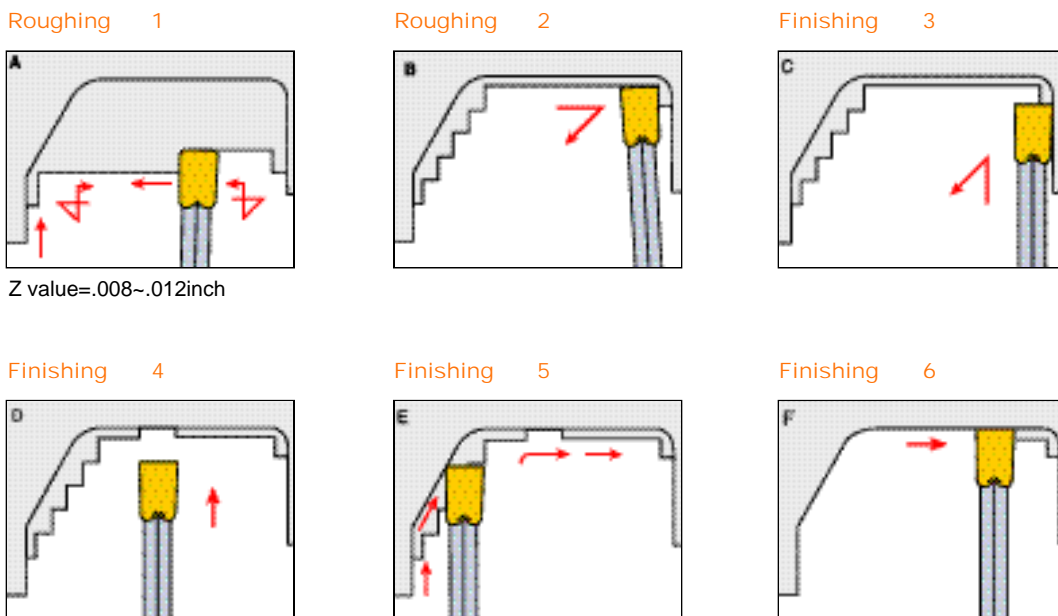
Recommended procedure to optimize machining and eliminate insert breakage



■ Machining Between Walls

One of the most important advantages of the **T-Clamp** system is the ability to machine between walls. To achieve the best results, the following sequence is recommended.

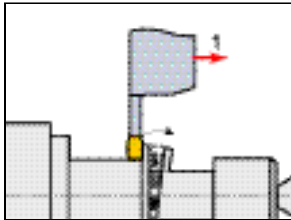
Leave steps near a wall. Don't arrive to the same Z value!!!



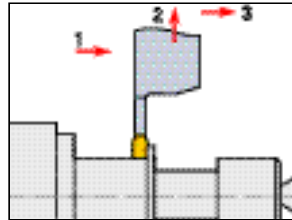
■ Eliminating a “Hanging Ring”

When turning at the end of a bar or toward a recess between two walls, a “Hanging Ring” may be formed. How to eliminate the unwanted “Hanging Ring”

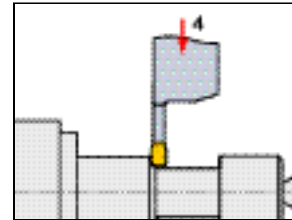
Roughing (Incorrect)



Roughing (Correct)

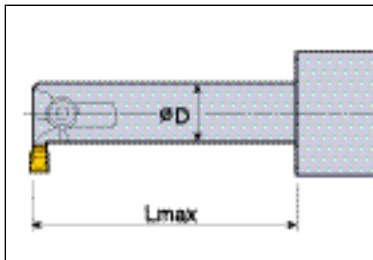


Finishing (Correct)



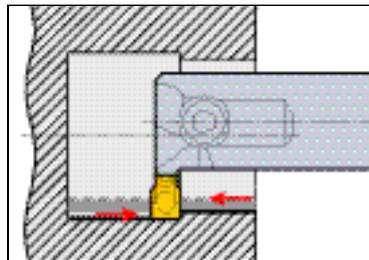
■ Optimizing Internal Machining

Toolholder Overhang



L max. 3D

Efficient use of Insert corners

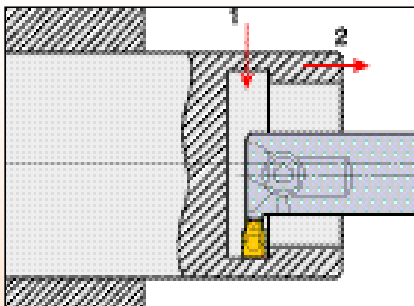


1. The first pass uses one corner for roughing
2. The other corner is used on the return path for semifinishing or finishing

■ Improving Internal Turning in a Blind Hole

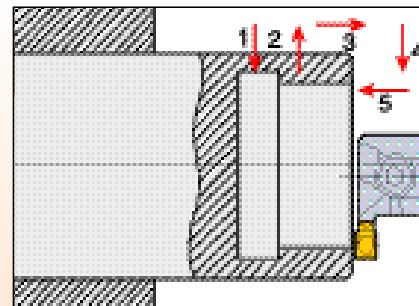
Internal turning in a blind hole brings about the problem of chip exit. When the tool reaches the rear side wall, chips may be caught between the wall and the insert. This may cause insert breakage.

Two solutions follow 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

Start by grooving at the rear wall. Pull the tool back to the outside. Turn the final diameter from outside toward the groove.

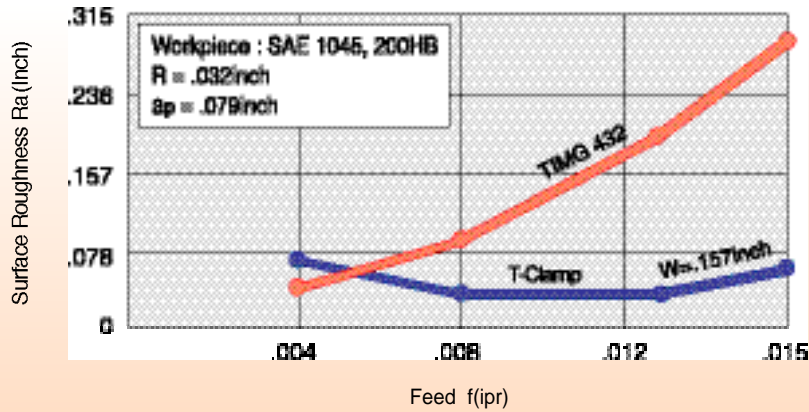


■ Surface Quality

ELIMINATING GRINDING OPERATIONS

Turning with **T-Clamp** Tools provides a surface quality far superior to anything normally possible when turning with standard ISO tools. In fact, turning with **T-Clamp** tools can produce a surface quality comparable to grinding.

T-Clamp vs ISO TURNING INSERTS



■ Calculation of Required Machine Power

Turning

$$P = \frac{K_c \cdot a_p \cdot f \cdot V_c}{.45 \cdot 10^3} \quad [\text{HP}]$$

Grooving / Parting

$$P = \frac{K_c \cdot W \cdot f \cdot V_c}{.45 \cdot 10^3} \quad [\text{HP}]$$

Face Grooving

$$P = \frac{K_c \cdot W \cdot f \cdot V_c}{.45 \cdot 10^3} \quad [\text{HP}]$$

Turning

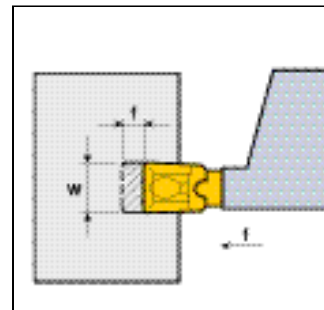
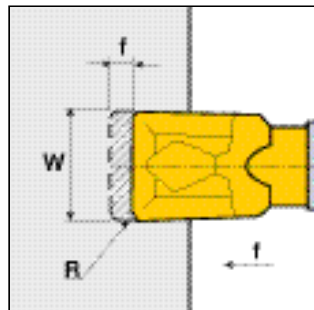
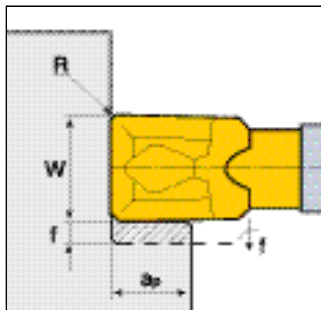
$$P = \frac{K_c \cdot a_p \cdot f \cdot V_c}{.61 \cdot 10^3} \quad [\text{kw}]$$

Grooving / Parting

$$P = \frac{K_c \cdot W \cdot f \cdot V_c}{.61 \cdot 10^3} \quad [\text{kw}]$$

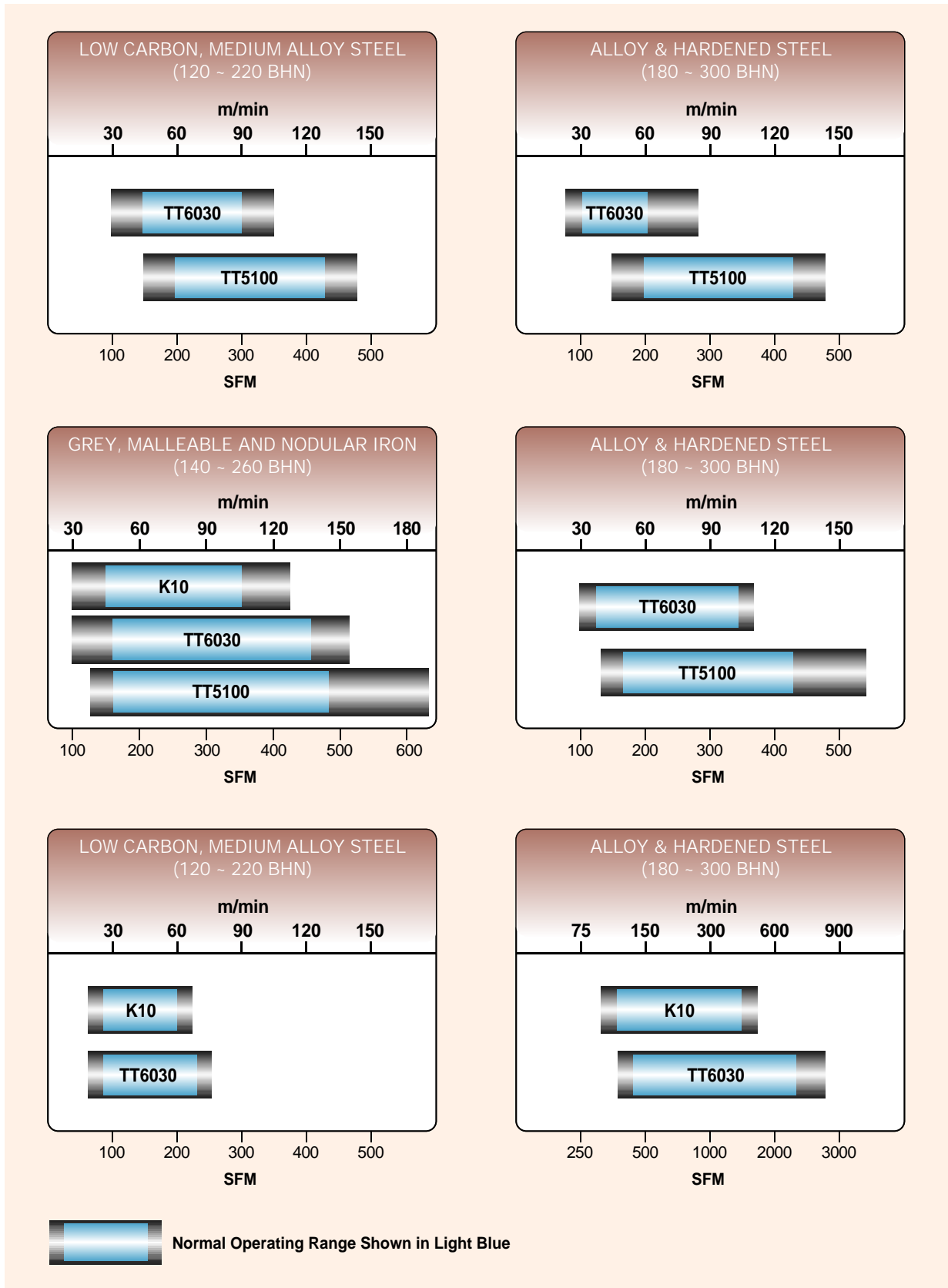
Face Grooving

$$P = \frac{K_c \cdot W \cdot f \cdot V_c}{.61 \cdot 10^3} \quad [\text{kw}]$$



Where : K_c - Specific Cutting Forces(N/mm²)
 turning values could be used.
 - Efficiency(.8)

Recommended Machining Conditions - T-Clamp Ultra



Recommended Machining Conditions - T-Clamp Ultra Plus

Turning with TDT-E Type Inserts																	
TT5100 (P20 - P40) and TT7220 (P25 - P45) Coated Carbide Grade 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	.021	.012	.018	.022	
		Cutting Speed (sfm)															
Carbon Steel	0.2%C	150	640	590	460	690	570	360	610	440	340	640	440	340	655	490	410
	0.45%C	190	590	540	425	655	525	330	560	395	260	590	395	260	590	410	330
	0.83%C	250	560	510	410	625	490	295	540	340	250	560	340	250	490	360	280
Alloy Steel	→ 200	560	510	410	625	490	295	540	330	250	560	330	250	560	360	280	
	200-250	525	480	395	610	480	280	525	310	230	540	310	230	540	340	260	
	275-325	490	440	380	590	460	260	490	295	195	525	295	195	525	330	230	
	325-375	380	295	165	410	250	165	360	210	165	380	230	165	360	260	195	
	375-425	230	195	100	280	200	130	200	165	110	260	200	130	280	210	165	
Stainless Steel	Mart	175-225	540	480	395	560	480	310	590	440	295	610	425	260	540	460	295
		275-325	410	380	295	425	380	280	490	360	280	525	360	230	490	380	280
	Aust	135-175	440	395	330	490	410	330	525	380	280	525	380	280	540	295	280
Cast Steel	Carbon	→ 150	425	380	330	440	380	260	410	295	250	425	310	230	440	340	260
	Alloyed	150-200	340	295	250	360	295	250	330	280	210	360	295	210	395	310	250
		200-250	310	280	195	330	250	210	280	230	195	295	260	195	340	260	230

Turning with TDT-E Type Inserts																	
K10 Uncoated Carbide Grade Cast Iron and Nonferrous Materials																	
INSERT		TDT-E	K10														
			Feed (ipr)														
Materials	Hardness Brinell HB	.004	.006	.008	Cutting Speed (sfm)												
		Malleable Iron	Short-chipping	110 - 145	460	360	295										
	Long-chipping	200 - 250	440	340	260												
Cast Iron	Low tensile, grey	180	525	340	260												
	High tensile, grey, alloy	250	395	295	210												
Nodular Iron	Ferritic	160	430	330	230												
	Pearlitic	250	410	295	210												
Chilled Cast Iron		400	65	50	-												
		600	50	35	-												
Bronze-brass-alloys:		120 - 200	430	340	230												
	Lead alloy	80 - 150	590	560	540												
	Brass, red brass	60 - 110	460	440	410												
	Phosphor-bronze	85 - 110	330	310	295												
Aluminum alloys:		150 - 200	780	720	650												
	Non-heat treatable	30 - 80	2820	2725	2625												
	Heat treatable	80 - 120	1085	1050	985												
Aluminum alloys, cast			1150	1085	985												
Magnesium		40 - 60HRB	1130	1050	920												
		60 - 90HRB	820	790	755												
Electrolytic copper		50 - 85	430	410	395												

Recommended Machining Conditions - **T-Clamp Ultra Plus**

Turning with **TDT-E** Type Inserts
 TT7220 (P25 - P45) & TT5100 (P20 - P40) Coated Carbide Grade, **K10** Uncoated Carbide Grade
 Iron-Base Alloys

Materials		TT7220(P25 - P45) TT5100(P20 - P40)	TT7220(P25 - P45)	K10						
		Feed (ipr)								
Commercial Designation	Hardness	.004	.006	.010	.008	.012	.016	.004	.006	.008
		Cutting Speed (sfm)								
V 57, A286	Sol 81 HRB	-	-	-	-	-	-	165	110	80
Incoloy 800, 801	S & A 24 - 34HRC	-	-	-	-	-	-	180	130	100
Austenitic Stainless Steel 302, 303, 304, 310 316, 321, 347	Annealed 135 - 175 HB	295	280	250	180	165	150	210	180	165
Martensitic Stainless Steel	Annealed 135 - 175 HB	440	410	330	180	165	150	230	215	195
403, 405, 410, 420 430, etc.	Q & T 28 - 35 HRC	330	295	280	165	150	130	-	-	-
17-4 PH	Sol 28 - 35 HRC	440	425	410	330	310	295	-	-	-
17-7 PH	S & A 36 - 40 HRC	260	250	230	180	165	150	-	-	-
Maraging Steel 120, 180, 200, 250 300, 350 Grade	Annealed 26 - 34 HRC	425	410	395	295	280	260	-	-	-
120, 180 Grade	Maraged 38 - 45 HRC	230	210	195	165	150	135	-	-	-
200, 250, 300 350 Grade	Maraged 50 - 52 HRC	-	-	-	-	-	-	100	85	-

- Sol-Solution
- S&A-Solution and Aging
- Q&T-Quenched and tempered

Recommended Machining Conditions for Ceramic **T-Clamp** Insert

Materials		Grooving	Turning
Cast Iron	Vc (sfm)	600 ~ 800	600 ~ 800
	F (ipr)	0.1 ~ 0.2	0.1 ~ 0.24
High Hardened Steel	Vc (sfm)	Not Recommended	250 ~ 350
	F (ipr)		0.08 ~ 0.20

- Above condition is adapted to TDT 4E-0.4T CE

Recommended Machining Conditions - T-Clamp Ultra Plus

High-Temp Alloys K10 Uncoated Carbide Grade Titanium - Base Alloys		Turning			Grooving and Undercutting		
Materials		K10					
		Feed (ipr)					
		.004	.006	.008	.002	.004	.006
Commercial Designation	Hardness	Cutting Speed (sfm)					
Ti6 - 2 - 4 - 2	Annealed 32 - 38 HRC	180	165	150	165	150	130
Ti6Al - 4V	Annealed 32 - 38 HRC	165	130	110	165	150	130
	S & A 38 - 42 HRC	130	110	100	130	100	80
Ti6Al - 6V - 2Sn Ti7Al - 4Mo	Annealed 34 - 38 HRC	150	130	110	150	130	110
	Ti8Al - 1Mo - 1V	130	110	100	130	110	100
TiA55 Ti75A	Annealed 110 - 175 HB	525	510	490	525	490	460
Ti140A	Annealed 30 - 36 HRC	165	150	130	165	150	130

Nickel - Base Alloys

Materials		K10					
		Feed (ipr)					
		.004	.006	.008	.002	.004	.006
Commercial Designation	Hardness	Cutting Speed (sfm)					
Astroloy, Rene 41	Sol 20 - 30 HRC	-	80	65	100	80	65
Udimet 500, 700	S & A 32 - 42 HRC	-	65	50	80	65	50
Inconel W, X, 702, 718	Sol 20 - 30 HRC	-	80	65	100	80	65
M 252, Waspalloy	S & A 40 - 42 HRC	-	65	50	80	65	50
Hastolloy B, C, X	Annealed 90 - 100 HRB	-	100	80	110	100	80
Inconel 600	Cold drawn 24 - 34 HRC	-	80	65	100	80	65
TD 2	Stress relieved 30 HRC	-	215	195	210	195	165

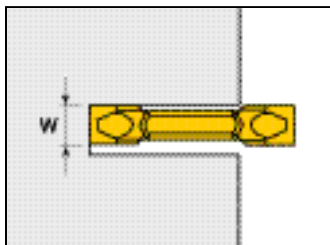
Cobalt - Base Alloys

Materials		K10					
		Feed (ipr)					
		.004	.006	.008	.002	.004	.006
Commercial Designation	Hardness	Cutting Speed (sfm)					
HS 21, HS 31, HS 36	As cast 20 - 30 HRC	-	65	50	-	65	50
L 605	Sol 90 - 98 HRB	-	85	65	-	85	65
	S & A 28 - 34 HRC	-	65	50	-	65	50
Stellite 6	39 - 43 HRB	-	50	35	-	50	35

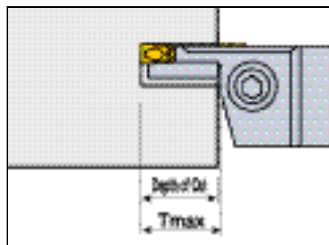
- Sol-Solution
- S&A-Solution and Aging

■ Tool Selection

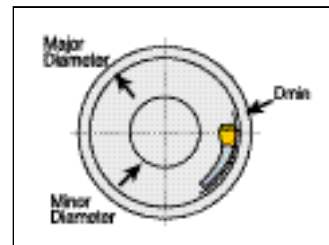
Follow three recommendations to choose the right tool for high performance



Choose the widest possible insert and tool, according to the cutting width and geometry to be machined.



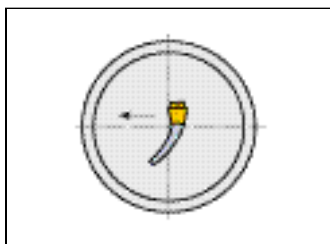
Choose the shortest tool blade overhang, according to the maximum depth required.



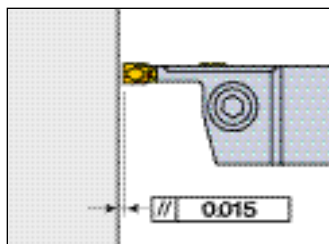
Choose the tool range with the largest diameter depending on the initial grooving diameter required in the application.

■ Tool Adjustment

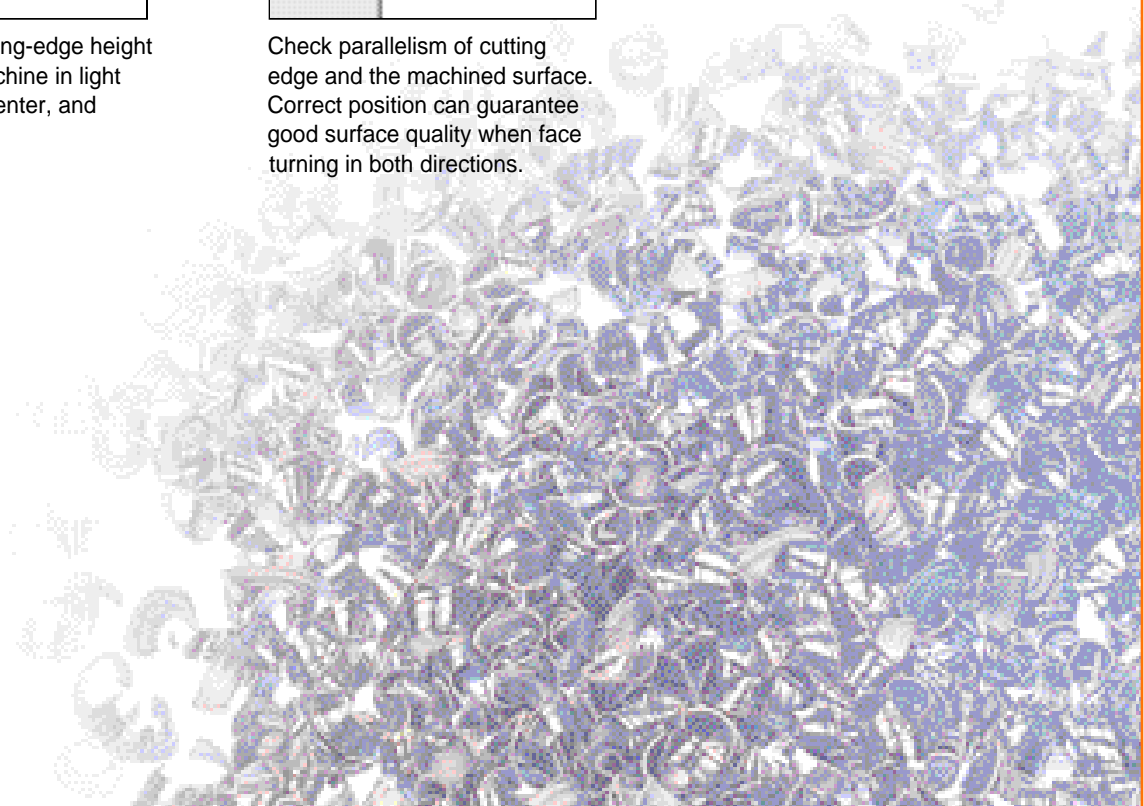
Prior to machining, check and adjust the following tool positions



Checking the cutting-edge height at center line. Machine in light turning down to center, and check for bur.



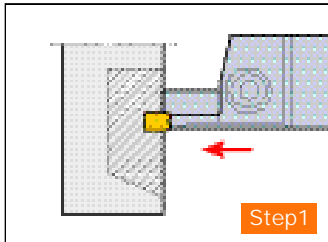
Check parallelism of cutting edge and the machined surface. Correct position can guarantee good surface quality when face turning in both directions.



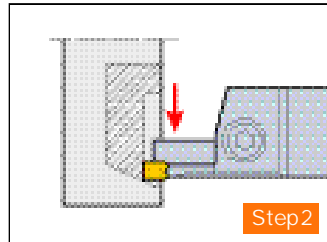
■ Optimizing the Machining Procedure

For roughing

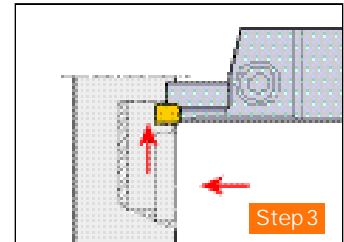
Basic steps in face turning operation procedure for Roughing operation with **T-Clamp Ultra Plus** tools



Grooving into initial diameter range



Turning away from center

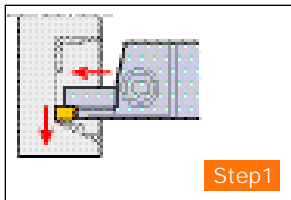


Turning to center

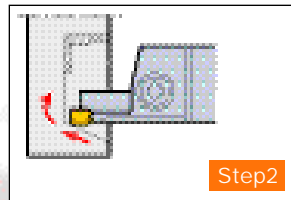
- When face grooving, reduce the speed by 40% in relation to that used in face turning.

For finishing

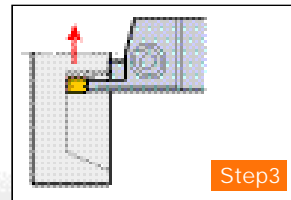
Basic steps in face turning operation procedure for Finishing operation with **T-Clamp Ultra Plus** tools.



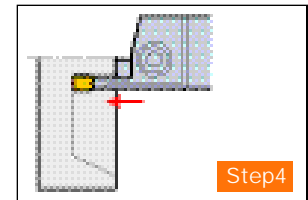
After initial groove,
Continue turning away
from center



Finish major diameter
and the radius

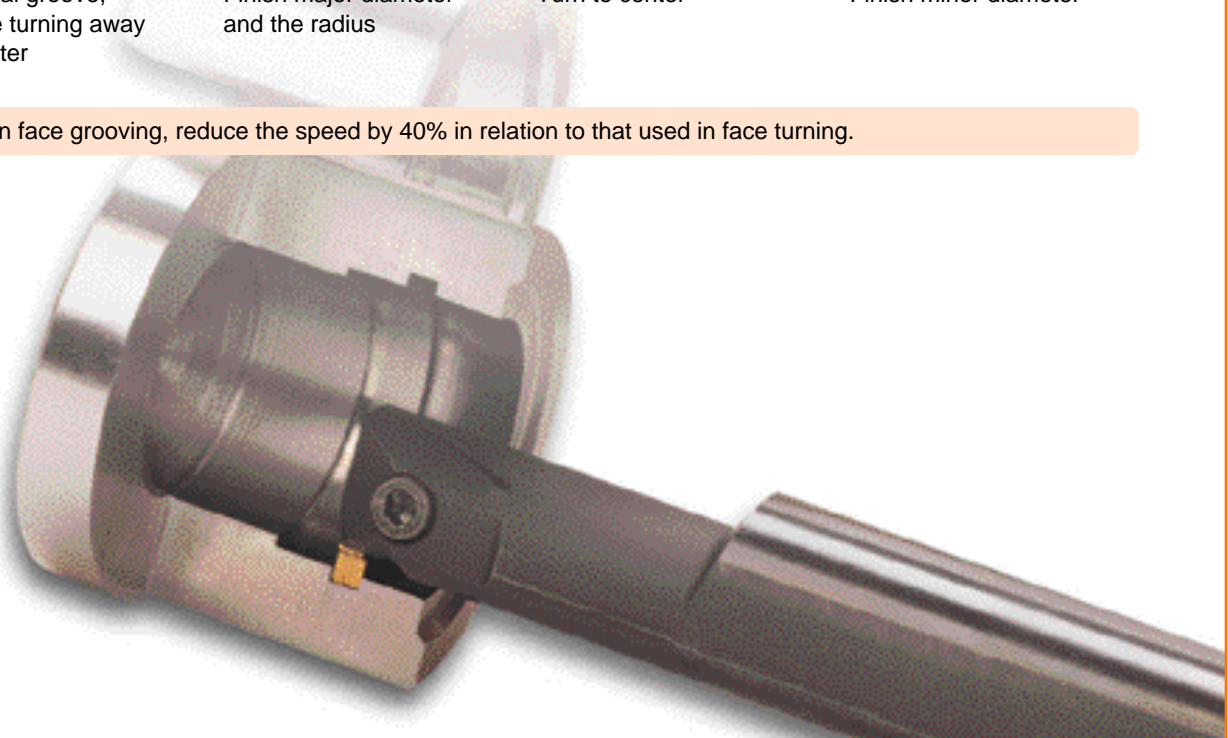


Turn to center



Finish minor diameter

- When face grooving, reduce the speed by 40% in relation to that used in face turning.



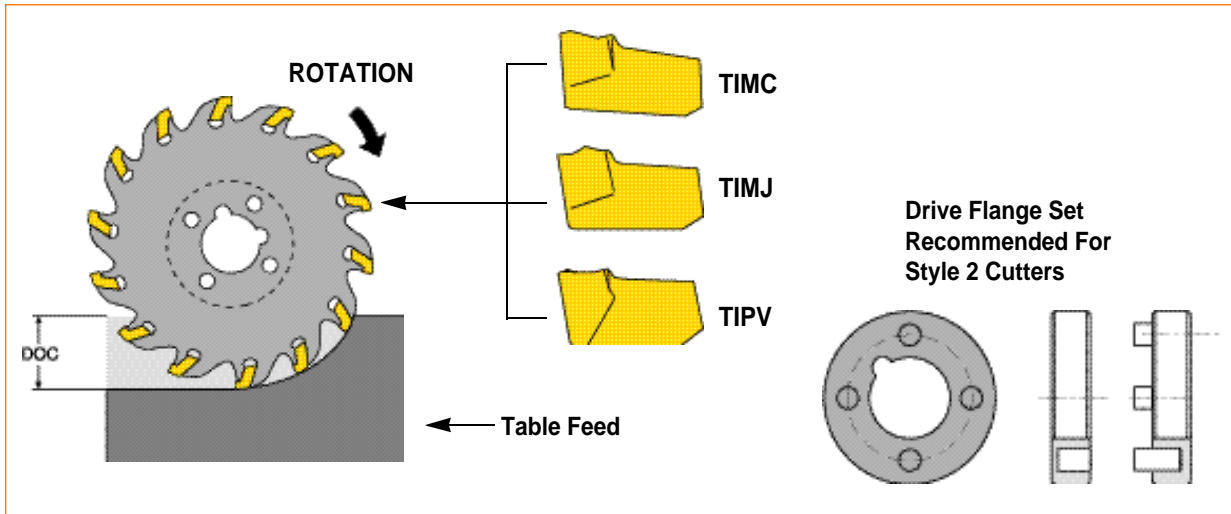
■ Recommended Machining Conditions

Material		Hardness Brinell HB	K10	TT7220
			Cutting Speed (sfm)	
Carbon Steel	0.2%C	150		361 - 459
	0.45%C	190		328 - 427
	0.83%C	250		295 - 361
Alloy Steel		< 200		262 - 427
		200 - 250		246 - 394
		275 - 325		230 - 295
		325 - 375		197 - 246
		375 - 425		148 - 180
Stainless Steel	Martensitic	175 - 225		328 - 443
	Austenitic	135 - 175		230 - 312
Cast Steel	Carbon	→ 150		164 - 213
	Alloyed	200 - 250		345 - 443
Malleable Iron	Short chip	110 - 145	295 - 328	279 - 328
	Long chip	200 - 250	230 - 295	246 - 295
Cast Iron	Low tensile	180	377 - 459	
	High tensile	250	262 - 328	
Nodular Iron	Ferritic	160	279 - 345	
	Pearlitic	250	262 - 328	
Chilled Cast Iron		400	66	
Bronze Alloy		120 - 200	361 - 394	
Lead Alloy		80 - 150	492 - 541	
Brass & Red		60 - 110	377 - 410	
Phosphor Bronze		85 - 110	262 - 295	
Aluminum Alloy		150 - 200	656 - 787	
Non-heat Treatable		30 - 80	1969 - 2297	
Heat-Treatable		80 - 120	820 - 984	
Aluminum Alloys, Cast			984 - 1116	
Magnesium		40 - 60 HRB	738 - 869	
		60 - 90 HRB	755 - 820	
Electrolytic Copper		50 - 85	295 - 361	

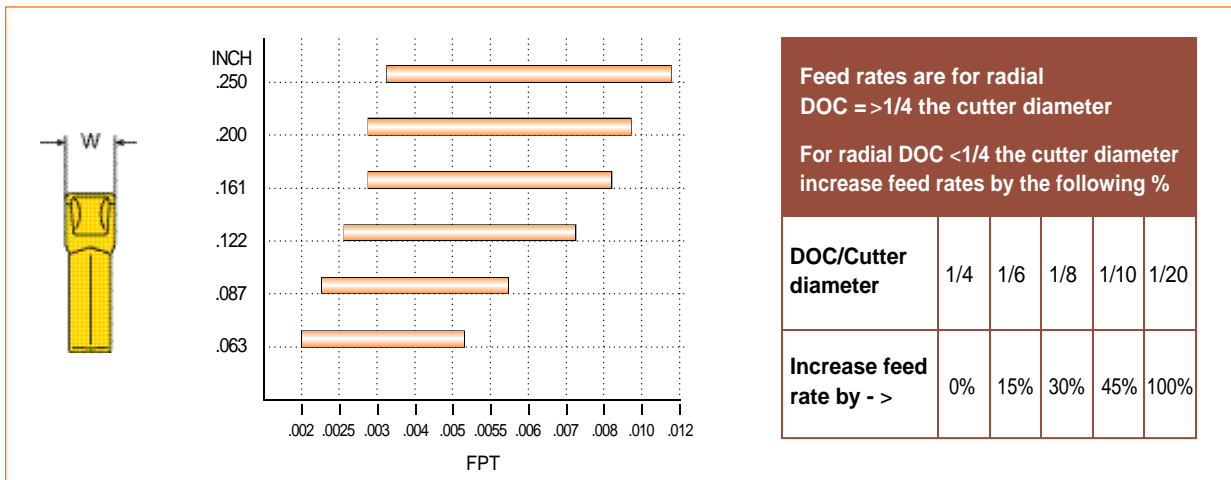
- For turning, increase cutting speed by 20-30%



Recommended Feed Rates (FPT) for - **T-Clamp Ultra** Slotting Cutters



Recommended Feed Rates (based on insert width)



Cutter Entry

Climb milling (down), conventional milling (up) and plunge slotting are possible with **T-Clamp Ultra**. Climb milling enters the workpiece with a thick chip and exits thin. Honed inserts are recommended. Conventional milling enters the workpiece with a thin chip and exits thick. Sharp inserts are recommended. Climb milling should be used whenever possible, especially when replacing high speed steel slotting cutters with **T-Clamp Ultra**. On machines with backlash eliminators, climb milling is preferred.

Cutter Mounting

The use of drive flange sets are recommended to prevent denting of arbor drive keys and to provide added stability during increased metal removal rates.

Insert Mounting

Manually place insert in pocket and seat into place by using a wooden or plastic hammer. This will ensure selfpositioning for insert repeatability and minimal radial runout. Pockets must be clean and free of debris prior to installation.



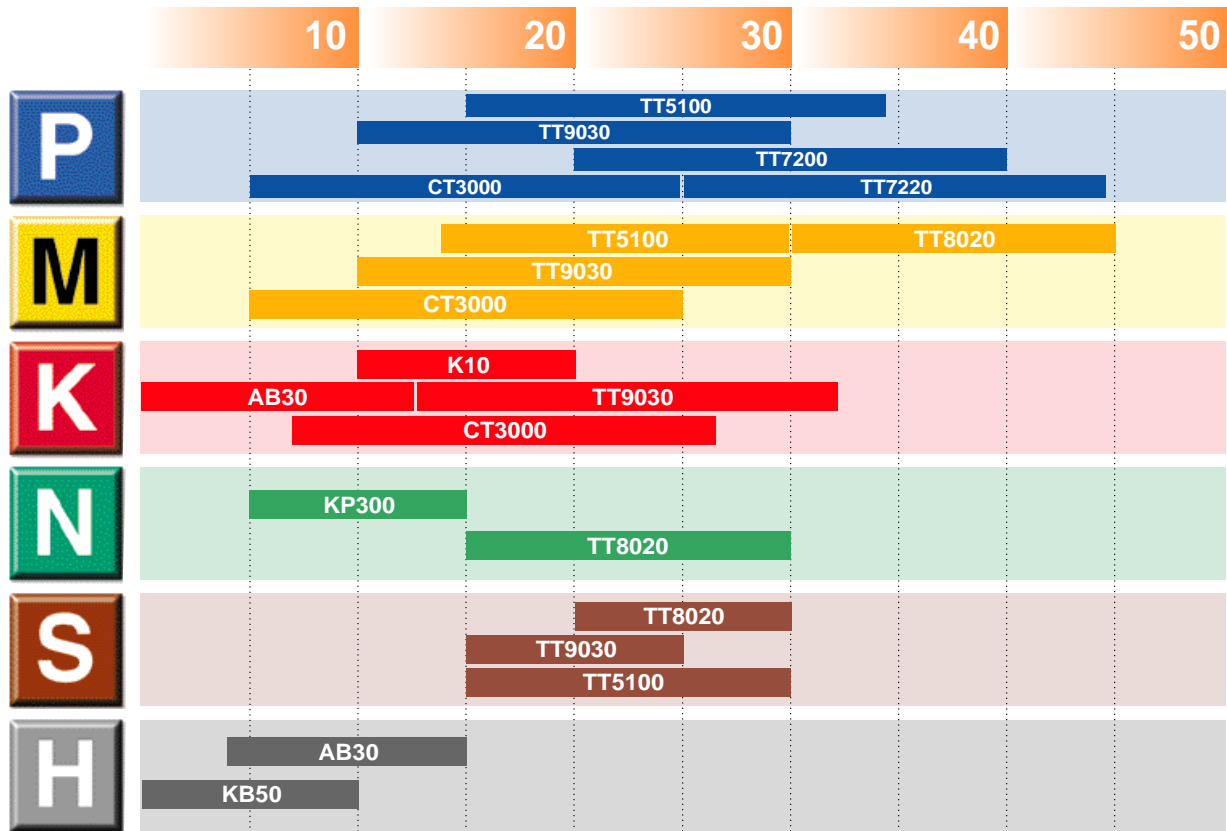
■ Cutting Materials Applications - **T-Clamp Ultra** Slotting Cutters

Workpiece Material	Brinell Hardness	P40A	TT7220	TT5100	
		Cutting Speed SFM	Cutting Speed SFM	Cutting Speed SFM	
Carbon 0.2%C	150	365 - 495	420 - 570	560 - 760	
Steel 0.45%C	190	265 - 365	305 - 420	395 - 660	
	0.83%C	250	250 - 360	295 - 560	
Alloy Steel	up to 200	280 - 365	320 - 420	395 - 595	
	200 - 250	230 - 295	265 - 340	330 - 530	
	275 - 325	200 - 265	230 - 305	265 - 430	
	325 - 375	165 - 230	190 - 265	230 - 365	
	375 - 425	130 - 200	150 - 230	180 - 315	
Stainless Steel	425 - 475	100 - 165	115 - 190	150 - 265	
	ferritic	135 - 175	395 - 495	455 - 570	
	Martensitic	175 - 225	330 - 430	380 - 495	430 - 660
		275 - 325	230 - 295	265 - 340	330 - 495
	375 - 425	130 - 200	150 - 230	150 - 230	
Cast Steel	austenitic	135 - 175	265 - 330	305 - 380	
	Carbon	up to 150	230 - 330	265 - 380	
		150 - 200	180 - 250	210 - 290	
	alloyed	200 - 250	150 - 215	175 - 250	
250 - 300		115 - 180	130 - 210		

Workpiece Material	Brinell Hardness	K10	TT6030
		Cutting Speed SFM	Cutting Speed SFM
Malleable Iron	ferritic	110 - 145	265 - 365
	pearlitic	200 - 250	230 - 315
Cast Iron, Low Tensile, Grey	180	365 - 460	420 - 530
Cast Iron, High Tensile, Grey, Alloy	250	230 - 330	265 - 380
Nodular Iron	ferritic	160	230 - 365
	pearlitic	250	180 - 265
Chilled Cast Iron	400	33 - 65	40 - 75
Nickel Base Alloys Inconel 600 Hastelloy C	175 - 225	50 - 120	60 - 140
Titanium Alloys 6AL4V	300 - 350	90 - 180	110 - 210
Wrought Aluminum 2024, 6061, 7075	30 - 80	1250 - 2550	1500 - 3000
Cast Aluminum 308, 356, 380	50 - 100	1000 - 2050	1200 - 2400

* **CAUTION** : These cutters have maximum RPM ratings.
Be sure to read the catalog page for specific RPM ratings on your cutter style!

Application Range



TT5100

A CVD coated grade for machining carbon steels, alloy steels and stainless steels with outstanding tool life.

CT3000

A new, reinforced, cermet grade for good toughness and wear resistance. Recommended in grooving, parting & turning alloy steels and stainless steels with good surface quality, and long tool life.

AB30

A mixed ceramic grade for high productivity machining cast iron, hard material and graphite. Also good results in grooving & parting inconel 718.

TT8020

TaeguTec's toughest PVD grade for severe interrupted cuts and machining stainless steel and exotic alloys.

TT7220

A PVD coated grade for excellent machining in carbon steel and alloy steel

TT9030

A PVD coated grade features high toughness and excellent wear resistance. Very good performance in alloy steels, stainless steels and exotic alloys.

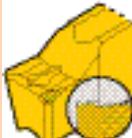
Grades

TaeguTec Grade	ISO	Characteristics	Application
P40A Uncoated	P30 - P50	<ul style="list-style-type: none"> Suitable for parting at medium speeds and large feeds in unfavorable conditions. For steel, steel castings with cavities. 	Cut off and Grooving
K10 Uncoated	K10 - K20	<ul style="list-style-type: none"> For semi-finishing and finishing at medium cutting speeds and feeds. For cast iron, malleable cast iron, aluminum, copper alloys. 	Cut off, Grooving and Turning
TT7200 CVD Coated	P20 - P40	<ul style="list-style-type: none"> For semi-finishing and roughing at medium cutting speeds and feeds. For carbon steel, alloy steel, steel castings, malleable cast iron. TiC-TiCN-TiN 	Cut off and Grooving
TT5100 CVD Coated	P20 - P40 M15 - M35 S10 - S20	<ul style="list-style-type: none"> Excellent chipping resistance and adhesion resistance. For medium turning of low carbon steel, low carbon alloy steel and stainless steel. TiC-TiCN-Al₂O₃-TiN 	Turning and Grooving
TT7220 PVD Coated	P20 - P35	<ul style="list-style-type: none"> For semi-roughing and medium cutting of steel. For carbon steel, alloy steel. TiCN 	Cut off, Grooving and Turning
TT8020 PVD Coated	P30 - P45 M30 - M40 N15 - N30 S20 - S30	<ul style="list-style-type: none"> Toughest grade in all T-Cut grades. First choice for interrupted cut on stainless steel and exotic alloy. 	Cut off and Grooving
TT9030 PVD Coated	P15 - P35 M10 - M30 K10 - K30 S15 - S25	<ul style="list-style-type: none"> High mechanical shock resistance. For semi-roughing and medium cutting of steel and stainless steel. For high speed machining of gray cast iron and ductile cast iron. TiAlN coated on sub-micron grade. 	Cut off and Grooving
TT6030 PVD Coated	K05 - K20	<ul style="list-style-type: none"> High wear resistance. For medium and high speed machining of gray cast iron and ductile cast iron. 	Turning and Grooving
CT3000 Cermet	P05 - P15 M05 - M15 K05 - K15	<ul style="list-style-type: none"> Suitable for finishing to semi-finishing of steel, cast iron and stainless steel. General turning and grooving of steel. 	Cut off, Grooving and Turning
AB30 Ceramic	K05 - K15 H05 - H15	<ul style="list-style-type: none"> For high speed machining of cast iron and high hardness material. Can be applied for interrupted cut. 	Cut off, Grooving and Turning
KB50 CBN	H01 - H05	<ul style="list-style-type: none"> For high speed machining of hardened steel in finishing. 	Turning and Grooving
KP300 PCD	N05 - N15	<ul style="list-style-type: none"> For high speed machining of low Si aluminum alloy. 	Turning and Grooving



■ Failure Mode

Insert failure and tool life

Problem	Possible Cause	Solution
1. Rapid flank wear Short tool life 	Too high cutting speed. Carbide with too low wear resistance	<ul style="list-style-type: none"> • Decrease cutting speed. • Use a carbide with higher hardness, or a coated carbide
2. Cratering Short tool life 	High cutting temperature on insert rake face at high feed and speed	<ul style="list-style-type: none"> • Decrease feed and speed. • Use coated grade.
3. Cutting edge / Insert fracture 	Too high load on insert. Insert width too narrow. Grade too brittle.	<ul style="list-style-type: none"> • Use wider insert, for maximum support. • Decrease feed and speed. • Choose a tougher grade.
4. Plastic deformation 	Too high heat pressure decreasing carbide hardness.	<ul style="list-style-type: none"> • Use a bigger corner radius, decrease feed and speed. • Choose carbide with higher hardness.
5. Chip control spaghetti-like chips coil under holder and interfere with operation	Too small depth of cut. Feed too slow. Insert width too large. Insert radius too large.	<ul style="list-style-type: none"> • Check chipbreaking range. • Increase depth of cut. • Increase feed rate. • Use narrower insert with a smaller radius.
6. Poor surface finish	Too small depth of cut, i.e. less than corner radius.	<ul style="list-style-type: none"> • Increase depth of cut to minimum radius size.
7. Vibrations and poor surface quality	Too small front clearance angle between insert and workpiece leads to rubbing action.	<ul style="list-style-type: none"> • Increase feed to get suitable clearance. • Before starting, check that the frontal cutting edge is parallel to workpiece.



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