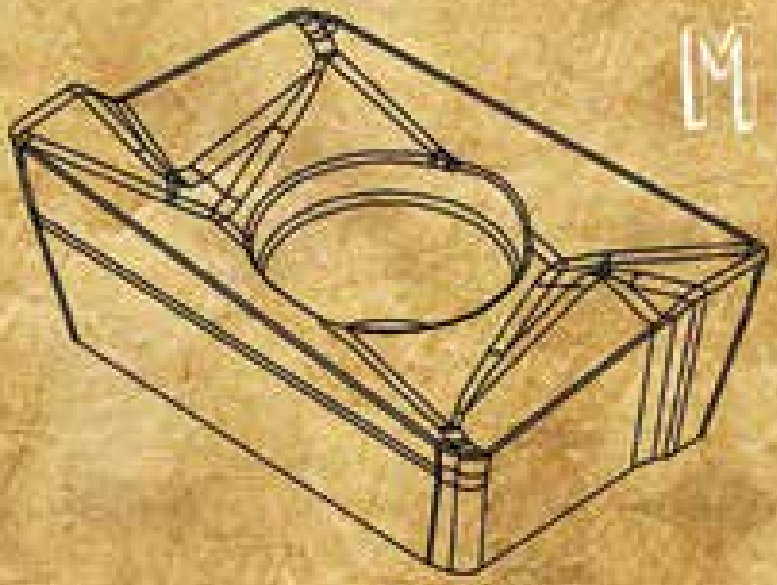
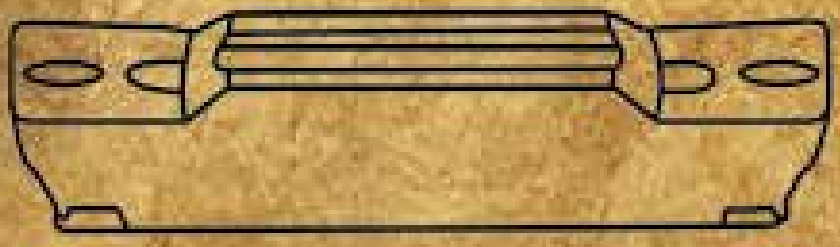
JUAN
cutting tool



MILLING TOOLS

CUTTING TOOLS

TURNING TOOLS



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WC 40
WC 40

A
Turning

Turning inserts

B
Milling

Milling inserts

C
Technical Information

Technical information

Turning Turning inserts overview

Cemented carbide and cermet inserts

Rough

	CNMG-RG	CNMM-RG	CNMG-RB	CNMG-RK	DNMG-RG	DNMM-RG	DNMG-RB
Length of cutting edge	09,12	12,16,19,25	12,16,19	12,16,19	15	15	15

	DNMG-RK	SNMG-RG	SNMG-RB	SNMG-RK	TNMG-RG	TNMM-RG	TNMG-RB
Length of cutting edge	15	12,15,19	12,15,19,25	12,15,19	12,15,19	16,22,27	16,22,27	16,22

	TNMG-RK	WNMG-RG	WNMG-RB	WNMG-RK
Length of cutting edge	16,22	06,08	06,08	06,08

Semi-finishing

	CNMG-MG	CNMG-SG	CNMG-MB	DNMG-MG	DNMG-SG	DNMG-MB	SNMG-MG
Length of cutting edge	09,12	09,12	09,12	11,15	11,15	11,15	09,12 ; 15,19

	SNMG-SG	SNMG-MB	TNMG-MG	TNMG-SG	TNMG-MB	VNMG-MG	VNMG-MB	WNMG-MG
Length of cutting edge	12,15	12,15	11,16,22	16,22	11,16,22	16	16	06,08

	WNMG-MB
Length of cutting edge	06,08

Finishing

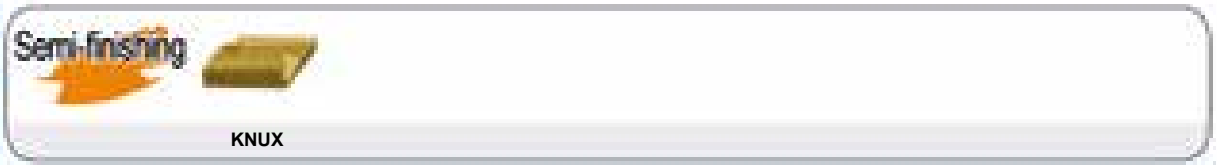
	CNMG-FG	CNMG-FB	DNMG-FG	DNMG-FB	SNMG-FG	SNMG-FB	TNMG-FG
Length of cutting edge	09,12	09,12	11,15	11,15	12	09,12,15	16,22

Negative angle

TNMG-FB	VNMG-FG	VNMG-FB	WNMG-FG	WNMG-FB
11,16,22	16	16	06,08	06,08

Semi-finishing	CNMG	DNMG	SNMG	TNMG	VNMG	WNMG
	12,16,19	15,19	09,12,15,19,25	11,16,22,27,33	16	06,08

Rough	CNMA	DNMA	SNMA	TNMA	WNMA	RNMA
	12,16,19	11,15	09,12,15,19	16,22,27	06,08	12



Semi-finishing	KNUX
	16

Positive angle

Rough	CCMT-RH	DCMT-RH	SCMT-RH	TCMT-RH
	09,12	07,11	09,12	09,11,16

Semi-finishing	CCMT-MH	DCMT-MH	SCMT-MH	TCMT-MH	VCMT-MH	VBMT-MH	CPMT-MH
	06,09,12	07,11	09,12	09,11,16	11	11,16	06,09

DPMT-MH	SPMT-MH	TPMT-MH
07,11	09,12	09,11

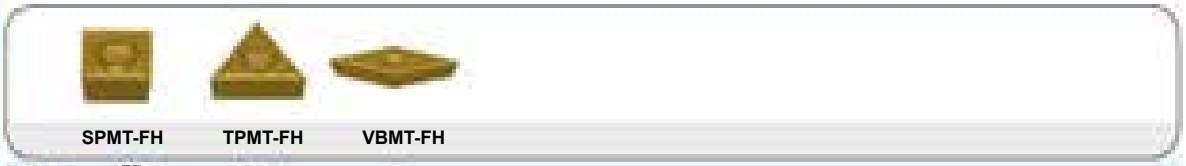
Turning Turning inserts overview

A JUAN cutting tool

Negative angle

Finishing

CCMT-FH	DCMT-FH	SCMT-FH	TCMT-FH	VCMT-FH	CPMT-FH	DPMT-FH
06,09,12	07,09	09	06,09,11,16	11	06,09	07,09



SPMT-FH	TPMT-FH	VBMT-FH
09	09,11	11

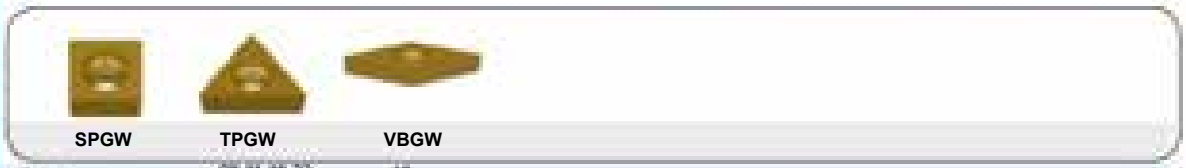
Positive angle

Aluminum machining

CCGX-CA	DCGX-CA	SCGX-CA	TCGX-CA	VCGX-CA
06,09,12	07,11	09,12	09,11,16	11,16,22

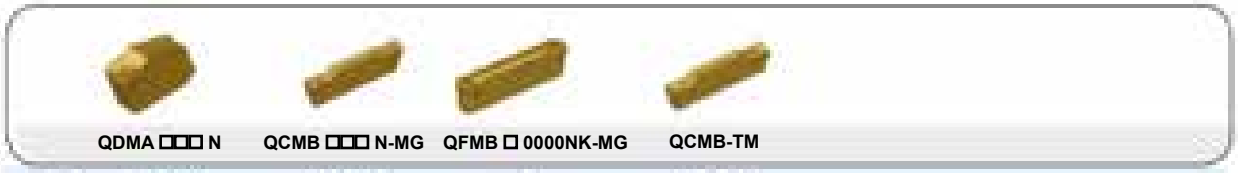
Slotless

CCGW	DCGW	SCGW	TCGW	VCGW	CPGW	DPGW
06,09,12	07,11	09,12	11,16	11	06	11



SPGW	TPGW	VBGW
09,12	09,11,16,22	16

Parting and grooving inserts



QDMA □□□ N	QCMB □□□ N-MG	QFMB □ 0000NK-MG	QCMB-TM
3.12~8.85	2,3,4,5,6	5	2,5,3,4,5,6

Turning Turning inserts overview

Threading inserts

The illustration shows Right toolholder	Partial profile 60°		Partial profile 55°		ISO Metric	
						
	External thread	Internal thread	External thread	Internal thread	External thread	Internal thread
Pitch/Tooth No.	0.5~6.0	0.5~6.0	0.5~6.0	0.5~6.0	0.35~6.0	0.35~6.0

The illustration shows Right toolholder	American UN		Whitworth		British Standard Pipe thread	
						
	External thread	Internal thread	External thread	Internal thread	External thread	Internal thread
Pitch/Tooth No.	72~4	72~4	72~4	72~4	28~11	28~11

The illustration shows Right toolholder	American 60° NPTtapepipe thread		National Pipe Threads-Cryseal		Round DIN 405	
						
	External thread	Internal thread	External thread	Internal thread	External thread	Internal thread
Pitch/Tooth No.	27~8	27~8	27~8	27~8	10~4	10~4

The illustration shows Right toolholder	Trapez DIN 103		American ACME	
				
	External thread	Internal thread	External thread	Internal thread
Pitch/Tooth No.	1.5~6.0	1.5~6.0	16~4	16~4

A JUAN cutting tool

Common turning inserts
Introduction of chipbreaker

Turning

Negative inserts with holes

Use	Chipbreaker	Series	Accuracy Recommended	Feature/Shape
Roughing	RG Double-sided	M	ap=3~12(mm) fn=0.3~0.8(mm/r)	For P & K type light load roughing M class double chip breaker, metal removal rate and edge economy can have it all.
	RG One-sided	M	ap=3~15(mm) fn=0.3~0.8 (mm/r)	For P type roughing M class single chip breaker, high safety, edge in high cutting depth, high cutting feed can obtain high metal removal rate and low cutting force.
	RB	M	ap=2.5~8(mm) fn=0.2~0.6(mm/r)	For M type roughing M class double chip breaker strong impact resistance, groove type design made the best balance between safety and sharp edge, solved the big cutting-heat, stick knives and other difficulties in the process of roughing of stainless steel, obtained the high efficiency.
	RK	M	ap=5~15(mm) fn= 0.3~1.0(mm/r)	For K type heavy load machining M class double chip breaker, tough edge, with a high security, strong ability to resist plastic deformation at high removal rate.
Semi-finishing	SG	M	ap=1.5~5(mm) fn=0.15~0.5(mm/r)	For P type Semi-finishing M class double chip breaker, small cutting force, wide range of chip breaker, can obtain better chipbreaking effect for higher viscosity alloy steel.
	MG	M	ap=1.5~5(mm) fn=0.15~0.5(mm/r)	For P type Semi-finishing M class double chip breaker, edge is stronger than GS, suitable for Semi-finishing at unstable condition, cast iron processing, lower cutting force.
	MB	M	ap=0.5~1.5(mm) fn=0.1~0.3(mm/r)	For M type Semi-finishing M class double chip breaker, effectively solve the processing difficulty,such as stainless steel breaking chip , stick knife, obtain higher processing efficiency than BF.
	Straight slot	M	ap=1.5~5(mm) fn=0.2~0.5(mm/r)	For P,M&K type Semi-finishing to roughing M class double chip breaker, edge tough,good versatility.
Finishing	FG	M	ap=0.3~2(mm) fn=0.05~0.35(mm/r)	For P type Finishing M class double chip breaker, chip breaking ideal in finishing range, high surface quality.
	FB	M	ap=0.05~1(mm) fn=0.05~0.3 (mm/r)	For M type Finishing M class double chipbreaker,a sharp edge effectively solve the processing difficulty, such as stainless steel breaking chip, stick knife, surface hardening, get high quality.

Turning

Common turning
Introduction of grooving inserts

Negative insert with hole

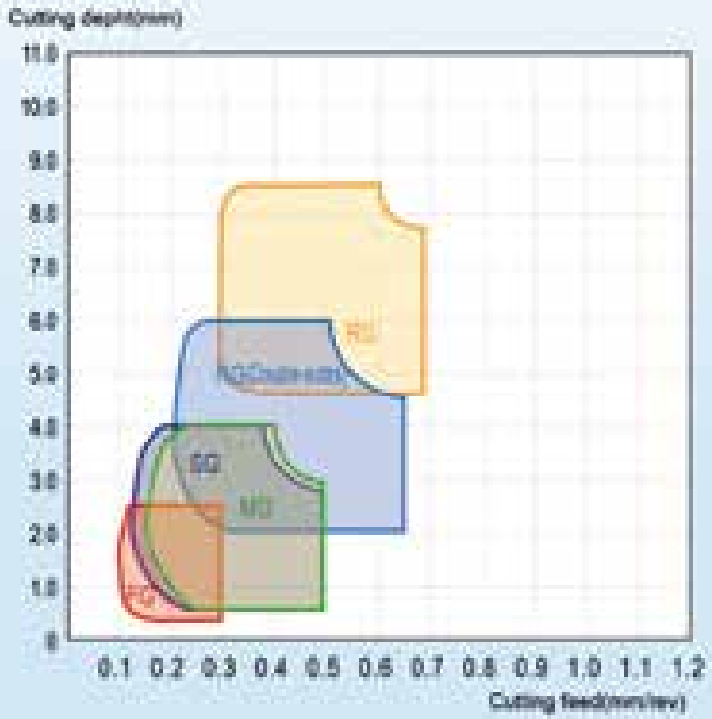
Use	Chipbreaker	Tolerance	Accuracy Recommended	Feature/Shape
Roughing	RH	M	ap=3~7(mm) fn=0.3~0.7(mm/r)	For roughing M class tolerance,suitable for internal and external roughing of steel,stainless steel and cast iron materials.
Semi-Finishing	MH	M	ap=1~4(mm) fn=0.2~0.5(mm/r)	For semi-finishing M class tolerance,suitable for internal and external semi-finishing of steel and cast iron materials.
Finishing	FH	G	ap=0.1~2(mm) fn=0.05~0.3 (mm/r)	For finishing M class tolerance,suitable for internal and external semi-finishing of steel and cast iron materials.
Aluminium alloy machining	CA	G	ap=0.02~4.8(mm) fn=0.05~0.5(mm/r)	For Aluminum machining G class tolerance, big rake angle and clearance angle make more sharp edge, cutting lighter under the condition of ensure effective chip breaker.

A JUAN cutting tool

Main scope of proove type of chipbreaker

Processing application note

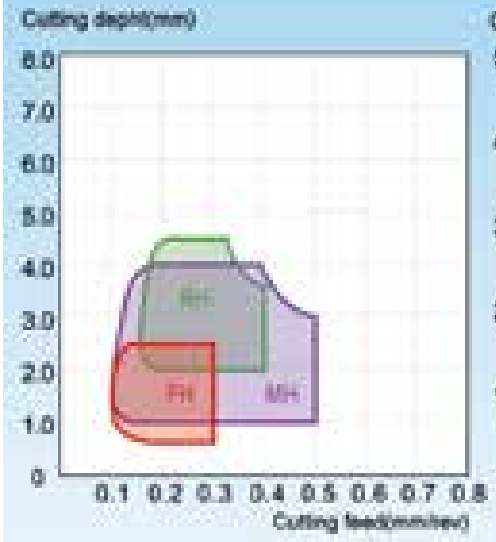
Negative inserts



◆ Material:45#steel

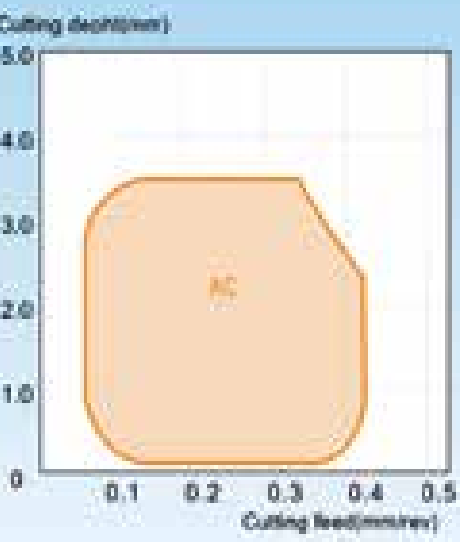
◆ Material:stainless steel(1Cr18Ni9Ti)

Positive inserts



◆ Material:45#steel

◆ Material:stainless steel(1Cr18Ni9Ti)



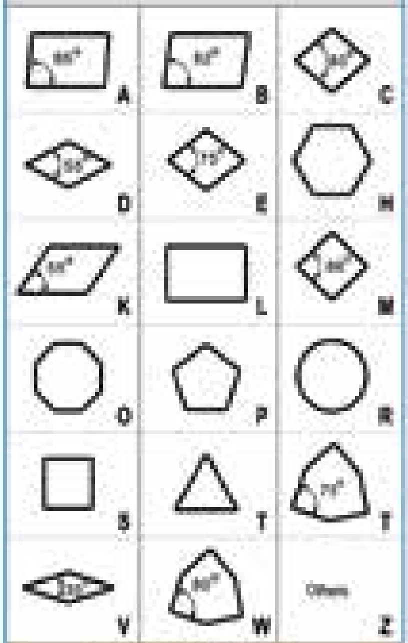
◆ Material: aluminum alloy


04

Common Turning İnserts

Cemented carbide insert

Shape/Code



Insert shape

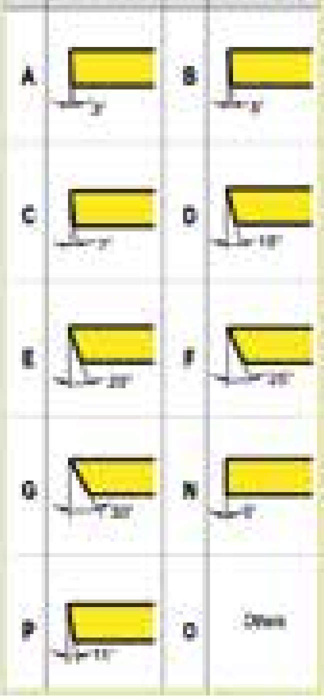
Metric

Code	With hole	Chipbreaker	Section plane	Code	With hole	Chipbreaker	Section plane
B	With	Without		N	Without	Without	
H	With	One-side		R	Without	One-side	
C	With	Without		F	Without	Double-side	
J	With	Double-side		A	With	Without	
W	With	Without		M	With	One-side	
T	With	One-side		G	With	Double-side	
Q	With	Without		X	—	—	Special
U	With	Double-side					

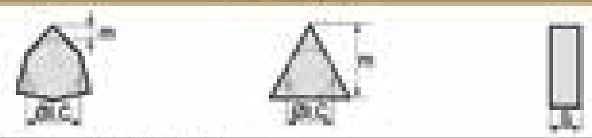
Chipbreaker and clamping type

C N M G

Clearance angle of main cutting edge



Tolerance



Code	Nose height M tolerance(mm)	Tolerance of I.C.(mm)	Thickness S tolerance(mm)
A	±0.005	±0.025	±0.025
F	±0.005	±0.013	±0.025
C	±0.013	±0.025	±0.025
H	±0.013	±0.013	±0.025
E	±0.025	±0.025	±0.025
G	±0.025	±0.025	±0.13
J	±0.005	±0.05-±0.13	±0.025
K	±0.013	±0.05-±0.13	±0.025
L	±0.025	±0.05-±0.13	±0.025
M	±0.08-±0.18	±0.05-±0.13	±0.13
N	±0.08-±0.18	±0.05-±0.13	±0.025
U	±0.13-±0.38	±0.08-±0.25	±0.13

(Reference) Details of M-class tolerance (identified by shape and size)

● Nose height tolerance(mm)

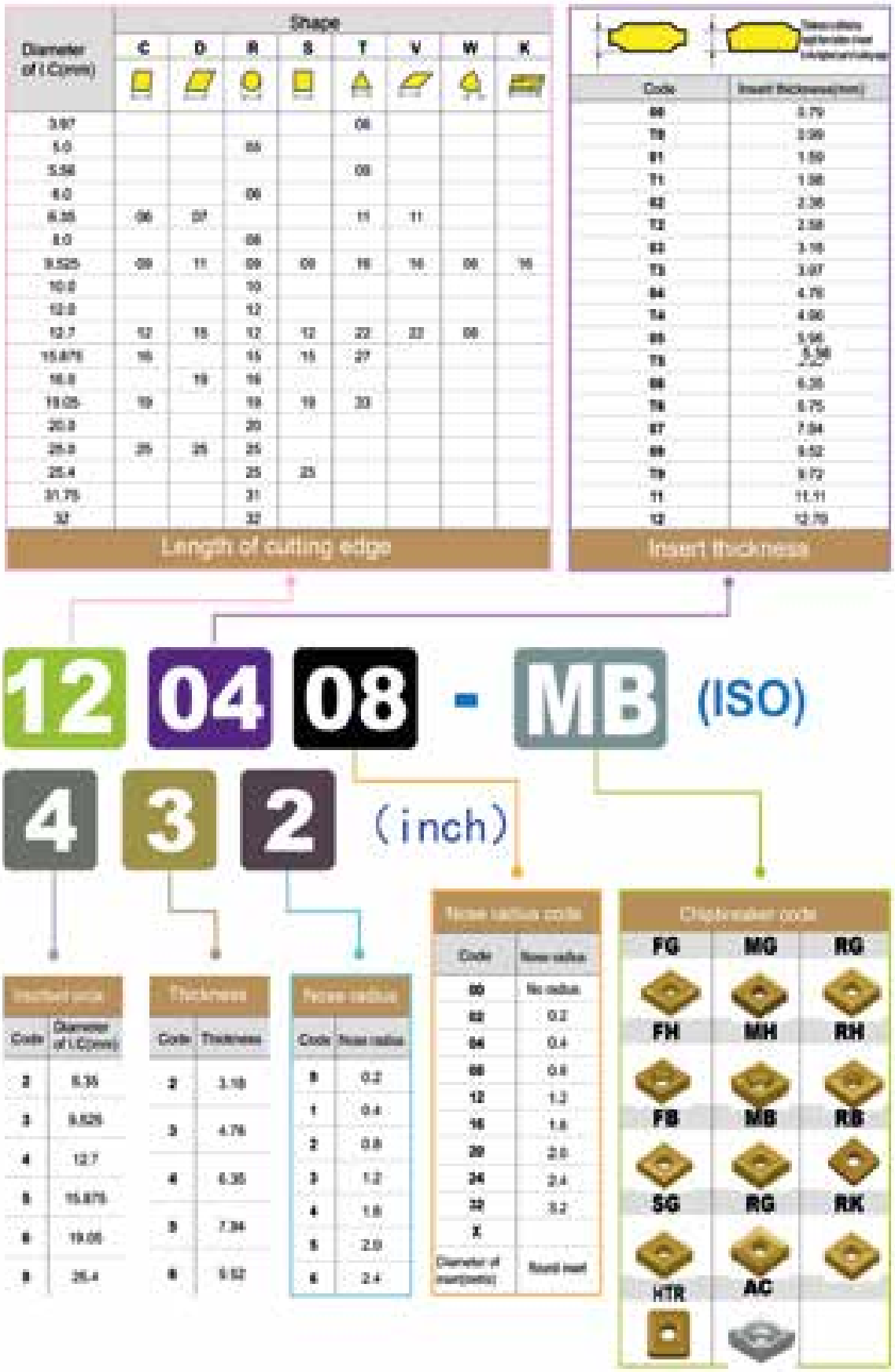
Inscribed circle	Regular triangle	Square	Diamond with 80°	Diamond with 55°	Diamond with 35°	Round
6.35	±0.08	±0.08	±0.08	±0.11	±0.16	—
9.525	±0.08	±0.08	±0.08	±0.11	±0.16	—
12.7	±0.13	±0.13	±0.13	±0.15	—	—
15.875	±0.15	±0.15	±0.15	±0.18	—	—
19.05	±0.15	±0.15	±0.15	±0.18	—	—
25.4	—	±0.18	—	—	—	—

● Tolerance of inscribed circle(mm)

Inscribed circle	Regular triangle	Square	Diamond with 80°	Diamond with 55°	Diamond with 35°	Round
6.35	±0.05	±0.05	±0.05	±0.05	±0.05	—
9.525	±0.05	±0.05	±0.05	±0.05	±0.05	±0.05
12.7	±0.08	±0.08	±0.08	±0.08	—	±0.08
15.875	±0.10	±0.10	±0.10	±0.10	—	±0.10
19.05	±0.10	±0.10	±0.10	±0.10	—	±0.10
25.4	—	±0.13	—	—	—	±0.13

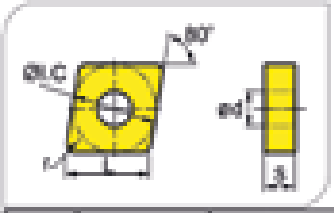
Common Turning İnserts

Cemented carbide insert



A JUAN cutting tool

CN □□ (Negative)

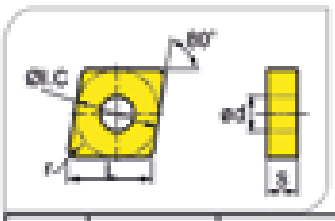


Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
							P						M							K											
		L	φI.C	S	φd	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
RG	CNMG120408-RG	12.9	12.7	4.76	5.16	0.8	☆	☆	★	★	☆	☆			○					○		○								
	CNMG120412-RG	12.9	12.7	4.76	5.16	1.2	☆	☆	★	★	☆	☆			○					○		○								
	CNMM160612-RG	16.1	15.875	6.35	6.35	1.2			☆	☆	★	★			○															
	CNMM160616-RG	16.1	15.875	6.35	6.35	1.6			☆	☆	★	★			○															
	CNMM190612-RG	19.3	19.05	6.35	7.94	1.2			☆	☆	★	★			○															
	CNMM190616-RG	19.3	19.05	6.35	7.94	1.6			☆	☆	★	★			○															
	CNMM190624-RG	19.3	19.05	6.35	7.94	2.4			☆	☆	★	★			○															
Roughing	CNMM250924-RG	25.79	25.400	9.525	9.12	2.4			☆	☆	★	★			○															
RB	CNMG120408-RB	12.9	12.7	4.76	5.16	0.8							○	☆	★			☆	★											
	CNMG120412-RB	12.9	12.7	4.76	5.16	1.2							○	☆	★			☆	★											
	CNMG120416-RB	12.9	12.7	4.76	5.16	1.6							○		★			☆	★											
	CNMM160608-RB	16.1	15.875	6.35	6.35	0.8							○		★			☆	★											
	CNMM160612-RB	16.1	15.875	6.35	6.35	1.2							○		★			☆	★											
	CNMM160616-RB	16.1	15.875	6.35	6.35	1.6							○		★			☆	★											
	CNMM190608-RB	19.3	19.05	6.35	7.94	0.8							○		★			☆	★											
	CNMM190612-RB	19.3	19.05	6.35	7.94	1.2							○		★			☆	★											
	CNMM190616-RB	19.3	19.05	6.35	7.94	1.6							○		★			☆	★											
Roughing	CNMM190624-RB	19.3	19.05	6.35	7.94	2.4							○		★			☆	★											

Applicable tool

★ Recommended grade ☆ Optional grade ○ Make to Order

CN □□ (Negative)



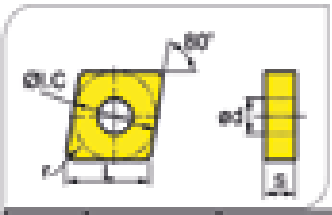
Shape	Type	Dimension(mm)					Coated cemented carbide																				Cemented carbide					
							P						M							K												
		L	ØI.C	S	Ød	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135							
Rough-ing	CNMG120404-RK	12.9	12.7	4.76	5.16	0.4			○													★		○							
	CNMG120408-RK	12.9	12.7	4.76	5.16	0.8			○													★		○							
	CNMG120412-RK	12.9	12.7	4.76	5.16	1.2			○													★		○							
	CNMG120416-RK	12.9	12.7	4.76	5.16	1.6			○													★		○							
	CNMG160612-RK	16.1	15.875	6.35	6.35	1.2			○													★		○							
	CNMG160616-RK	16.1	15.875	6.35	6.35	1.6			○													★		○							
	CNMG190608-RK	19.3	19.05	6.35	7.94	0.8			○													★		○							
	CNMG190612-RK	19.3	19.05	6.35	7.94	1.2			○													★		○							
	CNMG190616-RK	19.3	19.05	6.35	7.94	1.6			○													★		○							
Straight slot	CNMG120404	12.9	12.7	4.76	5.16	0.4	○	○	☆	★	○									○		★									
	CNMG120408	12.9	12.7	4.76	5.16	0.8	○	○	☆	★	○											★									
	CNMG120412	12.9	12.7	4.76	5.16	1.2	○	○	☆	★	○											★		○							
	CNMG160608	16.1	15.875	6.35	6.35	0.8	○	○	☆	★	○											★		○							
	CNMG160612	16.1	15.875	6.35	6.35	1.2	○	○	☆	★	○											★		○							
	CNMG160616	16.1	15.875	6.35	6.35	1.6	○	○	☆	★	○											★		○							
	CNMG190608	19.3	19.05	6.35	7.94	0.8	○	○	☆	★	○											○		★							
	CNMG190612	19.3	19.05	6.35	7.94	1.2	○	○	☆	★	○											○		★							
	CNMG190616	19.3	19.05	6.35	7.94	1.6	○	○	☆	★	○											○		★							

Applicable tool

★ Recommended grade ☆ Optional grade ○ Make to Order

A JUAN cutting tool

CN □□ (Negative)



Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
							P						M						K											
		L	φ I. C	S	φ d	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
Slot less	CNMA120404	12.9	12.7	4.76	5.16	0.4			☆	☆										☆										
	CNMA120408	12.9	12.7	4.76	5.16	0.8			☆	☆										☆		★		○						
	CNMA120412	12.9	12.7	4.76	5.16	1.2			☆	☆												★		○						
	CNMA120416	12.9	12.7	4.76	5.16	1.6			☆	☆												★		○						
	CNMA160608	16.1	15.875	6.35	6.35	0.8					☆	☆										★		○						
	CNMA160612	16.1	15.875	6.35	6.35	1.2					☆	☆										★		○						
	CNMA160616	16.1	15.875	6.35	6.35	1.6					☆	☆										★		○						
	CNMA160620	16.1	15.875	6.35	6.35	2.0					☆	☆										☆		★						
	CNMA160632	16.1	15.875	6.35	6.35	3.2					☆	☆										☆		★						
	CNMA190612	19.3	19.05	6.35	7.94	1.2					☆	☆										★								
	CNMA190616	19.3	19.05	6.35	7.94	1.6					☆	☆										☆		★						
NG	CNMG090304-NG	9.7	9.525	3.18	3.81	0.4	○	☆	☆	★				☆						☆		★								
	CNMG090308-NG	9.7	9.525	3.18	3.81	0.8	○	☆	☆	★	○			☆						☆		★								
	CNMG120404-NG	12.9	12.7	4.76	5.16	0.4	○	☆	☆	★				☆						☆		★								
	CNMG120408-NG	12.9	12.7	4.76	5.16	0.8	○	☆	☆	★	○			☆						☆		★								
Semi-finishing	CNMG120412-NG	12.9	12.7	4.76	5.16	1.2	○	☆	☆	★	○			☆						☆		★								
NG	CNMG090304-NS	9.7	9.525	3.18	3.81	0.4	○	☆	☆	★										○		☆								
	CNMG090308-NS	9.7	9.525	3.18	3.81	0.8	○	☆	☆	★	○									○		☆								
	CNMG120404-NS	12.9	12.7	4.76	5.16	0.4	○	☆	☆	★										○		☆								
	CNMG120408-NS	12.9	12.7	4.76	5.16	0.8	○	☆	☆	★	○									○		☆								
Semi-finishing	CNMG120412-NS	12.9	12.7	4.76	5.16	1.2	○	☆	☆	★	○									○		☆								

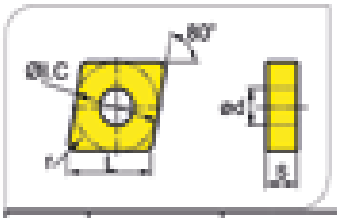
Applicable tool

★ Recommended grade ☆ Optional grade ○ Make to Order

Common Turning İnserts

Cemented carbide insert

CN □□ (Negative)



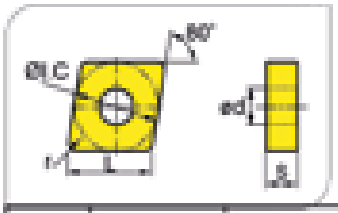
Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
							P						M						K											
		L	ø I.C	S	ø d	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
M	CNMG090304-MF	9.7	9.525	3.18	3.81	0.4							○	★				☆													
	CNMG090308-MF	9.7	9.525	3.18	3.81	0.8							○	★				☆													
	CNMG120404-MF	12.9	12.7	4.76	5.16	0.4							○	★				☆													
	CNMG120408-MF	12.9	12.7	4.76	5.16	0.8							○	★				☆													
Semi-finishing	CNMG120412-MF	12.9	12.7	4.76	5.16	1.2							○	★				☆													
	CNMG190616-MF	19.1	19.875	6.35	6.35	1.6							○	★				☆													
M	CNMG090304-MM	9.7	9.525	3.18	3.81	0.4	☆	★	○				○																		
	CNMG090308-MM	9.7	9.525	3.18	3.81	0.8	☆	★	○																						
	CNMG120404-MM	12.9	12.7	4.76	5.16	0.4	☆	★	○				○																		
	CNMG120408-MM	12.9	12.7	4.76	5.16	0.8	☆	★	○				○																		
Finishing	CNMG120412-MM	12.9	12.7	4.76	5.16	1.2	☆	★	○																						
R	CNMG090304-MR	9.7	9.525	3.18	3.81	0.4							○	★				☆													
	CNMG090308-MR	9.7	9.525	3.18	3.81	0.8							○	★				☆													
	CNMG120404-MR	12.9	12.7	4.76	5.16	0.4							○	★				☆													
	CNMG120408-MR	12.9	12.7	4.76	5.16	0.8							○	★				☆													
Finishing	CNMG120412-MR	12.9	12.7	4.76	5.16	1.2							○	★				☆													

Applicable tool

★ Recommended grade ☆ Optional grade ○ Make to Order

A JUAN cutting tool

CN □□ (Negative)

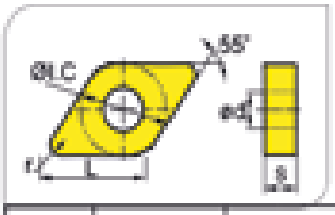


Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
							P						M							K										
		L	ø I. C	S	ød	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
RQ	CNMG150408-RQ	15.5	12.7	4.76	5.16	0.8			○	○	☆	★																		
	CNMG150412-RQ	15.5	12.7	4.76	5.16	1.2			○	○	☆	★																		
	CNMG150416-RQ	15.5	12.7	4.76	5.16	1.6			○	○	☆	★																		
	CNMG150608-RQ	15.5	12.7	4.76	5.16	0.8			○	○	☆	★																		
	CNMG150612-RQ	15.5	12.7	6.35	5.16	1.2			○	○	☆	★																		
Roughing	CNMG150616-RQ	15.5	12.7	6.35	5.16	1.6			○	○	☆	★																		
RQ	CNMM150608-RQ	15.5	12.7	6.35	5.16	0.8			○	○	☆	★																		
	CNMM150612-RQ	15.5	12.7	6.35	5.16	1.2			○	○	☆	★																		
	CNMM150616-RQ	15.5	12.7	6.35	5.16	1.6			○	○	☆	★																		
Roughing																														
RB	CNMG150608-RB	15.5	12.7	6.35	5.16	0.8								☆	★				○											
	CNMG150612-RB	15.5	12.7	6.35	5.16	1.2								☆	★				○											
	CNMG150616-RB	15.5	12.7	6.35	5.16	1.6								☆	★				○											
Roughing																														
RX	CNMG150608-RX	15.5	12.7	6.35	5.16	0.8			○													☆		★						
	CNMG150612-RX	15.5	12.7	6.35	5.16	1.2			○													☆		★						
Roughing																														
Straight slot	CNMG150604	15.5	12.7	6.35	5.16	0.4	○		☆	★	○									☆		★		○						
	CNMG150608	15.5	12.7	6.35	5.16	0.8	○		☆	★	○									☆		★		○						
	CNMG150612	15.5	12.7	6.35	5.16	1.2	○		☆	★	○									☆		★		○						
	CNMG150616	15.5	12.7	6.35	5.16	1.6	○		☆	★	○									☆		★		○						
	CNMG190608	19.3	15.875	6.35	7.94	0.8	○		☆	★	○									☆		★		○						
	CNMG190612	19.3	15.875	6.35	7.94	0.8	○		☆	★	○									☆		★		○						

Applicable tool

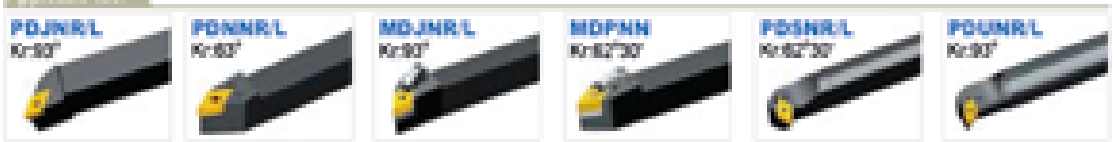
★ Recommended grade ☆ Optional grade ○ Make to Order

DN □□ (Negative)



Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
							P						M						K											
		L	ø I.C	S	ød	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
Slotless	DNMA110416	11.6	9.525	4.76	3.81	1.6	○		☆	★												★		○						
	DNMA110424	11.6	9.525	4.76	3.81	2.4	○		☆	★												★		○						
	DNMA150404	15.5	12.7	4.76	5.16	0.4	○		☆	★												★								
	DNMA150408	15.5	12.7	4.76	5.16	0.8			☆	★												★								
	DNMA150604	15.5	12.7	6.35	5.16	0.4			☆	★												★								
	DNMA150608	15.5	12.7	6.35	5.16	0.8			☆	★												★								
	DNMA150612	15.5	12.7	6.35	5.16	1.2			☆	★	○											★		○						
	DNMA150616	15.5	12.7	6.35	5.16	1.6			☆	★	○											★		○						
wiper	DNMG110404-MQ	11.6	9.525	4.76	3.81	0.4	○	☆	☆	★												○								
	DNMG110408-MQ	11.6	9.525	4.76	3.81	0.8	○	☆	☆	★												○								
	DNMG110412-MQ	11.6	9.525	4.76	3.81	1.2	○	☆	☆	★												○								
	DNMG150404-MQ	15.5	12.7	4.76	5.16	0.4	○	☆	☆	★												○								
	DNMG150408-MQ	15.5	12.7	4.76	5.16	0.8	○	☆	☆	★												○								
	DNMG150412-MQ	15.5	12.7	4.76	5.16	1.2	○	☆	☆	★												○								
	DNMG150416-MQ	15.5	12.7	4.76	5.16	1.6	○	☆	☆	★												○								
	DNMG150604-MQ	15.5	12.7	6.35	5.16	0.4	○	☆	☆	★												○								
	DNMG150608-MQ	15.5	12.7	6.35	5.16	0.8	○	☆	☆	★												○								
	DNMG150612-MQ	15.5	12.7	6.35	5.16	1.2	○	☆	☆	★												○								
Semi-finishing	DNMG150616-MQ	15.5	12.7	6.35	5.16	1.6	○	☆	☆	★												○								

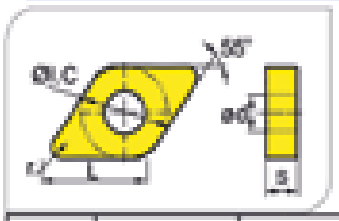
Applicable tool



★ Recommended grade ☆ Optional grade ○ Make to Order

A JUAN cutting tool

DN □□ (Negative)

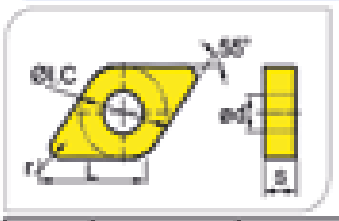


Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
							P						M							K											
		L	ø I.C	S	ø d	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
SG	DNMG110412-SG	11.6	9.525	4.76	3.81	1.2	☆	☆	★	★			○							○										
	DNMG150404-SG	15.5	12.7	4.76	5.16	0.4	☆	☆	★	★			○							○										
	DNMG150408-SG	15.5	12.7	4.76	5.16	0.8	☆	☆	★	★			○							○										
	DNMG150412-SG	15.5	12.7	4.76	5.16	1.2	☆	☆	★	★	○		○							○										
	DNMG150416-SG	15.5	12.7	4.76	5.16	1.6	☆	☆	★	★	○		○							○										
	DNMG150604-SG	15.5	12.7	6.35	5.16	0.4	☆	☆	★	★			○							○										
	DNMG150608-SG	15.5	12.7	6.35	5.16	0.8	☆	☆	★	★			○							○										
	DNMG150612-SG	15.5	12.7	6.35	5.16	1.2	☆	☆	★	★	○		○							○										
Semi-finishing	DNMG150616-SG	15.5	12.7	6.35	5.16	1.6	☆	☆	★	★	○		○							○										
MB	DNMG110412-MB	11.6	9.525	4.76	3.81	1.2								★	○			★	☆											
	DNMG150404-MB	15.5	12.7	4.76	5.16	0.4							○	★				★												
	DNMG150408-MB	15.5	12.7	4.76	5.16	0.8								★				★	☆											
	DNMG150412-MB	15.5	12.7	4.76	5.16	1.2								★	○			★	☆											
	DNMG150416-MB	15.5	12.7	4.76	5.16	1.6								★	○			★												
	DNMG150604-MB	15.5	12.7	6.35	5.16	0.4							○	★				★												
	DNMG150608-MB	15.5	12.7	6.35	5.16	0.8							○	★				★												
	DNMG150612-MB	15.5	12.7	6.35	5.16	1.2								★	○			★	☆											
Semi-finishing	DNMG150616-MB	15.5	12.7	6.35	5.16	1.6							○	★	○			★	☆											

Applicable tool

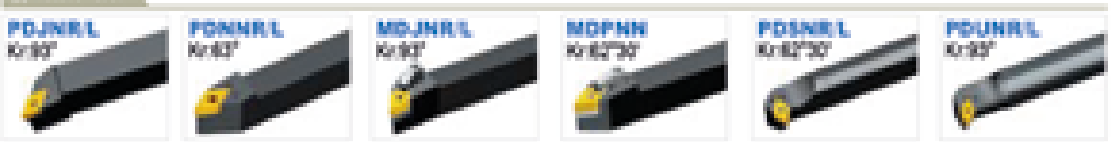
★ Recommended grade ☆ Optional grade ○ Make to Order

DN □□ (Negative)



Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
							P						M						K											
		L	φ I.C	S	φd	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
FG	DNMG110404-FG	11.6	9.525	4.76	3.81	0.4	☆	★	○					○						○										
	DNMG110408-FG	11.6	9.525	4.76	3.81	0.8	☆	★	○					○						○										
	DNMG110412-FG	11.6	9.525	4.76	3.81	1.2	☆	★	○					○						○										
	DNMG150404-FG	15.5	12.7	4.76	5.16	0.4	☆	★	○					○						○										
	DNMG150408-FG	15.5	12.7	4.76	5.16	0.8	☆	★	○					○						○										
	DNMG150412-FG	15.5	12.7	4.76	5.16	1.2	☆	★	○					○						○										
	DNMG150604-FG	15.5	12.7	6.35	5.16	0.4	☆	★	○					○						○										
	DNMG150608-FG	15.5	12.7	6.35	5.16	0.8	☆	★	○					○						○										
Finishing	DNMG150612-FG	15.5	12.7	6.35	5.16	1.2	☆	★	○					○						○										
FB	DNMG110404-FB	11.6	9.525	4.76	3.81	0.4							★	○			☆													
	DNMG110408-FB	11.6	9.525	4.76	3.81	0.8							★	○			☆													
	DNMG110412-FB	11.6	9.525	4.76	3.81	1.2							★	○			☆													
	DNMG150404-FB	15.5	12.7	4.76	5.16	0.4							★	○			☆													
	DNMG150408-FB	15.5	12.7	4.76	5.16	0.8							★	○			☆													
	DNMG150412-FB	15.5	12.7	4.76	5.16	1.2							★	○			☆													
	DNMG150604-FB	15.5	12.7	6.35	5.16	0.4							★	○			☆													
	DNMG150608-FB	15.5	12.7	6.35	5.16	0.8							★	○			☆													
Finishing	DNMG150612-FB	15.5	12.7	6.35	5.16	1.2							★	○			☆													

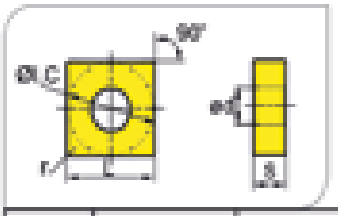
Applicable tool



★ Recommended grade ☆ Optional grade ○ Make to Order

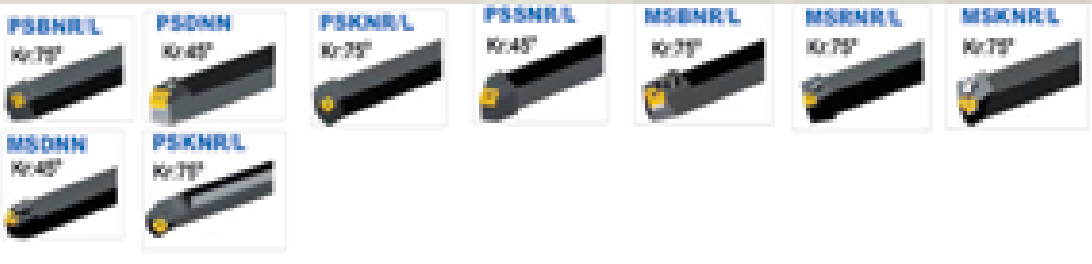
A JUAN cutting tool

SN □□ (Negative)



Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
							P						M						K											
		L	φI.C	S	φd	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
RG	SNMG120408-RG	12.7	12.7	4.76	5.15	0.8			○	☆	★	☆			○															
	SNMG120412-RG	12.7	12.7	4.76	5.16	1.2			○	☆	★	☆			○															
	SNMG120416-RG	12.7	12.7	4.76	5.16	1.6			○	☆	★	☆			○															
	SNMG150608-RG	15.875	15.875	6.35	6.35	0.8			○	☆	★	☆			○															
	SNMG150612-RG	15.875	15.875	6.35	6.35	1.2			○	☆	★	☆			○															
	SNMG150616-RG	15.875	15.875	6.35	6.35	1.6			○	☆	★	☆			○															
	SNMG150624-RG	15.875	15.875	6.35	6.35	2.4			○	☆	★	☆			○															
	SNMG190612-RG	19.05	19.05	6.35	7.94	1.2			○	☆	★	☆			○															
	SNMG190616-RG	19.05	19.05	6.35	7.94	1.6			○	☆	★	☆			○															
Roughing	SNMG190624-RG	19.05	19.05	6.35	7.94	2.4			○	☆	★	☆			○															
RG	SNMM120408-RG	12.7	12.7	4.76	5.15	0.8			○	☆	★	☆			○															
	SNMM120412-RG	12.7	12.7	4.76	5.16	1.2			○	☆	★	☆			○															
	SNMM120416-RG	12.7	12.7	4.76	5.16	1.6			○	☆	★	☆			○															
	SNMM150608-RG	15.875	15.875	6.35	6.35	0.8			○	☆	★	☆			○															
	SNMM150612-RG	15.875	15.875	6.35	6.35	1.2			○	☆	★	☆			○															
	SNMM150616-RG	15.875	15.875	6.35	6.35	1.6			○	☆	★	☆			○															
	SNMM190608-RG	19.05	19.05	6.35	7.94	0.8			○	☆	★	☆			○															
	SNMM190612-RG	19.05	19.05	6.35	7.94	1.2			○	☆	★	☆			○															
	SNMM190616-RG	19.05	19.05	6.35	7.94	1.6			○	☆	★	☆			○															
	SNMM190624-RG	19.05	19.05	6.35	7.94	2.4			○	☆	★	☆			○															
	SNMM250724-RG	25.4	25.4	7.94	9.12	2.4			○	☆	★	☆			○															
Roughing	SNMM250924-RG	25.4	25.4	7.94	9.12	2.4			○	☆	★	☆			○															
HTR	SNMX250724-HTR	25.4	25.4	7.94	9.12	2.4																								
	SNMX250924-HTR	25.4	25.4	7.94	9.12	2.4																								
	SNMX250732-HTR	25.4	25.4	7.94	9.12	3.2																								
	SNMX250932-HTR	25.4	25.4	7.94	9.12	3.2																								

Applicable to

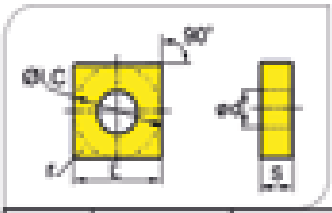


★ Recommended grade ☆ Optional grade ○ Make to Order

Common Turning İnserts

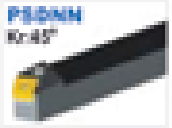
Cemented carbide insert

SN □□ (Negative)



Shape	Type	Dimension(mm)					Coated cemented carbide																Cemented carbide					
							P						M						K										
		L	ØI.C	S	Ød	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
RB	SNMG120408-RB	12.7	12.7	4.76	5.15	0.8							○	★				☆												
	SNMG120412-RB	12.7	12.7	4.76	5.15	1.2							○	★				☆												
	SNMG150608-RB	15.875	15.875	6.35	6.35	0.8							○	★				☆												
	SNMG150612-RB	15.875	15.875	6.35	6.35	1.2							○	★				☆												
	SNMG190612-RB	19.05	19.05	6.35	7.94	1.2							○	★				☆												
Roughing	SNMG190616-RB	19.05	19.05	6.35	7.94	1.6							○	★				☆												
RK	SNMG120412-RK	12.7	12.7	4.76	5.16	1.2				○										○		★		☆						
	SNMG150608-RK	15.875	15.875	6.35	6.35	0.8				○										○		★		☆						
	SNMG150612-RK	15.875	15.875	6.35	6.35	1.2				○										○		★		☆						
	SNMG190612-RK	19.05	19.05	6.35	7.94	1.2				○										○		★		☆						
Roughing																														
Straight slot	SNMG090304	9.525	9.525	3.18	3.81	0.4	○	○	☆	★												★	☆							
	SNMG090308	9.525	9.525	3.18	3.81	0.8	○	○	☆	★												★	☆							
	SNMG120404	12.7	12.7	4.76	5.16	0.4	○	○	☆	★												★	☆							
	SNMG120408	12.7	12.7	4.76	5.16	0.8	○	○	☆	★												★	☆							
	SNMG120412	12.7	12.7	4.76	5.16	1.2	○	○	☆	★												★	☆							
	SNMG120416	12.7	12.7	4.76	5.16	1.6	○	○	☆	★												★	☆							
	SNMG150608	15.875	15.875	6.35	6.35	0.8	○	○	☆	★												★	☆							
	SNMG150612	15.875	15.875	6.35	6.35	1.2			☆	★												★	☆							
	SNMG190612	19.05	19.05	6.35	7.94	1.2			☆	★														★	☆					
	SNMG190616	19.05	19.05	6.35	7.94	1.6			☆	★	○													★	☆					
	SNMG250724	25.4	25.4	7.94	9.12	2.4			☆	★	○													★	☆					
	SNMG250924	25.4	25.4	7.94	9.525	2.4			☆	★	○													★	☆					

Toolholder tool

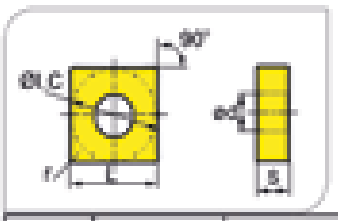


★ Recommended grade ☆ Optional grade ○ Make to Order

Common Turning İnserts

Cemented carbide insert

SN □□ (Negative)



Shape	Type	Dimension(mm)					Coated cemented carbide																Cemented carbide					
							P						M						K										
		L	ØI.C	S	Ød	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
Slotless	SNMA090304	9.525	9.525	3.18	3.81	0.4			☆		☆									○		★	☆							
	SNMA090308	9.525	9.525	3.18	3.81	0.8			☆		☆									○		★	☆							
	SNMA120404	12.7	12.7	4.76	5.16	0.4			☆		☆									○		★	☆							
	SNMA120408	12.7	12.7	4.76	5.16	0.8			☆		☆									○		★	☆		○					
	SNMA120416	12.7	12.7	4.76	5.16	1.6			☆		☆									○		★	☆							
	SNMA150608	15.875	15.875	6.35	6.35	0.8			☆		☆											★	☆		○					
	SNMA190612	19.05	19.05	6.35	7.94	1.2			☆		☆											★	☆		○					
	SNMA190616	19.05	19.05	6.35	7.94	1.6			☆		☆											★	☆		○					
MG	SNMG090304-MG	9.525	9.525	3.18	3.81	0.4	○		☆	★	○											○								
	SNMG090308-MG	9.525	9.525	3.18	3.81	0.8	○		☆	★	○											○								
	SNMG120404-MG	12.7	12.7	4.76	5.16	0.4	○		☆	★	○											○								
	SNMG120408-MG	12.7	12.7	4.76	5.16	0.8			☆	★	○											○								
	SNMG120412-MG	12.7	12.7	4.76	5.16	1.2	○		☆	★	○											○								
	SNMG120416-MG	12.7	12.7	4.76	5.16	1.6			☆	★	○											○								
	SNMG150608-MG	15.875	15.875	6.35	6.35	0.8			☆	★	○											○								
	SNMG150612-MG	15.875	15.875	6.35	6.35	1.2			☆	★	○											○								
	SNMG150616-MG	15.875	15.875	6.35	6.35	1.6			☆	★	○											○								
	SNMG190612-MG	19.05	19.05	6.35	7.94	1.2			☆	★	○											○								
Two-Faceting	SNMG190616-MG	19.05	19.05	6.35	7.94	1.6			☆	★	○											○								
SG	SNMG120404-SG	12.7	12.7	4.76	5.16	0.4	☆		☆	★	○																			
	SNMG120408-SG	12.7	12.7	4.76	5.16	0.8	☆		☆	★	○																			
	SNMG120412-SG	12.7	12.7	4.76	5.16	1.2	☆		☆	★	○																			
	SNMG120416-SG	12.7	12.7	4.76	5.16	1.6	☆		☆	★	○																			
	SNMG150612-SG	15.875	15.875	6.35	6.35	1.2	☆		☆	★	○																			
Two-Faceting	SNMG150616-SG	15.875	15.875	6.35	6.35	1.6	☆		☆	★	○																			

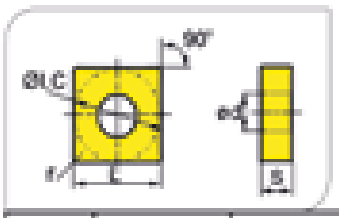
Applicable for

★ Recommended grade ☆ Optional grade ○ Make to Order

Common Turning İnserts

Cemented carbide insert

SN □□ (Negative)



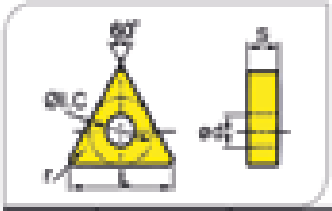
Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
							P						M						K											
		L	φI.C	S	φd	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
MS	SNMG120404-MS	12.7	12.7	4.76	5.16	0.4							○	★				☆												
	SNMG120408-MS	12.7	12.7	4.76	5.16	0.8							○	★				☆												
	SNMG120412-MS	12.7	12.7	4.76	5.16	1.2							○	★				☆												
	SNMG120416-MS	12.7	12.7	4.76	5.16	1.6							○	★				☆												
	SNMG150612-MS	15.875	15.875	6.35	6.35	1.2							○	★				☆												
	SNMG150616-MS	15.875	15.875	6.35	6.35	1.6							○	★				☆												
Semi-finishing	SNMG190615-MS	19.05	19.05	6.35	7.94	1.6																								
PG	SNMG120408-PG	12.7	12.7	4.76	5.16	0.8	☆	★	○	☆										○										
	SNMG120412-PG	12.7	12.7	4.76	5.16	1.2	☆	★	○	☆										○										
Finishing																														
FS	SNMG090304-FS	9.525	9.525	3.18	3.81	0.4							○	★				☆												
	SNMG090308-FS	9.525	9.525	3.18	3.81	0.8							○	★				☆												
	SNMG090312-FS	9.525	9.525	3.18	3.81	1.2							○	★				☆												
	SNMG120404-FS	12.7	12.7	4.76	5.16	0.4							○	★				☆												
	SNMG120408-FS	12.7	12.7	4.76	5.16	0.8							○	★				☆												
	SNMG120412-FS	12.7	12.7	4.76	5.16	1.2							○	★				☆												
	SNMG150608-FS	15.875	15.875	6.35	6.35	0.8							○	★				☆												
Finishing	SNMG150612-FS	15.875	15.875	6.35	6.35	1.2							○	★				☆												

Applicable tool

★ Recommended grade ☆ Optional grade ○ Make to Order

A JUAN cutting tool

TN □□ (Negative)



Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
							P						M						K											
		L	φ I.C	S	φd	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
RG	TNMG160408-RG	16.5	9.525	4.76	3.81	0.8			☆	☆	☆	★																		
	TNMG160412-RG	16.5	9.525	4.76	3.81	1.2			☆	☆	☆	★																		
	TNMG220408-RG	22	12.7	4.76	5.16	0.8			☆	☆	☆	★																		
	TNMG220412-RG	22	12.7	4.76	5.16	1.2			☆	☆	☆	★																		
	TNMG220416-RG	22	12.7	4.76	5.16	1.6			○	○	☆	★																		
	TNMG270608-RG	27.515	15.875	6.35	6.35	0.8			○	○	☆	★																		
	TNMG270612-RG	27.515	15.875	6.35	6.35	1.2			○	○	☆	★																		
Roughing	TNMG270616-RG	27.515	15.875	6.35	6.35	1.6			○	○	☆	★																		
RG	TNMM160408-RG	16.5	9.525	4.76	3.81	0.8			☆	☆	☆	★																		
	TNMM160412-RG	16.5	9.525	4.76	3.81	1.2			☆	☆	☆	★																		
	TNMM220408-RG	22	12.7	4.76	5.16	0.8			☆	☆	☆	★																		
	TNMM220412-RG	22	12.7	4.76	5.16	1.2			☆	☆	☆	★																		
	TNMM220416-RG	22	12.7	4.76	5.16	1.6			○	○	☆	★																		
	TNMM270612-RG	27.515	15.875	6.35	6.35	1.2			○	○	☆	★																		
Roughing	TNMM270616-RG	27.515	15.875	6.35	6.35	1.6			○	○	☆	★																		
RR	TNMG160408-RR	16.5	9.525	4.76	3.81	0.8							○	★	☆			☆												
	TNMG160412-RR	16.5	9.525	4.76	3.81	1.2							○	★	☆			☆												
	TNMG220408-RR	22	12.7	4.76	5.16	0.8							○	★	☆			☆												
Roughing	TNMG220412-RR	22	12.7	4.76	5.16	1.2							○	★	☆			☆												

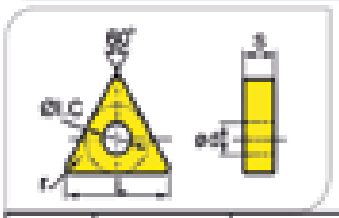
Applicable tool

★ Recommended grade ☆ Optional grade ○ Make to Order

Common Turning İnserts

Cemented carbide insert

TN □□ (Negative)



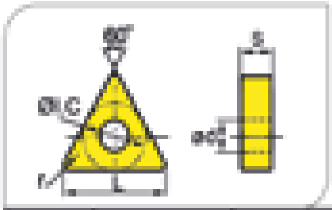
Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
							P						M						K											
		l	φ i.c	S	φ d	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
8X	TNMG160408-8X	16.5	9.525	4.76	3.81	0.8			○													★		○						
	TNMG160412-8X	16.5	9.525	4.76	3.81	1.2			○													★		○						
	TNMG220408-8X	22	12.7	4.76	5.16	0.8			○													★		○						
	TNMG220412-8X	22	12.7	4.76	5.16	1.2			○													★		○						
Roughing	TNMG220416-8X	22	12.7	4.76	5.16	1.6			○													★								
Slotless	TNMA160404	16.5	9.525	4.76	3.81	0.4	○	○	☆	★												★	☆							
	TNMA160408	16.5	9.525	4.76	3.81	0.8	○	○	☆	★												★	☆							
	TNMA160412	16.5	9.525	4.76	3.81	1.2	○	○	☆	★												★	☆							
	TNMA160416	16.5	9.525	4.76	3.81	1.6	○	○	☆	★												★	☆							
	TNMA220404	22	12.7	4.76	5.16	0.4	○	○	☆	★												★	☆							
	TNMA220408	22	12.7	4.76	5.16	0.8	○	○	☆	★												★	☆							
	TNMA270616	27.515	15.875	6.35	6.35	1.6						☆												★						
Straight slot	TNMG110308	11	6.35	3.18	2.36	0.8	○	○	☆	★												★	☆							
	TNMG160404	16.5	9.525	4.76	3.81	0.4	○	○	☆	★												★	☆							
	TNMG160408	16.5	9.525	4.76	3.81	0.8	○	○	☆	★												★	☆							
	TNMG160412	16.5	9.525	4.76	3.81	1.2	○	○	☆	★												★	☆							
	TNMG220404	22	12.7	4.76	5.16	0.4	○	○	☆	★												★	☆							
	TNMG220408	22	12.7	4.76	5.16	0.8	○	○	☆	★												★	☆							
	TNMG220412	22	12.7	4.76	5.16	1.2	○	○	☆	★												★	☆							
	TNMG220416	22	12.7	4.76	5.16	1.6			☆	★												★	☆							
	TNMG270612	27.515	15.875	6.35	6.35	1.2			☆	★	○													★	☆					
	TNMG270616	27.515	15.875	6.35	6.35	1.6			☆	★	○													★	☆					
	TNMG330916	33	19.05	9.525	7.94	1.6			☆	★	○													★	☆					
	TNMG330924	33	19.05	9.525	7.94	2.4			☆	★	○													★	☆					

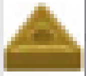
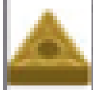
Applicable tool

★ Recommended grade ☆ Optional grade ○ Make to Order

A
JUAN cutting tool

TN□□ (Negative)

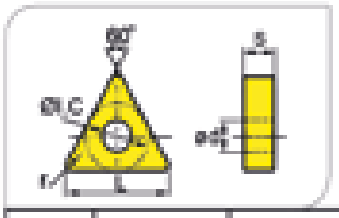


Shape	Type	Dimension(mm) L	φI.C	S	φd	r	Coated cemented carbide P 7100	7105	7110	7115	7120	7125	M 5015	5025	5035	5045	5330	5340	5350	K 6100	6105	6110	6115	6125	6135	Cemented carbide				
MG	TNMG110304-MG	11	6.35	3.18	2.26	0.4		☆	☆	★												☆								
	TNMG110308-MG	11	6.35	3.18	2.26	0.8		☆	☆	★	○											☆								
	TNMG160404-MG	16.5	9.525	4.76	3.81	0.4		☆	☆	★												☆								
	TNMG160408-MG	16.5	9.525	4.76	3.81	0.8		☆	☆	★												☆								
	TNMG160412-MG	16.5	9.525	4.76	3.81	1.2		☆	☆	★	○											☆								
	TNMG220408-MG	22	12.7	4.76	5.16	0.8		☆	☆	★												☆								
	TNMG220412-MG	22	12.7	4.76	5.16	1.2		○	☆	★	○											☆								
Semi-finishing	TNMG220416-MG	22	12.7	4.76	5.16	1.6		○	☆	★	○											☆								
SG	TNMG160404-SG	16.5	9.525	4.76	3.81	0.4	○	☆	☆	★																				
	TNMG160408-SG	16.5	9.525	4.76	3.81	0.8	○	☆	☆	★																				
	TNMG160412-SG	16.5	9.525	4.76	3.81	1.2	○	☆	☆	★	★																			
	TNMG220408-SG	22	12.7	4.76	5.16	0.8	○	☆	☆	★	★																			
	TNMG220412-SG	22	12.7	4.76	5.16	1.2	○	○	☆	★	★																			
Semi-finishing	TNMG220416-SG	22	12.7	4.76	5.16	1.6	○	○	☆	★	○																			
MS	TNMG110304-MS	11	6.35	3.18	2.26	0.4							○	★				★												
	TNMG110308-MS	11	6.35	3.18	2.26	0.8							○	★				★												
	TNMG160404-MS	16.5	9.525	4.76	3.81	0.4							○	★				★												
	TNMG160408-MS	16.5	9.525	4.76	3.81	0.8							○	★				★												
	TNMG160412-MS	16.5	9.525	4.76	3.81	1.2							○	★				★												
	TNMG220408-MS	22	12.7	4.76	5.16	0.8							○	★				★												
	TNMG220412-MS	22	12.7	4.76	5.16	1.2							○	★				★												
Semi-finishing	TNMG220416-MS	22	12.7	4.76	5.16	1.6							○	★				★												

Applicable tool

★ Recommended grade ☆ Optional grade ○ Make to Order

TN□□ (Negative)



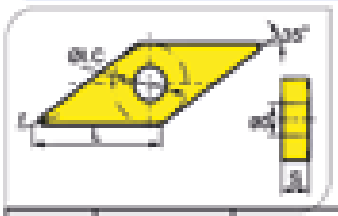
Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide				
							P						M						K										
		L	φ I.C	S	φ d	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135					
FG	TN8021604-FG	16.5	9.525	4.76	3.81	0.4	☆	★	○	☆																			
	TN8021608-FG	16.5	9.525	4.76	3.81	0.8	☆	★	○	☆																			
	TN8021612-FG	16.5	9.525	4.76	3.81	1.2	☆	★	○	☆																			
	TN8022208-FG	22	12.7	4.76	5.16	0.8	☆	★	○	☆																			
Finishing	TN8022212-FG	22	12.7	4.76	5.16	1.2	☆	★	○	☆																			
FB	TN8021104-FB	11	6.35	3.18	2.26	0.4								★			☆													
	TN8021108-FB	11	6.35	3.18	2.26	0.8								★			☆													
	TN8021604-FB	16.5	9.525	4.76	3.81	0.4								★			☆													
	TN8021608-FB	16.5	9.525	4.76	3.81	0.8								★			☆													
	TN8021612-FB	16.5	9.525	4.76	3.81	1.2								★			☆													
	TN8022204-FB	22	12.7	4.76	5.16	0.4								★			☆													
	TN8022208-FB	22	12.7	4.76	5.16	0.8								★			☆													
Finishing	TN8022212-FB	22	12.7	4.76	5.16	1.2								★			☆													

Applicable tool

★ Recommended grade ☆ Optional grade ○ Make to Order

A JUAN cutting tool

VN □□ (Negative)

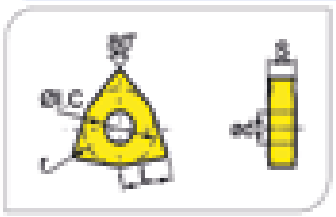


Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
							P						M						K											
		L	φ I.C	S	φ d	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
Straight str.	VNMG160404	16.6	9.525	4.76	3.81	0.4	○	☆	☆	★										○		★								
	VNMG160408	16.6	9.525	4.76	3.81	0.8	○	☆	☆	★										○		★								
MG	VNMG160408-MG	16.6	9.525	4.76	3.81	0.8	○	☆	☆	★																				
	VNMG160412-MG	16.6	9.525	4.76	3.81	1.2	○	☆	☆	★																				
Semi-finishing																														
MB	VNMG160404-MB	16.6	9.525	4.76	3.81	0.4							○	★				★												
	VNMG160408-MB	16.6	9.525	4.76	3.81	0.8							○	★				★												
Semi-finishing																														
FG	VNMG160404-FG	16.6	9.525	4.76	3.81	0.4	○	☆	☆	★			○																	
	VNMG160408-FG	16.6	9.525	4.76	3.81	0.8	○	☆	☆	★	○		○																	
Finishing																														
FB	VNMG160404-FB	16.6	9.525	4.76	3.81	0.4							○	★																
	VNMG160408-FB	16.6	9.525	4.76	3.81	0.8							○	★																
	VNMG160412-FB	16.6	9.525	4.76	3.81	1.2							○	★																
Finishing																														

Applicable tool

★ Recommended grade ☆ Optional grade ○ Make to Order

WN □□ (Negative)



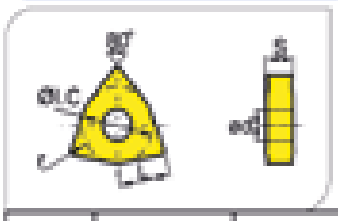
Shape	Type	Dimension(mm)					Coated cemented carbide																			Cemented carbide					
							P						M							K											
		L	φ I.C	B	φ d	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
RG	WNMG060408-RG	6.5	9.525	4.76	3.81	0.8			○	☆	☆	★																			
	WNMG060412-RG	6.5	9.525	4.76	3.81	1.2			○	☆	☆	★																			
	WNMG080408-RG	8.7	12.7	4.76	5.16	0.8			○	☆	☆	★																			
	WNMG080412-RG	8.7	12.7	4.76	5.16	1.2			○	☆	☆	★																			
Roughing	WNMG080416-RG	8.7	12.7	4.76	5.16	1.6			○	☆	☆	★																			
RR	WNMG060408-RR	6.5	9.525	4.76	3.81	0.8							○	★					☆												
	WNMG060412-RR	6.5	9.525	4.76	3.81	1.2							○	★					☆												
	WNMG080408-RR	8.7	12.7	4.76	5.16	0.8							○	★					☆												
	WNMG080412-RR	8.7	12.7	4.76	5.16	1.2							○	★					☆												
Roughing	WNMG080416-RR	8.7	12.7	4.76	5.16	1.6							○	★					☆												
RX	WNMG060412-RX	6.5	9.525	4.76	3.81	1.2			○													★	☆	○							
	WNMG080408-RX	8.7	12.7	4.76	5.16	0.8			○													★	☆	○							
	WNMG080412-RX	8.7	12.7	4.76	5.16	1.2			○													★	☆	○							
Roughing	WNMG080416-RX	8.7	12.7	4.76	5.16	1.6			○													★	☆								
Stdless	WNMA060308	6.5	9.525	3.97	3.81	0.8	○	○	☆	★												★	☆	○							
	WNMA060404	6.5	9.525	4.76	3.81	0.4	○	○	☆	★												★	☆								
	WNMA060408	6.5	9.525	4.76	3.81	0.8	○	○	☆	★												★	☆								
	WNMA060412	6.5	9.525	4.76	3.81	1.2	○	○	☆	★												★	☆								
	WNMA080404	8.7	12.7	4.76	5.16	0.4	○	○	☆	★												★	☆								
	WNMA080408	8.7	12.7	4.76	5.16	0.8	○	○	☆	★												★	☆								
	WNMA080412	8.7	12.7	4.76	5.16	1.2	○	○	☆	★												★	☆								
	WNMA080416	8.7	12.7	4.76	5.16	1.6	○	○	☆	★												★	☆	○							

Applicable tool

★ Recommended grade ☆ Optional grade ○ Make to Order

A JUAN cutting tool

WN □□ (Negative)

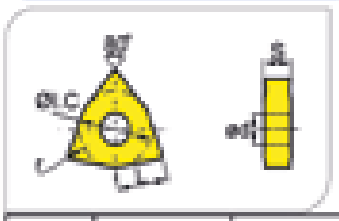


Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
							P						M						K											
		L	ø l.C	S	ø d	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
Straight slot	WNMG060408	6.5	9.525	4.76	3.81	0.8	○		☆	★										☆		★								
	WNMG060412	6.5	9.525	4.76	3.81	1.2			☆	★	○									☆		★								
	WNMG080408	8.7	12.7	4.76	5.16	0.8	○		☆	★										☆		★								
	WNMG080412	8.7	12.7	4.76	5.16	1.2			☆	★	○									☆		★		○						
	WNMG080416	8.7	12.7	4.76	5.16	1.6			☆	★	○									☆		★		○						
RG	WNMG060408-RG	6.5	9.525	4.76	3.81	0.8	○		☆	★										○		☆								
	WNMG060412-RG	6.5	9.525	4.76	3.81	1.2	○		☆	★										○		☆								
	WNMG080404-RG	8.7	12.7	4.76	5.16	0.4	○		☆	★										○		☆								
	WNMG080408-RG	8.7	12.7	4.76	5.16	0.8	○		☆	★										○		☆								
	WNMG080412-RG	8.7	12.7	4.76	5.16	1.2			☆	★										○		☆								
	WNMG080416-RG	8.7	12.7	4.76	5.16	1.6			☆	★										○		☆								
Set-finishing	WNMG080608-RG	8.7	12.7	6.35	5.16	0.8			☆	★																				
MG	WNMG060404-MG	6.5	9.525	3.97	3.81	0.4							○	★				☆												
	WNMG060408-MG	6.5	9.525	3.97	3.81	0.8							○	★				☆												
	WNMG060412-MG	6.5	9.525	3.97	3.81	1.2							○	★				☆												
	WNMG060404-MG	6.5	9.525	4.76	3.81	0.4							○	★				☆												
	WNMG060408-MG	6.5	9.525	4.76	3.81	0.8							○	★				☆												
	WNMG080404-MG	8.7	12.7	4.76	5.16	0.4							○	★				☆												
	WNMG080408-MG	8.7	12.7	4.76	5.16	0.8							○	★				☆												
Set-finishing	WNMG080412-MG	8.7	12.7	4.76	5.16	1.2							○	★				☆												

Applicable tool

★ Recommended grade ☆ Optional grade ○ Make to Order

WN □□ (Negative)



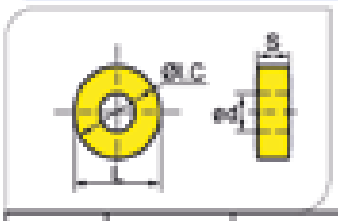
Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
							P						M						K											
		L	φ I.C	S	φ d	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
FG	WNMG060404-FG	6.5	9.525	3.97	3.81	0.4	☆	★	○	☆																				
	WNMG060408-FG	6.5	9.525	3.97	3.81	0.8	☆	★	○	☆																				
	WNMG060412-FG	6.5	9.525	3.97	3.81	1.2	☆	★	○	☆																				
	WNMG080404-FG	6.5	9.525	4.76	3.81	0.4	☆	★	○	☆																				
	WNMG080408-FG	6.5	9.525	4.76	3.81	0.8	☆	★	○	☆																				
	WNMG080412-FG	6.5	9.525	4.76	3.81	1.2	☆	★	○	☆																				
	WNMG090404-FG	8.7	12.7	4.76	5.16	0.4	☆	★	○	☆																				
	WNMG090408-FG	8.7	12.7	4.76	5.16	0.8	☆	★	○	☆																				
Finishing	WNMG090412-FG	8.7	12.7	4.76	5.16	1.2	☆	★	○	☆																				
FB	WNMG060404-FB	6.5	9.525	3.97	3.81	0.4							○	★			☆													
	WNMG060408-FB	6.5	9.525	3.97	3.81	0.8							○	★			☆													
	WNMG060412-FB	6.5	9.525	3.97	3.81	1.2							○	★			☆													
	WNMG080404-FB	6.5	9.525	4.76	3.81	0.4							○	★			☆													
	WNMG080408-FB	6.5	9.525	4.76	3.81	0.8							○	★			☆													
	WNMG090404-FB	8.7	12.7	4.76	5.16	0.4							○	★			☆													
Finishing	WNMG090408-FB	8.7	12.7	4.76	5.16	0.8							○	★			☆													

Toolholder

★ Recommended grade ☆ Optional grade ○ Make to Order

A JUAN cutting tool

RN □□ (Negative)



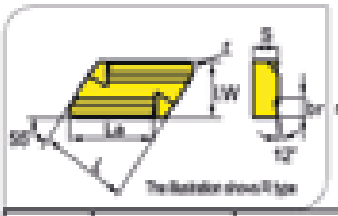
Shape	Type	Dimension(mm)				Coated cemented carbide																		Cemented carbide					
						P						M							K										
		L	ø I.C	S	ød	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
Steliless	RNMA120400	12.7	12.7	4.76	5.16			☆	☆												☆		○						

Applicable tool

MRGNR/L

MRSNN

KN □□ (Negative)



Shape	Type	Dimension(mm)					Coated cemented carbide																		cemented carbide					
							P						M						K											
		L	ø I.C	S	ød	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
	KNMX160405L12	16.0	16.2	9.525	4.76	0.5			☆		○																			
	KNMX160405R12	16.0	16.2	9.525	4.76	0.5			☆		○																			
	KNMX160410L12	16.0	16.2	9.525	4.76	1			☆		○																			
	KNMX160410R12	16.0	16.2	9.525	4.76	1			☆		○																			
	KNMX160405L11	16.0	16.2	9.525	4.76	0.5			☆		○																			
India tools	KNMX160405R11	16.0	16.2	9.525	4.76	0.5			☆		○																			

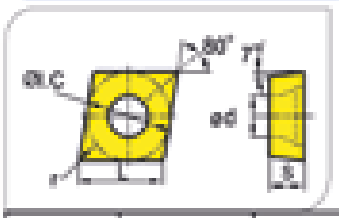
Applicable tool

CKJNR/L
Kr:93°

CKNNR/L
Kr:93°

★ Recommended grade ☆ Optional grade ○ Make to Order

CN □□ (Negative)



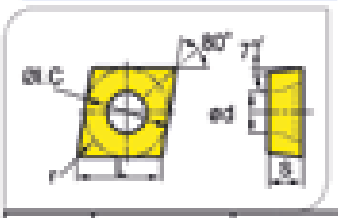
Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
							P						M						K											
		L	φI.C	S	φd	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
RN	CCMT09T308-RN	9.7	9.525	3.97	4.4	3.8	○	○	☆	★														☆						
	CCMT091312-RN	9.7	9.525	3.97	4.4	1.2	○	○	☆	★														☆						
	CCMT120408-RN	12.9	12.7	4.76	5.56	0.8	○	○	☆	★														☆						
Roughing	CCMT120412-RN	12.9	12.7	4.76	5.56	1.2	○	○	☆	★														☆						
MN	CCMT060204-MN	6.4	6.35	2.38	2.8	0.4	○	○	☆	★				○								☆								
	CCMT060208-MN	6.4	6.35	2.38	2.8	0.8	○	○	☆	★				○								☆								
	CCMT091304-MN	9.7	9.525	3.97	4.4	0.4	○	○	☆	★				○								☆								
	CCMT091308-MN	9.7	9.525	3.97	4.4	0.8	○	○	☆	★				○								☆								
	CCMT120404-MN	12.9	12.7	4.76	5.56	0.4	○	○	☆	★				○								☆								
	CCMT120408-MN	12.9	12.7	4.76	5.56	0.8	○	○	☆	★				○								☆								
Semi-finishing	CCMT120412-MN	12.9	12.7	4.76	5.56	1.2	○	○	☆	★				○								☆								

Applicable tool

★ Recommended grade ☆ Optional grade ○ Make to Order

A JUAN cutting tool

CC □□ (Positive)

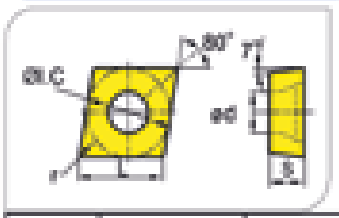


Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
							P						M						K											
		L	φI.C	S	φd	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135					
FN																														
	00070603O2-FN	6.4	6.35	2.38	2.8	0.2	☆	★	☆																					
	00070603O4-FN	6.4	6.35	2.38	2.8	0.4	☆	★	☆																					
	00070603O8-FN	6.4	6.35	2.38	2.8	0.8	☆	★	☆																					
	00070913O2-FN	9.7	9.525	3.97	4.4	0.2	☆	★	☆																					
	00070913O4-FN	9.7	9.525	3.97	4.4	0.4	☆	★	☆																					
	00070913O8-FN	9.7	9.525	3.97	4.4	0.8	☆	★	☆																					
	00071204O4-FN	12.9	12.7	4.76		0.4	☆	★	☆																					
Finishing	00071204O8-FN	12.9	12.7	4.76	.56	0.8	☆	★	☆																					

Application tool

★ Recommended grade ☆ Optional grade ○ Make to Order

CC □□ (Positive)



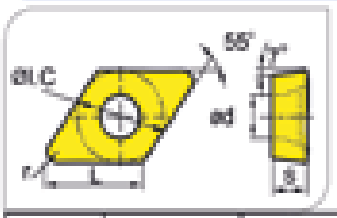
Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
							P						M						K											
		L	φI.C	S	φd	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
CA	CCGX060202-CA	6.4	6.35	2.38	2.8	0.2																								
	CCGX060204-CA	6.4	6.35	2.38	2.8	0.4																								
	CCGX060208-CA	6.4	6.35	2.38	2.8	0.8																								
	CCGX091302-CA	9.7	9.525	3.97	4.4	0.2																								
	CCGX091304-CA	9.7	9.525	3.97	4.4	0.4																								
	CCGX091308-CA	9.7	9.525	3.97	4.4	0.8																								
	CCGX120402-CA	12.9	12.7	4.76	5.56	0.2																								
	CCGX120404-CA	12.9	12.7	4.76	5.56	0.4																								
	CCGX120408-CA	12.9	12.7	4.76	5.56	0.8																								
Arrow setting	CCGX120412-CA	12.9	12.7	4.76	5.56	1.2																								
Slotless	CCGW060204	6.4	6.35	2.38	2.8	0.4	○	○	☆	★												★	☆							
	CCGW091304	9.7	9.525	3.97	4.4	0.4	○	○	☆	★												★	☆							
	CCGW091308	9.7	9.525	3.97	4.4	0.8	○	○	☆	★												★	☆							
	CCGW120404	12.9	12.7	4.76	5.56	0.4	○	○	☆	★												★	☆							
	CCGW120408	12.9	12.7	4.76	5.56	0.8	○	○	☆	★												★	☆							

Applicable tool

★ Recommended grade ☆ Optional grade ○ Make to Order

A JUAN cutting tool

DC □□ (Positive)

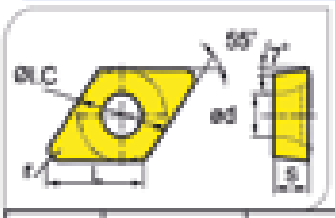


Shape	Type	Dimension(mm)					Coated cemented carbide																Cemented carbide					
							P						M						K									
		L	g i. C	S	g-d	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135					
RH	DCMT070208-RH	7.8	6.35	2.38	2.8	0.8	○		☆	★		☆										○								
	DCMT070212-RH	7.8	6.35	2.38	2.8	1.2	○		☆	★		☆										○								
	DCMT111304-RH	11.6	9.525	3.97	4.4	0.4	○		☆	★		☆										○								
	DCMT111308-RH	11.6	9.525	3.97	4.4	0.8	○		☆	★		☆										○								
Roughing	DCMT111312-RH	11.6	9.525	3.97	4.4	1.2	○		☆	★		☆										○								
MH	DCMT070204-MH	7.8	6.35	2.38	2.8	0.4	○		☆	★												○								
	DCMT070208-MH	7.8	6.35	2.38	2.8	0.8	○		☆	★												○								
	DCMT111304-MH	11.6	9.525	3.97	4.4	0.4	○		☆	★												○								
	DCMT111308-MH	11.6	9.525	3.97	4.4	0.8	○		v	★												○								
Semi-finishing	DCMT111312-MH	11.6	9.525	3.97	4.4	1.2	○		☆	★												○								
FH	DCGT070202-FH	7.8	6.35	2.38	2.8	0.2	☆	★	☆													○								
	DCGT070204-FH	7.8	6.35	2.38	2.8	0.4	☆	★	☆													○								
	DCGT070208-FH	7.8	6.35	2.38	2.8	0.8	☆	★	☆													○								
	DCGT091302-FH	11.6	9.525	3.97	4.4	0.2	☆	★	☆													○								
	DCGT091304-FH	11.6	9.525	3.97	4.4	0.4	☆	★	☆													○								
Finishing	DCGT091308-FH	11.6	9.525	3.97	4.4	0.8	☆	★	☆													○								

Applicable tool

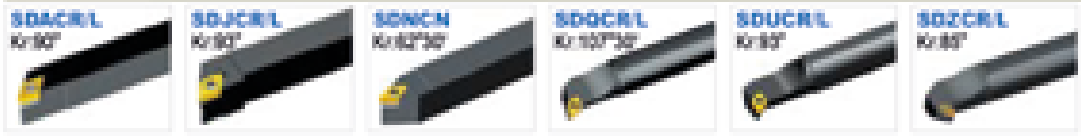
★ Recommended grade ☆ Optional grade ○ Make to Order

DC □□ (Positive)



Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide				
							P						M						K										
		L	ø I.C	S	ø d	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135					
CA	DCGT070202-CA	7.8	6.35	2.38	2.8	0.2																							
	DCGT070204-CA	7.8	6.35	2.38	2.8	0.4																							
	DCGT11T302-CA	11.6	9.525	3.97	4.4	0.2																							
	DCGT11T304-CA	11.6	9.525	3.97	4.4	0.4																							
Narrow variety	DCGT11T308-CA	11.6	9.525	3.97	4.4	0.8																							
HA	DCGT070204-HA	7.8	6.35	2.38	2.8	0.4																							
Standard	DCGW070204	7.8	6.35	2.38	2.8	0.4	○	○	☆	★												★		○					
	DCGW11T304	11.6	9.525	3.97	4.4	0.4	○	○	☆	★												★		○					
	DCGW11T308	11.6	9.525	3.97	4.4	0.8	○	○	☆	★												★		○					

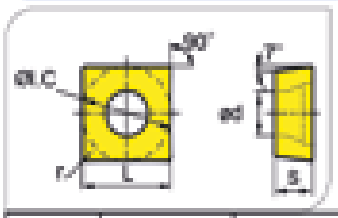
Applicable tool



★ Recommended grade ☆ Optional grade ○ Make to Order

A JUAN cutting tool

SC □□ (Positive)

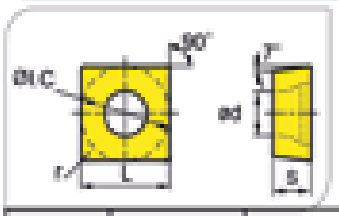


Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide				
							P						M						K										
		L	ø I. C	S	ød	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135					
RH	SOET09T308-RH	9.525	9.525	3.97	4.4	0.8			☆	★	☆	☆										○							
	SOET09T312-RH	9.525	9.525	3.97	4.4	1.2			☆	★	☆	☆										○							
	SOET120408-RH	12.7	12.7	4.76	5.56	0.8			☆	★	☆	☆										○							
Roughing	SOET120412-RH	12.7	12.7	4.76	5.56	1.2			☆	★	☆	☆										○							
MH	SOET09T304-MH	9.525	9.525	3.97	4.4	0.4	○		☆	★												○							
	SOET09T308-MH	9.525	9.525	3.97	4.4	0.8	○		☆	★												○							
	SOET120404-MH	12.7	12.7	4.76	5.56	0.4	○		☆	★												○							
	SOET120408-MH	12.7	12.7	4.76	5.56	0.8	○		☆	★												○							
Semi-finishing	SOET120412-MH	12.7	12.7	4.76	5.56	1.2	○		☆	★																			
FH	SOET09T302-FH	9.525	9.525	3.97	4.4	0.2	☆	★	☆	☆										○									
	SOET09T304-FH	9.525	9.525	3.97	4.4	0.4	☆	★	☆	☆										○									
	SOET09T304-FH	9.525	9.525	3.97	4.4	0.8	☆	★	☆	☆										○									
Finishing																													

Applicable tool

★ Recommended grade ☆ Optional grade ○ Make to Order

SC □□ (Positive)



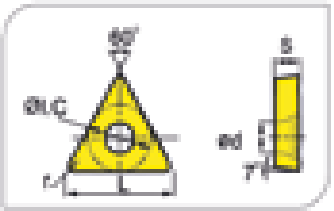
Shape	Type	Dimension (mm)					Coated cemented carbide																Cemented carbide					
							P						M						K										
		L	φ I.C	S	φd	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135					
CA	SCGX09T302-CA	9.525	9.525	3.97	4.4	0.2																							
	SCGX09T304-CA	9.525	9.525	3.97	4.4	0.4																							
	SCGX09T308-CA	9.525	9.525	3.97	4.4	0.8																							
	SCGX120404-CA	12.7	12.7	4.76	5.56	0.4																							
Button cutting	SCGX120408-CA	12.7	12.7	4.76	5.56	0.8																							
Slotless	SCGW09T302	9.525	9.525	3.97	4.4	0.2	○	○	☆	★												★		○					
	SCGW09T304	9.525	9.525	3.97	4.4	0.4	○	○	☆	★												★		○					
	SCGW09T308	9.525	9.525	3.97	4.4	0.8	○	○	☆	★												★		○					
	SCGW120404	12.7	12.7	4.76	5.56	0.4	○	○	☆	★												★		○					
	SCGW120408	12.7	12.7	4.76	5.56	0.8	○	○	☆	★												★		○					
	SCGW120412	12.7	12.7	4.76	5.56	1.2	○	○	☆	★												★		○					

Applicable tool

★ Recommended grade ☆ Optional grade ○ Make to Order

A JUAN cutting tool

TC □□ (Positive)

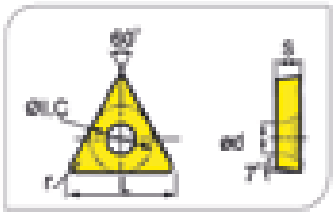


Shape	Type	Dimension(mm)					Coated cemented carbide																			Cemented carbide					
							P						M						K												
		L	ØI.C	S	Ød	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
RH	TCMT090208-RH	9.6	5.56	2.38	2.5	0.8			○	☆	☆	★										○									
	TCMT110208-RH	11.0	6.35	2.38	2.8	0.8			○	☆	☆	★										○									
	TCMT110212-RH	11.0	6.35	2.38	2.8	1.2			○	☆	☆	★										○									
	TCMT167308-RH	16.5	9.525	3.97	4.4	0.8			○	☆	☆	★										○									
Roughing	TCMT167312-RH	16.5	9.525	3.97	4.4	1.2			○	☆	☆	★										○									
RH	TCMT090204-RH	9.6	5.56	2.38	2.5	0.4	○	☆	☆	★												○									
	TCMT090208-RH	9.6	5.56	2.38	2.5	0.8	○	☆	☆	★												○									
	TCMT110204-RH	11.0	6.35	2.38	2.8	0.4	○	☆	☆	★												○									
	TCMT110208-RH	11.0	6.35	2.38	2.8	0.8	○	☆	☆	★												○									
	TCMT167304-RH	16.5	9.525	3.97	4.4	0.4	○	☆	☆	★												○									
	TCMT167308-RH	16.5	9.525	3.97	4.4	0.8	○	☆	☆	★												○									
Semi-finishing	TCMT167312-RH	16.5	9.525	3.97	4.4	1.2	○	☆	☆	★												○									

Applicable tool

★ Recommended grade ☆ Optional grade ○ Make to Order

TC □□ (Positive)



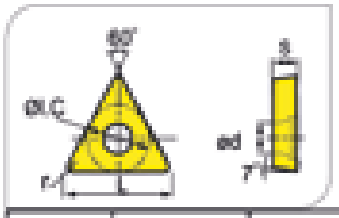
Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
							P						M						K											
		L	φI.C	S	φd	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
FN	TCET06T104-FN	6.4	3.97	1.98	2.2	0.4	☆	★	○					○						○										
	TCET06T108-FN	6.4	3.97	1.98	2.2	0.8	☆	★	○					○						○										
	TCET090202-FN	9.6	5.56	2.38	2.5	0.2	☆	★	○					○						○										
	TCET090204-FN	9.6	5.56	2.38	2.5	0.4	☆	★	○					○						○										
	TCET090208-FN	9.6	5.56	2.38	2.5	0.8	☆	★	○					○						○										
	TCET110202-FN	11.0	6.35	2.38	2.8	0.2	☆	★	○					○						○										
	TCET110204-FN	11.0	6.35	2.38	2.8	0.4	☆	★	○					○						○										
	TCET110208-FN	11.0	6.35	2.38	2.8	0.8	☆	★	○					○						○										
	TCET16T302-FN	16.5	9.525	3.97	4.4	0.2	☆	★	○					○						○										
	TCET16T304-FN	16.5	9.525	3.97	4.4	0.4	☆	★	○					○						○										
Finishing	TCET16T308-FN	16.5	9.525	3.97	4.4	0.8	☆	★	○					○						○										

Applicable tool

★ Recommended grade ☆ Optional grade ○ Make to Order

A JUAN cutting tool

TC □□ (Positive)

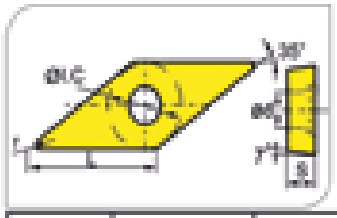


Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
							P						M						K											
		L	ø I.C	S	ød	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
CA	TCGX090202-CA	9.6	5.56	2.38	2.5	0.2																								
	TCGX090204-CA	9.6	5.56	2.38	2.5	0.4																								
	TCGX110202-CA	11.0	6.35	2.38	2.8	0.2																								
	TCGX110204-CA	11.0	6.35	2.38	2.8	0.4																								
	TCGX110208-CA	11.0	6.35	2.38	2.8	0.8																								
	TCGX16T302-CA	16.5	9.525	3.97	4.4	0.2																								
	TCGX16T304-CA	16.5	9.525	3.97	4.4	0.4																								
Stainless	TCGX16T308-CA	16.5	9.525	3.97	4.4	0.8																								
	TCGMR10204	11.0	6.35	2.38	2.8	0.4			☆	★	○											★	☆							
	TCGMR16T304	16.5	9.525	3.97	4.4	0.4			☆	★	○											★	☆							
	TCGMR16T308	16.5	9.525	3.97	4.4	0.8			☆	★	○											★	☆							
	TCGMR16T312	16.5	9.525	3.97	4.4	1.2			☆	★	○											★	☆							

Applicable tool

★ Recommended grade ☆ Optional grade ○ Make to Order

VC □□ (Positive)



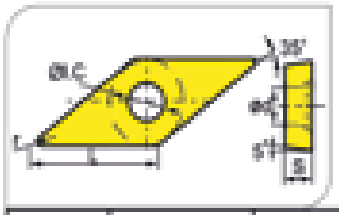
Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
							P						M						K											
		L	φI.C	S	φd	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
BH	VCMT110304-BH	11	6.35	3.18	2.8	0.4	○		☆	★				○								○								
Semi-finishing																														
FH	VCET110304-FH	11	6.35	3.18	2.8	0.4	☆	★	○					○						○										
Finishing																														
CA	VCGX110202-CA	11	6.35	2.38	2.8	0.2																								
	VCGX110204-CA	11	6.35	2.38	2.8	0.4																								
	VCGX110301-CA	11	6.35	3.18	2.8	0.1																								
	VCGX110302-CA	11	6.35	3.18	2.8	0.2																								
	VCGX110304-CA	11	6.35	3.18	2.8	0.4																								
	VCGX110308-CA	11	6.35	3.18	2.8	0.8																								
	VCGX160402-CA	16.6	R.525	4.76	4.4	0.2																								
	VCGX160404-CA	16.6	R.525	4.76	4.4	0.4																								
	VCGX160408-CA	16.6	R.525	4.76	4.4	0.8																								
	VCGX160412-CA	16.6	R.525	4.76	4.4	1.2																								
Burnish machining	VCGX220530-CA	22	12.7	5.56	5.5	3.0																								
Short-less	VCGW110304	11	6.35	3.18	2.8	0.4	○		☆	★													★	☆						

Applicable tool

★ Recommended grade ☆ Optional grade ○ Make to Order

A JUAN cutting tool

VB □□ (Positive)

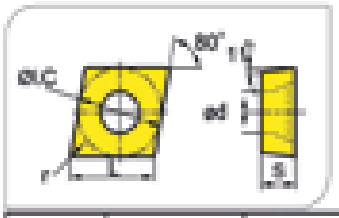


Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
							P						M						K											
		L	φ I.C	S	φ d	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						

Applicable tool

★ Recommended grade ☆ Optional grade ○ Make to Order

CP □□ (Positive)



Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide				
							P						M						K										
		L	ø I. C	S	ø d	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135					
	CPMT060204-[illegible]	6.4	6.35	2.38	2.8	0.4	○	☆	☆	★				○								○								
	CPMT09T304-[illegible]	9.79	9.525	3.97	4.4	0.4	○	☆	☆	★				○								○								
Semi-finishing																														
FM	CPGT060202-FM	6.4	6.35	2.38	2.8	0.2	☆	★	○	☆			○							○										
	CPGT09T304-FM	9.79	9.525	3.97	4.4	0.4	☆	★	○	☆			○							○										
Finishing																														
Slotless	CPMW060204	6.4	6.35	2.38	2.8	0.4	○	○	☆	★												★		○						

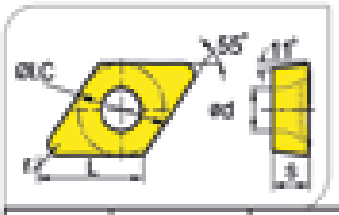
Applicable tool

★ Recommended grade ☆ Optional grade ○ Make to Order

Turning — Common Turning İnserts

Cemented carbide insert

DP □□ (Positive)

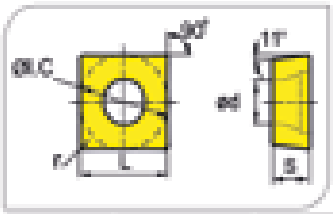


Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
							P						M						K											
		L	φI.C	S	φd	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135					
	DPET070204-WH	7.8	6.35	2.38	2.8	0.4	○	○	☆	★												○								
	DPET070208-WH	7.8	6.35	2.38	2.8	0.8	○	○	☆	★												○								
	DPET110304-WH	11.6	9.525	3.97	4.4	0.4	○	○	☆	★												○								
Semi-finishing	DPET110308-WH	11.6	9.525	3.97	4.4	0.8	○	○	☆	★												○								
FH	DPET070204-FH	7.8	6.35	2.38	2.8	0.4	☆	★	○	○										○										
	DPET070208-FH	7.8	6.35	2.38	2.8	0.8	☆	★	○	○										○										
	DPET110304-FH	11.6	9.525	3.97	4.4	0.4	☆	★	○	○										○										
Finishing	DPET110308-FH	11.6	9.525	3.97	4.4	0.8	☆	★	○	○										○										
Stainless	DPGM11T304	11.6	9.525	3.97	4.4	0.4	○	○	☆	★										○		★								
	DPGM11T308	11.6	9.525	3.97	4.4	0.8	○	○	☆	★										○		★								

Applicable tool

★ Recommended grade ☆ Optional grade ○ Make to Order

SP □□ (Positive)

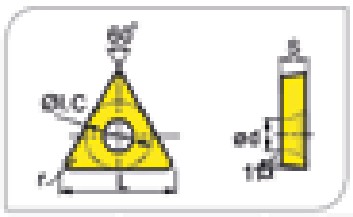


Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
							P						M						K											
		L	φI.C	S	φd	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
RH	SPRT091304-RH	9.525	9.525	3.97	4.4	0.4	○		☆	★																				
	SPRT091308-RH	9.525	9.525	3.97	4.4	0.8	○		☆	★																				
	SPRT120404-RH	12.7	12.7	4.76	5.56	0.4	○		☆	★																				
	SPRT120408-RH	12.7	12.7	4.76	5.56	0.8	○		☆	★																				
Semi-finishing	SPRT120412-RH	12.7	12.7	4.76	5.56	1.2	○		☆	★																				
Fix	SPGT091302-FW	9.525	9.525	3.97	4.4	0.2	☆	★	○																					
	SPGT091304-FW	9.525	9.525	3.97	4.4	0.4	☆	★	○																					
Finishing	SPGT091308-FW	9.525	9.525	3.97	4.4	0.8	☆	★	○																					
Slotless	SPGM091304	9.525	9.525	3.97	4.4	0.4			○	★												★								
	SPGM091308	9.525	9.525	3.97	4.4	0.8			○	★												★								
	SPGM120408	12.7	12.7	4.76	5.56	0.8			○	★												★								

★ Recommended grade ☆ Optional grade ○ Make to Order

A JUAN cutting tool

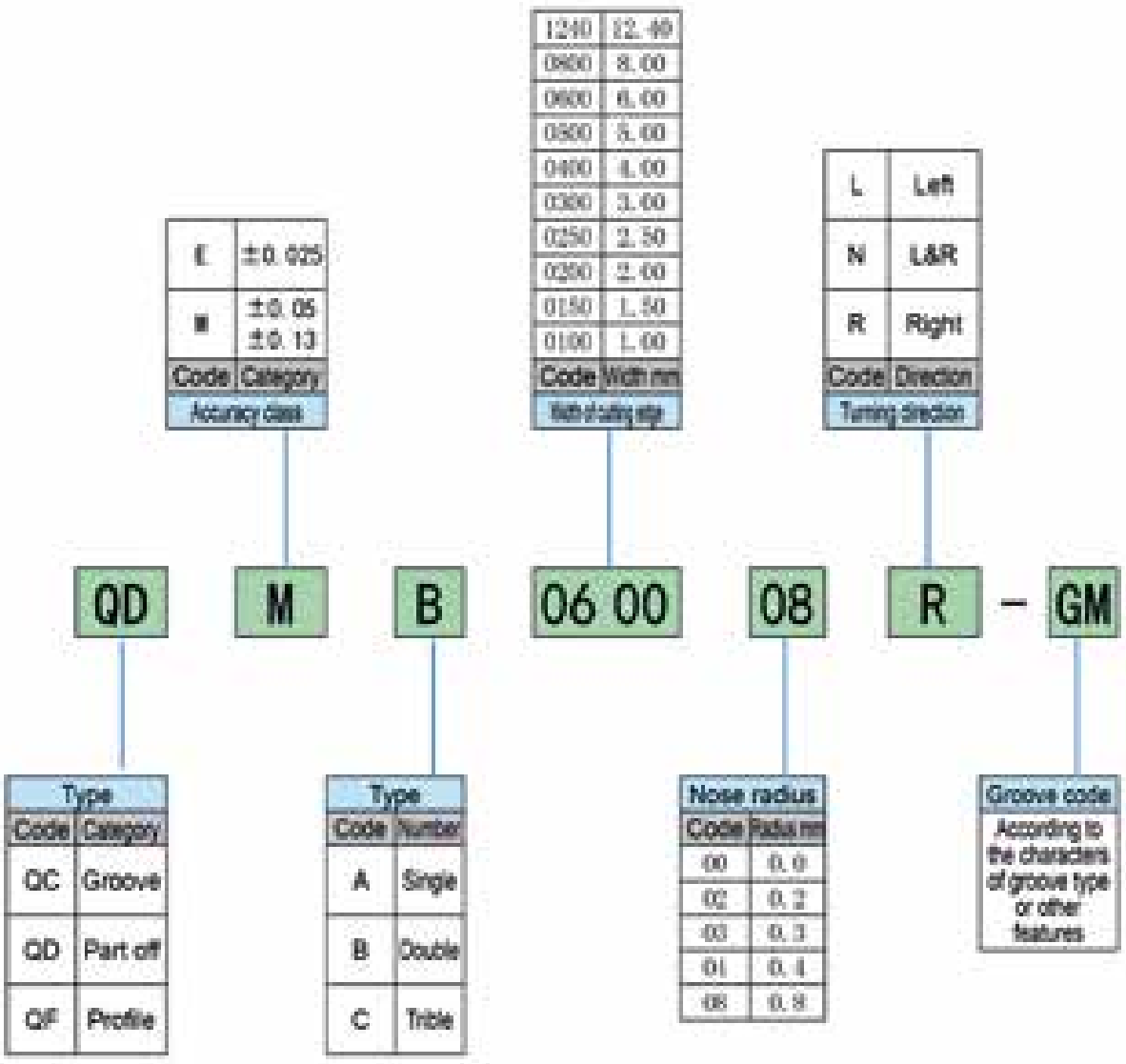
TP □□ (Positive)



Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
							P						M						K											
		L	φI.C	S	φd	r	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135					
Semi-finishing	TPMT090208-MH	9.6	5.56	2.38	2.5	0.8	○	○	☆	★												○								
	TPMT110202-MH	11.0	6.35	2.38	2.8	0.2	○	○	☆	★												○								
	TPMT110204-MH	11.0	6.35	2.38	2.8	0.4	○	○	☆	★												○								
	TPMT110208-MH	11.0	6.35	2.38	2.8	0.8	○	○	☆	★												○								
Finishing	TPGT090204-FH	9.6	5.56	2.38	2.5	0.4	☆	★	○	○												○								
	TPGT090208-FH	9.6	5.56	2.38	2.5	0.8	☆	★	○	○										○										
	TPGT110202-FH	11.0	6.35	2.38	2.8	0.2	☆	★	○	○										○										
	TPGT110204-FH	11.0	6.35	2.38	2.8	0.4	☆	★	○	○										○										
	TPGT110208-FH	11.0	6.35	2.38	2.8	0.8	☆	★	○	○										○										
Stainless	TPGB090204	9.6	6.35	2.38	2.5	0.4	○	○	☆	★										○										
	TPGB090208	9.6	6.35	2.38	2.5	0.8	○	○	☆	★										○		★								
	TPGB110304	11.0	6.350	3.18	2.8	0.4	○	○	☆	★										○		★								
	TPGB110308	11.0	6.350	3.18	2.8	0.8	○	○	☆	★										○		★								
	TPGB160308	16.5	9.525	3.18	2.8	0.8	○	○	☆	★										○		★								
	TPGB160302	16.5	9.525	3.97	2.8	0.2	○	○	☆	★										○		★								
	TPGB220408	22.0	12.70	4.76	5.5	0.8	○	○	☆	★										○		★								

★ Recommended grade ☆ Optional grade ○ Make to Order

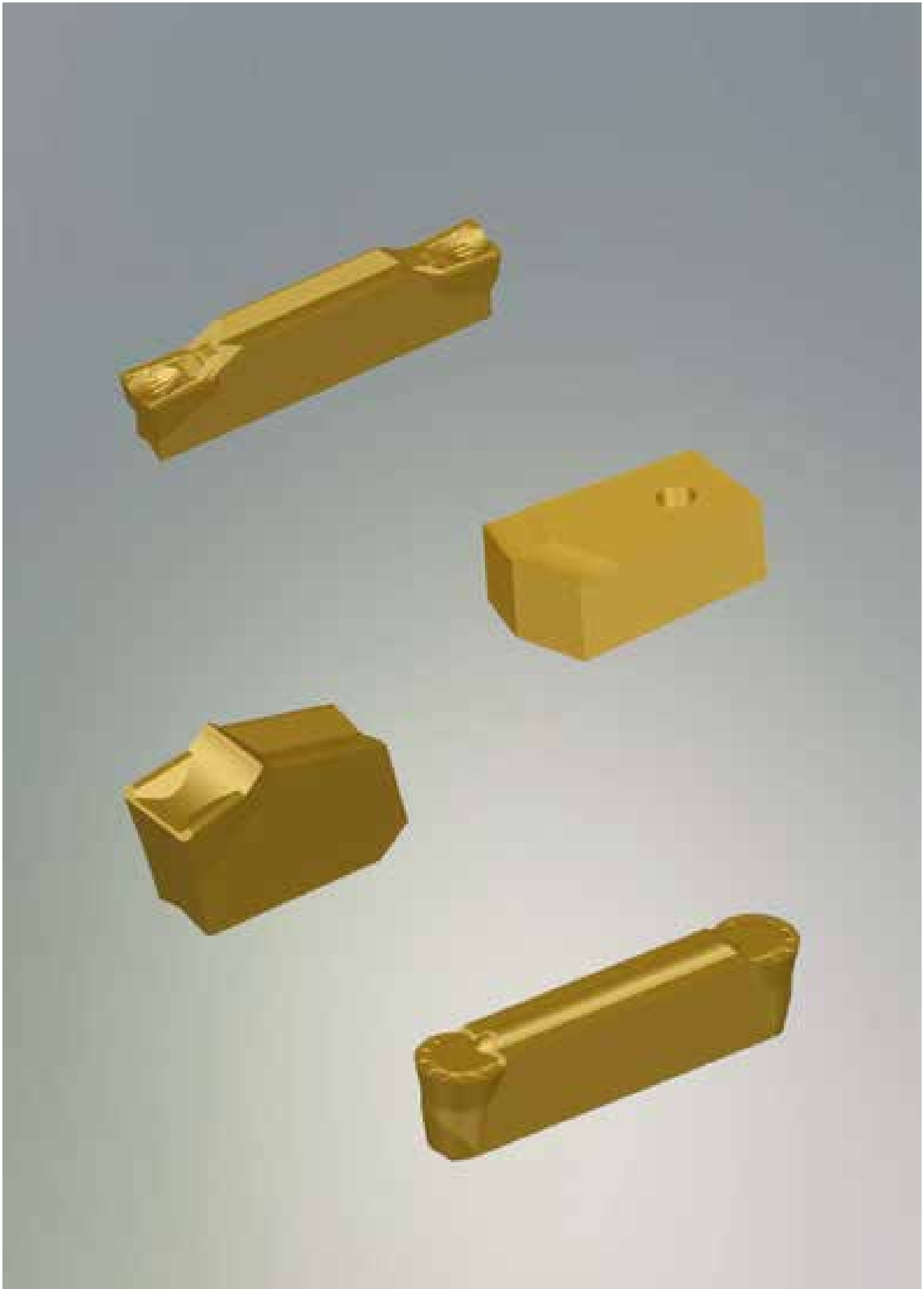
Sharp solid series grooving insert naming rules



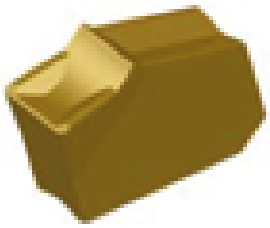
A JUAN cutting tool

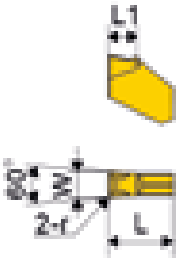
Abrasion of tools and various damages

Tool damage type	Phenomenon	Reason	Solution
flank wear	cutting resistance increase groove wear gradually in flank surface	tool material is too soft cutting speed is too high the clearance angle is too small low feed	✱ choose tool materials of high wear resistance ✱ lower cutting speed ✱ increase clearance angle ✱ increase cutting feed
rake face wear (crater wear)	chipbreaking control is bad surface quality deterioration	tool material is too soft cutting speed is too high high feed	✱ choose tool materials of high wear resistance ✱ lower cutting speed ✱ reduce cutting feed
cutting edge breakage	sudden collapse edge tool life is unstable	tool material is too tough high feed cutting intensity is not enough tool rod and handle less rigid	✱ choose higher material toughness ✱ reduce cutting feed ✱ increase the edge grinding (if rounding, chamfer instead) ✱ increase the toolholder size
damage	cutting resistance increase deterioration of the surface roughness	tool material is too tough high cutting feed cutting edge strength is not enough tool rod and handle less rigid	✱ choose higher material toughness ✱ reduce cutting feed ✱ increase the edge grinding (if rounding, chamfer instead) ✱ increase the toolholder size
plastic deformation (cutting edge collapse)	workpiece size change nose abrasion	tool material is too soft cutting speed is too high cutting depth and feed are too high cutting depth and feed is too high cutting edge temperature is too high	✱ choose tool materials of high wear resistance ✱ lower cutting speed ✱ reduce cutting depth and feed ✱ use high thermal conductivity of tool materials
built-up edge (bond)	finishing surface deterioration cutting resistance increase	low cutting speed cutting edge is not sharptool material is not suitable	✱ higher cutting speed ✱ increase rake angle ✱ choose small affinity tool material (coating, cermet, etc.)
heat crack	collapse loss due to thermal cycling in interrupted cutting	expansion and contraction caused by cutting heat tool material is too tough	✱ dry cutting ✱ choose higher material toughness
boundary wear	produce burr cutting resistance increase	high feed, high cutting speed	✱ choose tool materials of high wear resistance ✱ increase rake angle to improve the edge sharpness ✱ lower cutting speed
peel off	usually occurring in high hardness materials, vibration cutting	cutting edge bonding poor chip removal	✱ increase rake angle to improve the edge sharpness ✱ increase the chip flute



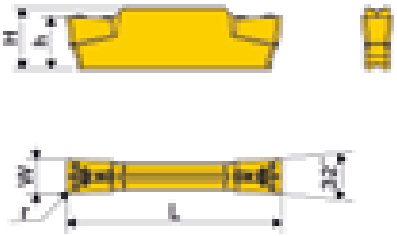
A JUAN cutting tool





Type	Dimension(mm)					Coated cemented carbide																Cemented carbide				
						P						M						K									
	L	W	r	d		7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135					
QDMA0300D3N	11.0	3.12	0.30	4.40		○		☆	★				★						○		★	☆							
QDMA0400D3N	11.0	4.12	0.30	4.95		○		☆	★				★						○		★	☆							
QDMA0500D3N	11.0	5.1	0.30	5.00		○		☆	★				★						○		★	☆							
QDMA0640D3N	11.0	6.40	0.30	5.28		○		☆	★				★						○		★	☆							
QDMA1000D5N	16.2	9.85	0.50	8.35		○		☆	★				★						○		★	☆							

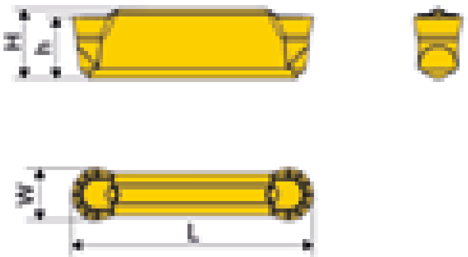
★ Recommended grade ☆ Optional grade ○ Make to Order



Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
						P						M						K											
	L	W	r	h	H	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135						
[illegible]	16.0	2.00	0.20	3.50	3.90			☆	★					★								★		☆					
[illegible]	21.0	3.00	0.40	4.80	5.60			☆	★					★								★		☆					
[illegible]	21.0	4.00	0.40	4.80	5.80			☆	★					★								★		☆					
[illegible]	26.05	5.03	0.80	5.85	7.05			☆	★					★								★		☆					
[illegible]																													

★ Recommended grade ☆ Optional grade ○ Make to Order

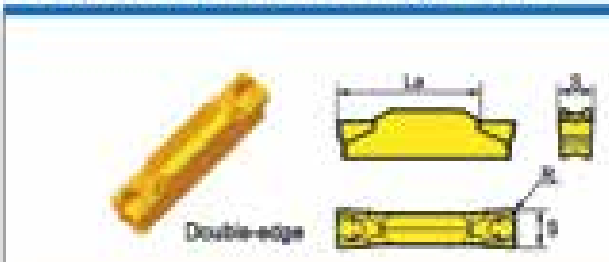
Profile cutting



Type	Dimension(mm)					Coated cemented carbide																			Cemented carbide				
						P						M							K										
	L	W	r	h	H	7100	7105	7110	7115	7120	7125	5015	5025	5035	5045	5330	5340	5350	6100	6105	6110	6115	6125	6135					
[illegible]	20.05	3.12	-	4.16	4.84	○		☆	★				★	☆							★	☆			☆				
[illegible]	20.10	4.14	-	4.90	5.75	○		☆	★				★	☆							★	☆			☆				
[illegible]	25.15	5.05	-	5.95	6.75	○		☆	★				★	☆							★	☆			☆				
[illegible]	30.20	5.15	-	5.66	6.95	○		☆	★				★	☆							★	☆			☆				

★ Recommended grade ☆ Optional grade ○ Make to Order

Grooving and turning insert

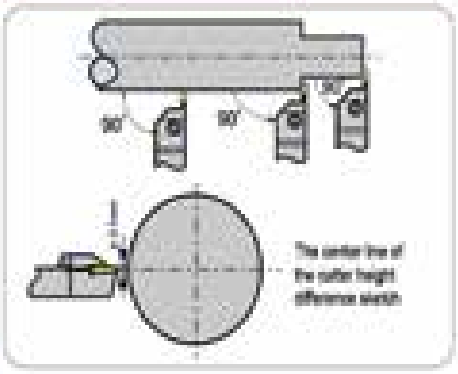


Type		Dimension(mm)			Grade					
					Coated cemented carbide CVD			Coated cemented carbide PVD		Uncoated cemented carbide
		S	Re		7110	7120	7130	3015	2015	JN100
Double-edge	QCMB025003N-MT				○		○	●	★	
	QCMB030303N-MT				○		○	●	★	
	QCMB040304N-MT				●		○	●	★	
	QCMB050304N-MT						○	●	★	
	QCMB060308N-MT						○	●	★	
One-edge	QCMA050304N-MT						○	○	○	
	QCMA060308N-MT						○	○	○	

★ Recommended grade ☆ Optional grade ○ Make to Order

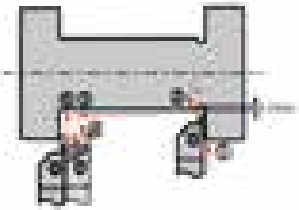
Part off and groove tool center height control

- No matter what tool you choose,only guarantee the blade and the center line of the workpiece installation into 90 degree, to obtain the ideal processing surface and reduce the vibration phenomenon in processing.
- Blade edge line with the workpiece center height tolerance should maintain ±0.1 mm, especially bar cutting and grooving of small diameter workpiece, can increase the tool life, reduce the cutting resistance, decrease the burr.



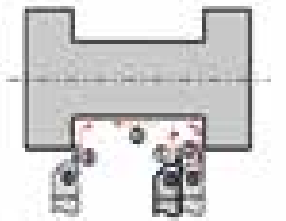
Parting off

- When the blade close to the workpiece center, should reduce the feed rate of 30%, to improve tool life and surface quality.
- Under permission, decrease overhanging as far as possible, to ensure good stability.



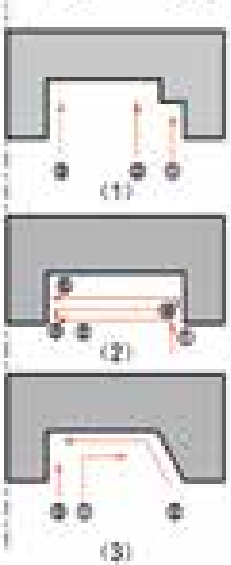
External grooving and turning, profiling

- Feeding order: cutting depth=0.5mm, the radial feed (maximum cutting depth can be 0.75 * edge width B)→ radial return around 0.1 mm→ axial feeding→ oblique knife back→ axial feeding→ radial processing to the required depth.
- Bottom diameter or chamfer (finishing), uses the operating sequence as shown,can reduce the friction of tool and chip and small vibration.



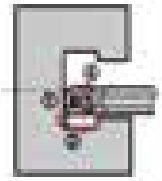
Face grooving and turning

- Finishing(multiple groove turning)
  From the max diameter cutting inside,return when the edge of the blade slightly inward migration.See(1)
- The groove turning
  The axial cutting depth is less than 0.75×B(Width of cutting edge)
  Groove width greater than groove depth, it is recommended to use groove cutting. See (2)
  Groove depth greater than groove width, it is recommended to use multiple groove cutting
- Finishing
  Finishing bottom and outside edge at the first, and then finishing bore to the required size. See (3)

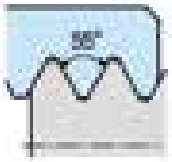
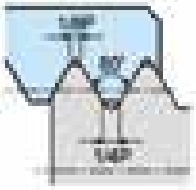


Internal grooving and turning

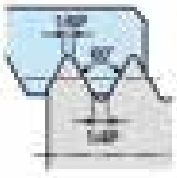
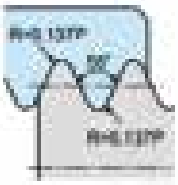
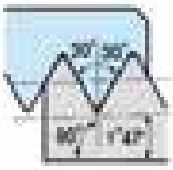
- Using the graphic processing order
  Easy to chip outflow, away from the end of the hole direction always start to feed



A JUAN cutting tool

Use			General machinery		
Diagram					
Name			Partial profile 60°	Partial profile 55°	ISO Metric
Thread form			60	55	GM
Shape (Length,11,16,22mm)			Here is for R type external thread 	Here is for R type external thread 	Here is for R type external thread 
Pitch / toolholder	Tool shank size(mm) (H*W*L) (D*L* Min D)		Pitch/mm(Number/inch)	Pitch/mm(Number/inch)	Pitch/mm
External thread	 Here is for R type	16×16×100 20×20×125 25×25×150 32×25×170 32×32×170 40×40×250	0.5~6.0 (5~48)	0.5~6.0 (5~48)	0.35~6.0
Internal thread	 R type	16×125×12 16×150×16 16×150×20 20×150×25 20×180×25 25×150×32 32×200×40 32×250×40 40×300×50 50×350×60	0.5~6.0 (5~48)	0.5~6.0 (5~48)	0.35~6.0

★ Recommended grade ☆ Optional grade ○ Make to Order

The aerospace industry	General machinery	Heating, gas, water	Gas, water	gas and conduct pipe
				
American	Whit Worth	British Standard Pipe Thread	American 60°Tape Pipe Thread	National Pipe Thread-Dry seal
UN	**W**	**BSP**	**NPT**	**NPTF**
R type external	R type external	R type external	R type external	R type external
				
Pitch/mm(Number/ Inch)	Pitch/mm(Number/ Inch)	Pitch/mm(Number/ Inch)	Pitch/mm(Number/ Inch)	Pitch/mm(Number/ Inch)
72~4	72~4	28~11	27~8	27~8
72~4	72~4	28~11	27~8	27~8

★ Recommended grade ☆ Optional grade ○ Make to Order

A

JUAN cutting tool

Usage	The food	Trapezoidal screw	Trapezoidal screw
Diagram			
Thread name	Round DIN405	Trapes DIN 103	American trapezd thread
Thread tooth form	R	Tr	ACME
Shape (Length: 11,16,22mm)	R type external 	R type external 	R type external 
Toolholder dimension(mm) (H*W*L) (D*L* Min D)	Pitch/mm(Number/Inch)	Pitch/mm	Pitch/mm(Number/Inch)
External thread	16×16×100 20×20×125 25×25×150 32×25×170 32×32×170 40×40×250	10~4	1.5~6.0	16~4
Internal thread	16×125×12 16×150×16 16×150×20 20×150×25 20×180×25 25×150×32 32×200×40 32×250×40 40×300×50 50×350×63	10~4	1.5~6.0	16~4

★ Recommended grade ☆ Optional grade ○ Make to Order

Golden yellow
TiN surface reduces friction and wear recognition effect

The inner nc - TiAlN coatings have excellent wear resistance

JN 2125

Nc - TiAlN coatings combined with ultra fine particles of strong toughness matrix, is suitable for all kinds of processed material of finishing and semi-finishing and high temperature alloy rough turning processing.

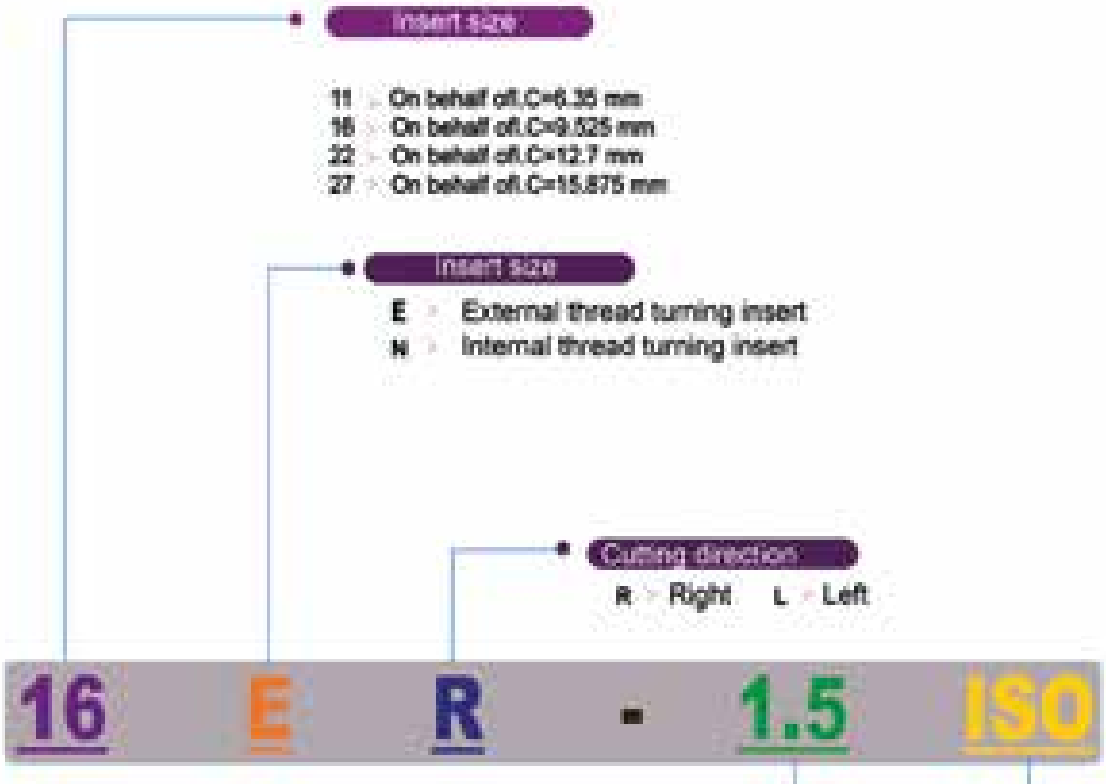
Nc - TiAlN coatings combined with ultra fine particles of strong toughness matrix, is suitable for all kinds of processed material of finishing and semi-finishing and high temperature alloy rough turning processing.

JN 5025

TiN and PVD coating alloy, with good toughness and wear resistance. It is a special grade for machining of carbon steel, stainless steel and cast iron, etc.

A JUAN cutting tool

Thread insert naming rules

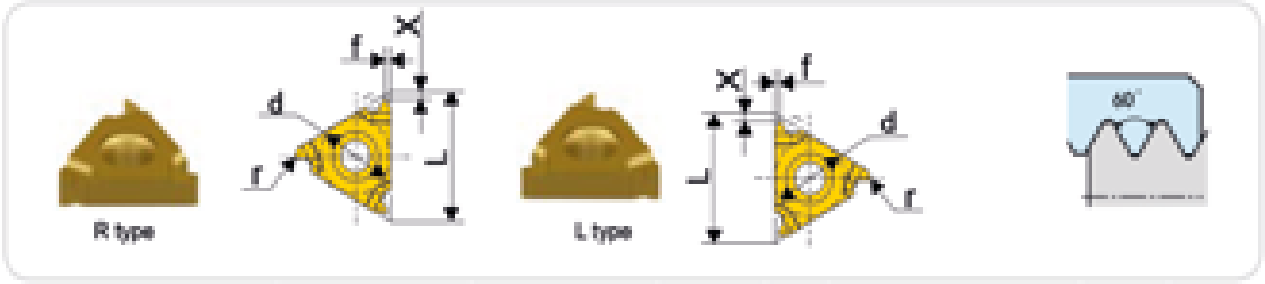


★ Recommended grade ☆ Optional grade ○ Make to Order

A JUAN cutting tool

Common thread

Type	Designation Right	Designation Left	Pitch(mm)	TPI	Dimensions(mm)				Nominal grade			
					d	L	X	f	5025		2125	
									R	L	R	L
External	11ER-A60	11EL-A60	0.5~1.5	48~16	6.35	11	0.8	0.9	★	★	★	★
	11ER-G60	11EL-G60	1.75~3.0	14~8	9.525	16	1.2	1.7	★	★	★	★
	11ER-AG60	11EL-AG60	0.5~3.0	48~8	9.525	16	1.2	1.7	★	★	★	★
	22ER-M60	22EL-M60	3.5~6.0	7~5	12.7	22	1.7	2.5	★	★	★	★
	27ER-G60	27EL-G60	5.5~6.0	4.5~4	15.875	27	2.1	3.1	★	★	★	★



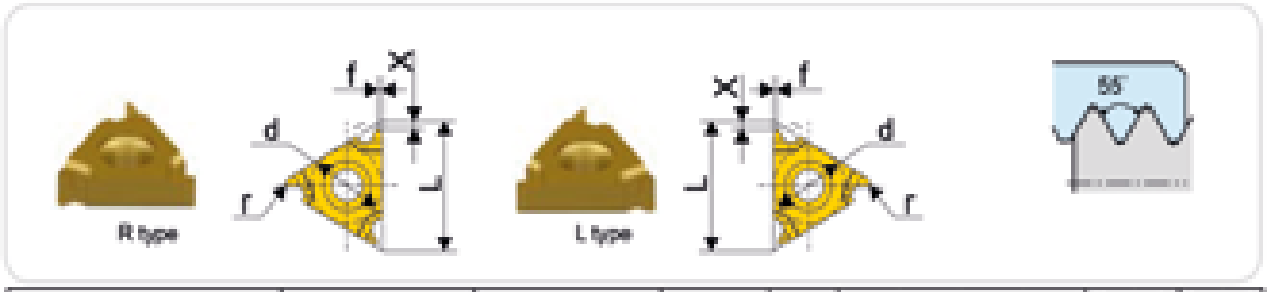
Type	Designation Right	Designation Left	Pitch(mm)	TPI	Dimensions(mm)				Nominal grade			
					d	L	X	f	5025		2125	
									R	L	R	L
Internal	11IR-A60	11IL-A60	0.5~1.5	48~16	6.35	11	0.8	0.9	★	★	★	★
	11IR-G60	11IL-G60	1.75~3.0	14~8	9.525	16	1.2	1.7	★	★	★	★
	11IR-AG60	11IL-AG60	0.5~3.0	48~8	9.525	16	1.2	1.7	★	★	★	★
	22IR-M60	22IL-M60	3.5~6.0	7~5	12.7	22	1.7	2.5	★	★	★	★
	27IR-G60	27IL-G60	5.5~6.0	4.5~4	15.875	27	1.8	2.7	★	★	★	★

★ Recommended grade ☆ Optional grade ○ Make to Order

A JUAN cutting tool

Common thread

Type	Designation Right	Designation Left	Pitch(mm)	TPI	Dimensions(mm)				Recommend grade			
					d	L	X	f	5025		2125	
									R	L	R	L
External	11ER-A55	11EL-A55	0.5~1.5	48~16	6.35	11	0.8	0.6	★	★	★	★
	11ER-055	11EL-055	1.75~3.0	14~8	9.525	16	1.2	1.7	★	★	★	★
	11ER-A055	11EL-A055	0.5~3.0	48~8	9.525	16	1.2	1.7	★	★	★	★
	22ER-A55	22EL-A55	3.5~5.0	7~5	12.7	22	1.7	3.5	★	★	★	★
	27ER-055	27EL-055	5.5~6.0	4.5~4	15.875	27	2	2.6	★	★	★	★



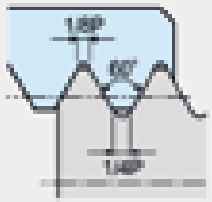
Type	Designation Right	Designation Left	Pitch(mm)	TPI	Dimensions(mm)				Recommend grade			
					d	L	X	f	5025		2125	
									R	L	R	L
Internal	11IR-A55	11IL-A55	0.5~1.5	48~16	6.35	11	0.8	0.6	★	★	★	★
	11IR-055	11IL-055	1.75~3.0	14~8	9.525	16	1.2	1.7	★	★	★	★
	11IR-A055	11IL-A055	0.5~3.0	48~8	9.525	16	1.2	1.7	★	★	★	★
	22IR-A55	22IL-A55	3.5~5.0	7~5	12.7	22	1.7	3.5	★	★	★	★
	27IR-055	27IL-055	5.5~6.0	4.5~4	15.875	27	2	2.6	★	★	★	★

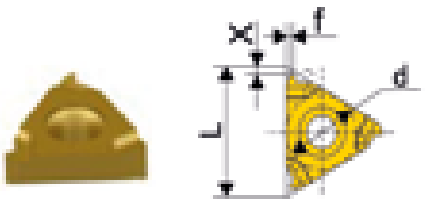
★ Recommended grade ☆ Optional grade ○ Make to Order

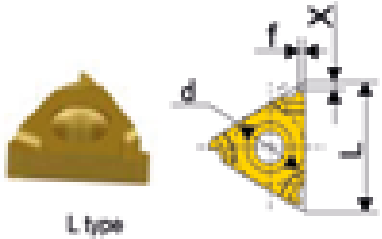
A JUAN cutting tool

ISO Metric

ISO 965-1980 DIN 13
GB/T 197-2003 Tolerance class:6g/6H







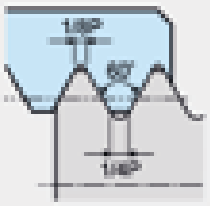
Type	Designation Right	Designation Left	TPI	Dimensions(mm)				Recommended grade 5025		Recommended grade 2125	
				d	L	X	f	R	L	R	L
External	11ER-0.35ISO	11EL-0.35ISO	0.35	6.35	11	0.8	0.4	★	★	★	★
	11ER-0.45ISO	11EL-0.45ISO	0.45	6.35	11	0.7	0.4	★	★	★	★
	11ER-0.5ISO	11EL-0.5ISO	0.5	6.35	11	0.6	0.4	★	★	★	★
	11ER-0.6ISO	11EL-0.6ISO	0.6	6.35	11	0.6	0.6	★	★	★	★
	11ER-0.75ISO	11EL-0.75ISO	0.75	6.35	11	0.6	0.6	★	★	★	★
	11ER-0.8ISO	11EL-0.8ISO	0.8	6.35	11	0.6	0.6	★	★	★	★
	11ER-1.0ISO	11EL-1.0ISO	1	6.35	11	0.7	0.7	★	★	★	★
	11ER-1.25ISO	11EL-1.25ISO	1.25	6.35	11	0.8	0.9	★	★	★	★
	11ER-1.5ISO	11EL-1.5ISO	1.5	6.35	11	0.8	1	★	★	★	★
	11ER-1.75ISO	11EL-1.75ISO	1.75	6.35	11	0.8	1.1	★	★	★	★
	16ER-0.35ISO	16EL-0.35ISO	0.35	9.525	16	0.8	0.4	★	★	★	★
	16ER-0.4ISO	16EL-0.4ISO	0.4	9.525	16	0.7	0.4	★	★	★	★
	16ER-0.45ISO	16EL-0.45ISO	0.45	9.525	16	0.7	0.4	★	★	★	★
	16ER-0.5ISO	16EL-0.5ISO	0.5	9.525	16	0.6	0.4	★	★	★	★
	16ER-0.6ISO	16EL-0.6ISO	0.6	9.525	16	0.6	0.6	★	★	★	★
	16ER-0.7ISO	16EL-0.7ISO	0.7	9.525	16	0.6	0.6	★	★	★	★
	16ER-0.75ISO	16EL-0.75ISO	0.75	9.525	16	0.6	0.6	★	★	★	★
	16ER-0.8ISO	16EL-0.8ISO	0.8	9.525	16	0.6	0.6	★	★	★	★

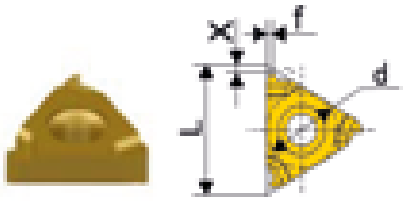
★ Recommended grade ☆ Optional grade ○ Make to Order

A JUAN cutting tool

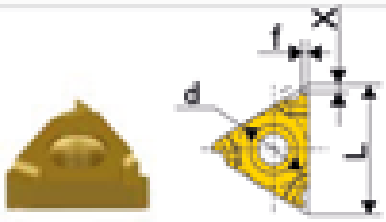
ISO Metric

ISO 965-1980 DIN 13
GB/T 197-2003 Tolerance class:6g/6H





R type



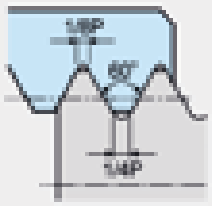
L type

Type	Designation Right	Designation Left	TPI	Dimensions(mm)				Recommended grade 5025		Recommended grade 2125	
				d	L	X	f	R	L	R	L
External	16ER-1.0ISO	16EL-1.0ISO	1	9.525	16	0.7	0.7	★	★	★	★
	16ER-1.25ISO	16EL-1.25ISO	1.25	9.525	16	0.8	0.9	★	★	★	★
	16ER-1.5ISO	16EL-1.5ISO	1.5	9.525	16	0.8	1	★	★	★	★
	16ER-1.75ISO	16EL-1.75ISO	1.75	9.525	16	0.9	1.2	★	★	★	★
	16ER-2.0ISO	16EL-2.0ISO	2	9.525	16	1	1.3	★	★	★	★
	16ER-2.5ISO	16EL-2.5ISO	2.5	9.525	16	1.1	1.5	★	★	★	★
	16ER-3.0ISO	16EL-3.0ISO	3	9.525	16	1.2	1.6	★	★	★	★
	22ER-3.5ISO	22EL-3.5ISO	3.5	12.7	22	1.6	2.3	★	★	★	★
	22ER-4.0ISO	22EL-4.0ISO	4	12.7	22	1.6	2.3	★	★	★	★
	22ER-4.5ISO	22EL-4.5ISO	4.5	12.7	22	1.7	2.4	★	★	★	★
	22ER-5.0ISO	22EL-5.0ISO	5	12.7	22	1.7	2.5	★	★	★	★
	27ER-5.5ISO	27EL-5.5ISO	5.5	15.875	27	1.9	2.7	★	★	★	★
	27ER-6.0ISO	27EL-6.0ISO	6	15.875	27	2	2.9	★	★	★	★

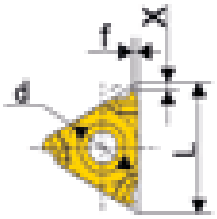
★ Recommended grade ☆ Optional grade ○ Make to Order

ISO Metric

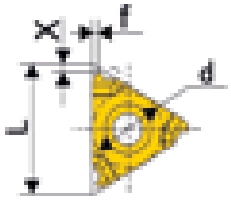
ISO 965-1980 DIN 13
GB/T 197-2003 Tolerance class:6g/6H



R type



L type



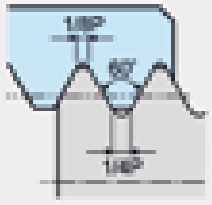
Type	Designation Right	Designation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	5025		2125	
								R	L	R	L
Internal	11IR-0.35ISO	11IL-0.35ISO	0.35	6.35	11	0.8	0.3	★	★	★	★
	11IR-0.4ISO	11IL-0.4ISO	0.4	6.35	11	0.8	0.4	★	★	★	★
	11IR-0.45ISO	11IL-0.45ISO	0.45	6.35	11	0.8	0.4	★	★	★	★
	11IR-0.5ISO	11IL-0.5ISO	0.5	6.35	11	0.6	0.4	★	★	★	★
	11IR-0.6ISO	11IL-0.6ISO	0.6	6.35	11	0.6	0.6	★	★	★	★
	11IR-0.7ISO	11IL-0.7ISO	0.7	6.35	11	0.6	0.6	★	★	★	★
	11IR-0.75ISO	11IL-0.75ISO	0.75	6.35	11	0.6	0.6	★	★	★	★
	11IR-0.8ISO	11IL-0.8ISO	0.8	6.35	11	0.6	0.6	★	★	★	★
	11IR-1.0ISO	11IL-1.0ISO	1	6.35	11	0.6	0.7	★	★	★	★
	11IR-1.25ISO	11IL-1.25ISO	1.25	6.35	11	0.8	0.9	★	★	★	★
	11IR-1.5ISO	11IL-1.5ISO	1.5	6.35	11	0.8	1	★	★	★	★
	11IR-1.75ISO	11IL-1.75ISO	1.75	6.35	11	0.9	1.1	★	★	★	★
	11IR-2.0ISO	11IL-2.0ISO	2	6.35	11	0.9	1.1	★	★	★	★
	11IR-2.5ISO	11IL-2.5ISO	2.5	6.35	11	0.8	1.1	★	★	★	★
	16IR-0.35ISO	16IL-0.35ISO	0.35	9.525	16	0.8	0.3	★	★	★	★
	16IR-0.4ISO	16IL-0.4ISO	0.4	9.525	16	0.8	0.4	★	★	★	★
	16IR-0.45ISO	16IL-0.45ISO	0.45	9.525	16	0.8	0.4	★	★	★	★
	16IR-0.5ISO	16IL-0.5ISO	0.5	9.525	16	0.6	0.4	★	★	★	★
	16IR-0.6ISO	16IL-0.6ISO	0.6	9.525	16	0.6	0.6	★	★	★	★
	16IR-0.7ISO	16IL-0.7ISO	0.7	9.525	16	0.6	0.6	★	★	★	★

★ Recommended grade ☆ Optional grade ○ Make to Order

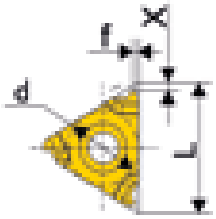
A JUAN cutting tool

ISO Metric

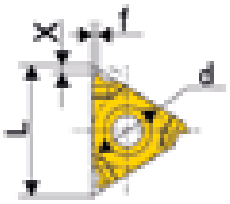
ISO 965-1980 DIN 13
GB/T 197-2003 Tolerance class:6g/6H



R type



L type

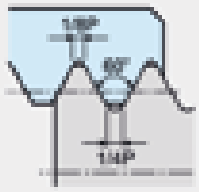


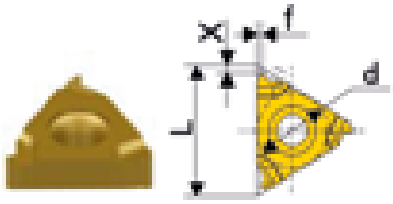
Type	Designation Right	Designation Left	TPI	Dimensions(mm)				Recommend grade		Recommend grade	
				d	L	X	f	5025		2125	
								R	L	R	L
Internal	16IR-0.75I50	16IL-0.75I50	0.75	9.525	16	0.6	0.6	★	★	★	★
	16IR-0.8I50	16IL-0.8I50	0.8	9.525	16	0.6	0.6	★	★	★	★
	16IR-1.0I50	16IL-1.0I50	1	9.525	16	0.6	0.7	★	★	★	★
	16IR-1.25I50	16IL-1.25I50	1.25	9.525	16	0.8	0.9	★	★	★	★
	16IR-1.5I50	16IL-1.5I50	1.5	9.525	16	0.8	1	★	★	★	★
	16IR-1.75I50	16IL-1.75I50	1.75	9.525	16	0.9	1.2	★	★	★	★
	16IR-2.0I50	16IL-2.0I50	2	9.525	16	1	1.3	★	★	★	★
	16IR-2.5I50	16IL-2.5I50	2.5	9.525	16	1.1	1.5	★	★	★	★
	16IR-3.0I50	16IL-3.0I50	3	9.525	16	1.1	1.5	★	★	★	★
	22IR-3.5I50	22IL-3.5I50	3.5	12.7	22	1.6	2.3	★	★	★	★
	22IR-4.0I50	22IL-4.0I50	4	12.7	22	1.6	2.3	★	★	★	★
	22IR-4.5I50	22IL-4.5I50	4.5	12.7	22	1.6	2.4	★	★	★	★
	22IR-5.0I50	22IL-5.0I50	5	12.7	22	1.6	2.3	★	★	★	★
	27IR-5.5I50	27IL-5.5I50	5.5	15.875	27	1.6	3.3	★	★	★	★
	27IR-6.0I50	27IL-6.0I50	6	15.875	27	1.8	3.5	★	★	★	★

★ Recommended grade ☆ Optional grade ○ Make to Order

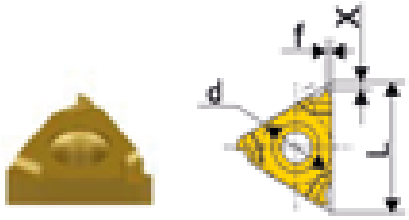
American UN

ASME B1.1-1989
Tolerance class:2A/2B





R type



L type

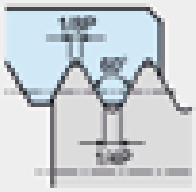
Type	Designation Right	Designation Left	TPI	Dimensions(mm)				Recommended grade			
				d	L	X	f	5025		2125	
								R	L	R	L
External	11ER-72UN	11EL-72UN	72	6.35	11	0.8	0.4	★	★	★	★
	11ER-64UN	11EL-64UN	64	6.35	11	0.8	0.4	★	★	★	★
	11ER-56UN	11EL-56UN	56	6.35	11	0.7	0.4	★	★	★	★
	11ER-48U	11EL-48UN	48	6.35	11	0.6	0.6	★	★	★	★
	11ER-44UN	11EL-44UN	44	6.35	11	0.6	0.6	★	★	★	★
	11ER-40UN	11EL-40UN	40	6.35	11	0.6	0.6	★	★	★	★
	11ER-36UN	11EL-36UN	36	6.35	11	0.6	0.6	★	★	★	★
	11ER-32UN	11EL-32UN	32	6.35	11	0.6	0.6	★	★	★	★
	11ER-28UN	11EL-28UN	28	6.35	11	0.6	0.7	★	★	★	★
	11ER-27UN	11EL-27UN	27	6.35	11	0.7	0.8	★	★	★	★
	11ER-24UN	11EL-24UN	24	6.35	11	0.7	0.8	★	★	★	★
	11ER-20UN	11EL-20UN	20	6.35	11	0.8	0.9	★	★	★	★
	11ER-18UN	11EL-18UN	18	6.35	11	0.8	1	★	★	★	★
	11ER-16UN	11EL-16UN	16	6.35	11	0.9	1.1	★	★	★	★
	11ER-14UN	11EL-14UN	14	6.35	11	0.9	1.1	★	★	★	★
	16ER-72UN	16EL-72UN	72	9.525	16	0.8	0.4	★	★	★	★
	16ER-64UN	16EL-64UN	64	9.525	16	0.8	0.4	★	★	★	★
	16ER-56UN	16EL-56UN	56	9.525	16	0.7	0.4	★	★	★	★
	16ER-48UN	16EL-48UN	48	9.525	16	0.6	0.6	★	★	★	★
	16ER-44UN	16EL-44UN	44	9.525	16	0.6	0.6	★	★	★	★
	16ER-40UN	16EL-40UN	40	9.525	16	0.6	0.6	★	★	★	★

★ Recommended grade ☆ Optional grade ○ Make to Order

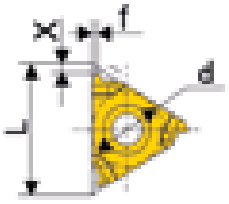
A JUAN cutting tool

American UN

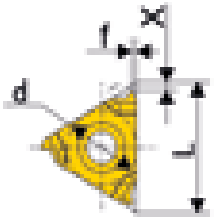
ASME B1.1-1989
Tolerance class:2A/2B



R type



L type



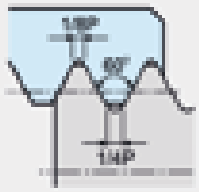
Type	Designation Right	Designation Left	TPI	Dimensions(mm)				Recommended grade 5025		Recommended grade 2125	
				d	L	X	f	R	L	R	L
External	16ER-36UN	16EL-36UN	36	9.525	16	0.6	0.6	★	★	★	★
	16ER-32UN	16EL-32UN	32	9.525	16	0.6	0.6	★	★	★	★
	16ER-28UN	16EL-28UN	28	9.525	16	0.6	0.7	★	★	★	★
	16ER-27UN	16EL-27UN	27	9.525	16	0.7	0.8	★	★	★	★
	16ER-24UN	16EL-24UN	24	9.525	16	0.7	0.8	★	★	★	★
	16ER-20UN	16EL-20UN	20	9.525	16	0.8	0.9	★	★	★	★
	16ER-18UN	16EL-18UN	18	9.525	16	0.8	1	★	★	★	★
	16ER-16UN	16EL-16UN	16	9.525	16	0.9	1.1	★	★	★	★
	16ER-14UN	16EL-14UN	14	9.525	16	1	1.2	★	★	★	★
	16ER-13UN	16EL-13UN	13	9.525	16	1	1.3	★	★	★	★
	16ER-12UN	16EL-12UN	12	9.525	16	1.1	1.4	★	★	★	★
	16ER-11.5UN	16EL-11.5UN	11.5	9.525	16	1.1	1.5	★	★	★	★
	16ER-11UN	16EL-11UN	11	9.525	16	1.1	1.5	★	★	★	★
	16ER-10UN	16EL-10UN	10	9.525	16	1.1	1.5	★	★	★	★
	16ER-9UN	16EL-9UN	9	9.525	16	1.2	1.7	★	★	★	★
	16ER-8UN	16EL-8UN	8	9.525	16	1.2	1.6	★	★	★	★
	22ER-7UN	22EL-7UN	7	12.7	22	1.6	2.3	★	★	★	★
	22ER-6UN	22EL-6UN	6	12.7	22	1.6	2.3	★	★	★	★
	22ER-5UN	22EL-5UN	5	12.7	22	1.7	2.5	★	★	★	★
	27ER-4.5UN	27EL-4.5UN	4.5	15.875	27	1.9	2.7	★	★	★	★
	27ER-4UN	27EL-4UN	4	15.875	27	2.1	3	★	★	★	★

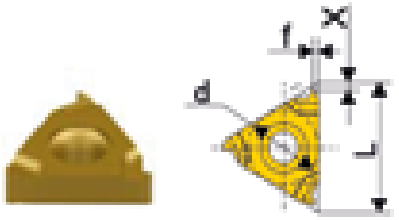
★ Recommended grade ☆ Optional grade ○ Make to Order

A JUAN cutting tool

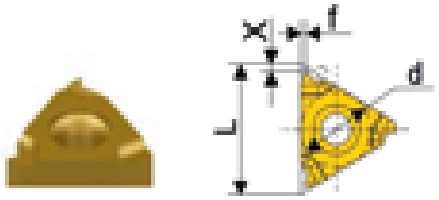
American UN

ASME B1.1-1989
Tolerance class:2A/2B





R type



L type

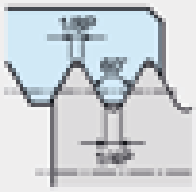
Type	Designation Right	Designation Left	TPI	Dimensions(mm)				Recommended grade 5025		Recommended grade 2125	
				d	L	X	f	R	L	R	L
Internal	11NR-72N	11NL-72N	72	6.35	11	0.7	0.4	★	★	★	★
	11NR-64N	11NL-64N	64	6.35	11	0.7	0.4	★	★	★	★
	11NR-56UN	11NL-56UN	56	6.35	11	0.7	0.4	★	★	★	★
	11NR-48U	11NL-48UN	48	6.35	11	0.6	0.6	★	★	★	★
	11NR-44UN	11NL-44UN	44	6.35	11	0.6	0.6	★	★	★	★
	11NR-40UN	11NL-40UN	40	6.35	11	0.6	0.6	★	★	★	★
	11NR-36UN	11NL-36UN	36	6.35	11	0.6	0.6	★	★	★	★
	11NR-32UN	11NL-32UN	32	6.35	11	0.6	0.6	★	★	★	★
	11NR-28UN	11NL-28UN	28	6.35	11	0.6	0.7	★	★	★	★
	11NR-27UN	11NL-27UN	27	6.35	11	0.7	0.8	★	★	★	★
	11NR-24UN	11NL-24UN	24	6.35	11	0.7	0.8	★	★	★	★
	11NR-20UN	11NL-20UN	20	6.35	11	0.8	0.9	★	★	★	★
	11NR-18UN	11NL-18UN	18	6.35	11	0.8	1	★	★	★	★
	11NR-16UN	11NL-16UN	16	6.35	11	0.9	1.1	★	★	★	★
	11NR-14UN	11NL-14UN	14	6.35	11	0.9	1.1	★	★	★	★
	11NR-12UN	11NL-12UN	12	6.35	11	0.8	1.1	★	★	★	★
	11NR-11UN	11NL-11UN	11	6.35	11	0.8	1.1	★	★	★	★
	16NR-72UN	16NL-72UN	72	9.525	16	0.8	0.4	★	★	★	★
	16NR-64UN	16NL-64UN	64	9.525	16	0.8	0.4	★	★	★	★
	16NR-56UN	16NL-56UN	56	9.525	16	0.7	0.4	★	★	★	★
	16NR-48UN	16NL-48UN	48	9.525	16	0.6	0.6	★	★	★	★
	16NR-44UN	16NL-44UN	44	9.525	16	0.6	0.6	★	★	★	★

★ Recommended grade ☆ Optional grade ○ Make to Order

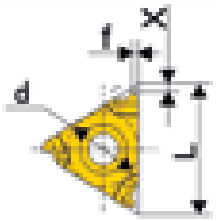
A JUAN cutting tool

American UN

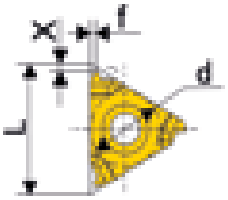
ASME B1.1-1989
Tolerance class:2A/2B



IR type



L type



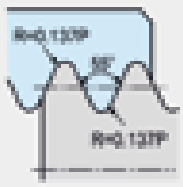
Type	Designation Right	Designation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	5025		2125	
								R	L	R	L
Internal	16IR-40UN	16IL-40UN	40	9.525	16	0.6	0.6	★	★	★	★
	16IR-36UN	16IL-36UN	36	9.525	16	0.6	0.6	★	★	★	★
	16IR-32UN	16IL-32UN	32	9.525	16	0.6	0.6	★	★	★	★
	16IR-28UN	16IL-28UN	28	9.525	16	0.6	0.7	★	★	★	★
	16IR-27UN	16IL-27UN	27	9.525	16	0.7	0.8	★	★	★	★
	16IR-24UN	16IL-24UN	24	9.525	16	0.7	0.8	★	★	★	★
	16IR-20UN	16IL-20UN	20	9.525	16	0.8	0.9	★	★	★	★
	16IR-18UN	16IL-18UN	18	9.525	16	0.8	1	★	★	★	★
	16IR-16UN	16IL-16UN	16	9.525	16	0.9	1.1	★	★	★	★
	16IR-14UN	16IL-14UN	14	9.525	16	1	1.2	★	★	★	★
	16IR-13UN	16IL-13UN	13	9.525	16	1	1.3	★	★	★	★
	16IR-12UN	16IL-12UN	12	9.525	16	1.1	1.4	★	★	★	★
	16IR-11.5UN	16IL-11.5UN	11.5	9.525	16	1.1	1.5	★	★	★	★
	16IR-11UN	16IL-11UN	11	9.525	16	1.1	1.5	★	★	★	★
	16IR-10UN	16IL-10UN	10	9.525	16	1.1	1.5	★	★	★	★
	16IR-9UN	16IL-9UN	9	9.525	16	1.2	1.7	★	★	★	★
	16IR-8UN	16IL-8UN	8	9.525	16	1.2	1.5	★	★	★	★
	22IR-7UN	22IL-7UN	7	12.7	22	1.6	2.3	★	★	★	★
	22IR-6UN	22IL-6UN	6	12.7	22	1.6	2.3	★	★	★	★
	22IR-5UN	22IL-5UN	5	12.7	22	1.7	2.3	★	★	★	★
	27IR-4.5UN	27IL-4.5UN	4.5	15.875	27	1.9	2.4	★	★	★	★
	27IR-4UN	27IL-4UN	4	15.875	27	2.1	2.7	★	★	★	★

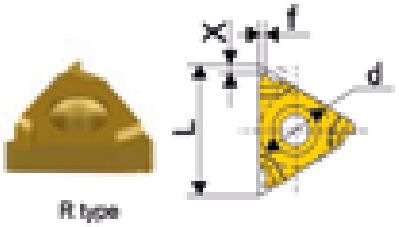
★ Recommended grade ☆ Optional grade ○ Make to Order

A JUAN cutting tool

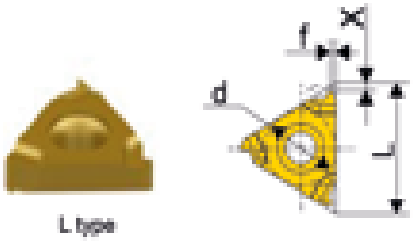
Whit Worth

ISO 228/1:1982,
DIN 259, B.S.84:1956
Tolerance class:Medium class A





R type



L type

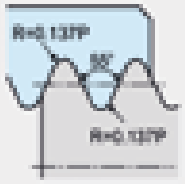
Type	Designation :Right	Designation :Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	5025		2125	
								R	L	R	L
External	11ER-72I	11EL-72I	72	6.35	11	0.7	0.4	★	★	★	★
	11ER-64I	11EL-64I	64	6.35	11	0.7	0.4	★	★	★	★
	11ER-56I	11EL-56I	56	6.35	11	0.7	0.4	★	★	★	★
	11ER-48I	11EL-48I	48	6.35	11	0.6	0.6	★	★	★	★
	11ER-44I	11EL-44I	44	6.35	11	0.6	0.6	★	★	★	★
	11ER-40I	11EL-40I	40	6.35	11	0.6	0.6	★	★	★	★
	11ER-36I	11EL-36I	36	6.35	11	0.6	0.6	★	★	★	★
	11ER-32I	11EL-32I	32	6.35	11	0.6	0.6	★	★	★	★
	11ER-28I	11EL-28I	28	6.35	11	0.6	0.7	★	★	★	★
	11ER-26I	11EL-26I	27	6.35	11	0.7	0.8	★	★	★	★
	11ER-24I	11EL-24I	24	6.35	11	0.7	0.8	★	★	★	★
	11ER-22I	11EL-22I	24	6.35	11	0.8	0.9	★	★	★	★
	11ER-20I	11EL-20I	20	6.35	11	0.8	0.9	★	★	★	★
	11ER-19I	11EL-19I	19	6.35	11	0.8	1	★	★	★	★
	11ER-18I	11EL-18I	18	6.35	11	0.8	1	★	★	★	★
	11ER-16I	11EL-16I	16	6.35	11	0.9	1.1	★	★	★	★
	11ER-14I	11EL-14I	14	6.35	11	1	1.2	★	★	★	★
	16ER-72I	16EL-72I	72	9.525	16	0.7	0.4	★	★	★	★
	16ER-60I	16EL-60I	60	9.525	16	0.7	0.4	★	★	★	★
	16ER-56I	16EL-56I	56	9.525	16	0.7	0.4	★	★	★	★
	16ER-48I	16EL-48I	48	9.525	16	0.6	0.6	★	★	★	★
	16ER-44I	16EL-44I	44	9.525	16	0.6	0.6	★	★	★	★

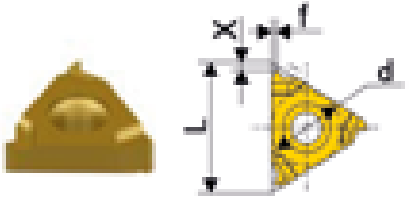
★ Recommended grade ☆ Optional grade ○ Make to Order

A JUAN cutting tool

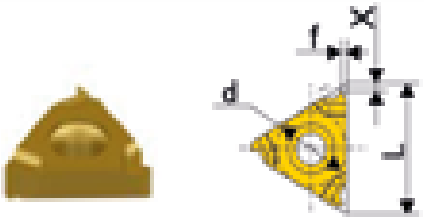
Whit Worth

ISO 228/1:1982,
DIN 259, B.S.84:1956
Tolerance class:Medium class A





R type



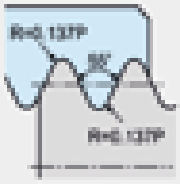
L type

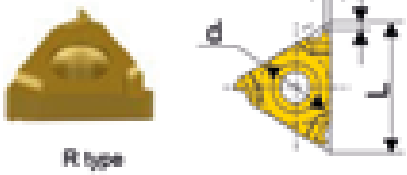
Type	Designation Right	Designation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	5025		2125	
								R	L	R	L
External	16ER-40W	16EL-40W	40	9.525	16	0.6	0.6	★	★	★	★
	16ER-36W	16EL-36W	36	9.525	16	0.6	0.6	★	★	★	★
	16ER-32W	16EL-32W	32	9.525	16	0.6	0.6	★	★	★	★
	16ER-28W	16EL-28W	28	9.525	16	0.6	0.7	★	★	★	★
	16ER-26W	16EL-26W	26	9.525	16	0.7	0.8	★	★	★	★
	16ER-24W	16EL-24W	24	9.525	16	0.7	0.8	★	★	★	★
	16ER-22W	16EL-22W	22	9.525	16	0.7	0.8	★	★	★	★
	16ER-20W	16EL-20W	20	9.525	16	0.8	0.9	★	★	★	★
	16ER-18W	16EL-18W	18	9.525	16	0.8	1	★	★	★	★
	16ER-16W	16EL-16W	16	9.525	16	0.9	1.1	★	★	★	★
	16ER-14W	16EL-14W	14	9.525	16	1	1.3	★	★	★	★
	16ER-12W	16EL-12W	12	9.525	16	1.1	1.4	★	★	★	★
	16ER-11W	16EL-11W	11	9.525	16	1.1	1.5	★	★	★	★
	16ER-10W	16ENL-10W	10	9.525	16	1.1	1.5	★	★	★	★
	16ER-9W	16EL-9W	9	9.525	16	1.2	1.7	★	★	★	★
	16ER-8W	16NEL-8W	8	9.525	16	1.2	1.5	★	★	★	★
	22ER-7W	22EL-7W	7	12.7	22	1.6	2.3	★	★	★	★
	22ER-6W	22EL-6W	6	12.7	22	1.6	2.3	★	★	★	★
	22ER-5W	22EL-5W	5	12.7	22	1.7	2.4	★	★	★	★
	27ER-4.5W	27EL-4.5W	4.5	15.875	27	1.8	2.6	★	★	★	★
	27ER-4UN	27EL-4UN	4	15.875	27	2.1	2.9	★	★	★	★

★ Recommended grade ☆ Optional grade ○ Make to Order

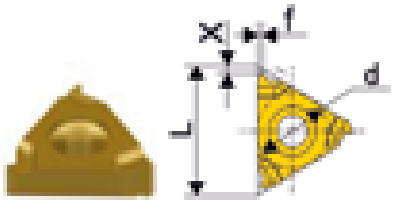
Whit Worth

ISO 228/1:1982,
DIN 259, B.S.84:1956
Tolerance class:Medium class A





R type



L type

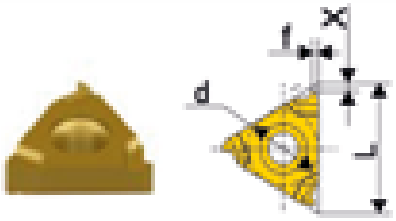
Type	Designation Right	Designation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	5025		2125	
								R	L	R	L
Internal	11MR-72R	11ML-72R	72	6.35	11	0.7	0.4	★	★	★	★
	11MR-64R	11ML-64R	64	6.35	11	0.7	0.4	★	★	★	★
	11MR-56R	11ML-56R	56	6.35	11	0.7	0.4	★	★	★	★
	11MR-48R	11ML-48R	48	6.35	11	0.6	0.6	★	★	★	★
	11MR-40R	11ML-40R	40	6.35	11	0.6	0.6	★	★	★	★
	11MR-36R	11ML-36R	36	6.35	11	0.6	0.6	★	★	★	★
	11MR-32R	11ML-32R	32	6.35	11	0.6	0.6	★	★	★	★
	11MR-28R	11ML-28R	28	6.35	11	0.6	0.7	★	★	★	★
	11MR-26R	11ML-26R	27	6.35	11	0.7	0.8	★	★	★	★
	11MR-24R	11ML-24R	24	6.35	11	0.7	0.8	★	★	★	★
	11MR-22R	11ML-22R	24	6.35	11	0.8	0.9	★	★	★	★
	11MR-20R	11ML-20R	20	6.35	11	0.8	0.9	★	★	★	★
	11MR-19R	11ML-19R	19	6.35	11	0.8	1	★	★	★	★
	11MR-18R	11ML-18R	18	6.35	11	0.8	1	★	★	★	★
	11MR-16R	11ML-16R	16	6.35	11	0.9	1.1	★	★	★	★
	11MR-14R	11ML-14R	14	6.35	11	0.9	1.1	★	★	★	★
	11MR-12R	11ML-12R	12	6.35	11	0.9	1.2	★	★	★	★
	16MR-72R	16ML-72R	72	9.525	16	0.7	0.4	★	★	★	★
	16MR-60R	16ML-60R	60	9.525	16	0.7	0.4	★	★	★	★
	16MR-56R	16ML-56R	56	9.525	16	0.7	0.4	★	★	★	★
	16MR-48R	16ML-48R	48	9.525	16	0.6	0.6	★	★	★	★
	16MR-40R	16ML-40R	40	9.525	16	0.6	0.6	★	★	★	★

★ Recommended grade ☆ Optional grade ○ Make to Order

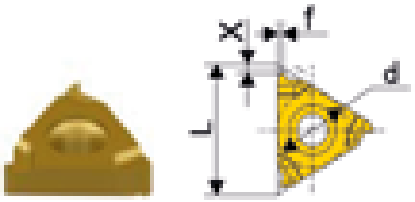
A JUAN cutting tool

Whit Worth

ISO 228/1:1982,
DIN 259, B.S.84:1956
Tolerance class:Medium class A



R type



L type

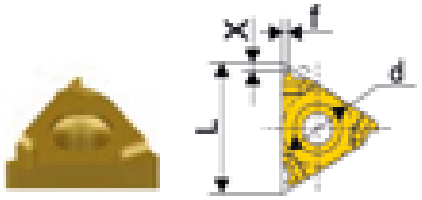
Type	Designation Right	Designation Left	TPI	Dimensions(mm)				Recommend grade		Recommend grade	
				d	L	X	f	5025		2125	
								R	L	R	L
Internal	16IR-36W	16NL-36W	36	9.525	16	0.6	0.6	★	★	★	★
	16IR-32W	16NL-32W	32	9.525	16	0.6	0.6	★	★	★	★
	16IR-30W	16NL-30W	30	9.525	16	0.6	0.7	★	★	★	★
	16IR-28W	16NL-28W	28	9.525	16	0.6	0.7	★	★	★	★
	16IR-26W	16NL-26W	26	9.525	16	0.7	0.8	★	★	★	★
	16IR-24W	16NL-24W	24	9.525	16	0.7	0.8	★	★	★	★
	16IR-22W	16NL-22W	22	9.525	16	0.8	0.9	★	★	★	★
	16IR-20W	16NL-20W	20	9.525	16	0.8	0.9	★	★	★	★
	16IR-19W	16NL-19W	20	9.525	16	0.8	1	★	★	★	★
	16IR-18W	16NL-18W	18	9.525	16	0.8	1	★	★	★	★
	16IR-16W	16NL-16W	16	9.525	16	0.9	1.1	★	★	★	★
	16IR-14W	16NL-14W	14	9.525	16	1	1.2	★	★	★	★
	16IR-12W	16NL-12W	12	9.525	16	1.1	1.4	★	★	★	★
	16IR-11W	16NL-11W	11	9.525	16	1.1	1.5	★	★	★	★
	16IR-10W	16NL-10W	10	9.525	16	1.1	1.5	★	★	★	★
	16IR-9W	16NL-9W	9	9.525	16	1.2	1.7	★	★	★	★
	16IR-8W	16NL-8W	8	9.525	16	1.2	1.5	★	★	★	★
	22IR-7W	22NL-7W	7	12.7	22	1.6	2.3	★	★	★	★
	22IR-6W	22NL-6W	6	12.7	22	1.6	2.3	★	★	★	★
	22IR-5W	22NL-5W	5	12.7	22	1.7	2.4	★	★	★	★
	27IR-4.5W	27NL-4.5W	4.5	15.875	27	1.8	2.6	★	★	★	★
	27IR-4W	27NL-4W	4	15.875	27	2.1	2.9	★	★	★	★

★ Recommended grade ☆ Optional grade ○ Make to Order

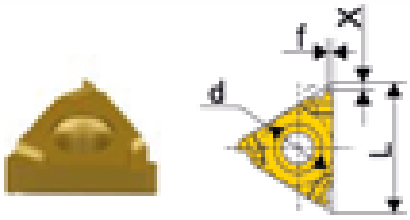
A JUAN cutting tool

British Standard Thread

ISO 7/1:1994
B.S.21:1985
Standard BSPT

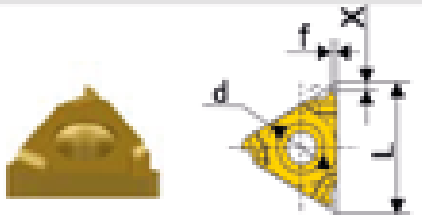


R type



L type

Type	Designation Right	Designation Left	TPI	Dimensions(mm)				Recommended grade			
				d	L	X	f	5025		2125	
								R	L	R	L
External	11ER-28BSPT	11NL-28BSPT	28	6.35	11	0.6	0.6	★	★	★	★
	11ER-19BSPT	11NL-28BSPT	19	6.35	11	0.8	0.9	★	★	★	★
	11ER-14BSPT	11NL-14BSPT	14	6.35	11	0.9	1	★	★	★	★
	16ER-28BSPT	16NL-28BSPT	28	9.525	16	0.6	0.6	★	★	★	★
	16ER-19BSPT	16NL-19BSPT	19	9.525	16	0.8	0.9	★	★	★	★
	16ER-14BSPT	16NL-14BSPT	14	9.525	16	1	1.2	★	★	★	★
	16ER-11BSPT	11NL-11BSPT	11	9.525	16	1.1	1.5	★	★	★	★



R type

L type

Type	Designation Right	Designation Left	TPI	Dimensions(mm)				Recommended grade			
				d	L	X	f	5025		2125	
								R	L	R	L
Internal	11NR-28BSPT	11NL-28BSPT	28	6.35	11	0.6	0.6	★	★	★	★
	11NR-19BSPT	11NL-28BSPT	19	6.35	11	0.8	0.9	★	★	★	★
	11NR-14BSPT	11NL-14BSPT	14	6.35	11	0.9	1	★	★	★	★
	16NR-28BSPT	16NL-28BSPT	28	9.525	16	0.6	0.6	★	★	★	★
	16NR-19BSPT	16NL-19BSPT	19	9.525	16	0.8	0.9	★	★	★	★
	16NR-14BSPT	16NL-14BSPT	14	9.525	16	1	1.2	★	★	★	★
	16NR-11BSPT	11NL-11BSPT	11	9.525	16	1.1	1.5	★	★	★	★

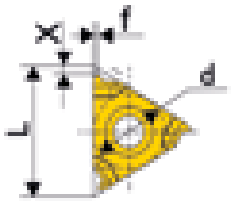
★ Recommended grade ☆ Optional grade ○ Make to Order

A JUAN cutting tool

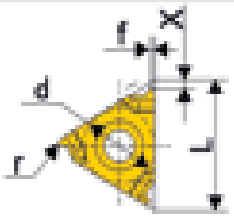
American 60°tape pipe thread

ASME B1.20.1-1983
Standard NPT


R type

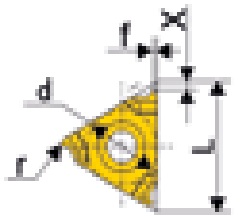



L type

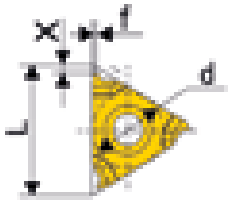


Type	Designation Right	Designation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	5025		2125	
								R	L	R	L
External	11ER-27NPT	11EL-27NPT	27	6.35	11	0.7	0.8	★	★	★	★
	11ER-18NPT	11EL-18NPT	18	6.35	11	0.8	1	★	★	★	★
	11ER-14NPT	11EL-14NPT	14	6.35	11	0.8	1	★	★	★	★
	16ER-28NPT	16EL-28NPT	28	9.525	16	0.7	0.8	★	★	★	★
	16ER-18NPT	16EL-18NPT	18	9.525	16	0.8	1	★	★	★	★
	16ER-14NPT	16EL-14NPT	14	9.525	16	0.9	1.2	★	★	★	★
	16ER-11.5NPT	11EL-11.5NPT	11.5	9.525	16	1.1	1.5	★	★	★	★
	16ER-8NPT	11EL-8NPT	8	9.525	16	1.3	1.8	★	★	★	★


R type




L type



Type	Designation Right	Designation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	5025		2125	
								R	L	R	L
Internal	11IR-27NPT	11IL-27NPT	27	6.35	11	0.7	0.8	★	★	★	★
	11IR-18NPT	11IL-18NPT	18	6.35	11	0.8	1	★	★	★	★
	11IR-14NPT	11IL-14NPT	14	6.35	11	0.8	1	★	★	★	★
	16IR-28NPT	16IL-28NPT	28	9.525	16	0.7	0.8	★	★	★	★
	16IR-18NPT	16IL-18NPT	18	9.525	16	0.8	1	★	★	★	★
	16IR-14NPT	16IL-14NPT	14	9.525	16	0.9	1.2	★	★	★	★
	16IR-11.5NPT	11IL-11.5NPT	11.5	9.525	16	1.1	1.5	★	★	★	★
	16IR-8NPT	11IL-8NPT	8	9.525	16	1.3	1.8	★	★	★	★

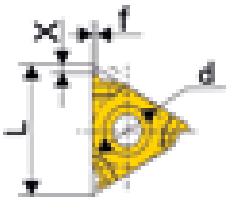
★ Recommended grade ☆ Optional grade ○ Make to Order

A JUAN cutting tool

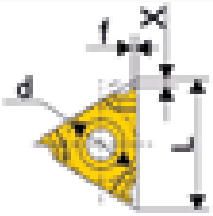
NPTF National Pipe Thread-Dry seal

NPTF60°
Standard:ANSI B1.20.1-1983
Tolerance class:2G

R type

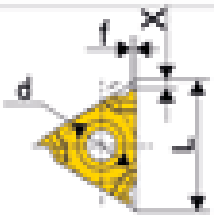


L type

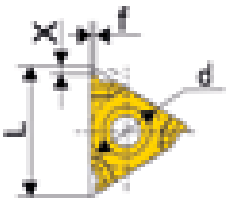


Type	Designation Right	Designation Lefe	TPI	Dimensions(mm)				Recommended grade			
				d	L	X	f	5025		2125	
								R	L	R	L
External	11ER-27NPTF	11EL-27NPTF	27	6.35	11	0.7	0.8	★	★	★	★
	11ER-18NPTF	11EL-18NPTF	18	6.35	11	0.8	1	★	★	★	★
	11ER-14NPTF	11EL-14NPTF	14	6.35	11	0.8	1	★	★	★	★
	16ER-28NPTF	16EL-28NPTF	28	9.525	16	0.7	0.8	★	★	★	★
	16ER-18NPTF	16EL-18NPTF	18	9.525	16	0.8	1	★	★	★	★
	16ER-14NPTF	16EL-14NPTF	14	9.525	16	0.9	1.2	★	★	★	★
	16ER-11.5NPTF	11EL-11.5NPTF	11.5	9.525	16	1.1	1.5	★	★	★	★
	16ER-8NPTF	11EL-8NPTF	8	9.525	16	1.3	1.8	★	★	★	★

R type



L type



Type	Designation Right	Designation Left	TPI	Dimensions(mm)				Recommended grade			
				d	L	X	f	5025		2125	
								R	L	R	L
Internal	11NR-27NPTF	11NL-27NPTF	27	6.35	11	0.7	0.8	★	★	★	★
	11NR-18NPTF	11NL-18NPTF	18	6.35	11	0.8	1	★	★	★	★
	11NR-14NPTF	11NL-14NPTF	14	6.35	11	0.8	1	★	★	★	★
	16NR-28NPTF	16NL-28NPTF	28	9.525	16	0.7	0.8	★	★	★	★
	16NR-18NPTF	16NL-18NPTF	18	9.525	16	0.8	1	★	★	★	★
	16NR-14NPTF	16NL-14NPTF	14	9.525	16	0.9	1.2	★	★	★	★
	16NR-11.5NPTF	11NL-11.5NPTF	11.5	9.525	16	1.1	1.5	★	★	★	★
	16NR-8NPTF	11NL-8NPTF	8	9.525	16	1.3	1.8	★	★	★	★

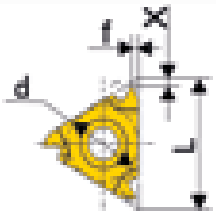
★ Recommended grade ☆ Optional grade ○ Make to Order

A JUAN cutting tool

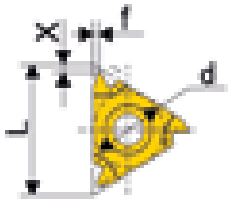
Round DIN405

DIN 405
Tolerance class:7G

R type



L type



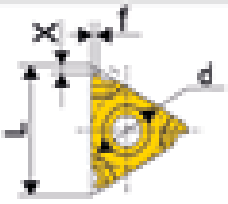
Type	Designation Right	Designation Left	TPI	Dimensions(mm)				Recommended grade			
				d	L	X	f	5025		2125	
								R	L	R	L
Internal	16ER-10RD	16EL-10RD	10	9.525	16	1.1	1.2	★	★	★	★
	16ER-8RD	16EL-8RD	8	9.525	16	1.4	1.3	★	★	★	★
	16ER-6RD	16EL-6RD	6	9.525	16	1.5	1.7	★	★	★	★
	22ER-6RD	22ER-6RD	6	12.7	22	1.5	1.7	★	★	★	★
	22ER-4RD	22ER-4RD	4	12.7	22	2.2	2.3	★	★	★	★
	27ER-4RD	27ER-4RD	4	15.875	27	2.2	2.3	★	★	★	★

★ Recommended grade ☆ Optional grade ○ Make to Order

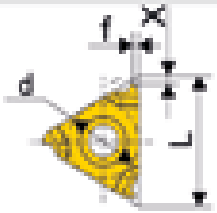
Trapez DIN103

ISO 2901-2904
Tolerance class:7G


R type

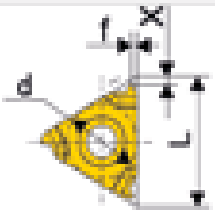



L type

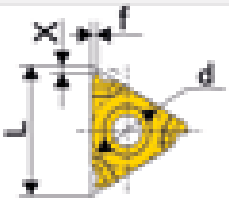


Type	Designation Right	Designation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	5025		2125	
								R	L	R	L
External	11ER-1.5TR	11EL-1.5TR	1.5	6.35	11	0.8	0.9	★	★	★	★
	16ER-1.5TR	16EL-1.5TR	1.5	9.525	16	1	1.1	★	★	★	★
	16ER-2.0TR	16EL-2.0TR	2	9.525	16	1.1	1.3	★	★	★	★
	16ER-3.0TR	16EL-3.0TR	3	9.525	16	1.3	1.5	★	★	★	★
	22ER-4.0TR	22EL-4.0TR	4	12.7	22	1.7	1.9	★	★	★	★
	22ER-5.0TR	22EL-5.0TR	5	12.7	22	2.1	2.5	★	★	★	★
	27ER-6.0TR	27EL-6.0TR	6	15.875	27	2.3	2.7	★	★	★	★


R type




L type



Type	Designation Right	Designation Left	TPI	Dimensions(mm)				Recommended grade		Recommended grade	
				d	L	X	f	5025		2125	
								R	L	R	L
Internal	11IR-1.5TR	11IL-1.5TR	1.5	6.35	11	0.8	0.9	★	★	★	★
	16IR-1.5TR	16IL-1.5TR	1.5	9.525	16	1	1.1	★	★	★	★
	16IR-2.0TR	16IL-2.0TR	2	9.525	16	1.1	1.3	★	★	★	★
	16IR-3.0TR	16IL-3.0TR	3	9.525	16	1.3	1.5	★	★	★	★
	22IR-4.0TR	22IL-4.0TR	4	12.7	22	1.7	1.9	★	★	★	★
	22IR-5.0TR	22IL-5.0TR	5	12.7	22	2.1	2.5	★	★	★	★
	27IR-6.0TR	27IL-6.0TR	6	15.875	27	2.3	2.7	★	★	★	★

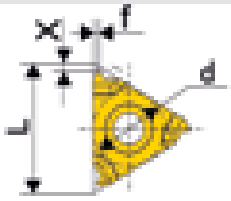
★ Recommended grade ☆ Optional grade ○ Make to Order

A JUAN cutting tool

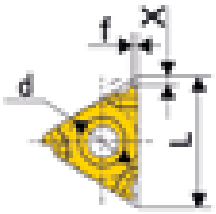
American trapez 29°thread

ANSI B1.5-1988 ANSI B1.5-1988
Tolerance class: 2G

R type

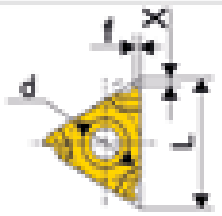


L type

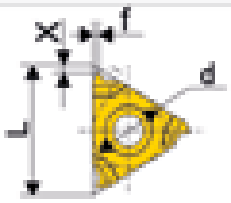


Type	Designation Right	Designation Left	TPI	Dimensions(mm)				Recommended grade			
				d	L	X	f	5025		2125	
								R	L	R	L
External	11ER-16AOBE	11EL-16AOBE	16	6.35	11	1	1.1	★	★	★	★
	16ER-16AOBE	16EL-16AOBE	16	9.525	16	1	1.1	★	★	★	★
	16ER-14AOBE	16EL-14AOBE	14	9.525	16	1	1.2	★	★	★	★
	16ER-12AOBE	16EL-12AOBE	12	9.525	16	1.1	1.2	★	★	★	★
	16ER-10AOBE	16EL-10AOBE	10	9.525	16	1.3	1.4	★	★	★	★
	16ER-8OBE	16EL-8AOBE	8	9.525	16	1.4	1.5	★	★	★	★
	16ER-6AOBE	16EL-6AOBE	6	9.525	16	1.7	1.9	★	★	★	★
	22ER-6AOBE	22EL-6AOBE	6	12.7	22	1.8	2.1	★	★	★	★
	22ER-5AOBE	22EL-5AOBE	5	12.7	22	3	3.3	★	★	★	★
	27ER-4AOBE	27EL-4AOBE	4	15.875	27	2.4	2.7	★	★	★	★

R type



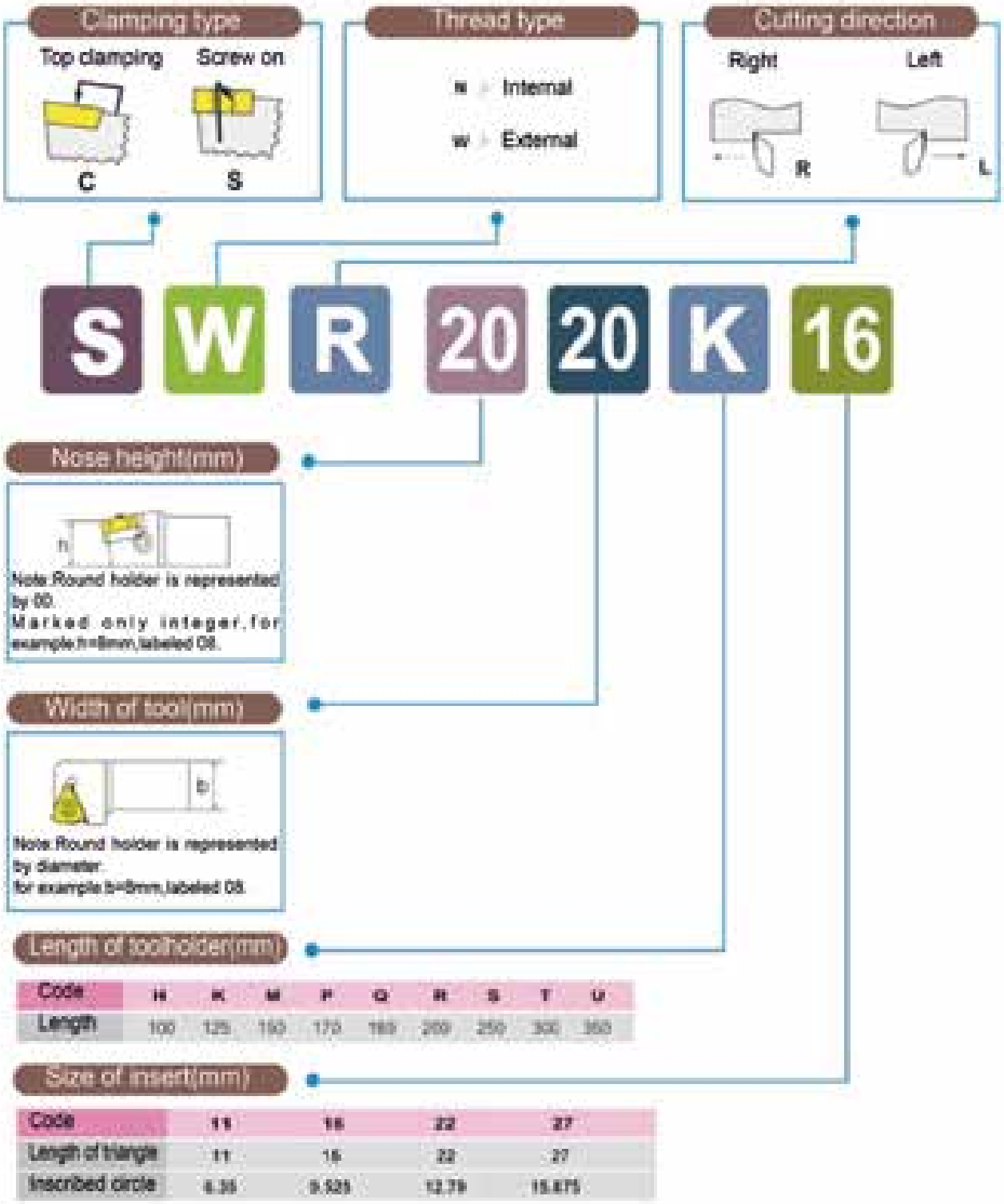
L type



Type	Designation Right	Designation Left	TPI	Dimensions(mm)				Recommended grade			
				d	L	X	f	5025		2125	
								R	L	R	L
Internal	11NR-16AOBE	11NL-16AOBE	16	6.35	11	1	1.1	★	★	★	★
	16NR-16AOBE	16NL-16AOBE	16	9.525	16	1	1.1	★	★	★	★
	16NR-14AOBE	16NL-14AOBE	14	9.525	16	1	1.2	★	★	★	★
	16NR-12AOBE	16NL-12AOBE	12	9.525	16	1.1	1.2	★	★	★	★
	16NR-10AOBE	16NL-10AOBE	10	9.525	16	1.3	1.4	★	★	★	★
	16NR-8OBE	16NL-8AOBE	8	9.525	16	1.4	1.5	★	★	★	★
	16NR-6AOBE	16NL-6AOBE	6	9.525	16	1.7	1.9	★	★	★	★
	22NR-6AOBE	22NL-6AOBE	6	12.7	22	1.8	2.1	★	★	★	★
	22NR-5AOBE	22NL-5AOBE	5	12.7	22	3	3.3	★	★	★	★
	27NR-4AOBE	27NL-4AOBE	4	15.875	27	2.3	2.6	★	★	★	★

★ Recommended grade ☆ Optional grade ○ Make to Order

Thread toolholder naming rules



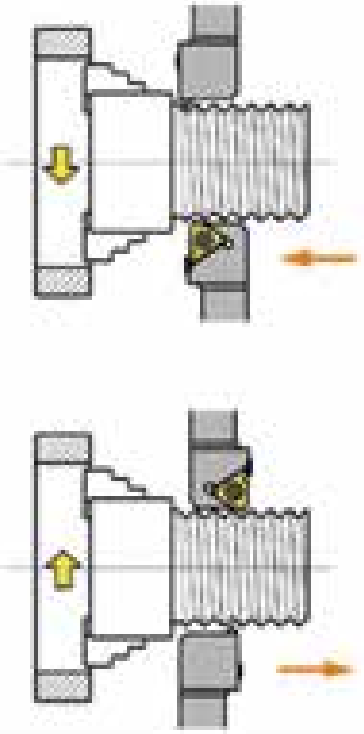
A JUAN cutting tool

In order to obtain the best thread processing effect,please follow the steps below:

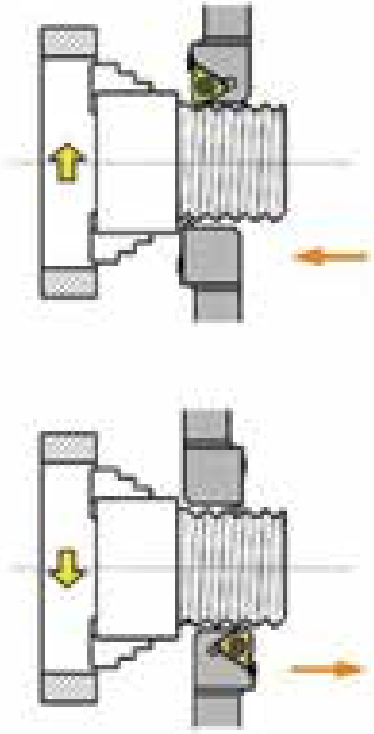
1. Choosing the right thread processing way.
2. Choose helix angle,choose shim.
3. Choose the appropriate insert and size of toolholder.
4. Reference standard thread processing programming parameter table,choose appropriate cutting data.
5. Choose feed method.

Machine type of thread tool

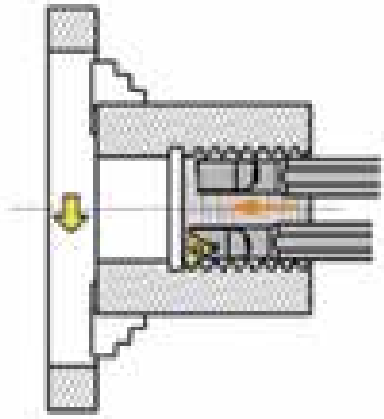
External processing - Right hand thread



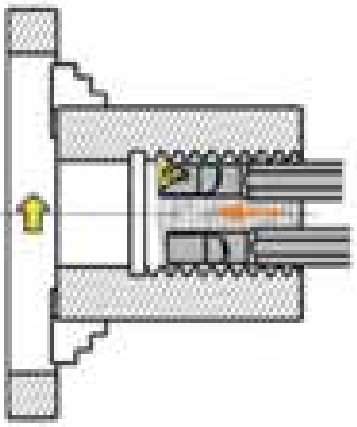
External processing - Left hand thread



Internal processing - Right hand thread



Internal processing - Left hand thread



Choose helix angle and shim

The clearance angle of thread mainly along the edge of tool. This will significantly impact on heat dissipation, tool wear extension, tool life, production safety, the quality of the thread. The clearance angle of thread profile depend on the helix angle, because both are similar. If inclined angle different from helix angle, and the clearance angle is changed.

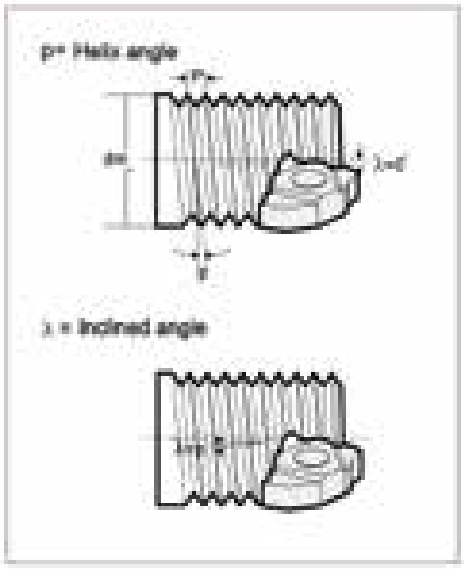
The inclined angle must be the same as helix angle to avoid excessive wear and lead to shorten the tool life. Helix angle is calculated by the following formula:

$$\rho = \arctan \frac{P}{d_2 \cdot \pi}$$

P=Pitch
d_2=Pitch diameter
Common inclined angle is 1° MT standard shim inclined angle is 1°.
Calculation of clearance angle:
The clearance angle is calculated by the following formula:

$$\beta = \arccos(\tan\theta \times \tan\alpha)$$

2θ= Thread profile angle
α= Rake angle external is 15° internal is 15° for standard tool



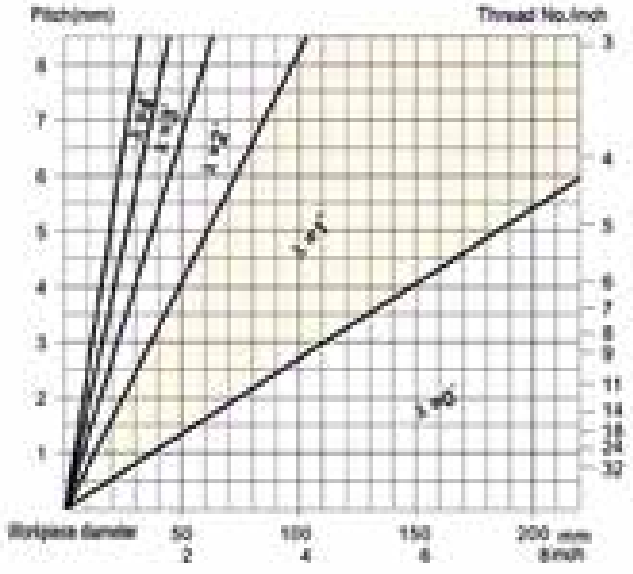
Thread profile 2θ	β	
	External	Internal
60°	8.5°	6°
55°	7°	7°
30°	4°	2.5°
29°	4°	2.5°

If helix angle<clearance angle,the side insert can produce interference,must be replace the shim. Please adjust the difference between helix angel and inclined angle to 2°-0° through replace the shim.

Ex:if P=1.5,d=24mm
Helix angle1.14°-(2°-0°)=Inclined(0.86°~1.14°)
Choose standard shim 1° to processe.

Pitch	Size	Shim range	Shim
0.5-3.0	16	0 1 2 3	MT16-00M MT16-01M MT16-02M MT16-03M
3.5-6.0	22	0 1 2 3	MT22-00M MT22-01M MT22-02M MT22-03M

(MT16-03M/MT22-03M)



A JUAN cutting tool

Turning condition recommended list

ISO	Material			Unit cutting force Kc0.4 N/mm²	Hardness HB	Grade JN5025 Cutting speed(m/min)	Grade JN501 Cutting speed(m/min)
P	Carbon steel	C<0.15%		1900	125	150-175	110-140
		C=0.35%		2100	150	140-155	100-120
		C=0.60%		2250	200	130-145	90-110
	Alloy steel	Annealed		2100	180	110-130	70-100
		Hardened		2600	275	80-100	60-80
		Hardened		2700	300	70-80	50-70
		Hardened		2850	350	60-80	40-60
	Hight alloy steel	Annealed		2600	200	90-115	70-90
		Harde ned		3900	325	70-90	50-70
	Cast steel	Un alloy		2000	180	180-210	140-170
		Low alloy		2500	200	90-110	60-85
		High alloy		2700	225	90-115	60-80
		Martensitic steel		3800	250	40-50	30-40
M	Stainless steel	Austenitic		2450	180	110-130	70-110
		Martensitic/Ferritic		2300	200	130-170	100-140
K	Malleable cast iron	Ferritic		1100	130	110-140	80-120
		Pearlitic		1100	230	85-105	70-90
	Grey cast iron	Low tensile strength		1100	180	110-140	80-110
		High tensile strength		1500	260	90-115	70-100
	Nodular cast iron	Ferritic		1100	180	110-130	80-120
		Pearlitic		1500	250	80-100	60-80
N	Alumium alloy	Non aging		500	60	1300-1450	1100-1200
		Aged		800	100	450-500	350-400
	Cast alumium alloy	Non aging		750	75	430-470	400-420
		Aged		900	90	250-290	200-240
S	Heat-resistant alloy	Fe based	Annealed	3000	200	35-50	25-35
			Aged	3050	280	25-35	20-30
		Nickel or Cobalt based	Annealed	3500	250	15-25	10-15
			Aged	4150	350	15-20	10-15
			Cast	4150	320	10-15	10-15
H	Harded steel	Harded steel		4500	HRC55	40-50	30-40

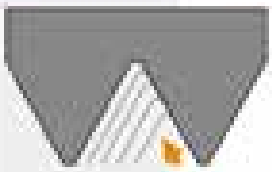
Note: • The list shows the range number would choose high number in cutting,when use new cutting speed,should check the edge condition.
• Would use high cutting speed in stainless thread cutting,avoid built-up.
• Would reduce cutting parameter in small pitch threading and using small nose radius tool.
• Would use big nose radius roughing to improve small nose radius tool life in using small nose radius tool threading.

Thread tools feed method

Radial in-feed

- Simple to use,high generality.
- The V type chipping caused by machining steel will produce high bend stress on cutting edge.
- It ask for small cutting depth,sharp edge and good toughness when processing.
- High cutting heat,it's hard to control the V type chipping.
- Due to the left and the right of the chipping contact length is long,easy to produce vibration,and increase the nose load.

Flank in-feed



- Small bending stress of cutting edge,stable condition,better shape chipping,large cutting depth.
- There is enough space for chipping discharge when flank in-feed.
- Severe wear on right flank.

Modified flank in-feed

- Right cutting edge also engage on cutting depth to a certain extent, it can reduce the abrasion on right size of clearance face.
- Small bending stress of cutting edge,stable condition,better shape chipping,large cutting depth
- Good cutting processing performance.

Alternate flank in-feed

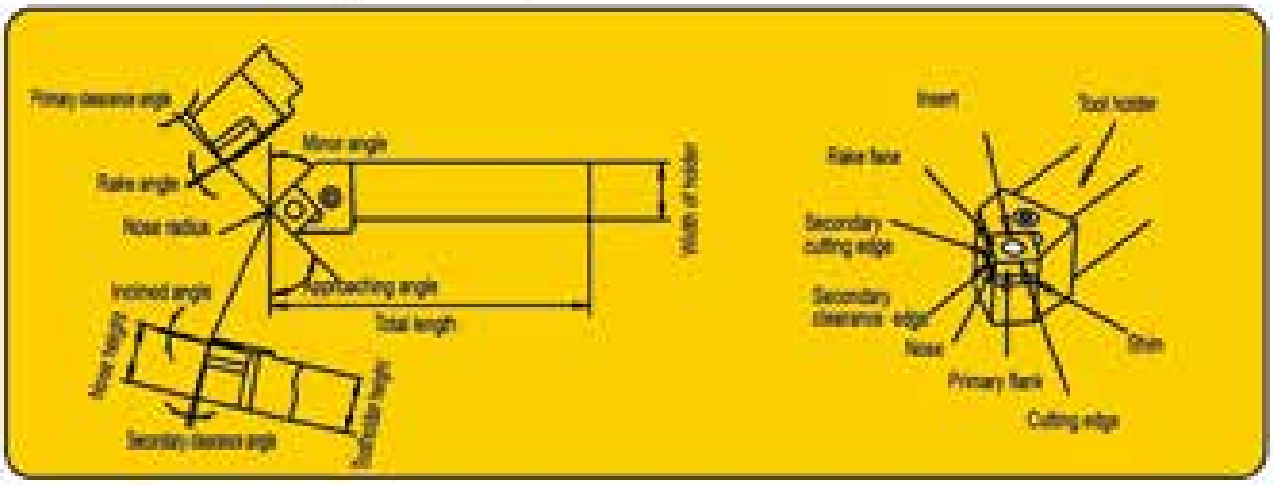
- Alternate use cutting edge,even wearing of left and right side back tool face,can lengthen tool life.
- Chipping discharge from left and right direction,good chip flow.
- Suitable for big pitch thread cutting.

Try to use Flank in-feed or Alternate flank in-feed under the condition of machine tools and programming system allows,and can effectively eliminate vibration,enough space for chipping discharge between teeth,small stress of cutting edge,stable condition,chipping controlled when processing thread.

A JUAN cutting tool

The functions of each part of turning tools

1. The names of each part of turning tools



2. Effects of rake angle

Large rake angle makes cutting edge sharper,reduces resistant forces of chip flow, diminishes friction and prevent deformation, leading to smaller cutting forces and cutting power, lower cutting temperature, less abrasion and higher surface quality. However, too large rake angle would reduce the rigidity and strength of tool. Heat can't be diffused easily. Serious breakage and abrasion on tool would occur, reducing tool life. Please choose rake angle according to machining conditions.

Value selection	Situations
Small rake angle	●When machining brittle and hard materials ●When roughing and intermittent cutting
Big rake angle	●When machining plastic or soft materials ●When finishing

3. Effects of clearance angle

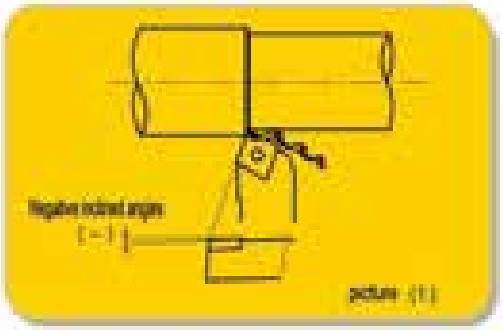
The main function of clearance angle is to reduce the friction between the clearance face of tool and surface of workpiece. When the rake angle is fixed, larger clearance angle can increase the sharpness of cutting edge, reduce cutting force and friction, and then achieve higher surface quality. However, if clearance angle is too large, the strength of cutting edge would decrease. Also, heat can't be diffused easily and serious abrasion would occur, reducing tool life.
The principle of choosing clearance angle: Choose small clearance angle if friction is not serious.

Value selection	Situations
Small clearance angle	●In order to increase nose strength when roughing ●When machining brittle and hard materials
Big clearance angle	●In order to reduce friction when finishing ●When machining materials easy to be hardened

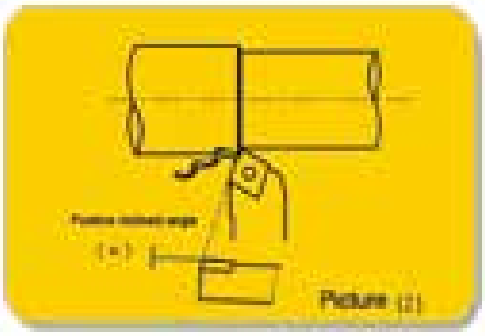
4. Effect of inclined angle

Positive or negative inclined angle determines the direction of chip flow, and also affects the strength and impact resistance of insert nose.

●As diagram(1) shows, when the inclined angle is negative, namely nose is in the lowest point as apposed to the bottom of tool, chips flow to the machined surface of workpiece.



- As diagram(2) shows, when inclined angle is positive, namely the nose is in the highest point as apposed to the bottom of the tool, chips flow to the areas of workpiece surface that haven't been machined.
- The change of inclined angle also affects insert nose strength and impact resistance. When the inclined angle is negative, the nose is in the lowest point of cutting edge. When the cutting edge enters the workpiece, the contacting point is on the cutting edge or rake face, protecting the nose from impact and increase the strength of the nose. Normally, negative inlined angle should be chosen for tools with big rake angle. This can not only increase nose strength, but also prevent the impact of entry.

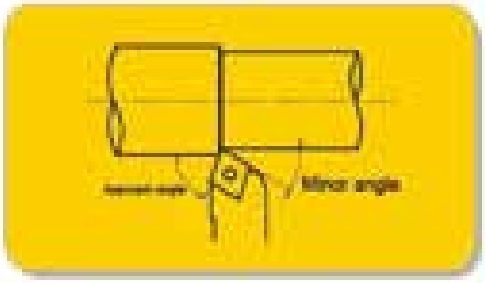


Picture (2)

5 . Effect of approach angle

Reduced approaching angle increase the strength of tools and enable heat to diffuse easily, improving surface quality. This is because when the approach angle is small, cutting edge width is large, and then the unit width of cutting edge bears less cutting force. Meanwhile, tool life can be improved.

Normally, select 90 approach angle for turning of slender and step shaft; select 45 approach angle for external turning, end surface machining and chamfering. When approach angle is larger, radis force is reduced, cutting is stable, cutting thickness is increased, and chip breaking is excellent.



Value selection	Situations
Small approach angle	●
Big approach angle	●

6 . Effect of minor angle

Minor angle is the main angle that can affect surface quality, and it can also affect tool strength. If the approach angle is too small, the friction between the secondary flank and machined surface of workpiece will increase, causing vibration.

The principle of selecting minor angle: Select small minor angle when roughing or when the friction is unaffected and there is no vibration. Select large minor angle when finishing.

7 . Nose radius

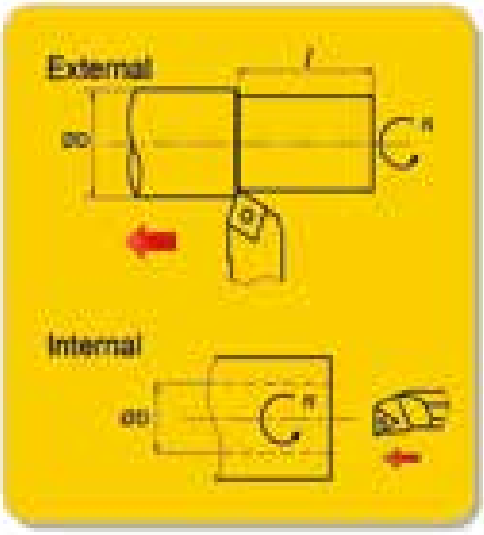
Nose radius significantly affects nose strength and surface quality. Large nose radius means higher cutting edge strength, and the abrasion on the rake face and clearance face can be reduced to some extent. However, if the nose radius is too large, radias force will increase, and vibration is easy to occur, affecting machining precision and surface quality.

Value selection	Situations
Small nose radius	● ● ●
Large nose radius	● ● ●

A JUAN cutting tool

Calculate method of turning parameter

1、Calulating the cutting speed



$$Vc=\frac{\pi\times D\times n}{1000}\ (m/min)$$

Vc: Cutting speed

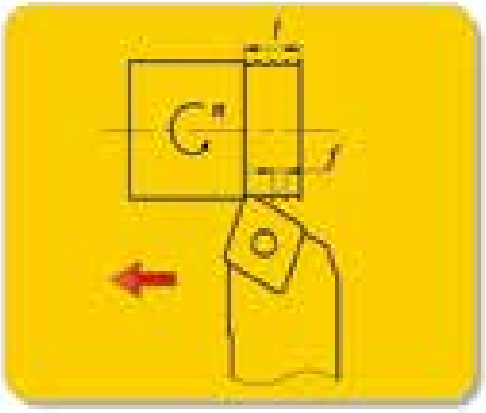
n: Spindle speed

D: Workpiece diameter

Ex: If spindle speed is 280 rev/min,turning the diameter of 150mm,the cutting speed is:

$$Vc=\frac{\pi\times D\times n}{1000}\ (m/min)\ =132(m/min)$$

2 .Calculating the cutting feed



$$f=\frac{l}{n}\ (mm/rev)$$

f: Feed rate per revolution

l: Cutting length per minute

n: Spindle speed

Ex: If spindle speed is 500rev/min,cutting length per minute is 100mm/min,the feed rate per revolution is:

$$f=\frac{l}{n}=\frac{100}{500}=0.2(mm/rev)$$

A JUAN cutting tool

3 . Calculating the cutting time of external and internal

$$T=\frac{l}{f\times n}\ (min)$$

T:Cutting time

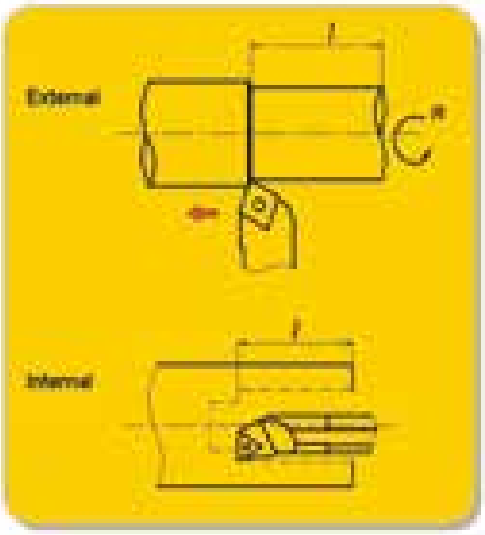
l:Length of cutting zone

f:Feed rate

n:Spindle speed

Ex:If spindle speed is 250rev/min,feed rate is 0.2mm/rev.
the cutting length is 150mm, the time requires

$$T=\frac{l}{f\times n}=\frac{150}{0.2\times 250}=3(min)$$



4 . Calculating the time of face turning(constant line speed)

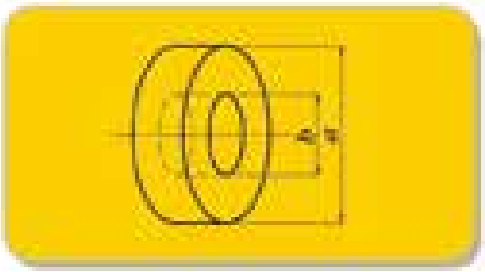
$$T=\frac{\pi\times(a^2-b^2)}{4000\times Vc\times f}\ (min)$$

T:Cutting time

Vc:Cutting speed

f:Feed rate

If it's no-inner hole of turning face,b=0,the formula is still valid



5 . Calculating the theoretical value of surface roughness

$$R=\frac{f^2}{8r_\varepsilon}\times 1000\ (\mu m)$$

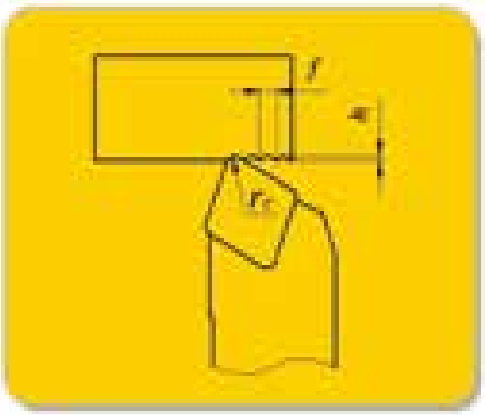
R:The theoretical value of surface roughness

f:Feed rate

r_ε:Nose radius

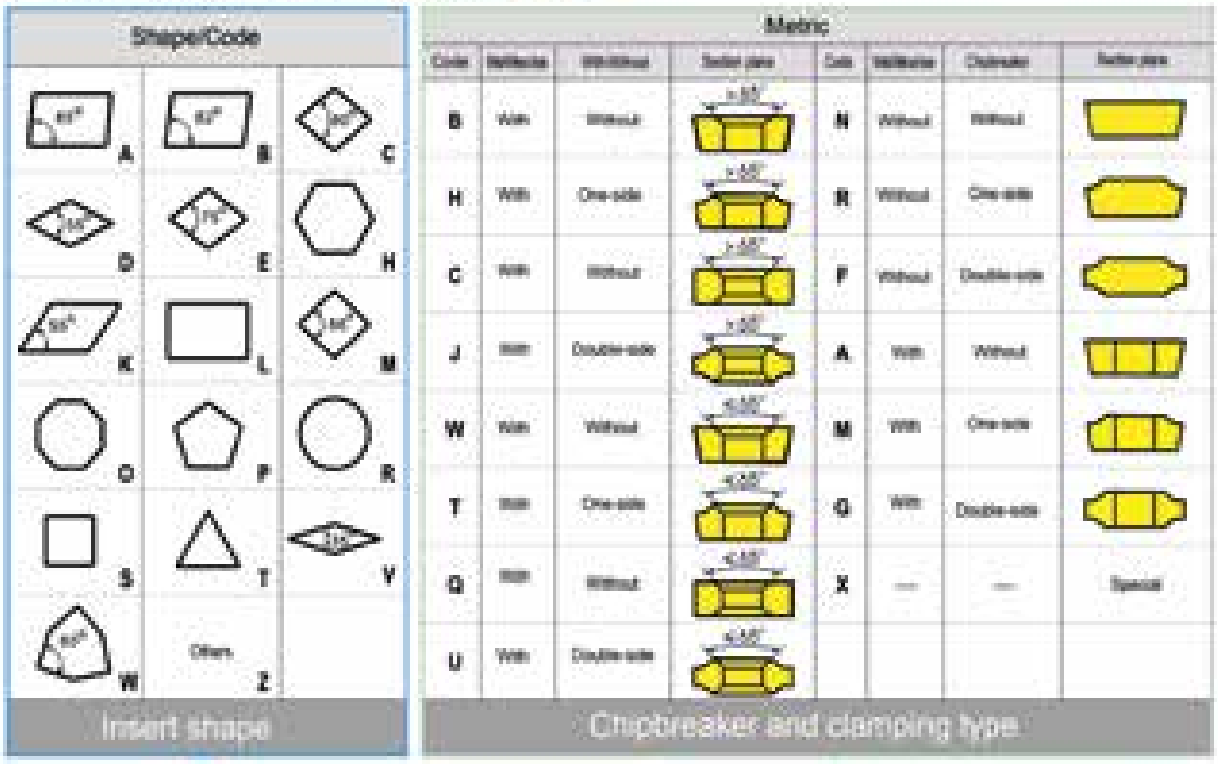
Ex: If feed rate is 0.2mm/rev,nose radius is 0.4mm,the theoretical value of surface roughness is

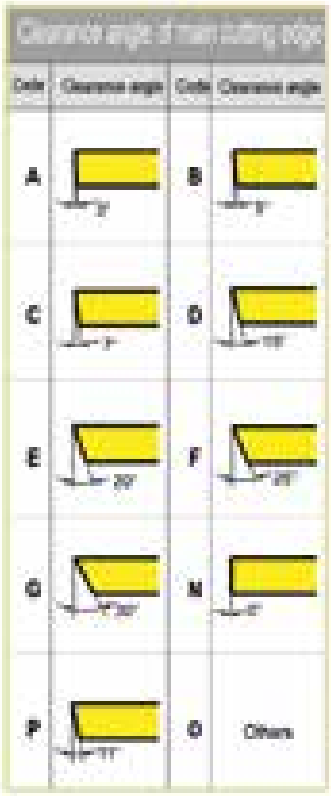
$$R=\frac{f^2}{8r_\varepsilon}\times 1000=\frac{0.2^2}{8\times 0.4}\times 1000=12.5(\mu m)$$

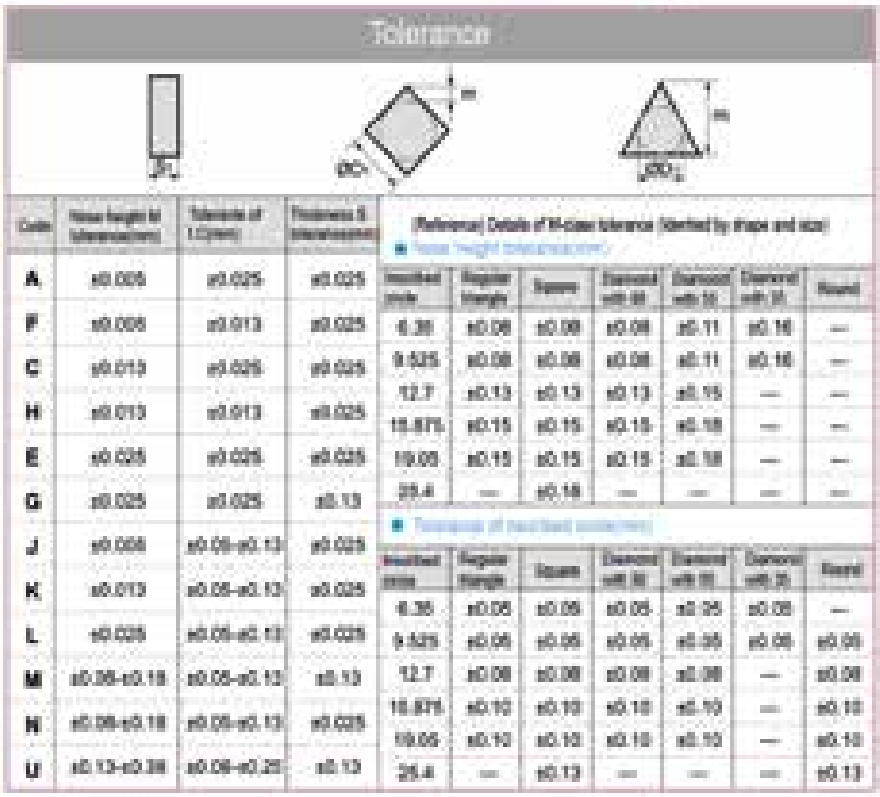


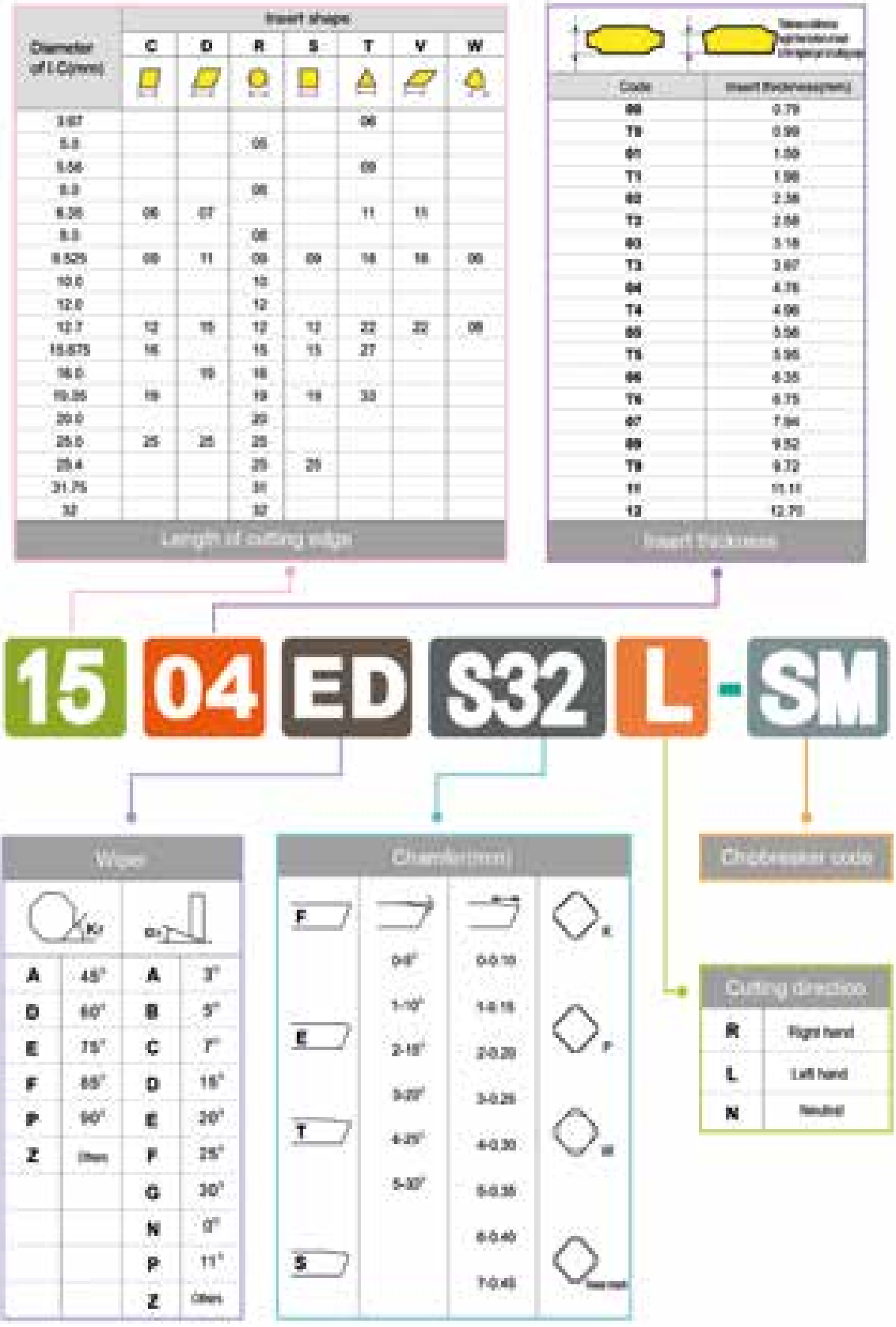
Milling

Indexable milling insert naming rules

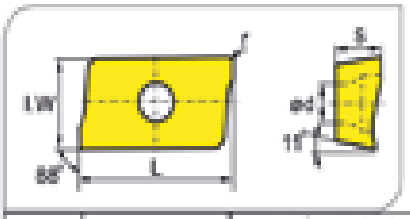







Insert shape
C
D
R
S
T
V
W
Length of cutting edge
Code
Insert thickness
15
04
ED
S32
L
SM
Wiper
Chamfer(mm)
Chipbreaker code
Cutting direction
R
L
N

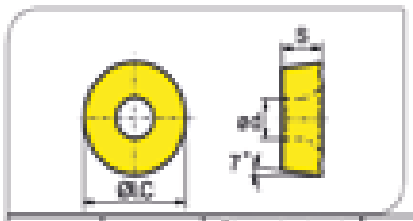
APㅁㅁ



Shape	Type	Dimension(mm)					Coated cemented carbide														Cemented carbide				
							P					M				K										
		L	W	S	ød	r	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230					
	APKT1003PDR	10.92	9.70	3.50	2.85	0.4				○			●		☆	☆			○							
	APKT1104-GM	12.24	6.50	3.60	2.8	0.4				○			●		☆	☆			○							
	APKT1108-GM	12.24	6.50	3.60	2.8	0.8				○			●		☆	☆			○							
	APKT11T312-GM	12.24	6.50	3.60	2.8	1.2				○			●		☆	☆			○							
	APKT11T316-GM	12.24	6.50	3.60	2.8	1.6				○			●		☆	☆			○							
	APKT1604DR-GM	17.88	9.3	5.76	4.4	0.8				○			●		☆	☆			○							
	APKT1104-AC	12.24	6.50	3.60	2.8	0.4																				
	APKT1108-AC	12.24	6.50	3.60	2.8	0.8																				
	APKT1604DR-AC	17.88	9.3	5.76	4.4	0.8																				
	APMT1135PDER-M2	11.40	6.20	3.65	2.80	0.8		☆					●			☆										
	APMT1604PDER-M2	17.36	9.24	4.76	4.40	0.5		☆					●			☆										
	APMT1135PDER-H2	11.40	6.20	3.50	2.80	0.8		☆					●			☆										
	XOMT135-08-H2	11.40	6.20	3.50	2.80	0.8		☆					●			☆										
	APMT1604PDER-H2	17.25	9.25	4.76	4.40	0.8		☆					●			☆										
	XOMT1504-08-H2	17.25	9.25	4.76	4.40	0.8		☆					●			☆										
	APET1604SAPDER	17.8	9.52	4.76	4.40	1.6		☆					☆			○					☆	○				
	APET1604SAPDEL	17.8	9.52	4.76	4.40	1.6		☆					☆			○					☆	○				
	APMT1504T-MT	16.2	12.7	4.76	5.50	0.4		☆																		

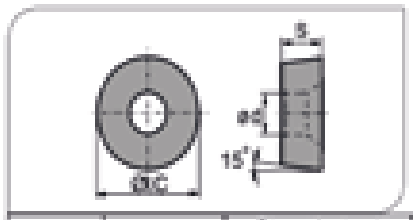
B JUAN cutting tool

RC□□



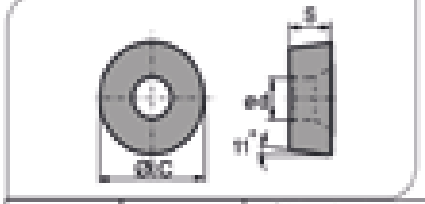
Shape	Type	Dimension(mm)			Coated cemented carbide																Cemented carbide				
					P					K															
		ø I.C	S	d	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230					
	RDKT10T3M0	10	3.97	4.4		☆	○	○		○	★			☆											
	RDKT1204M0	12	4.76	4.4		☆	○	○		○	★			☆											
	RDKX2507M0	25.0	7.94	7.4		☆	○	○				★		☆											
	RDKX3207M0	32.0	9.52	9.3		☆	○	○				★		☆											
	RDKX1605M0																								
	RDKX1204M0																								
	RDKX0905M0																								

RD□□



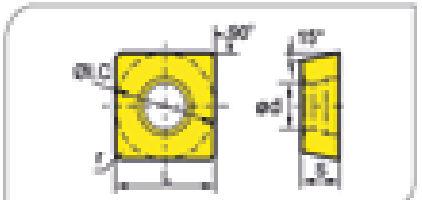
Shape	Type	Dimension(mm)				Coated cemented carbide																Cemented carbide				
						P					K															
		R	I.C	S	d	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230					
	RDKX0502M0	4	8	2.38	2.4		☆		○			★			☆											
	RDKT10T3M0	5	10	3.97	4.4		☆		○			★			☆											
	RDKT1204M0	6	12	4.76	4.4		☆		○			★			☆											
	RDKT1605M0	8	16	5.56	5.5		☆		○			★			☆											
	RDKX2005M0	10	20	6.35	6.5		☆		○			★			☆											
	RDKT1204M0TN	6	12	4.76	4.4		☆		○			★			☆											
	RDKT1605M0TN	8	16	4.76	5.5		☆		○			★			☆											
	RDKT10T3M0TN	5	10	3.97	4.4		☆		○			★			☆											
	RDKT1204M0TN	6	12	4.76	4.4		☆		○			★			☆											
	RDKT1605M0TN	8	16	4.76	5.5		☆		○			★			☆											

RP□□



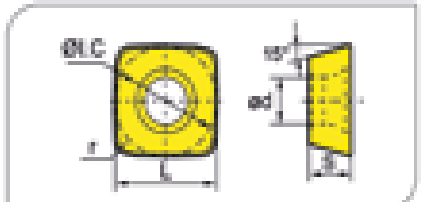
Shape	Type	Dimension(mm)			Coated cemented carbide																Cemented carbide					
					P					M					K											
		ϕ1.C	S		7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230						
	RPM0602M0	6	2.38	3.4		☆			○		★			☆												
	RPM0603M0	6	3.18	3.4		☆			○		★			☆												
	RPM1003M0	10	3.97	4.4		☆			○		★			☆												
	RPM1204M0	12	4.76	4.4		☆			○		★			☆												

SD□□



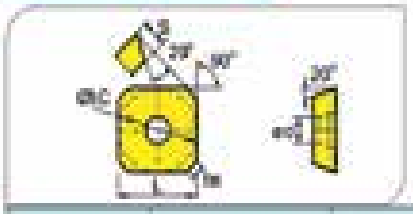
Shape	Type	Dimension(mm)				Coated cemented carbide																Cemented carbide					
						P					M					K											
		L	ϕ1.C	S	d	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230						
	SDMT090308	9.525	9.525	3.18	4.4	0.8	○	☆	★	○			★								★						

SD□□

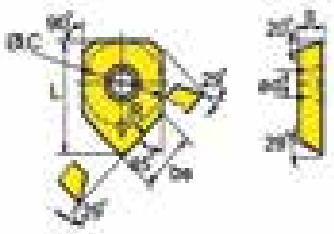


Shape	Type	Dimension(mm)				Coated cemented carbide																Cemented carbide					
						P					M					K											
		L	ϕ1.C	S	d	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230						
	SDMT09T312-5M	9.525	9.525	3.18	4.4	1.2	○	☆	★				★								★						
	SDMT120412-5M	12.7	12.7	4.76	4.4	1.2	○	☆	★				★								★						

SE□□

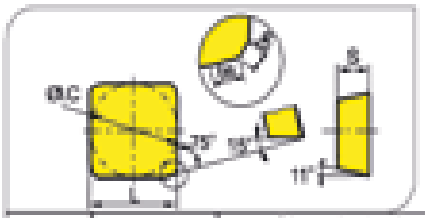


Shape	Type	Dimension(mm)						CVD coating						PVD coating						Cermet	Cemented carbide
		L	ØI.C	S	m1	ha	R	P070	P080	S030	S040	S100	S110	S120	S020	S025	S125	S130	S040	S035	
	SEET1213-SF	13.4	13.4	3.97	4.1	2.55		●		★						★		○			
	SEET1213-WF	13.4	13.4	3.97	4.1	2.55				★			○		★	○		○			
	SEET1213-SF	13.4	13.4	3.97	4.1	2.55				★						○		○			
	SEET1213-PR	13.4	13.4	3.97	4.1	2.55		●	★	★		○				★		★			
	SEET1213-MM	13.4	13.4	3.97	4.1	2.55				★		○	★			★		○			
	SEET1213-SM	13.4	13.4	3.97	4.1	2.55				★						○		★			
	SEET1213-SR	13.4	13.4	3.97	4.1	2.55		●	★		★		○			★		★			
	SEET1213-MR	13.4	13.4	3.97	4.1	2.55		●			★		★					★			
	SEET1213-AR	13.4	13.4	3.97	4.1	2.55															
	SEET1213-R	17.82	13.4	3.97	4.1	9.46	500		★	●			★			★					



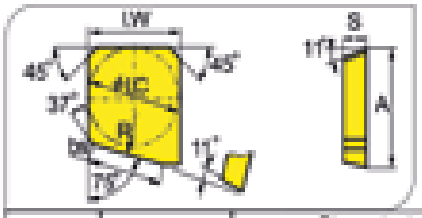
B JUAN cutting tool

SP□N



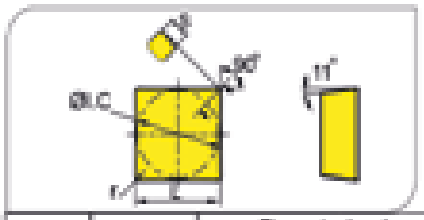
Shape	Type	Dimension(mm)					Coated cemented carbide																Cemented carbide				
							P					M					K										
		L	φ1.C	S	bs	bs	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230					
	SPEN1203EDR	12.7	12.7	3.18	1	1.4		○	★	☆			☆						○								
	SPEN1203EDL	12.7	12.7	3.18	1	1.4		○	★	☆			☆						○								
	SPEN1203EDER	12.7	12.7	3.18	1	1.4		○	★	☆			☆						○								
	SPEN1203EDEL	12.7	12.7	3.18	1	1.4		○	★	☆			☆						○								
	SPEN1203EDFR	12.7	12.7	3.18	1	1.4		○	★	☆			☆						○								
	SPEN1203EDFL	12.7	12.7	3.18	1	1.4		○	★	☆			☆						○								
	SPEN1203EDSR	12.7	12.7	3.18	1	1.4		○	★	☆			☆						○								
	SPEN1203EDSL	12.7	12.7	3.18	1	1.4		○	★	☆			☆						○								
	SPEN1203EDTR	12.7	12.7	3.18	1	1.4		○	★	☆			☆						○								
	SPEN1203EDTL	12.7	12.7	3.18	1	1.4		○	★	☆			☆						○								
	SPEN1504EDER	15.875	15.875	4.76	1	1.4		○	★	☆			☆						○								
	SPEN1504EDEL	15.875	15.875	4.76	1	1.4		○	★	☆			☆						○								
	SPEN1504EDFR	15.875	15.875	4.76	1	1.4		○	★	☆			☆						○								
	SPEN1504EDFL	15.875	15.875	4.76	1	1.4		○	★	☆			☆						○								
	SPEN1504EDSR	15.875	15.875	4.76	1	1.4		○	★	☆			☆						○								
	SPEN1504EDSL	15.875	15.875	4.76	1	1.4		○	★	☆			☆						○								
	SPEN1504EDTR	15.875	15.875	4.76	1	1.4		○	★	☆			☆						○								
	SPEN1504EDTL	15.875	15.875	4.76	1	1.4		○	★	☆			☆						○								

SP□X



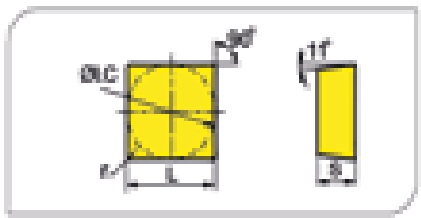
Shape	Type	Dimension(mm)						Coated cemented carbide																Cemented carbide				
								P					M					K										
		A	ØLC	LW	S	bs	R	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230					
	SPEX1203EDL-1	15	12.7	12.7	3.18	10	500	☆	○	★	☆			☆						☆								
	SPEX1203EDR-1	15	12.7	12.7	3.18	10	500	☆	○	★	☆			☆						☆								
	SPEX1504EDL-1	16.2	15.875	15.875	4.76	10	500	☆	○	★	☆			☆						☆								
	SPEX1504EDR-1	16.2	15.875	15.875	4.76	10	500																					

SP□□



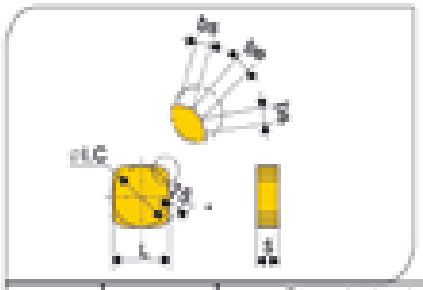
Shape	Type	Dimension(mm)				Coated cemented carbide															Cemented carbide					
						P					M					K										
		L	I.C	S	r	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230					
	SPMR090304	9.525	9.525	3.18	0.4	☆	○	★				☆														
	SPMR090308	9.525	9.525	3.18	0.8	☆	○	★				☆														
	SPMR090T304	9.525	9.525	3.97	0.4	☆	○	★				☆														
	SPMR090T308	9.525	9.525	3.97	0.8	☆	○	★				☆														
	SPMR120304	12.7	12.7	3.18	0.4	☆	○	★				☆														
	SPMR120308	12.7	12.7	3.18	0.8	☆	○	★				☆														
	SPMR120312	12.7	12.7	3.18	1.2	☆	○	★				☆														
	SPMT110512-EM	11.5	11.5	5.2	1.2	☆	○	★				☆														
	SPMT110408-EM	11.5	11.5	4.3	0.8	☆	○	★				☆														
	SPMT090408-EM	9.8	9.8	4.3	0.8	☆	○	★				☆														
	SPMT07T308-EM	7.94	7.94	3.97	0.8	☆	○	★				☆														
	SPMT060204-EM	6.0	6.0	2.38	0.4	☆	○	★				☆														
	SPMT050204-EM	5.0	5.0	2.38	0.4	☆	○	★				☆														

SP□□



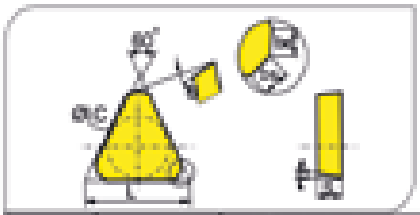
Shape	Type	Dimension(mm)				Coated cemented carbide															Cemented carbide					
						P					M					K										
		L	ØI.C	S	r	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230					
	SPUN090304	9.525	9.525	3.18	0.4	☆	○	★	☆			★														
	SPUN090308	9.525	9.525	3.18	0.8	☆	○	★	☆			★														
	SPUN120304	12.7	12.7	3.18	0.4	☆	○	★	☆			★														
	SPUN120308	12.7	12.7	3.18	0.8	☆	○	★	☆			★														
	SPUN120312	12.7	12.7	3.18	1.2	☆	○	★	☆			★														
	SPUN150408	15.875	15.875	4.76	0.8	☆	○	★	☆			★														
	SPUN150412	15.875	15.875	4.76	1.2	☆	○	★	☆			★														
	SPUN190408	19.05	19.05	4.76	0.8	☆	○	★	☆				★													
	SPUN190412	19.05	19.05	4.76	1.2	☆	○		★				★													
	SPUN190416	19.05	19.05	4.76	1.6	☆	○		★			★														
	SPGN090304	9.525	9.525	3.18	0.4	☆	○	★	☆			★														
	SPGN090308	9.525	9.525	3.18	0.8	☆	○	★	☆			★														
	SPGN120308	12.7	12.7	3.18	0.8	☆	○	★	☆			★														
	SPGN120404	12.7	12.7	4.76	0.4	☆	○	★	☆			★														
	SPGN120408	12.7	12.7	4.76	0.8	☆	○	★	☆			★														
	SPGN120412	12.7	12.7	4.76	1.2	☆	○	★	☆			★														
	SPGN150408	15.875	15.875	4.76	0.8	☆	○	★	☆			★														
	SPGN150412	15.875	15.875	4.76	1.2	☆	○		★			★														
	SPGN190412	19.05	19.05	4.76	1.2	☆	○		★				★													
	SPGN190416	19.05	19.05	4.76	1.6	☆	○		★				★													

SN□□



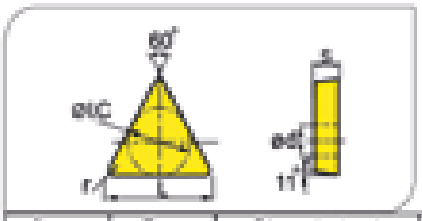
Shape	Type	Dimension(mm)					Coated cemented carbide																Cemented carbide					
							P					M					K											
		L	I.C	S	be	bs	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230						
	SNGN 2040EN	12.7	12.7	4.76	0.9	1.5		★	☆	☆	○																	
	SNGN 3540EN	15.875	15.875	4.76	0.9	1.5		★	☆	☆	○																	
	SNGN 4540EN	19.05	19.05	4.76	1.6	1.5		★	☆	☆	○																	

TP□□



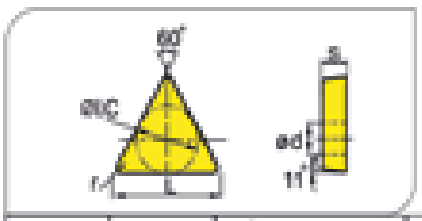
Shape	Type	Dimension(mm)					Coated cemented carbide																Cemented carbide					
							P					M					K											
		L	I.C	S	be	bs	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230						
	TPMX220405R	22	12.7	4.76	1.4	0.7	○	☆	★	○			☆						☆									
	TPMX220405L	22	12.7	4.76	1.4	0.7	○	☆	★	○			☆						☆									
	TPMX220408R	22	12.7	4.76	1.4	0.7	○	☆	★	○			☆						☆									
	TPMX220408L	22	12.7	4.76	1.4	0.7	○	☆	★	○			☆						☆									
	TPMX220412R	22	12.7	4.76	1.4	0.7	○	☆	★	○			☆						☆									
	TPMX220412L	22	12.7	4.76	1.4	0.7	○	☆	★	○			☆						☆									

TP□□



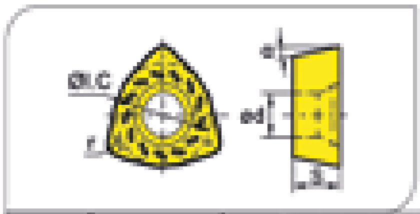
Shape	Type	Dimension(mm)				Coated cemented carbide															Cemented carbide					
						P					M					K										
		L	I.C	S	r	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230					
	TPBN160304	16.5	9.525	3.18	0.4		☆	★	☆	○		★							○							
	TPBN160308	16.5	9.525	3.18	0.8		☆	★	☆	○		★							○							
	TPBN160312	16.5	9.525	3.18	1.2		☆	★	☆	○		★							○							
	TPBN160316	16.5	9.525	3.18	1.6		☆	★	☆	○		★							○							
	TPBN220308	22	12.7	4.76	0.8		☆	★	☆	○		★							○							
	TPBN220404	22	12.7	4.76	0.4		☆	★	☆	○		★							○							
	TPBN220408	22	12.7	4.76	0.8		☆	★	☆	○		★							○							
	TPBN220412	22	12.7	4.76	1.2		☆	★	☆	○		★							○							
	TPBN220416	22	12.7	4.76	1.6		☆	★	☆	○		★							○							
	TPBN270408	27.5	19.875	4.76	0.8		☆	★	☆	○		★							○							
	TPBN270412	27.5	19.875	4.76	1.2		☆	★	☆	○		★							○							

TP□□



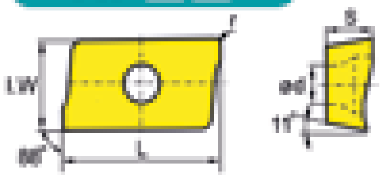
Shape	Type	Dimension(mm)				Coated cemented carbide															Cemented carbide					
						P					M					K										
		L	I.C	S	r	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230					
	TPBN160304	16.5	9.525	3.18	0.4		☆	★	☆	○		☆								○						
	TPBN160308	16.5	9.525	3.18	0.8		☆	★	☆	○		☆								○						
	TPBN160312	16.5	9.525	3.18	1.2		☆	★	☆	○		☆								○						
	TPBN160408	16.5	9.525	4.76	0.8		☆	★	☆	○		☆								○						
	TPBN160412	16.5	9.525	4.76	1.2		☆	★	☆	○		☆								○						
	TPBN220404	22	12.7	4.76	0.4		☆	★	☆	○		☆								○						
	TPBN220408	22	12.7	4.76	0.8		☆	★	☆	○		☆								○						
	TPBN220412	22	12.7	4.76	1.2		☆	★	☆	○		☆								○						
	TPBN220416	22	12.7	4.76	1.6		☆	★	☆	○		☆								○						
	TPBR160304	16.5	9.525	4.76	0.4		☆	★	☆	○		☆								○						
	TPBR160308	16.5	9.525	4.76	0.8		☆	★	☆	○		☆								○						
	TPBR160312	16.5	9.525	4.76	1.2		☆	★	☆	○		☆								○						
	TPBR220412	22	12.7	4.76	1.2		☆		☆	○		☆								○						

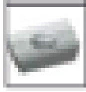
WP□□



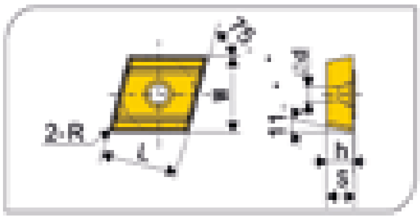
Shape	Type	Dimension(mm)					Coated cemented carbide																Cemented carbide				
							P					M					K										
		φI.C	r	S	φd	α	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230					
	WPGT050315ZSR	7.94	1.5	3.5	4.0	11°	☆	☆	★				★	☆													
	WPGT060415ZSR	9.525	1.5	4.2	4.4	11°	☆	☆	★				★	☆													
	WPGT080615ZSR	12.80	1.5	6.35	5.5	11°	☆	☆	★				★	☆													
	WPGT090725ZSR	12.7	2.5	7	5.5	11°	☆	☆	★				★	☆													

XP□□



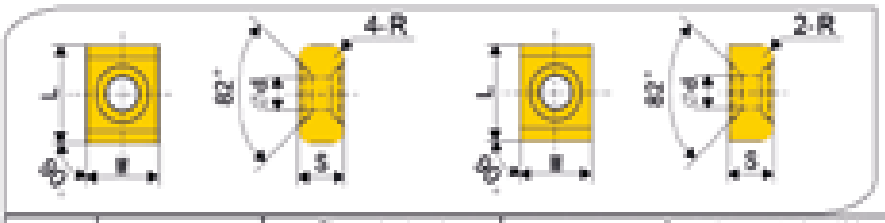
Shape	Type	Dimension(mm)					Coated cemented carbide																Cemented carbide				
							P					M					K										
		L	W	S	d	r	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230					
	XPMT110304-AR	11.1	6.4	3.18	2.80																						
	XPMT160404-AR	16.4	9.52	4.76	4.40																						

XP□□



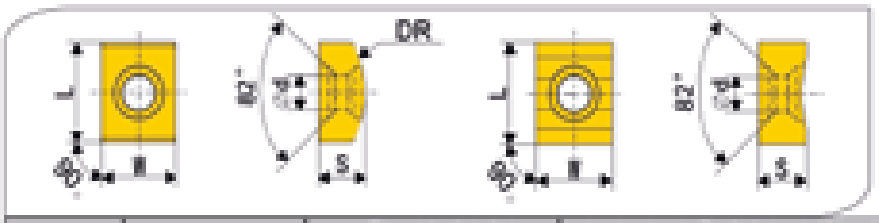
Shape	Type	Dimension(mm)					Coated cemented carbide																Cemented carbide				
							P					M					K										
		L	W	S	h	d	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230					
	XPGT120408R-DH	13.00	12.5	4.6	3.25	5	○	☆	★	☆			☆						☆								
	XPGT120408L-DH	13.00	12.5	4.6	3.25	5	○	☆	★	☆			☆						☆								

LN□□ Track special milling insert



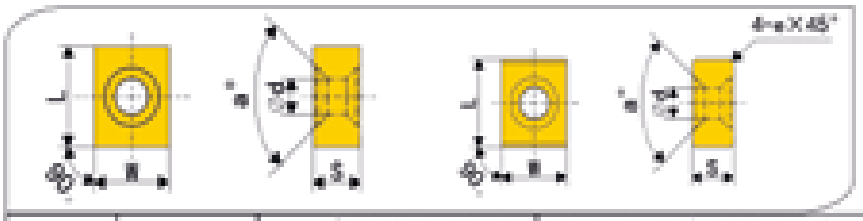
Shape	Type	Dimension(mm)					Coated cemented carbide																Cemented carbide					
							P							M			K											
		L	W	S	d	r	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230						
	LNEC151207-4R10	15.875	12.7	7.94	5.5	1		○		☆	○		★	☆								○						
	LNEC151207-4R20	15.875	12.7	7.94	5.5	2		○		☆	○		★	☆								○						
	LNEC151207-4R30	15.875	12.7	7.94	5.5	3		○		☆	○		★	☆								○						
	LNEC151207-2-R20	15.875	12.7	7.94	5.5	1		○		☆	○		★	☆								○						
	LNEC151207-2-R30	15.875	12.7	7.94	5.5	2		○		☆	○		★	☆								○						

LN□□



Shape	Type	Dimension(mm)					Coated cemented carbide																Cemented carbide					
							P							M			K											
		L	W	S	d	DR	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230						
	LNEC151207-DR115	15.875	12.7	7.94	5.5	11.5		○		☆	○		★	☆								○						
	LNEC151207-DR130	15.875	12.7	7.94	5.5	13		○		☆	○		★	☆								○						
	LNEC151207-DR140	15.875	12.7	7.94	5.5	14.3		○		☆	○		★	☆								○						
	LNEC151207-DR160	15.875	12.7	7.94	5.5	16		○		☆	○		★	☆								○						
	LNEC151207-DR200	15.875	12.7	7.94	5.5	20		○		☆	○		★	☆								○						
	LNEC151207-DR250	15.875	12.7	7.94	5.5	25		○		☆	○		★	☆								○						
	LNEC151207-DR400	15.875	12.7	7.94	5.5	40		○		☆	○		★	☆								○						
	LNEC151207-DR800	15.875	12.7	7.94	5.5	80		○		☆	○		★	☆								○						
	LNEC151207-MR100	15.875	12.7	7.94	5.5	10		○		☆	○		★	☆								○						
	LNEC151207-2MR100	15.875	12.7	7.94	5.5	10		○		☆	○		★	☆								○						
	LNEC151207-MR130	15.875	12.7	7.94	5.5	13		○		☆	○		★	☆								○						
	LNEC151207-2MR130	15.875	12.7	7.94	5.5	13		○		☆	○		★	☆								○						
	LNEC151207-2MR160	15.875	12.7	7.94	5.5	16		○		☆	○		★	☆								○						
	LNEC151207-MR140	15.875	12.7	7.94	5.5	14		○		☆	○		★	☆								○						
	LNEC151207-2MR140	15.875	12.7	7.94	5.5	14		○		☆	○		★	☆								○						
	LNEC151207-MR150	15.875	12.7	7.94	5.5	15		○		☆	○		★	☆								○						
	LNEC151207-MR800	15.875	12.7	7.94	5.5	80		○		☆	○		★	☆								○						
	LNEC151207-2MR3000	15.875	12.7	7.94	5.5	300		○		☆	○		★	☆								○						

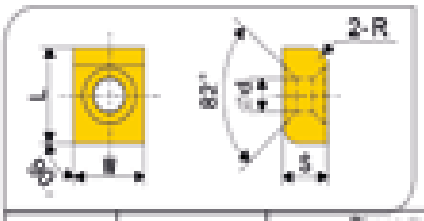
LN□□ Track special milling insert



Shape	Type	Dimension(mm)						Coated cemented carbide															Cemented carbide					
								P						M			K											
		L	B	S	a	d	e	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230						
	LNEC151207	15.875	12.7	7.94	82°	5.5		○	☆		★			★	☆		○			○									
	LNEX151207	15.875	12.7	7.94	80°	5.5		○	☆		★			★	☆		○			○									
	LNEC151207~404	15.875	12.7	7.94	82°	5.5		○	☆		★			★	☆		○			○									
	LNEX151207~404	15.875	12.7	7.94	80°	5.5	8.4	○	☆		★	○		★	☆		○			○									

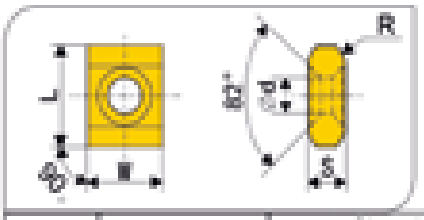
B JUAN cutting tool

LN□□ Crankshaft special milling insert



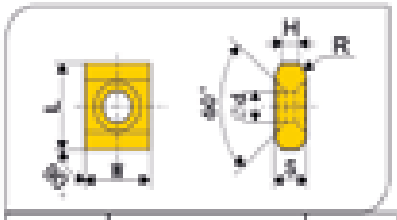
Shape	Type	Dimension(mm)						Coated cemented carbide																Cemented carbide					
								P						M			K												
		L	B	S		d	R	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230						
	LNEC151207~2R35	15.875	12.7	7.94		5.5	3		○		☆	○		●	☆								○						
	LNEC151207~2R35	15.875	12.7	7.94		5.5	3.5		○		☆	○		●	☆								○						
	LNEC151207~2R40	15.875	12.7	7.94		5.5	4		○		☆	○		●	☆								○						
	LNEC151207~2R45	15.875	12.7	7.94		5.5	4.5		○		☆	○		●	☆								○						
	LNEC151207~2R50	15.875	12.7	7.94		5.5	5		○		☆	○		●	☆								○						
	LNEC151207~2R55	15.875	12.7	7.94		5.5	5.5		○		☆	○		●	☆								○						

LN□□



Shape	Type	Dimension(mm)						Coated cemented carbide																Cemented carbide					
								P						M			K												
		L	B	S		R	d	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230						
	LNEC151207~4R50H	15.875	12.7	7.94		5	5.5		○		☆	○		●	☆								○						
	LNEC151206~4R40H	15.875	12.7	6.35		4	5.5		○		☆	○		●	☆								○						
	LNEC151206D~4R40H	15.875	12.7	6.35		4	5.5		○		☆	○		●	☆								○						
	LNEC151206D~4R50H	15.875	12.7	7.94		5	5.5		○		☆	○		●	☆								○						
	LNEC151206D~4R55H	15.875	12.7	7.94		5.5	5.5		○		☆	○		●	☆								○						
	LNEC151206D~4R65H	15.875	12.7	7.94		6.5	5.5		○		☆	○		●	☆								○						
	LNEC151207D~4R40H	15.875	12.7	7.94		4	5.5		○		☆	○		●	☆								○						
	LNEC181206D~4R50H	18.47	12.7	6.35		5	5.5		○		☆	○		●	☆								○						

LN□□ Crankshaft special milling insert



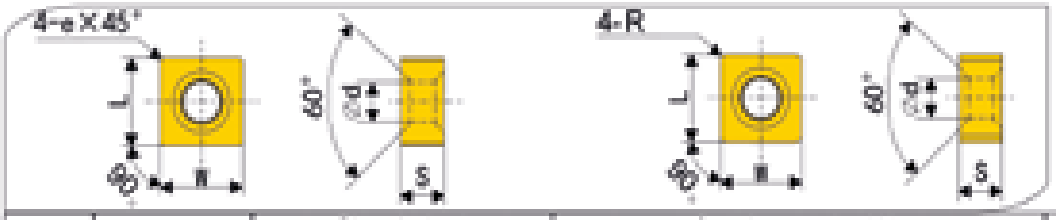
Shape	Type	Dimension(mm)						Coated cemented carbide																Cemented carbide					
								P						M			K												
		L	B	S	a	R	d	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230						
	LNE0150504-48304-T22	15.875	9.525	4.76	60°	3	4.4	○	☆	☆	★	○		★	☆		★					○							
	LNE0211104-48304-T22	15.875	11.00	4.76	60°	3	5.5	○	☆	☆	★	○		★	☆		★					○							
	LNE0512206-48504-T21	15.875	12.7	6.35	60°	5	5.5	○	☆	☆	★	○		★	☆		★					○							

SN□□

Shape	Type	Dimension(mm)						Coated cemented carbide																Cemented carbide					
								P						M			K												
		L	B	S	d		a	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230						
	SNE1206-405-T40	12.7	12.7	6.35	5.5		0.5	☆			★	○		★								○							
	SNE1206A-405-T33	12.7	12.7	6.35	4.4		0.5	☆			★	○		★								○							
	SNE1206-403-T33	12.0	12.0	6.35	4.4		0.3	☆			★	○		★								○							
	SNE1406-405-T33	12.0	12.0	6.35	4.4		0.5	☆			★	○		★								○							
	SNE1206-405R-T40	12.7	12.7	6.35	5.5		0.5	☆			★	○		★								○							
	SNE1206A-405R-T33	12.7	12.7	6.35	4.4		0.5	☆			★	○		★								○							
	SNE1206-403R-T33	12.0	12.0	6.35	4.4		0.3	☆			★	○		★								○							
	SNE1406-405R-T33	12.0	12.0	6.35	4.4		0.5	☆			★	○		★								○							

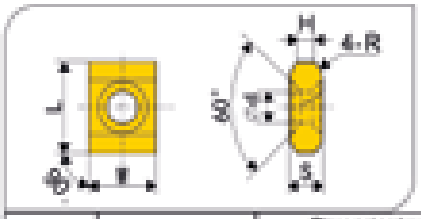
B JUAN cutting tool

SN□□ Crankshaft special milling insert



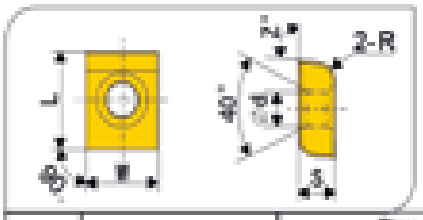
Shape	Type	Dimension(mm)						Coated cemented carbide																Cemented carbide					
								P						M			K												
		L	B	S	d	R	a	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230						
	SNE1206-4D3X	12.7	12.7	6.35	5.5		0.3		○		☆	○		●	☆							○							
	SNE1206-4D8X	12.7	12.7	6.35	5.5		0.8		○		☆	○		●	☆							○							
	SNE1206-4R03	12.7	12.7	6.35	5.5	0.3			○		☆	○		●	☆							○							
	SNE1206-4R04	12.7	12.7	6.35	5.5	0.4			○		☆	○		●	☆							○							
	SNE1206-4R08	12.7	12.7	6.35	5.5	0.8			○		☆	○		●	☆							○							
	SNE1207-4R12																												

SN□□



Shape	Type	Dimension(mm)					Coated cemented carbide																Cemented carbide					
							P							M			K											
		L	B	S	d	R	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230						
	SNEX0904-4R03H	9.525	9.525	4.76	5.5	0.3		○		☆	○		●	☆							○							

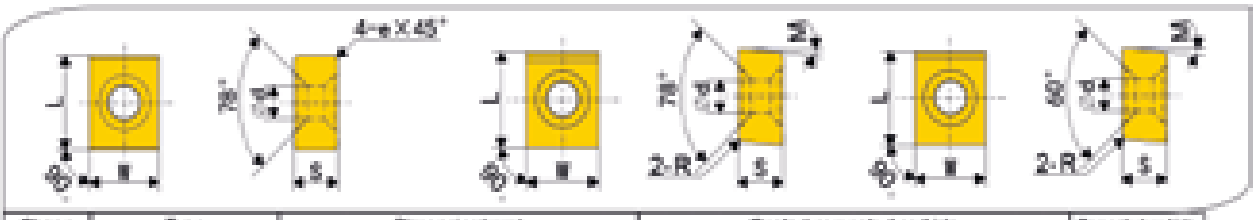
XN□□ Crankshaft special milling insert



Shape	Type	Dimension(mm)						Coated cemented carbide														Cemented carbide					
								P						M			K										
		L	B	S	a	Z	d	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230						
	XN[illegible]	15.875	12.7	7.15	5.5	88°	5.5	○	○	○	★	○		★	☆							○						
	XN[illegible]	15.875	12.7	7.15	5.5	88°	5.5	○	○	○	★	○		★	☆							○						
	XN[illegible]	15.875	12.7	7.15	5.5	88°	5.5	○	○	○	★	○		★	☆							○						

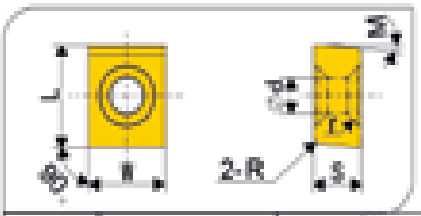
B JUAN cutting tool

LN□□ Gear special milling insert



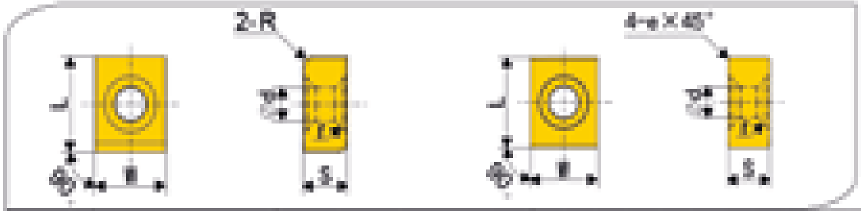
Shape	Type	Dimension(mm)							Coated cemented carbide																Cemented carbide					
									P						M			K												
		L	W	S	B	d	e	R	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230						
	LNEC191406-400	19.05	14.29	6.35		5.5	0			○		☆	○		★	☆							○						
	LNEC191406-402-22	19.05	14.29	6.35		5.5	0.2			○		☆	○		★	☆							○						
	LNEC291409-400	28.575	14.29	6.35		5.5	0			○		☆	○		★	☆							○						
	LNEC191201N-2R20A23	19.05	12.7	7.15	23°	5.5		2		○		☆	○		★	☆							○						
	LNEC191406-2R20A15	19.05	12.7	6.35	15°	5.5		2		○		☆	○		★	☆							○						
	LNEX191406-2R25A23	19.05	12.7	5	23°	5.5		2.5		○		☆	○		★	☆								○						
	LNEX191406-2R25A23	19.05	12.7	6.35	23°	5.5		2.5		○		☆	○		★	☆								○						

LN□□



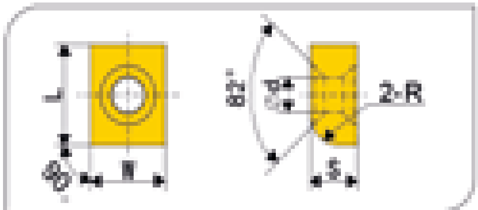
Shape	Type	Dimension(mm)						Coated cemented carbide																Cemented carbide					
								P						M			K												
		L	W	S	B	d	R	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230						
	LNEX191406-2R35A20	19.05	14.29	8.5	20°	5.5	3.5		○		☆	○		★	☆								○						

LN□□ Gear special milling insert



Shape	Type	Dimension(mm)					Coated cemented carbide																Cemented carbide				
							P						M			K											
		L	W	S	d	R	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230					
	LNEX191406-2R24-T31	19.05	14.29	6.35	5.5	2.4				★	○		★	☆								○					
	LNEX191406-400	19.05	14.29	6.35	5.5					★	○		★	☆								○					
	LNEX191406-400-T31	19.05	14.29	6.35	5.5					★	○		★	☆								○					

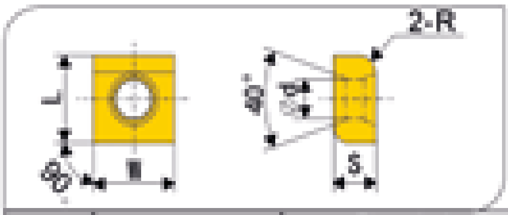
LN□□

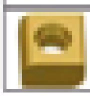


Shape	Type	Dimension(mm)					Coated cemented carbide																Cemented carbide				
							P						M			K											
		L	W	S	d	R	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230					
	LNEC151207-1R70	15.875	12.7	7.94	5.5	7	○	☆	☆	★	○		★	☆								○					
	LNEC151207-1R180	15.875	12.7	7.94	5.5	18	○	☆	☆	★	○		★	☆								○					

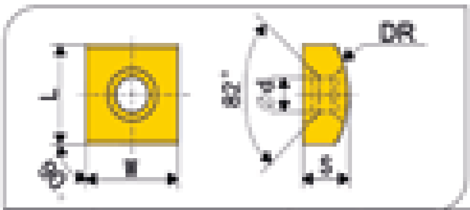
B
JUAN cutting tool

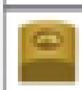
SN□□ Normal gravity milling insert



Shape	Type	Dimension(mm)					Coated cemented carbide																Cemented carbide				
							P							M			K										
		L	W	S	d	R	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230					
	SNEQ1507-2R40-T24	15.875	15.875	7.94	5.5	4.0		○		☆	○		★	☆								○					

SN□□

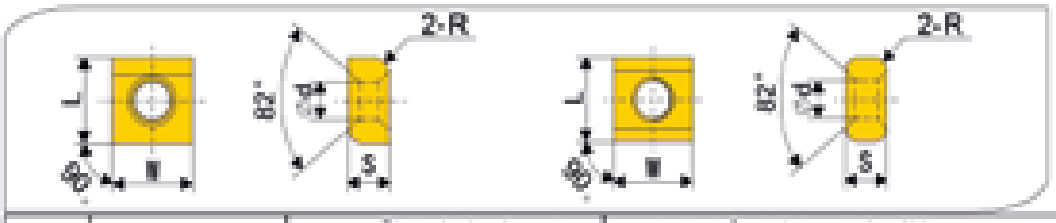


Shape	Type	Dimension(mm)					Coated cemented carbide																Cemented carbide				
							P							M			K										
		L	W	S	d	R	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230					
	SNEC1507-0R130-T50	15.875	15.875	7.94	5.5	13		○		☆	☆		★	☆								○					

B

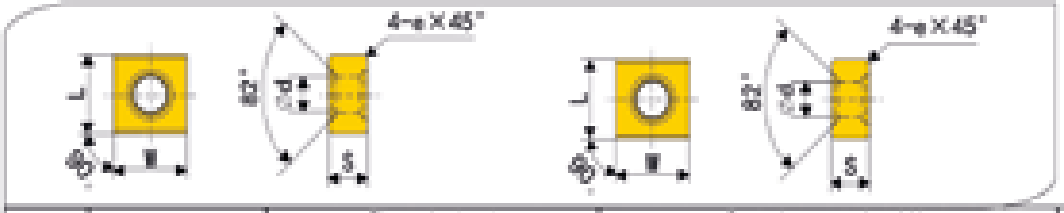
JUAN cutting tool

SN□□ Normal gravity milling insert



Shape	Type	Dimension(mm)						Coated cemented carbide																		Cemented carbide					
								P						M			K														
		L	W	S	d	a	r	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230							
	SNEC1507-2K20-T23	15.875	15.875	7.94	5.50	82°	2		☆		★	○		○	☆								○							
	SNEC1507-2K20-T24	15.875	15.875	7.94	5.50	82°	3		☆		★	○		○	☆								○							
	SNEC1507-2K15-T21	15.875	15.875	7.94	5.50	82°	11.5		☆		★	○		○	☆								○							
	SNEC1507-4K20-T23	15.875	15.875	7.94	5.50	82°	3.7		☆		★	○		○	☆								○							

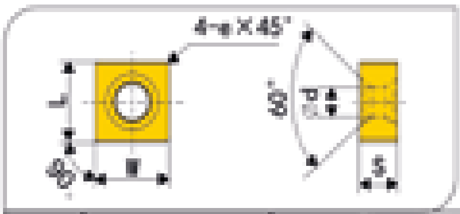
SN□□



Shape	Type	Dimension(mm)					Coated cemented carbide																		Cemented carbide					
							P							M			K													
		L	W	S	d	e	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230							
	SNEC1507-400	15.875	15.875	7.94	5.50	0.80		☆		★	○		★	☆					○			☆							
	SNEC1507-408	15.875	15.875	7.94	5.50	0.80		☆		★	○		★	☆					○			☆							
	SNEC1507-408-T24	15.875	15.875	7.94	5.50	0.80		☆		★	○		★	☆					○			☆							
	SNEC1507-407-T12	15.875	15.875	7.94	5.50	0.70		☆		★	○		★	☆					○			☆							

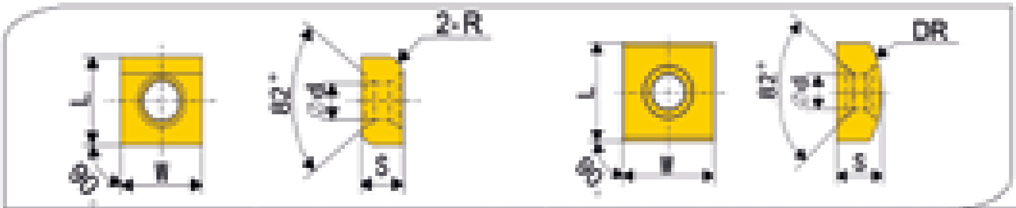
B JUAN cutting tool

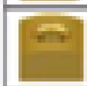
SN□□ Normal gravity milling insert



Shape	Type	Dimension(mm)					Coated cemented carbide																Cemented carbide				
							P							M			K										
		L	W	S	d	R	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230					
	SNEQ1106-4ISN-T22	15.875	15.875	7.94	5.50			○		☆	○		★	☆								☆					
	SNEQ1706R-41AI	15.875	15.875	7.94	5.50			○		☆	○		★	☆								☆					

SN□□



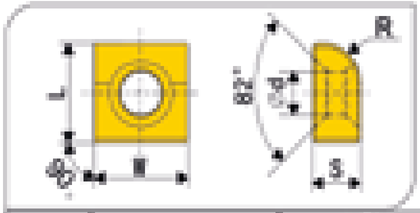
Shape	Type	Dimension(mm)					Coated cemented carbide																Cemented carbide				
							P							M			K										
		L	W	S	d	R	7070	7080	5330	5340		5015	5025	5035	2125	1040	6100	6105	6110	6115	6125	6230					
	SNEC1507-2R32	15.875	15.875	7.94	5.50	3.2		○		☆	○		★	☆		★						☆					
	SNEC1507-DR235	15.875	15.875	7.94	5.50	23.5		○		☆	○		★	☆		★						☆					

B

JUAN cutting tool

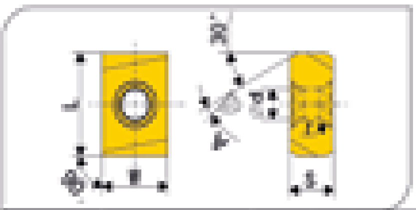
SN□□

Normal gravity milling insert



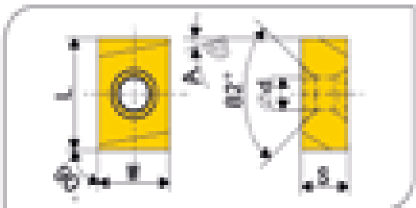
Shape	Type	Dimension(mm) L	W	S	d	R	Coated cemented carbide P 7070	P 7080	P 5330	P 5340	P	P 5015	P 5025	M 5035	M 2125	M 1040	K 6100	K 6105	K 6110	K 6115	K 6125	K 6230	Cemented carbide				
	SNEX1507-1870-T33	15.875	15.875	7.94	5.50	3.2		○		☆	○		★	☆								☆					

LN□□



Shape	Type	Dimension(mm) L	W	S	d	A	Coated cemented carbide P 7070	P 7080	P 5330	P 5340	P	P 5015	P 5025	M 5035	M 2125	M 1040	K 6100	K 6105	K 6110	K 6115	K 6125	K 6230	Cemented carbide				
	LNEX191308A-4AS	19.03	13	8.50	5.50	8°		○		☆	○		★	☆								☆					

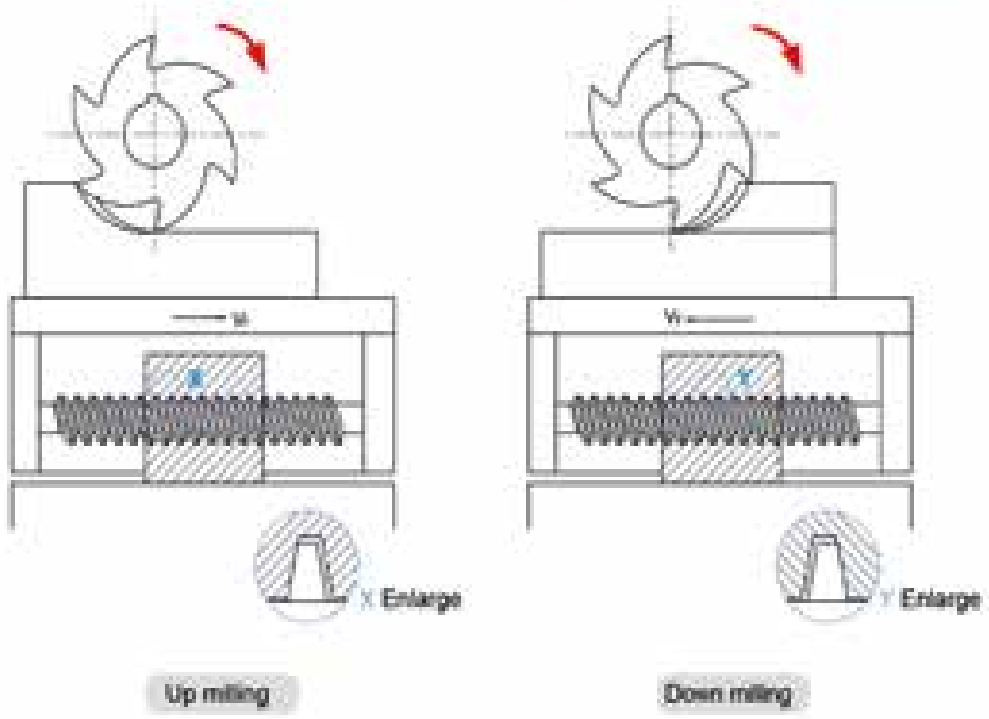
LN□□



Shape	Type	Dimension(mm) L	W	S	d	A	Coated cemented carbide P 7070	P 7080	P 5330	P 5340	P	P 5015	P 5025	M 5035	M 2125	M 1040	K 6100	K 6105	K 6110	K 6115	K 6125	K 6230	Cemented carbide				
	LNEC151207-4AS	15.875	12.7	7.94	5.50	5°		○		☆	○		★	☆								☆					
	LNEC151207-4AS-T33	15.875	12.7	7.94	5.50	6°		○		☆	○		★	☆								☆					
	LNEC191406-4AS	19.050	14.29	6.35	5.50	8°		○		☆	○		★	☆								☆					
	LNEC191406-4AS-T33	19.050	14.29	6.35	5.50	8°		○		☆	○		★	☆								☆					
	LNEC281409-4AS	19.050	14.29	9.52	5.50	8°		○		☆	○		★	☆								☆					

JUAN
cutting tool

Difference and selection between down milling and up milling



Down milling the feed direction of workpiece is the same as that of the milling rotation at the connecting position.
Up milling the feed direction of workpiece is opposite to the milling rotation at the connecting position.

In down milling,the major force of cutting edge is compressive stress; in up milling,cutting edge bears the tensile stress.The compressive strength of cemented carbide material is larger than its tensile strength. In down milling,chip becomes thin from thick gradually,cutting edge and workpiece press each other. The friction between edge and workpiece is small, thus can reduce the abrasion of edge, the hardening of workpiece surface and the surface roughness(Ra). In up milling, chip becomes thin gradually. When insert cutting into the workpiece, it generates strong friction and more heat than down milling, and make workpiece surface harden.

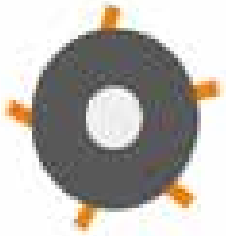
In up milling, because horizontal direction of cutting force that milling cutter conduction on workpiece is opposite to the feed direction of workpiece, therefore the lead screw of work table joints closely with one side of screw nut. In down milling, the direction of cutting force is same as the feed direction. When edge's radial force on workpiece is big enough to some extend, the work table will bounce left and right, thus make the gap fall behind.The gap will return to front side along with the continuing rotation of lead screw. At this moment the work table stops motion, however it will bounce left and right again when the radial cutting force is big enough to some extend again. The periodical bounce of work table will cause poor surface quality of workpiece and tool breakage.

When use end mills for down milling,every time the edges begin the cutting at workpiece surface,therefore end mills are not suitable for machining the workpiece with the hardened surface.

Up milling is recommended for milling the thin-wall components or square milling with the demand of high precision.

Pitch selection

Pitch is the distance between one point on one cutting edge and the same point on the next edge. Milling cutters are mainly classified into coarse, close and extra close pitches.

Stability of operation		
L (Low)	**M** (Medium)	**H** (High)
Coarse pitch	Close pitch	Extra close pitch
		
When the milling width is equal to diameter of cutter, the machining system is stable and main power of machine is sufficient, selecting coarse pitch can achieve high productive efficiency	General milling function and multiple mixed productions	When the milling width is less than diameter of cutter,cutting by maximum edges can achieve high productive efficiency

Approach angle selection

The approach angle is composed by insert and tool body,chip thickness, cutting forces and tool-life are affected especially by the approach thickness and spreads the cutting area between cutting edge and workpiece for a given feed rate.

A smaller approach angle also guarantee that it is stable entrying into or exiting workpiece, to protect the cutting edge and extend tool life. However this will increase higher axial cutting forces on the workpiece, thus is not suitable for machining thin workpiece such as thin plate.

Iterant angle	Feed rate per tooth	maximum cutting depth
90°	f_z	$h_{ex}=f_z\times\sin kr$
75°	f_z	$h_{ex}=0.96\times f_z$
60°	f_z	$h_{ex}=0.86\times f_z$
45°	f_z	$h_{ex}=0.707\times f_z$
Round insert	f_z	$h_{ex}=\frac{\sqrt{ic^2+(ic-2ae)^2}}{ic}\times f_z$

B JUAN cutting tool

General formule

V_c : Cutting speed(m/min) V_f : Feed rate of worktable(feed speed)(mm/min) D_c : Nominal diameter of milling tool(mm)
f_z : Feed rate per tooth(mm/z) n : Spindle speed(rev/min)
π : Circumference ratio=3.14
z_n : Tooth NO. T_c : Machining time(min)
Q : Metal removal rate(cm^3/min)
f_r : Feed rate per revolution(mm/rev) L : Real cutting distance(mm)

- Cutting speed

$$V_c = \frac{\pi \times D_c \times n}{1000} \text{ (m/min)}$$

- Spindle speed

$$n = \frac{1000 \times V_c}{\pi \times D_c} \text{ (rev/min)}$$

- Feed rate of worktable(feed speed)

$$V_f = f_z \times n \times z_n \text{ (mm/min)}$$

- Feed rate per tooth

$$f_z = \frac{V_f}{n \times Z_n} \text{ (mm/Z)}$$

- Feed rate per revolution

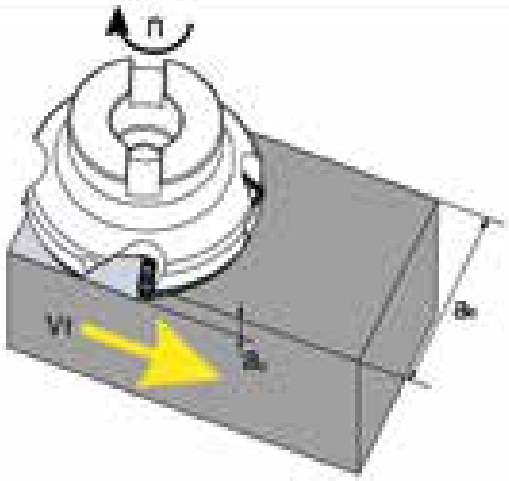
$$f_r = \frac{V_f}{n} \text{ (mm/rev)}$$

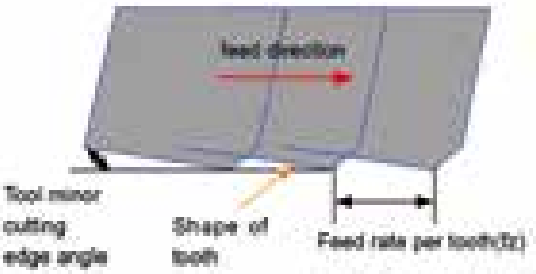
- Machining time

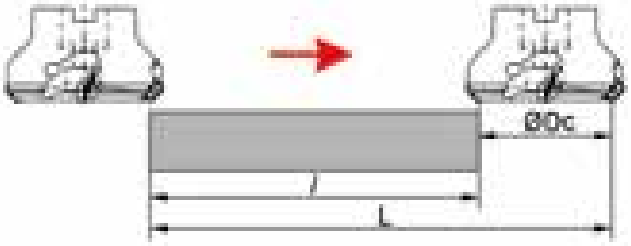
$$T_c = \frac{L}{V_f} \text{ (min)}$$

- Metal removal rate

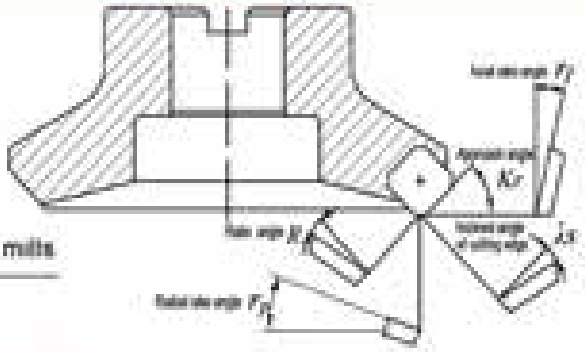
$$Q = \frac{a_p \times a_e \times V_f}{1000} \text{ (cm^3/min)}$$







Function of each part in face milling



Main angles of face mills

Main angles of face mills

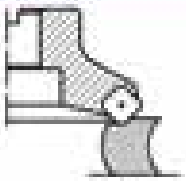
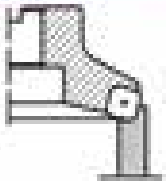
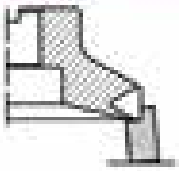
Name	Function	Effect		
Axial rake angle F_f	Determining the chip direction	Negative angle: good chip removal performance		
Radial rake angle γ_o	Determining whether the cutting is light and fast or not	Positive angle: good chip removal performance		
Approach angle Kr	Determining the chip direction	Kr ↑, chip thickness ↑ ; Kr ↓, chip thickness ↓		
Rake angle R	Determining whether the cutting is light and fast or not	Poor cutting performance,high strength of cutting edge	(−) ←○→ (+)	Good cutting performance,low strength of cutting edge
Inclined angle of cutting edge λs	Determining the chip direction	Poor cutting performance,high strength of cutting edge	(−) ←○→ (+)	Good cutting performance,low strength of cutting edge

Characteristics of different rake angles combined

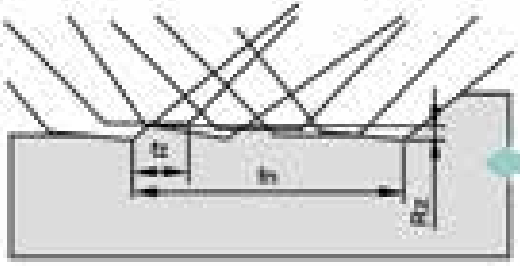
		Double positive	Double negative	positive, one negative
Negative rake Angle				
Rake Angle				
Positive rake angle				
Axial rake angle		+	−	+
Radial rake angle		+	−	−
Applicable material machined	P	√		√
	M	√		√
	K		√	√
	N	√		
	S	√		√

B JUAN cutting tool

Cutting performances of different approach angles

Approach angle	45°	75°	90°
Schematic diagram			
Instruction	Axial force is the largest. It will bend when machining thin-wall workpiece and reduces the precision of workpiece. It is benefit to avoid finge breakage of workpiece when machining cast iron.	The main purpose is to resolve the radial cutting force, it is often used for general face milling.	The axial force is zero in theory, suitable for milling thin plate workpiece.

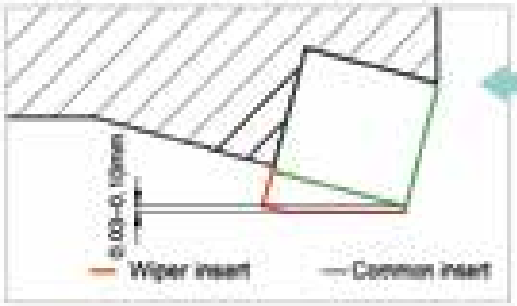
Wiper insert



It has axial and radial run out because of tools and inserts axial manufacturing tolerance.The axial runout lead to poor surface roughness.

Solution

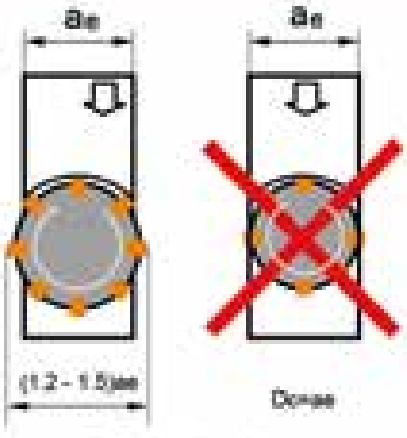
Assembling wiper insert



Usage

The wiper insert must protrude below the other insert by 0.03-0.05mm at axial direction, only that the wiping function can take into effect.Generally speaking, a cutter can just assemble only one one wiper insert. If the diameter of cutter is much bigger or cutter's feed rate per revolution is bigger than the length of wiper edge,2 to 3 wiper inserts can be assembled.

Selection of cutting width and tool cutting diameter in face milling



Dc:Tool cutting diameter
ae:Cutting width

Generally speaking, the relation between cutting width and tool cutting diameter is Dc=(1.2-1.5) ae.
In the machining practice, it need to avoid coincidence of tool center and workpiece center as much as possible.

JUAN
cutting tool

General Technical Information

Material Comparison Table

Material comparison table

ISO	Country and standard										
	China	America	Germany		England		Sweden	France	Italy	Spain	Japan
	GB	AISI/SAE	W.-nr.	DIN	BS	EN	SS	AFNOR	UNI	UNE	JIS
P	Structural steel										
	15	1015	1.0401	C15	080M15	-	1350	CC12	C15C16	F.111	-
	20	1020	1.0402	C22	050A20	2C	1450	CC20	C20C21	F.112	-
	35	1035	1.0501	C35	060A35	-	1550	CC35	C35	F.113	-
	45	1045	1.0503	C45	080M40	-	1650	CC45	C45	F.114	-
	55	1055	1.0535	C55	070M55	-	1655	-	C55	-	-
	60	1060	1.0601	C60	080A62	43D	-	CC55	C60	-	-
	Y15	1213	1.7015	9SMn28	230M07	-	1912	S250	CF9SMn28	11SMn28	SUM22
	-	12L13	1.0718	9SMnPb28	-	-	1914	S250Pb	CF9MnPb28	11SMnPb28	SUM22L
	-	-	1.0722	10SPb20	-	-	-	10PbF2	CF10Pb20	10SPb20	-
	-	1140	1.0726	35S20	212M36	8M	1957	35MF4	-	F.2100	-
	Y15	1215	1.0736	9SMn36	240M07	1B	-	S300	CF9SMn36	12SMn35	-
	-	12L14	1.0737	9SMnPb36	-	-	1926	S300Pb	CF9SMnPb36	12SMnP35	-
	55SiMn	9255	1.0904	55Si8	250A53	45	2085	55S7	55Si8	56S7	-
	-	9262	1.0961	60SiCr7	-	-	-	60SC7	60SiCr8	60SiCr8	-
	15	1015	1.1141	Ck15	080M15	32C	1370	XC12	C16	C15K	S15C
	40Mn	1039	1.1157	40Mn4	150M36	15	-	35M5	-	-	-
	25	1025	1.1158	Ck25	-	-	-	-	-	-	S25C
	35Mn2	1335	1.1167	36Mn5	-	-	2120	40Mn5	-	38Mn6	SMn438(H)
	30Mn	1330	1.1170	28Mn6	150M28	14A	-	20M5	C28Mn	-	SCMn1
	35Mn	1035	1.1183	C35	060A35	-	1572	XS38TS	C36	-	S35C
	Ck45	1045	1.1191	45	080M46	-	1672	XC42	C45	C45K	S45C
	55	1055	1.1203	Ck55	070M55	-	-	XC45	C50	C55K	S55C
	50	1050	1.1213	C53	060A52	-	1674	XC48TS	C53	-	S50C
	60Mn	1060	1.1221	Ck60	080A62	43D	1678	XC60	C60	-	S58C
	-	1095	1.1274	Ck101	060A96	-	1870	-	-	-	SUP4
	-	-	1.3401	X120Mn12	Z120M12	-	-	X120M12	X0120Mn12	X120Mn12	SCMnH1
	Gr15;45Cr	52100	1.3505	100Cr6	534A99	31	2258	100C6	100Cr6	F.131	SUJ2
	-	ASTM A204Gr.A	1.5415	15Mo3	1501-240	-	2912	15D3	16Mo3KW	16Mo3	-
	-	4520	1.5428	16Mo5	1503-245-420	-	-	-	16Mo5	16Mo5	-
	-	ASTM A350LF5	1.5622	14Ni6	-	-	-	16N6	14Ni6	15Ni6	-
	-	ASTM A353	1.5662	X8Ni9	1501-509,510	-	-	-	X10Ni9	X8Ni09	-

C JUAN cutting tool

General Technical Information

Material Comparison Table

ISO	Country and standard										
	China	America	Germany		England		Sweden	France	Italy	Spain	Japan
	GB	AISI/SAE	W.-nr	DIN	BS	EN	SS	AFNOR	UNI	UNE	JIS
P	Structural steel										
	-	2515	1.5680	12Ni19	-	-	-	Z18N5	-	-	-
	-	3135	1.5710	36NiCr6	640A35	111A	-	35NC6	-	-	SNC236
	-	3415	1.5732	14NiCr10	-	-	-	14NC11	18NiCr11	15NiCr11	SNC415(H)
	-	3415 3310	1.5752	14NiCr14	655M13 655A12	36A	-	12NC15	-	-	SNC815(H)
	-	8640	1.6511	36CrNiMo4	816M40	110	-	40NCD3	38CrNiMo4(KB)	35CrNiMo4	-
	-	8620	1.6523	21NiCrMo2	805M20	362	2506	20NCD2	20NiCrMo2	20NiCrMo2	SNCCM220(H)
	-	8740	1.6546	40NiCrMo2	311-Type7	-	-	-	40NiCrMo2(KB)	40NiCrMo2	SNCM240
	40CrNiMoA	4340	1.6582	34CrNiMo6	817M40	24	2541	35NCD6	35CrNiMo6(KB)	-	-
	-	-	1.6587	17CrNiMo6	820A16	-	-	18NCD6	-	14CrNiMo13	-
	15Cr	5015	1.7015	15Cr3	523M15	-	-	12C3	-	-	SCr415(H)
	35Cr	5132	1.7033	34Cr4	530A32	18B	-	32C4	34Cr4(KB)	35Cr4	SCr430(H)
	40Cr	5140	1.7035	41Cr4	530M40	18	-	42C4	41Cr4	42Cr4	SCr440(H)
	40Cr	5140	1.7045	42Cr4	-	-	2245	-	-	42Cr4	SCr440
	18CrMn	5115	1.7131	16MnCr5	(527M20)	-	2511	16MC5	16MnCr5	16MnCr5	-
	20CrMn	5120	1.7176	20Cr3	527A60	48	-	20C3	-	-	SUP5(A)
	30CrMn	4130	1.7218	25CrMo4	1717CDS110	-	2225	25CD4	25CrMo4(KB)	55Cr3	SCM420; SCM430
	35CrMo	4137;4135	1.7220	34CrMo4	708A37	19B	2234	35CD4	35CrMo4	34CrMo4	SCM432; SCPRM3
	40CrMoA	4140;4142	1.7223	41CrMo4	708M40	19A	2244	42CD4TS	41CrMo4	41CrMo4	SCM440
	42CrMo 42CrMnMo	4140	1.7225	42CrMo4	708M40	19A	2244	42CD4	42CrMo4	42CrMo4	SCM440(H)
	-	-	1.7262	15CrMo5	-	-	2216	12CD4	-	12CrMo4	SCM415(H)
	-	ASTM A182 F11;F12	1.7335	13CrMo44	1501- 620Gr.27	-	-	15CD3.5; 15CD4.5	14CrMo44	14CrMo45	-
	-	-	1.7361	32CrMo12	722M24	40B	2240	30CD12	32CrMo12	F.124.A	-
	-	ASTM A182 F.22	1.7380	10CrMo910	1501- 622Gr.31;45	-	2218	12CD9.10	12CrMo9.10	TU.H	-
	-	-	1.7715	14MoV63	1503-660-440	-	-	-	-	13MoCrV6	-
	50CrVA	6150	1.8159	50CrV4	735A50	47	2230	50CV4	50CrV4	51CrV4	SUP10
	-	-	1.8509	41CrAlMo7	905M39	41B	2940	40CAD6.12	41CrAlMo7	41CrAlMo7	-
	-	-	1.8523	39CrMoV139	897M39	40C	-	-	36CrMoV12	-	-

ISO	Country and standard											
	China	America	Germany		England		Sweden	France	Italy	Spain	Japan
	GB	AISI/SAE	W.-nr	DIN	BS	EN	SS	AFNOR	UNI	UNE	JIS
	Chisel tool steel										
P	T10	W110	1.1545	C105W1	-	-	1880	Y1105	C98KU C100KU	F.515 F.516	-
	T12A	W112	1.1663	C125W	-	-	-	Y2120	C120KU	(C120)	SK2
	CrV/9SiCr	L3	1.2067	100Cr6	BL3	-	-	Y100C6	-	100Cr6	-
	Cr12	D3	1.2080	X210Cr12	BD3	-	-	Z200Cr12	X210Cr13KU X250Cr12KU	X210Cr12	SKD1
	4Cr5MoV1Si	H13	1.2344	X40CrMoV5 1	BH13	-	2242	Z40CDV5	X35CrMoV05KU X40CrMoV51KU	X40CrMoV5	SKD61
	Cr6WV	A2	1.2363	X100CrMoV5 1	BA2	-	2260	Z100CDV5	X100CrMoV51KU	X100CrMoV5	SKD12
	CrWMo	-	1.2419	105WCr6	-	-	2140	105WC13	10WCr6 107WCr5KU	105WCr5	SKS31 SKS2 SKS3
	Cr12W	-	1.2436	X210CrW12	-	-	2312	-	X215CrW12 1KU	X210CrW12	SKD2
	5CrNiMo	S1	1.2542	45WCrV7	BS1	-	2710	-	45WCrV8KU	45WCrSi8	-
	3Cr2W8V	H21	1.2581	X30WCrV9 3 X30WCrV93KU	BH21	-	-	Z30WCV9	X28W09KU X30WCrV9 3KU	X30WCrV9	SKD5
	Cr12MoV	-	1.2601	X165CrMoV 12	-	-	2310	-	X165CrMoW12KU	X160CrMoV12	SKD11
	5CrNiMo	L6	1.2713	55NiCrMoV6	-	-	-	55NCDV7	-	F.520.S	SKT4
	V	W210	1.2833	100V1	BW2	-	-	Y1105V	-	-	SKS43
	W6Mo5Cr4V2Co5	-	1.3243	S6-5-2-5	-	-	2723	Z85WDKCV	HS6-5-2-5	HS6-5-2-5	SKH55
	W18Cr4VCo5	T4	1.3255	S18-1-2-5	BT4	-	-	Z80WKCV 18-05-04-01	X78WCo1805KU	HS18-1-1-5	SKH3
	W6Mo5Cr4V2	M2	1.3343	S6-5-2	BM2	-	2722	Z85WDCV 06-05-04-02	X82WMo0605KU	HS6-5-2	SKH9
	-	M7	1.3348	S2-9-2	-	-2-	2782	Z100WCWV 09-02-04-02	HS2-9-2	HS2-9-2	-
	W18Cr4V	T1	1.3355	S18-0-1	BT1	-	-	Z80WCV 18-04-01	X75W18KU	HS18-0-1	SKH2
	W6Mo5Cr4V3	M3	-	S6-5-3	-	-	-	-	-	-	SKH52
	-	M42	-	-	BM42	-	-	-	-	-	SKH59

General Technical Information

Material Comparison Table

ISO	Country and standard					Main application
	China	America	Germany	Japan	Daeng (Japan)	
	GB	AISI/SAE	DIN	JIS	DAIDO	
P	**Plastic die steel**					
	-	P20 mod.		-	PX5N	Mass production with large mirror mould. Auto tail lamp, mirror before the shell baffle, camera,home appliances, etc
	-	-		-	NAK55	High precision mirror mould. Camera, music,cosmetic containers, transparent cover class, transparent film, etc
	-	-		-	NAK80	High mirror high precision mold. Camera, cosmetic containers, transparent cover, transparent film, etc
	3Cr13	420 mod.		SUS420J2 mod.	S-STAR	Super mirror corrosion precision mold. Camera parts, CD, lens, watch case
	Cold-work die steel					
	-	O2	-	SKS93	YK30	Stamping mold, gauge, paper knife, auxiliary tools
	9CrWMn	O1 mod.	-	SKS3 mod.	GOA	Blanking die,gauge, die, tap, a hole punch
	Cr12MoV	D2	X165CrMoV12	SKD11	DC11	Die, cold, cold die, die forming roll, the punch
	-	D2 mod.	-	SKD11 mod.	DC53	Die, cold, cold die, die forming roll, the punch
	Hot-work die steel					
	4Cr5MoSiV1	H13	X40CrMoV51	SKD61	DHA1	Aluminum die-casting mould, die-casting mould connection parts, stamping dies, hot extrusion die, hot shear blades
	-	-	-	-	DH21	Long life aluminum die-casting mould
	-	-	-	-	DH31-S	Easy die casting dies
	-	-	-	-	DH2F	Die mold, plastic mold

General Technical Information

Material Comparison Table

ISO	Country and standard										
	China	Swiss	Germany		England		Sweden	France	Italy	Spain	Japan
	GB	ISO/SAE	W.-Nr	DIN	BS	EN	SS	AFNOR	UNI	UNE	JIS
M	**Stainless steel**										
	9Cr13; 1Cr12	403	1.4000	X6Cr13	403S17	-	2301	Z8C13	X6Cr13	F.3110	SUS403
	-	-	1.4001	X7Cr14	-	-	-	-	-	F.8401	-
	1Cr13	410	1.4006	X10Cr13	410S21	56A	2302	Z10C14	X12Cr13	F.3401	SUS410
	1Cr17	430	1.4016	X6Cr17	430S15	60	2320	Z8C17	X8Cr17	F.3113	SUS430
	2Cr13	416	1.4021	X20Cr13	56Z	56B; 56C	-	Z20C13	X20C13	F.3401	SUS410
	-	-	1.4027	G-X20Cr14	420C29	56B	-	Z20C13M	-	-	SCS2
	4Cr13	-	1.4034	X46Cr13	420S45	56D	2304	Z40CM Z38C13M	X40Cr14	F.3405	SUS420J2
	1Cr17Ni2	431	1.4057	X22CrNi17	431S29	57	2321	Z15CN16.02	X16CrNi16	F.3427	SUS431
	Y1Cr17	430F	1.4104	X12CrMoS17	-	-	2383	Z10CF17	X10CrS17	F.3117	SUS430F
	1Cr17Mo	434	1.4113	X6CrMo171	434S17	-	2325	Z8CD17.01	X8CrMo17	-	SUS434
	-	-	1.4313	X5CrNi134	425C11	-	-	Z4CND13.4M	-	-	SCS5
	-	-	1.4408	G-X6CrNiMo1810	316C16	-	-	-	-	F.8414	SCS14
	4Cr9Si2	HW3	1.4718	X45CrSi93	401S45	52	-	Z45CS9	X45CrSi8	F.322	SUH1
	0Cr13Al	405	1.4724	X10CrAl13	405S17	-	-	Z10C13	X10CrAl12	F.311	SUS405
	0Cr17	430	1.4742	X10CrAl18	430S15	60	-	Z12CAS18	X8Cr17	F.3113	SUS430
	8Cr20Si2Ni	HNV6	1.4757	X80CrNiSi20	443S65	59	-	Z80CSN20.02	X80CrSiNi20	F.320V	SUH4
	2Cr25N	446	1.4762	X10CrAl24	-	-	2322	Z12CAS24	X18Cr26	-	SUH446
	Austenitic stainless steel										
	0Cr18Ni9	304	1.4301	X5CrNi1810	304S15	58E	2332	Z6CN18.09	X5CrNi1810	F.3551; F.3541; F.3504	SUS304
	1Cr18Ni9Mo2Ti	320	1.4309	X10CrNi0189	320S21	58M	2346	Z10CNF18.09	X10CrNi0809	F.3508	SUS320
	00Cr19Ni10	304L	1.4306	X2CrNi1911	304S12	-	2352	Z2CN18.10	X2CrNi18.11	F.3503	SCS19
	-	-	1.4308	G-X6CrNi189	304C15	-	-	Z6CN18.10M	-	-	SCS13
	0Cr17Ni7	301	1.4310	X12CrNi177	-	-	2331	Z12CN17.07	X12CrNi1707	F.3517	SUS301
	-	304LN	1.4311	X2CrNiN1810	304S62	-	2371	Z2CN18.10	-	-	SUS304LN
	0Cr18Ni9	304	1.4350	X5CrNi189	304S31	58E	-	Z6CN18.09	X5CrNi1810	-	SUS304
	0Cr17Ni12Mo2	316	1.4401	X5CrNiMo1712	316S16	Z6CND17.11	2347	1.4401	X5CrNiMo1712	F.3543	SUS316
	00Cr17Ni13Mo2	316LN	1.4429	X2CrNiMoN1713	-	-	2375	Z2CND17.13	-	-	SUS316LN
	00Cr17Ni13Mo3	316L	1.4435	X2CrNiMo18143	316S12	-	2353	Z2CDN17.13	X2CrNiMo1713	-	SCS16
	00Cr19Ni13Mo3	317L	1.4438	X2CrNiMo17133	317S12	-	2367	Z2CND19.15	X2CrNiMo18.16	-	SUS317L
	-	329L	1.4460	X8CrNiMo279	-	-	2324	-	-	-	SUS329L; SCH11; SCS11
	1Cr18Ni9Ti	321	1.4541	X6CrNiTi1810	2337	321S12	568	Z6CNT18.10	X6CrNiTi1811	F.3553	SUS321
	1Cr18Ni11Nb	347	1.4550	X6CrNiNb1810	347S17	59F	2338	Z6CNNb18.1	X6CrNiTi1811	F.3552	SUS347
	Cr18Ni12Mo2Ti	316Ti	1.4571	X6CrNiMoTi17122	320S17	58J	2350	Z6NDT17.12	X6CrNiMoTi17	F.3535	-

ISO	Country and standard											
	China	America	Germany		England		Sweden	France	Italy	Spain	Japan
	GB	AISI/SAE	W.-nr	DIN	BS	EN	SS	AFNOR	UNI	UNE	JIS
M	**Austenitic stainless steel**										
	-	-	1.4581	G-X5CrNiMoNb1810	318C17	-	-	Z4CNDNb1812M	XG8CrNiMo18	-	SCS22
	Cr17Ni12Mo3Nb	318	1.4583	X10CrNiMoNb1812	-	-	-	Z6CNDNb1713B	X6CrNiMoTiNb17	-	-
	1Cr23Ni13	309	1.4828	X15CrNiSi2012	309S24	-	-	Z15CNS20.12	-	-	SUH309
	0Cr25Ni20	310S	1.4845	X12CrNi2521	310S24	-	2361	Z12CN2520	X6CrNi2520	F.331	SUH310
	Cr15Ni36W3Ti	330	1.4864	X12NiCrSi3616	-	-	-	Z12CNS35.16	-	-	SUH330
	-	-	1.4865	G-X40NiCrSi3818	330C11	-	-	-	XG50NiCr3919	-	SCH15
	5Cr21Mn9Ni4N	EV8	1.4871	X53CrMnNiN219	349S54, 321S12	- 58B	-	Z52CMN21.09	X53CrMnNiN219	-	SUH35
	1Cr18Ni9Ti	321	1.4878	X12CrNiTi189	321S320	58C	-	Z6CNT18.12	X6CrNiTi1811	F.5523	SUS321

ISO	Country and standard								
	China	America	Germany	England	Sweden	France	Italy	Spain	Japan
K	**Nodular cast iron**								
	QT400-18	60-40-18	GGG40	400/17	0717-02	FGS370-17	GS370-17	FGE38-17	FCD400
	QT450-10	65-45-12	–	420/12	–	FGS400-12	GS400-12	FGE42-12	FCD450
	QT500-7	70-50-05	GGG50	500/7	0727-02	FGS500-7	GS500-7	FGE50-7	FCD500
	QT600-3	80-60-03	GGG60	600/7	0732-03	FGS600-2	GS600-2	FGE60-2	FCD600
	QT700-2	100-70-03	GGG70	700/2	0737-01	FGS700-2	GS700-2	FGE70-2	FCD700
	QT800-2	120-90-02	GGG80	800/2	0864-03	FGS800-2	GS800-2	FGE80-2	FCD800
	QT900-2	–	–	900/2	–	–	–	–	–
	Grey cast iron								
	–	NO.60	GG40	–	0140	FGL400	–	–	
	HT350	NO.50	GG35	350	0135	FGL350	G35	FG35	FC350
	HT300	NO.45	GG30	300	0130	FGL300	G30	FG30	FC300
	HT250	NO.35	GG25	250	0125	FGL250	G25	FG25	FC250
	HT200	NO.30	GG20	200	0120	FGL200	G20	FG20	FC200
	HT150	NO.20	GG15	150	0115	FGL150	G15	FG15	FC150
	HT100	–	–	100	0110	–	G10	–	FC100

General Technical Information

Fit Dimension Tolerance

Fit dimension tolerance

Dimension/mm		Standard tolerance grade																
		IT1	IT2	IT3	IT4	IT5	IT6	IT7	IT8	IT9	IT10	IT11	IT12	IT13	IT14	IT15	IT16	IT17	IT18
over to	to	μm											mm						
—	3	0.8	1.2	2	3	4	6	10	14	25	40	60	0.1	0.14	0.25	0.4	0.6	1	1.4
3	6	1	1.5	2.5	4	5	8	12	18	30	48	75	0.12	0.18	0.3	0.48	0.75	1.2	1.8
6	10	1	1.5	2.5	4	6	9	15	22	36	58	90	0.15	0.22	0.36	0.58	0.9	1.5	2.2
10	18	1.2	2	3	5	8	11	18	27	43	70	110	0.18	0.27	0.43	0.7	1.1	1.8	2.7
18	30	1.5	2.5	4	6	9	13	21	33	52	84	130	0.21	0.33	0.52	0.84	1.3	2.1	3.3
30	50	1.5	2.5	4	7	11	16	25	39	62	100	160	0.25	0.39	0.62	1	1.6	2.5	3.9
50	80	2	3	5	8	13	19	30	46	74	120	190	0.3	0.46	0.74	1.2	1.9	3.	4.6
80	120	2.5	4	6	10	15	22	35	54	87	140	220	0.35	0.54	0.87	1.4	2.2	3.5	5.4
120	180	3.5	5	8	12	18	25	40	63	100	160	250	0.4	0.63	1	1.6	2.5	4	6.3
180	250	4.5	7	10	14	20	29	46	72	115	185	290	0.46	0.72	1.15	1.85	2.9	4.6	7.2
250	315	6	8	12	16	23	32	52	81	130	210	320	0.52	0.81	1.3	2.1	3.2	5.2	8.1
315	400	7	9	13	18	25	36	57	89	140	230	360	0.57	0.89	1.4	2.3	3.6	5.7	8.9
400	500	8	10	15	20	27	40	63	97	155	250	400	0.63	0.97	1.55	2.5	4	6.3	9.7
500	630	9	11	16	22	32	44	70	110	175	280	440	0.7	1.1	1.75	2.8	4.4	7	11
630	800	10	13	18	25	36	50	80	125	200	320	500	0.8	1.25	2	3.2	5	8	12.5
800	1000	11	15	21	28	40	56	90	140	230	360	560	0.9	1.4	2.3	3.6	5.6	9	14
1000	1250	13	18	24	33	47	66	105	165	260	420	660	1.05	1.65	2.6	4.2	6.6	10.5	16.5
1250	1600	15	21	29	39	55	78	125	195	310	500	780	1.25	1.95	3.1	5	7.8	12.5	19.5
1600	2000	18	25	35	46	65	92	150	230	370	600	920	1.5	2.3	3.7	6	9.2	15	23
2000	2500	22	30	41	55	78	110	175	280	440	700	1100	1.75	2.8	4.4	7	11	17.5	28
2500	3150	26	36	50	68	96	135	210	330	540	860	1350	2.1	3.3	5.4	8.6	13.5	21	33

Note

1. The basic size greater than 500 mm, IT1 to IT9 standard tolerance value for trial.
2. The basic size less than or equal to 1 mm, no IT14 to IT18.

C JUAN cutting tool

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