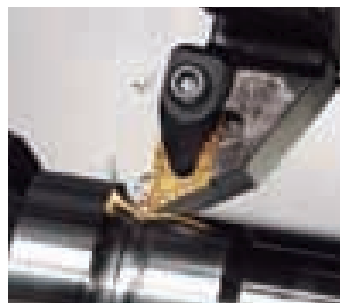
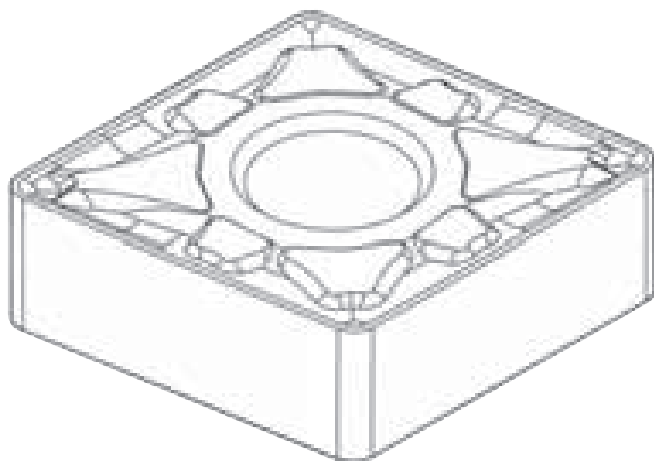
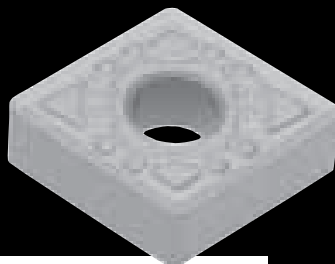


2007

Cutting Tools



1234



TAC Inserts

Selection Guides

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Specifications

■ TAC Inserts (Negative)

● 80° Rhombic	44
● 55° Rhombic	52
● 90° Square	61
● 60° Triangular	70
● 80° Trigon	78
● 35° Rhombic	83
● Round	88
● Parallelogram.....	89

■ TAC Inserts (Positive)

● 80° Rhombic	7°	92
	11°	96
● 55° Rhombic	7°	98
● 90° Square	7°	102
	11°	103
● 60° Triangular	5°	107
	7°	108
	11°	110
● 80° Trigon	5°	119
● 35° Rhombic	5°	120
	7°	121
● Round	7°	122
● 75° Rhombic	11°	123

Selection System

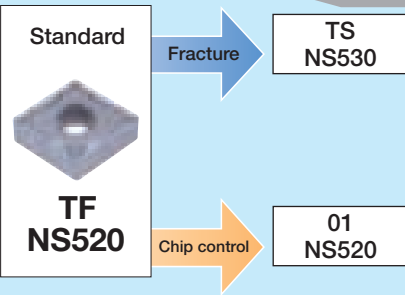
Negative Inserts

TAC Inserts

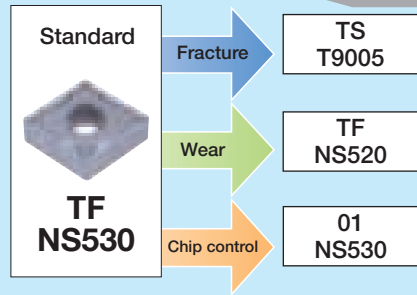
P Steels

Precision finishing [$a_p = \sim 0.5 \text{ mm}$]

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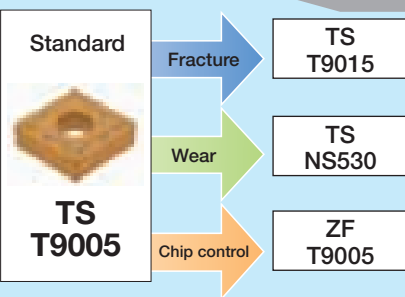


Light interrupted

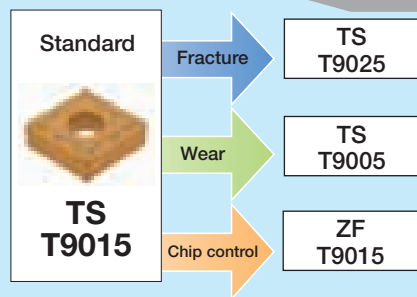


Finishing [$a_p = 0.3 \sim 1.5 \text{ mm}$]

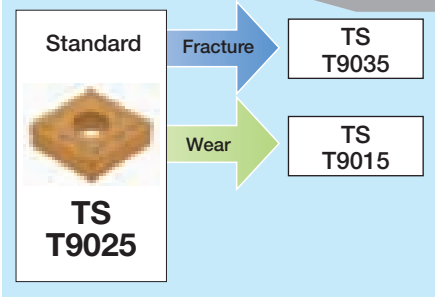
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Light interrupted

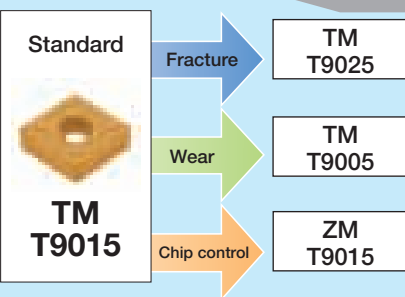


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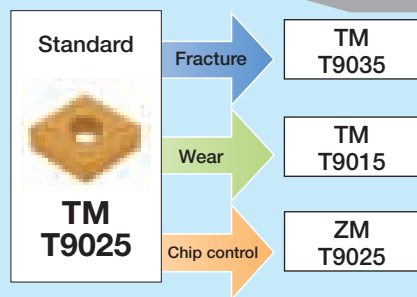


Medium cutting [$a_p = 1.0 \sim 5.0 \text{ mm}$]

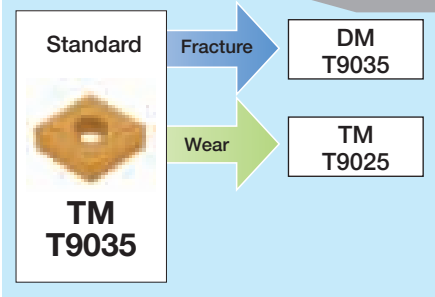
Continuous



Light interrupted

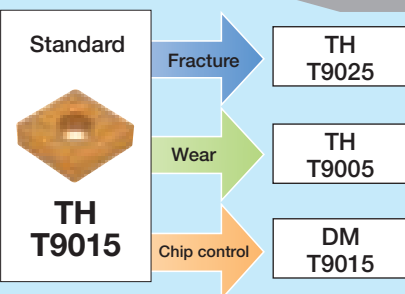


Interrupted

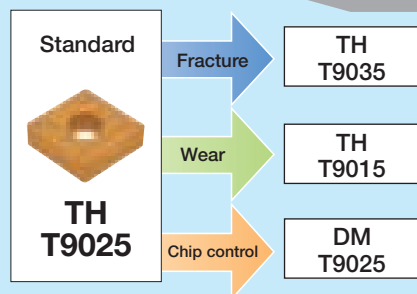


Medium to heavy cutting [$a_p = 3.0 \sim 6.0 \text{ mm}$]

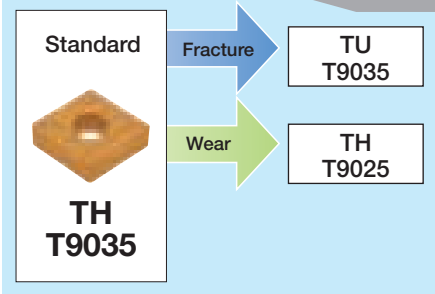
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Light interrupted



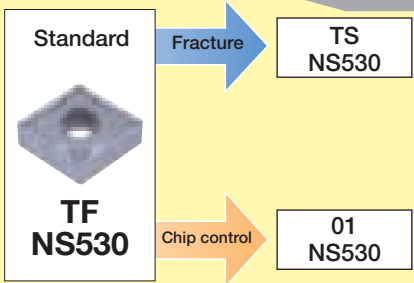
Interrupted



M Stainless steels

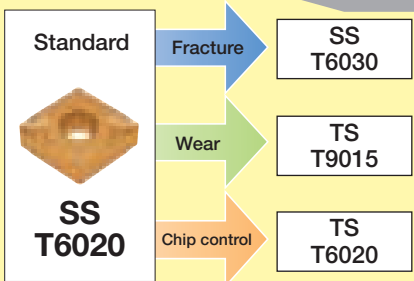
Precision finishing [ap = ~ 0.5 mm]

Continuous

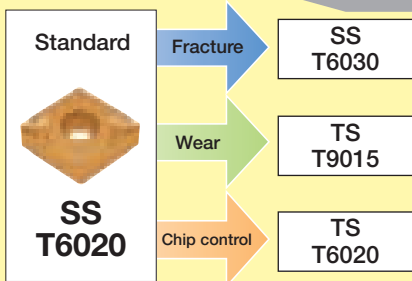


Finishing [ap = 0.5 ~ 3.0 mm]

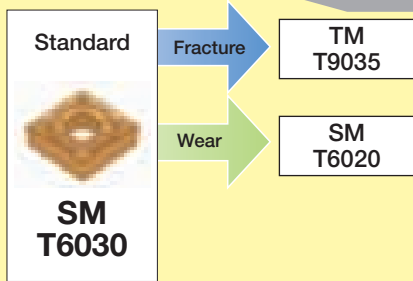
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Light interrupted

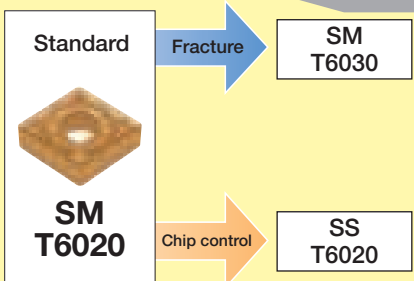


Interrupted

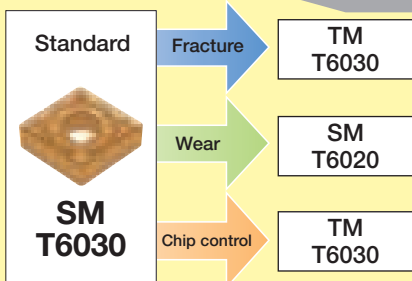


Medium cutting [ap = 1.0 ~ 4.0 mm]

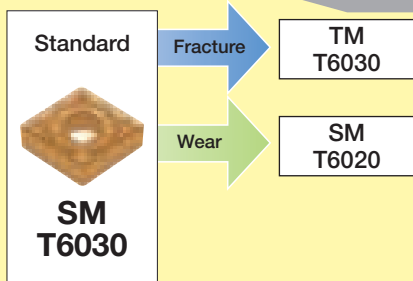
Continuous



Light interrupted



Interrupted



Selection System

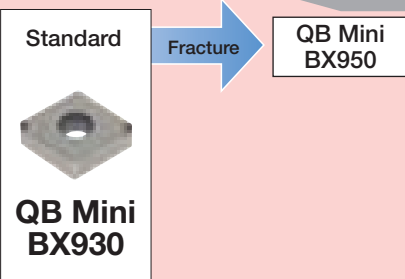
Negative Inserts

TAC Inserts

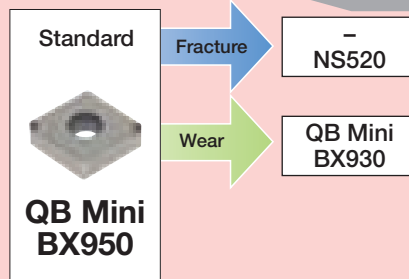
K Cast irons

Precision finishing [$a_p = \sim 0.5 \text{ mm}$]

Continuous

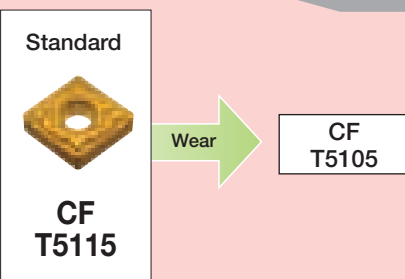


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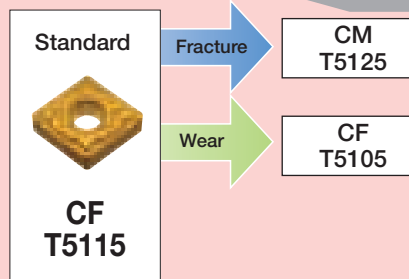


Finishing [$a_p = 0.5 \sim 2.0 \text{ mm}$]

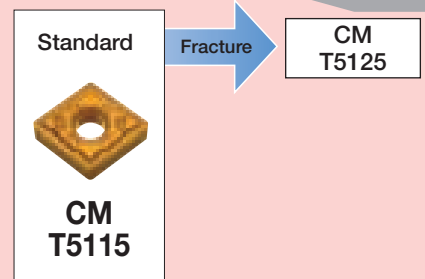
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Light interrupted

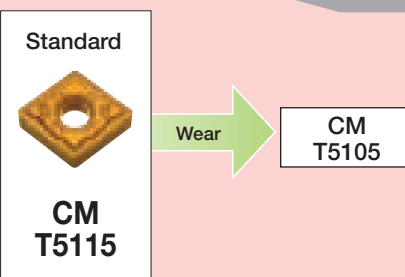


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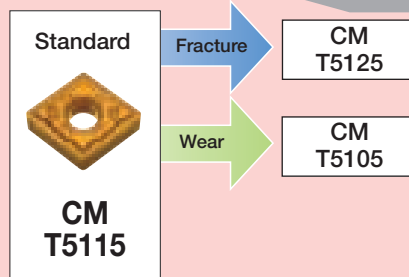


Medium cutting [$a_p = 1.0 \sim 5.0 \text{ mm}$]

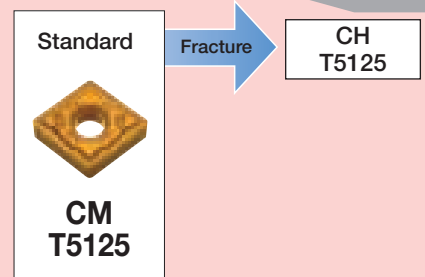
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Light interrupted

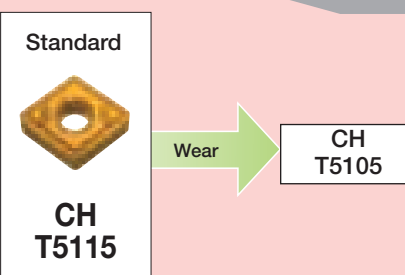


Interrupted

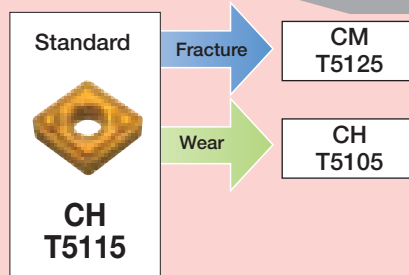


Medium to heavy cutting [$a_p = 3.0 \sim 6.0 \text{ mm}$]

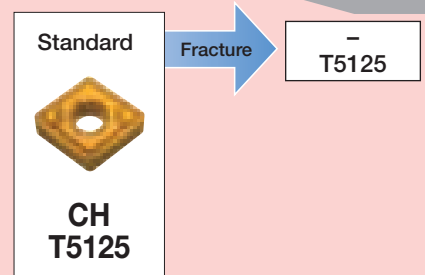
Continuous



Light interrupted



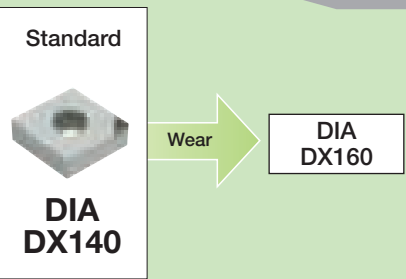
Interrupted



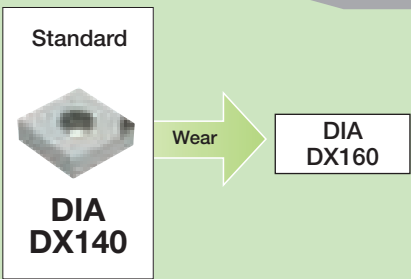
N Non-ferrous metals

Precision finishing [ap = ~ 0.5 mm]

Continuous

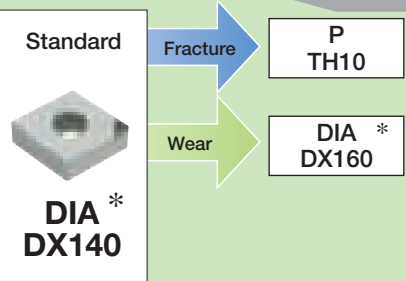


Light interrupted

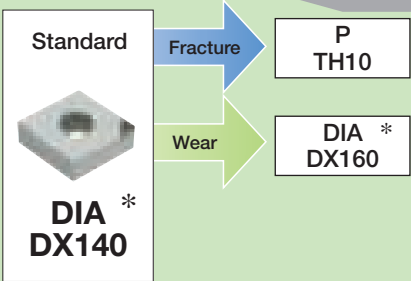


Finishing [ap = 0.5 ~ 2.0 mm]

Continuous



Light interrupted

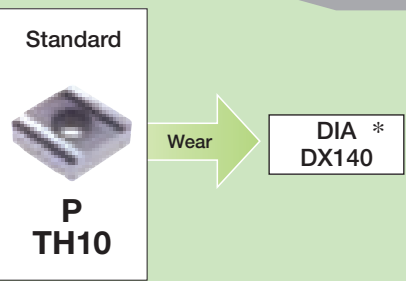


Interrupted

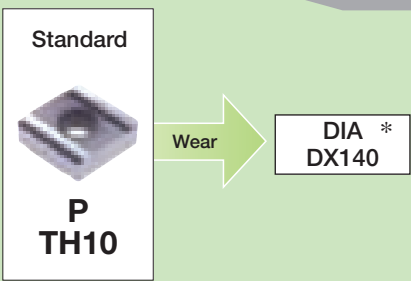


Medium cutting [ap = 1.0 ~ 4.0 mm]

Continuous



Light interrupted



Interrupted



* When using T-DIA inserts, please keep ap ≤ 1.0 mm.

Selection System

Negative Inserts

TAC Inserts

S Difficult-to-cut Materials

Precision finishing [$a_p = \sim 0.5 \text{ mm}$]

Continuous

Standard

Fracture

TH10



QB Mini
BX950

Light interrupted

Standard

Fracture

TH10



QB Mini
BX950

Finishing [$a_p = 0.5 \sim 2.0 \text{ mm}$]

Continuous

Standard

Fracture

All-round
AH120

Wear

SA
AH120



SA
KS20

Light interrupted

Standard

Fracture

All-round
AH120

Wear

SA
AH120



SA
KS20

Interrupted

Standard

Fracture

All-round
AH120

Wear

SA
AH120



SA
KS20

Medium cutting [$a_p = 1.0 \sim 4.0 \text{ mm}$]

Continuous

Standard

Fracture

All-round
AH120

Wear

SA
AH120



SA
KS20

Light interrupted

Standard

Fracture

All-round
AH120

Wear

SA
AH120



SA
KS20

Interrupted

Standard

Fracture

All-round
AH120

Wear

SA
AH120

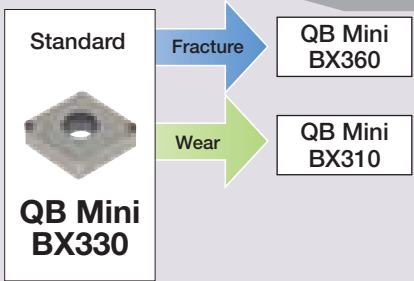


SA
KS20

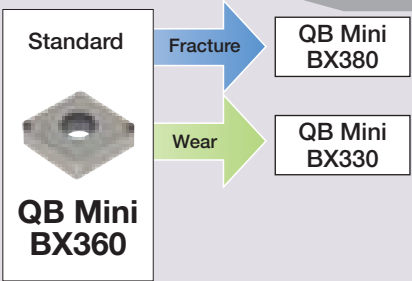
H Hard materials

Precision finishing [ap = ~ 0.2 mm]

Continuous

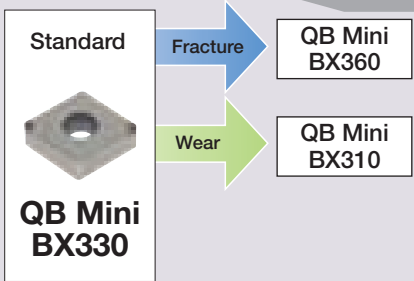


Light interrupted

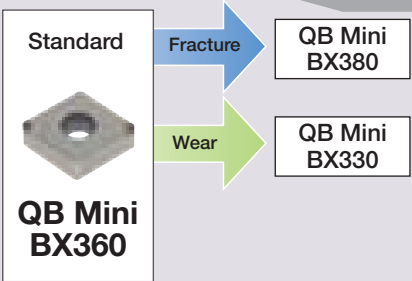


Finishing [ap = ~ 0.5 mm]

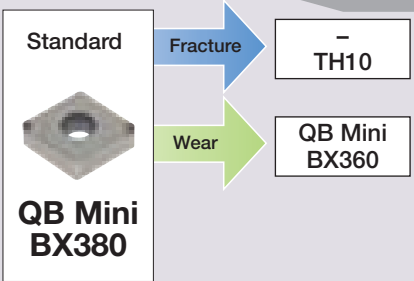
Continuous



Light interrupted



Interrupted



Selection System

Positive Inserts

TAC Inserts

P Steels

Precision finishing [$a_p = \sim 0.5 \text{ mm}$]

Continuous

Standard

W□□
NS530

Light interrupted

Standard

W□□
NS530Finishing [$a_p = 0.3 \sim 1.5 \text{ mm}$]

Continuous

Standard

PF
NS530

Fracture

PF
T9015

Chip control

W□□
NS530

Light interrupted

Standard

PF
T9015

Fracture

PF
T9025

Wear

PF
NS530

Chip control

W□□
NS530

Interrupted

Standard

PF
T9025

Fracture

24
T9025

Wear

PF
T9015Finishing to Medium cutting [$a_p = 0.3 \sim 2.0 \text{ mm}$]

Continuous

Standard

PS
T9015

Fracture

PS
T9025

Wear

PS
NS530

Chip control

PF
T9015

Light interrupted

Standard

PS
T9015

Fracture

PS
T9025

Wear

PS
NS530

Chip control

PF
T9015

Interrupted

Standard

PS
T9025

Fracture

24
T9025

Wear

PS
T9015Medium cutting [$a_p = 1.0 \sim 5.0 \text{ mm}$]

Continuous

Standard

PM
T9015

Fracture

PM
T9025

Wear

PM
NS530

Chip control

PS
T9015

Light interrupted

Standard

PM
T9015

Fracture

PM
T9025

Wear

PM
NS530

Chip control

PS
T9015

Interrupted

Standard

PM
T9025

Fracture

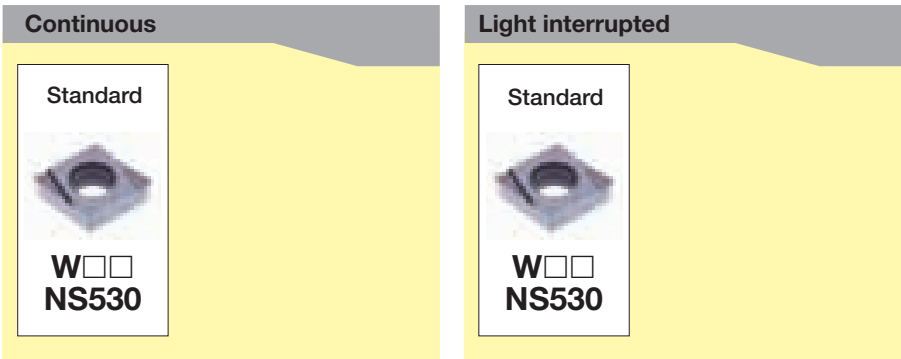
24
T9025

Wear

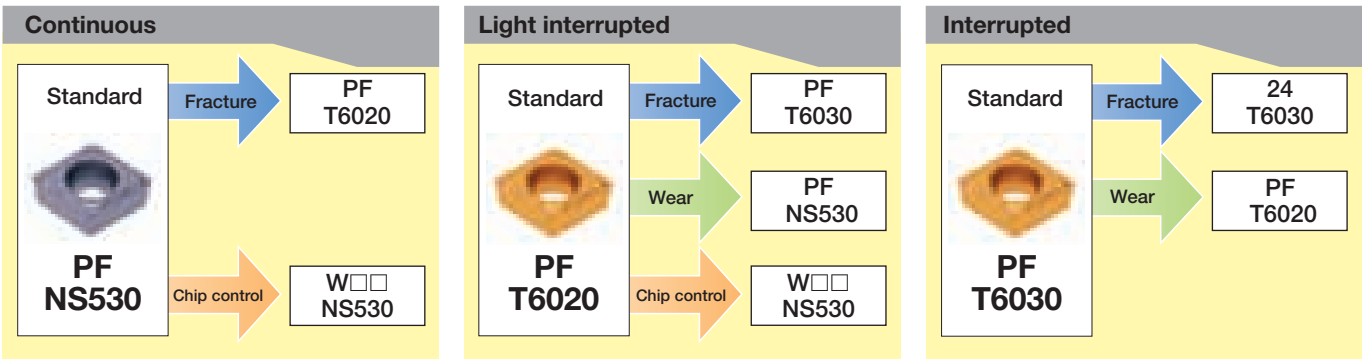
PM
T9015

M Stainless steels

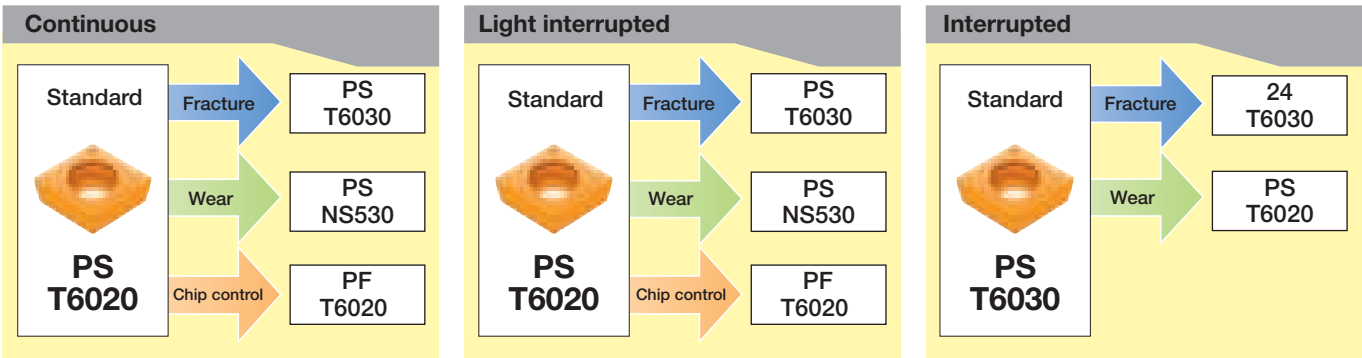
Precision finishing [ap = ~ 0.5 mm]



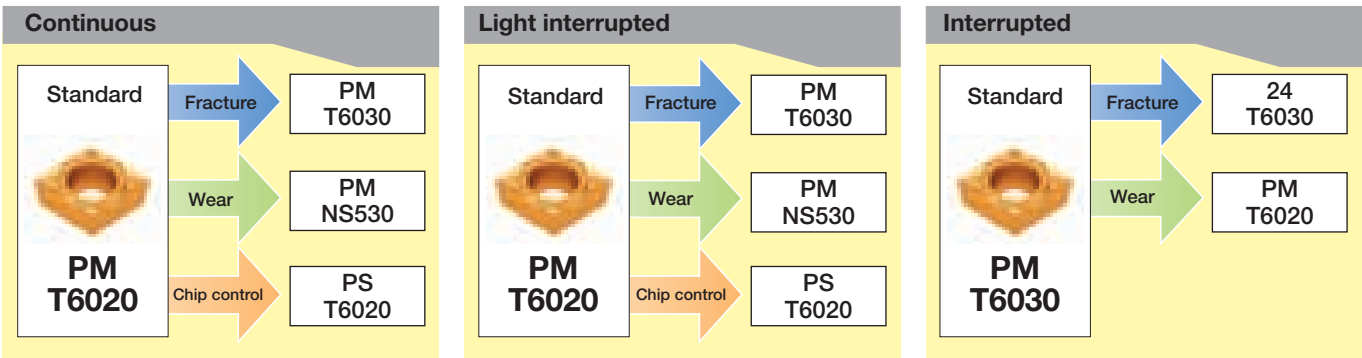
Finishing [ap = 0.3 ~ 1.5 mm]



Finishing to Medium cutting [ap = 0.3 ~ 2.0 mm]



Medium cutting [ap = 1.0 ~ 5.0 mm]



Selection System

Positive Inserts

TAC Inserts

K Cast irons

Precision finishing [$a_p = \sim 0.5 \text{ mm}$]

Continuous

Standard

Fracture

TH10



QB Mini
BX930

Light interrupted

Standard

Fracture

TH10



QB Mini
BX930

Finishing [$a_p = 0.5 \sim 2.0 \text{ mm}$]

Continuous

Standard

Fracture

T5020

Wear

QB Mini
BX930



T5010

Light interrupted

Standard

Wear

T5010



T5020

Interrupted

Standard

Wear

T5010



T5020

Medium cutting [$a_p = 1.0 \sim 5.0 \text{ mm}$]

Continuous

Standard

Fracture

T5020



T5010

Light interrupted

Standard

Wear

T5010



T5020

Interrupted

Standard

Wear

T5010

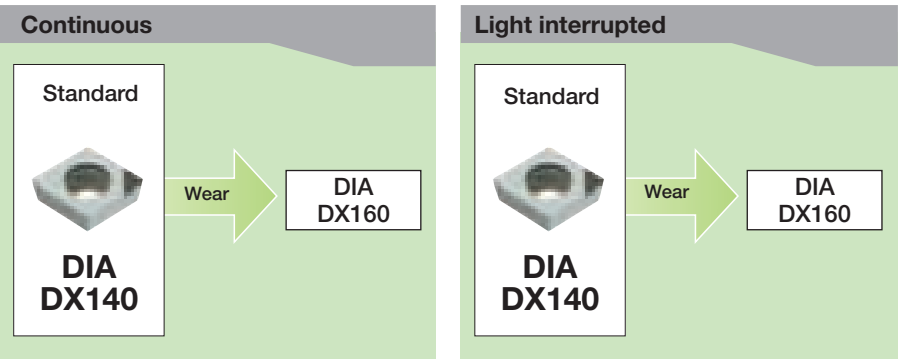


T5020

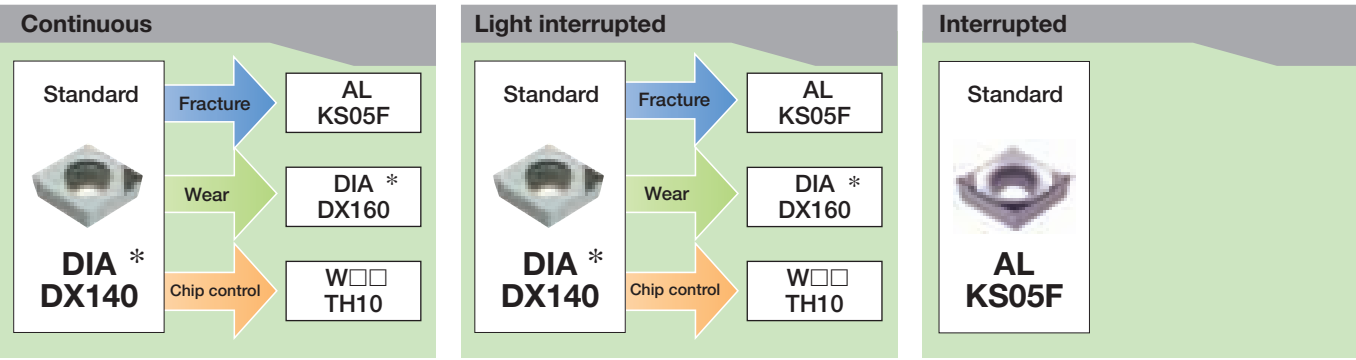
N

Non-ferrous metals

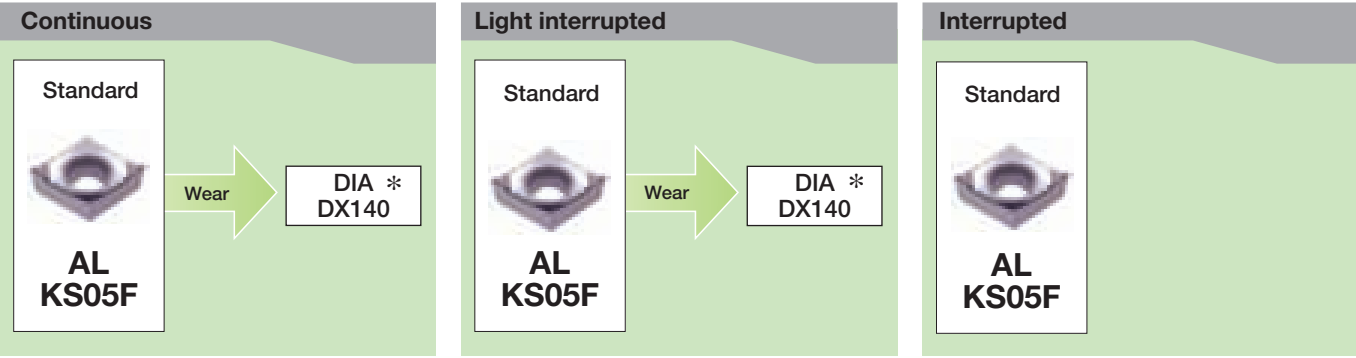
Precision finishing [ap = ~ 0.5 mm]



Finishing [ap = 0.5 ~ 2.0 mm]



Medium cutting [ap = 1.0 ~ 4.0 mm]



* When using T-DIA inserts, please keep ap ≤ 1.0 mm.

Selection System

Positive Inserts

S Difficult-to-cut Materials

TAC Inserts

Precision finishing [$ap = \sim 0.5 \text{ mm}$]

Continuous

Standard



W□□
TH10

Light interrupted

Standard



W□□
TH10

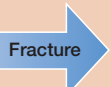
Finishing [$ap = 0.5 \sim 2.0 \text{ mm}$]

Continuous

Standard



TH10



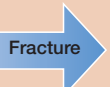
PS
T6020

Light interrupted

Standard



TH10



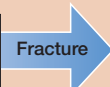
PS
T6020

Interrupted

Standard



TH10



PS
T6020

H Hard materials

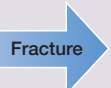
Precision finishing [$ap = \sim 0.2 \text{ mm}$]

Continuous

Standard



QB Mini
BX330



QB Mini
BX360



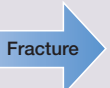
QB Mini
BX310

Light interrupted

Standard



QB Mini
BX360



TH10



QB Mini
BX330

Finishing [$ap = \sim 0.5 \text{ mm}$]

Continuous

Standard



QB Mini
BX330



QB Mini
BX360



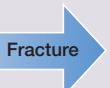
QB Mini
BX310

Light interrupted

Standard



QB Mini
BX360



TH10



QB Mini
BX330

Interrupted

Standard



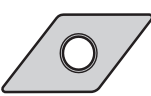
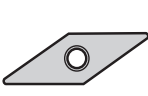
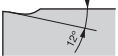
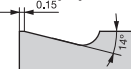
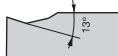
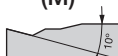
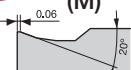
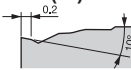
TH10

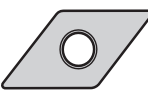
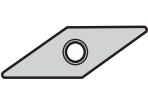
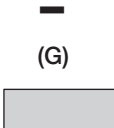
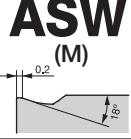
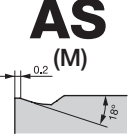
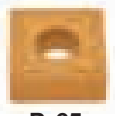
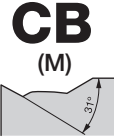
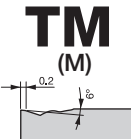
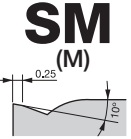
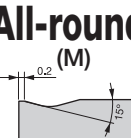
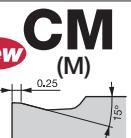


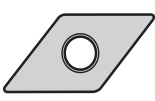
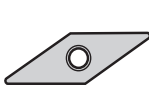
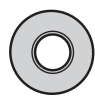
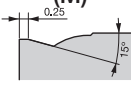
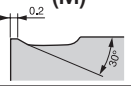
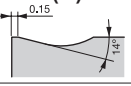
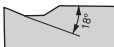
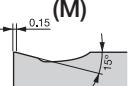
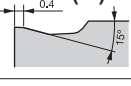
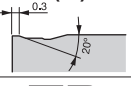
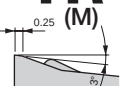
QB Mini
BX360

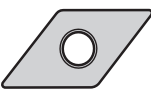
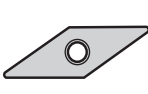
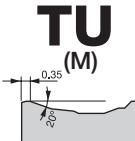
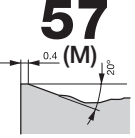
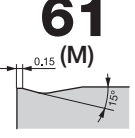
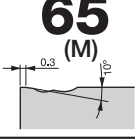
Appearance of Chipbreaker

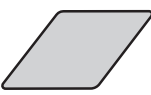
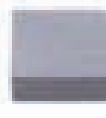
Negative inserts

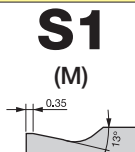
Application	Chipbreaker	C	D	S	T	W	V	R
	Negative							
		80° Negative	55° Negative	90° Negative	60° Negative	80° Negative	35° Negative	Negative
Precision finishing	TF (M) 	 P. 44	 P. 52	 P. 61	 P. 70	 P. 78	 P. 83	
	01 (G) 	 P. 44	 P. 52	 P. 61	 P. 70	 P. 78	 P. 83	
	C (G) 				 P. 70			
Finishing	New TSF (M) 	 P. 48	 P. 57	 P. 65	 P. 74	 P. 81	 P. 87	
	TS (M) 	 P. 44	 P. 53	 P. 61	 P. 71	 P. 79	 P. 84	
	SS (M) 	 P. 44	 P. 54	 P. 62	 P. 71	 P. 79	 P. 84	
	New CF (M) 	 P. 44	 P. 53	 P. 61	 P. 71	 P. 79	 P. 84	
	ZF (M) 	 P. 48	 P. 57	 P. 65	 P. 74	 P. 81	 P. 87	
	11 (M) 	 P. 48	 P. 57	 P. 65	 P. 74	 P. 81	 P. 87	
	AFW Wiper (M) 	 P. 49				 P. 82		
Finishing to medium cutting	ZM (M) 	 P. 48	 P. 57	 P. 65	 P. 74	 P. 81	 P. 87	

Application	Chipbreaker	C	D	S	T	W	V	R
Negative								
		80° Negative	55° Negative	90° Negative	60° Negative	80° Negative	35° Negative	Negative
Finishing to medium cutting	(M) 	 P. 44	 P. 52	 P. 61	 P. 70	 P. 79	 P. 83	
	(G) 	 P. 44	 P. 52	 P. 61	 P. 70	 P. 79	 P. 83	 P. 88
Finishing (low carbon steel)	17 (M) 	 P. 48	 P. 57	 P. 65	 P. 74	 P. 81		
High feed, small cutting depth	ASW (M) 	 P. 49				 P. 82		
	AS (M) 	 P. 48	 P. 57	 P. 65	 P. 74	 P. 81		
Boring	CB (M) 	 P. 49	 P. 58		 P. 75	 P. 82		
Medium cutting	TM (M) 	 P. 45	 P. 54	 P. 62	 P. 71	 P. 79	 P. 85	
	SM (M) 	 P. 45	 P. 54	 P. 62	 P. 71	 P. 80	 P. 85	
	All-round (M) 	 P. 46	 P. 55	 P. 63	 P. 72	 P. 80	 P. 85	
	New CM (M) 	 P. 45	 P. 54	 P. 62	 P. 71	 P. 79	 P. 85	

Application	Chipbreaker	C	D	S	T	W	V	R
	Negative							
		80° Negative	55° Negative	90° Negative	60° Negative	80° Negative	35° Negative	Negative
Medium cutting	P (G) 	 P. 45	 P. 55	 P. 63	 P. 72			
	DM (M) 	 P. 49	 P. 58	 P. 66	 P. 75	 P. 82	 P. 87	
	28 (M) 	 P. 49						
	37 (M) 	 P. 49	 P. 58	 P. 66	 P. 75	 P. 82		
	Parallel (G) 		 P. 55					
	SA (M) 	 P. 45	 P. 54	 P. 62	 P. 72	 P. 80		
	S (M) 	 P. 45	 P. 55	 P. 62	 P. 72			
Roughing	CH (M) 	 P. 46	 P. 55	 P. 63	 P. 72	 P. 80		
	TH (M) 	 P. 46	 P. 55	 P. 63	 P. 72	 P. 80		
Heavy cutting	TR (M) 	 P. 46		 P. 63				

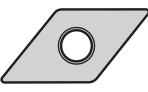
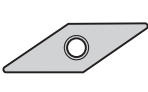
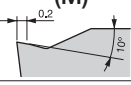
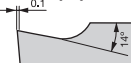
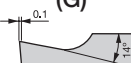
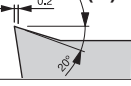
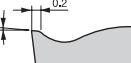
Application	Chipbreaker	C	D	S	T	W	V	R
	Negative							
		80° Negative	55° Negative	90° Negative	60° Negative	80° Negative	35° Negative	Negative
Heavy cutting		 P. 46		 P. 63				
		 P. 50	 P. 59	 P. 66	 P. 76	 P. 82		
								 P. 88
		 P. 50		 P. 67				

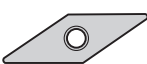
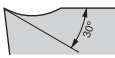
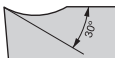
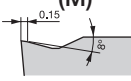
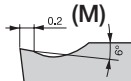
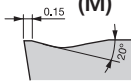
Application	Chipbreaker	C	D	S	T	R
	Negative					
		80° Negative	55° Negative	90° Negative	60° Negative	Negative
Finishing to medium cutting		 P. 51	 P. 60	 P. 68	 P. 77	 P. 88
		 P. 51		 P. 68	 P. 77	 P. 88

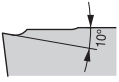
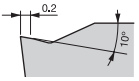
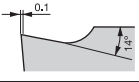
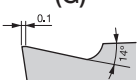
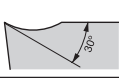
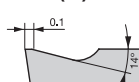
Application	Chipbreaker	KNMX
	Negative	
		55° Negative
Finishing		 P. 89

Appearance of Chipbreaker

Positive Inserts

Application	Chipbreaker	C	D	S	T	V	R
	Positive 7°						
		80° Positive 7°	55° Positive 7°	90° Positive 7°	60° Positive 7°	35° Positive 7°	Positive 7°
Precision finishing	01 (G) 	 P. 92	 P. 98		 P. 108		
	PF (M) 	 P. 92	 P. 98	 P. 102		 P. 121	
	W10 (G) 		 P. 98				
	W15 (G) 	 P. 92	 P. 98				
	W20 (G) 	 P. 92					
Finishing to medium cutting	PS (M) 	 P. 92	 P. 98	 P. 102	 P. 108	 P. 121	
	SS (G) 				 P. 108		
	- (M) 	 P. 93	 P. 99				
	AL (G) 	 P. 93	 P. 99		 P. 108	 P. 121	 P. 122
	RS (M) 						 P. 122

Application	Chipbreaker	C	D	S	T	V	R
	Positive 7°						
		80° Positive 7°	55° Positive 7°	90° Positive 7°	60° Positive 7°	35° Positive 7°	Positive 7°
Finishing to medium cutting	 (G)	 P. 93	 P. 101				
	 All-round (G)	 P. 95	 P. 101				
	 Parallel (G)	 P. 96	 P. 101				
Turning on small lathes	 J08 (G)				 P. 109		
	 J10 (G)	 P. 94	 P. 100		 P. 109		
Medium cutting	 PM (M)	 P. 92	 P. 98	 P. 102	 P. 108		
	 24 (M)	 P. 93	 P. 99	 P. 102		 P. 121	
Heavy cutting	 61 (M)						 P. 122

Application	Chipbreaker	C	S	T	E
	Positive 11°				
		80° Positive 11°	90° Positive 11°	60° Positive 11°	75° Positive 11°
Precision finishing	01 (G) 			 P. 110	
Finishing	PF (M) 	 P. 96		 P. 112	
	W08 (G) 			 P. 110	 P. 123
	W15 (G) 	 P. 96	 P. 103	 P. 111	
	W20 (G) 	 P. 96	 P. 103		
	J08 (G) 				 P. 123
	R/L (G) 			 Former Tungaloy-standard hole P. 115	

Application	Chipbreaker	C	S	T
	Positive 11°			
		80° Positive 11°	90° Positive 11°	60° Positive 11°
Finishing to medium cutting	PS (M) 	 P. 96	 P. 103	 P. 112
	SS (G) 			 P. 113
	— (M) 	 P. 97	 P. 103	 P. 113
	23 (M) 			 P. 116
	— (G) 			 P. 115
Medium cutting	PM (M) 	 P. 96		 P. 112
	24 (M) 	 P. 97	 P. 103	 P. 114

Application	Chipbreaker	W	V
	Positive 5°		
		80° Positive 5°	35° Positive 5°
Finishing	W08 (G) 	 P. 119	
	W11 (G) 	 P. 119	
	PF (M) 		 P. 120
Finishing to medium cutting	PS (M) 		 P. 120
Turning on small lathes	J10 (G) 		 P. 120
Medium cutting	24 (M) 		 P. 120

Chipb.	JXF	JXB	JXR
Application	Positive	Positive	Positive
Small Lathes	Front-turning	Back-turning	Reverse-turning
	P. 276	P. 277	P. 276

Chipbreaker	JTB	J10E
Application	Positive	Positive
Backturning		
	P. 278	P. 278

Chipbreaker	S	T	R
Application	Positive 11°	90° Positive 11°	60° Positive 11°
Finishing	(G)		
Finishing to medium cutting	(M)		
	(G)		
	23 (M)		
Medium cutting	24 (M)		

Standard Cutting Conditions (Negative Inserts)

ISO	Work materials	Hardness (HB)	Operation		Chipbreaker type	Insert grades	Corner R	Cutting depth ap (mm)	Feed f (mm/rev)	Cutting speed Vc (m/min)
P	Low carbon steels · Alloy steels Ck10 15CrMo5 USt42 etc.	< 150	Precision finishing	continuous light interrupted	TF	NS520 NS530	0.4	0.05 - 0.3 - 0.5	0.03 - 0.1 - 0.15	320 - 390 - 450 130 - 230 - 320
			Finishing	continuous light interrupted interrupted	TS	NS520 NS530 T9025	0.8	0.3 - 1.0 - 1.5	0.08 - 0.15 - 0.2	320 - 390 - 450 130 - 230 - 320 130 - 230 - 320
			Medium cutting	continuous light interrupted interrupted	TM	T9005 T9015 T9025	0.8	1.0 - 3.0 - 5.0	0.2 - 0.3 - 0.5	320 - 390 - 450 130 - 230 - 320 130 - 230 - 320
			Roughing	continuous light interrupted interrupted	TH	T9005 T9015 T9025	1.2	3.0 - 4.0 - 6.0	0.3 - 0.4 - 0.6	230 - 260 - 320 230 - 260 - 320 130 - 200 - 220
			Heavy cutting	continuous interrupted	TU	T9015 T9025	1.6	3.0 - 6.0 - 10.0	0.6 - 0.7 - 1.0	230 - 260 - 320 130 - 200 - 220
	Medium carbon steels · Alloy steels C45 42CrMo4 etc.	150~300	Precision finishing	continuous light interrupted	TF	NS520 NS530	0.4	0.05 - 0.3 - 0.5	0.03 - 0.1 - 0.15	250 - 310 - 370 100 - 180 - 250
			Finishing	continuous light interrupted interrupted	TS	NS520 NS530 T9025	0.8	0.3 - 1.0 - 1.5	0.08 - 0.15 - 0.2	250 - 310 - 370 100 - 180 - 250 100 - 180 - 250
			Medium cutting	continuous light interrupted interrupted	TM	T9005 T9015 T9025	0.8	1.0 - 3.0 - 5.0	0.2 - 0.3 - 0.5	220 - 310 - 370 120 - 220 - 310 120 - 220 - 310
			Roughing	continuous light interrupted interrupted	TH	T9005 T9015 T9025	1.2	3.0 - 4.0 - 6.0	0.3 - 0.4 - 0.6	220 - 250 - 310 100 - 160 - 220 100 - 160 - 220
			Heavy cutting	continuous interrupted	TU	T9015 T9025	1.6	3.0 - 6.0 - 10.0	0.6 - 0.7 - 1.0	100 - 160 - 220 100 - 160 - 220
	High carbon steels · Alloy steels 40NiCrMo6 etc.	250~400	Precision finishing	continuous light interrupted	TF	NS520 NS530	0.4	0.05 - 0.3 - 0.5	0.03 - 0.1 - 0.15	70 - 170 - 280 50 - 110 - 230
			Finishing	continuous light interrupted interrupted	TS	NS520 NS530 T9025	0.8	0.3 - 1.0 - 1.5	0.08 - 0.15 - 0.2	70 - 170 - 280 50 - 110 - 170 50 - 110 - 170
			Medium cutting	continuous light interrupted interrupted	TM	T9005 T9015 T9025	0.8	1.0 - 3.0 - 5.0	0.2 - 0.3 - 0.5	110 - 170 - 230 80 - 110 - 200 80 - 110 - 200
			Roughing	continuous light interrupted interrupted	TH	T9005 T9015 T9025	1.2	3.0 - 4.0 - 6.0	0.3 - 0.4 - 0.6	90 - 110 - 170 70 - 110 - 150 70 - 110 - 150
			Heavy cutting	continuous interrupted	TU	T9015 T9025	1.6	3.0 - 6.0 - 10.0	0.6 - 0.7 - 1.0	70 - 110 - 150 70 - 110 - 150
M	Stainless steels X5CrNi18-10 X3CrNiMo17-13-3 etc.	< 200	Precision finishing	continuous light interrupted	TF	NS520 NS530	0.4	0.05 - 0.3 - 0.5	0.03 - 0.1 - 0.15	100 - 120 - 220 80 - 100 - 180
			Finishing	continuous light interrupted interrupted	SS	T6020 T6020 T6030	0.8	0.5 - 1.0 - 3.0	0.08 - 0.15 - 0.2	150 - 220 - 260 120 - 180 - 200 100 - 150 - 180
			Medium cutting	continuous light interrupted interrupted	SM	T6020 T6030 T6030	0.8	1.0 - 3.0 - 5.0	0.2 - 0.3 - 0.5	150 - 220 - 260 120 - 180 - 200 100 - 150 - 180
			Heavy cutting	continuous light interrupted	TU	T6030	1.6	3.0 - 6.0 - 10.0	0.6 - 0.7 - 1.0	120 - 180 - 230 80 - 100 - 150

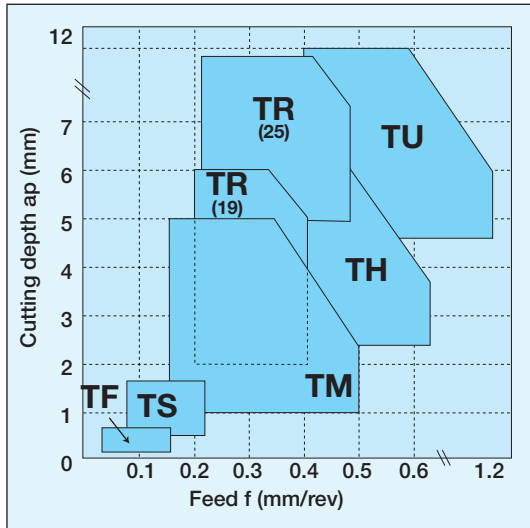
ISO	Work materials	Hardness (HB)	Operation		Chipbreaker type	Insert grades	Corner R	Cutting depth ap (mm)	Feed f (mm/rev)	Cutting speed Vc (m/min)
K	Grey cast irons GG25 etc.	200~250	Precision finishing	continuous light interrupted	(PCBN-mini)	BX850 BX850	0.4	0.05 - 0.3 - 0.5 0.05 - 0.3 - 0.5	0.05 - 0.1 - 0.2 0.05 - 0.1 - 0.2	300 - 700 - 1200 300 - 500 - 800
			Finishing	continuous light interrupted	CM	T5105 T5115	0.8	0.5 - 1.0 - 2.0	0.05 - 0.25 - 0.4	180 - 330 - 480 140 - 270 - 400
			Medium cutting	continuous light interrupted interrupted	CM	T5105 T5115 T5125	0.8	1.0 - 2.0 - 4.0	0.1 - 0.3 - 0.5	180-330-480 140-270-400 120-210-300
			Heavy cutting	continuous light interrupted interrupted	CH	T5105 T5115 T5125	1.2	3.0 - 4.0 - 6.0	0.1 - 0.35 - 0.6	180-330-480 140-270-400 120-210-300
	Ductile cast irons GGG40 etc.	150~250	Finishing	continuous light interrupted	CF	T5105 T5115	0.8	0.5 - 1.0 - 2.0	0.05 - 0.25 - 0.4	180-290-400 140-255-370
			Medium cutting	interrupted continuous light interrupted	CM	T5105 T5115 T5125	0.8	1.0 - 2.0 - 4.0	0.1 - 0.3 - 0.5	180-290-400 140-255-370 120-180-250
			Heavy cutting	interrupted continuous continuous	CH	T5105 T5115 T5125	1.2	3.0 - 4.0 - 6.0	0.1 - 0.35 - 0.6	180-290-400 140-255-370 120-180-250
N	Aluminium alloys (Si < 12%)		Precision finishing	continuous light interrupted	PCD	DX140 DX140	0.4	0.05 - 0.3 - 0.5	0.03 - 0.1 - 0.15	500 - 800 - 2500 400 - 800 - 2000
			Finishing	continuous light interrupted interrupted	P	TH10 TH10 TH10	0.8	0.5 - 2.0 - 4.0	0.08 - 0.3 - 0.5	500 - 600 - 1000 400 - 500 - 700 200 - 300 - 500
	Aluminium alloys (Si > 12%)		Medium cutting	continuous light interrupted	PCD	DX140 DX140	0.4	0.05 - 0.3 - 0.5	0.03 - 0.1 - 0.15	400 - 600 - 800 400 - 500 - 600
			Roughing	continuous light interrupted	PCD	DX140 DX140	0.8	0.3 - 0.5 - 1.0	0.08 - 0.15 - 0.25	400 - 600 - 800 400 - 500 - 600
			Heavy cutting	continuous light interrupted interrupted	P	TH10 TH10 TH10	0.8	0.5 - 2.0 - 4.0	0.08 - 0.3 - 0.5	100 - 200 - 300 100 - 150 - 200 100 - 150 - 200
	Copper and Copper alloys		Precision finishing	continuous light interrupted	PCD	DX140 DX140	0.4	0.05 - 0.3 - 0.5	0.03 - 0.1 - 0.15	500 - 1000 - 1500 400 - 800 - 1200
			Heavy cutting	continuous light interrupted interrupted	P	TH10 TH10 TH10	0.8	0.5 - 2.0 - 4.0	0.08 - 0.3 - 0.5	100 - 200 - 300 100 - 150 - 200 50 - 100 - 150
S	Ni-base alloys INCONEL718 etc.		Precision finishing	continuous light interrupted	01	TH10 TH10	0.4	0.05 - 0.3 - 0.5	0.03 - 0.1 - 0.15	10 - 30 - 50 10 - 20 - 30
			Finishing	continuous light interrupted	SA	AH110 AH120	0.8	0.5 - 1.0 - 2.0	0.08 - 0.15 - 0.25	10 - 30 - 60 10 - 30 - 50
			Medium cutting	continuous light interrupted	SA	AH110 AH120	0.8	1.0 - 2.0 - 4.0	0.2 - 0.3 - 0.5	10 - 30 - 60 10 - 30 - 50
	Titanium alloys Ti6Al4V etc.		Roughing	continuous light interrupted	01	TH10 TH10	0.4	0.05 - 0.3 - 0.5	0.03 - 0.1 - 0.15	50 - 100 - 120 30 - 80 - 100
			Heavy cutting	continuous light interrupted interrupted	SA	KS20 KS20 KS20	0.8	0.5 - 1.0 - 2.0	0.08 - 0.15 - 0.25	30 - 50 - 70 30 - 50 - 70 10 - 30 - 50
			Precision finishing	continuous light interrupted interrupted	SA	KS20 KS20 KS20	0.8	1.0 - 2.0 - 4.0	0.2 - 0.3 - 0.5	30 - 50 - 70 30 - 50 - 70 10 - 30 - 50
H	Hardened steels Pre-hardened steels		Precision finishing	continuous light interrupted interrupted interrupted	PCBN	BX310 BX330 BX360 BX380	0.4	0.05 - 0.1 - 0.2	0.05 - 0.1 - 0.15	130 - 200 - 300 80 - 120 - 150 80 - 120 - 150 80 - 120 - 150
			Finishing	continuous light interrupted interrupted	—	LX11 TH10 TH10	0.8	0.05 - 0.3 - 0.5	0.05 - 0.08 - 0.10	50 - 100 - 150 20 - 30 - 40 10 - 15 - 20

Standard Cutting Conditions (Positive Inserts)

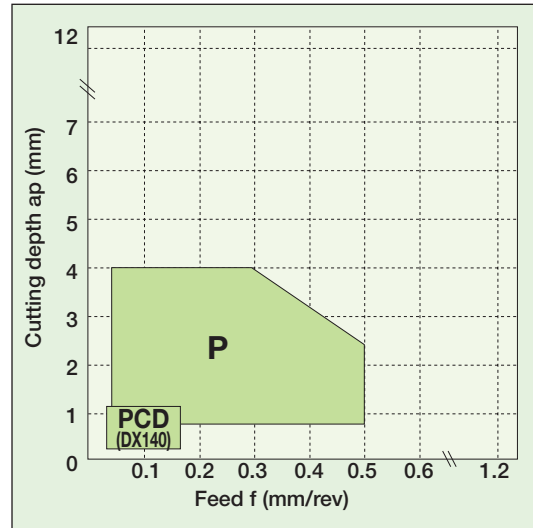
ISO	Work materials	Hardness (HB)	Operation		Chipbreaker type	Insert grades	Corner R	Cutting depth ap (mm)	Feed f (mm/rev)	Cutting speed Vc (m/min)
P	Low carbon steels Alloy steels Ck10, 15CrMo5, USt42 etc.	> 150	Precision finishing	continuous light interrupted	01	NS520 NS530	0.4	0.05 - 0.3 - 0.5	0.03 - 0.1 - 0.15	250 - 300 - 350 100 - 180 - 250
			Finishing	continuous light interrupted interrupted	PF PS	NS530 T9015 T9025	0.4	0.3 - 1.0 - 1.5 0.3 - 1.0 - 1.5 0.3 - 1.0 - 2.0	0.05 - 0.15 - 0.25 0.05 - 0.15 - 0.25 0.08 - 0.15 - 0.3	200 - 250 - 300 120 - 200 - 300 100 - 150 - 200
				continuous light interrupted interrupted	PM	NS530 T9015 T9025	0.8	1.0 - 2.0 - 2.5	0.15 - 0.2 - 0.3	200 - 250 - 300 120 - 200 - 300 100 - 150 - 200
	Medium carbon steels Alloy steels C45, 42CrMo4 etc.	150~300	Precision finishing	continuous light interrupted	01	NS520 NS530	0.4	0.05 - 0.3 - 0.5	0.03 - 0.1 - 0.15	200 - 250 - 300 80 - 150 - 200
			Finishing	continuous light interrupted interrupted	PF PS	NS530 T9015 T9025	0.4	0.3 - 1.0 - 1.5 0.3 - 1.0 - 1.5 0.3 - 1.0 - 2.0	0.05 - 0.15 - 0.25 0.05 - 0.15 - 0.25 0.08 - 0.15 - 0.3	150 - 200 - 250 120 - 200 - 300 100 - 150 - 200
				continuous light interrupted interrupted	PM	NS530 T9015 T9025	0.8	1.0 - 2.0 - 2.5	0.15 - 0.2 - 0.3	150 - 200 - 250 120 - 200 - 300 100 - 150 - 200
	High carbon steels Alloy steels 40NiCrMo6 etc.	250~400	Precision finishing	continuous light interrupted	01	NS520 NS530	0.4	0.05 - 0.3 - 0.5	0.03 - 0.1 - 0.15	80 - 150 - 250 80 - 100 - 150
			Finishing	continuous light interrupted interrupted	PF PS	NS530 T9015 T9025	0.4	0.3 - 1.0 - 1.5 0.3 - 1.0 - 1.5 0.3 - 1.0 - 2.0	0.05 - 0.15 - 0.25 0.05 - 0.15 - 0.25 0.08 - 0.15 - 0.3	80 - 150 - 200 120 - 200 - 300 100 - 150 - 200
				continuous light interrupted interrupted	PM	NS530 T9015 T9025	0.8	1.0 - 2.0 - 2.5	0.15 - 0.2 - 0.3	100 - 150 - 200 120 - 200 - 300 100 - 150 - 200
M	Stainless steels X5CrNi18-10, X3CrNiMo17-13-3 etc.	< 200	Precision finishing	continuous light interrupted	01	NS530 NS530	0.4	0.05 - 0.3 - 0.5	0.03 - 0.1 - 0.15	100 - 120 - 150 80 - 100 - 150
			Finishing	continuous light interrupted interrupted	PF PS	T6020 T6020 T6030	0.8	0.3 - 1.0 - 1.5 0.3 - 1.0 - 1.5 0.3 - 1.0 - 2.0	0.05 - 0.15 - 0.25 0.05 - 0.15 - 0.25 0.08 - 0.15 - 0.3	150 - 220 - 260 120 - 180 - 200 100 - 150 - 180
				continuous light interrupted interrupted	PM	T6020 T6030 T6030	0.8	1.0 - 2.0 - 2.5	0.15 - 0.2 - 0.3	150 - 220 - 260 120 - 180 - 200 100 - 150 - 180
K	Grey cast irons GG25 etc.	200~250	Precision finishing	continuous light interrupted	01	NS520 NS520	0.4	0.05 - 0.3 - 0.5	0.03 - 0.1 - 0.15	200 - 250 - 300 100 - 150 - 200
			Finishing to medium cutting	continuous light interrupted interrupted	-	T5010 T5020 T5020	0.8	0.05 - 1.0 - 3.0	0.03 - 0.1 - 0.3	150 - 300 - 600 150 - 300 - 400 100 - 150 - 300
	Ductile cast irons GGG40 etc.	150~250	Precision finishing	continuous light interrupted	01	NS520 NS520	0.4	0.05 - 0.3 - 0.5	0.03 - 0.1 - 0.15	100 - 200 - 300 100 - 150 - 200
			Finishing to medium cutting	continuous light interrupted interrupted	-	T5010 T5020 T5020	0.8	0.05 - 1.0 - 3.0	0.03 - 0.1 - 0.3	100 - 250 - 300 100 - 200 - 300 100 - 150 - 200
N	Aluminium alloys (Si < 12%)		Precision finishing	continuous light interrupted	PCD	DX140 DX140	0.2	0.05 - 0.3 - 0.5	0.03 - 0.1 - 0.15	500 - 800 - 2500 400 - 800 - 2000
			Precision finishing	continuous light interrupted	AL	KS05F KS05F	0.4	0.5 - 3.0 - 5.0	0.1 - 0.3 - 0.5	100 - 600 - 1200 100 - 500 - 900
	Aluminium alloys (Si 13%-17%)		Precision finishing	continuous light interrupted	PCD	DX140 DX140	0.2	0.05 - 0.3 - 0.5	0.03 - 0.1 - 0.15	400 - 600 - 800 400 - 500 - 600
			Precision finishing	continuous light interrupted	AL	KS05F KS05F	0.4	0.5 - 3.0 - 5.0	0.1 - 0.3 - 0.5	100 - 200 - 300 100 - 150 - 200
			Medium cutting	continuous light interrupted	AL	KS05F KS05F	0.4	0.5 - 3.0 - 5.0	0.1 - 0.3 - 0.5	100 - 200 - 300 100 - 150 - 200
				continuous light interrupted	AL	KS05F KS05F	0.4	0.5 - 3.0 - 5.0	0.1 - 0.3 - 0.5	100 - 200 - 300 100 - 150 - 200
S	Ni-base alloys INCONEL718 etc.		Precision finishing	continuous light interrupted	01	TH10 TH10	0.4	0.05 - 0.3 - 0.5	0.03 - 0.1 - 0.15	30 - 40 - 50 10 - 20 - 30
			Finishing	light interrupted interrupted	W□□	TH10 TH10	0.8	0.5 - 1.0 - 2.0	0.08 - 0.15 - 0.25	10 - 20 - 30 10 - 20 - 30
	Titanium alloys Ti6Al4V etc.		Precision finishing	continuous light interrupted continuous	01	TH10 TH10	0.4	0.05 - 0.3 - 0.5	0.03 - 0.1 - 0.15	50 - 100 - 120 30 - 80 - 100
			Finishing	light interrupted interrupted	W□□	TH10 TH10 TH10	0.8	0.5 - 1.0 - 2.0	0.08 - 0.15 - 0.25	30 - 100 - 120 30 - 80 - 100 30 - 50 - 80
H	Hardened steels	> HRC 45	Precision finishing	continuous light interrupted interrupted	PCBN	BX310 BX330 BX360	0.4	0.05 - 0.1 - 0.2	0.05 - 0.1 - 0.15	160 - 200 - 300 100 - 150 - 200 80 - 120 - 150
	Pre-hardened steels etc.		Finishing	continuous light interrupted interrupted	-	LX11 TH10 TH10	0.8	0.05 - 0.3 - 0.5	0.05 - 0.08 - 0.10	50 - 100 - 150 20 - 30 - 40 10 - 15 - 20

Chipbreaker System for Turning (Negative Inserts)

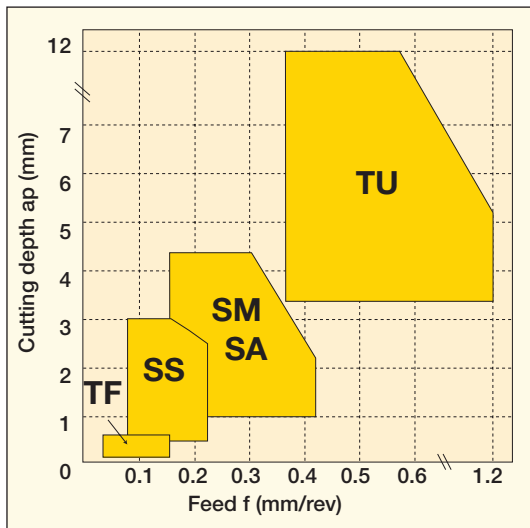
Low to high carbon steels and alloy steels



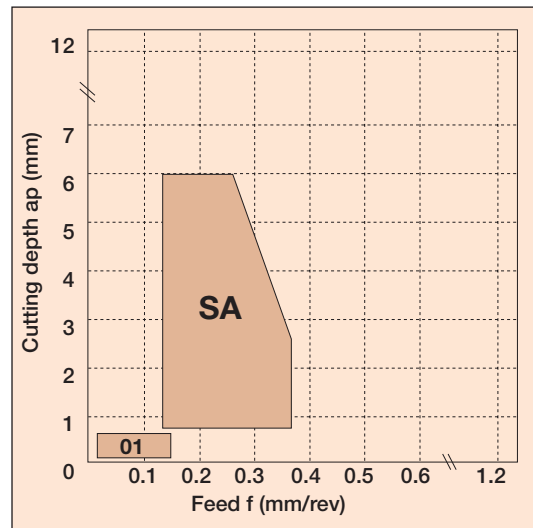
Non-ferrous metals



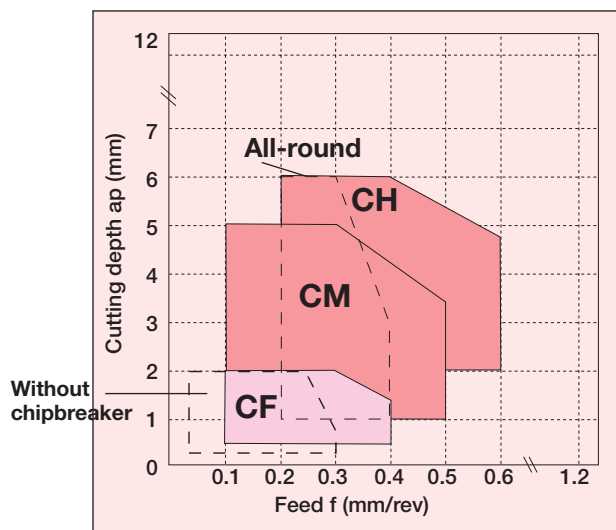
Stainless steels



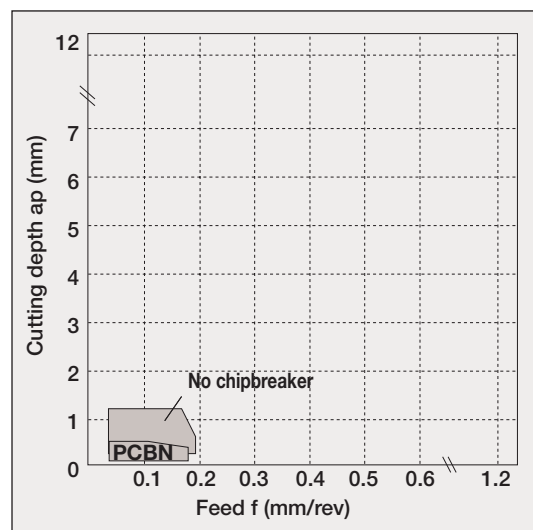
Difficult-to-cut materials



Grey and ductile cast irons

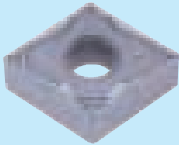
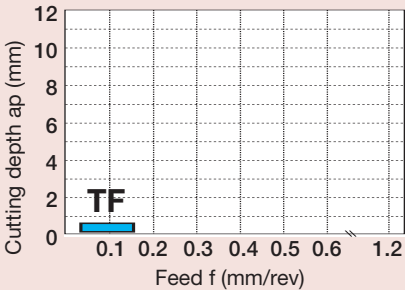
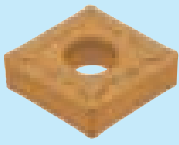
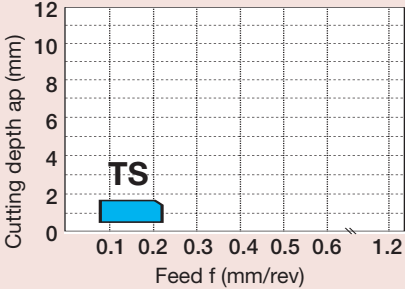
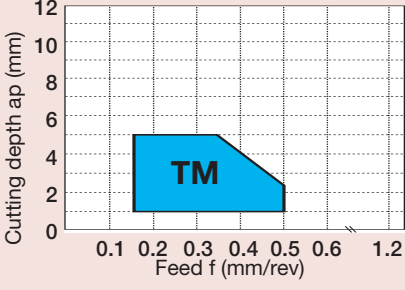
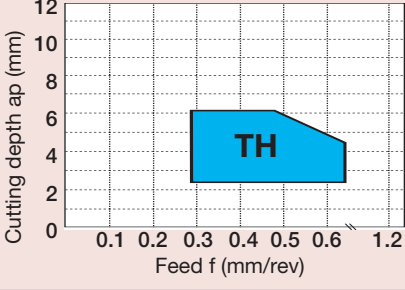
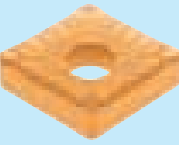
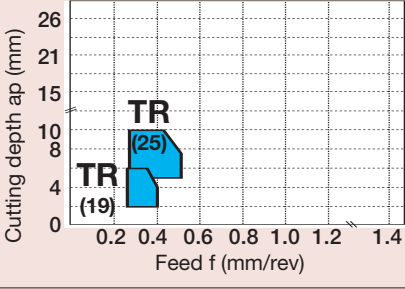
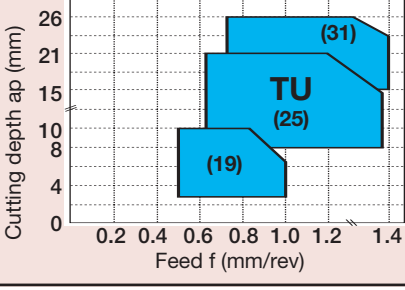


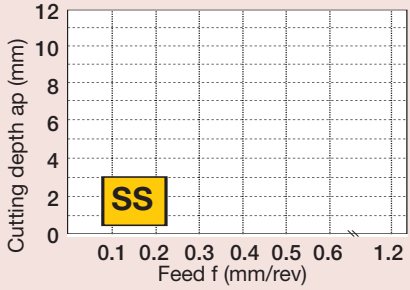
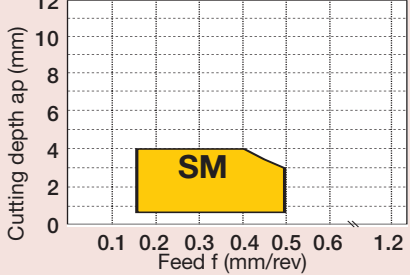
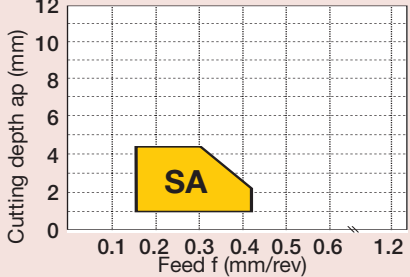
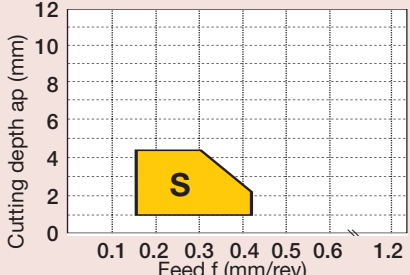
Hard materials



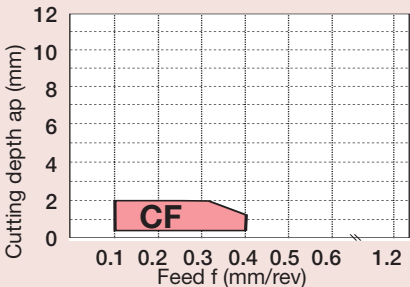
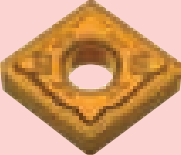
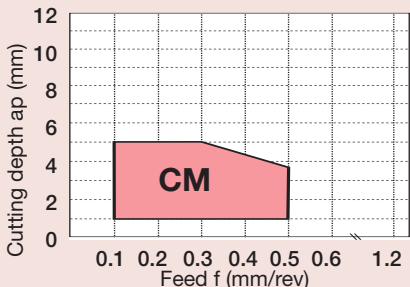
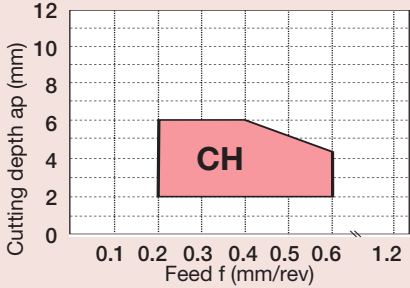
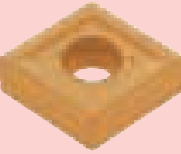
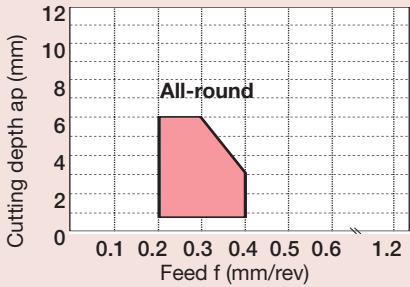
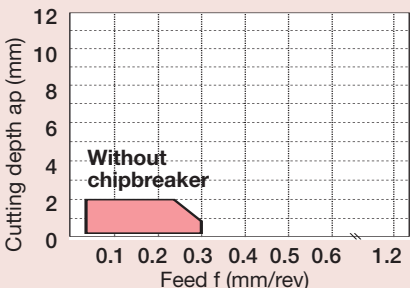
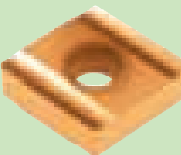
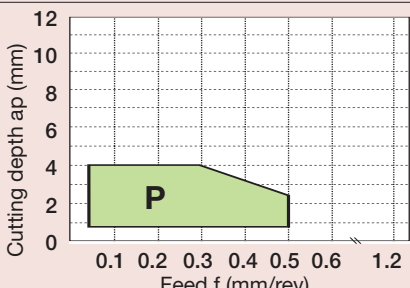
TAC Inserts

Basic Selection Chipbreaker (Negative Inserts)

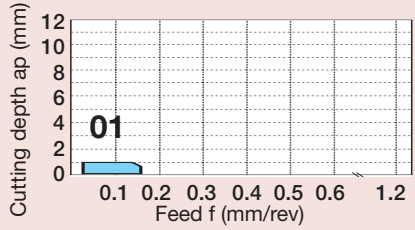
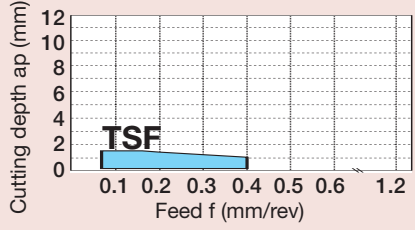
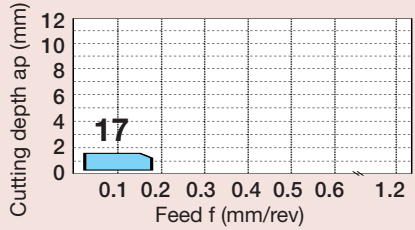
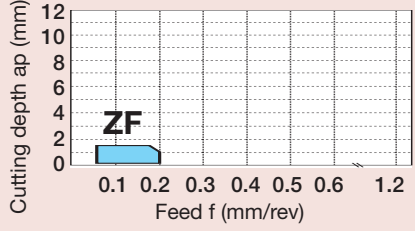
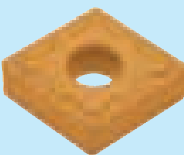
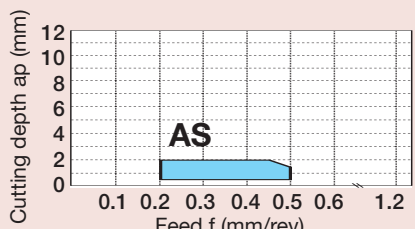
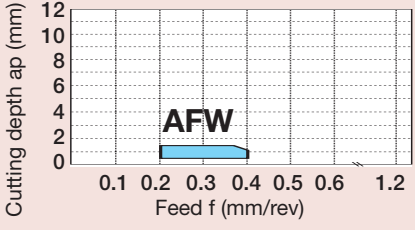
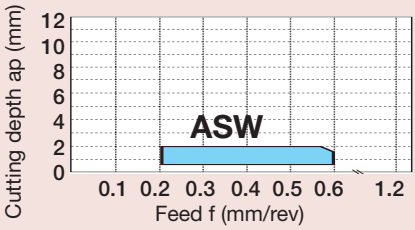
Appli.	Chipbreaker type	Features	Application range
Steels	TF 	Precision finishing The sharp cutting edge and raised projection near corner contribute to excellent chip control at very small cutting depths and low feeds. Economical M-class tolerance and low cost.	
	TS 	Finishing Provided with landless sharp cutting edges and large rake angle, this type is an all-round chipbreaker for general finishing. Designed to provide excellent performance in combination with cermet grades.	
	TM 	Medium cutting General purpose chipbreaker used for medium cutting. Unique chipbreaker geometry with sharp edges and large rake angle assures free cutting action in a wide range of cutting conditions.	
	TH 	Roughing (double-sided) Double-sided 3-dimensional chipbreaker with a wide land and broad groove used for medium to heavy cutting including interruption and unfavorable surface conditions. Also performs well in high feed machining.	
	TR 	Heavy cutting (single-sided) Single-sided, low-force chipbreaker used for a heavier cutting range than TH-type. Provides low-force cutting as well.	
	TU 	Heavy cutting (single-sided) Single-sided, strong cutting edge, for heavy interrupted cutting and rough skin.	

Appli.	Chipbreaker type	Features	Application range
Stainless steels	SS 	Finishing to medium cutting 3-dimensional chipbreaker with a large rake angle. Performs free-cutting action and most suitable for finishing of stainless steel and mild steel.	
	SM 	Medium cutting Provided with both freer cutting action and excellent chip control. Best suitable for machining stainless steels.	
	SA 	Medium cutting This chipbreaker is designed so as to reduce the contact-area between tool and chip, preventing the insert from raising temperature during cutting. Suitable for medium cutting of stainless steels as well as super alloys.	
	S 	Medium cutting Features sharp cutting edge and excellent chip control for high-efficiency machining.	

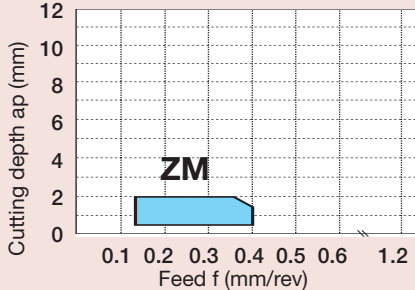
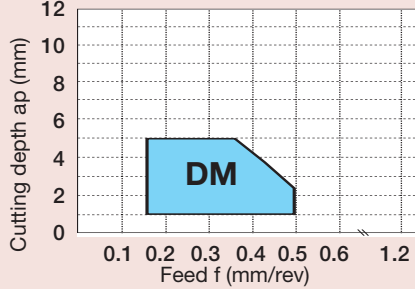
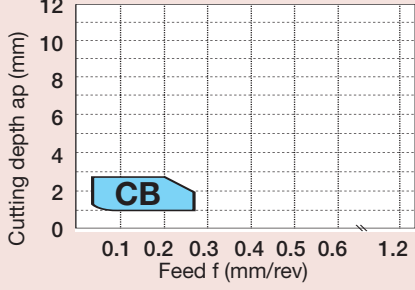
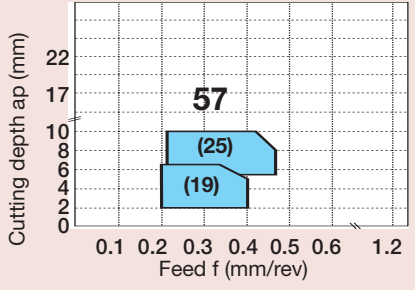
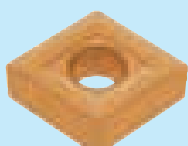
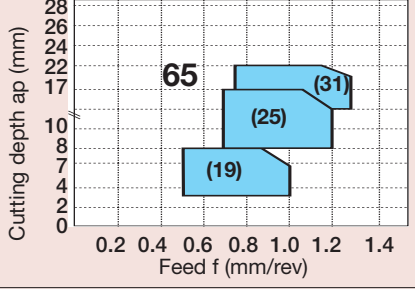
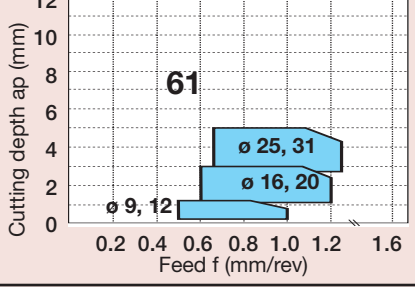
Basic Selection Chipbreaker (Negative Inserts)

Appli.	Chipbreaker type	Features	Application range
Cast irons	CF 	Finishing Low cutting-force chipbreaker for cast iron. Arc-shaped concave combined with a high rake (substantially 20° rake angle), allows for drastic reduction of cutting forces and suppresses deformation of thin walled components and burr occurrence.	
	CM 	Medium cutting First choice chipbreaker for cast iron. An allrounder applicable for a wide range of cutting conditions from continuous to interrupted machining with positive land and wide chip pocket.	
	CH 	Roughing Chipbreaker with reinforced cutting-edge for cast iron. Utilizing the land-support and negative-land design, features stable insert seating and high cutting-edge strength even for heavy cutting.	
	All-round 	Medium cutting Performs well in interrupted cutting of cast irons and steels. Highly reliable chipbreaker which excels in impact resistance.	
	Without chipbreaker 	Finishing to medium cutting Covers a wide range of applications from finishing to roughing of cast irons. Excels in cutting edge strength and stability.	
Non-ferrous metals	P 	Finishing to medium cutting Excels in sharpness of cutting edges and effectively used for machining non-ferrous metals such as aluminium alloys and copper alloys.	

Complementary Chipbreaker (Negative Inserts)

Appli.	Chipbreaker type	Features	Application range
Steels	01 	Precision finishing Double-sided, high-precision (ISO G-class) insert used for high-accuracy finishing. Can machine to closer tolerance.	
	TSF 	Finishing First choice chipbreaker for finishing steels. The dimple structure decreases the contact area between the insert surface and chips, resulting in significant reduction of heat occurrence.	
	17 	Finishing of mild steels and low carbon steels Is effectively used for machining mild steels and low-carbon steels where chip control is troublesome.	
	ZF 	Finishing Excellent chip control at low cutting depths and low feed rates.	
	AS 	High feed, low cutting depth Double-sided, 3-dimensional chipbreaker designed to be effective for machining at high-feed and small cutting depth. Provided with tough cutting edges, this type is best suitable for high-efficiency machining of near-net-shape forgings.	
	AFW (Wiper) 	Finishing to medium cutting Optimum chip control at low cutting depths and high feed rates. Excellent surface qualities through wiper-geometry.	
	ASW (Wiper) 	Medium cutting, High feed, low cutting depth Double-sided, 3-dimensional chipbreaker designed to be effective for machining at high-feed and small cutting depth. Provided with tough cutting edges, this type is best suitable for high-efficiency machining of near-net-shape forgings. Wiper Type Chipbreaker	

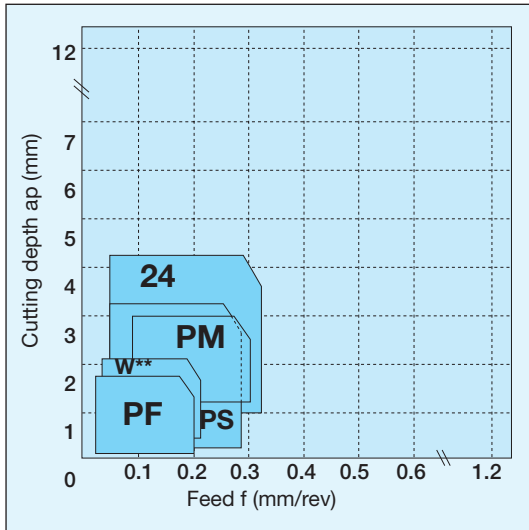
Complementary Chipbreaker (Negative Inserts)

Appli.	Chipbreaker type	Features	Application range
Steels	ZM	Medium cutting Extremely stable cutting edges.	
	DM	Medium cutting to roughing Impact resistant chipbreaker which features robust cutting edges and wide range of chip control.	
	CB	Medium cutting (Boring) Double-sided, boring-use chipbreaker specially designed to have high edge strength contributes to more economical boring operations compared with conventional single-sided boring inserts.	
	57	Heavy cutting (single-sided) Designed to reduce cutting forces and can perform well in heavy-duty machining on relatively low-powered machines.	
	65	Heavy cutting (single-sided) Highly reliable and impact resistant chipbreaker designed to be used for high-volume metal removal on high-powered machines.	
	Round 61	Roughing, small cutting depth Designed to be used for high-feed, highly efficient profiling and copying.	

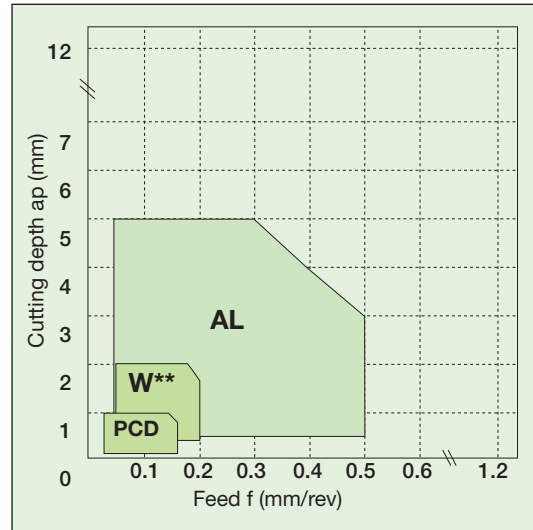
Note : Figure in parenthesis is symbol of cutting edge length.

Chipbreaker System for Turning (Positive Inserts)

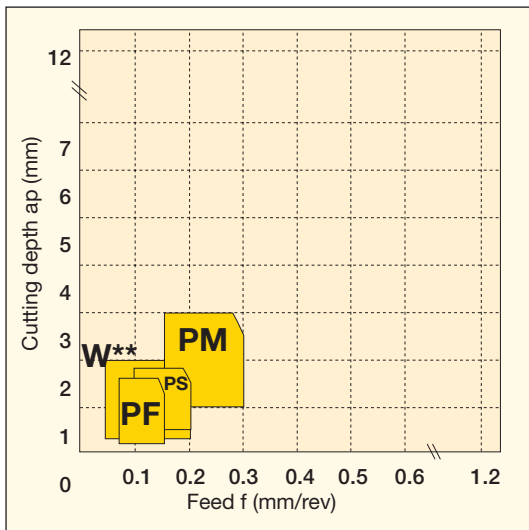
Low to high carbon steels and alloy steels



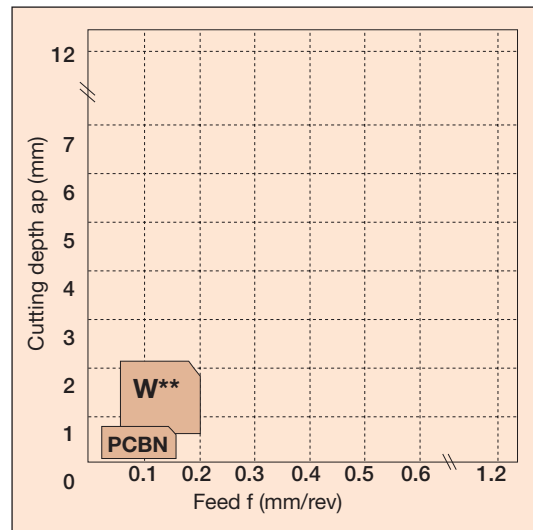
Aluminium alloys and other non-ferrous metals



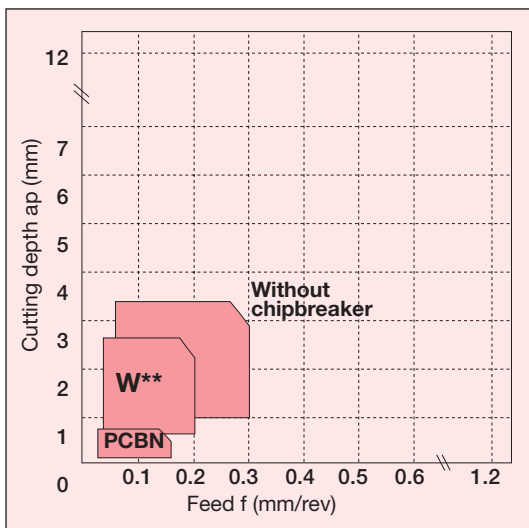
Stainless steels



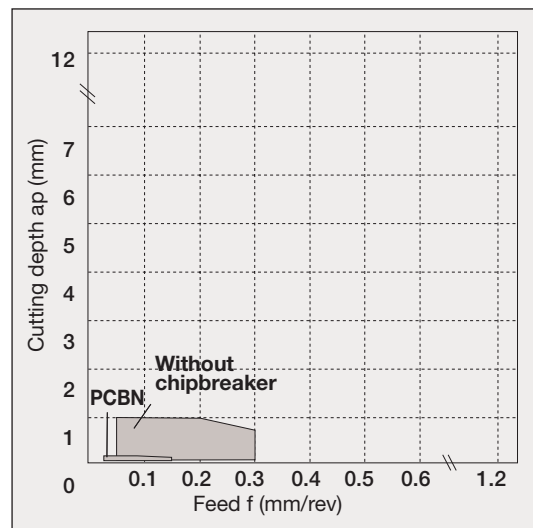
Difficult-to-cut materials



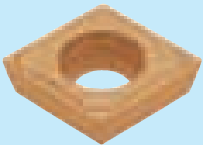
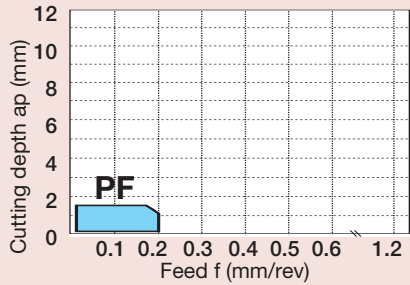
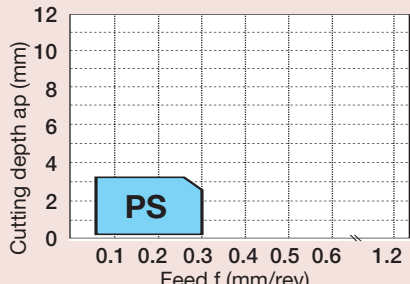
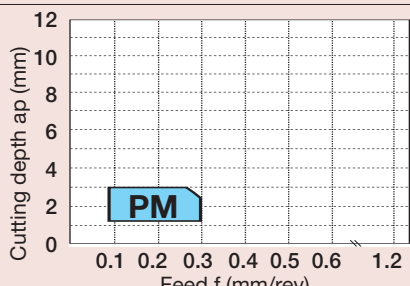
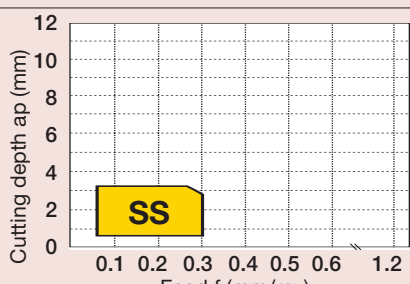
Grey and ductile cast irons

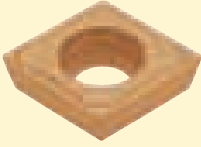
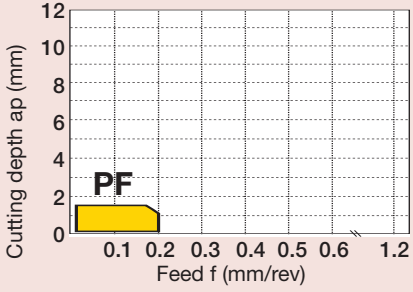
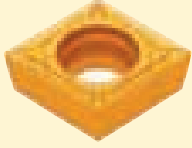
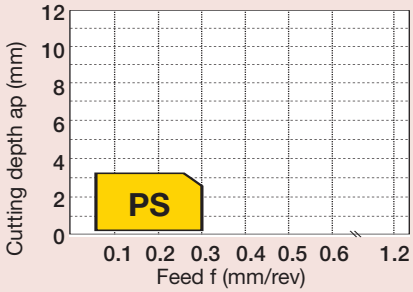
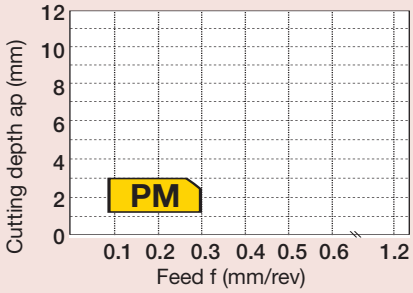
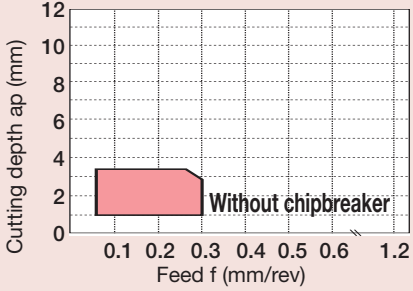
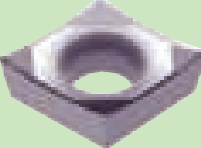
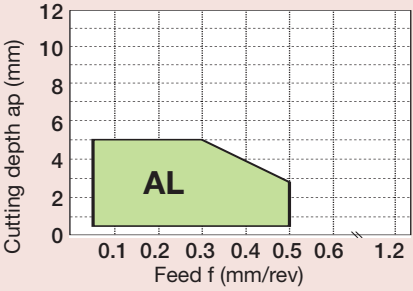


Hard materials

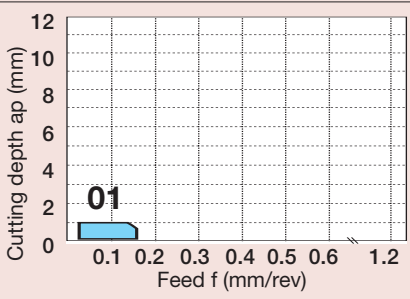
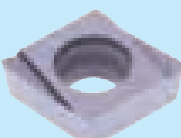
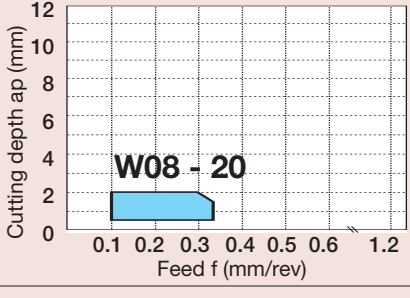
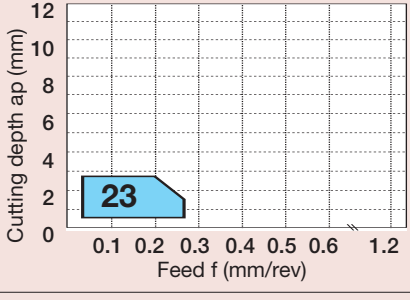
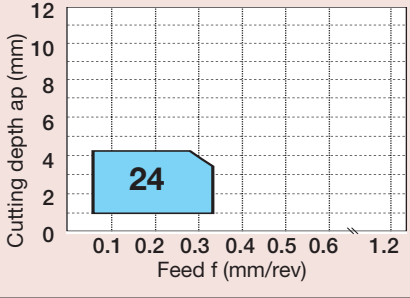
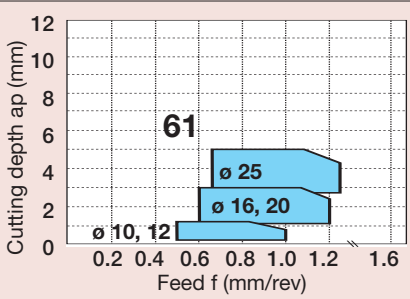
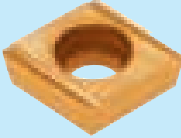
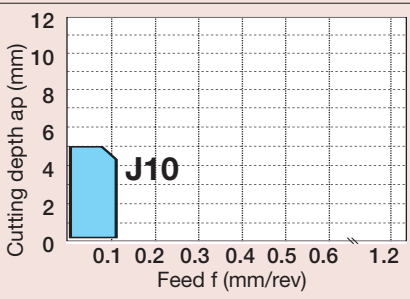


Basic Selection Chipbreaker (Positive Inserts)

Appli.	Chipbreaker type	Features	Application range
Steels	PF 	Finishing Chipbreaker for precision machining at low cutting depths. Optimal chip control due to pre-positioned chip-breaker element.	
	PS 	Finishing to medium cutting 3-dimensional chipbreaker designed to have excellent chip-control capability and low cutting forces in finishing to medium cutting. Low cost, M-class positive insert used for high-efficiency boring in a wide range of applications.	
	PM 	Medium cutting Chipbreaker for medium machining operations. Excellent chip control due to wide, positive chip flow zone.	
Stainless steels	SS 	Finishing to medium cutting 3-dimensional chipbreaker with a large rake angle and sharp cutting edges. Best suitable for finishing of stainless steel and mild steel where sharpness of cutting edge is required.	

Appli.	Chipbreaker type	Features	Application range
Stainless steels	PF 	Finishing Chipbreaker for precision machining at low cutting depths. Optimal chip control due to pre-positioned chip-breaker element.	
	PS 	Finishing to medium cutting 3-dimensional chipbreaker designed to have excellent chip-control capability and low cutting forces in finishing to medium cutting. Low cost, M-class positive insert used for high-efficiency boring in a wide range of applications.	
	PM 	Medium cutting Chipbreaker for medium machining operations. Excellent chip control due to wide, positive chip flow zone.	
Cast irons	Without chipbreaker 	Finishing to medium cutting Can cover a wide range of applications from finishing to roughing of cast irons. Excels in cutting edge strength.	
Non-ferrous metals	AL 	Machining of aluminium and other non-ferrous metals Extremely sharp cutting edges Polished surfaces Excellent chip forming at high cutting feeds Low power consumption	

Complementary Chipbreaker (Positive Inserts)

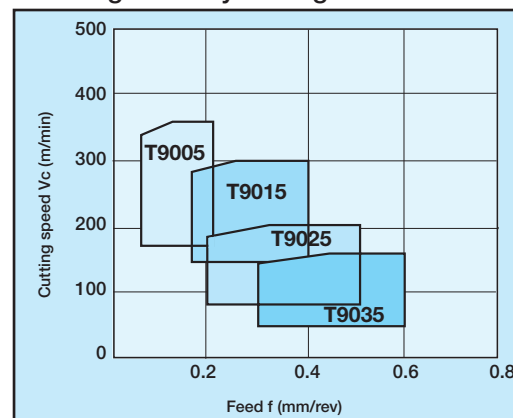
Appli.	Chipbreaker type	Features	Application range
Steels	01 	Precision finishing High-precision (ISO G-class), positive insert used for high-accuracy finishing. Can machine to closer tolerance.	
	W08~20 	Finishing to medium cutting Designed to control the direction of chip flow and used for precision-finish boring. Provides excellent chip evacuation which is important to attain a highly accurate bore.	
	23 	Medium cutting Provided with very tough cutting edges to achieve a reliable boring.	
	24 	Medium cutting General-purpose, all-round groove chipbreaker used for a wide range of applications. Performs well in medium to rough boring operations.	
	Round 61 	Roughing, small cutting depth Designed to be used for high-feed, highly efficient profiling and copying.	
	J10 	Finishing to medium cutting Used for machining on small lathes. Precisely ground inserts allow excellent surface finish and longer tool life.	

Insert Grades for General Turning

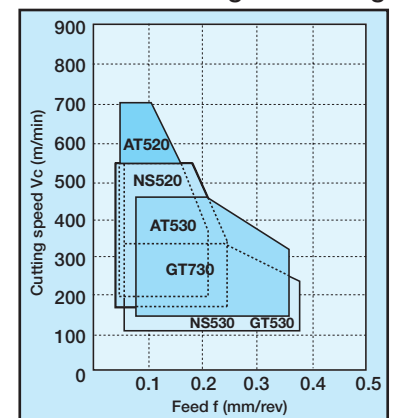
● Steel

ISO	Work condition	Basic selection		Complementary selection	
		Coated	Cermet	Coated	Cermet
		CVD	Unc.	PVD	PVD
P01		T9005	NS520	AT520	
P10		T9015	NS530	AT530	GT730
P20		T9025	NS530	GH730	GT730
P30		T9035		AH740	
P40					

Finishing to heavy cutting



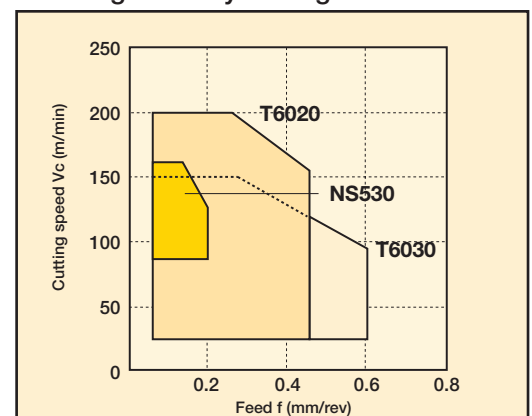
Precision finishing to finishing



● Stainless steels

ISO	Work condition	Basic selection		Complementary selection	
		Coated	Cermet	Coated	Cermet
		CVD	Unc.	PVD	PVD
M01					
M10		T6020	NS530	GT530	GT730
M20		T6030	NS530	GH730	GH330
M30					
M40					

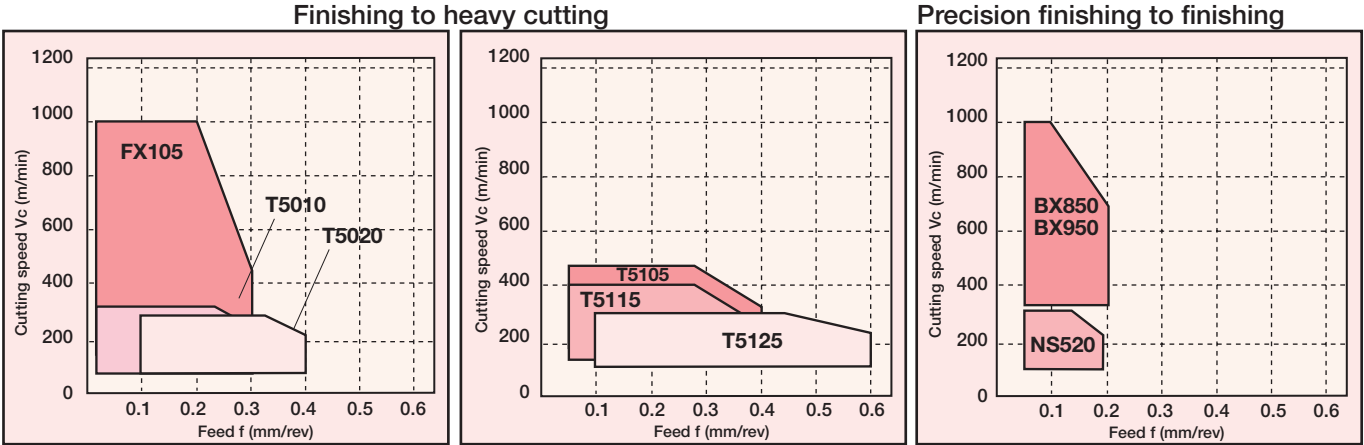
Finishing to heavy cutting



Insert Grades for General Turning

● Grey cast irons and ductile cast irons

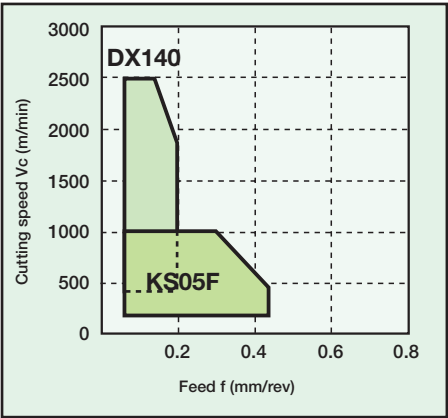
ISO	Work condition	Basic selection				Complementary selection	
		Coated	Cerm.	Ceramics	PCBN	Coated	Cerm.
K01		T5105		CX710	BX950		
K05							
K10		T5010	NS520	FX105	BX850	AH110	AT520
K20		T5115					
K30		T5020		CXC73	BX90S		
		T5125					
					BXC90		



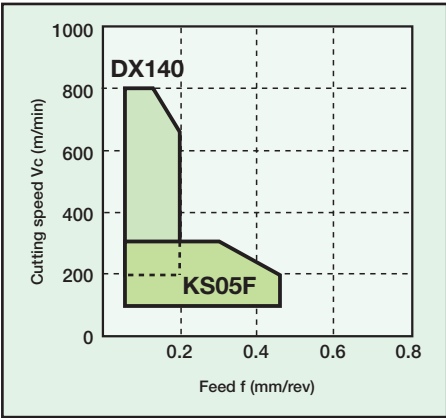
● Non-ferrous alloys: Aluminium alloys, Copper alloys

ISO	Work condition	Basic selection		Complementary selection	
		Carbide Uncoated	PCD	Coated PVD	PCD
N01		KS05F	DX160		DX180
N05					
N10		TH10	DX140	GH110	DX120
N20					
N30					

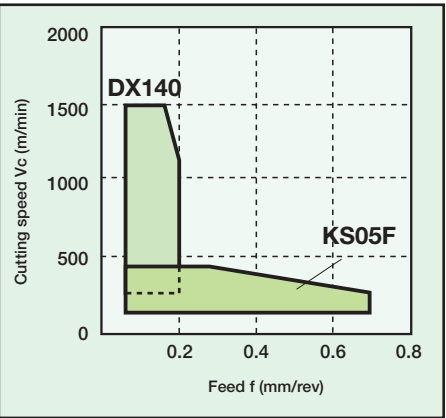
● Aluminium alloys (Si < 12%)



● Aluminium alloys (Si > 12%)



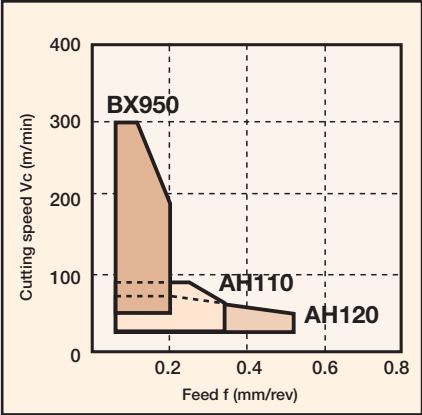
● Copper and copper alloys



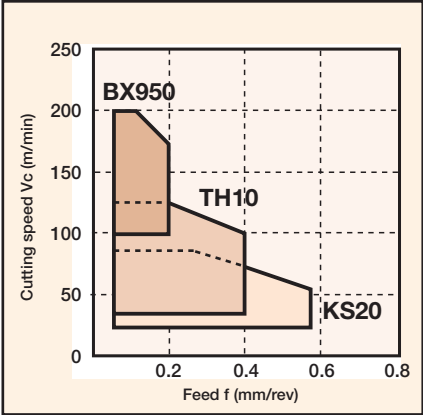
● Difficult-to-cut materials: Nickel-base alloys and Titanium alloys

ISO	Work condition	Basic selection		
		Coated PVD	Uncoated	PCBN
S01				BX950
S05				
S10		AH110	TH10	
S20		AH120	KS20	
S30				

● Nickel-base alloys



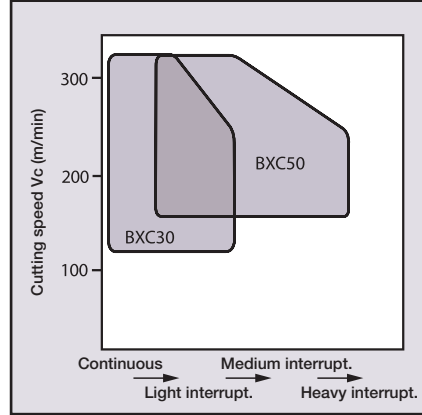
● Titanium alloys



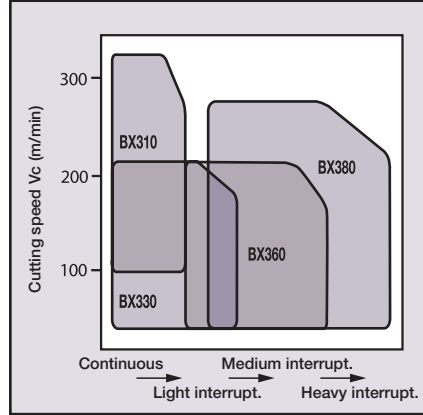
● Hard materials: Hardened steels

ISO	Work condition	Basic selection						
		Ceramics	PCBN					
		PVD	PVD	uncoated				
H01		LX11	BXC50	BXC30	BX310	BX330	BX360	BX380
H05								
H10								
H20								
H30								

● Coated PCBN



● PCBN



Nomenclature for TAC Inserts

Symbol	Shape	Nose angle	Figure
O	Octagonal	135°	
H	Hexagonal	120°	
P	Pentagonal	108°	
S	Square	90°	
T	Triangular	60°	
C	Rhombic	80°	
D		55°	
E		75°	
F		50°	
M		86°	
V		35°	
W	Trigon	80°	
L	Rectangular	90°	
A	Parallelogram	85°	
B		82°	
K		55°	
R	Round	—	

① Shape

With respect to the nose angles of rhombic and parallelogram shaped inserts, use the smaller angle respectively.

[Example] ①

T

Symbol	Relief angle
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
O	Others

② Relief angle

N

Symbol (class)	Tolerance (mm)		
	Corner height (m)	Thickness (s)	I. C. dia. (d)
A	±0.005	±0.025	±0.025
F	±0.005	±0.025	±0.013
C	±0.013	±0.025	±0.025
H	±0.013	±0.025	±0.013
E	±0.025	±0.025	±0.025
G	±0.025	±0.13	±0.025
J	±0.005	±0.025	±0.05 ~ ±0.13
K	±0.013	±0.025	±0.05 ~ ±0.13
L	±0.025	±0.025	±0.05 ~ ±0.13
M	±0.08 ~ ±0.18	±0.13	±0.05 ~ ±0.13
N	±0.08 ~ ±0.18	±0.025	±0.05 ~ ±0.13
U	±0.13 ~ ±0.38	±0.13	±0.08 ~ ±0.25

③ Accuracy

M

G

16

④ Groove and hole				
Symbol	Hole	Shape of hole	Chipbreaker	Shape
N	Without	—	Without	
R			Single-sided	
F			Double-sided	
A	With	Cylindrical hole	Without	
M			Single-sided	
G			Double-sided	
W		Partly cylindrical hole, double-side 40° ~ 60°	Without	
T			Single-sided	
Q		Partly cylindrical hole, double-side 40° ~ 60° Counter sink	Without	
U			Double-sided	
B		Partly cylindrical hole, single-side 70° ~ 90° Counter sink	Without	
H			Single-sided	
C		Partly cylindrical hole, single-side 70° ~ 90° Counter sink	Without	
J			Double-sided	
X	—	—	—	—

⑤ Cutting edge length																
R		S		C		W		T		D		V		K		I. C. dia. (mm)
Symbol	Length	Symbol	Length	Symbol	Length	Symbol	Length	Symbol	Length	Symbol	Length	Symbol	Length	Symbol	Length	
		03	3.97	03	4.0			06	6.9	04	4.8					3.97
		04	4.76	04	4.8			08	8.2	05	5.8					4.76
05	5.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.0
		05	5.56	05	5.6	03	3.8	09	9.6	06	6.8					5.56
06	6.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.0
		06	6.35	06	6.5	04	4.3	11	11.0	07	7.8					6.35
		07	7.94	08	8.1	05	5.4	13	13.8	09	9.7					7.94
08	8.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.0
09	9.525	09	9.525	09	9.7	06	6.5	16	16.5	11	11.6	16	16.6	16	19.7	9.525
10	10.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10.0
12	12.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.0
12	12.7	12	12.7	12	12.9	08	8.7	22	22.0	15	15.5	22	22.1			12.70
15	15.875	15	15.875	16	16.1	10	10.9	27	27.5	19	19.4					15.875
16	16.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16.0
19	19.05	19	19.05	19	19.3	13	13.0	33	33.0	23	23.3					19.05
20	20.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20.0
		22	22.225	22	22.6			38	38.5	27	27.1					22.225
25	25.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25.0
25	25.4	25	25.4	25	25.8			44	44.0	31	31.0					25.40
31	31.75	31	31.75	32	32.2			55	55.0	38	38.8					31.75
32	32.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	32.0

Note: For the insert shape "K", the rule for the relation between the symbol and dimension differs from those for other shapes.

● Detailed accuracy for J, K, L, M, N and U classes

For inserts with corner angle > 55°

Inscribed circle	Tolerance on inscribed circle dia. (d)		Tolerance on corner height (m)		Insert shapes applied
	J K L M N	U	J K L M N	U	
6.35	±0.05	±0.08	±0.08	±0.13	H M
9.525					O R
12.70	±0.08	±0.13	±0.13	±0.20	P
15.875	±0.10	±0.18	±0.15	±0.27	S
19.05					T
25.40	±0.13	±0.25	±0.18	±0.38	C, E, M

For M-type inserts with corner angle > 55°

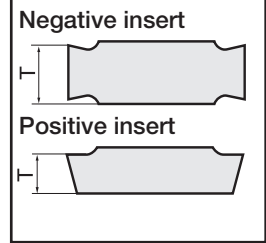
(mm)

Inscribed circle	Tolerance on inscribed circle dia. (d)	Tolerance on corner height (m)	Insert shapes applied
6.35	±0.05	±0.11	D 
9.525			
12.70	±0.08	±0.15	
15.875	±0.10	±0.18	
19.05			

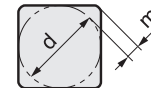
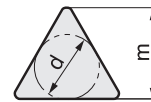
Note: The tolerance for shape V may be increased than above.

Note on insert thickness

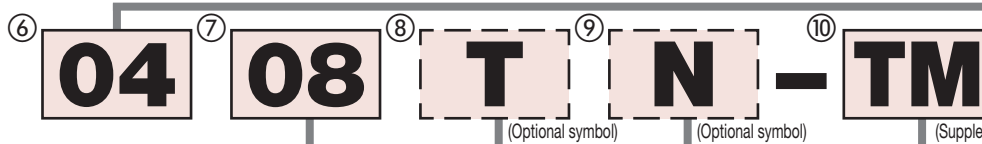
Thickness of chipbreaker inserts is defined as "T" (height from the bottom face to the cutting edge) as shown in the figure right.



Inscribed circle (d)
Corner height (m)



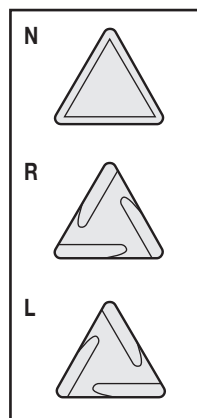
Symbol	Thickness(mm)
01	1.59
02	2.38
T2	2.78
03	3.18
T3	3.97
04	4.76
05	5.56
06	6.35
07	7.94
09	9.52



⑦ Corner radius	
Symbol	Corner radius (mm)
00	0.03
02	0.2
04	0.4
08	0.8
12	1.2
16	1.6
20	2.0
24	2.4
28	2.8
32	3.2

⑧ Symbols of major cutting edge		
Symbol	Condition of cutting edge	Shape
F	Sharp edge	
E	Honed rounded edge	
W · T	Honed chamfered edge	
S	Combination honed edge	

⑨ Hand of insert	
Symbol	Hand
R	Right
L	Left
N	Neutral



⑩ Chipbreaker			
Symbol	Applications	Symbol	Applications
TF	Precision Finishing	17	Finishing of alloy steels
TSF	Finishing	57	Heavy cutting
TS	Finishing	65	Heavy cutting
TM	Medium cutting	61	Roughing
TH	Roughing	AS	High-feed, small cutting depth
TR	Heavy cutting	AFW	Wiper
TU	Heavy cutting	ASW	Wiper
SS	Finishing to medium cutting	DM	Medium cutting to roughing
SM	Finishing to medium cutting	CB	Medium cutting (inside)
SA	Medium cutting	PF	Finishing
S	Medium cutting	PM	Medium cutting
CF	Finishing	W08, 10, 15, 20	Finishing to medium cutting
CM	Medium cutting		
CH	Roughing		
All-round	Medium cutting		
P	Finishing to medium cutting		
01	Precision finishing		

Example: 57

1 to 5: Even cutting edge
6 to 8: Uneven cutting edge
Note regarding feed, 5 means 0.5 mm/rev

Insert Sizes and Hole Diameter

TAC Inserts

Insert shape	S 						C 				D 				T 						
	Negative		Positive				Negative		Positive		Negative		Positive		Negative		Positive				
	A.M.G		T.W		M.A		A.M.G		T.W		A.M.G		T.W		A.M.G		T.W		M.A		
Hole symbol	I.C. symbol	Hole dia (mm)	I.C. symbol	Hole dia (mm)	I.C. symbol	Hole dia (mm)	I.C. symbol	Hole dia (mm)	I.C. symbol	Hole dia (mm)	I.C. symbol	Hole dia (mm)	I.C. symbol	Hole dia (mm)	I.C. symbol	Hole dia (mm)	I.C. symbol	Hole dia (mm)	I.C. symbol	Hole dia (mm)	
3.97																					
4.37																			07	2.7	
4.76																	08	2.7 ²	2.2		
5																					
5.56									05	2.5							09	2.5	09	3.2	
6																					
6.35									06	2.8			07	2.8	11	2.26	11	2.8 ³	3.4	11	3
7.94			07	3.4													13	3.4			
8																					
9.525	09	3.18	09	4.4	09	4	09	3.18	09	4.4	11	3.18	11	4.4	16	3.81	16	4.4	16	4	
10																					
12																					
12.7	12	5.16	12	5.5	12	5 ¹	5.5	12	5.16	12	5.5	15	5.16		22	5.16					
15.875	15	6.35					16	6.35	16	5.5											
16																					
19.05	19	7.93	19		19		19	7.93	19												
20																					
22.225																					
25	25	9.12	25		25		25	9.12	25												
31.75																					
32	32	8.8	32		32		32	8.8	32												

1) Thickness symbol: 04

2) Thickness symbol: 02

3) Thickness symbol: 03

Insert shape	V 				W 				R 						E 	
	Negative		Positive		Negative		Positive		Negative		Positive				Positive	
	A.M.G		T.W		A.M.G		T.W		A.M.G		T.W		M.A		A.M.G	
Hole symbol	I.C. symbol	Hole dia (mm)	I.C. symbol	Hole dia (mm)	I.C. symbol	Hole dia (mm)	I.C. symbol	Hole dia (mm)	I.C. symbol	Hole dia (mm)	I.C. symbol	Hole dia (mm)	I.C. symbol	Hole dia (mm)	I.C. symbol	Hole dia (mm)
3.97							03	4 ² 2.3							04	2.3
4.37							06	4 ² 2.3								
4.76							08	4 ² 2.3								
5											05	2.5				
5.56																
6											06	2.8				
6.35																
7.94																
8							05	3.4			08	3.4				
9.525	16	3.18	16	4.4	06	3.81	06	3.9	09	3.81						
10											10	4	10	3.6		
12							08	4.4	12	5.16			12	4.2		
12.7			22	5.5	08	5.16										
15.875					10	6.35			15	6.43						
16													16	5.2		
19.05					13	7.93			19	7.93						
20													20	6.5		
22.225																
25									25	9.22			25	7.2		
31.75																
32									31	12.78						

4) With hole and 5° relief angle (WB□□)



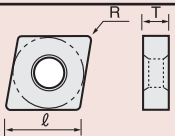
**TAC Inserts
Turning
(Negative)**



TAC Inserts (Negative)

CN					CNMG 12 04 04 -																												
Negative					Cutting edge length (l) Thickness (T) Corner radius (R)																												
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																												
			Cutting speed Vc (m/min)		Coated										Cermet	Coated Cem.	Ceramics		Un.														
			Work materials	P	M	T9005	T9015	T9025	T9035	T6020	T6030	GH330	T5105	T5115	T5125	T5010	T5020	AH110	AH120	NS520	NS530	AT520	AT530	GT530	FX105	CX710	LX21	LX11	TH10				
Precision finishing	TF																																
		CNMG120404-TF CNMG120408-TF		NS520 80-250-350	NS530 100-120-150																●	○											
				NS530 80-150-250																	●	○											
				ap = 0.05-0.3-0.5 mm f = 0.03-0.1-0.15 mm/rev																													
Precision finishing	01	Insert Cat. No.		P																													
		CNGG090302-01 CNGG090304-01 CNGG090308-01 CNGG120402-01 CNGG120404-01 CNGG120408-01		NS520 80-250-350																	○	○											
				NS530 80-150-250																	○	○											
				ap = 0.05-0.3-0.5 mm f = 0.03-0.1-0.15 mm/rev																	●	●											
Finishing	CF	Insert Cat. No.		K																													
		CNMG120404-CF CNMG120408-CF CNMG120412-CF		T5105 180-330-480										●	●																		
				T5115 140-270-400										●	●																		
				T5115 120-210-300										●	●																		
Finishing to medium cutting	—	Insert Cat. No.		K																													
		CNMA120404 CNMA120408 CNMA120412 CNMA120416		T5010 100-300-600	FX105 300-400-1000	○										●	●				○											○	
				T5010 100-250-500		○										●	●				○												○
		CNMA160608 CNMA160612 CNMA160616		T5020 100-150-300		○										●	●																
Finishing to medium cutting	—	Insert Cat. No.		K	H																												
		CNGA120404 CNGA120404T01020 CNGA120404S01530 CNGA120408 CNGA120408T01020 CNGA120408S01530 CNGA120412 CNGA120412T01020 CNGA120412S01530 CNGA120416 CNGA120420		FX105 300-400-1000	LX11 50-100-150																○	○											
				FX105 300-400-500	LX11 50-100-150																○												
				LX11: ap = 0.05-0.3-0.5 mm LX11: f = 0.05-0.08-0.1 mm/rev FX105: ap = 0.5-1.0-2.0 mm FX105: f = 0.05-0.2-0.3 mm/rev																													
Finishing	TS	Insert Cat. No.		P	M																												
		CNMG120404-TS CNMG120408-TS CNMG120412-TS		NS520 80-250-350	GT530 120-140-180	●	●	●	○		○										●	●	●	●	●								
				NS530 80-150-250		●	●	●	○		○										○	●	●	●	●	●							
				T9025 100-150-200		●	●	●	○																								
Finishing to medium cutting	SS	Insert Cat. No.		M	S																												
		CNMG120404-SS CNMG120408-SS CNMG120412-SS		T6020 150-200-250	AH110 10-50-70																●	●											
				T6020 150-180-220	AH110 10-30-60																●	●											
				T6030 50-100-150	AH120 10-30-50																												

80° Rhombic (Basic Selection Chipbreaker with Hole)

CN 					CNMG 12 04 04 - 													
Negative					Cutting edge length (ℓ) Thickness (T) Chipbreaker type Corner radius (R)													
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades													
			Cutting speed v_c (m/min)		Coated												Cer.	Uncoat.
Medium cutting	TM		Work materials	P	S	T9005	T9015	T9025	T9035									
		CNMG090304-TM		T9005 100-250-400	AH120 10-40-60	●	●	●										
		CNMG090308-TM		T9015 80-150-250	AH120 10-30-50	●	●	●	●									
		CNMG120404-TM		T9025 50-100-150	AH120 10-30-50	●	●	●	●									
		CNMG120408-TM				●	●	●	●									
		CNMG120412-TM				●	●	●	●									
		CNMG120416-TM				●	●	●	●									
		CNMG160612-TM		ap = 1.0-3.0-5.0 mm f = 0.2-0.3-0.5 mm/rev			○	○										
		CNMG190608-TM				○	○	○										
		CNMG190612-TM				○	○	○										
	CM	Insert Cat. No.		K														
		CNMG120404-CM		T5105 180-330-480														
		CNMG120408-CM		T5115 140-270-400														
		CNMG120412-CM		T5125 120-210-300														
		CNMG160608-CM																
		CNMG160612-CM		ap = 1.0-2.0-4.0 mm f = 0.1-0.3-0.5 mm/rev														
	SM	Insert Cat. No.		M														
		CNMG120404-SM		T6020 150-200-250			●	●										
		CNMG120408-SM		T6020 150-180-220			●	●										
		CNMG120412-SM		T6030 50-100-150														
		CNMG160612-SM																
		CNMG190612-SM		ap = 1.0-3.0-5.0 mm f = 0.2-0.3-0.5 mm/rev														
		CNMG190616-SM																
	SA	Insert Cat. No.		M	S													
		CNMG120404-SA		T6020 150-200-250	AH110 10-50-70													
		CNMG120408-SA		T6020 150-180-220	AH110 10-30-60													
		CNMG120412-SA		T6030 50-100-150	AH120 10-30-50													
		CNMG190612-SA																
		CNMG190616-SA		ap = 1.0-3.0-4.0 mm f = 0.2-0.3-0.4 mm/rev														
	S	Insert Cat. No.		M														
		CNMG120404R-S		GH330 100-130-150			●	●										
		CNMG120404L-S		GH330 50-80-100			●	●										
		CNMG120408R-S		T6030 50-80-100														
		CNMG120408L-S																
				ap = 1.0-3.0-4.0 mm f = 0.2-0.3-0.4 mm/rev														
	P	Insert Cat. No.		N														
		CNMG120404R-P		GH110 50-600-1000														
		CNMG120404L-P		TH10 100-150-700														
		CNMG120408R-P		TH10 100-150-500														
		CNMG120408L-P																
				ap = 0.5-2.0-4.0 mm f = 0.2-0.3-0.5 mm/rev														

TAC Inserts (Negative)

Chipbreaker selection
P. 27 ~ 32Grade selection
P. 37 ~ 39Insert hole diameter
P. 42Reference
guide

TAC Inserts (Negative)

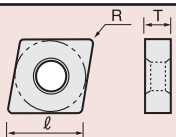
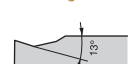
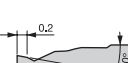
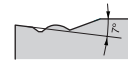
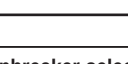
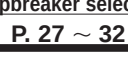
CN					CNMG 09 03 04 -														
Negative					Cutting edge length (l)				Thickness (T)				Chipbreaker type						
Negative					Cutting edge length (l)				Thickness (T)				Chipbreaker type						
Negative					Cutting edge length (l)				Thickness (T)				Chipbreaker type						
Negative					Cutting edge length (l)				Thickness (T)				Chipbreaker type						
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Negative					Cutting edge length (l)				Thickness (T)				Chipbreaker type						
Negative					Cutting edge length (l)				Thickness (T)				Chipbreaker type						
Negative					Cutting edge length (l)				Thickness (T)				Chipbreaker type						
Negative					Cutting edge length (l)				Thickness (T)				Chipbreaker type						
Negative					Cutting edge length (l)				Thickness (T)				Chipbreaker type						
Negative					Cutting edge length (l)														

80° Rhombic (Basic Selection Chipbreaker with Hole)

CN					CNGA 12 04 04 -																				
Negative					Cutting edge length (l) Thickness (T) Corner radius (R)																				
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																				
			Cutting speed v_c (m/min)		Coated								PCD & PCBN												
Precision finishing	PCD		Work materials	N	T9005	T9015	T9025	T9035							DX140	BX310	BX330	BX360	BX380	BXC30	BXC50	BX850	BX930	BX950	
		CNGA120404-DIA		DX140 400-600-2500											○										
				DX140 400-500-2000																					
			ap = 0.05-0.5-1.0 mm f = 0.05-0.1-0.15 mm/rev																						
	PCBN	Insert Cat. No.		K	H																				
		CNGA120402-QBN		BX850 100-500-1200	BX330 100-150-200														○						
		CNGA120404-QBN		BX850 100-400-800	BX360 80-120-150													●	●				○		
		CNGA120408-QBN																●	●				○		
		CNGA120412-QBN			BX360 80-120-150													●	●				○		
			ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev																						
	PCBN	Insert Cat. No.		K	H																				
	(QB-mini) 	2QP-CNGA120404-L		BX930 100-500-1200	BX310 130-200-300														○						
		2QP-CNGA120404-H																	○	○					
		2QP-CNGA120404		BX930 100-400-800	BX330 80-120-150													●	●	●	●			○	○
		T2QP-CNGA120404																○							
		2QP-CNGA120408-L			BX360 80-120-150													○							
		2QP-CNGA120408-H																○	○						
		2QP-CNGA120408																●	●	●	●		○	○	
		T2QP-CNGA120408																○							
		2QP-CNGA120412-L																○							
		2QP-CNGA120412-H																○	○						
		2QP-CNGA120412																●	●	●	●		○	○	
		2QP-CNMA120404W																○							
		2QP-CNMA120408W																○							
		2QP-CNMA120412W																○							
			ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev																						
			L = Small honing angle Wear resistance priority																						
			H = Large honing angle Impact resistance priority																						
			T = 10 inserts packing unit																						
			W = Wiper																						
	PCBN	Insert Cat. No.		H																					
		4QP-CNGA120404		BXC30 100-250-300																		●	●		
		4QP-CNGA120408		BXC50 80-150-200																		●	●		
		4QP-CNGA120412																				●	●		
	4QP-CNMA120404W		BXC50 80-120-150																		○				
(QB-mini) 	4QP-CNMA120408W																				○				
	4QP-CNMA120412W																				○				
		ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev																							

TAC Inserts (Negative)

80° Rhombic (Complementary Chipbreaker with Hole)

CN					CNMG 12 04 04 - 																					
Negative					Cutting edge length (l)					Thickness (T)			Chipbreaker type					Corner radius (R)								
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions			Stocked grades																				
			Cutting speed v _c (m/min)			Coated					Cermets			Coated Cerm.												
Finishing	11	CNMG120404-11 CNMG120408-11 CNMG120412-11	Work materials	P	M	T9005	T9015	T9025	T9035					T6020	T6030	GH330	NS520	NS530	NS730	AT520	AT530	GT720	GT730	GT530		
				NS520 80-250-350	NS530 100-120-150													○	●	●		●	●			●
				NS530 80-150-250															●	●		●	●			●
						ap = 0.3-1.0-1.5 mm f = 0.08-0.15-0.2 mm/rev																				
Finishing of mild steel	17	Insert Cat. No. CNMG120404-17 CNMG120408-17 CNMG120412-17	Work materials	P	M																					
				NS520 80-200-300	NS530 100-120-150														●	●						
				NS530 80-150-250															○	●						
						ap = 0.3-1.0-1.5 mm f = 0.08-0.15-0.2 mm/rev																				
Finishing	TSF	Insert Cat. No. CNMG120404-TSF CNMG120408-TSF	Work materials	P	M																					
				GT730 150-200-300	GT730 120-140-180															○			○	●		
				GT730 100-180-250																○			○	●		
				GT730 80-150-200																						
			ap = 0.2-1.0-1.5 mm f = 0.08-0.15-0.4 mm/rev																							
Finishing	ZF	Insert Cat. No. CNMG120404-ZF CNMG120408-ZF CNMG120412-ZF	Work materials	P	M																					
				T9015 100-250-400	GT730 120-140-180		●	●												○			○	●		
				T9015 80-150-250			●	●												○			○	●		
				T9025 50-100-150			●	●																		
			ap = 0.2-0.7-1.5 mm f = 0.07-0.1-0.2 mm/rev																							
Finishing to medium cutting	ZM	Insert Cat. No. CNMG120408-ZM CNMG120412-ZM CNMG120416-ZM	Work materials	P	M																					
				T9015 100-250-400	GT730 120-140-180		●	●												○			○	●		
				T9015 80-150-250			●	●												○				●		
				T9025 50-100-150			●	●																		
			ap = 0.7-1.5-2.0 mm f = 0.15-0.3-0.4 mm/rev																							
Low cutting depth, high feed	AS	Insert Cat. No. CNMG120404-AS CNMG120408-AS CNMG120412-AS CNMG120416-AS CNMG160612-AS CNMG160616-AS	Work materials	P																						
				T9005 100-250-400	NS530 80-200-300		●	●	●	●									●							
				T9015 100-200-350			●	●	●	●									●							
				T9025 50-100-150			○	○	○	○																
			ap = 0.5-1.0-2.0 mm f = 0.2-0.4-0.6 mm/rev																							

Chipbreaker selection

P. 27 ~ 32

Grade selection

P. 37 ~ 39

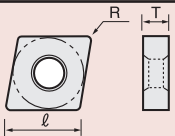
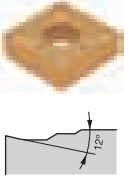
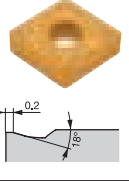
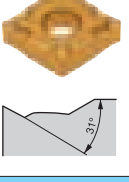
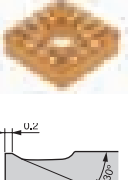
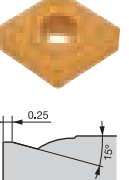
Insert hole diameter

P. 42

Reference

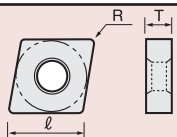
guide

80° Rhombic (Complementary Chipbreaker with Hole)

CN					CNMG 12 04 04 - 												
Negative					Cutting edge length (l) Thickness (T) Chipbreaker type Corner radius (R)												
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades												
			Cutting speed v_c (m/min)		Coated											Cermet	C.C.
			Work materials	P	T9005	T9015	T9025	T9035									
Low cutting depth, high feed	AFW 	CNMG120404-AFW CNMG120408-AFW		T9005 100-250-400	NS530 80-200-300	●	●	●									
				T9015 100-200-350		●	●										
				T9025 50-100-150													
			$a_p = 0.5-1.0-1.5$ mm $f = 0.2-0.3-0.4$ mm/rev														
Low cutting depth, high feed	ASW 	Insert Cat. No. CNMG120408-ASW CNMG120412-ASW		P													
				T9005 100-250-400	NS530 80-200-300	●	●	●									
				T9015 100-200-350		●	●										
				T9025 50-100-150													
Medium cutting (internal)	CB 	Insert Cat. No. CNMG090304-CB CNMG090308-CB		P	M												
				NS530 80-200-300	NS530 100-120-150	●											
				T9015 100-200-350		●											
				T9015 100-200-350													
Medium cutting	37 	Insert Cat. No. CNMG120404-37 CNMG120408-37 CNMG120412-37		P													
				NS530 80-200-300		●	●										
				T9015 80-150-250		●	●										
				T9025 50-100-150		●	●										
Medium cutting to roughing	DM 	Insert Cat. No. CNMG120404-DM CNMG120408-DM CNMG120412-DM CNMG120416-DM CNMG160612-DM		P													
				T9005 100-250-400		●	●	●	●								
				T9015 80-150-250		●	●	●	●								
				T9025 50-100-150		●	●	●									
Medium cutting	28 	Insert Cat. No. CNMG120404-28 CNMG120408-28		M	S												
				GH330 80-120-150	AH120 10-40-70												
				GH330 50-80-100	AH120 10-30-60												
																	
Medium cutting			$a_p = 1.0-2.0-3.0$ mm $f = 0.1-0.2-0.3$ mm/rev														

80° Rhombic (Complementary Chipbreaker with Hole)

TAC Inserts (Negative)

CN					CNMM 12 04 08 - 																		
Negative					Cutting edge length (ℓ) Thickness (T) Chipbreaker type Corner radius (R)																		
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																		
			Cutting speed v _c (m/min)		Coated																		
Heavy cutting	57		Work materials	P	T9005	T9015	T9025	T9035								T6020	T6030	GH330	T5010	T5020	AH110	AH120	GH110
	(Single-sided)	CNMM120404-57		T9015 80-150-250	●	●																	
		CNMM120408-57		T9015 80-150-250	●	●																	
		CNMM120412-57		T9025 50-100-150	●	●																	
		CNMM160608-57		a _p = 2.0-5.0-8.0 mm f = 0.4-0.6-0.8 mm/rev	●	●																	
		CNMM160612-57			●	●																	
		CNMM160616-57			●	●																	
		CNMM190612-57			●	●																	
		CNMM190616-57			●	●																	
		CNMM190624-57			●	●																	
	65		Insert Cat. No.		P																		
	(Single-sided)	CNMM120408-65						○															
		CNMM120412-65			T9015 80-150-250			○															
		CNMM160608-65			T9025 50-100-150			○															
		CNMM160612-65						●															
		CNMM160616-65						●															
		CNMM190612-65			a _p = 3-5-8 mm (12-19 Type) a _p = 8-12-17 mm (25 Type) f = 0.5-0.8-1.0 mm/rev (12-19 Type) f = 0.8-1.0-1.2 mm/rev (25 Type)	●	●																
		CNMM190616-65				●	●																
		CNMM190624-65				●	●																
	CNMM250924-65				●	●																	

Chipbreaker selection

P. 27 ~ 32

Grade selection

P. 37 ~ 39

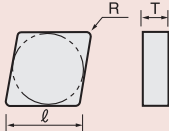
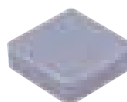
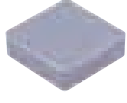
Insert hole diameter

P. 42

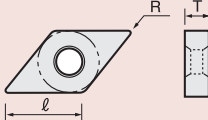
Reference

guide

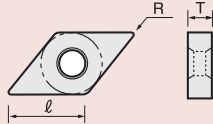
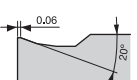
80° Rhombic (Basic Selection Chipbreaker without Hole)

CN					CNGN 12 04 04 - 																				
Negative					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																				
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions			Stocked grades																			
			Cutting speed v _c (m/min)			Coated				Ceramics				PCBN											
			Work materials	K	H	T9005	T9015	T9025	T9035					T6020	T6030	CX710	FX105	LX 2 1	LX 1 1	BX310	BX330	BX360	BX90S	BXC90	
Finishing to roughing	Ceramics																								
		CNGN120404		FX105 300-400-1000	LX11 50-100-150																				
		CNGN120408		FX105 300-400-500	LX11 50-100-150																				
		CNGN120412																							
		CNGN120416																							
		CNGN120420																							
Medium cutting to roughing	PCBN	Insert Cat. No.		K																					
		S-CNGN090308		BXC90 300-700-1500																					
		S-CNGN090312		BXC90 300-700-1000																					
		S-CNGN120408																							
		S-CNGN120412		BXC90 300-500-800																					
			ap = 0.05-0.3-3.0 mm f = 0.05-0.2-0.4 mm/rev																						
Finishing to roughing	Ceramics	Insert Cat. No.		K																					
		CNGX120708		FX105 300-400-1000																					
		CNGX120712		FX105 300-400-500																					
		CNGX120716																							
				ap = 0.5-1.0-2.0 mm f = 0.05-0.2-0.3 mm/rev																					
Precision finishing	PCBN	Insert Cat. No.		H																					
		CNGN090404-QBN																							
		CNGN090408-QBN		BX360 80-120-150																					
				BX360 80-120-150																					
				ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev																					
Finishing to roughing	Ceramics	Insert Cat. No.		K																					
		CNMN090308		FX105 300-400-1000																					
		CNMN090312		FX105 300-400-500																					
		CNMN120408																							
		CNMN120412																							
		CNMN120712		ap = 0.5-1.0-2.0 mm f = 0.05-0.2-0.3 mm/rev																					

55° Rhombic (Basic Selection Chipbreaker with Hole)

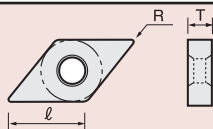
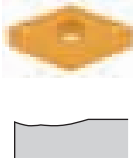
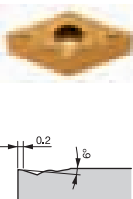
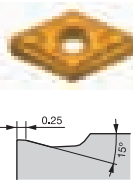
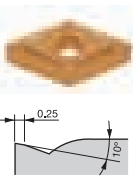
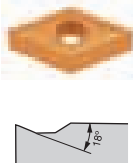
DN					DNMG 15 04 04 - 																					
Negative					Cutting edge length (l) Thickness (T) Corner radius (R)																					
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																					
			Cutting speed v _c (m/min)		Coated Cermet Co. Cermet Un. Ceramics																					
Precision finishing	TF	DNMG150404-TF DNMG150408-TF DNMG150604-TF DNMG150608-TF	Work materials	P	M	T9005	T9015	T9025	T9035						T5010	T5020	NS520	NS530	AT520	AT530	TH10	FX105	CX710	LX21	LX11	
				NS520 80-250-350	NS530 100-120-150													●	○							
				NS530 80-150-250														●	○							
			ap = 0.05-0.3-0.5 mm f = 0.03-0.1-0.15 mm/rev																							
	01	DNGG110402-01 DNGG110404-01 DNGG110408-01 DNGG150402-01 DNGG150404-01 DNGG150408-01 DNGG150602-01 DNGG150604-01 DNGG150608-01	ap = 0.05-0.3-0.5 mm f = 0.03-0.1-0.15 mm/rev																							
			Work materials	P																						
				NS520 80-250-350														○	○							
				NS530 80-150-250														○	○							
																		●	●			○				
																		●	●			○				
Finishing to medium cutting	—	DNMA150404 DNMA150408 DNMA150412 DNMA150604 DNMA150608 DNMA150612	ap = 0.05-3.0-5.0 mm f = 0.03-0.3-0.6 mm/rev																							
			Work materials	K																						
				T5010 100-300-600		○										○	○	○				○				
				T5010 100-250-500		○										○	○					○				
	Ceramics	DNGA150404 DNGA150408 DNGA150412 DNGA150416 DNGA150604 DNGA150604T01020 DNGA150604T01525 DNGA150604S01530 DNGA150608 DNGA150608T01020 DNGA150608S01530 DNGA150612 DNGA150616 DNGA150620		T5020 100-150-300												●	●									
																●	●									
																										
																										
																										
																										
																										
																										

55° Rhombic (Basic Selection Chipbreaker with Hole)

DN					DNMG 15 04 04 - 																				
Negative					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																				
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																				
			Cutting speed v _c (m/min)		Coated								Cermet		Co. Cermet										
Finishing	TS	Insert Cat. No.	Work materials	P	M	T9005	T9015	T9025	T9035				T6020	T6030	T5105	T5115	T5125	GH330	NS520	NS530	AT520	AT530	GT530		
				NS520 80-250-350	NS530 100-120-150	○	○	○	○					○							○	○			●
				NS530 80-150-250		○	○	○	○					○							○	●	○		
				T9025 100-150-200		●	●	●	○												●	●	●		●
				ap = 0.3-1.0-1.5 mm f = 0.08-0.15-0.2 mm/rev		●	●	●	○												○	●	●		●
	CF	Insert Cat. No.		K																					
				T5105 180-330-480												●	●								
				T5115 180-270-400												●	●								
				T5115 180-200-240												●	●								
				ap = 0.5-1.0-2.0 mm f = 0.05-0.25-0.4 mm/rev													●	●							

TAC Inserts (Negative)

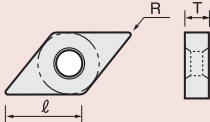
55° Rhombic (Basic Selection Chipbreaker with Hole)

DN 					DNMG 15 04 02 - 																					
Negative					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																					
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades												Cer.									
			Cutting speed v_c (m/min)		Coated																					
Finishing to medium cutting	SS 	DNMG150404-SS DNMG150408-SS DNMG150412-SS DNMG150604-SS DNMG150608-SS DNMG150612-SS	Work materials	M	S	T9005	T9015	T9025	T9035					T6020	T6030	GH330	T5105	T5115	T5125	T5010	T5020	AH110	AH120	NS530		
				T6020 150-200-250	AH110 10-50-70											○	○	●								
				T6020 150-180-220	AH110 10-30-60											○	○									
				T6030 50-100-150	AH120 10-30-50											○	○	●						●	●	●
																○	○	●						●	●	●
						$a_p = 0.5-1.0-3.0$ mm $f = 0.08-0.15-0.2$ mm/rev										○	○							●	●	
	Medium cutting	TM 	Insert Cat. No. DNMG110404-TM DNMG110408-TM DNMG150404-TM DNMG150408-TM DNMG150412-TM DNMG150416-TM DNMG150604-TM DNMG150608-TM DNMG150612-TM DNMG150616-TM		P	S																				
					T9005 100-250-400	AH120 10-40-60		●	●																	
					T9015 80-150-250	AH120 10-30-50	○	○	○	○							○									
					T9025 50-100-150	AH120 10-30-50	○	○	○	○							○									
							○	○	○																	
						$a_p = 1.0-3.0-5.0$ mm $f = 0.2-0.3-0.5$ mm/rev			●	●	●	●				○								●		
CM 		Insert Cat. No. DNMG150404-CM DNMG150408-CM DNMG150412-CM DNMG150604-CM DNMG150608-CM DNMG150612-CM		K																						
				T5105 180-330-480														●	●	●						
				T5115 140-270-400															●	●	●					
				T5125 120-210-300															●	●	●					
																			●	●	●					
					$a_p = 1.0-2.0-4.0$ mm $f = 0.1-0.3-0.5$ mm/rev															●	●	●				
SM 		Insert Cat. No. DNMG110404-SM DNMG110408-SM DNMG110412-SM DNMG150404-SM DNMG150408-SM DNMG150412-SM DNMG150604-SM DNMG150608-SM DNMG150612-SM		M																						
				T6020 150-200-250												●	●									
				T6020 150-180-220												●	●									
				T6030 50-100-150												○	○									
																○	○									
					$a_p = 1.0-3.0-4.0$ mm $f = 0.2-0.3-0.5$ mm/rev												○	○								
SA 		Insert Cat. No. DNMG150404-SA DNMG150408-SA DNMG150412-SA DNMG150604-SA DNMG150608-SA DNMG150612-SA		M	S																					
				T6020 150-200-250	AH110 10-50-70																					
				T6020 150-180-220	AH110 10-30-60																					
				T6030 50-100-150	AH120 50-100-150											●	●						●	●		
																●	●						●	●		
					$a_p = 1.0-3.0-4.0$ mm $f = 0.2-0.3-0.4$ mm/rev												●	●						●	●	

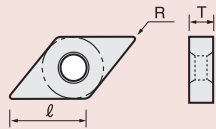
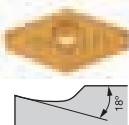
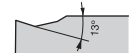
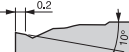
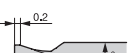
55° Rhombic (Basic Selection Chipbreaker with Hole)

DN					DNMG 15 04 04 -																	
Negative					Cutting edge length (l) Thickness (T) Chipbreaker type Corner radius (R)																	
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																	
			Cutting speed v_c (m/min)		Coated											Cermet	Un.					
Medium cutting	S		Work materials	M	T9005	T9015	T9025	T9035	T6020	T6030	GH330	T5105	T5115	T5125	T5010	T5020	AH110	AH120	GH110	NS520	NS530	TH10
		DNMG150404R-S DNMG150404L-S DNMG150408R-S DNMG150408L-S DNMG150604R-S DNMG150604L-S DNMG150608R-S DNMG150608L-S	 	GH330 100-130-150 GH330 50-80-100 T6030 50-80-100			○	○		○	○											○
			ap = 1.0-3.0-4.0 mm f = 0.2-0.3-0.4 mm/rev																			
	All-round	Insert Cat. No.		K	S																	
		DNMG110404 DNMG110408 DNMG150404 DNMG150408 DNMG150412 DNMG150416 DNMG150604 DNMG150608 DNMG150612 DNMG150616	 	T5010 100-300-600 T5010 100-250-500 T5020 300-400-500	AH110 10-50-70 AH110 10-30-60 AH120 10-30-50	○	○	○							○	○						●
			ap = 1.0-3.0-6.0 mm f = 0.2-0.3-0.4 mm/rev																			

55° Rhombic (Basic Selection Chipbreaker with Hole)

DN					DNMG 15 04 02 - 																	
Negative					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																	
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																	
			Cutting speed v _c (m/min)		Coated							PCD & PCBN										
Precision finishing	PCD		Work materials	N	T9005	T9015	T9025	T9035	T5020	AH120	DX120	DX140	DX160	BX310	BX330	BX360	BX380	BXC30	BXC50	BX850	BX930	BX950
		DNMM150402-DIA DNMM150404-DIA	 DX120 500-1500-2500  DX120 300-1000-1800 ap = 0.05-0.5-1.0 mm f = 0.05-0.1-0.15 mm/rev								○											
	PCD	Insert Cat. No.		N																		
		DNGA150404-DIA DNGA150408-DIA	 DX140 400-600-2500  DX160 400-500-2000 ap = 0.05-0.5-1.0 mm f = 0.05-0.1-0.15 mm/rev								○	○										
	PCBN	Insert Cat. No.		K	H																	
		DNGA150402-QBN DNGA150404-QBN DNGA150408-QBN DNGA150412-QBN DNGA150602-QBN DNGA150604-QBN DNGA150608-QBN DNGA150612-QBN	 BX850 100-500-1200  BX850 100-400-800  BX360 80-120-150 ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev													●	○				○	○
	PCBN	Insert Cat. No.		K	H																	
	(QB-mini) 	2QP-DNGA150404-L 2QP-DNGA150404-H 2QP-DNGA150404 2QP-DNGA150408-L 2QP-DNGA150408-H 2QP-DNGA150408 2QP-DNGA150412-L 2QP-DNGA150412-H 2QP-DNGA150412 2QP-DNGA150604 2QP-DNGA150608 2QP-DNGA150612	 BX930 100-500-1200  BX930 100-400-800  BX360 80-120-150 ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev L = Small honing angle Wear resistance priority H = Large honing angle Impact resistance priority												○	○	○				○	○
	PCBN	Insert Cat. No.		H																		
	(QB-mini) 	4QP-DNGA150404 4QP-DNGA150408 4QP-DNGA150412 4QP-DNGA150604 4QP-DNGA150608 4QP-DNGA150612	 BXC30 100-250-300  BXC50 80-150-200  BXC50 80-120-150 ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev																●	●		

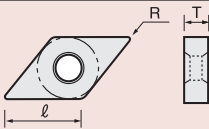
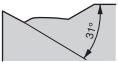
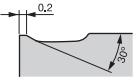
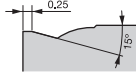
55° Rhombic (Complementary Chipbreaker with Hole)

DN					DNMG 11 04 04 - 																		
Negative					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																		
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																		
			Cutting speed v_c (m/min)		Coated				Cermets			Coated Cermets		Un.									
			Work materials		T9005	T9015	T9025	T9035					T6020	T5010	NS730	NS520	NS530	AT520	AT530	GT720	GT730	GT530	Un.
Finishing	11			P M																			
		DNMG110404-11 DNMG110408-11	●	NS520 80-250-350	NS530 100-120-150											●	●		●			●	
		DNMG150404-11 DNMG150408-11	●	NS530 80-150-250													○						○
		DNMG150604-11 DNMG150608-11 DNMG150612-11		ap = 0.3-1.0-1.5 mm f = 0.08-0.15-0.2 mm/rev													●	●	●	●			●
																	●	●	●	●			●
Finishing of mild steel	17			P M																			
		DNMG150604-17 DNMG150608-17 DNMG150612-17	●	NS530 80-200-300	NS530 100-120-150												●						
			●	NS530 80-150-250													●						
			ap = 0.3-1.0-1.5 mm f = 0.08-0.15-0.2 mm/rev																				
Finishing	TSF			P M																			
		DNMG150404-TSF DNMG150408-TSF	●	GT730 150-200-300	GT730 120-140-180										○					○	○		
		DNMG150604-TSF DNMG150608-TSF	●	GT730 100-180-250											○					○	○		
			●	GT730 80-150-200																○	●		●
				ap = 0.2-1.0-1.5 mm f = 0.08-0.15-0.4 mm/rev																			
Finishing	ZF			P M																			
		DNMG150404-ZF DNMG150408-ZF	●	T9015 100-250-400	GT730 120-140-180	○	○								○					○	○		
		DNMG150412-ZF	●	T9015 80-150-250		○	○								○					○	○		
		DNMG150604-ZF DNMG150608-ZF DNMG150612-ZF	●	T9025 50-100-150		●	●															●	
				ap = 0.2-0.7-1.5 mm f = 0.07-0.1-0.2 mm/rev		●	●															●	
Finishing to medium cutting	ZM			P M																			
		DNMG150408-ZM DNMG150412-ZM	●	T9015 100-250-400	GT730 120-140-180	○	○								○					○	○		
		DNMG150416-ZM	●	T9015 80-150-250		○	○								○						○		
		DNMG150608-ZM DNMG150612-ZM DNMG150616-ZM	●	T9025 50-100-150		●	●															●	
				ap = 0.7-1.5-2.0 mm f = 0.15-0.3-0.4 mm/rev		●	●															●	
Low cutting depth, high feed	AS			P																			
		DNMG150404-AS DNMG150408-AS	●	T9005 100-250-400	NS530 80-200-300	○	○	○	○							○							
		DNMG150412-AS	●	T9015 80-150-250		○	○	○	○							○							
		DNMG150604-AS DNMG150608-AS DNMG150612-AS DNMG150616-AS	●	T9025 50-100-150		●	●	●	●								●						
				ap = 0.5-1.0-2.0 mm f = 0.2-0.4-0.6 mm/rev		●	●	●	●								○						

TAC Inserts (Negative)

Chipbreaker selection
P. 27 ~ 32Grade selection
P. 37 ~ 39Insert hole diameter
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55° Rhombic (Complementary Chipbreaker with Hole)

DN					DNMG 15 04 04 - 																				
Negative																									
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																				
			Cutting speed v_c (m/min)		Coated														Cermets						
Medium cutting (internal)	CB	DNMG110404-CB DNMG110408-CB 	Work materials	P	M	T9005	T9015	T9025	T9035									T6020	T6030	GH330	T5010	T5020	AH110	NS520	NS530
			NS530 80-200-300	NS530 100-120-150		●																		●	
			T9015 80-150-250		●																			●	
			T9015 80-150-250																						
				$a_p = 0.3-1.5-2.5$ mm $f = 0.1-0.15-0.25$ mm/rev																					
Medium cutting	37	Insert Cat. No. DNMG150404-37 DNMG150408-37 DNMG150412-37 DNMG150604-37 DNMG150608-37 DNMG150612-37 		P																					
			NS530 80-200-300			○																		○	
			T9015 100-150-250			○												○						○	
			T9025 50-100-150			●	●																	●	
				$a_p = 1.0-2.0-4.0$ mm $f = 0.2-0.3-0.4$ mm/rev																					
Medium cutting to roughing	DM	Insert Cat. No. DNMG150404-DM DNMG150408-DM DNMG150412-DM DNMG150416-DM DNMG150604-DM DNMG150608-DM DNMG150612-DM DNMG150616-DM 		P																					
			T9005 100-250-400		○	○	○	○																	
			T9015 80-150-250		○	○	○	○																	
			T9025 50-100-150		○	○	○	○																	
				$a_p = 1.0-3.0-5.0$ mm $f = 0.2-0.3-0.45$ mm/rev																					

55° Rhombic (Complementary Chipbreaker with Hole)

DN			ℓ R T		DNMM 15 04 04 -																			
Negative					Cutting edge length (ℓ) Thickness (T) Corner radius (R) Chipbreaker type																			
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																			
			Cutting speed v_c (m/min)		Coated																			
			Work materials		T9005	T9015	T9025	T9035									T6020	T6030	GH330	T5010	T5020	AH110	AH120	GH110
Heavy cutting	57		P																					
	(Single-sided)	DNMM150408-57		T9015 80-150-250																				
		DNMM150412-57		T9015 80-150-250																				
		DNMM150608-57		T9015 80-150-250																				
		DNMM150612-57		T9025 50-100-150																				
		DNMM150616-57		$a_p = 2.0-5.0-8.0$ mm $f = 0.4-0.6-0.8$ mm/rev																				

TAC Inserts (Negative)

Chipbreaker selection

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Grade selection

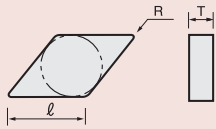
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Insert hole diameter

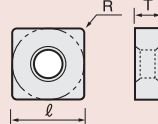
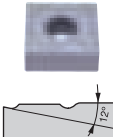
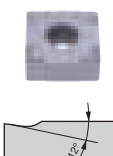
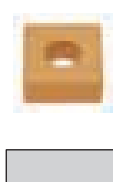
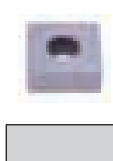
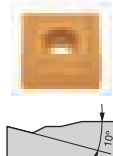
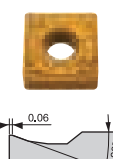
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55° Rhombic (Basic Selection Chipbreaker without Hole)

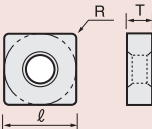
DN 					DNGN 15 04 04 - 																				
Negative					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																				
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																				
	Ceramics		Cutting speed v _c (m/min)		Coated Ceramics																				
Finishing to roughing		DNGN120712		FX105 300-400-1000	LX11 50-100-150	T9005	T9015	T9025	T9035									T6020	T6030	GH330	T5010	T5020	CX710	FX105	LX11
		DNGN150404		FX105 300-400-500	LX11 50-100-150																				
		DNGN150408		FX105 300-400-500	LX11 50-100-150																				
		DNGN150412																							
		DNGN150416	LX11: ap = 0.05-0.3-0.5 mm f = 0.05-0.08-0.1 mm/rev																						
		DNGN150708	FX105: ap = 0.5-1.0-2.0 mm f = 0.05-0.2-0.3 mm/rev																						
			DNGN150712																						
			DNGN150716																						
		Ceramics	Insert Cat. No.		K																				
			DNGX120712		FX105 300-400-1000																				
	DNGX150708			FX105 300-400-500																					
	DNGX150712			FX105 300-400-500																					
	DNGX150716																								
			ap = 0.5-1.0-2.0 mm f = 0.05-0.2-0.3 mm/rev																						

90° Square (Basic Selection Chipbreaker with Hole)

SN 					SNMG 12 04 04 - 																		
Negative					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																		
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																		
			Cutting speed v_c (m/min)		Coated						Cermets C.C. Un. Ceramics												
Precision finishing	TF		Work materials	P	M	T9005	T9015	T9025	T9035	T6020	T5105	T5115	T5125	T5010	T5020	NS520	NS530	GT530	TH10	CX710	FX105	LX21	LX11
		SNMG120404-TF SNMG120408-TF	 NS520 80-250-350	NS530 100-120-150												●	○						
			 NS530 80-150-250													●	○						
			$a_p = 0.05-0.3-0.5$ mm $f = 0.03-0.1-0.15$ mm/rev																				
Precision finishing	01	Insert Cat. No.	Work materials	P																			
		SNGG090302-01 SNGG090304-01 SNGG090308-01	 NS520 80-250-350														○	○					
		SNGG120402-01 SNGG120404-01 SNGG120408-01	 NS530 80-150-250														○	○					
			$a_p = 0.05-0.3-0.5$ mm $f = 0.03-0.1-0.15$ mm/rev														○	○					
Finishing to medium cutting	—	Insert Cat. No.	Work materials	K																			
		SNMA090308 SNMA120404 SNMA120408 SNMA120412 SNMA120416 SNMA190612 SNMA190616	 T5010 100-300-600	FX105 300-400-1000															○				
			 T5010 100-250-500			○										●	●	○		○	●		
			 T5020 100-150-300			○										●	●	○		○	●		
Finishing to medium cutting	—	Insert Cat. No.	Work materials	K	H																		
		SNGA090304 SNGA120404 SNGA120408 SNGA120412 SNGA120416	 FX105 300-400-1000	LX11 50-100-150															○				
			 FX105 300-400-500	LX11 50-100-150													○	○		○	●	●	
			LX11: $a_p = 0.05-0.3-0.5$ mm LX11: $f = 0.05-0.08-0.1$ mm/rev FX105: $a_p = 0.5-1.0-2.0$ mm FX105: $f = 0.05-0.2-0.3$ mm/rev																○	●	●		
Finishing	TS	Insert Cat. No.	Work materials	P	M																		
		SNMG120404-TS SNMG120408-TS SNMG120412-TS	 NS520 80-250-350	NS530 100-120-150		●	●	●	○								●	●	○				
			 NS530 80-150-250			●	●	●	○								●	●	●				
			 T9025 50-100-150			●	●	●	○								●	○					
Finishing	CF	Insert Cat. No.	Work materials	K																			
		SNMG120408-CF SNMG120412-CF	 T5105 180-330-480														●	●					
			 T5115 140-270-400														●	●					
			 T5115 120-210-300																				
		$a_p = 0.5-1.0-2.0$ mm $f = 0.05-0.25-0.4$ mm/rev																					

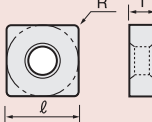
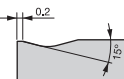
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90° Square (Basic Selection Chipbreaker with Hole)

SN					SNMG 12 04 04 - 																					
Negative					Cutting edge length (l) Thickness (T) Corner radius (R)																					
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																					
			Cutting speed v _c (m/min)		Coated																					
Finishing to medium cutting	SS	SNMG120404-SS SNMG120408-SS SNMG120412-SS	Work materials	M	S	T9005	T9015	T9025	T9035				T6020	T6030	GH330	T5105	T5115	T5125	T5010	T5020	AH110	AH120	K S 20	NS530		
				T6020 150-200-250	AH110 10-50-70										●	●	●							●	●	
				T6020 150-180-220	AH110 10-30-60										●	●								●	●	
				T6030 50-100-150	AH120 10-30-50																			●	●	
			ap = 0.5-1.0-3.0 mm f = 0.08-0.15-0.2 mm/rev																							
Medium cutting	TM	SNMG090304-TM SNMG090308-TM SNMG120404-TM SNMG120408-TM SNMG120412-TM SNMG120416-TM SNMG150608-TM SNMG150612-TM SNMG190608-TM SNMG190612-TM	Work materials	P	S																					
				T9005 100-250-400	AH120 10-40-60		●	●																		
				T9015 80-150-250	AH120 10-30-50	●	●	●	●						○									●		
				T9025 50-100-150	AH120 10-30-50	●	●	●	●						○									●		
			ap = 1.0-3.0-5.0 mm f = 0.2-0.3-0.5 mm/rev																							
						○																				
						○																				
						○																				
						○																				
						○																				
Medium cutting	CM	SNMG120408-CM SNMG120412-CM	Work materials	K																						
				T5105 180-330-480													●	●	●							
				T5115 140-270-400													●	●	●							
				T5125 120-210-300																						
			ap = 1.0-2.0-4.0 mm f = 0.1-0.3-0.5 mm/rev																							
																										
																										
																										
																										
																										
Medium cutting	SM	SNMG120408-SM SNMG120412-SM	Work materials	M																						
				T6020 150-200-250											●	○										
				T6020 150-180-220											●	○										
				T6030 50-100-150																						
			ap = 0.5-2.0-4.0 mm f = 0.2-0.3-0.5 mm/rev																							
																										
																										
																										
																										
																										
Medium cutting	SA	SNMG120404-SA SNMG120408-SA SNMG120412-SA SNMG190612-SA SNMG190616-SA	Work materials	M	S																					
				T6020 150-200-250	AH110 10-50-70										●	●							●	●		
				T6020 150-180-220	AH110 10-30-60										●	●							●	●	●	
				T6030 50-100-150	AH120 10-30-50																		●	●		
			ap = 1.0-3.0-4.0 mm f = 0.2-0.3-0.4 mm/rev																							
																								</		

Chipbreaker selection
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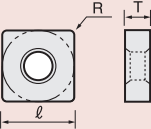
90° Square (Basic Selection Chipbreaker with Hole)

SN					SNMG 09 03 04 - 																				
Negative					Cutting edge length (l) Thickness (T) Corner radius (R)																				
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																				
			Cutting speed v_c (m/min)		Coated												Cermet	Un.							
Medium cutting	All-round		Work materials	K	S	T9005	T9015	T9025	T9035			T6030	GH330	T5105	T5115	T5125	T5010	T5020	AH110	AH120	GH110	NS520	NS530	TH10	
		SNMG090304 SNMG090308 SNMG120404 SNMG120408 SNMG120412 SNMG120416 SNMG120420 SNMG150612 SNMG150616 SNMG190612 SNMG190616 SNMG250724	 T5010 100-300-600  T5010 100-250-500  T5020 100-150-300	AH110 10-50-70 AH110 10-30-60 AH120 10-30-50	$a_p = 1.0-3.0-6.0$ mm $f = 0.2-0.3-0.4$ mm/rev	○	○	○																	
						○	●	●	○								●	●	○	○		○	○	○	
						○	○	○	○									○	○	○	○		○	○	○
						○	○	○	○									○	○	○	○		○	○	○
						○	○	○	○									○	○	○	○		○	○	○
						○	○	○	○									○	○	○	○		○	○	○
						○	○	○	○									○	○	○	○		○	○	○
						○	○	○	○									○	○	○	○		○	○	○
						○	○	○	○									○	○	○	○		○	○	○
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○	○		○	○	○	
					○	○	○	○									○	○	○</						

90° Square (Basic Selection Chipbreaker with Hole)

SN					SNGA 12 04 04 -																					
Negative					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																					
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions			Stocked grades																				
			Cutting speed v _c (m/min)			Coated								PCD & PCBN												
Precision finishing	PCD	SNGA120404-DIA SNGA120408-DIA	Work materials	N		T9005	T9015	T9025	T9035					DX140	DX160	BX310	BX330	BX360	BX380	BXC30	BXC50	BX850	BX930	BX950		
				DX140 400-600-2500											○	○										
				DX140 400-500-2000												○	○									
			ap = 0.05-0.5-1.0 mm f = 0.05-0.1-0.15 mm/rev																							
	PCBN	Insert Cat. No.		K	H																					
		SNGA120402-QBN SNGA120404-QBN SNGA120408-QBN SNGA120412-QBN																	○							
																			●	●			○			
																			●	●			○			
																			●	●			○			
			ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev																							
	PCBN	Insert Cat. No.		K	H																					
	(QB-mini)	2QP-SNGA120404-L 2QP-SNGA120404-H 2QP-SNGA120404 2QP-SNGA120408-L 2QP-SNGA120408-H 2QP-SNGA120408 2QP-SNGA120412-L 2QP-SNGA120412-H 2QP-SNGA120412																	○							
																			○	○				○	○	
																			○	○						
			ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev																●	●	●	●		○	○	
			L = Small honing angle Wear resistance priority H = Large honing angle Impact resistance priority																○	○						
	PCBN	Insert Cat. No.		H																						
	(QB-mini)	4QP-SNGA120404 4QP-SNGA120408 4QP-SNGA120412																			●	●				
																				●	●					
																				●	●					
		ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev																								

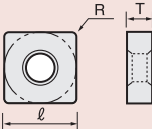
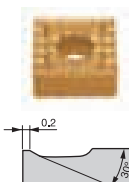
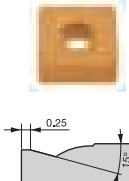
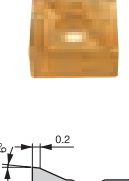
90° Square (Complementary Chipbreaker with Hole)

SN 					SNMG 12 04 04 - 																				
Negative					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																				
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions			Stocked grades																			
Finishing	11	SNMG120404-11 SNMG120408-11 SNMG120412-11	Cutting speed v_c (m/min)			Coated										Cermets		C.C.							
			Work materials	P	M	T9005	T9015	T9025	T9035					T6020	T6030	GH330	T5010	T5020	AH110	AH120	NS730	NS520	NS530	GT720	GT730
Finishing of mild steel	17	SNMG120404-17 SNMG120408-17		P	M																				
				NS520 80-250-350	NS530 100-120-150																	●	●		
Finishing	TSF	SNMG120404-TSF SNMG120408-TSF		P	M																				
				GT730 150-200-300	GT730 120-140-180																	○			●
Finishing to medium cutting	ZF	SNMG120404-ZF SNMG120408-ZF SNMG120412-ZF		P																					
				T9015 100-250-400		●	●															○			
Low cutting depth, high feed	AS	SNMG120404-AS SNMG120408-AS SNMG120412-AS		P																					
				T9015 80-150-250		○	●	●	○														●		

TAC Inserts (Negative)

Chipbreaker selection
P. 27 ~ 32Grade selection
P. 37 ~ 39Insert hole diameter
P. 42Reference
guide

90° Square (Complementary Chipbreaker with Hole)

SN 					SNMM 12 04 04 - 																						
Negative					Cutting edge length (ℓ) Thickness (T) Corner radius (R) Chipbreaker type Corner radius (R)																						
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																						
			Cutting speed v _c (m/min)		Coated												Cerm.										
			Work materials		T9005	T9015	T9025	T9035								T6020	T6030	GH330	T5010	T5020	AH110	AH120	NS520	NS530			
Medium cutting	37 	SNMG120404-37 SNMG120408-37 SNMG120412-37	   	P NS530 80-200-300 T9015 80-150-250 T9025 50-100-150 ap = 1.0-2.0-4.0 mm f = 0.2-0.3-0.4 mm/rev																							
Medium cutting to roughing	DM 	SNMG120404-DM SNMG120408-DM SNMG120412-DM	   	P T9005 100-250-400 T9015 80-150-250 T9025 50-100-150 ap = 1.0-3.0-5.0 mm f = 0.2-0.3-0.5 mm/rev																							
Heavy cutting	57 (Single-sided) 	SNMM120408-57 SNMM120412-57 SNMM150608-57 SNMM150612-57 SNMM150616-57 SNMM190612-57 SNMM190616-57 SNMM190624-57 SNMM250724-57	   	P T9015 80-150-250 T9015 80-150-250 T9025 50-100-150 ap = 2.0-5.0-8.0 mm f = 0.4-0.6-0.8 mm/rev																							

90° Square (Complementary Chipbreaker with Hole)

SN					SNMM 12 04 04 -																				
Negative					Cutting edge length (ℓ) Thickness (T) Corner radius (R) Chipbreaker type																				
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																				
Heavy cutting	65		Cutting speed v _c (m/min)		Coated															Cer					
			Work materials	P	T9005	T9015	T9025	T9035									T6020	T6030	GH330	T5010	T5020	AH110	AH120	NS520	Cer
		SNMM120408-65						●																	
		SNMM120412-65		T9015 80-150-250			●																		
		SNMM190612-65		T9025 50-100-150			●	●																	
		SNMM190616-65					●	●																	
		SNMM190624-65		ap = 3-5-8 mm (12-19 Type) ap = 8-12-17 mm (25 Type) f = 0.5-0.8-1.0 mm/rev (12-19 Type) f = 0.8-1.0-1.2 mm/rev (25 Type)			●	●																	
		SNMM250724-65					●	●																	
		SNMM250732-65						●																	
		SNMM250924-65						●																	
		SNMM310916-65						●																	
		SNMM310924-65						●																	

TAC Inserts (Negative)

90° Square (Basic Selection Chipbreaker without Hole)

SN					SNGN 09 03 08 -																						
Negative			Cutting edge length (ℓ) Thickness (T) Chipbreaker type Corner radius (R)																								
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions			Stocked grades																					
			Cutting speed v_c (m/min)		Work materials	Coated								Ceramics				PCBN									
			K	H			T9005	T9015	T9025	T9035						T6020	T6030	CX710	FX105	LX 21	LX 11	BX310	BX330	BX360	BX90S	BXC90	
Finishing to roughing	Ceramics	SNGN090308		FX105 300-400-1000	LX11 50-100-150															○	●						
		SNGN120304		FX105 300-400-500	LX11 50-100-150																○						
		SNGN120312																			○						
		SNGN120404																				●					
		SNGN120408	LX11: $a_p = 0.05-0.3-0.5$ mm $f = 0.05-0.08-0.1$ mm/rev																	●	○	●					
		SNGN120412																	●	○	●						
		SNGN120416																	●	○	●						
		SNGN120420																		●	○						
		SNGN120424																		●							
		SNGN120708																		●			●				
SNGN120712																		●			●						
SNGN120716																		●			●						
SNGN120720																				○							
Medium cutting to roughing	PCBN	Insert Cat. No.		K																							
		S-SNGN090308		BXC90 300-700-1500																						○	
		S-SNGN090312		BXC90 300-700-1000																						○	
		S-SNGN120308		BXC90 300-700-1000																						○	
		S-SNGN120312		BXC90 300-500-800																						○	
		S-SNGN120408	$a_p = 0.05-0.3-3.0$ mm $f = 0.05-0.2-0.4$ mm/rev																							○	
S-SNGN120412																								○			
Finishing to roughing	Ceramics	Insert Cat. No.		K																							
		SNGX120708		FX105 300-400-1000															●								
		SNGX120712																	●								
		SNGX120716		FX105 300-400-500															●								
		$a_p = 0.5-1.0-2.0$ mm $f = 0.05-0.2-0.3$ mm/rev																									
Medium cutting to roughing	PCBN	Insert Cat. No.		K																							
		SNMN090308		BX90S 300-700-1500																						○	
		SNMN090312		BX90S 300-700-1000																						○	
		SNMN120308		BX90S 300-700-1000																						○	
		SNMN120312		BX90S 300-500-800																						○	
		SNMN120408	$a_p = 0.05-0.3-3.0$ mm $f = 0.05-0.2-0.4$ mm/rev																							○	
SNMN120412																								○			

90° Square (Basic Selection Chipbreaker without Hole)

SN					SNGN 12 04 08 -																			
Negative					Cutting edge length (ℓ) Thickness (T) Chipbreaker type Corner radius (R)																			
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																			
			Cutting speed v _c (m/min)		Coated							PCD & PCBN												
	PCBN		Work materials	K	H	T9005	T9015	T9025	T9035							DX120	DX140	DX160	BX310	BX330	BX360	BX380	BX850	BX950
Precision finishing		SNGN120402-QBN		BX850 100-500-1200	BX360 100-150-200																			
		SNGN120404-QBN		BX850 100-400-800	BX360 80-120-150																			
		SNGN120408-QBN			BX360 80-120-150																			
		SNGN120412-QBN			BX360 80-120-150																			
					ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev																			

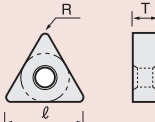
TAC Inserts (Negative)

Chipbreaker selection
P. 27 ~ 32Grade selection
P. 37 ~ 39Insert hole diameter
P. 42Reference
guide

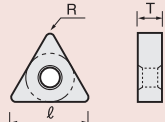
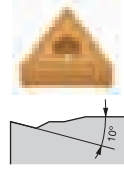
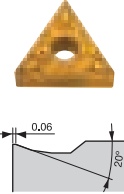
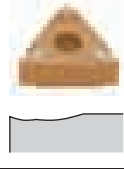
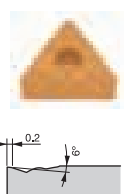
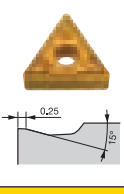
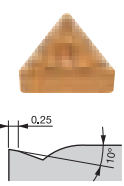
TAC Inserts (Negative Inserts)

60° Triangular (Basic Selection Chipbreaker with Hole)

TAC Inserts (Negative)

TN					TNMG 16 04 04 - 																							
Negative					Cutting edge length (l)				Thickness (T)				Chipbreaker type				Corner radius (R)											
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																							
			Cutting speed v_c (m/min)		Coated										Cermet		C.C.		Un.		Ceramics							
Precision finishing	TF	TNMG160404-TF TNMG160408-TF TNMG160412-TF	Work materials	P	M	T9005	T9015	T9025	T9035					GH330	T5010	T5020	GH110	NS520	NS530	GT530	TH10	CX710	FX105	LX21	LX11			
				●	NS520 80-250-350	NS530 100-120-150														●	○		○					
				●	NS530 80-150-250															○	●	●						
				ap = 0.05-0.3-0.5 mm f = 0.03-0.1-0.15 mm/rev																○	○	○						
Precision finishing	01	Insert Cat. No. TNGG110302-01 TNGG110304-01 TNGG110308-01 TNGG160402-01 TNGG160404-01 TNGG160408-01 TNGG160412-01	Work materials	P																								
				●	NS520 80-250-350													○	○									
				●	NS530 80-150-250												○	○										
				⊕												○	●	●	○									
Finishing	C	Insert Cat. No. TNGG160400R-C TNGG160400L-C TNGG160402R-C TNGG160402L-C TNGG160404R-C TNGG160404L-C TNGG160408R-C TNGG160408L-C	Work materials	P																								
				●	NS520 80-250-350													○										
				●	NS530 80-150-250													○	○	○								
				⊕												○	○	○	○	○	○							
Finishing to medium cutting	—	Insert Cat. No. TNMA160404 TNMA160408 TNMA160412 TNMA160416 TNMA160420 TNMA220404 TNMA220408 TNMA220412 TNMA220416	Work materials	K																								
				●	T5010 100-300-600	FX105 300-400-1000	○									●	●		○			○						
				●	T5010 100-250-500		○									●	●		○			●						
				●	T5020 100-150-300		○									○	○											
				ap = 0.05-3.0-5.0 mm f = 0.03-0.3-0.6 mm/rev			○									○	○											
	Ceramics	Insert Cat. No. TNGA110304 TNGA110308 TNGA160304 TNGA160308 TNGA160404 TNGA160404T01020 TNGA160404S01530 TNGA160408 TNGA160408T01020 TNGA160408S01530 TNGA160412 TNGA160416 TNGA220408	Work materials	K	H																							
				●	FX105 300-400-1000	LX11 50-100-150											○			○								
				●	FX105 300-400-500	LX11 50-100-150														○								
				⊕													○	○	○	○			○		●			
				LX11: ap = 0.05-0.3-0.5 mm f = 0.05-0.08-0.1 mm/rev FX105: ap = 0.5-1.0-2.0 mm f = 0.05-0.2-0.3 mm/rev															○			○	●	●	○	●		
																						○	●	●	○	●		
																						○	●	●	○	●		
																						○				○	●	

60° Triangular (Basic Selection Chipbreaker with Hole)

TN 					TNMG 16 04 04 - 																			
Negative					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																			
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																			
			Cutting speed v_c (m/min)		Coated Cermet Co. Cermet																			
Finishing	TS	TNMG160404-TS TNMG160408-TS TNMG160412-TS	Work materials	P	M	T9005	T9015	T9025	T9035	T6020	T6030	GH330	T5105	T5115	T5125	T5010	T5020	AH110	AH120	NS520	NS530	AT520	GT530	
			NS520 80-250-350	GT530 120-140-180	●	●	●	○		○										●	●	●	●	
			NS530 80-150-250		●	●	●	○		○											●	●	●	●
			T9025 100-150-200		●	●	●	○																
			$ap = 0.3-1.0-1.5$ mm $f = 0.08-0.15-0.2$ mm/rev																					
Finishing	CF	TNMG160404-CF TNMG160408-CF		K																				
			T5105 180-330-480																					
			T5115 180-270-400																					
			T5115 180-200-240																					
			$ap = 0.5-1.0-2.0$ mm $f = 0.05-0.25-0.4$ mm/rev																					
Finishing to medium cutting	SS	TNMG160404-SS TNMG160408-SS TNMG160412-SS TNMG220404-SS TNMG220408-SS TNMG220412-SS		M	S																			
			T6020 150-200-250	AH110 10-50-70							●	●	●					●	●	●				
			T6020 150-180-220	AH110 10-30-60							●	●	●					●	●	●				
			T6030 50-100-150	AH120 10-30-50							●	●	●											
			$ap = 0.5-1.0-3.0$ mm $f = 0.08-0.15-0.2$ mm/rev																					
Medium cutting	TM	TNMG110304-TM TNMG110308-TM TNMG160404-TM TNMG160408-TM TNMG160412-TM TNMG220404-TM TNMG220408-TM TNMG220412-TM TNMG220416-TM		P	S																			
			T9005 100-250-400	AH120 10-40-60	●	●																		
			T9015 80-150-250	AH120 10-30-50	●	●	●			○									●					
			T9025 50-100-150	AH120 10-30-50	●	●	●	●		○									●					
			$ap = 1.0-3.0-5.0$ mm $f = 0.2-0.3-0.5$ mm/rev		●	●	●	●		○														
							●	●	●	●		○												
	CM	TNMG160408-CM TNMG160408-CM TNMG160412-CM TNMG220408-CM TNMG220412-CM		K																				
			T5105 180-330-480										●	●	●									
			T5115 140-270-400										●	●	●									
			T5125 120-210-300										●	●	●									
				$ap = 1.0-2.0-4.0$ mm $f = 0.1-0.3-0.5$ mm/rev																				
	SM	TNMG160404-SM TNMG160408-SM TNMG160412-SM		M																				
			T6020 150-200-250		●	●					●	●												
			T6020 150-180-220								●	●												
			T6030 50-100-150								●	●												
				$ap = 1.0-3.0-4.0$ mm $f = 0.2-0.3-0.5$ mm/rev																				

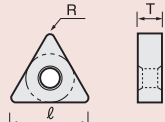
TAC Inserts (Negative)

Chipbreaker selection
P. 27 ~ 32Grade selection
P. 37 ~ 39Insert hole diameter
P. 42Reference
guide

TAC Inserts (Negative)

[illegible]

60° Triangular (Basic Selection Chipbreaker with Hole)

TN 					TNGA 16 04 04 - 																				
Negative					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																				
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																				
			Cutting speed v _c (m/min)		Coated							PCD & PCBN													
Precision finishing	PCD		Work materials	N		T9005	T9015	T9025	T9035						DX140	DX160	BX310	BX330	BX360	BX380	BXC30	BXC50	BX850	BX930	BX950
		TNGA160404-DIA TNGA160408-DIA		DX140 400-600-2500											○	○									
				DX140 400-500-2000											○	○									
																									
			ap = 0.05-0.5-1.0 mm f = 0.05-0.1-0.15 mm/rev																						
	PCBN	Insert Cat. No.		K	H																				
		TNGA160402-QBN TNGA160404-QBN TNGA160408-QBN TNGA160412-QBN		BX850 100-500-1200	BX330 100-150-200														○					○	
				BX850 100-400-800	BX360 80-120-150													●	●					○	
					BX360 80-120-150													●	●					○	
			ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev																						
PCBN	Insert Cat. No.		K	H																					
(QB-mini)	3QP-TNGA160404-L 3QP-TNGA160404-H 3QP-TNGA160404 T3QP-TNGA160404		BX930 100-500-1200	BX310 130-200-300														○							
			BX930 100-400-800	BX330 80-120-150													●	●	●	●				○	○
				BX360 80-120-150															○						
		ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev																	○	○					
		L = Small honing angle Wear resistance priority H = Large honing angle Impact resistance priority T = 10 inserts packing unit																					○	○	
	3QP-TNGA160408-L 3QP-TNGA160408-H 3QP-TNGA160408 T3QP-TNGA160408 3QP-TNGA160412-L 3QP-TNGA160412-H 3QP-TNGA160412																○	○							
																	●	●	●	●				○	○
PCBN	Insert Cat. No.		H																						
(QB-mini)	6QP-TNGA160404 6QP-TNGA160408 6QP-TNGA160412		BXC30 100-250-300																	●	●				
			BXC50 80-150-200																	●	●				
			BXC50 80-120-150																	●	●				
		ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev																							

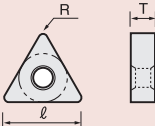
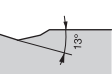
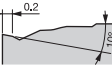
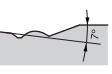
TAC Inserts (Negative)

Chipbreaker selection
P. 27 ~ 32Grade selection
P. 37 ~ 39Insert hole diameter
P. 42Reference
guide

TAC Inserts (Negative Inserts)

60° Triangular (Complementary Chipbreaker with Hole)

TAC Inserts (Negative)

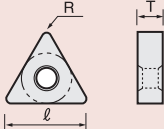
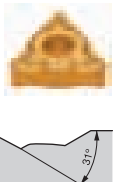
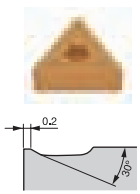
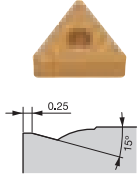
TN					TNMG 11 03 04 - 											
Negative					Cutting edge length (ℓ)				Thickness (T)		Chipbreaker type				Corner radius (R)	
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades											
			Cutting speed v _c (m/min)		Coated				Cermets		Coat. Cermets		Un.			
			Work materials		T9005	T9015	T9025	T9035								
Finishing	11		P	M												
		TNMG110304-11 TNMG110308-11	NS520 80-250-350	NS530 100-120-150												
		TNMG160402-11 TNMG160404-11 TNMG160408-11 TNMG160412-11 TNMG220404-11 TNMG220408-11	NS530 80-150-250													
			ap = 0.3-1.0-1.5 mm f = 0.08-0.15-0.20 mm/rev													
Finishing of mild steel	17	Insert Cat. No.	P	M												
		TNMG160404-17 TNMG160408-17 TNMG160412-17	NS530 80-200-300	NS530 100-120-150												
			NS530 80-150-250													
			ap = 0.3-1.0-1.5 mm f = 0.08-0.15-0.2 mm/rev													
Finishing	TSF	Insert Cat. No.	P	M												
		TNMG160402-TSF TNMG160404-TSF TNMG160408-TSF TNMG160412-TSF	GT730 150-200-300	GT730 120-140-180												
			GT730 100-180-250													
			GT730 80-150-200													
			ap = 0.2-1.0-1.5 mm f = 0.08-0.15-0.40 mm/rev													
Finishing to medium cutting	ZF	Insert Cat. No.	P													
		TNMG160404-ZF TNMG160408-ZF TNMG160412-ZF	T9015 100-250-400													
			T9015 80-150-250													
			T9025 50-100-150													
Finishing to low cutting	ZM	Insert Cat. No.	P													
		TNMG160404-ZM TNMG160408-ZM TNMG160412-ZM	T9015 100-250-400													
			T9015 80-150-250													
			T9025 50-100-150													
			ap = 0.7-1.5-2.0 mm f = 0.15-0.3-0.4 mm/rev													
Low cutting depth, high feed	AS	Insert Cat. No.	P													
		TNMG160404-AS TNMG160408-AS TNMG160412-AS	T9005 100-250-400	NS530 80-200-300												
			T9015 80-150-250													
			T9025 50-100-150													
		ap = 0.5-1.0-2.0 mm f = 0.2-0.4-0.6 mm/rev														
Chipbreaker selection			Grade selection		Insert hole diameter		Reference guide									
P. 27 ~ 32			P. 37 ~ 39		P. 42											

Chipbreaker selection
P. 27 ~ 32Grade selection
P. 37 ~ 39Insert hole diameter
P. 42Reference
guide

60° Triangular · Negative (Complementary Selection)

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60° Triangular (Complementary Chipbreaker with Hole)

TN					TNMG 11 03 04 - 																					
Negative			Cutting edge length (l) Thickness (T) Corner radius (R)																							
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions				Stocked grades																			
			Cutting speed v_c (m/min)				Coated																			
Medium cutting (internal)	CB		Work materials	P	M	T9005	T9015	T9025	T9035									T6020	T6030	GH330	T5010	T5020	AH110	AH120	NS530	
			●	NS530 80-200-300	NS530 100-120-150		●																			●
			●	T9015 80-150-250			●																			●
			⊕	T9015 80-150-250																						○
			$a_p = 0.3-1.5-2.5$ mm $f = 0.1-0.15-0.25$ mm/rev																							
Medium cutting	37		Work materials	P																						
			●	NS530 80-200-300																					●	
			●	T9015 80-150-250																					●	
			⊕	T9025 50-100-150																					○	
			$a_p = 1.0-2.0-4.0$ mm $f = 0.2-0.3-0.4$ mm/rev																							
Medium cutting to roughing	DM		Work materials	P																						
			●	T9005 100-250-400																					●	
			●	T9015 80-150-250																					●	
			⊕	T9025 50-100-150																					○	
			$a_p = 1.0-3.0-5.0$ mm $f = 0.2-0.3-0.5$ mm/rev																							

TAC Inserts (Negative)

 Chipbreaker selection
P. 27 ~ 32

 Grade selection
P. 37 ~ 39

 Insert hole diameter
P. 42

 Reference
guide

TAC Inserts (Negative Inserts)

60° Triangular (Complementary Chipbreaker with Hole)

TAC Inserts (Negative)

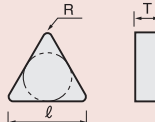
TN			R ℓ T		TNMM 16 04 08 -																			
Negative			Cutting edge length (ℓ) Thickness (T) Chipbreaker type Corner radius (R)																					
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions			Stocked grades																		
			Cutting speed v _c (m/min)			Coated															Cermet		C.C.	
			Work materials			T9005	T9015	T9025	T9035								T6020	T6030	GH330	T5010	T5020	NS520	NS530	GT530
Heavy cutting	57	TNMM160408-57 TNMM160412-57 TNMM220408-57 TNMM220412-57		P																				
				T9015 80-150-250			●	●	●															
				T9015 80-150-250			●	●	●															
				T9025 50-100-150			●	●	●															
						ap = 2.0-5.0-8.0 mm f = 0.4-0.6-0.8 mm/rev																		

Chipbreaker selection
P. 27 ~ 32Grade selection
P. 37 ~ 39Insert hole diameter
P. 42Reference
guide

60° Triangular · Negative (Basic Selection)

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60° Triangular (Basic Selection Chipbreaker without Hole)

TN 					TNGN 16 04 04 - 																				
Negative					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																				
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions			Stocked grades																			
			Cutting speed v _c (m/min)		Coated				Ceramics				PCBN												
Finishing to roughing	Ceramics		Work materials	K	H	T9005	T9015	T9025	T9035				CX710	FX105	LX21	LX11	BX310	BX330	BX360	BX380	BX90S	BXC90	BX850	BX950	
		TNGN160404		FX105 300-400-1000	LX11 50-100-150											○	●								
		TNGN160408		FX105 300-400-500	LX11 50-100-150										●	●	○	●							
		TNGN160412												●	●	○	●								
		TNGN160416												●	●	○	○								
		TNGN160420		LX11: ap = 0.05-0.3-0.5 mm LX11: f = 0.05-0.08-0.1 mm/rev FX105: ap = 0.5-1.0-2.0 mm FX105: f = 0.05-0.2-0.3 mm/rev											●	●	○	○							
		TNGN160708															●	●							
TNGN160712															●	●									
Precision finishing	PCBN	Insert Cat. No.		K	H																				
		TNGN160402-QBN		BX850 100-500-1200	BX330 100-150-200															○					
		TNGN160404-QBN		BX850 100-400-800	BX360 80-120-150														●	●				○	
		TNGN160408-QBN			BX360 80-120-150														●	●				○	
		TNGN160412-QBN																	●	●			○		
	ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev																								
	PCBN	Insert Cat. No.		K																					
		S-TNGN110308		BXC90 300-700-1500																			○		
		S-TNGN110312		BXC90 300-700-1000																			○		
		S-TNGN160408		BXC90 300-500-800																			○		
		S-TNGN160412																				○			
	ap = 0.05-0.3-3.0 mm f = 0.05-0.2-0.4 mm/rev																								
PCBN	Insert Cat. No.		K																						
	TNMN110308		BX90S 300-700-1500																			○			
	TNMN110312		BX90S 300-700-1000																			○			
	TNMN160408		BX90S 300-500-800																			○			
	TNMN160412																				○				
ap = 0.05-0.3-3.0 mm f = 0.05-0.2-0.4 mm/rev																									

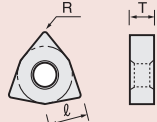
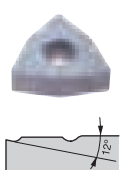
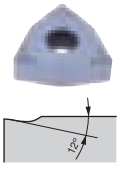
TAC Inserts (Negative)

Chipbreaker selection
P. 27 ~ 32Grade selection
P. 37 ~ 39Insert hole diameter
P. 42Reference
guide

TAC Inserts (Negative Inserts)

80° Trigon (Basic Selection Chipbreaker with Hole)

TAC Inserts (Negative)

WN					 WNMG 08 04 04 - 																					
Negative					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																					
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																					
			Cutting speed v_c (m/min)		Coated														Cermet							
Precision finishing	TF	WNMG080404-TF WNMG080408-TF	Work materials	P	M	T9005	T9015	T9025	T9035									T6020	T6030	GH330	T5010	AH110	AH120	NS520	NS530	
				NS520 80-250-350	NS530 100-120-150																				●	○
			NS530 80-150-250																						●	○
																										
	01	Insert Cat. No.		P																						
		WNGG060402-01		NS520 80-250-350																						○
		WNGG060404-01		NS530 80-150-250																						○
		WNGG080402-01																							●	●
		WNGG080404-01																							●	●
	WNGG080408-01																								○	○
				$a_p = 0.05\text{-}0.3\text{-}0.5\text{ mm}$ $f = 0.03\text{-}0.1\text{-}0.15\text{ mm/rev}$																						

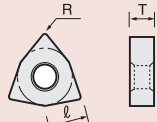
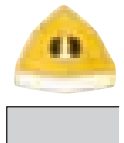
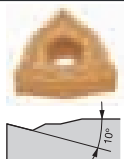
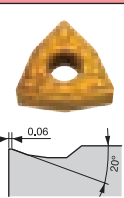
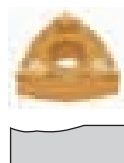
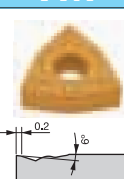
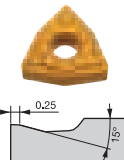
 Chipbreaker selection
P. 27 ~ 32

 Grade selection
P. 37 ~ 39

 Insert hole diameter
P. 42

 Reference
guide

80° Trigon (Basic Selection Chipbreaker with Hole)

WN					WNMG 08 04 04 - 																						
Negative					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																						
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																						
			Cutting speed v _c (m/min)		Coated											Cermet	C.Cerm.	Un.Ce.									
Finishing to medium cutting		WNMA080404 WNMA080408 WNMA080412 WNMA080416		K		T9005	T9015	T9025	T9035	T6020	T6030	GH330	T5105	T5115	T5125	T5010	T5020	AH110	AH120	NS520	NS530	AT520	GT530	TH10	LX11		
				T5010 100-300-600		○												●	●			○				○	
				T5010 100-250-500		○												●	●								
				T5020 100-150-300		○												●	●								
Finishing to medium cutting		WNGA080404 WNGA080408 WNGA080412		H																							
				LX11 50-100-150																							
				LX11 50-100-150																							
Finishing		Insert Cat. No.		P	M																						
				NS520 80-250-350	GT530 120-140-180	●	●	●	○		○											●	●	●	●		
				NS530 80-150-250		●	●	●	○		○											●	●	●	●		
				T9025 100-180-250																							
Finishing		Insert Cat. No.		K																							
				T5105 180-330-480											●	●											
				T5115 180-270-400											●	●											
				T5115 180-200-240																							
Finishing to medium cutting		Insert Cat. No.		M	S																						
				T6020 150-200-250	AH110 10-50-70								●	●	●					●	●						
				T6020 150-180-220	AH110 10-30-60								●	●							●						
				T6030 50-100-150	AH120 10-30-50																						
Medium cutting		Insert Cat. No.		P	S																						
				T9005 100-250-400	AH120 10-40-60	●	●	●	●											●							
				T9015 80-150-250	AH120 10-30-50	●	●	●	●												●						
				T9025 50-100-150	AH120 10-30-50	●	●	●	●		○										●						
Medium cutting		Insert Cat. No.		K																							
				T5105 180-330-480											●	●	●										
				T5115 140-270-400																							
				T5125 120-210-300																							

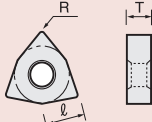
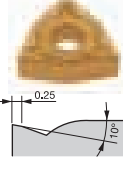
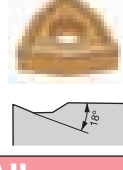
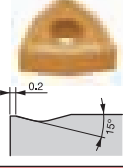
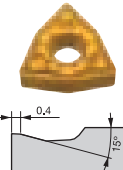
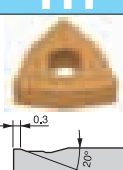
TAC Inserts (Negative)

Chipbreaker selection
P. 27 ~ 32Grade selection
P. 37 ~ 39Insert hole diameter
P. 42Reference
guide

TAC Inserts (Negative Inserts)

80° Trigon (Basic Selection Chipbreaker with Hole)

TAC Inserts (Negative)

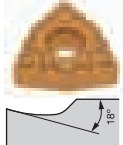
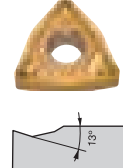
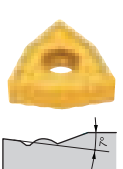
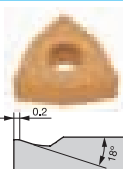
WN					WNMG 08 04 04 - 																								
Negative					Cutting edge length (l) Thickness (T) Chipbreaker type Corner radius (R)																								
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																								
			Cutting speed Vc (m/min)		Coated								Cerm. Unc.		PCBN														
Medium cutting	SM		Work materials	M	T9005	T9015	T9025	T9035	T6020	T6030	T5105	T5115	T5125	T5010	T5020	AH110	AH120	NS520	NS530	KS20	TH10	BX310	BX330	BX360	BX380	BXC50	BXC30	BX930	BX950
		WNMG060404-SM WNMG060408-SM WNMG060412-SM WNMG080404-SM WNMG080408-SM WNMG080412-SM		T6020 150-200-250					●	●																			
				T6020 150-180-220					●	●																			
				T6030 50-100-150					●	●																			
				ap = 1.0-3.0-4.0 mm f = 0.2-0.3-0.5 mm/rev	●	●			●	●																			
	SA	Insert Cat. No.		M	S																								
		WNMG080408-SA WNMG080412-SA		T6020 150-200-250	AH110 10-50-70					●	●					●	●		●										
				T6020 150-180-220	AH110 10-30-60					●	●					●	●		●										
				T6030 50-100-150	AH120 10-30-50																								
				ap = 1.0-3.0-4.0 mm f = 0.2-0.3-0.4 mm/rev																									
Roughing	All-round	Insert Cat. No.		K																									
		WNMG060404 WNMG060408 WNMG080404 WNMG080408 WNMG080412 WNMG080416		T5010 100-300-600	○	○	○							●	●														
				T5010 100-250-500	○	●	●	○						●	●	○	○	○	○	○	○								
				T5020 100-150-300	○	●	●	○						●	●	○	○	○	○	○	○								
				ap = 1.0-3.0-6.0 mm f = 0.2-0.3-0.4 mm/rev	○	○	○	○						●	●														
Roughing	CH	Insert Cat. No.		K																									
		WNMG080408-CH WNMG080412-CH		T5105 180-330-480							●	●	●																
				T5115 140-270-400							●	●	●																
				T5125 120-210-300																									
			ap = 3.0-4.0-6.0 mm f = 0.1-0.35-0.6 mm/rev																										
Roughing	TH	Insert Cat. No.		P																									
		WNMG080408-TH WNMG080412-TH WNMG080416-TH WNMG100612-TH WNMG100616-TH		T9005 100-250-400	●	●	●	●		○						●													
				T9015 80-150-250	●	●	●	●		○						●													
				T9025 50-100-150		○	●																						
			ap = 3.0-4.0-6.0 mm f = 0.3-0.4-0.6 mm/rev		○	●																							
Precision finishing	PCBN	Insert Cat. No.		H																									
		3QP-WNGA080408		BX310 130-200-300																		○	○	○	○		○	○	
				BX330 80-120-150																									
				BX360 80-120-150																									
			ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev																										
Precision finishing	PCBN	Insert Cat. No.		H																									
		6QP-WNGA080408		BXC30 100-250-300																									
				BXC50 80-150-200																									
				BXC50 80-120-150																									
			ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev																										

Chipbreaker selection
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guide

80° Trigon · Negative (Complementary Selection)

81

80° Trigon (Complementary Chipbreaker with Hole)

WN					WNMG 08 04 04 -  Cutting edge length (ℓ) Thickness (T) Corner radius (R)																			
Negative																								
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																			
			Cutting speed v_c (m/min)		Coated								Cermet		Co. Cerm.									
			Work materials		T9005	T9015	T9025	T9035					T6020	T6030	GH330	NS730	NS520	NS530	AT520	AT530	GT720	GT730	GT530	
Finishing	11		P	M																				
		WNMG080404-11 WNMG080408-11 WNMG080412-11	NS520 80-250-350	NS530 100-120-150													●	●	●	●				
			NS530 80-150-250															●	●	●	●			
			$a_p = 0.3-1.0-1.5$ mm $f = 0.08-0.15-0.2$ mm/rev																					
Finishing of mild steel	17		P	M																				
		WNMG080404-17 WNMG080408-17	NS530 80-200-300	NS530 100-120-150		○	○											●						
			NS530 80-150-250			○	○											●						
			$a_p = 0.3-1.0-1.5$ mm $f = 0.08-0.15-0.2$ mm/rev																					
Finishing	TSF		P	M																				
		WNMG080404-TSF WNMG080408-TSF	GT730 150-200-300	GT730 120-140-180												○					○	●		
			GT730 100-180-250													○						●		
			GT730 80-150-200																					
			$a_p = 0.2-1.0-1.5$ mm $f = 0.08-0.15-0.40$ mm/rev																					
	ZF		P	M																				
Finishing to medium cutting		WNMG060404-ZF WNMG060408-ZF	T9015 100-250-400	GT730 120-140-180		●	●																	
		WNMG080404-ZF WNMG080408-ZF	T9015 80-150-250			●	●										○				○	●		
		WNMG080412-ZF	T9025 50-100-150			●	●										○				○	●		
			$a_p = 0.2-0.7-1.5$ mm $f = 0.07-0.1-0.2$ mm/rev																					
	ZM		P	M																				
		WNMG060408-ZM WNMG060412-ZM	T9015 100-250-400	GT730 120-140-180		●	●																	
Low cutting depth, high feed		WNMG080408-ZM WNMG080412-ZM	T9015 80-150-250			●	●										○				○	●		
		WNMG080416-ZM	T9025 50-100-150			●	●										○				○	●		
			$a_p = 0.7-1.5-2.0$ mm $f = 0.15-0.3-0.4$ mm/rev																					
	AS		P																					
		WNMG080404-AS WNMG080408-AS	T9005 100-250-400	NS530 80-200-300		●	●	●	●									●						
		WNMG080412-AS WNMG080416-AS	T9015 80-150-250			●	●	●	●									●						
			$a_p = 0.5-1.0-2.0$ mm $f = 0.2-0.4-0.6$ mm/rev																					

TAC Inserts (Negative)

Chipbreaker selection

P. 27 ~ 32

Grade selection

P. 37 ~ 39

Insert hole diameter

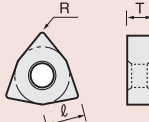
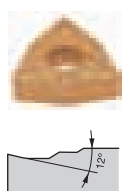
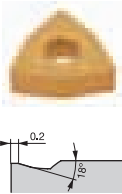
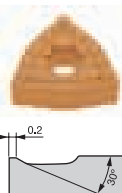
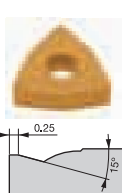
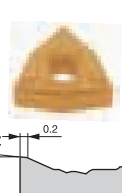
P. 42

Reference guide

TAC Inserts (Negative Inserts)

80° Trigon (Complementary Chipbreaker with Hole)

TAC Inserts (Negative)

WN					WNMG 08 04 04 - 																			
Negative					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																			
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																			
			Cutting speed v_c (m/min)		Coated												Cermet							
			Work materials	P	T9005	T9015	T9025	T9035										T6020	T6030	GH330	T5010	T5020	NS520	NS530
High feed Low cutting depth, high feed	AFW																							
		WNMG060404-AFW WNMG060408-AFW WNMG080404-AFW WNMG080408-AFW		T9005 100-250-400	NS530 80-200-300	●	●	●													●			●
				T9015 100-200-350		●	●	●													●			●
				T9025 50-100-150		●	●	●													●			●
			$a_p = 0.5-1.0-1.5$ mm $f = 0.2-0.3-0.4$ mm/rev																					
Low cutting depth, high feed	ASW	Insert Cat. No.		P																				
		WNMG060408-ASW WNMG060412-ASW WNMG080408-ASW WNMG080412-ASW		T9005 100-250-400	NS530 80-200-300	●	●	●													●			●
				T9015 100-200-350		●	●	●													●			●
				T9025 50-100-150		●	●	●													●			●
			$a_p = 0.5-1.0-2.0$ mm $f = 0.3-0.5-0.6$ mm/rev																					
Medium cutting (internal)	CB	Insert Cat. No.		P																				
		WNMG060404-CB WNMG060408-CB		NS530 80-200-300			●																●	
				T9025 80-150-220			●																●	
				T9025 50-100-150																				
			$a_p = 0.3-1.5-2.5$ mm $f = 0.1-0.15-0.25$ mm/rev																					
Medium cutting	37	Insert Cat. No.		P																				
		WNMG080404-37 WNMG080408-37 WNMG080412-37		NS530 80-200-300		●	●																●	
				T9015 80-150-250		●	●																●	
				T9025 50-100-150		●	●																○	
			$a_p = 1.0-2.0-4.0$ mm $f = 0.2-0.3-0.4$ mm/rev																					
Medium cutting to roughing	DM	Insert Cat. No.		P																				
		WNMG080404-DM WNMG080408-DM WNMG080412-DM		T9005 100-250-400		●	●	●	●															
				T9015 80-150-250		●	●	●	●															
				T9025 50-100-150		●	●	●	●															
			$a_p = 1.0-3.0-5.0$ mm $f = 0.2-0.3-0.5$ mm/rev																					
Heavy cutting	57	Insert Cat. No.		P																				
		WNMM080408-57 WNMM080412-57 WNMM100612-57 WNMM100616-57 WNMM130616-57 WNMM130624-57		T9005 100-250-400		●	●																	
				T9015 80-150-250		●	●																	
				T9025 50-100-150		○	○																	
			$a_p = 2.0-5.0-8.0$ mm $f = 0.4-0.6-0.8$ mm/rev																					

Chipbreaker selection

P. 27 ~ 32

Grade selection

P. 37 ~ 39

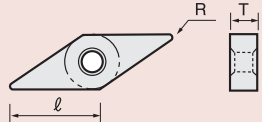
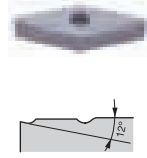
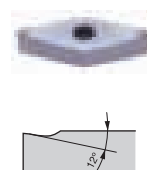
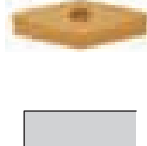
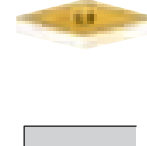
Insert hole diameter

P. 42

Reference

guide

35° Rhombic (Basic Selection Chipbreaker with Hole)

VN 					VNMG 16 04 04 - 																			
Negative					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																			
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions			Stocked grades																		
			Cutting speed v _c (m/min)			Coated												Cermet	Un. Cer.					
Precision finishing	TF		Work materials	P	M	T9005	T9015	T9025	T9035								T6020	T5010	T5020	GH110	NS520	NS530	TH10	LX11
		VNMG160404-TF VNMG160408-TF		NS520 80-250-350	NS530 100-120-150																●	○		
				NS530 80-150-250																	●	○		
																								
			ap = 0.05-0.3-0.5 mm f = 0.03-0.1-0.15 mm/rev																					
	01	Insert Cat. No.		P																				
		VNGG160402-01 VNGG160404-01 VNGG160408-01		NS520 80-250-350																	○	●	●	○
				NS530 80-150-250																	○	●	●	○
																					○	○		
			ap = 0.05-0.3-0.5 mm f = 0.03-0.1-0.15 mm/rev																					
Finishing to medium cutting	—	Insert Cat. No.		K																				
		VNMA160402 VNMA160404 VNMA160408		T5010 100-300-600																			○	
				T5010 100-250-500		○												●	●		○	○		
				T5020 100-150-300		○												●	●		○	○		
			ap = 0.05-3.0-5.0 mm f = 0.03-0.3-0.6 mm/rev																					
	Ceramics	Insert Cat. No.		H																				
		VNGA160404 VNGA160408 VNGA160408T01020 VNGA160408T01525 VNGA160408S01530		LX11 50-100-150																			●	
				LX11 50-100-150																			●	
																							●	
			ap = 0.05-0.3-0.5 mm f = 0.05-0.08-0.1 mm/rev																				●	

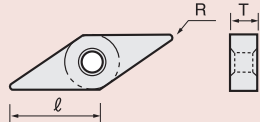
TAC Inserts (Negative)

Chipbreaker selection
P. 27 ~ 32Grade selection
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TAC Inserts (Negative Inserts)

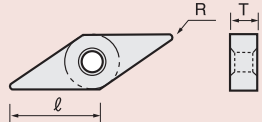
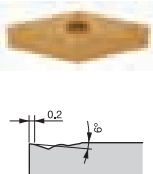
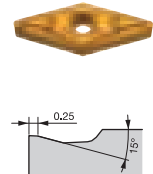
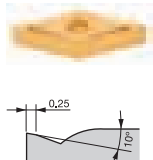
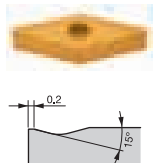
35° Rhombic (Basic Selection Chipbreaker with Hole)

TAC Inserts (Negative)

VN 					VNMG 16 04 04 - 																					
Negative					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																					
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																					
			Cutting speed v _c (m/min)		Coated								Cermet		C.Cerm.											
Finishing	TS	VNMG160404-TS VNMG160408-TS VNMG160412-TS	Work materials	P	M	T9005	T9015	T9025	T9035				T6020	T6030	T5105	T5115	T5125	GH330	AH110	AH120	NS520	NS530	AT520	GT530		
				NS520 80-250-350	GT530 120-140-180	●	●	●	○														●	●	●	●
				NS530 80-150-250		●	●	●	○														●	●	●	●
				T9025 100-180-250		●	●	●	○														●	●		
			ap = 0.3-1.0-1.5 mm f = 0.08-0.15-0.2 mm/rev																							
	CF	VNMG160404-CF VNMG160408-CF	VNMG160404-CF VNMG160408-CF	K																						
					T5105 180-330-480											●	●									
					T5115 180-270-400											●	●									
					T5115 180-200-240																					
			ap = 0.5-1.0-2.0 mm f = 0.05-0.25-0.4 mm/rev																							
Finishing to medium cutting	SS	VNMG160404-SS VNMG160408-SS VNMG160412-SS	M		S																					
				T6020 150-200-250	AH110 10-50-70									●	●				●	●	●		●			
				T6020 150-180-220	AH110 10-30-60									●	●				●	●	●		●			
				T6030 50-100-150	AH120 10-30-50									●	●				○		●					
		ap = 0.5-1.0-3.0 mm f = 0.08-0.15-0.2 mm/rev																								

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35° Rhombic (Basic Selection Chipbreaker with Hole)

VN 					VNMG 16 04 04 - 																													
Negative			Cutting edge length (ℓ)		Thickness (T)		Corner radius (R)																											
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																													
			Cutting speed v _c (m/min)		Coated																Cer.Un.													
Medium cutting	TM	VNMG160404-TM VNMG160408-TM VNMG160412-TM 	Work materials	P	T9005	T9015	T9025	T9035																										
			T9005 100-250-400	●	●	●	●																											
			T9015 80-150-250	●	●	●	●																											
			T9025 50-100-150	●	●	●	●																											
	ap = 1.0-3.0-5.0 mm f = 0.2-0.3-0.5 mm/rev																																	
	CM	Insert Cat. No.	Work materials	K																														
		VNMG160408-CM VNMG160412-CM		T5105 180-330-480																														
				T5115 140-270-400																														
				T5125 120-210-300																														
			ap = 1.0-2.0-4.0 mm f = 0.1-0.3-0.5 mm/rev																															
			SM	Insert Cat. No.	Work materials	M																												
		VNMG160408-SM		T6020 150-200-250																														
				T6020 150-180-220																														
				T6030 50-100-150																														
			ap = 1.0-3.0-4.0 mm f = 0.2-0.3-0.5 mm/rev																															
			All-round	Insert Cat. No.	Work materials	K																												
		VNMG160404 VNMG160408 VNMG160412		T5010 100-300-600	○	○	○	○																										
				T5010 100-250-500	○	○	○	○																										
				T5020 100-150-300	○	○	○	○																										
			ap = 1.0-3.0-6.0 mm f = 0.2-0.3-0.4 mm/rev																															

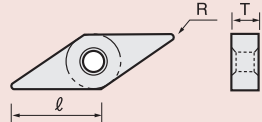
TAC Inserts (Negative)

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guide

TAC Inserts (Negative Inserts)

35° Rhombic (Basic Selection Chipbreaker with Hole)

TAC Inserts (Negative)

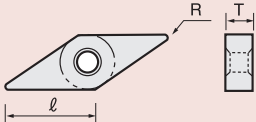
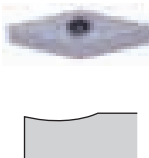
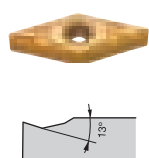
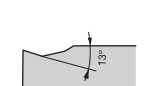
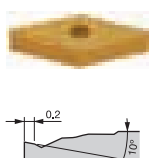
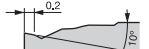
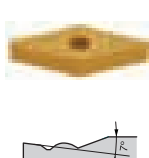
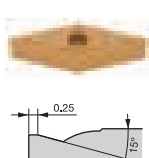
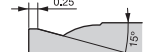
VN 					VNGA 16 04 04 - 																			
Negative					Cutting edge length (ℓ) Thickness (T) Chipbreaker type Corner radius (R)																			
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																			
			Cutting speed v _c (m/min)		Coated							PCD & PCBN												
Precision finishing	PCD		Work materials	N	T9005	T9015	T9025	T9035				T6020	T6030	DX120	BX310	BX330	BX360	BX380	BXC30	BXC50	BX850	BX930	BX950	
	(QB-mini)	VNMM160402-DIA VNMM160404-DIA VNMM160408-DIA		DX120 500-1500-2500 DX120 300-1000-1800											○									
															○									
															○									
				ap = 0.05-0.5-1.0 mm f = 0.05-0.1-0.15 mm/rev																				
	PCBN	Insert Cat. No.		K	H																			
	(QB-mini)	2QP-VNGA160404-L 2QP-VNGA160404-H 2QP-VNGA160404 2QP-VNGA160408-L 2QP-VNGA160408-H 2QP-VNGA160408		BX930 100-500-1200 BX930 100-400-800	BX310 130-200-300 BX330 80-120-150 BX360 80-120-150											○		○						
																●	●	●	●				○	○
																○								
				ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev L = Small honing angle H = Large honing angle											●	●	●	●				○	○	
	PCBN	Insert Cat. No.		H																				
	(QB-mini)	4QP-VNGA160404 4QP-VNGA160408		BXC30 130-250-300 BXC50 80-150-200 BXC50 80-120-150																●	●			
																				●	●			
																								
				ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev																				

Chipbreaker selection
P. 27 ~ 32Grade selection
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guide

35° Rhombic · Negative (Complementary Selection)

87

35° Rhombic (Complementary Selection Chipbreaker with Hole)

VN					VNMG 16 04 04 - 																		
Negative					Cutting edge length (l) Thickness (T) Corner radius (R)																		
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																		
			Cutting speed v_c (m/min)		Coated				Cermets				Coated Cermets				Un						
			Work materials	P	M	T9005	T9015	T9025	T9035		T6020	GH330	T5010	T5020	NS730	NS520	NS530	AT520	AT530	GT720	GT730	GT530	TH 10
Finishing	11																						
		VNMG160404-11 VNMG160408-11 VNMG160412-11	 NS520 80-250-350	 NS530 100-120-150																			
																							
				ap = 0.3-1.0-1.5 mm f = 0.08-0.15-0.2 mm/rev																			
Finishing	TSF	Insert Cat. No.		P	M																		
		VNMG160402-TSF VNMG160404-TSF VNMG160408-TSF	 GT730 150-200-300	 GT730 120-140-180																			
			 GT730 100-180-250																				
			 GT730 80-150-200																				
			ap = 0.2-1.0-1.5 mm f = 0.08-0.15-0.4 mm/rev																				
Finishing	ZF	Insert Cat. No.		P	M																		
		VNMG160404-ZF VNMG160408-ZF VNMG160412-ZF	 T9015 100-250-400	 GT730 120-140-180																			
			 T9015 80-150-250																				
			 T9025 50-100-150																				
			ap = 0.2-0.7-1.5 mm f = 0.07-0.1-0.2 mm/rev																				
Finishing to medium cutting	ZM	Insert Cat. No.		P	M																		
		VNMG160408-ZM VNMG160412-ZM	 T9015 100-250-400	 GT730 120-140-180																			
			 T9015 80-150-250																				
			 T9025 50-100-150																				
			ap = 0.7-1.5-2.0 mm f = 0.15-0.3-0.4 mm/rev																				
Medium cutting to roughing	DM	Insert Cat. No.		P																			
		VNMG160404-DM VNMG160408-DM VNMG160412-DM	 T9005 100-250-400																				
			 T9015 80-150-250																				
			 T9025 50-100-150																				
			ap = 1.0-3.0-5.0 mm f = 0.2-0.3-0.5 mm/rev																				

TAC Inserts (Negative)

Chipbreaker selection

P. 27 ~ 32

Grade selection

P. 37 ~ 39

Insert hole diameter

P. 42

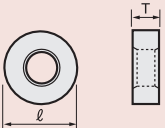
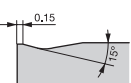
Reference

guide

TAC Inserts (Negative Inserts)

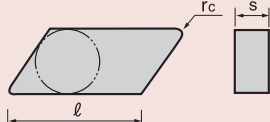
Round (Basic Selection Chipbreaker)

TAC Inserts (Negative)

RN					RNGA 12 04 00 - 																					
Negative																										
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions			Stocked grades																				
Finishing	Ceramics	RNGA120400	Cutting speed v_c (m/min)			Coated										Un.	Ceramics	PCBN								
			Work materials	H		T9005	T9015	T9025	T9035					T6020	GH330	T5010	T5020	AH110	AH120	TH10	FX105	LX11	BXC90	BX90S		
	 	RNGA120400		LX11 50-100-150	$a_p = 0.05-0.3-0.5$ mm $f = 0.05-0.08-0.1$ mm/rev																					
				LX11 50-100-150																						
																										
Heavy cutting	61	Insert Cat. No.		P																						
		RNMG090300-61					○	●	●	○																
		RNMG120400-61					○	●	●	○								○		○						
		RNMG150600-61				○	○	○	○																	
		RNMG190600-61					○	○	○	○																
		RNMG250900-61						○	○	○																
		RNMG310900-61					○	○	○																	
Finishing to roughing	Ceramics	Insert Cat. No.		K	H																					
		RNGN120400		FX105 300-400-1000	LX11 50-100-150																	●	●			
		RNGN120700		FX105 300-400-500	LX11 50-100-150																	●	●			
																										
	PCBN	Insert Cat. No.		K																						
S-RNGN090300			BXC90 300-700-1500																					○		
S-RNGN120400			BXC90 300-700-1000																					○		
			BXC90 300-500-800																							
PCBN	Insert Cat. No.		K																							
	RNMN090300		BX90S 300-700-1500																					○		
	RNMN120400		BX90S 300-700-1000																					○		
			BX90S 300-500-800																							
</																										

Chipbreaker selection
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Parallelogram (Basic Selection Chipbreaker)

KNMX					KNMX 16 04 05 - 																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
Negative					Cutting edge length (l) Thickness (T) Corner radius (R)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions			Stocked grades																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
			Cutting speed v _c (m/min)			Coated								Ceramics																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
Finishing	S1	KNMX160405R-S1 KNMX160405L-S1	Work materials	M		T9005	T9015	T9025	T9035																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												

TAC Inserts (Negative)

Chipbreaker selection
P. 27 ~ 32Grade selection
P. 37 ~ 39Insert hole diameter
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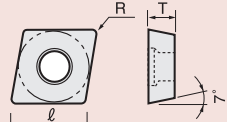
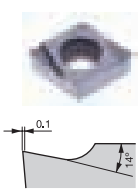
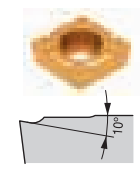
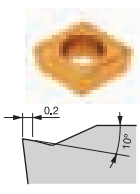
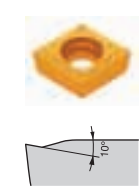
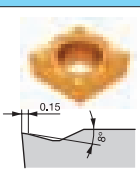
TAC Inserts Turning (Positive)



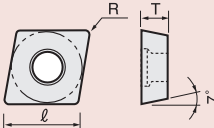
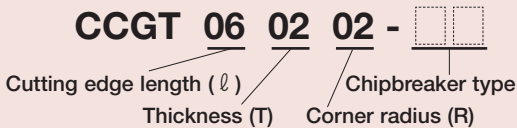
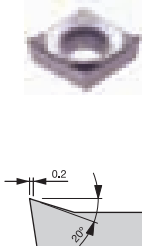
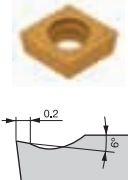
TAC Inserts (Positive Inserts)

80° Rhombic · 7° Positive with Hole

TAC Inserts (Positive)

CC					CCGT 06 02 02 - 																			
Positive					Cutting edge length (ℓ) Thickness (T) Chipbreaker type Corner radius (R)																			
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																			
			Cutting speed v_c (m/min)		Coated							Cermet		Coated Cerm.		Un.								
Finishing to medium cutting	W15 (Ground-in type) 	Insert Cat. No.	Work materials	P	M	T9015	T9025	GH730	T6020	T6030	GH330	J 7 4 0	T5020	GH110	NS730	NS520	NS530	AT520	AT530	GT730	GT530	J 5 3 0	Un.	
				NS530 80-200-300	NS530 100-120-150														●					
		NS530 80-150-250	GH330 50-80-100															●						○
			GH330 50-80-100								●			●				●				○		○
		ap = 0.05-0.5-2.0 mm f = 0.03-0.1-0.2 mm/rev									○							●				○		○
																		●						○
																		●					○	
																		●					○	
																		●					○	
																		●					○	
Precision finishing	01 	Insert Cat. No.		P	M																			
				J530 60-200-300	J530 100-120-150																			
		J740 10-30-60	J740 10-30-60																					
		J740 10-30-60	J740 10-30-60																					
	ap = 0.05-0.3-0.5 mm f = 0.01-0.03-0.1 mm/rev																							
Finishing	PF 	Insert Cat. No.		P	M																			
				NS530 60-200-300	T6020 150-200-250	●	●	○	●	●						○	●			○				
		T9015 80-150-250	T6020 150-180-220	●	●	○	●	●						○	●			○						
		T9025 50-100-150	T6030 50-100-150	●	●	○	●	●						○	●			○						
		ap = 0.3-0.8-1.5 mm f = 0.05-0.12-0.25 mm/rev																						
Finishing to medium cutting	PS 	Insert Cat. No.		P	M																			
				NS530 60-200-300	T6020 150-200-250	●	●	○	●	●						○	●			○				
		T9015 80-150-250	T6020 150-180-220	●	●	○	●	●						○	●			○						
		T9025 50-100-150	T6030 50-100-150	●	●	○	●	●						○	●			○						
		ap = 0.3-1.0-2.0 mm f = 0.08-0.15-0.3 mm/rev																						
Medium cutting	PM 	Insert Cat. No.		P	M																			
				NS530 60-200-300	T6020 150-200-250	●	●	○	●	●						○	●			○				
		T9015 80-150-250	T6020 150-180-220	●	●	○	●	●						○	●			○						
		T9025 50-100-150	T6030 50-100-150	●	●	○	●	●						○	●			○						
		ap = 1.0-1.5-2.5 mm f = 0.15-0.2-0.3 mm/rev																						

80° Rhombic · 7° Positive with Hole

CC					CCGT 06 02 02 - 																		
Positive																							
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																		
Finishing to medium cutting		CCMW060204 CCMW060208 CCMW09T304 CCMW09T308		K 100-300-600 T5010 100-250-500 T5020 100-150-300 ap = 0.3-1.0-3.0 mm f = 0.03-0.15-0.3 mm/rev	Coated				Cer.	C.Cerm.	Un.	PCD & PCBN											
					T9005	T9015	T9025	T6020	T5010	T5020	NS530	AT530	GT530	KS05F	DX120	DX140	DX160	BX310	BX330	BX360	BX930		
					○				●	●													
					○				●	●													
					○				●	●													
Aluminium	AL	Insert Cat. No.		N																			
		CCGT060202-AL		KS05F 100-600-1000									●										
		CCGT060204-AL		KS05F 100-500-800										●									
		CCGT09T302-AL		KS05F 100-300-500										●									
		CCGT09T304-AL		KS05F 100-300-500										●									
		CCGT09T308-AL												●									
CCGT120402-AL CCGT120404-AL CCGT120408-AL													●										
Medium cutting	24	Insert Cat. No.		P																			
		CCMT060202-24		NS530 60-200-300					●	●			●	●									
		CCMT060204-24		T9015 80-150-250					●	●			●	●									
		CCMT060208-24		T9025 50-100-150					●	●			●	●									
		CCMT09T302-24		T9025 50-100-150					●	●			●	●									
		CCMT09T304-24							●	●			●	●									
CCMT09T308-24 CCMT120408-24								●	●			●	●										
Precision finishing	PCD	Insert Cat. No.		N																			
		CCMT060202-DIA		DX120 500-1500-2500											○								
		CCMT060204-DIA		DX120 300-1000-1800												○							
		CCMT09T302-DIA		DX120 300-1000-1800												○							
		CCMT09T304-DIA		DX120 300-1000-1800												○							
	CCMT09T308-DIA														○								
Precision finishing	PCD	Insert Cat. No.		N																			
		CCGW060200-DIA		DX140 400-600-2500													○						
		CCGW060202-DIA		DX140 400-500-2000														○					
		CCGW060204-DIA		DX140 400-500-2000														○					
		CCGW09T302-DIA		DX140 400-500-2000														○	○				
		CCGW09T304-DIA CCGW09T308-DIA																○	○				

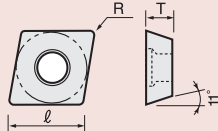
TAC Inserts (Positive)

Chipbreaker selection
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TAC Inserts (Positive Inserts)

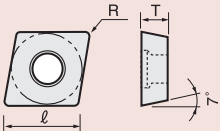
80° Rhombic · 7° Positive with Hole

TAC Inserts (Positive)

CC					CCGT 06 02 02 - 																	
Positive					Cutting edge length (l)				Thickness (T)				Chipbreaker type				Corner radius (R)					
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																	
			Cutting speed v_c (m/min)		Coated				Cermet				Coat. Cermet				Un.				PCBN	
Precision finishing	PCBN		Work materials	H		T9015	T9025		J 7 4 0	NS520	NS530	AT530	GT530	J 5 3 0	TH 10	BXC30	BX310	BX330	BX360	BX930	BX950	
		2QP-CCMW060202	●	BX310 130-200-300														●	●			
		2QP-CCMW060204	●	BX330 80-120-150														●	●	●	○	○
		2QP-CCMW09T304	●	BX360 80-120-150														●	●	●	○	○
		2QP-CCMW09T308	●	BX360 80-120-150														●	●	●	○	○
				$a_p = 0.05-0.3-0.5$ mm $f = 0.05-0.1-0.15$ mm/rev																		
	PCBN	Insert Cat. No.		H																		
		2QP-CCMW060202	●	BXC30 130-250-300													●					
		2QP-CCMW060204	●	BXC30 130-200-250													●					
		2QP-CCMW09T304	●	BXC30 130-200-250													●					
		2QP-CCMW09T308	●	BXC30 130-200-250													●					
				$a_p = 0.05-0.3-0.5$ mm $f = 0.05-0.1-0.15$ mm/rev																		
PCBN	Insert Cat. No.		H																			
	Q-CCMW060202	●	BX310 130-200-300														●	●				
	Q-CCMW060204	●	BX330 80-120-150														●	●	●			
	Q-CCMW09T302	●															●	●				
	Q-CCMW09T304	●															●	●	●			
	Q-CCMW09T308	●															●	●	●			
			$a_p = 0.05-0.3-0.5$ mm $f = 0.05-0.1-0.15$ mm/rev																			
Finishing to medium cutting	J10	Insert Cat. No.		P	M																	
		CCGT060200FR-J10	●	NS530 80-120-150	NS530 60-100-120					●	●					○						
		CCGT060200FL-J10	●	J740 10-30-60	J740 10-30-60					●	●					○						
		CCGT060201FR-J10	●	J740 10-30-60	J740 10-30-60					●	●					○						
		CCGT060201FL-J10	●	J740 10-30-60	J740 10-30-60					●	●					○						
		CCGT060202FR-J10	●						●	●					○							
		CCGT060202FL-J10	●						●	●					○							
		CCGT09T300FR-J10	●						●	●					○							
		CCGT09T300FL-J10	●						●	●					○							
		CCGT09T301FR-J10	●						●	●					○							
		CCGT09T301FL-J10	●						●	●					○							
		CCGT09T302FR-J10	●						●	●					○							
CCGT09T302FL-J10		●						●	●					○								

Chipbreaker selection
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80° Rhombic · 7° Positive with Hole

CC					CCGT 06 02 02 - 																			
Positive					Cutting edge length (ℓ) Thickness (T) Chipbreaker type Corner radius (R)																			
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																			
			Cutting speed v _c (m/min)		Coated												Cermet	C.C.	Un.					
Medium cutting	All-round		Work materials	P	M	T9015	T9025							T6020	T6030	GH330	T5010	T5020	AH110	AH120	NS520	NS530	GT530	TH10
		CCGT060200	●	NS530 80-200-300	NS530 100-120-150																	●		
	CCGT060202	●	NS530 80-150-250																			●		
	CCGT060204	●																				●		
		CCGT09T302	✚																			●		
Finishing to medium cutting	R/L	Insert Cat. No.		N	S																			
		CCGT060200R	●	TH10 100-200-1000	TH10 10-20-30																			○
		CCGT060200L	●	TH10 100-150-700	TH10 10-20-30																			○
		CCGT060202R	●	TH10 100-150-700	TH10 10-20-30																			○
		CCGT060202L	✚	TH10 100-150-500	TH10 10-20-30																			●
		CCGT060204R		ap = 1.0-1.5-2.0 f = 0.03-0.1-0.2 mm/rev																				○
	CCGT060204L																						○	
		CCGT09T302R																						○
		CCGT09T302L																						○
		CCGT09T304R																						○
CCGT09T304L																							○	

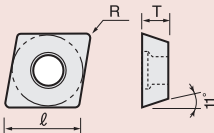
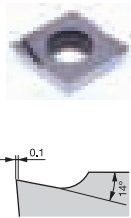
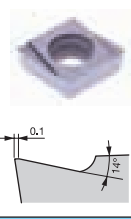
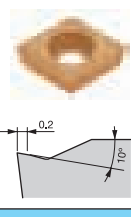
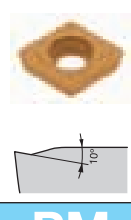
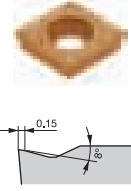
TAC Inserts (Positive)

Chipbreaker selection
P. 33 ~ 36Grade selection
P. 37 ~ 39Insert hole diameter
P. 42Reference
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TAC Inserts (Positive Inserts)

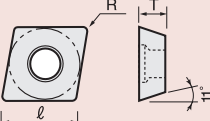
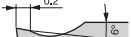
80° Rhombic · 11° Positive with Hole

TAC Inserts (Positive)

CP					CPGT 06 02 02 - 														
Positive					Cutting edge length (l) Thickness (T) Corner radius (R) Chipbreaker type														
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades														
Finishing to medium cutting	W15	 CPGT050202R-W15 CPGT050202L-W15 CPGT050204R-W15 CPGT050204L-W15 CPGT060200R-W15 CPGT060200L-W15 CPGT060202R-W15 CPGT060202L-W15 CPGT060204R-W15 CPGT060204L-W15	Cutting speed v_c (m/min)		Coated Cermet C.Cerm.														
				Work materials	P M	T9015 T9025	T6020 T6030 GH330 T5010 T5020 AH110 AH120 NS730 NS520 NS530 GT730 AT520 AT530												
Finishing	W20	 CPGT090302R-W20 CPGT090302L-W20 CPGT090304R-W20 CPGT090304L-W20	Cutting speed v_c (m/min)		Coated Cermet C.Cerm.														
				Work materials	P M	T9015 T9025	T6020 T6030 GH330 T5010 T5020 AH110 AH120 NS730 NS520 NS530 GT730 AT520 AT530												
Finishing to medium cutting	PF	 CPMT090302-PF CPMT090304-PF CPMT090308-PF	Cutting speed v_c (m/min)		Coated Cermet C.Cerm.														
				Work materials	P M	T9015 T9025	T6020 T6030 GH330 T5010 T5020 AH110 AH120 NS730 NS520 NS530 GT730 AT520 AT530												
Medium cutting	PS	 CPMT060202-PS CPMT060204-PS CPMT090304-PS CPMT090308-PS	Cutting speed v_c (m/min)		Coated Cermet C.Cerm.														
				Work materials	P M	T9015 T9025	T6020 T6030 GH330 T5010 T5020 AH110 AH120 NS730 NS520 NS530 GT730 AT520 AT530												
Medium cutting	PM	 CPMT090304-PM CPMT090308-PM	Cutting speed v_c (m/min)		Coated Cermet C.Cerm.														
				Work materials	P M	T9015 T9025	T6020 T6030 GH330 T5010 T5020 AH110 AH120 NS730 NS520 NS530 GT730 AT520 AT530												

Chipbreaker selection
P. 33 ~ 36Grade selection
P. 37 ~ 39Insert hole diameter
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guide

80° Rhombic · 11° Positive with Hole

CP 					CPGT 06 02 02 - 											
Positive					Cutting edge length (l) Thickness (T) Corner radius (R)											
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades											
Finishing to medium cutting			Cutting speed v_c (m/min)		Coated Cermet PCBN											
			Work materials	K	T9005	T9015	T9025				T6020	T6030	T5010	T5020	AH110	AH120
		CPMW090302 CPMW090304 CPMW090308		T5010 100-300-600	○								○	○		
				T5010 100-250-500	○								○	○		
				T5020 100-150-300	○								○	○		
			$a_p = 0.3-1.0-3.0$ mm $f = 0.03-0.15-0.3$ mm/rev													
Precision finishing	PCBN (QB-mini)	Insert Cat. No.		H												
		Q-CPMW060202		BX310 130-200-300											●	●
		Q-CPMW060204		BX330 80-120-150											●	●
		Q-CPMW090302		BX360 80-120-150											●	●
		Q-CPMW090308		BX360 80-120-150											●	●
Medium cutting		Insert Cat. No.		P												
				NS530 60-200-300		●									●	
				T9015 80-150-250		●	●								●	
				T9025 50-100-150		●	●								●	
			$a_p = 1.0-1.5-3.0$ mm $f = 0.08-0.15-0.3$ mm/rev													
				CPMT120408-24		○	○								●	
				CPMT120412-24		○	○								●	
				CPMT160508-24		○	○								○	
				CPMT160512-24		○	○								○	
				CPMT160516-24		○	○								○	

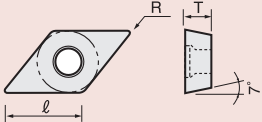
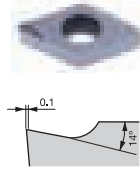
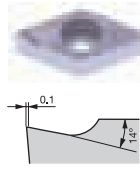
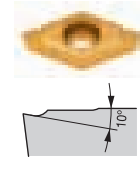
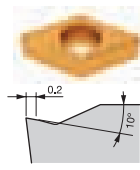
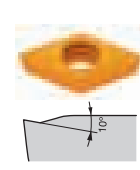
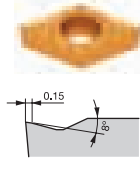
TAC Inserts (Positive)

Chipbreaker selection
P. 33 ~ 36Grade selection
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P. 42Reference
guide

TAC Inserts (Positive Inserts)

55° Rhombic · 7° Positive with Hole

TAC Inserts (Positive)

DC					DCGT 07 02 02 - 																		
Positive					Cutting edge length (l)				Thickness (T)		Chipbreaker type		Corner radius (R)										
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																		
			Cutting speed v_c (m/min)		Coated				Cermet		Coated Cerm.		Un.										
			Work materials	P	M	T9015	T9025	GH730	T6020	T6030	GH330	J 7 4 0	T5010	T5020	NS730	NS520	NS530	AT520	AT530	GT730	GT530	J 5 3 0	TH 10
Finishing to medium cutting	W10																						
		DCGT070200R-W10 DCGT070200L-W10 DCGT070202R-W10 DCGT070202L-W10 DCGT070204R-W10 DCGT070204L-W10 DCGT070208L-W10	 NS530 80-200-300	NS530 100-120-150													●						○
			 NS530 80-150-250	GH330 50-80-100														●					○
				GH330 50-80-100														●				○	○
			$a_p = 0.05-0.5-2.0$ mm $f = 0.03-0.1-0.2$ mm/rev															●				○	○
																		●				○	○
Finishing to medium cutting	W15	Insert Cat. No.		P	M																		
		DCGT11T302R-W15 DCGT11T302L-W15 DCGT11T304R-W15 DCGT11T304L-W15 DCGT11T308R-W15 DCGT11T308L-W15	 NS530 80-200-300	NS530 100-120-150														●					○
			 NS530 80-150-250	GH330 50-80-100														●				○	○
				GH330 50-80-100														●				○	○
			$a_p = 0.05-0.5-2.0$ mm $f = 0.03-0.1-0.2$ mm/rev															●				○	○
																		●				○	○
Precision finishing	01	Insert Cat. No.		P	M																		
		DCGT070202-01 DCGT11T302-01	 J530 60-200-300	J530 100-120-150									●										●
			 J740 10-30-60	J740 10-30-60									●										●
			 J740 10-30-60	J740 10-30-60																			
			$a_p = 0.05-0.3-0.5$ mm $f = 0.01-0.03-0.1$ mm/rev																				
Finishing	PF	Insert Cat. No.		P	M																		
		DCMT070202-PF DCMT070204-PF DCMT070208-PF DCMT11T302-PF DCMT11T304-PF DCMT11T308-PF	 NS530 60-200-300	T6020 150-200-250	●	●	○	●	●						○	●				○			
			 T9015 80-150-250	T6020 150-180-220	●	●	○	●	●						○	●				○			
			 T9025 50-100-150	T6030 50-100-150	●	●	○	●	●						○	●				○			
			$a_p = 0.3-0.8-1.5$ mm $f = 0.05-0.12-0.25$ mm/rev		●	●	○	●	●						○	●				○			
					●	●	○	●	●						○	●				○			
Finishing to medium cutting	PS	Insert Cat. No.		P	M																		
		DCMT070202-PS DCMT070204-PS DCMT070208-PS DCMT11T302-PS DCMT11T304-PS DCMT11T308-PS	 NS530 60-200-300	T6020 150-200-250	●	●	○	●	●						○	●	●	●	○				
			 T9015 80-150-250	T6020 150-180-220	●	●	○	●	●						○	●	●	●	○				
			 T9025 50-100-150	T6030 50-100-150	●	●	○	●	●						○	●	●	●	○				
			$a_p = 0.3-1.0-2.0$ mm $f = 0.08-0.15-0.3$ mm/rev		●	●	○	●	●						○	●	●	●	○				
					●	●	○	●	●						○	●	●	●	○				
Medium cutting	PM	Insert Cat. No.		P	M																		
		DCMT070204-PM DCMT070208-PM DCMT11T304-PM DCMT11T308-PM DCMT11T312-PM	 NS530 60-200-300	T6020 150-200-250	●	●	○	●	●						○	●				○			
			 T9015 80-150-250	T6020 150-180-220	●	●	○	●	●						○	●				○			
			 T9025 50-100-150	T6030 50-100-150	●	●	○	●	●						○	●				○			
			$a_p = 1.0-1.5-2.5$ mm $f = 0.15-0.2-0.3$ mm/rev		●	●	○	●	●						○	●				○			
					●	●	○	●	●						○	●				○			

55° Rhombic · 7° Positive with Hole

DC					DCMW 07 02 02 -																		
Positive					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																		
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																		
			Cutting speed v _c (m/min)		Coated Cermet Coated Cermet Un. PCD & PCBN																		
			Work materials	K	T9005	T9015	T9025	T5010	T5020	NS520	NS530	AT520	AT530	GT530	KS05F	DX120	DX140	BX310	BX330	BX360	BX930		
Finishing to medium cutting		DCMW070204		T5010 100-300-600	○			●	●														
		DCMW070208		T5010 100-250-500	○			●	●														
		DCMW11T304		T5020 100-150-300	○			●	●														
		DCMW11T308		T5020 100-150-300	○			●	●														
			ap = 0.3-1.0-3.0 mm f = 0.03-0.15-0.3 mm/rev																				
Aluminium		Insert Cat. No.		N																			
		DCGT070202-AL		KS05F 100-600-1000											●								
		DCGT070204-AL		KS05F 100-500-800											●								
		DCGT11T302-AL		KS05F 100-300-500											●								
			ap = 0.5-2.0-4.0 mm f = 0.1-0.3-0.5 mm/rev																				
Medium cutting		Insert Cat. No.		P																			
		DCMT070202-24		NS530 60-200-300			●	●			●	●		●									
		DCMT070204-24		T9015 80-150-250			●	●				●											
		DCMT070208-24		T9025 50-100-150			●	●				●	●		●								
			ap = 1.0-1.5-3.0 mm f = 0.08-0.15-0.3 mm/rev																				
Precision finishing		Insert Cat. No.		N																			
		DCMT070202-DIA		DX120 500-1500-2500													○						
		DCMT070204-DIA		DX120 300-1000-1800													○						
		DCMT11T302-DIA														○							
			ap = 0.05-0.5-1.0 mm f = 0.05-0.1-0.15 mm/rev																				
Precision finishing		Insert Cat. No.		N																			
		DCGW070200-DIA		DX140 400-600-2500														○					
		DCGW070202-DIA		DX140 400-500-2000														○					
		DCGW070204-DIA															○						
			ap = 0.05-0.1-0.3 mm f = 0.05-0.1-0.3 mm/rev																				
Precision finishing		Insert Cat. No.		N																			
		DCGW11T302-DIA															○						
		DCGW11T304-DIA															○						
		DCGW11T308-DIA															○						
			ap = 0.05-0.1-0.3 mm f = 0.05-0.1-0.3 mm/rev																				

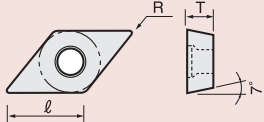
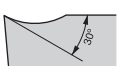
TAC Inserts (Positive)

Chipbreaker selection
P. 33 ~ 36Grade selection
P. 37 ~ 39Insert hole diameter
P. 42Reference
guide

TAC Inserts (Positive Inserts)

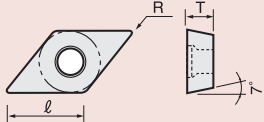
55° Rhombic · 7° Positive with Hole

TAC Inserts (Positive)

DC					DCGT 07 02 00 - 																	
Positive					Cutting edge length (l) Thickness (T) Corner radius (R)																	
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																	
			Cutting speed v _c (m/min)		Coated Cermet C. Cerm. Un. PCBN																	
Precision finishing	PCBN		Work materials	H		T9015	T9025		J 7 4 0	NS520	NS530	AT520	AT530	GT530	TH 1 0	BXC30	BX310	BX330	BX360	BX930	BX950	
		2QP-DCMW070202	●	BX310 130-200-300													●	●		○	○	
		2QP-DCMW070204	●	BX330 80-120-150													●	●	●	○	○	
		2QP-DCMW11T302	●	BX360 80-120-150													●	●	●	○	○	
		2QP-DCMW11T304	⌘	BX360 80-120-150													●	●	●	○	○	
		2QP-DCMW11T308		ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev													●	●	●			
	PCBN	Insert Cat. No.		H																		
		2QP-DCMW070202	●	BXC30 130-250-300													●					
		2QP-DCMW070204	●	BXC30 130-250-300													●					
		2QP-DCMW11T302	●	BXC30 130-200-250													●					
		2QP-DCMW11T304	⌘														●					
		2QP-DCMW11T308		ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev													●					
	PCBN	Insert Cat. No.		H																		
		Q-DCMW070202	●	BX310 130-200-300														●	●			
		Q-DCMW070204	●	BX330 80-120-150														●	●	●		
		Q-DCMW11T302	●	BX360 80-120-150														●	●	●		
		Q-DCMW11T304	⌘	BX360 80-120-150														●	●	●		
		Q-DCMW11T308		ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev														●	●	●		
	Finishing to medium cutting	J10	Insert Cat. No.		P	M																
		 	DCGT070200FR-J10	●	NS530 80-120-150	NS530 60-100-120					●	●					○					
			DCGT070200FL-J10	●	J740 10-30-60	J740 10-30-60					●	●					○					
DCGT070201FR-J10			●	J740 10-30-60	J740 10-30-60					●	●					○						
DCGT070201FL-J10			⌘	J740 10-30-60	J740 10-30-60					●	●					○						
DCGT070202FR-J10				ap = 0.1-0.5-5.0 mm f = 0.01-0.03-0.1 mm/rev						●	●					○						
DCGT070202FL-J10										●	●					○						
DCGT11T300FR-J10										●	●					○						
DCGT11T300FL-J10										●	●					○						
DCGT11T301FR-J10										●	●					○						
DCGT11T301FL-J10										●	●					○						
DCGT11T302FR-J10										●	●					○						
DCGT11T302FL-J10										●	●					○						

Chipbreaker selection
P. 33 ~ 36Grade selection
P. 37 ~ 39Insert hole diameter
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55° Rhombic · 7° Positive with Hole

DC					DCGT 07 02 02 - 																				
Positive					Cutting edge length (ℓ) Thickness (T) Chipbreaker type Corner radius (R)																				
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																				
			Cutting speed v_c (m/min)		Coated										Cermet	C.C.	Un.								
Medium cutting	All-round		Work materials	P	M	T9015	T9025					T6020	T6030	GH330	T5010	T5020	AH110	AH120	GH110	NS520	NS530	AT530	TH 10		
		DCGT070200	●	NS530 80-200-300	NS530 100-120-150																	●			
		DCGT070202	●	NS530 80-150-250																		●			
		DCGT070204	●	NS530 80-150-250																		●			
		DCGT11T302	✚																			●			
Finishing to medium cutting		DCGT11T304																			●				
		DCGT11T308																			●				
		ap = 1.0-1.5-2.0 mm f = 0.03-0.1-0.2 mm/rev																				●			
		Insert Cat. No.		K																					
		DCGW070202	●	TH10 50-100-150																					●
		DCGW070204	●	TH10 30-100-150																	○				●
		DCGW11T302	●	TH10 30-100-150																					●
		DCGW11T304	✚	TH10 30-50-80																					●
		ap = 0.05-0.3-3.0 mm f = 0.03-0.08-0.3 mm/rev																							
	R/L	Insert Cat. No.		N	S																				
		DCGT070200R	●	TH10 100-200-1000	TH10 10-20-30																				●
		DCGT070200L	●	TH10 100-150-700	TH10 10-20-30																				●
		DCGT070202R	●	TH10 100-150-700	TH10 10-20-30																				●
		DCGT070202L	✚	TH10 100-150-500	TH10 10-20-30																				●
		DCGT070204R																							●
	DCGT070204L																							●	
	ap = 80-150-250 f = 0.03-0.1-0.2 mm/rev																								
	DCGT11T302R																							●	
	DCGT11T302L																							●	
	DCGT11T304R																							●	
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	DCGT11T308R																							●	
	DCGT11T308L																							●	

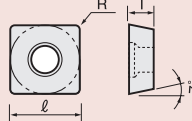
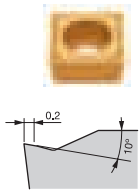
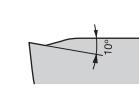
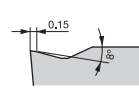
TAC Inserts (Positive)

Chipbreaker selection
P. 33 ~ 36Grade selection
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102 TAC Inserts (Positive Inserts)

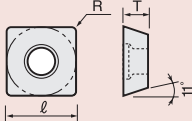
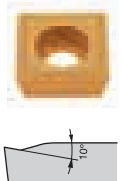
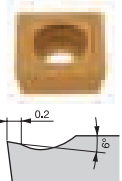
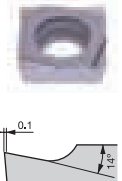
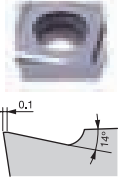
90° Square · 7° Positive with Hole

TAC Inserts (Positive)

SC 					SCMT 07 02 04 - 											
Positive					Cutting edge length (ℓ) Thickness (T) Chipbreaker type Corner radius (R)											
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades											
Finishing	PF 	SCMT09T304-PF SCMT09T308-PF	Cutting speed v_c (m/min)		Coated Cermet C.Cerm.											
			Work materials	P	M	T9015	T9025			T6020	T6030	GH330	T5010	T5020	AH110	AH120
				NS530 60-200-300	T6020 150-200-250	●	●			●	●					○
				T9015 80-150-250	T6020 150-180-220	●	●			●	●					○
Finishing to medium cutting	PS 	SCMT09T304-PS SCMT09T308-PS SCMT120404-PS SCMT120408-PS														
			Work materials	P	M	T9015	T9025			T6020	T6030					
				NS530 60-200-300	T6020 150-200-250	●	●			●	●				○	○
				T9015 80-150-250	T6020 150-180-220	●	●			●	●				○	○
Medium cutting	PM 	SCMT09T304-PM SCMT09T308-PM SCMT120408-PM SCMT120412-PM														
			Work materials	P	M	T9015	T9025			T6020	T6030					
				NS530 60-200-300	T6020 150-200-250	●	●			●	●				○	●
				T9015 80-150-250	T6020 150-180-220	●	●			●	●				○	●
Medium cutting	24 	SCMT070204-24 SCMT09T302-24 SCMT09T304-24 SCMT09T308-24 SCMT120404-24 SCMT120408-24														
			Work materials	P		T9015	T9025									
				NS530 60-200-300		●	●								○	
				T9015 80-150-250		●	●								●	

Chipbreaker selection
P. 33 ~ 36Grade selection
P. 37 ~ 39Insert hole diameter
P. 42Reference
guide

90° Square · 11° Positive with Hole

SP 					SPMW 09 03 04 - 											
Positive					Cutting edge length (ℓ) Thickness (T) Corner radius (R)											
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades											
Finishing to medium cutting	—		Cutting speed v_c (m/min)		Coated Cermet C.Cerm. Un.											
			Work materials	K	T9015	T9025	T6020	T6030	GH330	T5010	T5020	AH110	AH120	NS730	NS520	NS530
		SPMW090304 SPMW090308 SPMW120404 SPMW120408		T5010 100-300-600						●	●					
				T5010 100-250-500						●	●					
				T5020 100-150-300						●	●					
Finishing to medium cutting	PS	Insert Cat. No.		P	M											
		SPMT090304-PS SPMT090308-PS SPMT120404-PS SPMT120408-PS		NS530 60-200-300	T6020 150-200-250	○	○	○	○					○	○	○
				T9015 80-150-250	T6020 150-180-220	○	○	○	○					○	○	○
				T9025 50-100-150	T6030 50-100-150	○	○	○	○					○	○	○
				$ap = 0.3-1.0-2.0$ mm $f = 0.08-0.15-0.3$ mm/rev												
Medium cutting	24	Insert Cat. No.		P	M											
		SPMT090304-24 SPMT090308-24 SPMT120404-24 SPMT120408-24		NS530 60-200-300		○	○							●		
				T9015 80-150-250		○	○							●		
				T9025 50-100-150		○	○							●		
				$ap = 1.0-1.5-3.0$ mm $f = 0.08-0.15-0.3$ mm/rev												
Finishing to medium cutting	W15	Insert Cat. No.		P	M											
		SPGT090302R-W15 SPGT090302L-W15 SPGT090304R-W15 SPGT090304L-W15 SPGT090308R-W15 SPGT090308L-W15		NS530 80-200-300	NS530 100-120-150									●		
				NS530 80-150-250										●		
														●		○
				$ap = 0.3-1.0-1.5$ mm $f = 0.08-0.15-0.2$ mm/rev												○
Finishing to medium cutting	W20	Insert Cat. No.		P	M											
		SPGT120404R-W20 SPGT120404L-W20 SPGT120408R-W20 SPGT120408L-W20		NS530 80-200-300	NS530 100-120-150									●		
				NS530 80-150-250										●		
														●		
				$ap = 0.05-0.5-2.0$ mm $f = 0.03-0.1-0.2$ mm/rev												

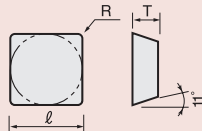
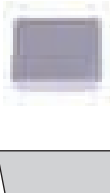
TAC Inserts (Positive)

Chipbreaker selection
P. 33 ~ 36Grade selection
P. 37 ~ 39Insert hole diameter
P. 42Reference
guide

104 TAC Inserts (Positive Inserts)

90° Square · 11° Positive without Hole

TAC Inserts (Positive)

SP 															SPGN 09 03 04 - 											
Positive															Cutting edge length (ℓ) Thickness (T) Corner radius (R)											
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																					
			Cutting speed v_c (m/min)		Coated Cermet Un. Cer.																					
Finishing		Ceramics	Work materials	H	T9015	T9025							T6020	T6030	GH330	T5010	T5020	AH110	AH120	NS520	NS530	TH10	LX11			
				LX11 50-100-150																				○	●	
				LX11 50-100-150																				○	●	
																								○	●	
			ap = 0.05-0.3-0.5 mm f = 0.05-0.08-0.1 mm/rev																				○	○	○	
																								○	○	○
																								○	○	○

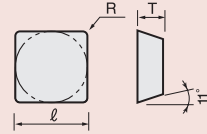
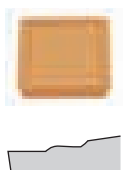
 Chipbreaker selection
P. 33 ~ 36

 Grade selection
P. 37 ~ 39

 Insert hole diameter
P. 42

 Reference
guide

90° Square · 11° Positive without Hole

SP 					SPMR 09 03 04 - 																	
Positive					Cutting edge length (ℓ) Thickness (T) Chipbreaker type Corner radius (R)																	
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																	
			Cutting speed v_c (m/min)		Coated						Cermet			Uncoated								
Finishing to medium cutting	23		Work materials	P	T9015	T9025					T6020	T6030	GH330	T5010	T5020	NS520	NS530	NS740	TH10	UX30	TX25	
		SPMR090304-23 SPMR090308-23 SPMR120304-23 SPMR120308-23 SPMR120312-23		NS530 60-200-300	●	●											●					
				T9015 80-150-250	●	●											○					
				T9025 50-100-150	●	●											●					
			$a_p = 0.03-1.0-2.0$ mm $f = 0.08-0.2-0.3$ mm/rev		●	●											●					
	—	Insert Cat. No.		K																		
		SPMN090304		T5010 100-300-600											●	●					●	
		SPMN090308		T5010 100-250-500											●	●					●	
		SPMN120304		T5020 100-150-300											●	●				●	●	
		SPMN120308		T5020 100-150-300											●	●		○	●	●	●	
		SPMN120312		$a_p = 0.3-1.0-3.0$ mm $f = 0.03-0.15-0.3$ mm/rev											●	●			●	○	●	
		SPMN120408													●	●				○	●	
		SPMN120412													●	●					●	
		SPMN150412																			●	
		SPMN190412																				●

TAC Inserts (Positive)

Chipbreaker selection
P. 33 ~ 36Grade selection
P. 37 ~ 39Insert hole diameter
P. 42Reference
guide

106 TAC Inserts (Positive Inserts)

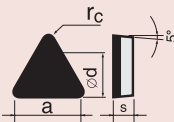
90° Square · 11° Positive without Hole

TAC Inserts (Positive)

SP					SPGN 09 03 04 -																		
Positive			Cutting edge length (ℓ) Thickness (T) Chipbreaker type Corner radius (R)																				
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions			Stocked grades																	
			Cutting speed v_c (m/min)			Coated								PCD & PCBN									
Precision finishing	PCD		Work materials	N		T9015	T9025				T6020	T6030	GH330	T5010	T5020	AH110	DX140	DX160	BX310	BX330	BX360	BX930	
		SPGN090304-DIA SPGN090308-DIA SPGN120302-DIA SPGN120304-DIA SPGN120308-DIA	  	DX160 400-600-2500 DX140 400-500-2000													○ ○ ○ ○	○ ○ ○ ○					
				ap = 0.05-0.5-1.0 mm f = 0.05-0.1-0.15 mm/rev																			
	PCBN	Insert Cat. No.		H																			
		SPGN090304-QBN SPGN090308-QBN SPGN090312-QBN SPGN120308-QBN SPGN120312-QBN	  																			○ ○ ○ ○	
				ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev																			
	PCBN	Insert Cat. No.		H																			
		Q-SPGN090304 Q-SPGN090308 Q-SPGN120304 Q-SPGN120308	  	BX330 80-150-200 BX330 80-120-150 BX360 80-120-150																	● ● ● ●		
				ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev																			
	PCBN	Insert Cat. No.		H																			
		2QP-SPMN090304 2QP-SPMN090308	  	BX330 80-150-200 BX330 80-120-150 BX360 80-120-150																	○ ○ ○		
				ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev																			

Chipbreaker selection
P. 33 ~ 36Grade selection
P. 37 ~ 39Insert hole diameter
P. 42Reference
guide

60° Triangular · 5° Positive without Hole

TBGN					TBGN 06 01 04 - 																	
Positive					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																	
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																	
			Cutting speed v _c (m/min)	Coated Cermet PCBN																		
Precision finishing	PCBN		Work materials	H	T9015	T9025	GH730			T6020	T6030	GH330	J 7 4 0	T5010	T5020	AH110	NS520	NS530	BX310	BX330	BX360	
		TBGN060104-15-QBN TBGN060108-15-QBN		BX330 80-150-200																●	●	
				BX330 80-120-150																●	●	
					BX360 80-120-150																	
				a _p = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev																		

TAC Inserts (Positive)

 Chipbreaker selection
 P. 33 ~ 36

 Grade selection
 P. 37 ~ 39

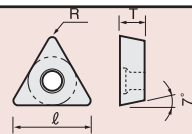
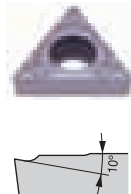
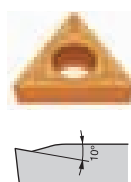
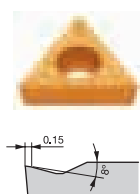
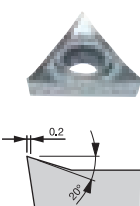
 Insert hole diameter
 P. 42

 Reference
 guide

108 TAC Inserts (Positive Inserts)

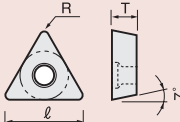
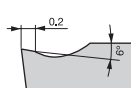
60° Triangular · 7° Positive with Hole

TAC Inserts (Positive)

TC 					TCMT 09 02 02 - 																			
Positive					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																			
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																			
			Cutting speed v _c (m/min)		Coated							Cermet		Coated Cermet	Cermet	Unc.								
			Work materials		T9015	T9025	GH730	T6020	T6030	GH330	J 7 4 0	T5010	T5020	NS730	NS520	NS530	AT520	AT530	GT730	GT530	J 5 3 0	T H 1 0	KS05F	
Precision finishing	01 	TCGT090202-01		P	M																			
		TCGT090204-01		NS530 80-200-300	NS530 100-120-150											○	○				○			
		TCGT110202-01		NS530 80-150-250												○	○				○			
		TCGT110204-01														○	○				○		○	
		TCGT110208-01		ap = 0.05-0.3-0.5 mm f = 0.03-0.1-0.15 mm/rev												○	○						○	
		TCGT16T304-01														○	○				○		○	
		TCGT16T308-01														○	○						○	
Finishing to medium cutting	PS 	Insert Cat. No.		P	M																			
		TCMT110202-PS		NS530 60-200-300	T6020 150-200-250	●	●	○	●	●	○				○	●	●		●	○				
		TCMT110204-PS		T9015 80-150-250	T6020 150-180-220	●	●	○	●	●	○			○	●	●		●	○					
		TCMT110208-PS		T9025 50-100-150	T6030 50-100-150	●	●	○	●	●	○			○	●	●		●	○					
		TCMT16T304-PS		ap = 0.3-1.0-2.0 mm f = 0.08-0.15-0.3 mm/rev		●	●		●	●	○			○	●	●		●	○					
		TCMT16T308-PS				●	●		●	●				○	●	●		●	○					
		Medium cutting	PM 	Insert Cat. No.		P	M																	
TCMT110204-PM				NS530 60-200-300	T6020 150-200-250	●	●	○	●	●					○	●		○						
TCMT110208-PM				T9015 80-150-250	T6020 150-180-220	●	●	○	●	●				○	●		○							
TCMT16T304-PM				T9025 50-100-150	T6030 50-100-150	●	●	○	●	●				○	●		○							
TCMT16T308-PM				ap = 1.0-1.5-2.5 mm f = 0.15-0.2-0.3 mm/rev		●	●		●	●				○	●		○							
TCMT16T312-PM						●	●		●	●					●		○							
Finishing to medium cutting	SS 			Insert Cat. No.		P	M																	
		TCGT110202-SS		NS530 80-200-300	NS530 100-120-150												●							
		TCGT110204-SS		NS530 80-150-250													○							
		TCGT110208-SS																						
		TCGT16T304-SS														●								
		TCGT16T308-SS		ap = 0.3-1.0-2.0 mm f = 0.08-0.15-0.3 mm/rev												○								
		Aluminium	AL 	Insert Cat. No.		N																		
TCGT110202-AL				KS05F 100-600-1000																			●	
TCGT110204-AL				KS05F 100-500-800																		●		
TCGT16T302-AL				KS05F 100-300-500																		●		
TCGT16T304-AL				ap = 0.5-2.0-4.0 mm f = 0.1-0.3-0.5 mm/rev																		●		
TCGT16T308-AL																						●		

Chipbreaker selection
P. 33 ~ 36Grade selection
P. 37 ~ 39Insert hole diameter
P. 42Reference
guide

60° Triangular · 7° Positive with Hole

TC 					TCGT 08 02 00 - 																				
Positive					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																				
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																				
			Cutting speed v _c (m/min)		Coated								Cermet	C. Cerm.	Unc.	PCD									
Medium cutting	24	 		P		T9015	T9025				J 7 4 0	T5010	T5020	AH110	AH120	NS520	NS530	AT520	AT530	GT530	TH10	DX120			
				NS530 60-200-300		●	●									●									
					T9015 80-150-250		●	●									●	●		●					
					T9025 50-100-150		●	●									●	●		●					
			ap = 1.0-1.5-3.0 mm f = 0.08-0.15-0.3 mm/rev															●	●		●				
																	●	●							
																	●	●		●					
																	●	●		●					
Precision finishing	PCD			N																					
				DX120 500-1500-2500																			○		
					DX120 300-1000-1800																			○	
																								○	
				ap = 0.05-0.5-1.0 mm f = 0.05-0.1-0.15 mm/rev																					○
																								○	
Finishing to medium cutting	J08	 		P	M																				
				NS530 60-200-300	NS530 100-120-150								●						●				○		
					J740 10-30-60	J740 10-30-60							●							●				○	
					J740 10-30-60	J740 10-30-60							●							●				○	
				ap = 1.0-2.0-5.0 mm f = 0.01-0.03-0.1 mm/rev										●						●				○	
													●						●				○		
	J10	 		P	M																				
					NS530 60-200-300	NS530 100-120-150								●						●				○	
						J740 10-30-60	J740 10-30-60							●							●				○
						J740 10-30-60	J740 10-30-60							●							●				○
					ap = 1.0-2.0-5.0 mm f = 0.01-0.03-0.1 mm/rev										●						●				○
														●						●				○	
														○						○				○	
														○						○				○	
														○						○				○	
														○						○				○	
														○						○				○	

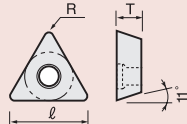
TAC Inserts (Positive)

Chipbreaker selection
P. 33 ~ 36Grade selection
P. 37 ~ 39Insert hole diameter
P. 42Reference
guide

110 TAC Inserts (Positive Inserts)

60° Triangular · 11° Positive with Hole

TAC Inserts (Positive)

TP 					TPGT 09 02 02 - 																				
Positive					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																				
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																				
			Cutting speed v_c (m/min)		Coated										Cermet	C.Cerm.	Unc.								
			Work materials	P	M	T9015	T9025				T6020	T6030	GH330	T5010	T5020	AH110	AH120	GH110	NS520	NS530	AT530	GT530	TH10		
Precision finishing	01																								
		TPGT090202-01	●	NS520 80-250-350	NS530 100-120-150															○	○		○	○	
		TPGT090204-01	●	NS530 80-150-250																○	○		○	○	
		TPGT110202-01																		○	○		○	○	
		TPGT110204-01	✚																	○	○		○	○	
		TPGT110208-01		ap = 0.05-0.3-0.5 mm f = 0.03-0.1-0.15 mm/rev																○	○				
		TPGT130302-01																		○	○		○	○	
		TPGT130304-01																		○	○		○	○	
TPGT130308-01																		○	○		○	○			
Finishing to medium cutting	W08			P	M																				
		TPGT080200L-W08	●	GT530 80-200-300	NS530 100-120-150																○		○	○	
		TPGT080202L-W08	●	NS530 80-150-250																○		●		○	○
		TPGT080204L-W08	✚																	○		●		○	○
			ap = 0.05-0.5-2.0 mm f = 0.03-0.1-0.2 mm/rev																						

Chipbreaker selection
P. 33 ~ 36Grade selection
P. 37 ~ 39Insert hole diameter
P. 42Reference
guide

60° Triangular · 11° Positive with Hole

TP			TPGT 09 02 02 - Cutting edge length (ℓ) Thickness (T) Chipbreaker type Corner radius (R)																					
Positive			Standard cutting conditions				Stocked grades																	
Application	Chipbreaker type	Insert Cat. No.	Cutting speed v _c (m/min)		Coated										Cermet	C. Cerm.		Unc.						
			Work materials	P	M	T9015	T9025						T6020	T6030	GH330	GH110	NS520	NS530	AT520	AT530	GT530	TH10	UX30	
Finishing to medium cutting	W15	TPGT090202R-W15	●	NS530 80-200-300	NS530 100-120-150													●						
		TPGT090202L-W15	●	NS530 80-150-250															●			○	○	
		TPGT090204R-W15																	●					
		TPGT090204L-W15	⚙												○	○			●			○	○	○
		TPGT110202R-W15	ap = 0.05-0.3-0.5 mm f = 0.03-0.1-0.15 mm/rev																●					
		TPGT110202L-W15																	●			○	○	
		TPGT110204R-W15																	●					
		TPGT110204L-W15													○	●			●			○	○	○
		TPGT110208R-W15																	○					
		TPGT110208L-W15																	●					○
		TPGT110302R-W15																	●					
		TPGT110302L-W15																	●					
		TPGT110304R-W15																	●					
		TPGT110304L-W15																	●					
		TPGT110304L-6MP(*)																	●					
		TPGT110308L-W15																	●					
		TPGT130302R-W15																	●					
		TPGT130302L-W15																	●			○	○	
		TPGT130304R-W15																	●					
		TPGT130304L-W15													○	○			●			○	○	○
		TPGT130308R-W15																	●					
		TPGT130308L-W15																	●				○	
		TPGT16T302R-W15																	●					
		TPGT16T302L-W15																	●				○	○
		TPGT16T304R-W15																	●					○
		TPGT16T304L-W15													○	○			●			○	○	○
		TPGT16T308R-W15																	●					
		TPGT16T308L-W15																	●				○	○

(*) -6MP: The diameter fixing hole of the insert is 2.8 mm (non ISO standard).
The chipbreaker type is the same as -W15.

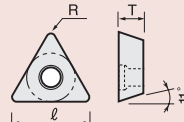
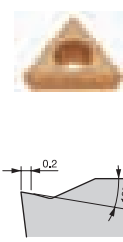
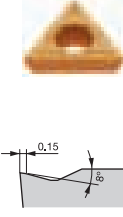
TAC Inserts (Positive)

Chipbreaker selection
P. 33 ~ 36Grade selection
P. 37 ~ 39Insert hole diameter
P. 42Reference
guide

112 TAC Inserts (Positive Inserts)

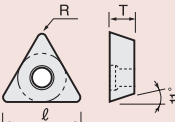
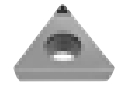
60° Triangular · 11° Positive with Hole

TAC Inserts (Positive)

TP 					TPGT 09 02 02 - 															
Positive					Cutting edge length (l) Thickness (T) Corner radius (R)															
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades															
			Cutting speed v_c (m/min)		Coated						Cermet		C. Cerm.							
Work materials	P	M	T9015	T9025	GH730	T6020	T6030	GH330	T5010	T5020	GH110	NS730	NS520	NS530	AT520	AT530	GT730	GT530		
Finishing	PF 	TPMT110204-PF	●	NS530 60-200-300	T6020 150-200-250	●	●	○		●	●				○	●		○		
		TPMT110208-PF	●	T9015 80-150-250	T6020 150-180-220	●	●					○		●			○			
		TPMT110302-PF	○	T9025 50-100-150	T6030 50-100-150	○	○	○		○	○		○		○			○		
		TPMT110304-PF	○			○	○					○		○				○		
		TPMT130304-PF	●			●	●					○		●				○		
		TPMT130308-PF	●			●	●					○		●					○	
		TPMT16T304-PF	●			●	●					○		●					○	
		$a_p = 0.3-0.8-1.5$ mm $f = 0.05-0.12-0.25$ mm/rev																		
Finishing to medium cutting	PS 	Insert Cat. No.		P	M															
		TPMT090202-PS	●	NS530 60-200-300	T6020 150-200-250	●	●	○		●	●			○	●		●	○		
		TPMT090204-PS	●	T9015 80-150-250	T6020 150-180-220	●	●	○		●	●			○	●		○	○		
		TPMT090208-PS	●	T9025 50-100-150	T6030 50-100-150	●	●	○		●	●			○	●		○	○		
		TPMT110202-PS	●			●	●	○		●	●			○	●		●	○		
		TPMT110204-PS	●			●	●	○		●	●			○	●		●	○		
		TPMT110208-PS	●			●	●	○		●	●			○	●		●	○		
		TPMT110304-PS	○			○	○			○	○			○	○		○	○		
		TPMT110308-PS	○			○	○			○	○			○	○		○	○		
		TPMT130302-PS	●			●	●			●	●			○	●		●	○		
Medium cutting	PM 	Insert Cat. No.		P	M															
		TPMT110204-PM	●	NS530 60-200-300	T6020 150-200-250	●	●	○		●	●			○	●			○		
		TPMT110208-PM	●	T9015 80-150-250	T6020 150-180-220	●	●	○		●	●			○	●			○		
		TPMT110304-PM	○	T9025 50-100-150	T6030 50-100-150	○	○	○		○	○			○	○			○		
		TPMT110308-PM	○			○	○	○		○	○			○	○					
		TPMT130304-PM	●			●	●			●	●			○	●			○		
		TPMT130308-PM	●			●	●			●	●			○	●			○		
		TPMT16T304-PM	●			●	●			●	●			○	●				○	
		TPMT16T308-PM	●			●	●			●	●			○	●				○	
		TPMT16T312-PM	●			●	●			●	●			○	●					
		$a_p = 1.0-1.5-2.5$ mm $f = 0.15-0.2-0.3$ mm/rev																		

Chipbreaker selection
P. 33 ~ 36Grade selection
P. 37 ~ 39Insert hole diameter
P. 42Reference
guide

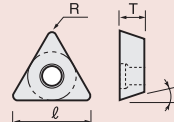
60° Triangular · 11° Positive with Hole

TP					TPGT 11 02 02 - 																	
Positive					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																	
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																	
			Cutting speed v _c (m/min)		Coated						Cermet		PCBN									
Finishing to medium cutting	SS		Work materials	P	M	T9005	T9015	T9025	T6020	T6030	GH330	T5010	T5020	NS520	NS530	BX310	BX330	BX360	BXC30	BX930	BX950	
		TPGT110202-SS TPGT110204-SS TPGT110208-SS TPGT130302-SS TPGT130304-SS TPGT130308-SS TPGT16T304-SS TPGT16T308-SS	  	NS530 60-200-300 NS530 80-150-250	NS530 100-120-150 GH330 50-80-100 GH330 50-80-100						●				●							
				ap = 0.3-1.0-2.0 mm f = 0.08-0.15-0.3 mm/rev							●				●							
	—	Insert Cat. No.		K																		
		TPMW110204 TPMW110208 TPMW130304 TPMW130308 TPMW16T304 TPMW16T308	  	T5010 100-300-600 T5010 100-250-500 T5020 100-150-300		○	○						●	●								
				ap = 0.3-1.0-3.0 mm f = 0.03-0.15-0.3 mm/rev		○	○					●	●									
	PCBN	Insert Cat. No.		H																		
	(QB-mini) 	3QP-TPMW080204 3QP-TPMW090202 3QP-TPMW090204 3QP-TPMW110202 3QP-TPMW110204 3QP-TPMW110302 3QP-TPMW110304 3QP-TPMW110308 3QP-TPMW130302 3QP-TPMW130304 3QP-TPMW16T304 3QP-TPMW16T308 3QP-TPMW160404 3QP-TPMW160408	  	BX310 130-200-300 BX330 80-120-150 BX360 80-120-150														○	○	○		○
				ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev														○	○	○		○
PCBN	Insert Cat. No.		H																			
	3QP-TPMW080204 3QP-TPMW090204 3QP-TPMW110202 3QP-TPMW110204 3QP-TPMW110302 3QP-TPMW110304 3QP-TPMW110308 3QP-TPMW130302 3QP-TPMW130304 3QP-TPMW160404 3QP-TPMW160408 3QP-TPMW16T304	  	BXC30 130-250-300 BXC30 130-200-250																	●		
			ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev																	●		
PCBN	Insert Cat. No.		H																			
(QB-mini) 	Q-TPMW080204 Q-TPMW090202 Q-TPMW090204 Q-TPMW110202 Q-TPMW110204 Q-TPMW110208 Q-TPMW110304 Q-TPMW110308 Q-TPMW130302 Q-TPMW130304 Q-TPMW130308 Q-TPMW16T304 Q-TPMW160404 Q-TPMW160408	  	BX310 130-200-300 BX330 80-120-150 BX360 80-120-150															○				
			ap = 0.05-0.3-0.5 mm f = 0.05-0.1-0.15 mm/rev																			

TAC Inserts (Positive)

100

60° Triangular · 11° Positive with Hole

TP 					TPGM 09 02 02 - 																		
Positive					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																		
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																		
			Cutting speed v _c (m/min)		Coated Cermet C. Cerm. Unc.																		
	R/L		Work materials	P	M	T9015	T9025				T6020	T6030	GH330	T5010	T5020	GH110	NS520	NS530	AT520	AT530	GT530	TH10	
Finishing to medium cutting		TPGM070102R	●	NS530 60-200-300	NS530 100-120-150														●				○
		TPGM070102L	●	NS530 80-150-250															●				○
		TPGM070104R	●																●				○
		TPGM070104L	●																●				○
		TPGM090202R	ap = 0.05-0.5-2.0 mm f = 0.03-0.1-0.2 mm/rev																●				
		TPGM090202L																	●				
		TPGM090204R																	●				
		TPGM090204L																	●				
		TPGM110202R																	●				
		TPGM110202L																	●				
		TPGM110204R																	●				
		TPGM110204L																	●				
		TPGM110302R																	●				○
		TPGM110302L																	●				○
		TPGM110302L-2																	●				○
		TPGM110304R																	●				○
		TPGM110304L																	●				○
		TPGM110304L-2																	●				○
		TPGM160302R																	●				○
		TPGM160302L																	●				○
		TPGM160304R																	●				○
		TPGM160304L																	●				○
		TPGM160304L-2																					○
		TPGM160308R																					○
		TPGM160308L																					○
	—	Insert Cat. No.		K																			
		TPGW090202	●	TH10 50-100-200																		○	
		TPGW090204	●	TH10 30-100-150																		○	
		TPGW110202	●	TH10 30-100-150																		○	
		TPGW110204	●	TH10 30-50-80													○					○	
		TPGW110304	ap = 0.05-0.3-0.5 mm f = 0.05-0.08-0.1 mm/rev																			○	
		TPGW110304-6MP(*)																				●	
		TPGW130304																				○	
		TPGW16T304															○					○	
	TPGW16T308																				○		

(*) -6MP: The diameter fixing hole of the insert is 2.8 mm (non ISO standard).

TAC Inserts (Positive)

Chipbreaker selection
P. 33 ~ 36

Grade selection
P. 37 ~ 39

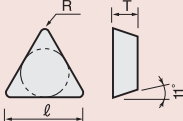
Insert hole diameter
P. 42

Reference
guide

116 TAC Inserts (Positive Inserts)

60° Triangular · 11° Positive without Hole

TAC Inserts (Positive)

TP 					TPMR 09 02 02 - 									
Positive					Cutting edge length (l) Thickness (T) Corner radius (R)									
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades									
Finishing to medium cutting	PS 	TPMR110304-PS TPMR110308-PS TPMR160304-PS TPMR160308-PS	Cutting speed v_c (m/min)		Coated					Cermet C.c. Unc.				
			Work materials	P	T9015	T9025				T6020	T6030	GH330	T5010	T5020
				T9025 120-180-250	●	●								
				T9025 120-180-250	●	●								
	23 	TPMR090202-23 TPMR090204-23 TPMR110304-23 TPMR110308-23 TPMR160304-23 TPMR160308-23 TPMR160312-23												
			Work materials	P										
				NS530 60-200-300	●	●							○	
				T9015 80-150-250	●	●							●	
				T9025 50-100-150	●	●							●	○
			$ap = 0.3-0.9-1.5$ mm $f = 0.05-0.15-0.25$ mm/rev		●	●							●	○
Medium cutting	24 	TPMR090202-24 TPMR090204-24 TPMR110304-24 TPMR110308-24 TPMR160304-24 TPMR160308-24												
			Work materials	P										
				NS530 60-200-300	●	●							○	
				T9015 80-150-250	●	●							●	
	— 	TPMN110304 TPMN110308 TPMN160304 TPMN160308 TPMN160312 TPMN220408 TPMN220412												
			Work materials	K										
				T5010 100-300-600									●	●
				T5010 100-250-500									●	●
				T5020 100-150-300									●	●
			$ap = 0.3-1.0-2.0$ mm $f = 0.03-0.15-0.3$ mm/rev										●	●

Chipbreaker selection
P. 33 ~ 36Grade selection
P. 37 ~ 39Insert hole diameter
P. 42Reference
guide

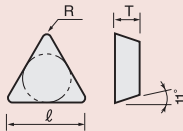
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TAC Inserts (Positive)

118 TAC Inserts (Positive Inserts)

60° Triangular · 11° Positive without Hole

TAC Inserts (Positive)

TP 			 TPGN 11 03 02 - 																		
Positive			Cutting edge length (ℓ) Thickness (T) Corner radius (R)																		
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																
			Cutting speed v_c (m/min)		Coated					Cermet	C. Cerm.	Un.	Ceramics								
Finishing	Ceramics		Work materials	H	T9015	T9025	T6020	T6030	GH330	T5010	T5020	GH110	NS520	NS530	AT520	AT530	GT530	TH10	LX21	LX11	
		TPGN110302		LX11 50-100-150															○	○	●
		TPGN110304		LX11 50-100-150								○							○	○	●
		TPGN110304T01020																	○	○	●
		TPGN110308																	○	○	●
		TPGN160302		$a_p = 0.05-0.3-0.5$ mm $f = 0.05-0.08-0.1$ mm/rev															○	○	●
		TPGN160304										○			○				○	○	●
		TPGN160304T01020										○							○	○	●
	TPGN160308										○			○				○	○	●	
	TPGN160308T01020										○							○	○	●	
TPGN160312																	○	○	●		
TPGN220404																	○	○	●		

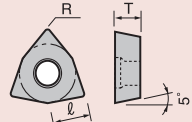
 Chipbreaker selection
P. 33 ~ 36

 Grade selection
P. 37 ~ 39

 Insert hole diameter
P. 42

 Reference
guide

80° Trigon · 5° Positive with Hole

WB 					WBGT 03 01 00 - 																			
Positive					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																			
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																			
			Cutting speed v _c (m/min)		Coated										Cermet		Co. Cerm.	Un						
Finishing to medium cutting	W08		Work materials	P	N	T9015	T9025						T6020	T6030	GH330	T5010	T5020	GH110	NS520	NS530	AT520	GT530	TH10	
		WBGT030100L-W08 WBGT030102L-W08 WBGT030104L-W08		NS530 80-200-300	GH110 100-200-1000																			
				NS530 80-150-250	TH10 100-150-700																			
																								
	ap = 0.05-0.5-2.0 mm f = 0.03-0.1-0.2 mm/rev																							
	W11	Insert Cat. No.		P	N																			
		WBGT060102L-W11 WBGT060104L-W11		NS530 80-200-300	GH110 100-200-1000																			
		WBGT080202L-W11 WBGT080204L-W11		NS530 80-150-250	TH10 100-150-700																			
	ap = 0.05-0.5-2.0 mm f = 0.03-0.1-0.2 mm/rev																							

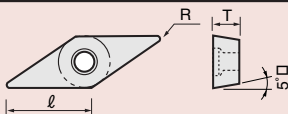
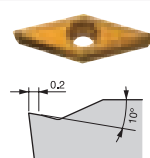
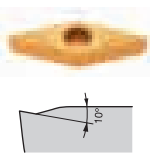
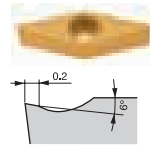
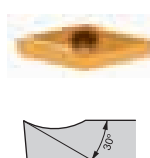
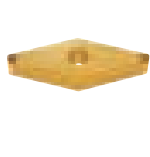
TAC Inserts (Positive)

Chipbreaker selection
P. 33 ~ 36Grade selection
P. 37 ~ 39Insert hole diameter
P. 42Reference
guide

TAC Inserts (Positive Inserts)

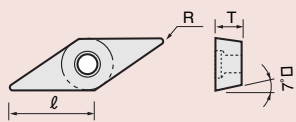
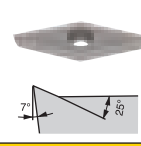
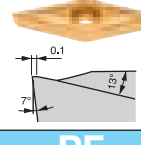
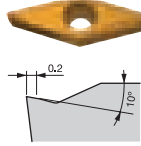
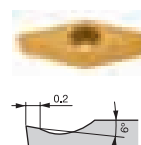
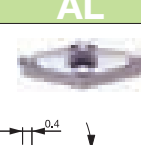
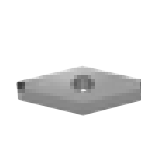
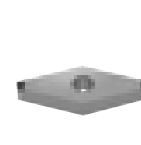
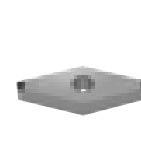
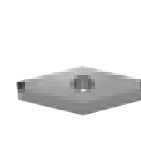
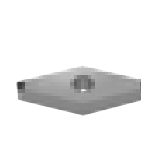
35° Rhombic · 5° Positive with Hole

TAC Inserts (Positive)

VB					VBMT 16 04 04 - 																			
Positive					Cutting edge length (ℓ) Thickness (T) Corner radius (R)																			
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																			
			Cutting speed v_c (m/min)		Coated				Cermets		C. Cerm.		Un.		PCBN									
Finishing to medium cutting	PF		Work materials	P	M	T9015	T9025	T6020	T6030	GH330	J 7 4 0	T5010	T5020	NS520	NS530	AT520	AT530	TH 1 0	BX310	BX330	BX360	BXC30	BX930	
		VBMT110302-PF VBMT110304-PF VBMT110308-PF VBMT160404-PF VBMT160408-PF	  	T9015 150-250-400 T9015 150-220-300 T9025 120-180-250	T6020 100-150-200 T6030 100-150-200	●	●	●	●															
			$a_p = 0.3-0.9-1.5$ mm $f = 0.05-0.15-0.25$ mm/rev																					
	PS		Insert Cat. No.		P	M																		
		VBMT110302-PS VBMT110304-PS VBMT110308-PS VBMT160404-PS VBMT160408-PS	  	NS530 60-200-300 T9015 80-150-250 T9025 50-100-150	T6020 150-200-250 T6020 150-180-220 T6030 50-100-150	●	●	●	●						●	●	○							
		$a_p = 0.3-1.0-2.0$ mm $f = 0.08-0.15-0.3$ mm/rev																						
Medium cutting	24			P																				
		VBMT160404-24 VBMT160408-24	  	NS530 60-200-300 T9015 80-150-250 T9025 50-100-150		●	●								●	●	●							
			$a_p = 1.0-1.5-3.0$ mm $f = 0.08-0.15-0.3$ mm/rev																					
	J10		Insert Cat. No.		P	M																		
		VBGT110300FR-J10 VBGT110300FL-J10 VBGT110301FR-J10 VBGT110301FL-J10 VBGT110302FR-J10 VBGT110302FL-J10 VBGT110304FR-J10 VBGT110304FL-J10	  	NS530 60-200-300 J740 10-30-60 J740 10-30-60	NS530 100-120-150 J740 10-30-60 J740 10-30-60					●	●	●	●	●	●	●	○							
		$a_p = 1.0-1.0-5.0$ mm $f = 0.01-0.03-0.1$ mm/rev																						
Precision finishing	PCBN			H																				
		2QP-VBMW110304 2QP-VBMW110308 2QP-VBMW160404 2QP-VBMW160408	  	BX310 130-200-300 BX330 80-120-150 BX360 80-120-150																○	○	○	○	
			$a_p = 0.05-0.3-0.5$ mm $f = 0.05-0.1-0.15$ mm/rev																					
	PCBN		Insert Cat. No.		H																			
		2QP-VBMW110304 2QP-VBMW110308 2QP-VBMW160404 2QP-VBMW160408	  	BXC30 130-250-300 BXC30 130-200-250																			●	
		$a_p = 0.05-0.3-0.5$ mm $f = 0.05-0.1-0.15$ mm/rev																						
Precision finishing	PCBN		Insert Cat. No.		H																			
		Q-VBMW110204 Q-VBMW110208 Q-VBMW110304 Q-VBMW110308 Q-VBMW160404 Q-VBMW160408	  	BX310 130-200-300 BX330 80-120-150 BX360 80-120-150																●	●			
			$a_p = 0.05-0.3-0.5$ mm $f = 0.05-0.1-0.15$ mm/rev																					

Chipbreaker selection
P. 33 ~ 36Grade selection
P. 37 ~ 39Insert hole diameter
P. 42Reference
guide

35° Rhombic · 7° Positive with Hole

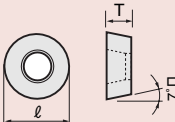
VC					VCMT 16 04 04 - 															
Positive			Cutting edge length (ℓ)		Thickness (T)		Corner radius (R)													
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades															
			Cutting speed v _c (m/min)		Coated		Cermet		Co. Cerm.		Unc.		PCD & PCBN							
Finishing to medium cutting	Q90	VCGT130302-Q90 VCGT130304-Q90	Work materials	N	T9015	T9025	T6020	T6030	GH330	NS520	NS530	AT520	AT530	GT530	TH10	KS05F	DX120	BX330	BX360	RX930
			TH10 100-200-1000																	
			TH10 100-150-700																	
	Q91		M																	
Finishing to medium cutting	PF	VCMT080202-PF VCMT080204-PF VCMT160404-PF VCMT160408-PF	Work materials	P	M															
			T9015 150-250-400	T6020 100-150-200																
			T9015 15-220-300	T6030 100-150-200																
	PS		T9025 120-180-250	T6030 50-100-150																
Medium cutting	24	VCMT160404-24 VCMT160408-24	Work materials	P																
			NS530 60-200-300																	
			T9015 80-150-250																	
	AL		T9025 50-100-150																	
Aluminium	AL	VCMT160404-AL VCMT160408-AL VCMT160412-AL VCMT220520-AL VCMT220530-AL	Work materials	N																
			KS05F 100-600-1000																	
			KS05F 100-500-800																	
	PCD		KS05F 100-300-500																	
Precision finishing	PCD	VCMT160402-DIA VCMT160404-DIA	Work materials	N																
			DX120 500-1500-2500																	
			DX120 300-1000-1800																	
	PCBN		H																	
Precision finishing	PCBN	2QP-VCMW160404	Work materials	H																
			BX330 80-150-200																	
			BX330 80-120-150																	
			BX360 80-120-150																	

TAC Inserts (Positive)

122 TAC Inserts (Positive Inserts)

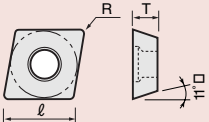
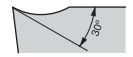
Round · 7° Positive

TAC Inserts (Positive)

RC					RCMT 06 02 M0 - 																			
Positive					Cutting edge length (l)				Thickness (T)				Chipbreaker type				Corner radius (R)							
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																			
			Cutting speed v_c (m/min)		Coated												Cermet		C. Cerm.		Unc.		C	
			Work materials	P	T9015	T9025	T6020	T6030	GH330	T5010	T5020	AH110	AH120	NS520	NS530	AT520	AT530	TH10	KS05F	X11				
Medium cutting	RS	RCMT10T3M0-RS	●	T9015 100-250-400	○	○																		
		RCMT1204M0-RS	●	T9015 80-150-250	○	○																		
		RCMT1606M0-RS	●	T9015 80-150-250	○	○																		
		RCMT2006M0-RS	⊕	T9025 50-100-150	○	○																		
		RCMT2507M0-RS	⊕	T9025 50-100-150	○	○																		
			ap = 0.5-1.0-2.0 mm (ø 10, 12) ap = 1.5-2.0-3.0 mm (ø 16, 20) ap = 3.0-4.0-5.0 mm (ø 25) f = 0.5-0.8-1.0 mm/rev (ø 10, 12) f = 0.6-0.9-1.2 mm/rev (ø 16, 20) f = 0.7-1.0-1.2 mm/rev (ø 25)																					
Aluminium	AL	Insert Cat. No.		N																				
		RCGT0602M0-AL	●	KS05F 100-600-1000																	●			
		RCGT0803M0-AL	●	KS05F 100-500-800																	●			
		RCGT1003M0-AL	⊕	KS05F 100-300-500																	●			
					ap = 0.5-1.0-2.0 mm f = 0.1-0.3-0.5 mm/rev																			
Heavy cutting	61	Insert Cat. No.		P	K																			
		RCMT0502M0-61	●	NS530 80-200-300	T5010 100-300-600	○	●				●				○		○							
		RCMT0602M0-61	●	NS530 80-150-250	T5010 100-250-500	○	●				●				○		○							
		RCMT0803M0-61	⊕	T9025 50-100-150	T5020 100-150-300	○	●				●				○		○							
					ap = 0.3-0.5-1.0 mm f = 0.3-0.5-0.8 mm/rev																			
	61	Insert Cat. No.		P	K																			
		RCMM1003M0-61	●	T9015 80-150-250	T5010 100-300-600	○	●				●				○		○							
		RCMM1204M0-61	●	T9025 80-120-200	T5010 100-250-500	○	●				●				○		○							
		RCMM1606M0-61	⊕	T9025 80-120-200	T5010 100-250-500	○	●				●							○						
		RCMM2006M0-61	⊕	T9025 50-100-150	T5020 100-150-300	○	●											○						
		RCMM2507M0-61	⊕	T9025 50-100-150	T5020 100-150-300	○	●																	
			ap = 0.5-1.0-2.0 (ø 10, 12) 1.5-2.0-3.0 mm (ø 16, 20, 25) f = 0.5-0.8-1.0 (ø 10, 12) 0.6-0.9-1.2 mm/rev (ø 16, 20, 25)																					
Finishing	Ceramics	Insert Cat. No.		H																				
		RCGX090800	●	LX11 50-100-150																	●			
		RCGX120800	●	LX11 50-100-150																	●			
					ap = 0.5-1.0-2.0 mm f = 0.05-0.08-0.1 mm/rev																			

Chipbreaker selection
P. 33 ~ 36Grade selection
P. 37 ~ 39Insert hole diameter
P. 42Reference
guide

75° Rhombic · 11° Positive with Hole

EPGT					EPGT 04 01 00 - 																			
Positive					Cutting edge length (ℓ) Thickness (T) Chipbreaker type Corner radius (R)																			
Application	Chipbreaker type	Insert Cat. No.	Standard cutting conditions		Stocked grades																			
			Cutting speed v _c (m/min)		Coated																			
Finishing to medium cutting	W08		Work materials	P	N	T9015	T9025					T6020	T6030	GH330	J7 4 0	T5010	T5020	GH110	NS530	AT520	AT530	GT530	TH10	
		EPGT040100R-W08	●	NS530 60-200-300	NS530 100-120-150														●					○
		EPGT040100L-W08	●	NS530 80-150-250															●	●			○	○
		EPGT040102R-W08																	●	●			○	○
		EPGT040102L-W08	⚙																●	●				●
		EPGT040104R-W08		ap = 0.05-0.5-2.0 mm f = 0.03-0.1-0.2 mm/rev															●	●			○	●
		EPGT040104L-W08																	●	●			○	●
	J08		Insert Cat. No.		M																			
			EPGT040100L-J08	●	J740 10-30-60											●								
			EPGT040102L-J08	●	J740 10-30-60											●								
		EPGT040104L-J08	⚙	J740 10-30-60											●									
			ap = 0.05-0.5-2.0 mm f = 0.03-0.1-0.2 mm/rev																					