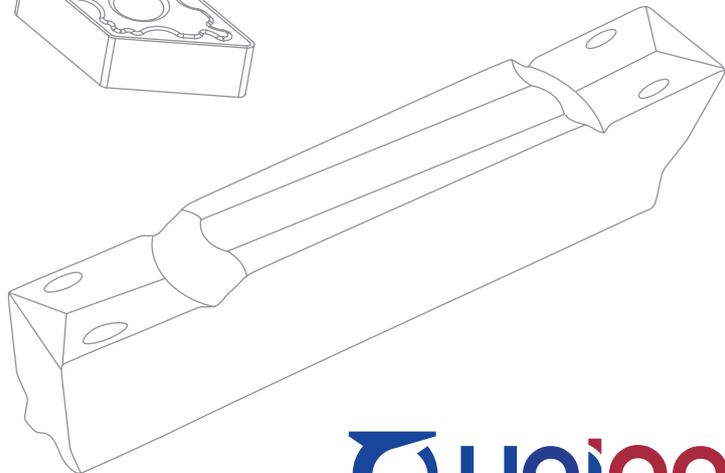
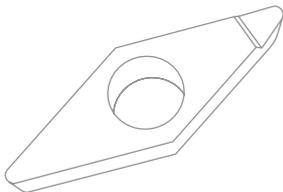
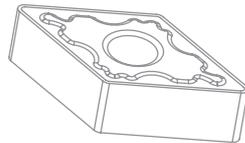
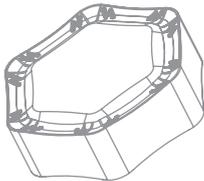
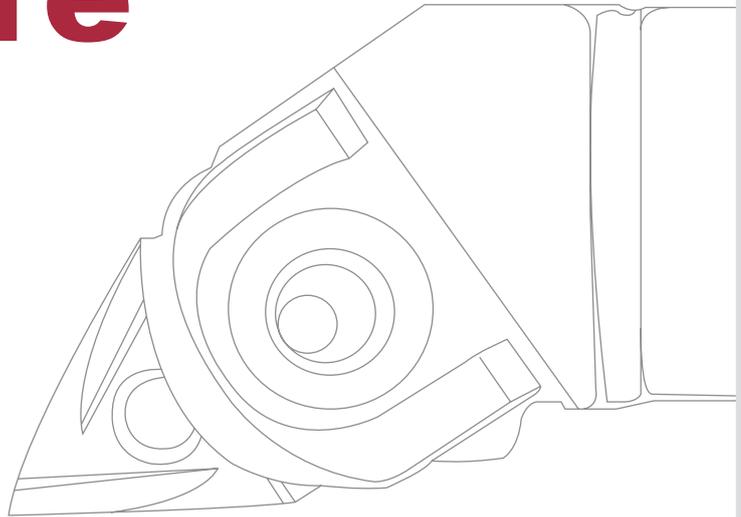
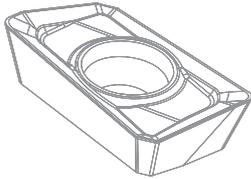


CUTTING TOOLS

Carbide



INTRODUCTION

Union Materials Corporation has accumulated technologies and experiences over 40 years through developing and manufacturing various high-tech materials. Including hard ferrite magnets which are awarded Best Supplier from Robert Bosch GmbH for seven times consecutively in last 18 years, Union Materials Corporation manufactures various ceramic-based parts, cutting tools and industrial ceramics for automotive, electrical & electronic engineering and machinery industry.

Union cutting tool products are advanced materials developed with high technologies through long-term experiences, continuous studies and applications to commercialization of new materials. We have attained many great achievements in the field of various cutting tools for automotive, steel mill, aerospace and machinery field.

As of March 14 2017, Union Corporation has been the largest shareholder of Union Materials Corporation. We started new era with new company name, Union Materials Corporation since September 28, 2017 in accordance with the change of major shareholder which was originally Ssangyong Cement to Union Corporation.

Union Materials Corporation firmly promises to engage in its current business activities and will endeavor to support our customers for satisfaction.



Seoul HQ Office



Daegu plant



TURNING

GROOVING

THREADING

DRILLING

CONTENTS

TURNING

Carbide 08

GROOVING

Carbide 40

Holders 52

THREADING

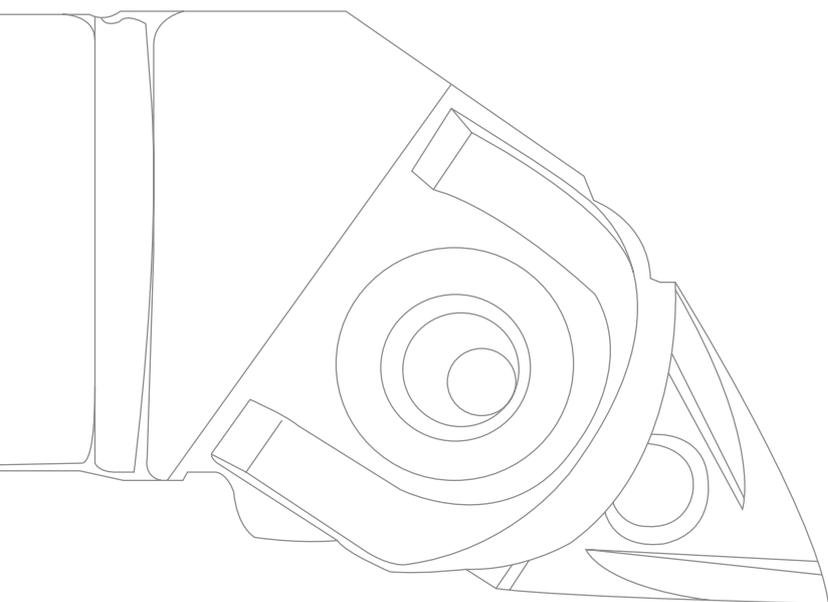
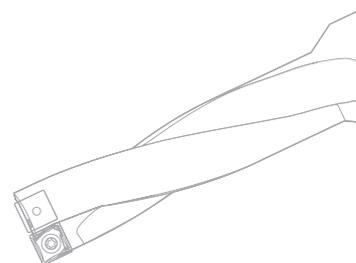
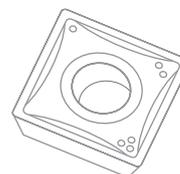
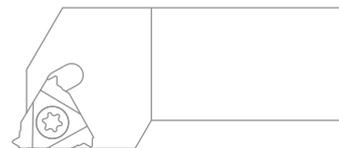
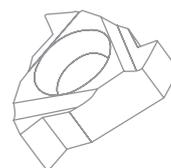
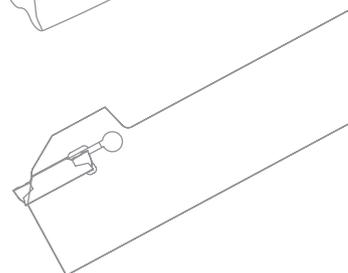
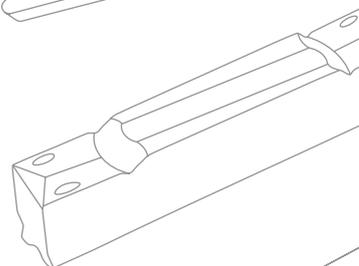
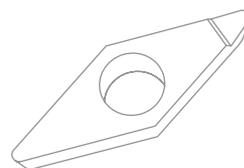
Carbide 58

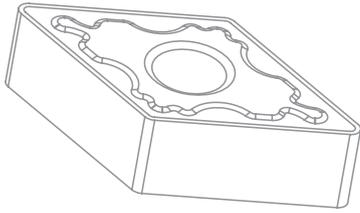
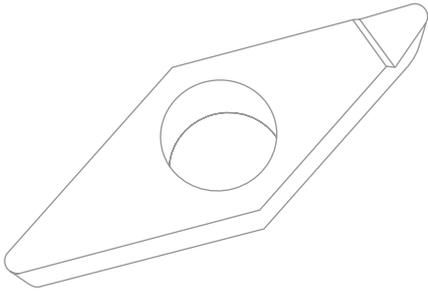
Holders 72

DRILLING

Carbide 78

Holders 82

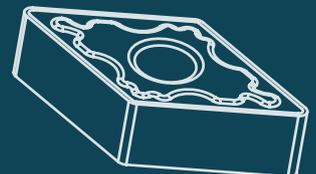
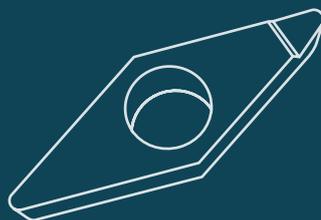
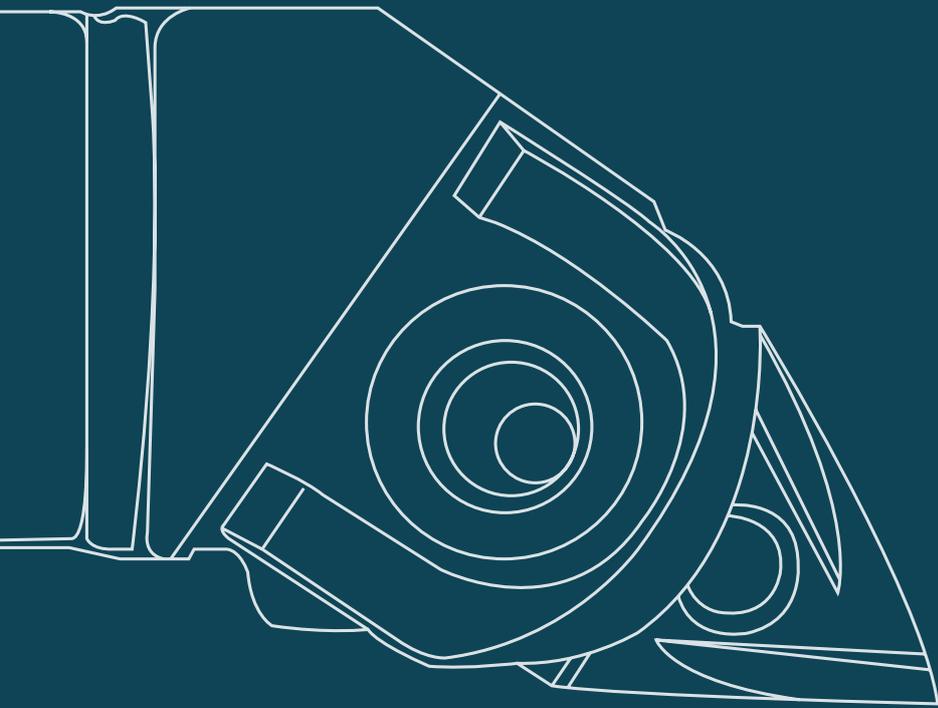




TURNING

Carbide / 08

TURNING / Carbide



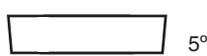
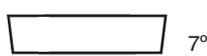
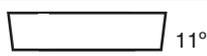
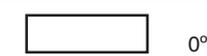
Carbide

TURNING

TURNING

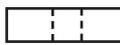
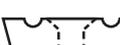
C	N	M	G	12	04	08
1	2	3	4	5	6	7

GROOVING

1	Geometry	2	Clearance Angle	3	Tolerance
C		B			 
D		C		G	± 0.025 ± 0.13
K		P		M	± 0.05 ± 0.13 ± 0.15
S		N		U	± 0.08 ± 0.13 ± 0.25
T					
V					
W					

THREADING

DRILLING

4	Shape	5	Shape	6	Thickness	7	Corner Radius
A		C	06 09 12 16 19 25 	02	2.38	02	0.20
G		D	07 11 15 	03	3.18	04	0.40
M		K	16 	T3	3.97	08	0.80
T		S	09 12 15 19 25 	04	4.76	12	1.20
X	Special	T	09 11 16 22 	06	6.35	16	1.60
		V	11 16 22 	09	9.52	24	2.40
		W	06 08 				

Carbide

TURNING

U	M
8	9

U	C	5	2	20	P	
Union Materials		10	11	12	13	14

TURNING

8	C/B Series	9	C/B Type
U	Finish	UF,UF1	Negative type
	Medium	UM,UM1,UMC,MM	
	Rough	UR,UR1,RB25,RH25	
	Finish	UF,MF1	Positive type
	Medium	UM,UM2,MM1,TQ	
	Rough	UR,UR2	
M	Finish	MF,MF2,MF3	Negative type
	Medium	MM,MM2,MM3,MM4,UM1	
	Rough	MR,MS,UR1	
	Finish	MF,MF1,MF2	Positive type
	Medium	GM, MM1,MM3,MM5,TQ	
	Rough	UR2	
K	Medium	MM1,UM1	Negative type
	Rough	Non(Box type), UR1	
A	Universal	AU	Normal
		AUP	Premium

10	Coating & Material
C	CVD Coated Carbide
P	PVD Coated Carbide
T	Cermet
N	Uncoated Carbide

GROOVING

THREADING

DRILLING

11	Workpiece Material
4	Cast Iron
5	Steel
6	Stainless Steel
0	Universal

12	Machining
1,2	Turning
0	Universal
5	Grooving
	Drilling

13	ISO Grade
05	
10	
15	
20	
25	
30	
35	
40	
45	

14	Grade
P	Premium
non	Normal

Carbide

T U R N I N G

Grades

T U R N I N G

ISO
DIN 513

K					P					M					N				
K01	K10	K20	K30	K40	P01	P10	P20	P30	P40	M01	M10	M20	M30	M40	N01	N10	N20	N30	N40

G R O O V I N G

T H R E A D I N G

D R I L L I N G

CARBIDE CVD	UC4105					UC5110					UC6115									
	UC4115D					UC5210					UC6125									
	UC4215					UC5120														
	UC4315					UC5220														
CARBIDE PVD											UP0005P									
											UP0005HP									
						UP0005HP					UP0105P									
											UP0010P									
											UP0015P									
											UP0115P									
											UP0025									
CARBIDE UNCOATED																UN4005				

CVD Turning Grades

Material	Grade	ISO	Color	Operation
P	UC5110	P10~P20	YELLOW	<ul style="list-style-type: none"> • CVD(Coated) - MT-TiCN + -Al₂O₃ + TiN
				
	UC5210	P10~P20	YELLOW - BLACK	<ul style="list-style-type: none"> • CVD(Coated) - MT-TiCN + -Al₂O₃ + TiN + post blasting treatment • Optimization for high speed machining due to combining the substrate of superior wear resistance and toughness with the coating of excellent thermal crack/plastic deformation
				
	UC5120	P10~P20	YELLOW	<ul style="list-style-type: none"> • CVD(Coated) - MT-TiCN + α-Al₂O₃ + TiN
				
UC5220	P10~P20	YELLOW - BLACK	<ul style="list-style-type: none"> • CVD(Coated) - MT-TiCN + α-Al₂O₃ + TiN + post blasting treatment • Medium to high speed machining of steel • First recommended grade for general machining with the use of high toughness substrate and coating layer with improved welding/chipping resistance 	
				
UC5230	P30~P40	YELLOW - BLACK	<ul style="list-style-type: none"> • CVD(Coated) - MT-TiCN + α-Al₂O₃ + TiN + post blasting treatment • Medium to low speed machining of steel 	
				
M	UC6115	M10-M20	COPPER	<ul style="list-style-type: none"> • CVD(Coated) - MT-TiCN + α-Al₂O₃ • high speed machining of stainless steel
				
UC6125	M20-M30	BLACK	<ul style="list-style-type: none"> • CVD(Coated) - MT-TiCN + α-Al₂O₃ • high speed machining of stainless steel 	
				
K	UC4105	K05~K10	BLACK	<ul style="list-style-type: none"> • CVD(Coated) - MT-TiCN + α-Al₂O₃ • high speed machining of cast iron & continuous condition
				
	UC4315	K10~K15	YELLOW - BLACK	<ul style="list-style-type: none"> • CVD(Coated) - MT-TiCN + α-Al₂O₃ + TiN • Medium speed machining of cast iron
				
	UC4215	K10~K15	BLACK	<ul style="list-style-type: none"> • CVD(Coated) - MT-TiCN + α-Al₂O₃ • Medium speed machining of cast iron
				
UC4115D	K10~K15	BLACK	<ul style="list-style-type: none"> • CVD(Coated) - MT-TiCN + α-Al₂O₃ • Medium speed machining of cast iron 	
				

TURNING

GROOVING

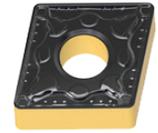
THREADING

DRILLING

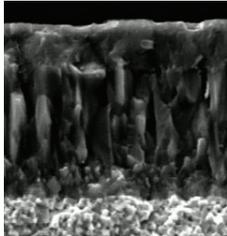
TURNING

GROOVING

DOUBLE COLOR UC5210(20,30,40) CVD COATING MECHANISM



Double color CVD Film



Cross sectional view

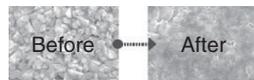
1. New Coating with fine grain columnar structure

- Only Side-TiN (Yellow) coating layer with lubrication
- Al₂O₃ layer (Excellent Hardness through improved -Al₂O₃ layer)
- Bonding layer for anti chipping
- MT-TiCN (MT-TiCN with fine grain columnar structure)

2. Substrate with fine-finished surface

- Exclusive material with hardness

3. Pre / Post - Treatment & Removing TiN layer on top side of insert



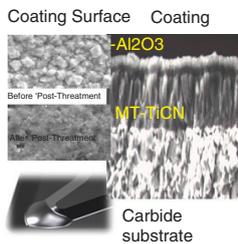
Prevent Crater wear, Thermal Stability, Chipping, Plastic deformation

THREADING

DRILLING

UC6125 [UC6125 CVD COATING MECHANISM]

UC6125 CVD Coating



Cross sectional view

Features of film

- Special MT-TiCN
- Micro-grain α -Alumina

Special Treatment for Coating

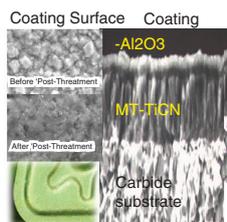
- Pre-treatment
- Enhance Film Adhesion
- Enhance Peeling Resistance
- Post-treatment
- Smooth & glossy Surface of Insert
- Lasting long tool life without Chipping & Built-up-edge

Features of substrate

- M20~30 carbide for high speed cutting of stainless steel

UC4115D,UC4215 [UC4115D & UC4215 CVD COATING MECHANISM]

UC4115D CVD Coating



Cross sectional view

Features of film

- Special MT-TiCN
- Micro-grain -Alumina

Special Treatment for Coating

- Pre-treatment
- Enhance Film Adhesion
- Enhance Peeling Resistance
- Post-treatment
- Smooth & glossy Surface of Insert
- Lasting long tool life without Chipping & Built-up-edge

Features of substrate

- Hard micro-grain carbide with reducing cobalt

PVD Turning Grades PVD

Material	Grade	ISO	Color	Operation
M	UP0005P	M10-M15	COPPER 	<ul style="list-style-type: none"> ● PVD Salina(Cotated) - TiAlSiN coating(3-5µm) ● Good wear resistance + Extremely heat & oxidation –resistance Reinforced shock resistance due to high Cobalt
	UP0005HP	M10-M15	COPPER 	<ul style="list-style-type: none"> ● PVD Salina(Coated) - AlCrN + AlCrSiN coating(3-5µm) ● sinter Hip(2µm) Reinforced shock resistance + Extremely heat & oxidation –resistance due to Sinter-hip technology
	UP0105P	M10-M15	BLACK 	<ul style="list-style-type: none"> ● PVD new Balzers(Cotated) - ALTiN coating(3-5µm) ● Reinforced shock resistance + Extremely heat & oxidation –resistance due to the micro substrate
	UP0010P	M15-M20	COPPER 	<ul style="list-style-type: none"> ● PVD Salina(Cotated) - TiAlSiN coating(3-5µm) ● Good wear resistance + Extremely heat & oxidation –resistance Reinforced shock resistance due to high Cobalt
	UP0015P	M20-M30	COPPER 	<ul style="list-style-type: none"> ● PVD Salina(Cotated) - TiAlSiN coating(3-5µm) ● Good wear resistance + Extremely heat & oxidation –resistance Reinforced shock resistance due to high Cobalt
	UP0115P	M20-M30	BLACK 	<ul style="list-style-type: none"> ● PVD new Balzers(Cotated) - ALTiN coating(3-5µm) ● Heavy duty machining of steel ● Medium to high speed machining of stainless steel
	UP0025	M25-M35	YELLOW 	<ul style="list-style-type: none"> ● PVD(Cotated) - Tin + TiAlN coating(3-5µm) ● General stainless steel grade, Reinforced shock resistance

T U R N I N G

G R O O V I N G

T H R E A D I N G

D R I L L I N G

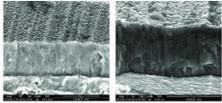
Uncoated Carbide Grades

Material	Grade	ISO	Color	Operation
N	UN4005	N05-N35	Silver 	<ul style="list-style-type: none"> ● Polishing (UnCotated) ● AL (prevent blit-up edge for Alumium)

TURNING

SALINA PVD(SALINA PVD UP0005(15)P COATING MECHANISM)

PVD Coating FILM



TiAlN Coating TiAlSiN Coating



Effect of coating treatment

Cross sectional view

Features of film

- TiAlSiN film coated (3-5 μ m)
- Increased Toughness + Extremely heat & oxidation –resistance

Features of substrate

- Micro-grain carbide (Under 3 μ m)
- Reinforced shock resistance due to high Cobalt

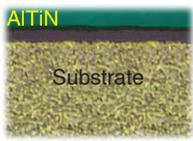
Available workpiece

- Stainless steel (AISI 300, 400 / X,Z-□ Cr, Ni)
- High temp. alloy

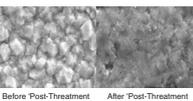
GROOVING

UP0105P(New balzers PVD UP0105(15)P COATING MECHANISM)

PVD Coating FILM



Effect of coating treatment



Before Post-Treatment After Post-Treatment

Cross sectional view

Features of film

- AlTiN (Enhanced AlTiN film coated (3-5 μ m)
- Good wear resistance + Extremely heat & oxidation –resistance

Special Treatment for Coating

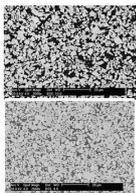
	Photo After Test	Adhesion Index
UP0115P		48/100
Swe S Maker		27/100
Jap K Maker		9/100
Kor T Maker		24/100

THREADING

DRILLING

UP0005HP(NEW PVD UP0005HP COATING MECHANISM)

UP0005HP Substrate



Sinter Hip EFFECT !!

Features of film

- AlCrN + AlCrSiN film coated (3-5 μ m)
- Good wear resistance + Extremely heat & oxidation –resistance

Features of substrate

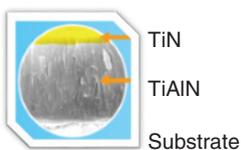
- Sinter-Hip Micro-grain carbide (Under 2 μ m)
- Prevent Plastic deformation & Built-up edge

Available workpiece

- Stainless steel AISI 300, 400 / X,Z-□ Cr, Ni
- Pre-hardened steel

UP0025(UNIVERSAL PVD UP0025 COATING MECHANISM)

UP0025 Substrate



Structure of Coating

Features of film

- TiN + TiAlN film coated (3-5 μ m)
- Good wear resistance + Reduce the friction due to adding TiN coating

Features of substrate

- Micro-grain carbide (Under 3 μ m)
- Reinforced shock resistance due to high Cobalt

Available workpiece

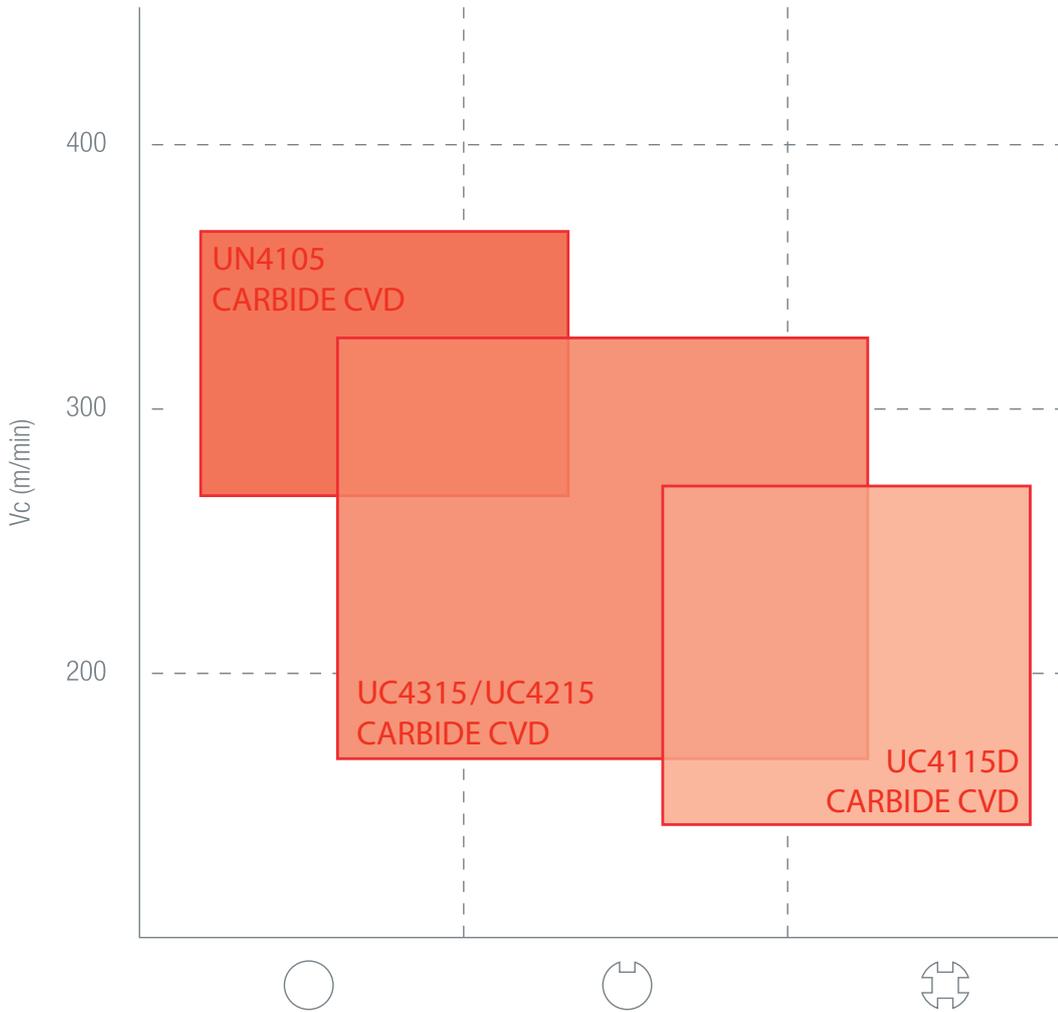
- Stainless steel (AISI 300, 400 / X,Z-□ Cr, Ni)
- High temp. alloy

TURNING

RANGE

ISO **K**

Grades



TURNING

GROOVING

THREADING

DRILLING

Carbide

T U R N I N G

RANGE

ISO **P**

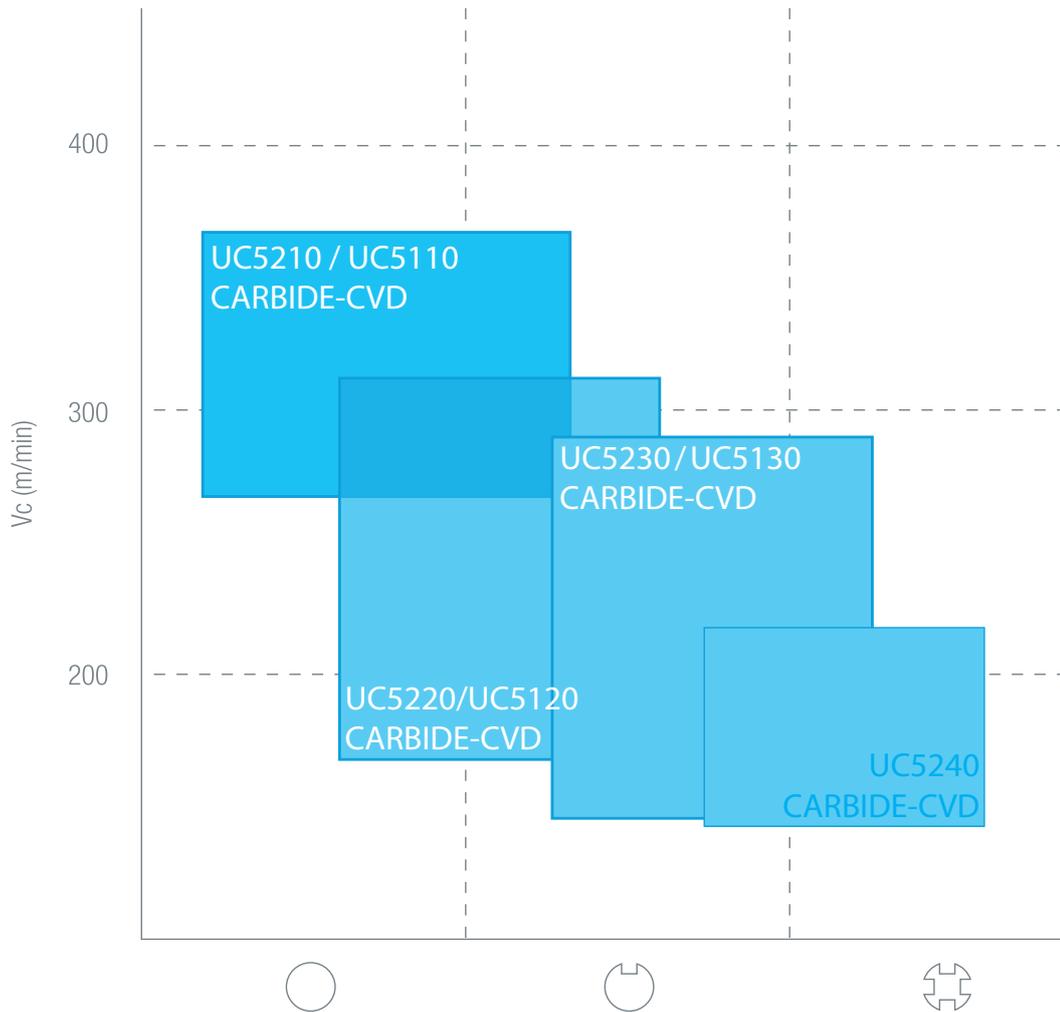
T U R N I N G

Grades

G R O O V I N G

T H R E A D I N G

D R I L L I N G

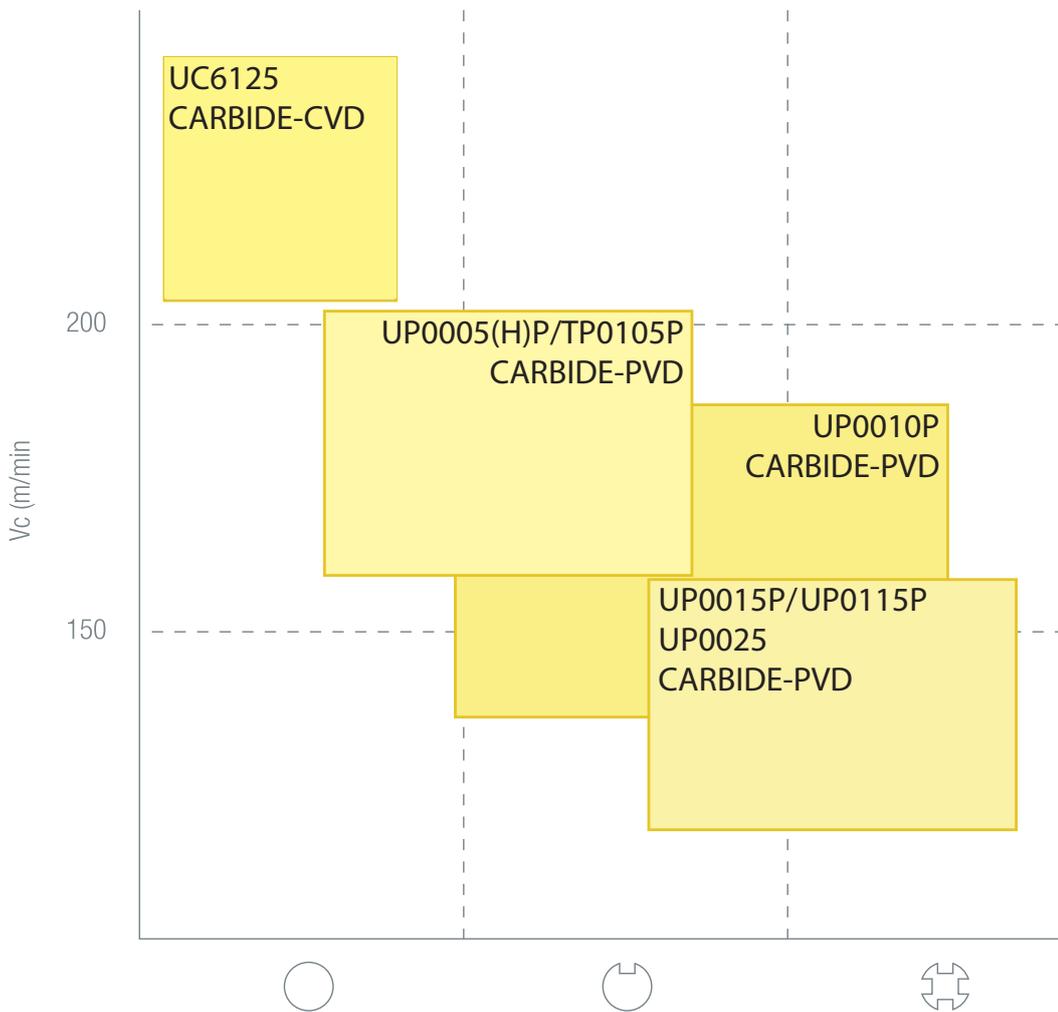


TURNING

RANGE

ISO **M**

Grades



TURNING

GROOVING

THREADING

DRILLING

Carbide

T U R N I N G

RANGE

ISO **N**

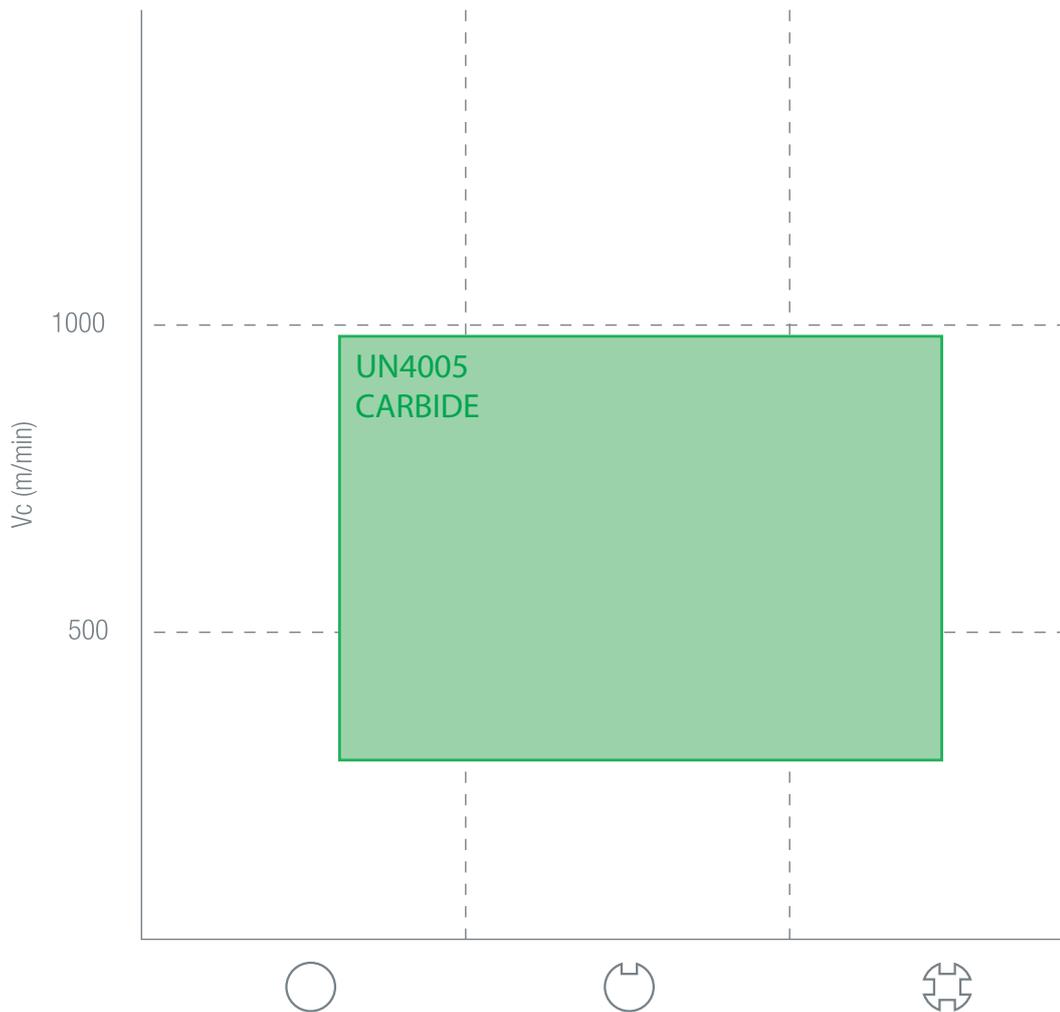
T U R N I N G

Grades

G R O O V I N G

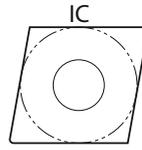
T H R E A D I N G

D R I L L I N G



POSITIVE 7°
with hole

CC □ □



CC □ □	0602 □ □	09T3 □ □	1204 □ □
IC	6,35	9,525	12,7
T	2,38	3,97	4,76
Ød	2,80	4,40	5,50

T U R N I N G

DESCRIPTION	CARBIDE-CVD								CARBIDE-PVD						CARBIDE			
	UC5110	UC5210	UC5120	UC5220	UC5230	UC4105	UC4115D	UC4215	UC4315	UC6125	UP0005P	UP0105P	UP0010P	UP0015P	UP0115P	UP0025	UP0005HP	UN4005
	CCGT060202-AU																	●
	CCGT060204-AU																	●
	CCGT060208-AU																	●
	CCGT09T302-AU																	●
	CCGT09T304-AU																	●
	CCGT09T308-AU																	●
	CCGT120402-AU																	●
	CCGT120404-AU																	●
	CCGT120408-AU																	●

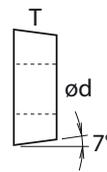
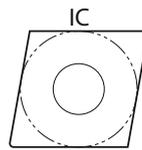
G R O O V I N G

T H R E A D I N G

Vc ● fn ● ap ▶ 31

NEGATIVE
with hole

CN □ □



CN □ □	1204 □ □	1606 □ □	1906 □ □
IC	12,7	15,875	12,7
T	4,76	6,35	4,76
Ød	5,16	6,35	5,50

D R I L L I N G

DESCRIPTION	CARBIDE-CVD								CARBIDE-PVD						CARBIDE			
	UC5110	UC5210	UC5120	UC5220	UC5230	UC4105	UC4115D	UC4215	UC4315	UC6125	UP0005P	UP0105P	UP0010P	UP0015P	UP0115P	UP0025	UP0005HP	UN4005
	CNMG120404-AU																	●
	CNMG120408-AU																	●

Vc ● fn ● ap ▶ 27

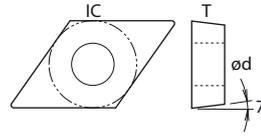
Carbide

TURNING

TURNING

POSITIVE 7°
with hole

DC□□



DC□□	0702□□	11T3□□
IC	6,35	9,525
T	2,38	3,97
Ød	2,80	4,40

GROOVING

THREADING

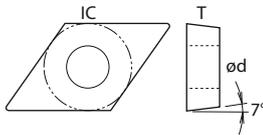
DRILLING

DESCRIPTION	CARBIDE-CVD								CARBIDE-PVD						CARBIDE					
	UC5110	UC5210	UC5120	UC5220	UC5230	UC4105	UC4115D	UC4215	UC4315	UC6125	UP0005P	TP0105P	UP0010P	UP0015P	UP0115P	UP0025	UP0005HP	UN4005		
 	DCGT070202-AU																		●	
	DCGT070204-AU																			●
	DCGT070208-AU																			●
	DCGT11T302-AU																			●
	DCGT11T304-AU																			●
	DCGT11T308-AU																			●
	DCGT11T312-AU																			●
 	DCGT11T302-SF																			
	DCGT11T304-SF																			
 	DCGT11T302-SF-OK										●			●						
	DCGT11T304-SF-OK										●			●						
 	DCGT11T302-SL																			
	DCGT11T304-SL																			

Vc ● fn ● ap  31

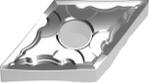
NEGATIVE with hole

DN  



DN	1104	1504	1506
IC	9,525	12,7	12,7
T	4,76	4,76	6,35
Ød	3,81	5,16	5,16

TURNING

DESCRIPTION	CARBIDE-CVD								CARBIDE-PVD						CARBIDE				
	UC5110	UC5210	UC5120	UC5220	UC5230	UC4105	UC4115D	UC4215	UC4315	UC6125	UP0005P	UP0105P	UP0010P	UP0015P	UP0115P	UP0025	UP0005HP	UN4005	
 	DNMG150404-AU																	●	
	DNMG150408-AU																		●
	DNMG150604-AU																		●
	DNMG150608-AU																		●

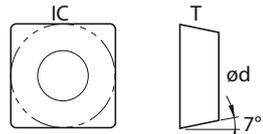
GROOVING

THREADING

Vc ● fn ● ap  31

NEGATIVE with hole

SN  



SC	1204	1206	1506
IC	12,7	12,7	15,875
T	4,76	6,35	6,35
Ød	5,16	5,16	6,35

DRILLING

DESCRIPTION	CARBIDE-CVD								CARBIDE-PVD						CARBIDE				
	UC5110	UC5210	UC5120	UC5220	UC5230	UC4105	UC4115D	UC4215	UC4315	UC6125	UP0005P	UP0105P	UP0010P	UP0015P	UP0115P	UP0025	UP0005HP	UN4005	
 	SNMG120404-AU																	●	
	SNMG120408-AU																		●

Vc ● fn ● ap  27

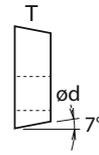
Carbide

TURNING

TURNING

POSITIVE 7°
with hole

TC □□



	TC□□	0902□□	1102□□	16T3□□
IC	5,56	6,35	9,525	
T	2,38	2,38	3,97	
Ød	2,50	2,80	4,40	

GROOVING

THREADING

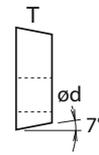
DESCRIPTION	CARBIDE-CVD								CARBIDE-PVD						CARBIDE				
	UC5110	UC5210	UC5120	UC5220	UC5230	UC4105	UC4115D	UC4215	UC4315	UC6125	UP0005P	UP0105P	UP0010P	UP0015P	UP0115P	UP0025	UP0005HP	UN4005	
 	TCGT090202-AU																	●	
	TCGT090204-AU																		●
	TCGT090208-AU																		●
	TCGT110202-AU																		●
	TCGT110204-AU																		●
	TCGT110208-AU																		●
	TCGT16T302-AU																		●
	TCGT16T304-AU																		●
	TCGT16T308-AU																		●

Vc ● fn ● ap  31

DRILLING

POSITIVE 7°
with hole

TC □□



	TC□□	0902□□	1102□□	16T3□□
IC	5,56	6,35	9,525	
T	2,38	2,38	3,97	
Ød	2,50	2,80	4,40	

DESCRIPTION	CARBIDE-CVD								CARBIDE-PVD						CARBIDE				
	UC5110	UC5210	UC5120	UC5220	UC5230	UC4105	UC4115D	UC4215	UC4315	UC6125	UP0005P	UP0105P	UP0010P	UP0015P	UP0115P	UP0025	UP0005HP	UN4005	
 	TCGT090202-AU																	●	
	TCGT090204-AU																		●
	TCGT090208-AU																		●
	TCGT110202-AU																		●
	TCGT110204-AU																		●
	TCGT110208-AU																		●
	TCGT16T302-AU																		●
	TCGT16T304-AU																		●
	TCGT16T308-AU																		●

Vc ● fn ● ap  27



finishing



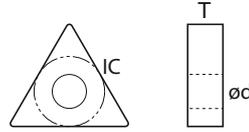
medium



roughing

NEGATIVE
with hole

TN□□



TN□□	1604□□	2204□□	2706□□
IC	9,525	12,7	15,875
T	4,76	4,76	6,35
Ød	3,81	5,16	6,35

TURNING

DESCRIPTION	CARBIDE-CVD								CARBIDE-PVD						CARBIDE			
	UC5110	UC5210	UC5120	UC5220	UC5230	UC4105	UC4115D	UC4215	UC4315	UC6125	UP0005P	UP0105P	UP0010P	UP0015P	UP0115P	UP0025	UP0005HP	UN4005
	TNMG160404-AU																	●
	TNMG160408-AU																	●
	TNMG220404-AU																	●
	TNMG220408-AU																	●

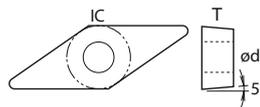
GROOVING

THREADING

Vc ● fn ● ap ▶ 27

POSITIVE 5°
with hole

VB□□



VB□□	1103□□	1604□□
IC	6,35	9,525
T	3,18	4,76
Ød	2,80	4,40

DRILLING

DESCRIPTION	CARBIDE-CVD								CARBIDE-PVD						CARBIDE			
	UC5110	UC5210	UC5120	UC5220	UC5230	UC4105	UC4115D	UC4215	UC4315	UC6125	UP0005P	UP0105P	UP0010P	UP0015P	UP0115P	UP0025	UP0005HP	UN4005
	VBGT110302-AU																	●
	VBGT110304-AU																	●
	VBGT160402-AU																	●
	VBGT160404-AU																	●
	VBGT160408-AU																	●
	VBGT160412-AU																	●

Vc ● fn ● ap ▶ 31

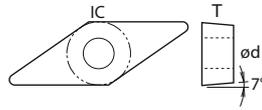
Carbide

TURNING

TURNING

POSITIVE 7°
with hole

VC □ □



VC □ □	1103 □ □	1604 □ □	2205 □ □
IC	6,35	9,525	12,70
T	3,18	4,76	5,56
Ød	2,80	4,40	5,60

GROOVING

THREADING

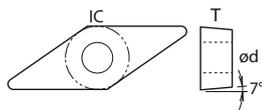
DRILLING

DESCRIPTION	CARBIDE-CVD								CARBIDE-PVD					CARBIDE				
	UC5110	UC5210	UC5120	UC5220	UC5230	UC4105	UC4115D	UC4215	UC4315	UC6125	UP0005P	UP0105P	UP0010P	UP0015P	UP0115P	UP0025	UP0005HP	UN4005
	VCGT110302-AU																	●
	VCGT110304-AU																	●
	VCGT160402-AU																	●
	VCGT160404-AU																	●
	VCGT160408-AU																	●
	VCGT160412-AU																	●
	VCGT220516-AU2C																●	
	VCGT110302-AUP																	●
	VCGT110304-AUP																	●
VCGT220530E-AUP																		●

Vc ● fn ● ap 31

POSITIVE 7°
with hole

VC □ □



VC □ □	1103 □ □	1604 □ □	2205 □ □
IC	6,35	9,525	12,70
T	3,18	4,76	5,56
Ød	2,80	4,40	5,60

DESCRIPTION	CARBIDE-CVD								CARBIDE-PVD					CARBIDE				
	UC5110	UC5210	UC5120	UC5220	UC5230	UC4105	UC4115D	UC4215	UC4315	UC6125	UP0005P	UP0105P	UP0010P	UP0015P	UP0115P	UP0025	UP0005HP	UN4005
	VCGX110302-SF-OK										●							
	VCGX110304-SF-OK										●							

Vc ● fn ● ap 31

NEGATIVE with hole

VN □ □

TN□□	1604□□
IC	9,525
T	4,76
Ød	3,81

DESCRIPTION	CARBIDE-CVD								CARBIDE-PVD						CARBIDE			
	UC5110	UC5210	UC5120	UC5220	UC5230	UC4105	UC4115D	UC4215	UC4315	UC6125	UP0005P	UP0105P	UP0010P	UP0015P	UP0115P	UP0025	UP0005HP	UN4005
	VNMG160404-AU																	●
	VNMG160408-AU																	●

Vc ● fn ● ap ▶ 27

NEGATIVE with hole

WN □ □

WN□□	0604□□	0804□□
IC	9,525	12,7
T	4,76	4,76
Ød	3,81	5,16

DESCRIPTION	CARBIDE-CVD								CARBIDE-PVD						CARBIDE			
	UC5110	UC5210	UC5120	UC5220	UC5230	UC4105	UC4115D	UC4215	UC4315	UC6125	UP0005P	UP0105P	UP0010P	UP0015P	UP0115P	UP0025	UP0005HP	UN4005
	WNMG080404-AU																	●
	WNMG080408-AU																	●

Vc ● fn ● ap ▶ 27

Carbide

T U R N I N G

Cutting Parameters Vc(m/min)

TURNING

FC	GRAY CAST IRON
FCD	DUCTILE CAST IRON
S15C	LOW CARBON AND FREE
S30C	MEDIUM CARBON
S45C	HIGH CARBON STEEL
SCM	ALLOY STEEL

SUS400	MARTENSITIC AND FERRITIC STAINLESS STEEL
SUS300	AUSTENITIC STAINLESS STEEL
AL	ALUMINIUM ALLOYS
HAL	ALUMINIUM ALLOYS AGED AND HARDENED
NB	BRASS
CU	BRONZE AND ELECTROLYTIC COPPER

GROOVING

MATERIAL		CARBIDE-CVD / CVD								
		UC5210 UC5110	UC5220 UC5120	UC5230 UC5130	UC5240	UC4105	UC4115D	UC4215	UC4315	UC6125
K	FC					250~450	200~360	200~360	200~360	
	FCD					180~300	150~280	150~280	150~280	
P	S15C	250~350	200~320	200~320	200~320					
	S30C	220~300	180~260	180~260	180~260					
	S45C	200~280	160~250	160~250	160~250					
	SCM	180~250	150~220	150~220	150~220					
M	SUS400									160~260
	SUS300									140~220

THREADING

DRILLING

MATERIAL		CARBIDE-PVD / PVD				CARBIDE
		UP0005P UP-0005HP UP0105P	UP0105P	UP0015P UP0115P	UP0025	UN4005 UN4005P
K	FC					
	FCD					
P	S15C					
	S30C					
	S45C					
	SCM					
M	SUS400	120~220	100~150	100~150	100~150	
	SUS300	100~180	80~120	80~120	80~120	
N	AL					600~1500
	HAL					300~700
	NB					250~400
	CU					150~250

Cutting Parameters a_p (mm) & f_n (mm/rev)

negative 

NEGATIVE INSERT SIZE		CN □□	-	1204..	1606..	1906..	2507.. 2509..
		DN □□	1104..	1504.. 1506..	-	-	-
		SN □□	0903..	1204..	-	1906..	2507.. 2509..
		TN □□	-	1604..	2204..	-	-
		VN □□	-	1604..	-	-	-
		WN □□	0604..	0804..	-	-	-

T U R N I N G

G R O O V I N G

Chip Breaker Form	Corner Radius	a_p (mm)	f_n (mm/rev)	$a_p$ (mm)	$f_n$ (mm/rev)	$a_p$ (mm)	$f_n$ (mm/rev)	$a_p$ (mm)	$f_n$ (mm/rev)	$a_p$ (mm)	$f_n$ (mm/rev)
MA FLAT	R02										
	R04	0.5-2.5	0.1-0.3	1.0-4.0	0.1-0.5	2.0-6.0	0.15-0.7	2.0-7.0	0.15-0.7		
	R08	0.5-3.0	0.1-0.35	1.5-5.0	0.15-0.6	2.0-7.0	0.2-0.75	2.0-7.0	0.2-0.75		
	R12	0.5-3.5	0.1-0.4	1.5-5.0	0.15-0.6	2.0-7.0	0.2-0.75	2.0-7.0	0.2-0.75	8.00-16.0	0.45-1.00
	R16 / R24									8.00-18.0	0.50-1.10
MG BOX	R02										
	R04	0.5-2.5	0.1-0.3	1.0-4.0	0.1-0.5	2.0-6.0	0.15-0.7	2.0-7.0	0.15-0.7	8.00-16.0	0.45-0.89
	R08	0.5-3.0	0.1-0.35	1.5-5.0	0.15-0.6	2.0-7.0	0.2-0.75	2.0-7.0	0.2-0.75		
	R12	0.5-3.5	0.1-0.4	1.5-5.0	0.15-0.6	2.0-7.0	0.2-0.75	2.0-7.0	0.2-0.75		
	R16 / R24									8.00-18.0	0.50-1.10
A3	R02										
	R04			0.8-3.5	0.1-0.4						
	R08			0.8-3.5	0.1-0.4						
	R12										
	R16 / R24										
AU	R02										
	R04			0.5-4.0	0.1-0.35						
	R08			0.5-4.0	0.1-0.35						
	R12										
	R16 / R24										
HA	R02										
	R04			0.5-2.0	0.05-0.25						
	R08			0.5-3.5	0.1-0.35						
	R12										
	R16 / R24										
GH	R02										
	R04										
	R08			1.5-5.0	0.2-0.5						
	R12			2.0-5.0	0.2-0.5	2.0-8.0	0.3-0.6				
	R16 / R24					2.0-10.0	0.3-0.7			1.80-10.00	0.30-0.80
MF	R02										
	R04	0.3-1.5	0.1-0.3	0.5-2.0	0.1-0.4						
	R08	0.5-2.0	0.1-0.35	0.5-3.0	0.15-0.45						
	R12	0.5-2.5	0.1-0.4	1.0-3.5	0.15-0.45						
	R16 / R24										

T H R E A D I N G

D R I L L I N G

Cutting Parameters a_p (mm) & f_n (mm/rev)

negative 

TURNING

GROOVING

NEGATIVE INSERT SIZE		CN □□	-	1204..	1606..	1906..	2507.. 2509..
		DN □□	1104..	1504.. 1506..	-	-	-
		SN □□	0903..	1204..	-	1906..	2507.. 2509..
		TN □□	-	1604..	2204..	-	-
		VN □□	-	1604..	-	-	-
		WN □□	0604..	0804..	-	-	-

THREADING

DRILLING

Chip Breaker Form	Corner Radius	$a_p$ (mm)	$f_n$ (mm/rev)	$a_p$ (mm)	$f_n$ (mm/rev)	$a_p$ (mm)	$f_n$ (mm/rev)	$a_p$ (mm)	$f_n$ (mm/rev)	a_p (mm)	f_n (mm/rev)
MF2	R02										
	R04	0.3-1.5	0.1-0.3	0.5-2.0	0.1-0.4						
	R08	0.5-2.0	0.1-0.35	0.5-3.0	0.15-0.45						
	R12	0.5-2.5	0.1-0.4	1.0-3.5	0.15-0.45					8,00-16,0	0,45-1,00
	R16 / R24									8,00-18,0	0,50-1,10
MF3	R02										
	R04			0.5-2.0	0.1-0.4					8,00-16,0	0,45-0,89
	R08			0.5-3.0	0.15-0.45						
	R12			1.0-3.5	0.15-0.45						
	R16 / R24									8,00-18,0	0,50-1,10
MF4	R02										
	R04	0.3-1.5	0.1-0.3	0.5-2.0	0.1-0.4						
	R08	0.5-2.0	0.1-0.35	0.5-3.0	0.15-0.45						
	R12	0.5-2.5	0.1-0.4	1.0-3.5	0.15-0.45						
	R16 / R24										
MM	R02										
	R04	0.5-2.5	0.1-0.3	1.0-4.0	0.1-0.5	2.0-6.0	0.15-0.7	2.0-7.0	0.15-0.7		
	R08	0.5-3.0	0.1-0.35	1.5-5.0	0.15-0.6	2.0-7.0	0.2-0.75	2.0-7.0	0.2-0.75		
	R12	0.5-3.5	0.1-0.4	1.5-5.0	0.15-0.6	2.0-7.0	0.2-0.75	2.0-7.0	0.2-0.75		
	R16 / R24										
MM2	R02										
	R04			1.0-4.0	0.1-0.5	2.0-6.0	0.15-0.7	2.0-7.0	0.15-0.7		
	R08			1.5-5.0	0.15-0.6	2.0-7.0	0.2-0.75	2.0-7.0	0.2-0.75		
	R12			1.5-5.0	0.15-0.6	2.0-7.0	0.2-0.75	2.0-7.0	0.2-0.75		
	R16 / R24										
MM3	R02										
	R04			1.0-4.0	0.1-0.5						
	R08			1.5-5.0	0.15-0.6						
	R12			1.5-5.0	0.15-0.6						
	R16 / R24									1,80-10,00	0,30-0,80
MM4	R02										
	R04			1.0-4.0	0.1-0.5						
	R08			1.5-5.0	0.15-0.6						
	R12			1.5-5.0	0.15-0.6						
	R16 / R24										

Cutting Parameters a_p (mm) & f_n (mm/rev)

negative 

NEGATIVE INSERT SIZE		CN □□	-	1204..	1606..	1906..	2507.. 2509..
		DN □□	1104..	1504.. 1506..	-	-	-
		SN □□	0903..	1204..	-	1906..	2507.. 2509..
		TN □□	-	1604..	2204..	-	-
		VN □□	-	1604..	-	-	-
		WN □□	0604..	0804..	-	-	-

Chip Breaker Form	Corner Radius	$a_p$ (mm)	$f_n$ (mm/rev)	$a_p$ (mm)	$f_n$ (mm/rev)	$a_p$ (mm)	$f_n$ (mm/rev)	$a_p$ (mm)	$f_n$ (mm/rev)	a_p (mm)	f_n (mm/rev)
MR	R02										
	R04			0.8-5.0	0.15-0.3	1.0-7.0	0.2-0.4	1.3-8.0	0.2-0.5		
	R08			1.3-6.0	0.15-0.4	1.5-8.0	0.2-0.5	1.5-9.0	0.23-0.6		
	R12			1.5-6.5	0.15-0.45	2.0-9.0	0.22-0.5	2.0-10.0	0.25-0.7		
	R16 / R24			1.7-7.0	0.15-0.45	2.5-10.0	0.25-0.6	2.2-10.0	0.25-0.8		
MS	R02										
	R04			0.8-5.0	0.15-0.3	1.0-7.0	0.2-0.4				
	R08			1.3-6.0	0.15-0.4	1.5-8.0	0.2-0.5				
	R12			1.5-6.5	0.15-0.45	2.0-9.0	0.22-0.5				
	R16 / R24										
RB-25	R02										
	R04			0.8-5.0	0.15-0.3	1.0-7.0	0.2-0.4	1.3-8.0	0.2-0.5		
	R08			1.3-6.0	0.15-0.4	1.5-8.0	0.2-0.5	1.5-9.0	0.23-0.6		
	R12			1.5-6.5	0.15-0.45	2.0-9.0	0.22-0.5	2.0-10.0	0.25-0.7		
	R16 / R24			1.7-7.0	0.15-0.45	2.5-10.0	0.25-0.6	2.2-10.0	0.25-0.8		
RH-25	R02										
	R04			0.8-5.0	0.15-0.3	1.0-7.0	0.2-0.4	1.3-8.0	0.2-0.5		
	R08			1.3-6.0	0.15-0.4	1.5-8.0	0.2-0.5	1.5-9.0	0.23-0.6		
	R12			1.5-6.5	0.15-0.45	2.0-9.0	0.22-0.5	2.0-10.0	0.25-0.7		
	R16 / R24			1.7-7.0	0.15-0.45	2.5-10.0	0.25-0.6	2.2-10.0	0.25-0.8		
TQ	R02										
	R04			1.0-4.0	0.1-0.5						
	R08			1.5-5.0	0.15-0.6						
	R12			1.5-5.0	0.15-0.6						
	R16 / R24										
UF	R02										
	R04	0.3-1.5	0.1-0.3	0.5-2.0	0.1-0.4						
	R08	0.5-2.0	0.1-0.35	0.5-3.0	0.15-0.45						
	R12	0.5-2.5	0.1-0.4	1.0-3.5	0.15-0.45						
	R16 / R24										
UF1	R02										
	R04	0.3-1.5	0.1-0.3	0.5-2.0	0.1-0.4						
	R08	0.5-2.0	0.1-0.35	0.5-3.0	0.15-0.45						
	R12										
	R16 / R24										

Cutting Parameters a_p (mm) & f_n (mm/rev)

negative 

TURNING

GROOVING

NEGATIVE INSERT SIZE		CN □□	-	1204..	1606..	1906..	2507.. 2509..
		DN □□	1104..	1504.. 1506..	-	-	-
		SN □□	0903..	1204..	-	1906..	2507.. 2509..
		TN □□	-	1604..	2204..	-	-
		VN □□	-	1604..	-	-	-
		WN □□	0604..	0804..	-	-	-

THREADING

DRILLING

Chip Breaker Form	Corner Radius	$a_p$ (mm)	$f_n$ (mm/rev)	$a_p$ (mm)	$f_n$ (mm/rev)	$a_p$ (mm)	$f_n$ (mm/rev)	$a_p$ (mm)	$f_n$ (mm/rev)	a_p (mm)	f_n (mm/rev)
UM	R02										
	R04	0.5-2.5	0.1-0.3	1.0-4.0	0.1-0.5	2.0-6.0	0.15-0.7	2.0-7.0	0.15-0.7		
	R08	0.5-3.0	0.1-0.35	1.5-5.0	0.15-0.6	2.0-7.0	0.2-0.75	2.0-7.0	0.2-0.75		
	R12	0.5-3.5	0.1-0.4	1.5-5.0	0.15-0.6	2.0-7.0	0.2-0.75	2.0-7.0	0.2-0.75		
	R16 / R24										
UM1	R02										
	R04	0.5-2.5	0.1-0.3	1.0-4.0	0.1-0.5	2.0-6.0	0.15-0.7	2.0-7.0	0.15-0.7		
	R08	0.5-3.0	0.1-0.35	1.5-5.0	0.15-0.6	2.0-7.0	0.2-0.75	2.0-7.0	0.2-0.75		
	R12	0.5-3.5	0.1-0.4	1.5-5.0	0.15-0.6	2.0-7.0	0.2-0.75	2.0-7.0	0.2-0.75		
	R16 / R24	1.0-4.0	0.12-0.45	1.7-6.0	0.17-0.65	2.3-7.5	0.23-0.8	2.3-7.5	0.23-0.8		
UMC	R02										
	R04	0.5-2.5	0.1-0.3	1.0-4.0	0.1-0.5	2.0-6.0	0.15-0.7				
	R08	0.5-3.0	0.1-0.35	1.5-5.0	0.15-0.6	2.0-7.0	0.2-0.75				
	R12	0.5-3.5	0.1-0.4	1.5-5.0	0.15-0.6	2.0-7.0	0.2-0.75				
	R16 / R24									5.00-17.0	0.45-0.90
UR	R02										
	R04			0.8-5.0	0.15-0.3	1.0-7.0	0.2-0.4	1.3-8.0	0.2-0.5		
	R08			1.3-6.0	0.15-0.4	1.5-8.0	0.2-0.5	1.5-9.0	0.23-0.6		
	R12			1.5-6.5	0.15-0.45	2.0-9.0	0.22-0.5	2.0-10.0	0.25-0.7		
	R16 / R24			1.7-7.0	0.15-0.45	2.5-10.0	0.25-0.6	2.2-10.0	0.25-0.8		
UR1	R02										
	R04			0.8-5.0	0.15-0.3	1.0-7.0	0.2-0.4	1.3-8.0	0.2-0.5		
	R08			1.3-6.0	0.15-0.4	1.5-8.0	0.2-0.5	1.5-9.0	0.23-0.6		
	R12			1.5-6.5	0.15-0.45	2.0-9.0	0.22-0.5	2.0-10.0	0.25-0.7		
	R16 / R24			1.7-7.0	0.15-0.45	2.5-10.0	0.25-0.6	2.2-10.0	0.25-0.8		
Z	R02										
	R04										
	R08			0.1-0.35	1.5-5.0						
	R12			0.1-0.4	1.5-5.0						
	R16 / R24										
L-R	R02										
	R04			1.0-3.5	0.15-0.3						
	R08			1.2-4.0	0.15-0.4						
	R12										
	R16 / R24										

Cutting Parameters a_p (mm) & f_n (mm/rev)

positive 

POSITIVE INSERT SIZE		CC/CP□□	0602..	09T3.. 0903..	1204..	-	-
		DC□□	0702..	11T3..	..	-	-
		SC/SP□□	-	09T3..	1204..	-	-
		TC/TP□□	0902..	1102..	16T3..	2204..	-
		VB/VC□□	-	1103..	1604..	2205..	-
		WB□□	0601..	-	-	-	-

T U R N I N G

G R O O V I N G

Chip Breaker Form	Corner Radius	$a_p$ (mm)	$f_n$ (mm/rev)	$a_p$ (mm)	$f_n$ (mm/rev)	$a_p$ (mm)	$f_n$ (mm/rev)	$a_p$ (mm)	$f_n$ (mm/rev)	a_p (mm)	f_n (mm/rev)
AU	R02	0.05-2.5	0.01-0.12	0.05-3.0	0.02-0.2	0.05-3.5	0.02-0.3				
	R04	0.07-2.8	0.01-0.15	0.07-3.3	0.03-0.25	0.07-3.8	0.03-0.35				
	R08	0.1-3.0	0.03-0.2	0.1-3.5	0.05-0.3	0.1-4.5	0.05-0.4				
	R12										
	R16 / R24										
AU2C	R02										
	R04										
	R08										
	R12										
	R16 / R24							0.1-7.0	0.08-1.0		
AUP	R02										
	R04			0.05-3.0	0.02-0.2						
	R08			0.07-3.3	0.03-0.25						
	R12			0.1-3.5	0.05-0.3						
	R16 / R24							0.1-7.0	0.08-1.0		
GM	R02										
	R04					0.15-2.7	0.07-0.2				
	R08					0.18-3.5	0.1-0.23				
	R12					0.2-3.7	0.12-0.25				
	R16 / R24										
MF	R02	0.06-1.0	0.03-0.1	0.08-1.5	0.04-0.15	0.13-2.5	0.07-0.2				
	R04	0.08-1.3	0.05-0.15	0.1-2.0	0.07-0.2	0.15-3.0	0.1-0.23				
	R08	0.1-1.8	0.15-0.2	0.13-2.5	0.1-0.25	0.15-3.3	0.13-0.28				
	R12	0.12-2.3	0.18-0.25	0.15-3.0	0.12-0.3	0.17-3.5	0.15-0.35				
	R16 / R24										
MF1	R02	0.06-1.0	0.03-0.1	0.08-1.5	0.04-0.15	0.13-2.5	0.07-0.2				
	R04	0.08-1.3	0.05-0.15	0.1-2.0	0.07-0.2	0.15-3.0	0.1-0.23				
	R08	0.1-1.8	0.15-0.2	0.13-2.5	0.1-0.25	0.15-3.3	0.13-0.28				
	R12	0.12-2.3	0.18-0.25	0.15-3.0	0.12-0.3	0.17-3.5	0.15-0.35				
	R16 / R24										
MF2	R02	0.06-1.0	0.03-0.1	0.08-1.5	0.04-0.15	0.13-2.5	0.07-0.2				
	R04	0.08-1.3	0.05-0.15	0.1-2.0	0.07-0.2	0.15-3.0	0.1-0.23				
	R08	0.1-1.8	0.15-0.2	0.13-2.5	0.1-0.25	0.15-3.3	0.13-0.28				
	R12	0.12-2.3	0.18-0.25	0.15-3.0	0.12-0.3	0.17-3.5	0.15-0.35				
	R16 / R24										

T H R E A D I N G

D R I L L I N G

Cutting Parameters a_p (mm) & f_n (mm/rev)

positive 

TURNING

GROOVING

POSITIVE INSERT SIZE		CC/CP□□	0602..	09T3.. 0903..	1204..	-	-
		DC□□	0702..	11T3..	..	-	-
		SC/SP□□	-	09T3..	1204..	-	-
		TC/TP□□	0902..	1102..	16T3..	2204..	-
		VB/VC□□	-	1103..	1604..	2205..	-
		WB□□	0601..	-	-	-	-

THREADING

DRILLING

Chip Breaker Form	Corner Radius	$a_p$ (mm)	$f_n$ (mm/rev)	$a_p$ (mm)	$f_n$ (mm/rev)	$a_p$ (mm)	$f_n$ (mm/rev)	$a_p$ (mm)	$f_n$ (mm/rev)	a_p (mm)	f_n (mm/rev)
MM1	R02	0.1-1.5	0.03-0.12	0.1-2.0	0.07-0.22	0.3-3.0	0.09-0.27				
	R04	0.2-2.0	0.06-0.2	0.15-2.5	0.1-0.28	0.5-3.3	0.1-0.3				
	R08	0.25-2.5	0.1-0.25	0.15-3.0	0.15-0.34	1.0-3.5	0.15-0.35				
	R12	0.25-2.8	0.1-0.3	0.2-3.5	0.2-0.35	1.0-3.5	0.15-0.4				
	R16 / R24										
MM3	R02			0.1-2.0	0.07-0.22						
	R04			0.15-2.5	0.1-0.28						
	R08			0.15-3.0	0.15-0.34						
	R12										
	R16 / R24										
MM4	R02					0.3-3.0	0.09-0.27				
	R04					0.5-3.3	0.1-0.3				
	R08					1.0-3.5	0.15-0.35				
	R12										
	R16 / R24										
MM5	R02	0.1-1.5	0.03-0.12	0.1-2.0	0.07-0.22	0.3-3.0	0.09-0.27				
	R04	0.2-2.0	0.06-0.2	0.15-2.5	0.1-0.28	0.5-3.3	0.1-0.3				
	R08	0.25-2.5	0.1-0.25	0.15-3.0	0.15-0.34	1.0-3.5	0.15-0.35				
	R12	0.25-2.8	0.1-0.3	0.2-3.5	0.2-0.35	1.0-3.5	0.15-0.4				
	R16 / R24										
SF	R02			0.06-1.0	0.03-0.13						
	R04			0.06-1.5	0.05-0.15						
	R08										
	R12										
	R16 / R24										
SF-OK	R02			0.06-1.0	0.03-0.13						
	R04			0.06-1.5	0.05-0.15						
	R08										
	R12										
	R16 / R24										
TQ	R02	0.06-1.0	0.03-0.1	0.08-1.5	0.04-0.15						
	R04	0.08-1.3	0.05-0.15	0.1-2.0	0.07-0.2						
	R08	0.1-1.8	0.15-0.2	0.13-2.5	0.1-0.25						
	R12	0.12-2.3	0.18-0.25	0.15-3.0	0.12-0.3						
	R16 / R24										

Cutting Parameters a_p (mm) & f_n (mm/rev)

POSITIVE INSERT SIZE		CC/CP□□	0602..	09T3.. 0903..	1204..	-	-
		DC□□	0702..	11T3..	..	-	-
		SC/SP□□	-	09T3..	1204..	-	-
		TC/TP□□	0902..	1102..	16T3..	2204..	-
		VB/VC□□	-	1103..	1604..	2205..	-
		WB□□	0601..	-	-	-	-

Chip Breaker Form	Corner Radius	$a_p$ (mm)	$f_n$ (mm/rev)	$a_p$ (mm)	$f_n$ (mm/rev)	$a_p$ (mm)	$f_n$ (mm/rev)	$a_p$ (mm)	$f_n$ (mm/rev)	a_p (mm)	f_n (mm/rev)
UF	R02	0.06-1.0	0.03-0.1	0.08-1.5	0.04-0.15	0.13-2.5	0.07-0.2				
	R04	0.08-1.3	0.05-0.15	0.1-2.0	0.07-0.2	0.15-3.0	0.1-0.23				
	R08	0.1-1.8	0.15-0.2	0.13-2.5	0.1-0.25	0.15-3.3	0.13-0.28				
	R12	0.12-2.3	0.18-0.25	0.15-3.0	0.12-0.3	0.17-3.5	0.15-0.35				
	R16 / R24										
UM	R02	0.1-1.5	0.03-0.12	0.1-2.0	0.07-0.22	0.3-3.0	0.09-0.27				
	R04	0.2-2.0	0.06-0.2	0.15-2.5	0.1-0.28	0.5-3.3	0.1-0.3				
	R08	0.25-2.5	0.1-0.25	0.15-3.0	0.15-0.34	1.0-3.5	0.15-0.35				
	R12	0.25-2.8	0.1-0.3	0.2-3.5	0.2-0.35	1.0-3.5	0.15-0.4				
	R16 / R24										
UM2	R02	0.1-1.5	0.03-0.12	0.1-2.0	0.07-0.22	0.3-3.0	0.09-0.27				
	R04	0.2-2.0	0.06-0.2	0.15-2.5	0.1-0.28	0.5-3.3	0.1-0.3				
	R08	0.25-2.5	0.1-0.25	0.15-3.0	0.15-0.34	1.0-3.5	0.15-0.35				
	R12	0.25-2.8	0.1-0.3	0.2-3.5	0.2-0.35	1.0-3.5	0.15-0.4				
	R16 / R24										
UR	R02	0.1-1.5	0.03-0.12	0.1-2.0	0.07-0.22						
	R04	0.2-2.0	0.06-0.2	0.15-2.5	0.1-0.28						
	R08	0.25-2.5	0.1-0.25	0.15-3.0	0.15-0.34						
	R12	0.25-2.8	0.1-0.3	0.2-3.5	0.2-0.35						
	R16 / R24										
UR2	R02	0.1-1.5	0.03-0.12	0.1-2.0	0.07-0.22						
	R04	0.2-2.0	0.06-0.2	0.15-2.5	0.1-0.28						
	R08	0.25-2.5	0.1-0.25	0.15-3.0	0.15-0.34						
	R12	0.25-2.8	0.1-0.3	0.2-3.5	0.2-0.35						
	R16 / R24										

TURNING CVD Comparison table

	MATERIAL	UNION MATERIALS	ISCAR	SECO	TEAGUTECH	KYOCERA	SANDVIK	KENAMETAL	MITSUBISHI	WALTER	KORLOY
TURNING		UC5210		TP0500	TT8105	CA5505	GC4305	KCP05(B)	UE6105	WPP10S	NC3010
		UC5110	IC8150	TP0501	TT8110	CA510	GC4205		UE6110	WKP13S	
GROOVING				TP1500	TT8115	CA515	GC4315	KCP10(B)	MY5015		NC3215
		UC5220		TP2500	TT8120	CA525	GC4215		MC6025	WPP20S	NC3220
	P	UC5120	IC8250	TP2501	LC025P	CA5525	GC4325	KCP25(B)	UE6020	WKP23S	NC3225
THREADING				T350M	TT8125		GC4225				
		UC5230	IC8350	TP3500	TT5100	CA530	GC4235	KCP30(B)	UE6035	WPP30S	NC3030
					TT8135	CA5535				WKP33S	NC500H
DRILLING		UC5240		TGP45	TT7100			KCP40(B)			NC5330
	M	UC6125	IC6015	TM2000	TT9215	CA6515	GC2015	KCM15(M)	MC7015	WAM10	NC9020
				TM4000	TT9225	CA6525	GC2025	KCM25(B)	US7020	WAM20	NC9025
									US735	WAM30	
	K	UC4105	IC5005	TK1001	TT7005	CA4505	GC3205	KCK05(B)	MC5005	WKK10S	NC6205
					CA4010	GC3210		UC5105			
UC4215				TT7310						NC6210	
UC4115D		IC5015	TK2001	TT7015	CA4515	GC3215	KCK15(B)	MC5015	WKK20S	NC6215	
	UC4315		TGK1500		CA4115	GC3225		UC5115			

TURNING PVD Comparison table

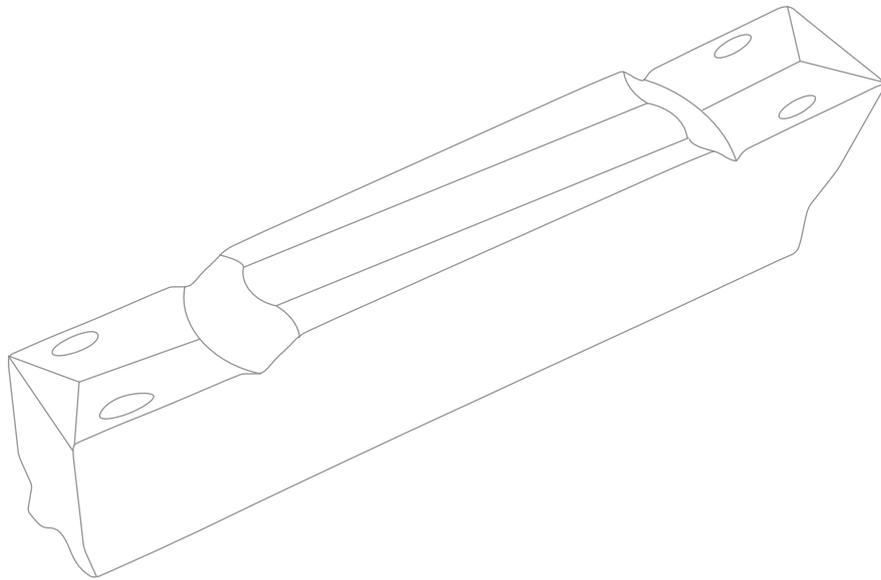
MATERIAL	UNION MATERIALS	ISCAR	SECO	TEAGUTEC	KYOCERA	SANDVIK	KENAMETAL	mitsubishi	WALTER	KORLOY
P	UP0005(H)P	IC507	CP200		PR1005					
	UP0105P	IC808			PR915		KU10T			PC8110
	UP0010P		CP250		PR1115		KU25T			PC230
						PR930				
	UP0015P	IC3028		TT5030		GC1025		VP15TF	WTA43	PC5300
	UP0115P	IC908				PR1025		VP20MF	WTA41	PC8115
			IC830			PR630	GC4125			
	UP0025		CP500		PR660					PC3545
M	UP0005(H)P	IC808	CP200			GC1005		MP9005		
	UP0105P	IC907			PR915	GC1105	KC5010	VP10RT	WSM10S	PC8110
	UP0010P		CP250				KC5510		WSM20S	PC8115
						PR930	GC1020			
	UP0015P	IC3028					KC5025	VP15TF	WSM30S	PC5300
	UP0115P	IC830		TT5030	PR1125	GC1025	KC5525	VP20MF	WSM40S	
						PR630	GC4125			PC9030
	UP0025		CP500	TT8020	PR660	GC2035				PC5400
K	UP4505	IC810	CP200							
		IC908	CP250	TT5030						
	UP0025	IC228	CP500							PC5300
S										
	UP0005(H)P	IC808	TS2000					VP05RT	WSM10	PC8105
	UP0105P	IC907			PR915	GC1105				
	UP6505P		CP500				KC5010	VP10RT	WSM20	PC8110
										PC8115
	UP6015	IC328	TS2500	TT5030	PR660	GC1025		VP15TF	WSM30	
	UP6025				PR1325	GC2035	KC5025			PC5300
	UP6035									PC5400

TURNING

GROOVING

THREADING

DRILLING

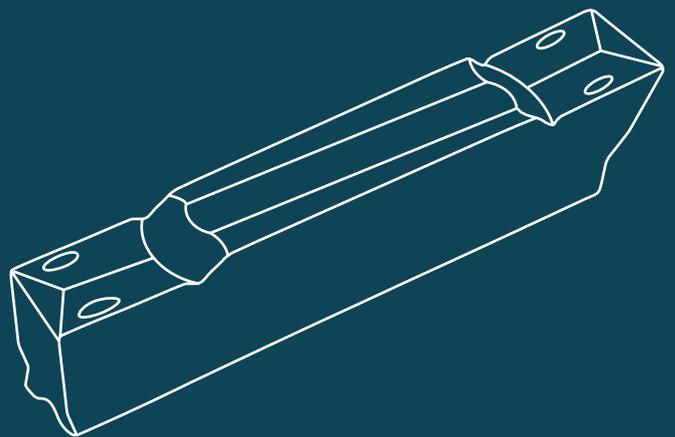
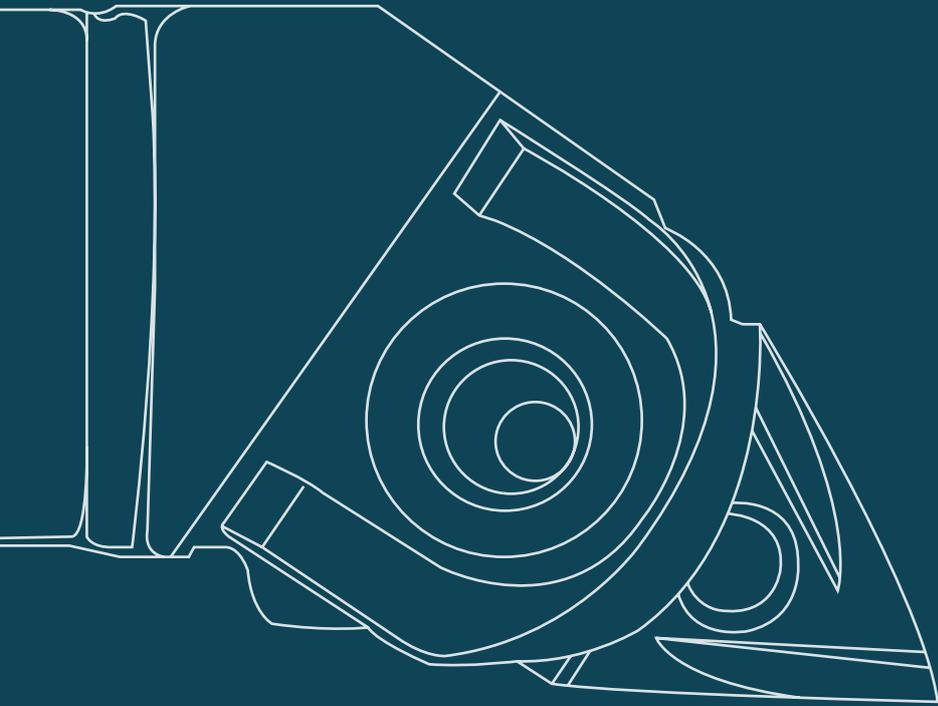


GROOVING

Carbide / 40

HOLDERS / 52

GROOVING / Carbide



Carbide

GROOVING

Grade

TURNING

ISO
DIN 513

K

P

M

N



K01 K10 K20 K30 K40

P01 P10 P20 P30 P40

M01 M10 M20 M30 M40

N01 N10 N20 N30 N40

GROOVING

CARBIDE
CVD

UC525P

UC525P

THREADING

CARBIDE
PVD

UP4505

UP5025

UP0525

UP6525P

UP0535

UP0525

UP6525P

UP0535

DRILLING

CARBIDE
UNCOATED

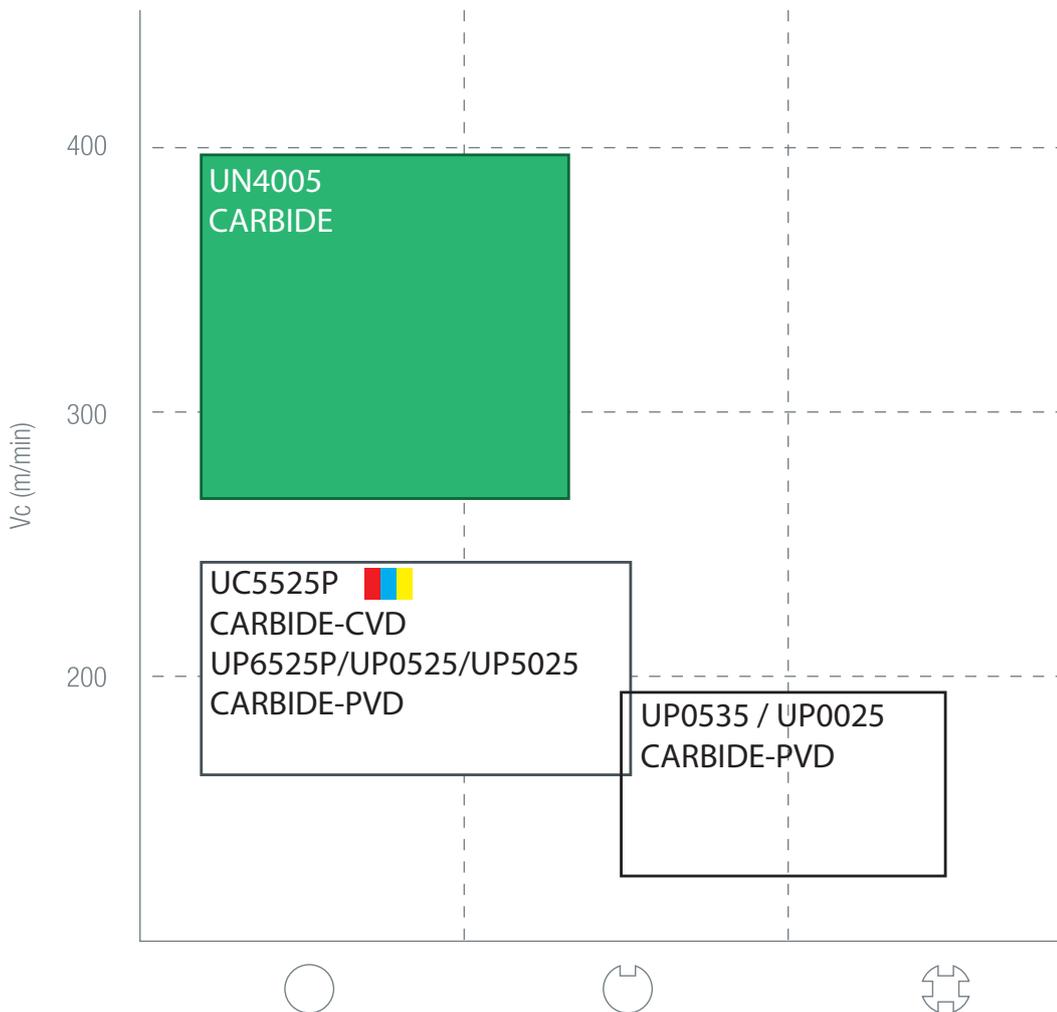
UN4005

GROOVING

Range

ISO **P** **M** **K**

Grades



TURNING

GROOVING

THREADING

DRILLING

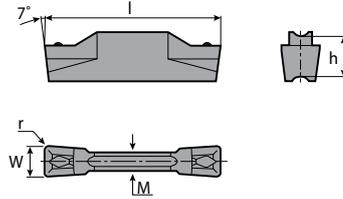
Carbide

GROOVING

TURNING

PARTING & GROOVING

MGMN-C



GROOVING

DESCRIPTION

DIMENSIONS

CARBIDE

UC5135	UP0525	UP0535	UP6525P	UP4505
--------	--------	--------	---------	--------

W	r	l	M	h	α
---	---	---	---	---	---



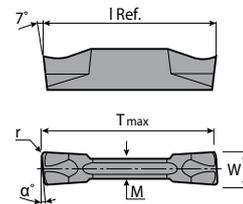
MGMN150-C	1.5	0.15	16.0	1.2	3.5		●	●	●	●	
MGMN200-C	2.0	0.2	16.0	1.2	3.5	-	●	●	●	●	
MGMN250-C	2.5	0.2	18.5	2.0	3.85	-	●	●	●	●	
MGMN300-C	3.0	0.4	21.0	2.35	4.8	-	●	●	●	●	
MGMN400-C	4.0	0.4	21.0	3.3	4.8	-	●	●	●	●	
MGMN500-C	5.0	0.8	26.0	4.1	5.8	-	●	●	●	●	
MGMN600-C	6.0	0.8	26.0	5.0	5.8		●	●	●	●	

THREADING

DRILLING

PARTING & GROOVING

MGMR-J



DESCRIPTION

DIMENSIONS

CARBIDE

UC5135	UP0525	UP0535	UP6525P	UP4505
--------	--------	--------	---------	--------

W	r	l	M	h	α
---	---	---	---	---	---



MGMR200J-15D	2.0	0.2	16.0	1.2	3.5	15	●	●	●	●	
MGMR300J-15D	3.0	0.4	21.0	2.35	4.8	15	●	●	●	●	

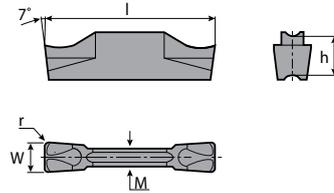
Vc ● fn



49

PARTING & GROOVING

MGMN-J



TURNING

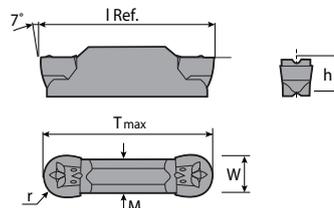
DESCRIPTION	DIMENSIONS							CARBIDE				
								UC5135	UC0525	UP0535	UP6525P	UP4505
								W	r	l	M	h	$\alpha$
	MGMN150-J	1.5	0.15	16.0	1.2	3.5	-	●	●	●	●	●
	MGMN200-J	2.0	0.2	16.0	1.2	3.5	-	●	●	●	●	●
	MGMN250-J	2.5	0.2	18.5	2.0	3.85	-	●	●	●	●	●
	MGMN300-J	3.0	0.4	21.0	2.35	4.8	-	●	●	●	●	●
	MGMN400-J	4.0	0.4	21.0	3.3	4.8	-	●	●	●	●	●
	MGMN500-J	5.0	0.8	26.0	4.1	5.8	-	●	●	●	●	●
	MGMN600-J	6.0	0.8	26.0	5.0	5.8	-	●	●	●	●	●

GROOVING

THREADING

PARTING & GROOVING

MRMN-MTK



DRILLING

DESCRIPTION	DIMENSIONS							CARBIDE				
								UC5135	UP0525	UP0535	UP6525P	UP4505
								W	r	l	M	h	$\alpha$
	MRMN200-MTK	2.0	1.0	16.0	1.5	3.5	-	●	●	●	●	●
	MRMN300-MTK	3.0	1.5	21.0	2.35	4.8	-	●	●	●	●	●
	MRMN400-MTK	4.0	2.0	21.0	3.3	4.8	-	●	●	●	●	●
	MRMN500-MTK	5.0	2.5	26.0	4.1	5.8	-	●	●	●	●	●
	MRMN600-MTK	6.0	3.0	26.0	5.0	5.8	-	●	●	●	●	●

Vc ● fn

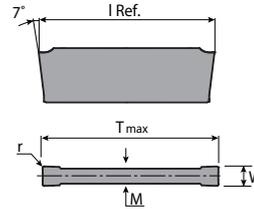


49

TURNING

PARTING & GROOVING

SDGN



GROOVING

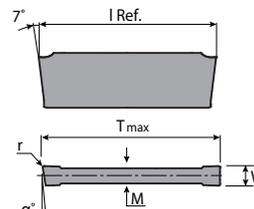
THREADING

DESCRIPTION	DIMENSIONS							CARBIDE				
	W	r	l	M	h	α	UC5525P	UP0525	UP0535	UP6525P	UP4505	
 	SDGN2002Z	2	0.2	21	1.7	4.5	-	●	●	●	●	
	SDGN2202J	2.2	0.2	19.8	2.2	4.5	-	●	●	●	●	
	SDGN3002Z	3	0.2	21	2.4	4.5	-	●	●	●	●	
	SDGN3102C	3.1	0.2	20.1	2.4	4.5	-	●	●	●	●	
	SDGN3102Z	3.1	0.2	20.1	2.4	4.5	-	●	●	●	●	

DRILLING

PARTING & GROOVING

SDGR

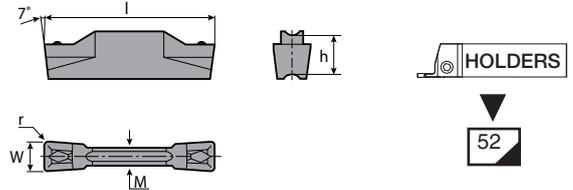


DESCRIPTION	DIMENSIONS							CARBIDE				
	W	r	l	M	h	α	UC5525P	UP0525	UP0535	UP6525P	UP4505	
	SDGR2200JS-15D	2.2	0.2	19.8	1.9	4.5	15	●	●	●	●	
	SDGR2202J-6D	2.2	0.2	19.8	1.9	4.5	6	●	●	●	●	

Vc • fn  49

PARTING & GROOVING

TG-C



TURNING

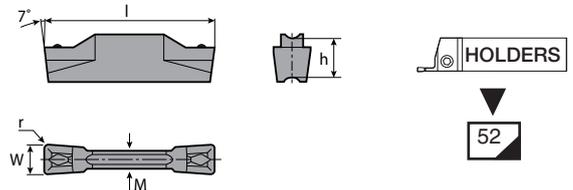
DESCRIPTION	DIMENSIONS							CARBIDE				
								UC5525P	UP0525	UP0535	UP6525P	UP4505
								W	r	l	M	h	$\alpha$
	TG200C-02	2.0	0.2	20.0	1.70	4.70	-	●	●	●	●	●
	TG300C-02	3.0	0.2	20.0	2.40	4.70	-	●	●	●	●	●
	TG400C-03	4.0	0.3	20.0	3.0	4.70	-	●	●	●	●	●
	TG500C-03	5.0	0.3	25.0	4.0	5.20	-	●	●	●	●	●

GROOVING

THREADING

PARTING & GROOVING

TG-J



DRILLING

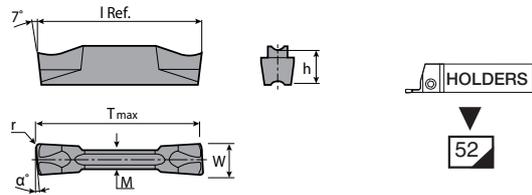
DESCRIPTION	DIMENSIONS							CARBIDE					
								UC5525P	UP0525	UP0535	UP6525P	UP4505	
								W	r	l	M	h	α
	TG200J-02	2.0	0.2	20.0	1.70	4.70	-	●	●	●	●	●	
	TG300J-02	3.0	0.2	20.0	2.40	4.70	-	●	●	●	●	●	
	TG400J-03	4.0	0.3	20.0	3.0	4.70	-	●	●	●	●	●	

Vc ● fn  49

TURNING

PARTING

TG-J-R



GROOVING

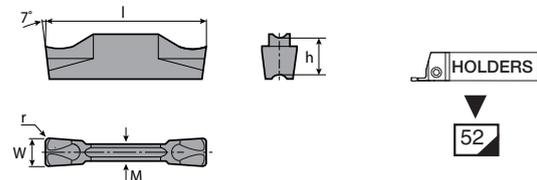
THREADING

DESCRIPTION	DIMENSIONS							CARBIDE				
								UC5525P	UP0525	UP0535	UP6525P	UP4505
								W	r	l	M	h	$\alpha$
	TG200-J-R-15D	2.0	0.2	20.0	1.70	4.70	15	●	●	●	●	●
	TG200-J-R-6D	2.0	0.2	20.0	1.70	4.70	6	●	●	●	●	●
	TG300-J-R-6D	3.0	0.2	20.0	2.40	4.70	6	●	●	●	●	●
	TG400-J-R-6D	4.0	0.2	20.0	2.40	4.70	6	●	●	●	●	●
	TG400-J-R-4D	4.0	0.3	20.0	3.00	4.70	4	●	●	●	●	●
	TG500-J-R-4D	5.0	0.3	25.0	4.00	5.20	4	●	●	●	●	●

DRILLING

GROOVING & TURNING

TG-T

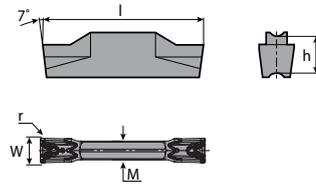


DESCRIPTION	DIMENSIONS							CARBIDE				
								UC5525P	UP0525	UP0535	UP6525P	UP4505
								W	r	l	M	h	$\alpha$
	TG300T-04	3.0	0.4	20.0	2.20	4.70	-	●	●	●	●	●
	TG400T-04	4.0	0.4	20.0	3.00	4.70	-	●	●	●	●	●
	TG500T-04	5.0	0.4	25.0	4.00	5.20	-	●	●	●	●	●

Vc ● fn 49

PARTING & GROOVING

TGDM



TURNING

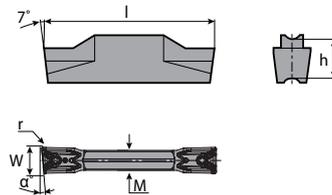
DESCRIPTION		DIMENSIONS						CARBIDE					
								UC5525P	UP0525	UP0535	UP6525P	UP4505	
		W	r	l	M	h	α						
	TGDM200	2.00	0.2	20	1.5	4.3	-	●	●	●	●		
	TGDM300	3.00	0.3	20	2.3	4.3	-	●	●	●	●		
	TGDM400	4.00	0.3	20	3.3	4.3	-	●	●	●	●		

GROOVING

THREADING

PARTING

TGDR



DRILLING

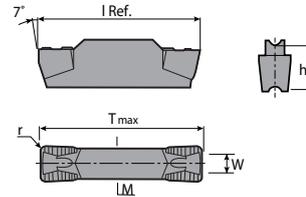
DESCRIPTION		DIMENSIONS						CARBIDE					
								UC5525P	UP0525	UP0535	UP6525	UP4505	
		W	r	l	M	h	α						
	TGDR200-15D	2.00	0.2	20	1.5	4.3	15	●	●	●	●		
	TGDR300-15D	3.00	0.3	20	2.3	4.3	15	●	●	●	●		

Vc ● fn  49

TURNING

PARTING & GROOVING

GRIP



GROOVING

THREADING

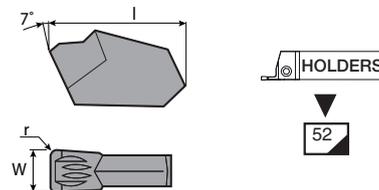


DESCRIPTION	DIMENSIONS							CARBIDE				
	W	r	l	M	h	α	UC5525P	UP0525	UP0535	UP6525P	UP4505	
GRIP300-M-TI	3.0	0.2	16.0	2.3	4.4	-	●	●	●	●		
GRIP400-F-TI	4.0	0.4	19.0	2.8	4.9	-	●	●	●	●		
GRIP500-M-TI	5.0	0.5	19.0	3.4	5.4	-	●	●	●	●		

DRILLING

PARTING

SP-TK



DESCRIPTION	DIMENSIONS							CARBIDE				
	W	r	l	M	h	α	UC5135	UP0525	UP0535	UP6525P	U-P4505	
SP200-TK	2.2	9.3	0.2	-	-	-	●	●				
SP300-TK	3.1	3.2	0.2	-	-	-	●	●				
SP400-TK	4.1	11.3	0.25	-	-	-	●	●				
SP500-TK	5.1	11.4	0.3	-	-	-	●	●				
SP600-TK	6.4	11.4	0.35	-	-	-	●	●				

Vc ● fn 49

Cutting Parameters Vc(m/min), fn(mm/rev)

FC	GREY CAST IRON
FCD	NODULAR CAST IRON
S15C	LOW CARBON AND FREE CUTTING STEEL
S30C	MEDIUM CARBON STEEL
S45C	HIGH CARBON STEEL
SCM	ALLOY STEEL

SUS400	MARTENSITIC AND FERRITIC STAINLESS STEEL
SUS300	AUSTENITIC STAINLESS STEEL
AL	ALUMINIUM ALLOYS
HAL	AL ALLOYS AGED AND HARDENED
NB	BRASS
NC	BRONZE AND ELECTROLYTIC COPPER

MATERIAL		CARBIDE-CVD	CARBIDE-PVD			CARBIDE
		TC5525P	TP0525	TP0535	TP6525P	TU4005
K	FC	250~450	200~360	200~360		
	FCD	180~300	150~280	150~280		
P	S15C	250~350	200~320	200~320		
	S30C	220~300	180~260	180~260		
	S45C	200~280	160~250	160~250		
	SCM	180~250	150~220	150~220		
M	SUS400	160~260	160~260	160~260	160~260	
	SUS300	140~220	140~220	140~220	140~220	
N	AL					600~1500
	HAL					300~700
	NB					250~400
	NC					150~250

TURNING

GROOVING

THREADING

DRILLING

Cutting Parameters, f_n (mm/rev)

TURNING

FC	GREY CAST IRON
FCD	NODULAR CAST IRON
S15C	LOW CARBON AND FREE CUTTING STEEL
S30C	MEDIUM CARBON STEEL
S45C	HIGH CARBON STEEL
SCM	ALLOY STEEL

SUS400	MARTENSITIC AND FERRITIC STAINLESS STEEL
SUS300	AUSTENITIC STAINLESS STEEL
AL	ALUMINIUM ALLOYS
HAL	AL ALLOYS AGED AND HARDENED
NB	BRASS
NC	BRONZE AND ELECTROLYTIC COPPER

GROOVING

Parting-off

MATERIAL		CUTTING WIDTH(mm)				
		2 mm	3 mm	4 mm	5 mm	6 mm
K	FC	0.05~0.12	0.10~0.25	0.10~0.30	0.10~0.35	0.10~0.40
	FCD	0.05~0.10	0.10~0.20	0.10~0.25	0.10~0.30	0.10~0.35
P	S15C	0.02~0.15	0.03~0.20	0.08~0.30	0.10~0.40	0.12~0.50
	S30C	0.02~0.15	0.03~0.20	0.08~0.30	0.10~0.40	0.12~0.50
	S45C	0.02~0.15	0.03~0.20	0.08~0.30	0.10~0.40	0.12~0.50
	SCM	0.02~0.15	0.03~0.20	0.08~0.30	0.10~0.40	0.12~0.50
M	SUS400	0.02~0.10	0.03~0.15	0.08~0.25	0.10~0.35	0.12~0.40
	SUS300	0.02~0.08	0.03~0.13	0.08~0.20	0.10~0.30	0.12~0.35
N	AL	0.05~0.10	0.05~0.20	0.05~0.25	0.05~0.30	0.05~0.35
	HAL	0.05~0.10	0.05~0.20	0.05~0.25	0.05~0.30	0.05~0.35
	NB	0.05~0.10	0.05~0.20	0.05~0.25	0.05~0.30	0.05~0.35
	NC	0.05~0.10	0.05~0.20	0.05~0.25	0.05~0.30	0.05~0.35

Facing

MATERIAL		CUTTING WIDTH(mm)		
		3 mm	4 mm	5 mm
K	FC	0.05~0.10	0.05~0.12	0.05~0.15
	FCD	0.05~0.10	0.05~0.12	0.05~0.15
P	S15C	0.05~0.10	0.05~0.12	0.05~0.15
	S30C	0.05~0.10	0.05~0.12	0.05~0.15
	S45C	0.05~0.10	0.05~0.12	0.05~0.15
	SCM	0.05~0.10	0.05~0.12	0.05~0.15
M	SUS400	0.05~0.10	0.05~0.12	0.05~0.15
	SUS300	0.05~0.10	0.05~0.12	0.05~0.15
N	AL	0.05~0.15	0.08~0.15	0.08~0.15
	HAL	0.05~0.15	0.08~0.15	0.08~0.15
	NB	0.05~0.15	0.08~0.15	0.08~0.15
	NC	0.05~0.15	0.08~0.15	0.08~0.15

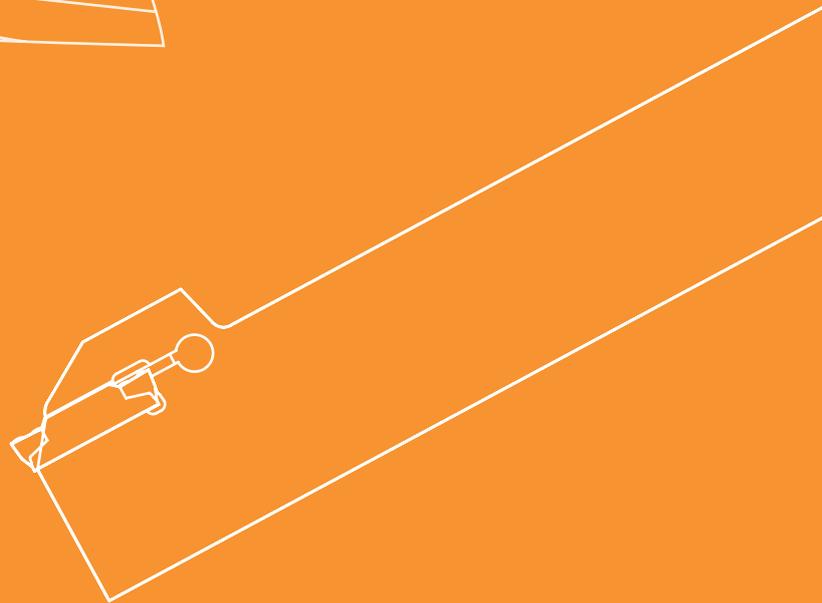
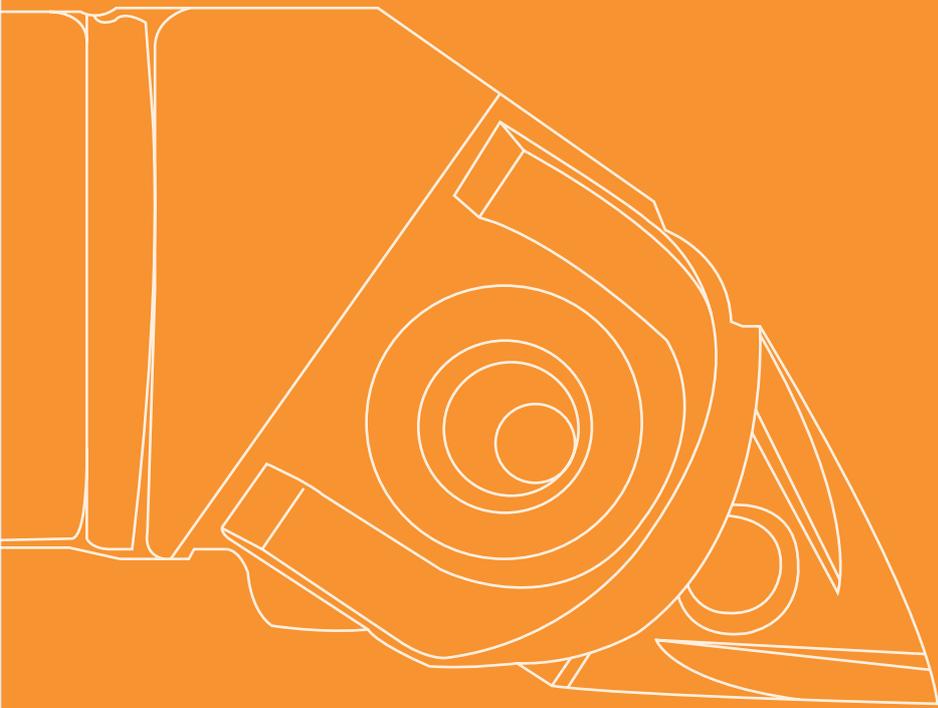
THREADING

DRILLING

Grooving, Groove Turning

MATERIAL		CUTTING WIDTH(mm)					
		0.5 ~ 1.0 mm	1.0 ~ 2.0 mm	2.0 ~ 3.0 mm	3.0 ~ 4.0 mm	4.0 ~ 5.0 mm	6.0 ~ 8.0 mm
K	FC	0.03~0.07	0.04~0.08	0.05~0.08	0.05~0.10	0.05~0.10	0.05~0.12
	FCD	0.03~0.07	0.04~0.08	0.05~0.08	0.05~0.10	0.05~0.10	0.05~0.12
P	S15C	0.03~0.08	0.04~0.09	0.05~0.10	0.05~0.12	0.05~0.15	0.05~0.20
	S30C	0.03~0.08	0.04~0.09	0.05~0.10	0.05~0.12	0.05~0.15	0.05~0.20
	S45C	0.03~0.07	0.04~0.08	0.05~0.08	0.05~0.10	0.05~0.12	0.05~0.15
	SCM	0.03~0.07	0.04~0.08	0.05~0.08	0.05~0.10	0.05~0.12	0.05~0.15
M	SUS400	0.03~0.08	0.04~0.09	0.05~0.10	0.05~0.12	0.05~0.12	0.05~0.15
	SUS300	0.03~0.08	0.04~0.09	0.05~0.10	0.05~0.12	0.05~0.12	0.05~0.15
N	AL	0.05~0.12	0.05~0.15	0.05~0.15	0.08~0.15	0.08~0.15	0.10~0.20
	HAL	0.05~0.12	0.05~0.15	0.05~0.15	0.08~0.15	0.08~0.15	0.10~0.20
	NB	0.05~0.12	0.05~0.15	0.05~0.15	0.08~0.15	0.08~0.15	0.10~0.20
	NC	0.05~0.12	0.05~0.15	0.05~0.15	0.08~0.15	0.08~0.15	0.10~0.20

GROOVING / Holders



Holders

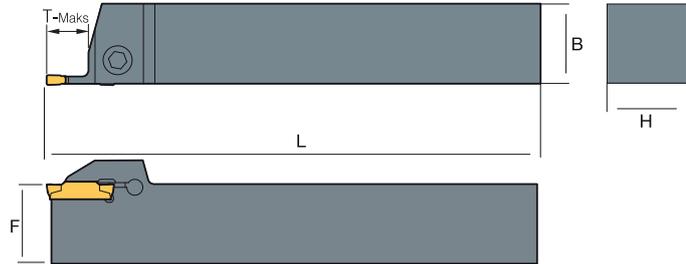
GROOVING

TURNING

TGER/L

screw on

TG



GROOVING

THREADING

DRILLING

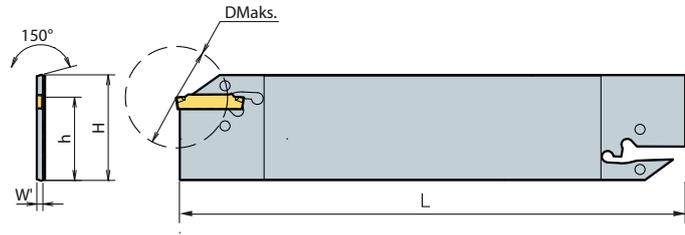
TG INSERT	DESCRIPTION			STOCK		DIMENSIONS								
				R	L	H	B	L	F	tmax				
TG200C/J/T	TGER/L	1010	2-T12-SH	●	●	10	10	100	10.3	12	ST-SC520	ST-WRT0040		
		1212	2-T12-SH	●	●	12	12	100	12.3	12	ST-SC520	ST-WRT0040		
		1616	2-T16-SH	●	●	16	16	100	16.3	16	ST-SC520	ST-WRT0040		
TG200C/J/T	TGER/L	1212	2-T15	●	●	12	12	100	12.3	15	ST-SC520	ST-WRT0040		
		1616	2-T18	●	●	16	16	100	16.3	18	ST-SC625	ST-WRT0050		
		2020	2-T18	●	●	20	20	125	20.3	18	ST-SC625	ST-WRT0050		
		2525	2-T18	●	●	25	25	150	25.3	18	ST-SC625	ST-WRT0050		
TG300C/J/T	TGER/L	1212	3-T15	●	●	12	12	100	12.3	15	ST-SC520	ST-WRT0040		
		1616	3-T18	●	●	16	16	100	16.4	18	ST-SC625	ST-WRT0050		
		2020	3-T30	●	●	20	20	125	20.4	20	ST-SC625	ST-WRT0050		
		2525	3-T22	●	●	25	25	150	25.4	22	ST-SC625	ST-WRT0050		
TG400C/J/T	TGER/L	2020	4-T20	●	●	20	20	125	20.4	20	ST-SC625	ST-WRT0050		
		2525	4-T33	●	●	25	25	150	25.4	22	ST-SC625	ST-WRT0050		

Carbide 45

SPPB

screw on

SP□



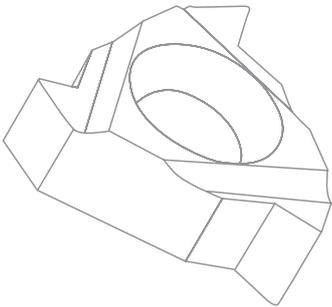
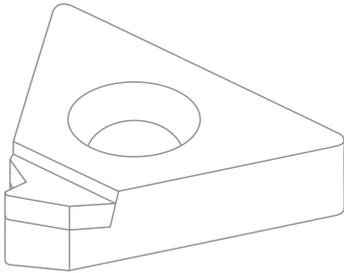
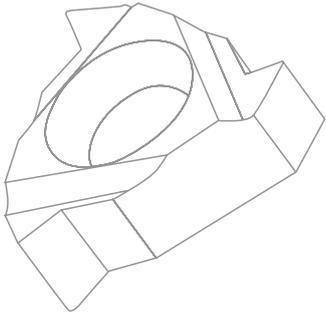
SP□□□-TK	DESCRIPTION	STOCK	DIMENSIONS				WRENCH			
			H	W	L	h				
SP200-TK	SPPB-26-2	●	26	1.6	110	21	SSW50L			
	SPPB-32-2	●	32	1.6	150	25	SSW50L			
SP300-TK	SPPB-26-3	●	26	2.4	110	21	SSW50L			
	SPPB-32-3	●	32	2.4	150	25	SSW50L			
SP400-TK	SPPB-26-4	●	26	3.2	110	21	SSW50L			
	SPPB-32-4	●	32	3.2	150	25	SSW50L			

TURNING

GROOVING

THREADING

DRILLING

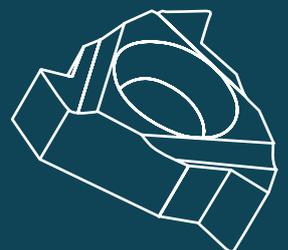
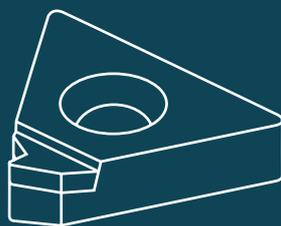
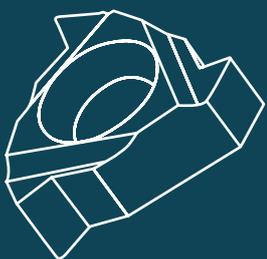
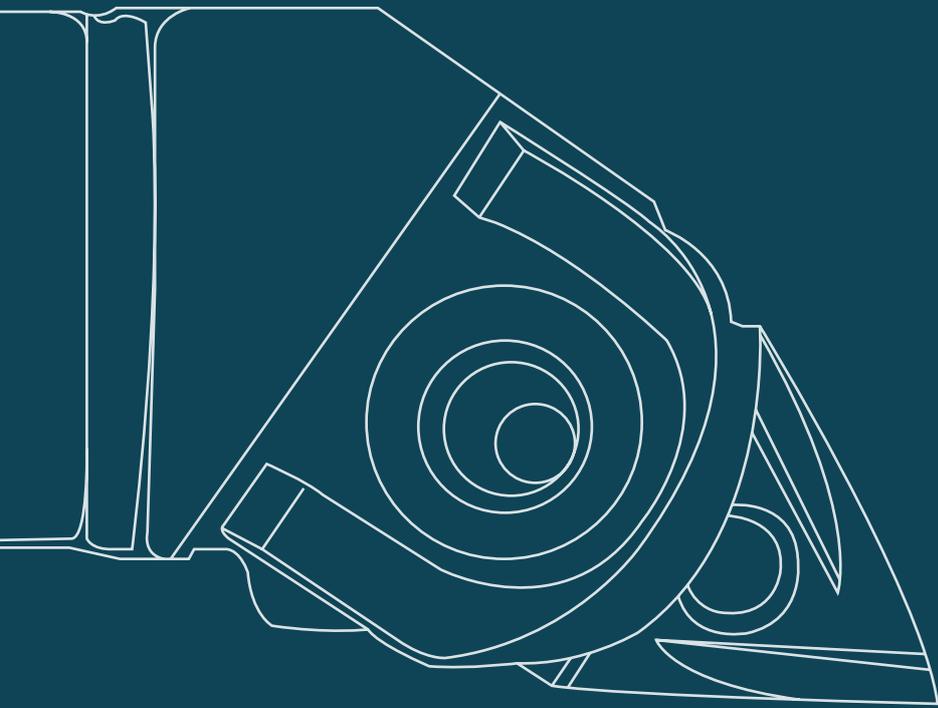


THREADING

Carbide / 58

HOLDERS / 72

THREADING / Carbide



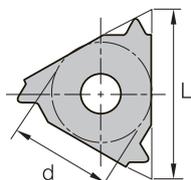
Carbide

THREADING

TURNING

16	E	R	M
1	2	3	4

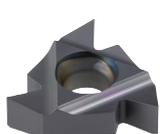
GROOVING

1	Insert Size(d)	
08	4.76mm	
11	6.35mm	
16	9.525mm	
22	12.70mm	
27	15.875mm	

2	Insert Type	
E	External	
I	Internal	

3	Hand of Insert	
R	Right	
L	Left	

THREADING

4	Chip Breaker	
M		Chip Breaker Type
Non		Regular Type

5*	Pitch(Full Profile)	
0.35~6.0	mm	
3~72	TPI	

5*	Pitch(Partial Profile)	
A	0.50~1.50	
AG	0.50~3.00	
G	1.75~3.00	
N	3.50~5.00	
Q	5.50~6.00	

* Should use only one table based on profile type

* Should use only one table based on profile type

DRILLING



6 Thread Standard

60	Partial Profile 60°
55	Partial Profile 55°
STACME	Stub ACME
UN	American UN
W	Whitworth for BSW, BSP
BSPT	British Standard Pipe Thread
ABUT	American Buttress
BBUT	British Buttress

SAGE	Metric Buttress DIN513
BUT	API Buttress Casing
APIRD	API Round Casing & Tubing
EL	Extreme Line Casing
NPT	NPT
NPTF	NPTF
NPS	NPS
PG	Pg DIN 40430

API	API
ISO	ISO Metric
UNJ	UNJ
MJ	ISO 5855
TR	Trapez DIN103
ACME	ACME
RD	Round DIN405

TURNING

GROOVING

THREADING

DRILLING

Carbide

THREADING

GRADES

TURNING

GROOVING

THREADING

DRILLING

ISO
DIN 513

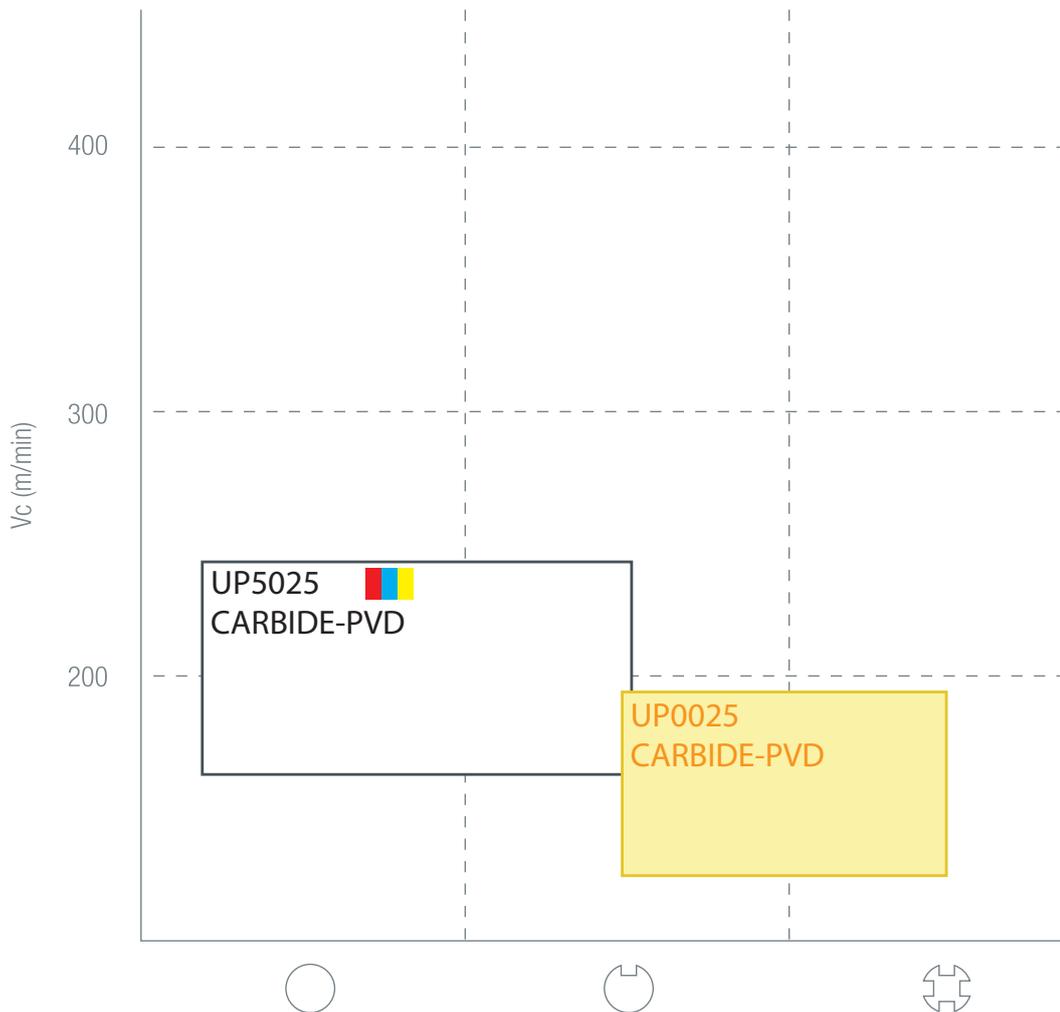
	P					M					K					N				
	P01	P10	P20	P30	P40	M01	M10	M20	M30	M40	K01	K10	K20	K30	K40	N01	N10	N20	N30	N40
CARBIDE CVD																				
CARBIDE PVD	UP5025					UP0025					UP5025					UP0025				
CARBIDE UNCOATED																				

THREADING

Range

ISO **P** **M** **K**

Grades



TURNING

GROOVING

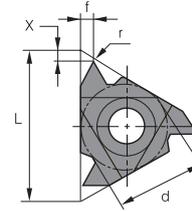
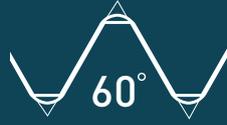
THREADING

DRILLING

TURNING

EXTERNAL PARTIAL PROFILE

ER



GROOVING

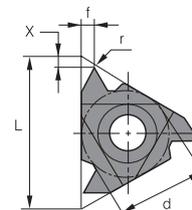
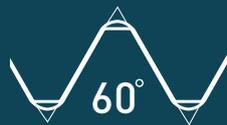
THREADING

DESCRIPTION	DIMENSIONS								CARBIDE		
			d	l	hmin	x	f	UP0025	UP5025		
		11ER-A60	0.5~1.5	48-16	6.35	11	0.05	0.8	0.9	●	●
16ER-A60		0.5~1.5	48-16	9.525	16	0.05	0.8	0.9	●	●	
16ER-G60		1.75~3.0	14-8	9.525	16	0.27	1.2	1.7	●	●	
16ER-AG60		0.5~3.0	48-8	9.525	16	0.08	1.2	1.7	●	●	
22ER-N60		3.5~5.0	7-5	12.7	22	0.53	1.7	2.5	●	●	

DRILLING

INTERNAL PARTIAL PROFILE

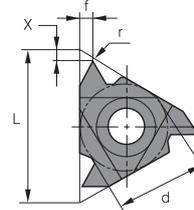
IR



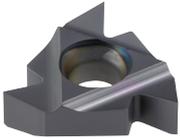
DESCRIPTION	DIMENSIONS								CARBIDE		
			d	l	hmin	x	f	UP0025	UP5025		
		11IR-A60	0.5~1.5	48-16	6.35	11	0.05	0.8	0.9	●	●
16IR-A60		0.5~1.5	48-16	9.525	16	0.05	0.8	0.9	●	●	
16IR-G60		1.75~3.0	14-8	9.525	16	0.27	1.2	1.7	●	●	
16IR-AG60		0.5~3.0	48-8	9.525	16	0.08	1.2	1.7	●	●	
22IR-N60		3.5~5.0	7-5	12.7	22	0.53	1.7	2.5	●	●	

EXTERNAL PARTIAL PROFILE

□□ER



TURNING

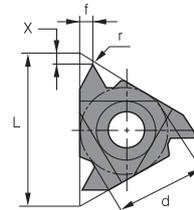
DESCRIPTION	DIMENSIONS								CARBIDE		
	-P- W		d	l	hmin	x	f	UP0025	UP5025		
		0.5~1.5	48-16	6.35	11	0.05	0.8	0.9	●	●	
	0.5~1.5	48-16	9.525	16	0.05	0.8	0.9	●	●		
	1.75~3.0	14-8	9.525	16	0.27	1.2	1.7	●	●		
	0.5~3.0	48-8	9.525	16	0.08	1.2	1.7	●	●		
	3.5~5.0	7-5	12.7	22	0.53	1.7	2.5	●	●		

GROOVING

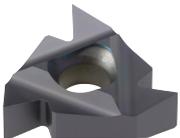
THREADING

EXTERNAL PARTIAL PROFILE

□□IR

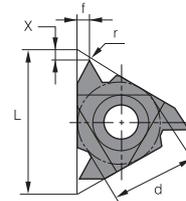
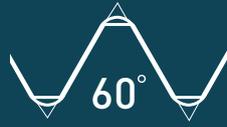


DRILLING

DESCRIPTION	DIMENSIONS								CARBIDE		
	-P- W		d	l	hmin	x	f	UP0025	UP5025		
		0.5~1.5	48-16	6.35	11	0.05	0.8	0.9	●	●	
	0.5~1.5	48-16	9.525	16	0.05	0.8	0.9	●	●		
	1.75~3.0	14-8	9.525	16	0.27	1.2	1.7	●	●		
	0.5~3.0	48-8	9.525	16	0.08	1.2	1.7	●	●		
	3.5~5.0	7-5	12.7	22	0.53	1.7	2.5	●	●		

INTERNAL METRIC

IR



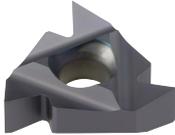
TURNING

GROOVING

THREADING

DRILLING

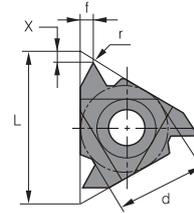
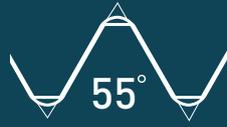
DESCRIPTION	DIMENSIONS							CARBIDE		
		d	l	hmin	x	f	UP0025	UP5025		
11IR-1.00ISO	1.00	6.35	11	0.61	0.7	0.7	●	●		
11IR-1.25ISO	1.25	6.35	11	0.61	0.7	0.7	●	●		
11IR-1.50ISO	1.50	6.35	11	0.92	0.8	1.0	●	●		
16IR-0.50ISO	0.50	9.525	16	0.46	0.6	0.6	●	●		
16IR-0.75ISO	0.75	9.525	16	0.46	0.6	0.6	●	●		
16IR-1.00ISO	1.00	9.525	16	0.61	0.7	0.7	●	●		
16IR-1.25ISO	1.25	9.525	16	0.77	0.8	0.9	●	●		
16IR-1.50ISO	1.50	9.525	16	0.92	0.8	1.0	●	●		
16IR-1.75ISO	1.75	9.525	16	1.07	0.9	1.2	●	●		
16IR-2.00ISO	2.00	9.525	16	1.23	1.0	1.3	●	●		
16ER-2.25ISO	2.25	9.525	16	1.53	1.1	1.5	●	●		
16IR-2.50ISO	2.50	9.525	16	1.53	1.1	1.5	●	●		
16IR-3.00ISO	3.00	9.525	16	1.84	1.2	1.6	●	●		
22IR-3.50ISO	3.50	12.7	22	2.15	1.6	2.3	●	●		
22IR-4.00ISO	4.00	12.7	22	2.45	1.6	2.3	●	●		
22IR-4.50ISO	4.50	12.7	22	2.78	1.7	2.4	●	●		
22IR-5.00ISO	5.00	12.7	22	3.07	1.7	2.5	●	●		



TURNING

EXTERNAL WHITWORTH

16ER



GROOVING

DESCRIPTION

DIMENSIONS

CARBIDE

UP0025

UP5025



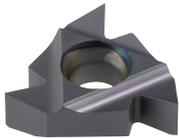
d

l

hmin

x

f



16ER-11W

11

9,52

16

1,48

1,1

1,5

16ER-14W

14

9,52

16

1,16

1

1,2

16ER-19W

19

9,52

16

0,86

0,8

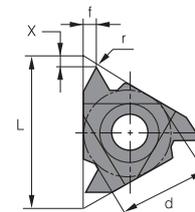
1

THREADING

DRILLING

INTERNAL WHITWORTH

16IR



DESCRIPTION

DIMENSIONS

CARBIDE

UP0025

UP5025



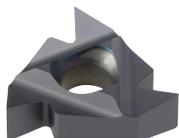
d

l

hmin

x

f



16IR-11W

11

9,52

16

1,48

1,1

1,5

16IR-14W

14

9,52

16

1,16

1

1,2

16IR-16W

16

9,52

16

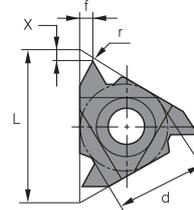
0,86

0,8

1

EXTERNAL BSPT

□□ER



TURNING

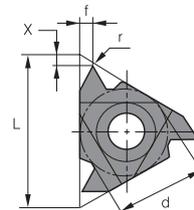
DESCRIPTION	DIMENSIONS								CARBIDE		
		d	l	hmin	x	f	UP0025	UP5025			
	11	9,52	16	1,48	1,1	1,5	●	●			
	14	9,52	16	1,16	1	1,2	●	●			
	19	9,52	16	0,86	0,8	0,9	●	●			

GROOVING

THREADING

INTERNAL BSPT

□□IR

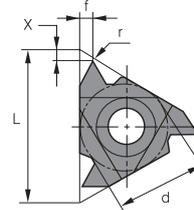


DRILLING

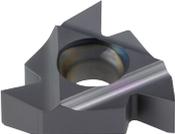
DESCRIPTION	DIMENSIONS								CARBIDE		
		d	l	hmin	x	f	UP0025	UP5025			
	11	9,52	16	1,48	1,1	1,5	●	●			
	14	9,52	16	1,16	1	1,2	●	●			

EXTERNAL NPT

□□ER



TURNING

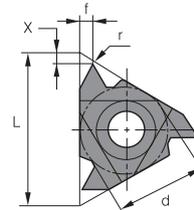
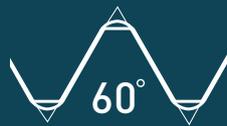
DESCRIPTION	DIMENSIONS							CARBIDE		
	P	d	l	hmin	x	f	UP0025	UP5025		
	11ER-14NPT	14	6,35	11	1,33	0,8	●	●		
	16ER-14NPT	16	9,52	16	1,01	0,8	●	●		
	16ER-18NPT	18	9,52	16	1,01	0,8	●	●		
	16ER-27NPT	27	9,52	16	0,66	0,7	0,8	●	●	

GROOVING

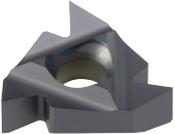
THREADING

INTERNAL NPT

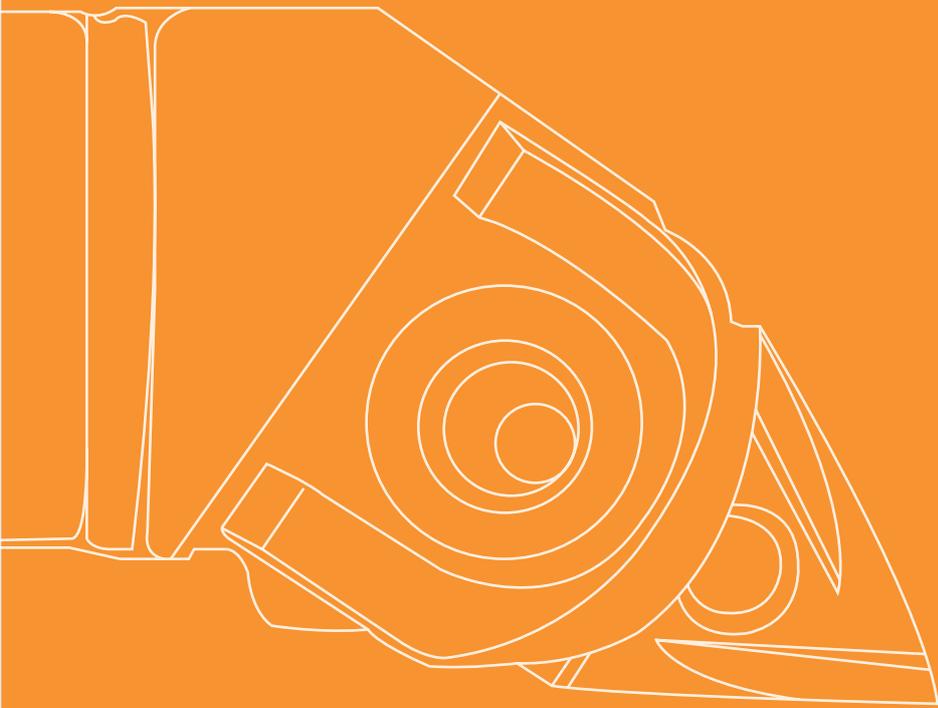
□□IR



DRILLING

DESCRIPTION	DIMENSIONS							CARBIDE		
	P	d	l	hmin	x	f	UP0025	UP5025		
	11IR-14NPT	14	6,35	11	1,33	0,8	1	●	●	
	16IR-11,5NPT	16	9,52	16	1,01	0,8	1	●	●	
	16IR-14NPT	14	9,52	16	1,33	0,9	1,2	●	●	

THREADING/ Holders



Holders

THREADING

TURNING

MTER/L

screw on **□□ER**



GROOVING

THREADING

DRILLING

	DESCRIPTION	STOCK		DIMENSIONS				R			L	
		R	L	H	B	L	F	L	R	L	R	L
11ER-□□	MTER/L 0808 E11	●	●	08	08	70	11	-	-	-	ST-SC0257	ST-WRT07
	1010 E11	●	●	10	10	70	11	-	-	-	ST-SC0257	ST-WRT07
	1212 F11	●	●	12	12	80	12	-	-	-	ST-SC0257	ST-WRT07
	1616 H11	●	●	16	16	100	16	-	-	-	ST-SC0257	ST-WRT07
16ER-□□	MTER/L 1616 H16	●	●	16	16	100	16	ST-SHEI16	ST-SC5011	ST-WR0030	ST-SC3514	ST-WRT15
	2020 K16	●	●	20	20	125	20	ST-SHEI16	ST-SC5011	ST-WR0030	ST-SC3514	ST-WRT15
	2525 M16	●	●	25	25	150	25	ST-SHEI16	ST-SC5011	ST-WR0030	ST-SC3514	ST-WRT15
	3232 P16	●	●	32	32	170	32	ST-SHEI16	ST-SC5011	ST-WR0030	ST-SC3514	ST-WRT15
22ER-□□	MTER/L 2525 M22	●	●	25	25	150	25	ST-SHEI22	ST-SC6011	ST-WR0040	ST-SC0416	ST-WRT15
	3232 P22	●	●	32	32	170	32	ST-SHEI22	ST-SC6011	ST-WR0040	ST-SC0416	ST-WRT15
	4040 S22	●	●	40	40	250	40	ST-SHEI22	ST-SC6011	ST-WR0040	ST-SC0416	ST-WRT15

MTIR/L

screw on

IR

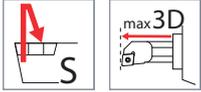
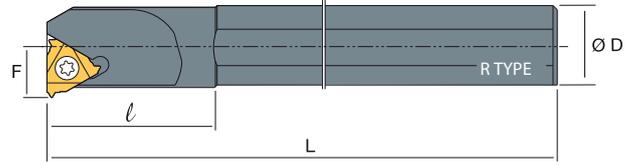
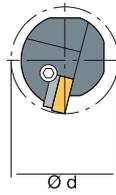


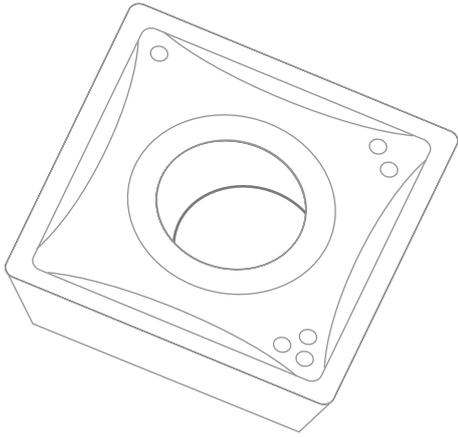
Image	DESCRIPTION				STOCK		DIMENSIONS				R			L	
					R	L	D	d	L	F	Image	Image	Image	Image	Image
08IR-□□	MTIR/L	S16M	08	●	●	16	7,8	150	5.3	-	-	-	ST-SC0226	ST-WRT07	
	MTIR/L	S10K	11	●	●	10	12	125	7.4	-	-	-	ST-SC0257	ST-WRT08	
11IR-□□		S12K	11	●	●	12	16	125	8.4	-	-	-	ST-SC0257	ST-WRT08	
		S16M	11	●	●	16	12	150	7.4	-	-	-	ST-SC0257	ST-WRT08	
16ER-□□	MTIR/L	S16M	16	●	●	16	16	150	10.2	-	-	-	ST-SC3511	ST-WRT15	
		S16P	16	●	●	16	19	150	11.7	-	-	-	ST-SC3511	ST-WRT15	
		S20P	16	●	●	20	24	170	13.7	-	-	-	ST-SC3511	ST-WRT15	
		S25R	16	●	●	25	29	200	16.2	ST-SHEI16	ST-SC5011	ST-WR0030	ST-SC3514	ST-WRT15	
		S32S	16	●	●	32	36	250	19.7	ST-SHEI16	ST-SC5011	ST-WR0030	ST-SC3514	ST-WRT15	
22ER-□□		S40T	16	●	●	40	44	300	23.7	ST-SHEI16	ST-SC5011	ST-WR0030	ST-SC3514	ST-WRT15	
	MTIR/L	S20P	22	●	●	20	24	170	14	ST-SHEI22	ST-SC6011	ST-WR0040	ST-SC0411	ST-WRT15	
		S25R	22	●	●	25	29	200	18.1	ST-SHEI22	ST-SC6011	ST-WR0040	ST-SC0411	ST-WRT15	
		S32S	22	●	●	32	38	250	21.6	ST-SHEI22	ST-SC6011	ST-WR0040	ST-SC0411	ST-WRT15	
	S40T	22	●	●	40	46	300	25.6	ST-SHEI22	ST-SC6011	ST-WR0040	ST-SC0411	ST-WRT15		

TURNING

GROOVING

THREADING

DRILLING

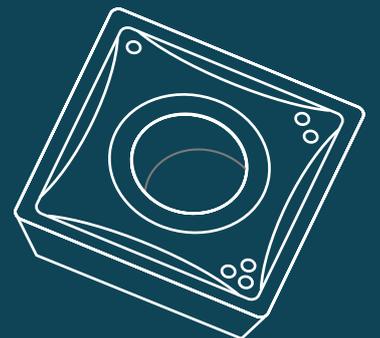
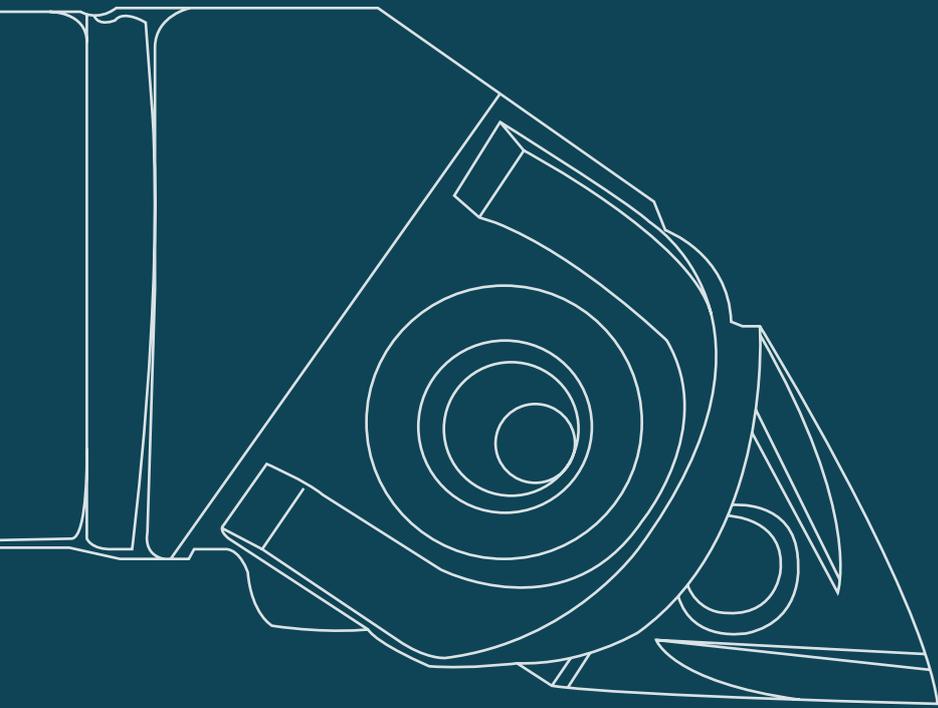


DRILLING

Carbide / 78

Holders / 82

DRILLING / Carbide



Carbide

DRILLING

Grades

TURNING

GROOVING

THREADING

DRILLING

ISO
DIN 513

K

P

M

N



K01

K10

K20

K30

K40

P01

P10

P20

P30

P40

M01

M10

M20

M30

M40

N01

N10

N20

N30

N40

CARBIDE
CVD

CARBIDE
PVD

CARBIDE
UNCOATED

UP4505

UP5025

UP0525

UP0535

UP0015P

UP0115P

UP0025

UP0535

UN4005

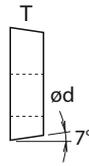
Carbide

DRILLING

TURNING

POSITIVE 7°
with hole

WC



SP		0302	0402	0503	06T3	0804
IC		5,56	6,35	7,94	9,525	12,70
T	TT	2,38	2,38	3,18	3,97	4,76
Ød	TK	2,50	2,80	3,40	4,40	5,50
	TK1	2,80	3,00	3,40	3,80	4,40

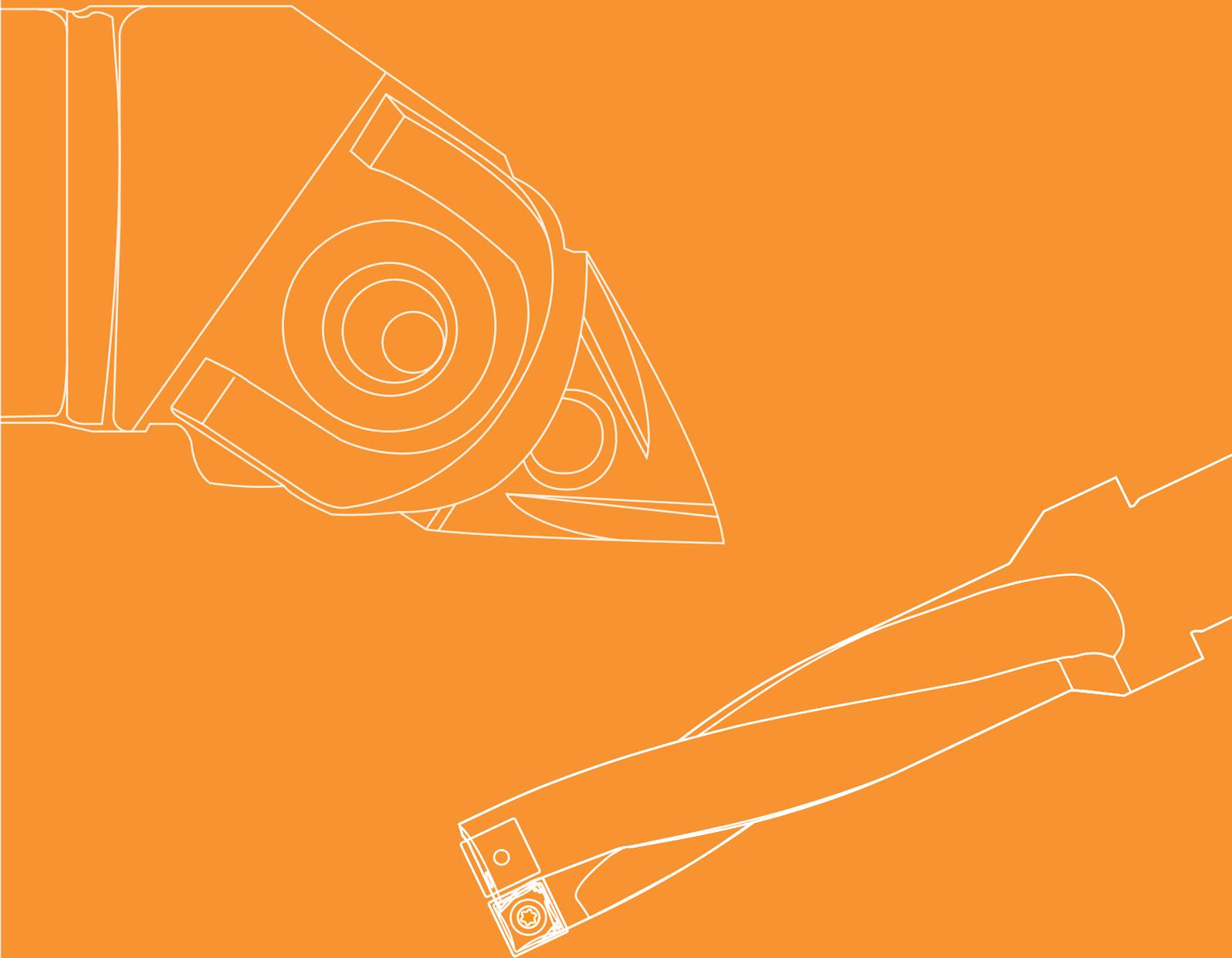
GROOVING

THREADING

DRILLING

DESCRIPTION		CARBIDE PVD												
		UP5025	UP0525	UP0025	UP0015P	UP0115P								
	WCGX030208-TK		●											
	WCGX040208-TK		●											
	WCGX050308-TK		●											
	WCGX06T308-TK		●											
	WCGX080412-TK		●											
	WCGX030208-TK1				●	●								
	WCGX040208-TK1				●	●								
	WCGX050308-TK1				●	●								
	WCGX06T308-TK1				●	●								
	WCGX080412-TK1				●	●								
	WCGX030204-TT		●											
	WCGX030208-TT		●											
	WCGX040204-TT		●											
	WCGX040208-TT		●											
	WCGX050308-TT		●											
	WCGX06T308-TT		●											
	WCGX080408-TT		●											
	WCGX080412-TT		●											

DRILLING / Holders

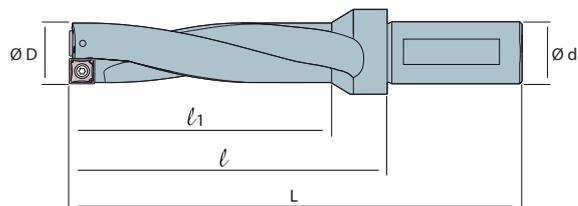


TURNING

SPID/T-DRILL

2xD

SP □ □



GROOVING

THREADING

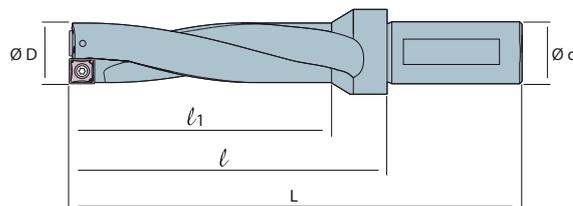
DRILLING

SP	DESCRIPTION		STOCK	DIMENSIONS								
				ØD	Ød	L	l	l ₁				
SPMG0502	SPID	125-2D-S20-SP05	●	12.5	20	107	37	44	ST-SC0206	ST-WRT06		
		130-2D-S20-SP05	●	13	20	107	39	44	ST-SC0206	ST-WRT06		
		135-2D-S20-SP05	●	13.5	20	110	40.5	46	ST-SC0206	ST-WRT06		
		140-2D-S20-SP05	●	14	20	110	42	46	ST-SC0206	ST-WRT06		
		145-2D-S20-SP05	●	14.5	20	113	43.5	49	ST-SC0206	ST-WRT06		
		150-2D-S20-SP05	●	15	20	113	45	49	ST-SC0206	ST-WRT06		
SPMG0602	SPID	155-2D-S20-SP06	●	15.5	20	124	46.5	52	ST-SC0226	ST-WRT07		
		160-2D-S25-SP06	●	16	25	124	48	52	ST-SC0226	ST-WRT07		
		165-2D-S25-SP06	●	16.5	25	127	49.5	54	ST-SC0226	ST-WRT07		
		170-2D-S25-SP06	●	17	25	127	51	54	ST-SC0226	ST-WRT07		
		175-2D-S25-SP06	●	17.5	25	130	52.5	57	ST-SC0226	ST-WRT07		
		180-2D-S25-SP06	●	18	25	130	54	57	ST-SC0226	ST-WRT07		
		185-2D-S25-SP06	●	18.5	25	134	55.5	59	ST-SC0226	ST-WRT07		
		190-2D-S25-SP06	●	19	25	134	57	59	ST-SC0226	ST-WRT07		
		195-2D-S25-SP06	●	19.5	25	139	58.5	63	ST-SC0226	ST-WRT07		
		200-2D-S25-SP06	●	20	25	139	60	63	ST-SC0226	ST-WRT07		
		205-2D-S25-SP06	●	20.5	25	142	61.5	65	ST-SC0226	ST-WRT07		
		210-2D-S25-SP06	●	21	25	142	63	65	ST-SC0226	ST-WRT07		
SPMG07T3	SPID	220-2D-S25-SP07	●	22	25	145	66	67	ST-SC0257	ST-WRT08		
		225-2D-S25-SP07	●	22.5	25	150	67.5	71	ST-SC0257	ST-WRT08		
		230-2D-S25-SP07	●	23	25	150	69	71	ST-SC0257	ST-WRT08		
		235-2D-S25-SP07	●	23.5	25	154	70.5	74	ST-SC0257	ST-WRT08		
		240-2D-S25-SP07	●	24	25	158	72	74	ST-SC0257	ST-WRT08		
		245-2D-S25-SP07	●	24.5	25	158	73.5	77	ST-SC0257	ST-WRT08		
		250-2D-S25-SP07	●	25	25	161	75	77	ST-SC0257	ST-WRT08		
		255-2D-S25-SP07	●	25.5	25	161	76.5	79	ST-SC0257	ST-WRT08		
		260-2D-S25-SP07	●	26	25	164	78	79	ST-SC0257	ST-WRT08		

SPID/T-DRILL

2xD

SP □ □



SP	DESCRIPTION		STOCK	DIMENSIONS								
				ØD	Ød	L	l	l ₁				
SPMG07T3	SPID	265-2D-S25-SP07	●	26.5	25	137	53	81	ST-SC0257	ST-WRT08		
		270-2D-S25-SP07	●	27	25	137	54	81	ST-SC0257	ST-WRT08		
		275-2D-S25-SP07	●	27.5	25	140	55	84	ST-SC0257	ST-WRT08		
SPMG0904	SPID	280-2D-S25-SP09	●	28	25	140	56	84	ST-SC3511	ST-WRT15		
		285-2D-S25-SP09	●	28.5	25	142	57	86	ST-SC3511	ST-WRT15		
		290-2D-S25-SP09	●	29	25	142	58	86	ST-SC3511	ST-WRT15		
		295-2D-S25-SP09	●	29.5	25	147	59	91	ST-SC3511	ST-WRT15		
		300-2D-S32-SP09	●	30	32	151	60	91	ST-SC3511	ST-WRT15		
		310-2D-S32-SP09	●	31	32	154	62	94	ST-SC3511	ST-WRT15		
		320-2D-S32-SP09	●	32	32	156	64	96	ST-SC3511	ST-WRT15		
SPMG1104	SPID	340-2D-S32-SP11	●	34	32	161	68	101	ST-SC0411	ST-WRT15		
		350-2D-S32-SP11	●	35	32	164	70	104	ST-SC0411	ST-WRT15		
		360-2D-S32-SP11	●	36	32	167	72	107	ST-SC0411	ST-WRT15		
		370-2D-S32-SP11	●	37	32	170	74	110	ST-SC0411	ST-WRT15		
		380-2D-S32-SP11	●	38	32	173	76	113	ST-SC0411	ST-WRT15		
		390-2D-S32-SP11	●	39	32	175	78	115	ST-SC0411	ST-WRT15		
		400-2D-S32-SP11	●	40	32	178	80	118	ST-SC0411	ST-WRT15		
		410-2D-S32-SP11	●	41	32	181	82	121	ST-SC0411	ST-WRT15		
SPMG1405	SPID	420-2D-S32-SP14	●	42	32	183	84	123	ST-SC0511	ST-WRT20		
		430-2D-S32-SP14	●	43	32	186	86	126	ST-SC0511	ST-WRT20		
		440-2D-S32-SP14	●	44	32	188	88	128	ST-SC0511	ST-WRT20		
		450-2D-S40-SP14	●	45	40	202	90	132	ST-SC0511	ST-WRT20		
		460-2D-S40-SP14	●	46	40	205	92	135	ST-SC0511	ST-WRT20		
		470-2D-S40-SP14	●	47	40	207	94	137	ST-SC0511	ST-WRT20		
		480-2D-S40-SP14	●	48	40	210	96	140	ST-SC0511	ST-WRT20		
		490-2D-S40-SP14	●	49	40	212	98	142	ST-SC0511	ST-WRT20		
		500-2D-S40-SP14	●	50	40	215	140	145	ST-SC0511	ST-WRT20		

TURNING

GROOVING

THREADING

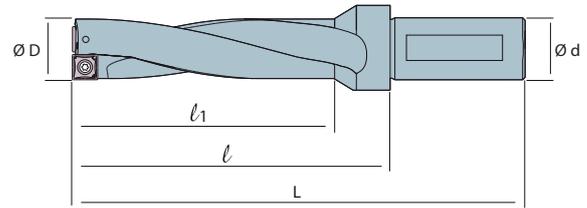
DRILLING

TURNING

SPID/T-DRILL

3xD

SP



GROOVING

THREADING

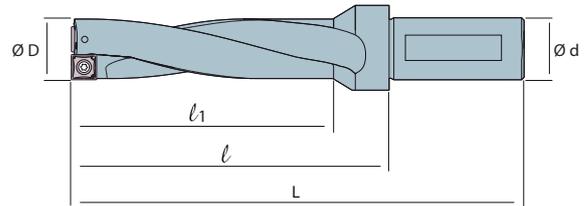
DRILLING

SP	DESCRIPTION		STOCK	DIMENSIONS								
				øD	ød	L	l	l ₁				
SPMG0502	SPID	125-3D-S20-SP05	●	12.5	20	94	25	57	ST-SC0206	ST-WRT06		
		130-3D-S20-SP05	●	13	20	94	26	57	ST-SC0206	ST-WRT06		
		135-3D-S20-SP05	●	13.5	20	96	27	60	ST-SC0206	ST-WRT06		
		140-3D-S20-SP05	●	14	20	96	28	60	ST-SC0206	ST-WRT06		
		145-3D-S20-SP05	●	14.5	20	99	29	63	ST-SC0206	ST-WRT06		
		150-3D-S20-SP05	●	15	20	99	30	63	ST-SC0206	ST-WRT06		
SPMG0602	SPID	155-3D-S20-SP06	●	15.5	20	102	31	68	ST-SC0226	ST-WRT07		
		160-3D-S25-SP06	●	16	25	108	32	68	ST-SC0226	ST-WRT07		
		165-3D-S25-SP06	●	16.5	25	110	33	71	ST-SC0226	ST-WRT07		
		170-3D-S25-SP06	●	17	25	110	34	71	ST-SC0226	ST-WRT07		
		175-3D-S25-SP06	●	17.5	25	113	35	75	ST-SC0226	ST-WRT07		
		180-3D-S25-SP06	●	18	25	113	36	75	ST-SC0226	ST-WRT07		
		185-3D-S25-SP06	●	18.5	25	115	37	78	ST-SC0226	ST-WRT07		
		190-3D-S25-SP06	●	19	25	115	38	78	ST-SC0226	ST-WRT07		
		195-3D-S25-SP06	●	19.5	25	119	39	83	ST-SC0226	ST-WRT07		
		200-3D-S25-SP06	●	20	25	119	40	83	ST-SC0226	ST-WRT07		
		205-3D-S25-SP06	●	20.5	25	121	41	86	ST-SC0226	ST-WRT07		
		210-3D-S25-SP06	●	21	25	121	42	86	ST-SC0226	ST-WRT07		
SPMG07T3		215-3D-S25-SP06	●	21.5	25	125	43	89	ST-SC0257	ST-WRT07		
	SPID	220-3D-S25-SP07	●	22	25	123	44	89	ST-SC0257	ST-WRT08		
		225-3D-S25-SP07	●	22.5	25	127	45	94	ST-SC0257	ST-WRT08		
		230-3D-S25-SP07	●	23	25	127	46	94	ST-SC0257	ST-WRT08		
		235-3D-S25-SP07	●	23.5	25	130	47	98	ST-SC0257	ST-WRT08		
		240-3D-S25-SP07	●	24	25	130	48	98	ST-SC0257	ST-WRT08		
		245-3D-S25-SP07	●	24.5	25	133	49	102	ST-SC0257	ST-WRT08		
		250-3D-S25-SP07	●	25	25	133	50	102	ST-SC0257	ST-WRT08		
		255-3D-S25-SP07	●	25.5	25	135	51	105	ST-SC0257	ST-WRT08		
	260-3D-S25-SP07	●	26	25	135	52	105	ST-SC0257	ST-WRT08			

SPID/T-DRILL

3xD

SP



SP	DESCRIPTION		STOCK	DIMENSIONS					 ← 			
				ØD	Ød	L	l	l ₁				
SPMG07T3	SPID	265-3D-S25-SP07	●	26.5	25	164	79.5	108	ST-SC0257	ST-WRT08		
		270-3D-S25-SP07	●	27	25	164	81	108	ST-SC0257	ST-WRT08		
		275-3D-S25-SP07	●	27.5	25	168	82.5	112	ST-SC0257	ST-WRT08		
SPMG0904	SPID	280-3D-S25-SP09	●	28	25	168	84	112	ST-SC3511	ST-WRT15		
		285-3D-S25-SP09	●	28.5	25	171	85.5	115	ST-SC3511	ST-WRT15		
		290-3D-S25-SP09	●	29	25	171	87	115	ST-SC3511	ST-WRT15		
		295-3D-S25-SP09	●	29.5	25	177	88.5	121	ST-SC3511	ST-WRT15		
		300-3D-S32-SP09	●	30	32	181	90	121	ST-SC3511	ST-WRT15		
		310-3D-S32-SP09	●	31	32	185	93	125	ST-SC3511	ST-WRT15		
		320-3D-S32-SP09	●	32	32	188	96	128	ST-SC3511	ST-WRT15		
		330-3D-S32-SP09	●	33	32	192	99	132	ST-SC3511	ST-WRT15		
SPMG1104	SPID	340-3D-S32-SP11	●	34	32	195	102	135	ST-SC0411	ST-WRT15		
		350-3D-S32-SP11	●	35	32	199	105	139	ST-SC0411	ST-WRT15		
		360-3D-S32-SP11	●	36	32	203	108	143	ST-SC0411	ST-WRT15		
		370-3D-S32-SP11	●	37	32	207	111	147	ST-SC0411	ST-WRT15		
		380-3D-S32-SP11	●	38	32	211	114	151	ST-SC0411	ST-WRT15		
		390-3D-S32-SP11	●	39	32	214	117	154	ST-SC0411	ST-WRT15		
		400-3D-S32-SP11	●	40	32	218	120	158	ST-SC0411	ST-WRT15		
		410-3D-S32-SP11	●	41	32	222	123	162	ST-SC0411	ST-WRT15		
SPMG1405	SPID	420-3D-S32-SP14	●	42	32	225	126	165	ST-SC0511	ST-WRT20		
		430-3D-S32-SP14	●	43	32	229	129	169	ST-SC0511	ST-WRT20		
		440-3D-S32-SP14	●	44	32	232	132	172	ST-SC0511	ST-WRT20		
		450-3D-S40-SP14	●	45	40	247	135	177	ST-SC0511	ST-WRT20		
		460-3D-S40-SP14	●	46	40	251	138	181	ST-SC0511	ST-WRT20		
		470-3D-S40-SP14	●	47	40	254	141	184	ST-SC0511	ST-WRT20		
		480-3D-S40-SP14	●	48	40	258	144	188	ST-SC0511	ST-WRT20		
		490-3D-S40-SP14	●	49	40	261	147	191	ST-SC0511	ST-WRT20		
		500-3D-S40-SP14	●	50	40	265	150	195	ST-SC0511	ST-WRT20		
		510-3D-S40-SP14	●	51	40	268	153	198	ST-SC0511	ST-WRT20		
		520-3D-S40-SP14	●	52	40	271	156	201	ST-SC0511	ST-WRT20		
		530-3D-S40-SP14	●	53	40	274	159	204	ST-SC0511	ST-WRT20		
	540-3D-S40-SP14	●	54	40	277	162	207	ST-SC0511	ST-WRT20			

TURNING

GROOVING

THREADING

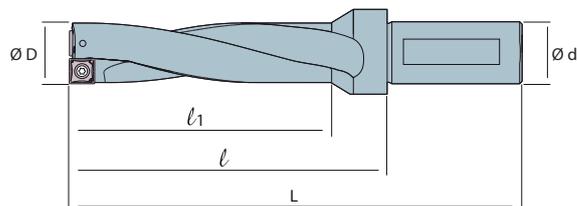
DRILLING

TURNING

SPID/T-DRILL

4xD

SP□□



GROOVING

THREADING

DRILLING

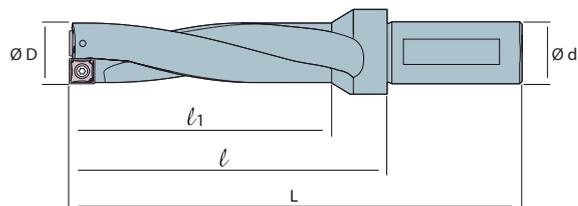
SP	DESCRIPTION		STOCK	DIMENSIONS					 ← 			
				ØD	Ød	L	l	l ₁				
SPMG0502	SPID	125-4D-S20-SP05	●	12.5	20	120	52	70	ST-SC0206	ST-WRT06		
		130-4D-S20-SP05	●	13	20	120	52	70	ST-SC0206	ST-WRT06		
		135-4D-S20-SP05	●	13.5	20	120	52	70	ST-SC0206	ST-WRT06		
		140-4D-S20-SP05	●	14	20	124	56	76	ST-SC0206	ST-WRT06		
		145-4D-S20-SP05	●	14.5	20	124	56	76	ST-SC0206	ST-WRT06		
		150-4D-S20-SP05	●	15	20	128	60	80	ST-SC0206	ST-WRT06		
SPMG0602	SPID	155-4D-S20-SP06	●	15.5	20	128	60	80	ST-SC0226	ST-WRT07		
		160-4D-S25-SP06	●	16	25	140	64	84	ST-SC0226	ST-WRT07		
		165-4D-S25-SP06	●	16.5	25	140	64	84	ST-SC0226	ST-WRT07		
		170-4D-S25-SP06	●	17	25	144	68	88	ST-SC0226	ST-WRT07		
		175-4D-S25-SP06	●	17.5	25	144	68	88	ST-SC0226	ST-WRT07		
		180-4D-S25-SP06	●	18	25	149	72	92	ST-SC0226	ST-WRT07		
		185-4D-S25-SP06	●	18.5	25	149	72	92	ST-SC0226	ST-WRT07		
		190-4D-S25-SP06	●	19	25	153	76	97	ST-SC0226	ST-WRT07		
		950-4D-S25-SP06	●	19.5	25	153	76	97	ST-SC0226	ST-WRT07		
		200-4D-S25-SP06	●	20	25	159	80	103	ST-SC0226	ST-WRT07		
		205-4D-S25-SP06	●	20.5	25	159	80	103	ST-SC0226	ST-WRT07		
		210-4D-S25-SP06	●	21	25	163	84	107	ST-SC0226	ST-WRT07		
SPMG07T3	SPID	220-4D-S25-SP07	●	22	25	167	88	111	ST-SC0257	ST-WRT08		
		225-4D-S25-SP07	●	22.5	25	167	88	111	ST-SC0257	ST-WRT08		
		230-4D-S25-SP07	●	23	25	173	92	117	ST-SC0257	ST-WRT08		
		235-4D-S25-SP07	●	23.5	25	173	92	117	ST-SC0257	ST-WRT08		
		240-4D-S25-SP07	●	24	25	178	96	122	ST-SC0257	ST-WRT08		
		245-4D-S25-SP07	●	24.5	25	178	96	122	ST-SC0257	ST-WRT08		
		250-4D-S25-SP07	●	25	25	183	100	127	ST-SC0257	ST-WRT08		
		255-4D-S25-SP07	●	25.5	25	183	100	127	ST-SC0257	ST-WRT08		
		260-4D-S25-SP07	●	26	25	187	104	131	ST-SC0257	ST-WRT08		
		265-4D-S25-SP07	●	26.5	25	187	104	131	ST-SC0257	ST-WRT08		
		270-4D-S25-SP07	●	27	25	191	108	135	ST-SC0257	ST-WRT08		
		275-4D-S25-SP07	●	27.5	25	191	108	135	ST-SC0257	ST-WRT08		

TURNING

SPID/T-DRILL

5xD

SP □ □



GROOVING

THREADING

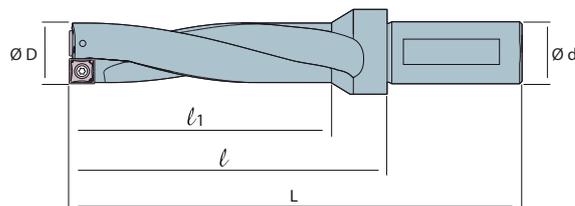
DRILLING

SP	DESCRIPTION		STOCK	DIMENSIONS					 ← 			
				ØD	Ød	L	l	l ₁				
SPMG0502	SPID	130-5D-S20-SP05	●	13	20	135	65	85	ST-SC0206	ST-WRT06		
		140-5D-S20-SP05	●	14	20	140	70	90	ST-SC0206	ST-WRT06		
		150-5D-S20-SP05	●	15	20	145	75	95	ST-SC0206	ST-WRT06		
SPMG0602	SPID	160-5D-S25-SP06	●	16	25	156	80	100	ST-SC0226	ST-WRT07		
		170-5D-S25-SP06	●	17	25	161	85	105	ST-SC0226	ST-WRT07		
		180-5D-S25-SP06	●	18	25	167	90	111	ST-SC0226	ST-WRT07		
		190-5D-S25-SP06	●	19	25	172	95	116	ST-SC0226	ST-WRT07		
		200-5D-S25-SP06	●	20	25	179	100	123	ST-SC0226	ST-WRT07		
		210-5D-S25-SP06	●	21	25	184	105	128	ST-SC0226	ST-WRT07		
		220-5D-S25-SP07	●	22	25	189	110	133	ST-SC0257	ST-WRT08		
SPMG07T3		230-5D-S25-SP07	●	23	25	193	115	137	ST-SC0257	ST-WRT08		
		240-5D-S25-SP07	●	24	25	198	120	142	ST-SC0257	ST-WRT08		
		250-5D-S25-SP07	●	25	25	203	125	147	ST-SC0257	ST-WRT08		
		260-5D-S25-SP07	●	26	25	207	130	151	ST-SC0257	ST-WRT08		
		270-5D-S25-SP07	●	27	25	212	135	156	ST-SC0257	ST-WRT08		
		280-5D-S25-SP09	●	28	25	218	140	162	ST-SC3511	ST-WRT15		
SPMG0904		290-5D-S25-SP09	●	29	25	222	145	166	ST-SC3511	ST-WRT15		
		300-5D-S32-SP09	●	30	32	227	150	171	ST-SC3511	ST-WRT15		
		310-5D-S32-SP09		31	32	245	155	185	ST-SC3511	ST-WRT15		
		320-5D-S32-SP09		32	32	250	160	190	ST-SC3511	ST-WRT15		
		330-5D-S32-SP09		33	32	255	165	195	ST-SC3511	ST-WRT15		
		340-5D-S32-SP11		34	32	260	170	200	ST-SC0411	ST-WRT15		
SPMG1104		350-5D-S32-SP11		35	32	265	175	205	ST-SC0411	ST-WRT15		
		360-5D-S32-SP11		36	32	270	180	210	ST-SC0411	ST-WRT15		
		370-5D-S32-SP11		37	32	275	185	215	ST-SC0411	ST-WRT15		
		380-5D-S32-SP11		38	32	280	190	220	ST-SC0411	ST-WRT15		
		390-5D-S32-SP11		39	32	285	195	225	ST-SC0411	ST-WRT15		
		400-5D-S32-SP11		40	32	290	200	230	ST-SC0411	ST-WRT15		

WUD / U-DRILL

2xD

WC



WC	DESCRIPTION		STOCK	DIMENSIONS								
				øD	ød	L	l	l ₁				
WCGX030208	WUD	160-2D-S25-WC03	●	16	25	108	32	52	ST-SC0257	ST-WRT08		
		165-2D-S25-WC03	●	16.5	25	110	33	54	ST-SC0257	ST-WRT08		
		170-2D-S25-WC03	●	17	25	110	34	54	ST-SC0257	ST-WRT08		
		175-2D-S25-WC03	●	17.5	25	113	35	57	ST-SC0257	ST-WRT08		
		180-2D-S25-WC03	●	18	25	113	36	57	ST-SC0257	ST-WRT08		
		185-2D-S25-WC03	●	18.5	25	115	37	59	ST-SC0257	ST-WRT08		
		190-2D-S25-WC03	●	19	25	115	38	59	ST-SC0257	ST-WRT08		
		195-2D-S25-WC03	●	19.5	25	119	39	63	ST-SC0257	ST-WRT08		
WCGX040208	WUD	200-2D-S25-WC04	●	20	25	119	40	63	ST-SC0257	ST-WRT08		
		205-2D-S25-WC04	●	20.5	25	121	41	65	ST-SC0257	ST-WRT08		
		210-2D-S25-WC04	●	21	25	121	42	65	ST-SC0257	ST-WRT08		
		215-2D-S25-WC04	●	21.5	25	123	43	67	ST-SC0257	ST-WRT08		
		220-2D-S25-WC04	●	22	25	123	44	67	ST-SC0257	ST-WRT08		
		225-2D-S25-WC04	●	22.5	25	127	45	71	ST-SC0257	ST-WRT08		
		230-2D-S25-WC04	●	23	25	127	46	71	ST-SC0257	ST-WRT08		
		235-2D-S25-WC04	●	23.5	25	130	47	74	ST-SC0257	ST-WRT08		
WCGX050308	WUD	240-2D-S25-WC05	●	24	25	130	48	74	ST-SC0309	ST-WRT15		
		245-2D-S25-WC05	●	24.5	25	133	49	77	ST-SC0309	ST-WRT15		
		250-2D-S25-WC05	●	25	25	133	50	77	ST-SC0309	ST-WRT15		
		255-2D-S25-WC05	●	25.5	25	135	51	79	ST-SC0309	ST-WRT15		
		260-2D-S25-WC05	●	26	25	135	52	79	ST-SC0309	ST-WRT15		
		265-2D-S25-WC05	●	26.5	25	137	53	81	ST-SC0309	ST-WRT15		
		270-2D-S25-WC05	●	27	25	137	54	81	ST-SC0309	ST-WRT15		
		275-2D-S25-WC05	●	27.5	25	140	55	84	ST-SC0309	ST-WRT15		
		280-2D-S25-WC05	●	28	25	140	56	84	ST-SC0309	ST-WRT15		
		285-2D-S25-WC05	●	28.5	25	142	57	86	ST-SC0309	ST-WRT15		
		290-2D-S25-WC05	●	29	25	142	58	86	ST-SC0309	ST-WRT15		
		295-2D-S25-WC05	●	29.5	25	151	59	91	ST-SC0309	ST-WRT15		
WCGX06T308	WUD	300-2D-S32-WC06	●	30	32	151	60	91	ST-SC3511	ST-WRT15		
		310-2D-S32-WC06	●	31	32	154	62	94	ST-SC3511	ST-WRT15		

TURNING

GROOVING

THREADING

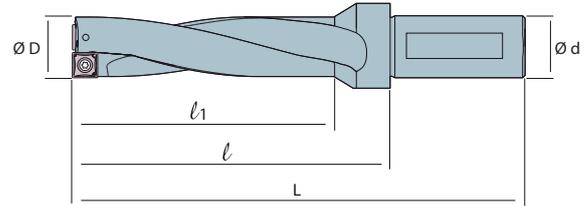
DRILLING

TURNING

WUD / U-DRILL

2xD

WC



GROOVING

THREADING

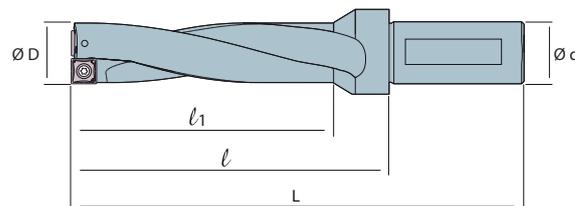
DRILLING

WC	DESCRIPTION	STOCK	DIMENSIONS					 ← 			
			ØD	Ød	L	l	l ₁				
WCGX06T308	WUD 320-2D-S32-WC06	●	32	32	156	64	96	ST-SC3511	ST-WRT15		
	330-2D-S32-WC06	●	33	32	159	66	99	ST-SC3511	ST-WRT15		
	340-2D-S32-WC06	●	34	32	161	68	101	ST-SC3511	ST-WRT15		
	350-2D-S32-WC06	●	35	32	164	70	104	ST-SC3511	ST-WRT15		
	360-2D-S32-WC06	●	36	32	167	72	107	ST-SC3511	ST-WRT15		
	370-2D-S32-WC06	●	37	32	170	74	110	ST-SC3511	ST-WRT15		
	380-2D-S32-WC06	●	38	32	173	76	113	ST-SC0411	ST-WRT15		
	390-2D-S32-WC06	●	39	32	175	78	115	ST-SC3511	ST-WRT15		
	400-2D-S32-WC06	●	40	32	178	80	118	ST-SC3511	ST-WRT15		
	410-2D-S32-WC06	●	41	32	181	82	121	ST-SC3511	ST-WRT15		
	420-2D-S32-WC06	●	42	32	183	84	123	ST-SC3511	ST-WRT15		
	420-2D-S32-WC06	●	43	32	186	86	126	ST-SC3511	ST-WRT15		
	440-2D-S32-WC06	●	44	32	188	88	128	ST-SC3511	ST-WRT15		
WCGX080412	WUD 450-2D-S40-WC08	●	45	40	202	90	132	ST-SC0411	ST-WRT15		
	460-2D-S40-WC08	●	46	40	205	92	135	ST-SC0411	ST-WRT15		
	470-2D-S40-WC08	●	47	40	207	94	137	ST-SC0411	ST-WRT15		
	480-2D-S40-WC08	●	48	40	210	96	140	ST-SC0411	ST-WRT15		
	490-2D-S40-WC08	●	49	40	212	98	142	ST-SC0411	ST-WRT15		
	500-2D-S40-WC08	●	50	40	215	100	145	ST-SC0411	ST-WRT15		
	510-2D-S40-WC08	●	51	40	217	102	147	ST-SC0411	ST-WRT15		
	520-2D-S40-WC08	●	52	40	220	104	150	ST-SC0411	ST-WRT15		
	530-2D-S40-WC08	●	53	40	222	106	152	ST-SC0411	ST-WRT15		
	540-2D-S40-WC08	●	54	40	225	108	155	ST-SC0411	ST-WRT15		
	550-2D-S40-WC08	●	55	40	227	110	157	ST-SC0411	ST-WRT15		
	560-2D-S40-WC08	●	56	40	230	112	160	ST-SC0411	ST-WRT15		
	570-2D-S40-WC08	●	57	40	232	114	162	ST-SC0411	ST-WRT15		
	580-2D-S40-WC08	●	58	40	235	116	165	ST-SC0411	ST-WRT15		
	590-2D-S40-WC08	●	59	40	237	118	167	ST-SC0411	ST-WRT15		
	600-2D-S40-WC08	●	60	40	240	120	170	ST-SC0411	ST-WRT15		

WUD / U-DRILL

3xD

WC



WC	DESCRIPTION		STOCK	DIMENSIONS								
				ØD	Ød	L	l	l ₁				
WCGX030208	WUD	160-3D-S25-WC03	●	16	25	108	32	68	ST-SC0257	ST-WRT08		
		165-3D-S25-WC03	●	16.5	25	110	33	71	ST-SC0257	ST-WRT08		
		170-3D-S25-WC03	●	17	25	110	34	71	ST-SC0257	ST-WRT08		
		175-3D-S25-WC03	●	17.5	25	113	35	75	ST-SC0257	ST-WRT08		
		180-3D-S25-WC03	●	18	25	113	36	75	ST-SC0257	ST-WRT08		
		185-3D-S25-WC03	●	18.5	25	115	37	78	ST-SC0257	ST-WRT08		
		190-3D-S25-WC03	●	19	25	115	38	78	ST-SC0257	ST-WRT08		
		195-3D-S25-WC03	●	19.5	25	119	39	83	ST-SC0257	ST-WRT08		
WCGX040208	WUD	200-3D-S25-WC04	●	20	25	119	40	83	ST-SC0257	ST-WRT08		
		205-3D-S25-WC04	●	20.5	25	121	41	86	ST-SC0257	ST-WRT08		
		210-3D-S25-WC04	●	21	25	121	42	86	ST-SC0257	ST-WRT08		
		215-3D-S25-WC04	●	21.5	25	123	43	89	ST-SC0257	ST-WRT08		
		220-3D-S25-WC04	●	22	25	123	44	89	ST-SC0257	ST-WRT08		
		225-3D-S25-WC04	●	22.5	25	127	45	94	ST-SC0257	ST-WRT08		
		230-3D-S25-WC04	●	23	25	127	46	94	ST-SC0257	ST-WRT08		
		235-3D-S25-WC04	●	23.5	25	130	47	98	ST-SC0309	ST-WRT15		
WCGX050308	WUD	240-3D-S25-WC05	●	24	25	130	48	98	ST-SC0309	ST-WRT15		
		245-3D-S25-WC05	●	24.5	25	133	49	102	ST-SC0309	ST-WRT15		
		250-3D-S25-WC05	●	25	25	133	50	102	ST-SC0309	ST-WRT15		
		255-3D-S25-WC05	●	25.5	25	135	51	105	ST-SC0309	ST-WRT15		
		260-3D-S25-WC05	●	26	25	135	52	105	ST-SC0309	ST-WRT15		
		265-3D-S25-WC05	●	26.5	25	137	79.5	108	ST-SC0309	ST-WRT15		
		270-3D-S25-WC05	●	27	25	137	81	108	ST-SC0309	ST-WRT15		
		275-3D-S25-WC05	●	27.5	25	140	82.5	112	ST-SC0309	ST-WRT15		
		280-3D-S25-WC05	●	28	25	140	84	112	ST-SC0309	ST-WRT15		
		285-3D-S25-WC05	●	28.5	25	142	85.5	115	ST-SC0309	ST-WRT15		
		290-3D-S25-WC05	●	29	25	142	87	115	ST-SC0309	ST-WRT15		
		295-3D-S25-WC05	●	29.5	25	151	88.5	121	ST-SC3511	ST-WRT08		
WCGX06T308	WUD	300-3D-S32-WC06	●	30	32	151	90	121	ST-SC3511	ST-WRT15		

TURNING

GROOVING

THREADING

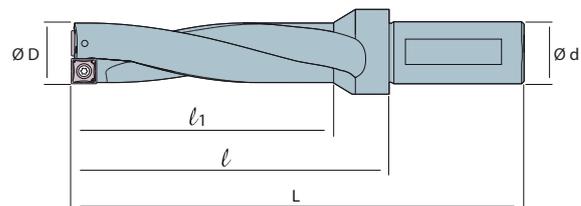
DRILLING

TURNING

WUD / U-DRILL

3xD

WC



GROOVING

THREADING

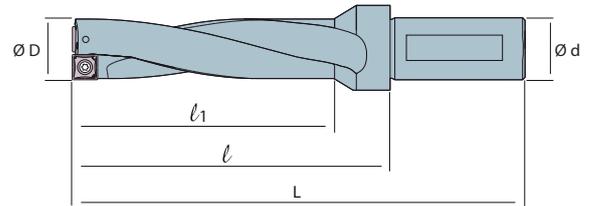
DRILLING

WC	DESCRIPTION		STOCK	DIMENSIONS						
				ØD	Ød	L	l	l ₁		
WCGX06T308	WUD	310-3D-S32-WC06	●	31	32	154	93	125	ST-SC3511	ST-WRT15
		320-3D-S32-WC06	●	32	32	156	96	128	ST-SC3511	ST-WRT15
		330-3D-S32-WC06	●	33	32	159	99	132	ST-SC3511	ST-WRT15
		340-3D-S32-WC06	●	34	32	161	102	135	ST-SC3511	ST-WRT15
		350-3D-S32-WC06	●	35	32	164	105	139	ST-SC3511	ST-WRT15
		360-3D-S32-WC06	●	36	32	167	108	143	ST-SC3511	ST-WRT15
		370-3D-S32-WC06	●	37	32	170	111	147	ST-SC3511	ST-WRT15
		380-3D-S32-WC06	●	38	32	173	114	151	ST-SC0411	ST-WRT15
		390-3D-S32-WC06	●	39	32	175	117	154	ST-SC3511	ST-WRT15
		400-3D-S32-WC06	●	40	32	178	120	158	ST-SC3511	ST-WRT15
		410-3D-S32-WC06	●	41	32	181	123	162	ST-SC3511	ST-WRT15
		420-3D-S32-WC06	●	42	32	183	126	165	ST-SC3511	ST-WRT15
		430-3D-S32-WC06	●	43	32	186	129	169	ST-SC3511	ST-WRT15
		440-3D-S32-WC06	●	44	32	188	132	172	ST-SC3511	ST-WRT15
WCGX080412	WUD	450-3D-S40-WC08	●	45	40	202	135	177	ST-SC0411	ST-WRT15
		460-3D-S40-WC08	●	46	40	205	138	181	ST-SC0411	ST-WRT15
		470-3D-S40-WC08	●	47	40	207	141	184	ST-SC0411	ST-WRT15
		480-3D-S40-WC08	●	48	40	210	144	188	ST-SC0411	ST-WRT15
		490-3D-S40-WC08	●	49	40	212	147	191	ST-SC0411	ST-WRT15
		500-3D-S40-WC08	●	50	40	215	150	195	ST-SC0411	ST-WRT15
		510-3D-S40-WC08	●	51	40	217	153	198	ST-SC0411	ST-WRT15
		520-3D-S40-WC08	●	52	40	220	156	201	ST-SC0411	ST-WRT15
		530-3D-S40-WC08	●	53	40	222	159	204	ST-SC0411	ST-WRT15
		540-3D-S40-WC08	●	54	40	225	162	207	ST-SC0411	ST-WRT15
		550-3D-S40-WC08	●	55	40	227	165	210	ST-SC0411	ST-WRT15
		560-3D-S40-WC08	●	56	40	230	168	213	ST-SC0411	ST-WRT15
		570-3D-S40-WC08	●	57	40	232	171	216	ST-SC0411	ST-WRT15
		580-3D-S40-WC08	●	58	40	235	174	219	ST-SC0411	ST-WRT15
		590-3D-S40-WC08	●	59	40	237	177	222	ST-SC0411	ST-WRT15
		600-3D-S40-WC08	●	60	40	240	180	225	ST-SC0411	ST-WRT15

WUD / U-DRILL

4xD

WC



TURNING

WC	DESCRIPTION		STOCK	DIMENSIONS						
				ØD	Ød	L	l	l ₁		
WCGX030208	WUD	160-4D-S25-WC03	●	16	25	140	64	84	ST-SC0257	ST-WRT08
		165-4D-S25-WC03	●	16.5	25	140	64	84	ST-SC0257	ST-WRT08
		170-4D-S25-WC03	●	17	25	144	68	88	ST-SC0257	ST-WRT08
		175-4D-S25-WC03	●	17.5	25	144	68	88	ST-SC0257	ST-WRT08
		180-4D-S25-WC03	●	18	25	149	72	92	ST-SC0257	ST-WRT08
		185-4D-S25-WC03	●	18.5	25	149	72	92	ST-SC0257	ST-WRT08
		190-4D-S25-WC03	●	19	25	153	76	97	ST-SC0257	ST-WRT08
		195-4D-S25-WC03	●	19.5	25	153	76	97	ST-SC0257	ST-WRT08
WCGX040208	WUD	200-4D-S25-WC04	●	20	25	159	80	103	ST-SC0257	ST-WRT08
		205-4D-S25-WC04	●	20.5	25	159	80	103	ST-SC0257	ST-WRT08
		210-4D-S25-WC04	●	21	25	163	84	107	ST-SC0257	ST-WRT08
		215-4D-S25-WC04	●	21.5	25	163	84	107	ST-SC0257	ST-WRT08
		220-4D-S25-WC04	●	22	25	167	88	111	ST-SC0257	ST-WRT08
		225-4D-S25-WC04	●	22.5	25	167	88	111	ST-SC0257	ST-WRT08
		230-4D-S25-WC04	●	23	25	173	92	117	ST-SC0257	ST-WRT08
		235-4D-S25-WC04	●	23.5	25	173	92	117	ST-SC0309	ST-WRT08
WCGX050308	WUD	240-4D-S25-WC05	●	24	25	178	96	122	ST-SC0309	ST-WRT08
		245-4D-S25-WC05	●	24.5	25	178	96	122	ST-SC0309	ST-WRT08
		250-4D-S25-WC05	●	25	25	183	100	127	ST-SC0309	ST-WRT08
		255-4D-S25-WC05	●	25.5	25	183	100	127	ST-SC0309	ST-WRT08
		260-4D-S25-WC05	●	26	25	187	104	131	ST-SC0309	ST-WRT08
		265-4D-S25-WC05	●	26.5	25	187	104	131	ST-SC0309	ST-WRT08
		270-4D-S25-WC05	●	27	25	191	108	135	ST-SC0309	ST-WRT08
		275-4D-S25-WC05	●	27.5	25	191	108	135	ST-SC0309	ST-WRT08
		280-4D-S25-WC05	●	28	25	196	112	140	ST-SC0309	ST-WRT08
		285-4D-S25-WC05	●	28.5	25	196	112	140	ST-SC0309	ST-WRT08
		290-4D-S25-WC05	●	29	25	200	116	144	ST-SC0309	ST-WRT08
		295-4D-S25-WC05	●	29.5	25	200	116	144	ST-SC0309	ST-WRT08

GROOVING

THREADING

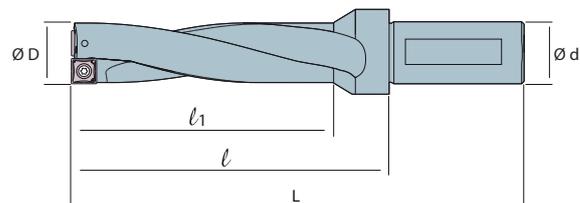
DRILLING

TURNING

WUD / U-DRILL

4xD

WC



GROOVING

THREADING

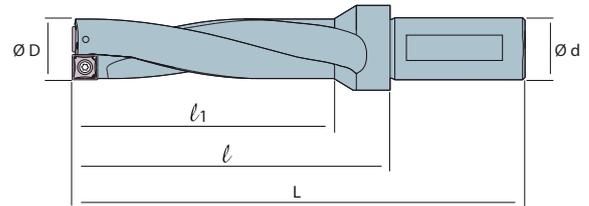
DRILLING

WC	DESCRIPTION		STOCK	DIMENSIONS						
				ØD	ød	L	l	l ₁		
WCGX06T308	WUD	300-4D-S32-WC06	●	30	32	211	120	151	ST-SC3511	ST-WRT15
		310-4D-S32-WC06	●	31	32	216	124	156	ST-SC3511	ST-WRT15
		320-4D-S32-WC06	●	32	32	220	128	160	ST-SC3511	ST-WRT15
		330-4D-S32-WC06	●	33	32	225	132	165	ST-SC3511	ST-WRT15
		335-4D-S32-WC06	●	33.5	32	227	134	167	ST-SC3511	ST-WRT15
		340-4D-S32-WC06	●	34	32	229	136	169	ST-SC3511	ST-WRT15
		350-4D-S32-WC06	●	35	32	234	140	174	ST-SC3511	ST-WRT15
		360-4D-S32-WC06	●	36	32	239	144	179	ST-SC3511	ST-WRT15
		370-4D-S32-WC06	●	37	32	244	148	184	ST-SC3511	ST-WRT15
		380-4D-S32-WC06	●	38	32	251	152	189	ST-SC3511	ST-WRT15
		385-4D-S32-WC06	●	38.5	32	253	154	191	ST-SC3511	ST-WRT15
		390-4D-S32-WC06	●	39	32	258	156	193	ST-SC3511	ST-WRT15
		400-4D-S32-WC06	●	40	32	263	160	198	ST-SC3511	ST-WRT15
		410-4D-S32-WC06	●	41	32	267	164	203	ST-SC3511	ST-WRT15
WCGX080412	WUD	420-4D-S32-WC08	●	42	32	272	168	207	ST-SC3511	ST-WRT15
		430-4D-S32-WC08	●	43	32	276	172	212	ST-SC3511	ST-WRT15
		440-4D-S32-WC08	●	44	32	292	176	216	ST-SC0411	ST-WRT15
		450-4D-S32-WC08	●	45	32	297	180	222	ST-SC0411	ST-WRT20
		460-4D-S32-WC08	●	46	32	301	184	227	ST-SC0411	ST-WRT20
		470-4D-S32-WC08	●	47	32	306	188	231	ST-SC0411	ST-WRT20
		480-4D-S32-WC08	●	48	32	310	192	236	ST-SC0411	ST-WRT20
		490-4D-S32-WC08	●	49	32	315	196	240	ST-SC0411	ST-WRT20
		500-4D-S32-WC08	●	50	32	310	200	245	ST-SC0411	ST-WRT20

WUD / U-DRILL

5xD

WC



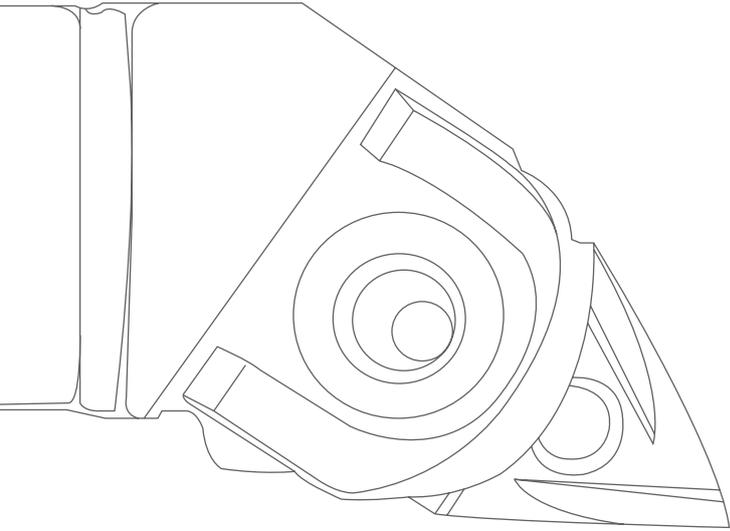
TURNING

GROOVING

THREADING

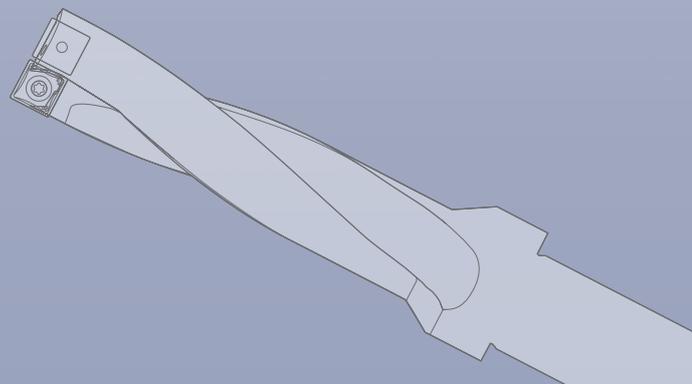
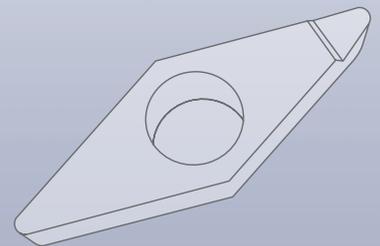
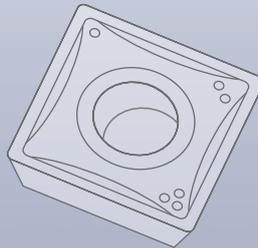
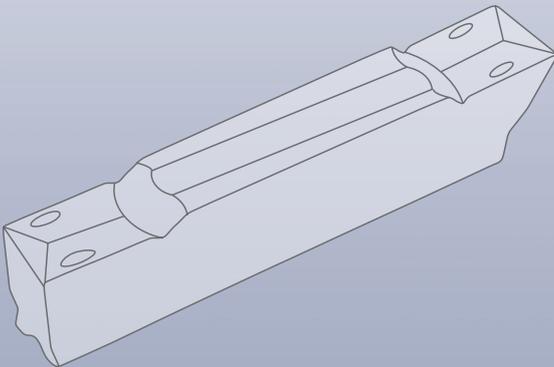
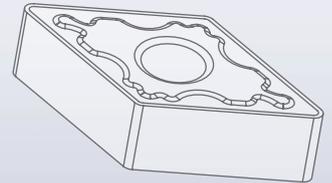
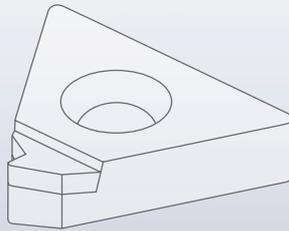
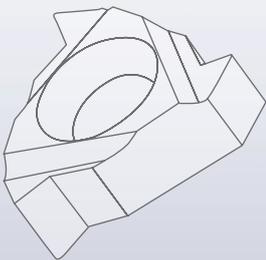
DRILLING

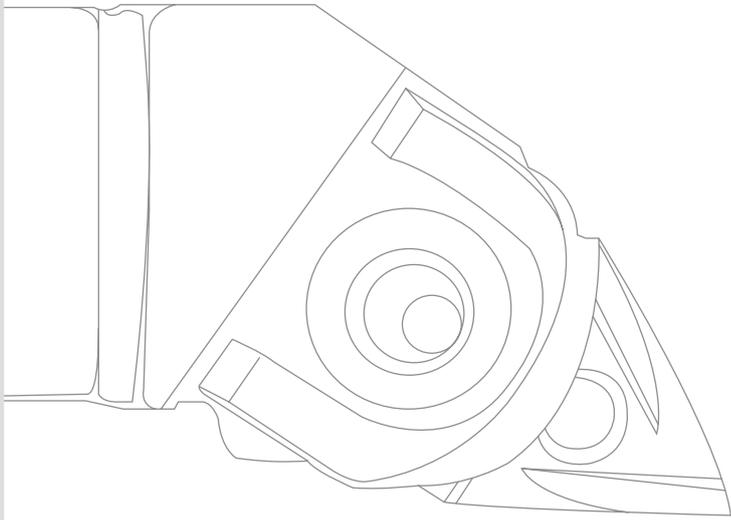
WC	DESCRIPTION		STOCK	DIMENSIONS						
				ØD	ød	L	l	l ₁		
WCGX030208	WUD	160-5D-S25-WC03	●	16	25	156	80	100	ST-SC0257	ST-WRT08
		170-5D-S25-WC03	●	17	25	161	85	105	ST-SC0257	ST-WRT08
		180-5D-S25-WC03	●	18	25	167	90	111	ST-SC0257	ST-WRT08
		190-5D-S25-WC03	●	19	25	172	95	116	ST-SC0257	ST-WRT08
WCGX040208	WUD	200-5D-S25-WC04	●	20	25	179	100	123	ST-SC0257	ST-WRT08
		210-5D-S25-WC04	●	21	25	184	105	128	ST-SC0257	ST-WRT08
		220-5D-S25-WC04	●	22	25	189	110	133	ST-SC0257	ST-WRT08
		230-5D-S25-WC04	●	23	25	193	115	137	ST-SC0257	ST-WRT08
WCGX050308	WUD	240-5D-S25-WC05	●	24	25	198	120	142	ST-SC0309	ST-WRT08
		250-5D-S25-WC05	●	25	25	203	125	147	ST-SC0309	ST-WRT08
		260-5D-S25-WC05	●	26	25	207	130	151	ST-SC0309	ST-WRT08
		270-5D-S25-WC05	●	27	25	212	135	156	ST-SC0309	ST-WRT08
		280-5D-S25-WC05	●	28	25	218	140	162	ST-SC0309	ST-WRT08
		290-5D-S25-WC05	●	29	25	222	145	166	ST-SC0309	ST-WRT08
WCGX06T308	WUD	300-5D-S32-WC06		30	32	227	150	171	ST-SC3511	ST-WRT15
		310-5D-S32-WC06		31	32	245	155	185	ST-SC3511	ST-WRT15
		320-5D-S32-WC06		32	32	250	160	190	ST-SC3511	ST-WRT15
		330-5D-S32-WC06		33	32	255	165	195	ST-SC3511	ST-WRT15
		340-5D-S32-WC06		34	32	260	170	200	ST-SC3511	ST-WRT15
		350-5D-S32-WC06		35	32	265	175	205	ST-SC3511	ST-WRT15
		360-5D-S32-WC06		36	32	270	180	210	ST-SC3511	ST-WRT15
		370-5D-S32-WC06		37	32	275	185	215	ST-SC3511	ST-WRT15
		380-5D-S32-WC06		38	32	280	190	220	ST-SC3511	ST-WRT15
		390-5D-S32-WC06		39	32	285	195	225	ST-SC3511	ST-WRT15
		400-5D-S32-WC06		40	32	290	200	230	ST-SC3511	ST-WRT15



Best Choice for High Productivity

by Union





OCI building 12FL #94, Sogong-Ro, Jung-Gu, Seoul 04532, Korea

Domestic Tel | (82)2-2251-4145,4147 **Fax** | (82)2-318-1995

Int'l Tel | (82)2-2251-4140,4148 **Fax** | (82)2-318-1995

E-mail ceramic@unionmaterials.com

www.unionmaterials.com