HOW TO READ THE STANDARD OF TURNING INSERTS

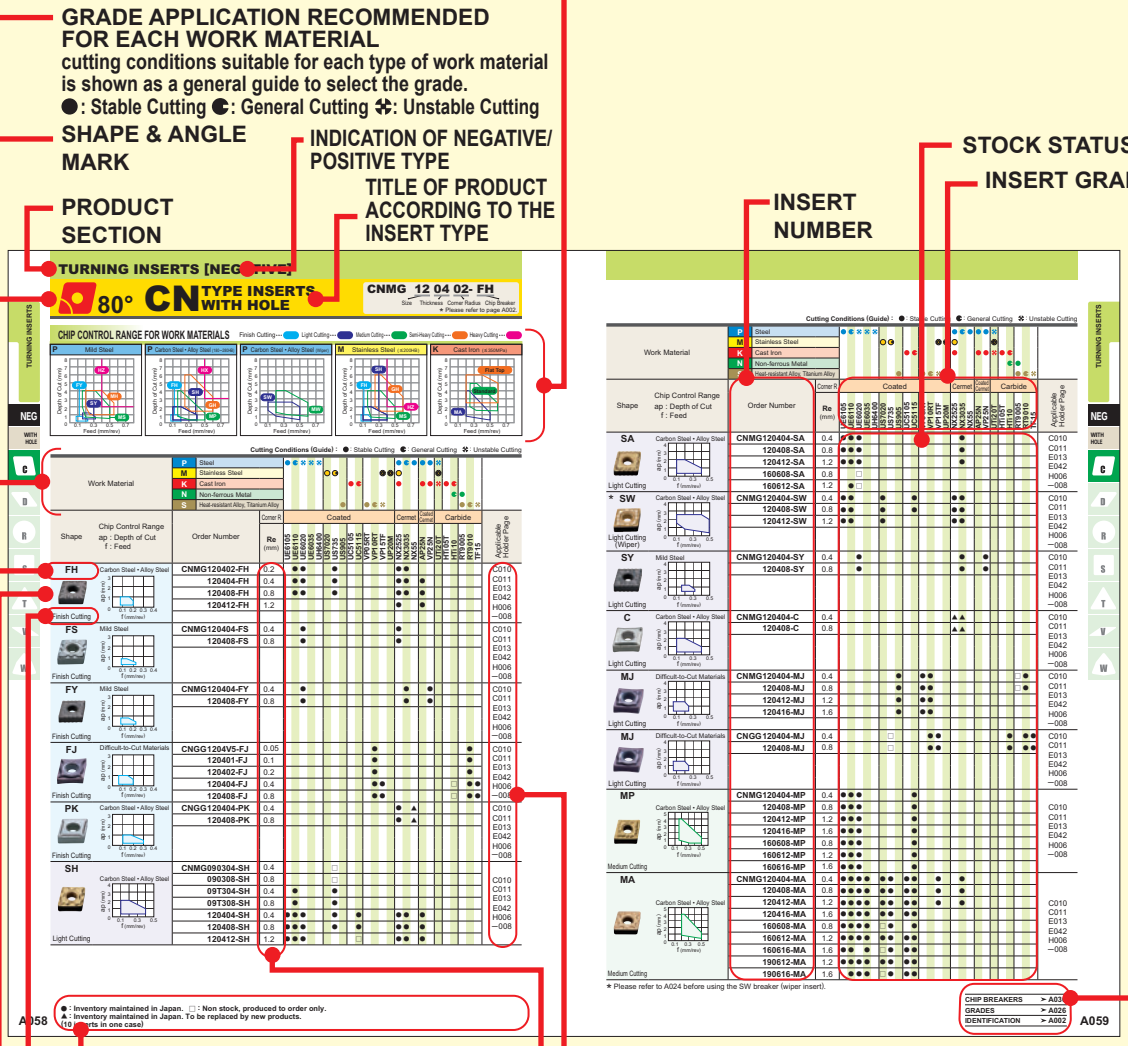
●How this section page is organized

①Organized according to turning insert shape.
(Refer to the index on the next page.)
②Inserts are arranged in order of :
• Negative inserts (with hole→without hole)
• Positive inserts (with hole→without hole)
③Breakers are arranged in order of :
Finish Cutting→Light Cutting→Medium Cutting →Semi-Heavy Cutting→Heavy Cutting

●Graph of chip control by work material

Shows recommended chip breakers and chip control range according to work material and cutting application.
Graphs are colored according to cutting applications (Finish→Light→Medium→Semi-Heavy→Heavy) and contain recommended breakers for each application.

Finish Cutting : Light Cutting : Medium Cutting :
Semi-Heavy Cutting : Heavy Cutting :



●To Order : Please specify
①insert number and ②grade.

TURNING TOOLS

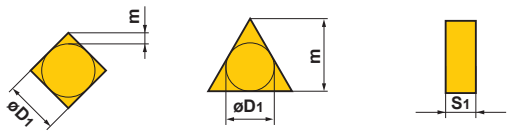
INSERT STANDARDS
INSERT GRADES

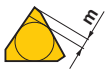
STANDARD OF INSERTS

IDENTIFICATION

Symbol	Insert Shape
H	Hexagonal
O	Octagonal
P	Pentagonal
S	Square
T	Triangular
C	Rhombic80°
D	Rhombic55°
E	Rhombic75°
F	Rhombic50°
M	Rhombic86°
V	Rhombic35°
W	Trigon
L	Rectangular
A	Parallelogram85°
B	Parallelogram82°
K	Parallelogram55°
R	Round
X	Special Design

① Insert Shape





Triangular insert with a facet (Secondary Cutting Edge)

③ Tolerance Class

Symbol	Tolerance of Nose Height **m** (mm)	Tolerance of Inscribed Circle **øD1** (mm)	Tolerance of Thickness **S1** (mm)
A	±0.005	±0.025	±0.025
F	±0.005	±0.013	±0.025
C	±0.013	±0.025	±0.025
H	±0.013	±0.013	±0.025
E	±0.025	±0.025	±0.025
G	±0.025	±0.025	±0.13
J	±0.005	±0.05–±0.15	±0.025
K*	±0.013	±0.05–±0.15	±0.025
L*	±0.025	±0.05–±0.15	±0.025
M*	±0.08–±0.18	±0.05–±0.15	±0.13
N*	±0.08–±0.18	±0.05–±0.15	±0.025
U*	±0.13–±0.38	±0.08–±0.25	±0.13

The surface of insert with * mark is sintered.

Detail of M Class Insert Tolerance

● Tolerance of Nose Height **m** (mm)

D.C.I.	Triangular	Square	Rhombic 80°	Rhombic 55°	Rhombic 35°	Round
6.35	±0.08	±0.08	±0.08	±0.11	±0.16	–
9.525	±0.08	±0.08	±0.08	±0.11	±0.16	–
12.70	±0.13	±0.13	±0.13	±0.15	–	–
15.875	±0.15	±0.15	±0.15	±0.18	–	–
19.05	±0.15	±0.15	±0.15	±0.18	–	–
25.40	–	±0.18	–	–	–	–
31.75	–	±0.20	–	–	–	–

● Tolerance of Inscribed Circle **øD1** (mm)

D.C.I.	Triangular	Square	Rhombic 80°	Rhombic 55°	Rhombic 35°	Round
6.35	±0.05	±0.05	±0.05	±0.05	±0.05	–
9.525	±0.05	±0.05	±0.05	±0.05	±0.05	±0.05
12.70	±0.08	±0.08	±0.08	±0.08	–	±0.08
15.875	±0.10	±0.10	±0.10	±0.10	–	±0.10
19.05	±0.10	±0.10	±0.10	±0.10	–	±0.10
25.40	–	±0.13	–	–	–	±0.13
31.75	–	±0.15	–	–	–	±0.15

③ Tolerance Class

① ② ③ ④

C N M G

② Normal Clearance

Symbol	Normal Clearance
A	3
B	5
C	7
D	15
E	20
F	25
G	30
N	0
P	11
O	Other Normal Clearance

Major Normal Clearance

④ Fixing and/or for Chip Breaker

Metric

Symbol	Hole	Hole Configuration	Chip Breaker	Figure	Symbol	Hole	Hole Configuration	Chip Breaker	Figure
W	With Hole	Cylindrical Hole + One Countersink (40–60°)	No		A	With Hole	Cylindrical Hole	No	
T	With Hole		One Sided		M	With Hole	Cylindrical Hole	One Sided	
Q	With Hole	Cylindrical Hole + Double Countersink (40–60°)	No		G	With Hole	Cylindrical Hole	Double Sided	
U	With Hole		Double Sided		N	Without Hole	–	No	
B	With Hole	Cylindrical Hole + One Countersink (70–90°)	No		R	Without Hole	–	One Sided	
H	With Hole		One Sided		F	Without Hole	–	Double Sided	
C	With Hole	Cylindrical Hole + Double Countersink (70–90°)	No		X	–	–	–	Special Design
J	With Hole		Double Sided						

Symbol R	Symbol W	Symbol V	Symbol D	Symbol C	Symbol S	Symbol T	Diameter of Inscribed Circle (mm)
	02		04	03	03	06	3.97
	L3	08	05	04	04	08	4.76
	03	09	06	05	05	09	5.56
06							6.00
	04	11	07	06	06	11	6.35
	05	13	09	08	07	13	7.94
08							8.00
09	06	16	11	09	09	16	9.525
10							10.00
12							12.00
12	08	22	15	12	12	22	12.70
15	10		19	16	15	27	15.875
16							16.00
19	13		23	19	19	33	19.05
20							20.00
			27	22	22	38	22.225
25							25.00
25			31	25	25	44	25.40
31			38	32	31	54	31.75
32							32.00

⑤ Insert Size

*Thickness is from the bottom of the insert to the top of the cutting edge.

Symbol	Thickness (mm)
S1	1.39
01	1.59
T0	1.79
02	2.38
T2	2.78
03	3.18
T3	3.97
04	4.76
06	6.35
07	7.94
09	9.52

⑥ Insert Thickness

⑤	⑥	⑦	⑧	⑨	⑩
12	04	08	(E)	(N)	- MP

⑦ Insert Corner Configuration

Symbol	Corner Radius (mm)
00	Sharp Nose
V3	0.03
V5	0.05
01	0.1
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
00 : Inch M0 : Metric	Round Insert

⑧ Cutting Edge Condition

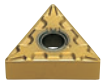
Figure	Cutting Edge	Symbol
	Sharp Cutting Edges	F
	Round Cutting Edges	E
	Chamfered Cutting Edges	T
	Chamfered and Rounded Cutting Edges	S

Mitsubishi Materials omit the honing symbol.

⑨ Cutting Direction

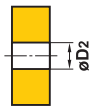
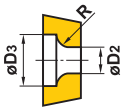
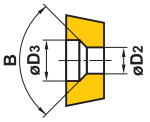
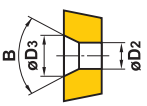
Figure	Hand	Symbol
	Right	R
	Left	L
	Neutral	N

⑩ Chip Breaker

Standard	C	FH
		
FJ	**FS**	**FV**
		
FY	**GH**	**GJ**
		
HV	**HX**	**HZ**
		
MA	**MH**	**MP**
		
MS	**MV**	**MW**
		
SA	**SH**	**SW**
		

(Refer to JIS-B4120-1998)

HOLE GEOMETRY

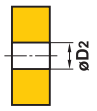
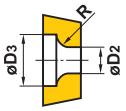
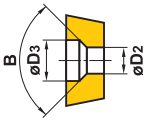
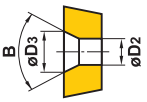
Type A	Type B	Type C	Type D
			

NEGATIVE

Insert Number		Dimensions (mm) D2	Hole Type
CNGA CNGG CNMA CNMG CNMM CNMP	0903○○	3.81	A
	0904○○	3.81	A
	1204○○	5.16	A
	1606○○	6.35	A
	1906○○	7.93	A
	2509○○	9.12	A
DNGA DNGG DNGM DNMA DNMG DNMM DNMX	1104○○	3.81	A
	1504○○	5.16	A
	1506○○	5.16	A
SNGA SNGG SNMA SNMG SNMM	0903○○	3.81	A
	1204○○	5.16	A
	1506○○	6.35	A
	1906○○	7.93	A
	2507○○	9.12	A
	2509○○	9.12	A
TNGA TNGG TNMA TNMG TNMM TNMX	1103○○	2.26	A
	1603○○	3.81	A
	1604○○	3.81	A
	2204○○	5.16	A
	2706○○	6.35	A
	3309○○	7.93	A
VNGA VNGM VNGG VNMG VNMM	1604○○	3.81	A
WNMA WNMG	0603○○	3.81	A
	06T3○○	3.81	A
	0604○○	3.81	A
	0804○○	5.16	A
RNMG RNMA	090300	3.81	A
	120400	5.16	A
	190600	7.93	A
	250900	9.12	A
	310900	12.7	A

POSITIVE

Insert Number		Dimensions (mm) D2	D3	B (°)	Hole Type
CCET	0602○○	2.8	3.8	R	B
	09T3○○	4.4	6.0	R	B
CCGB CCMB CCGH CCMH	0602○○	2.8	3.9	R	B
CCGT	03S1○○	2.0	2.9	R	B
	04T0○○	2.4	3.5	R	B
	0602○○	2.8	3.8	R	B
	09T3○○	4.4	6.0	R	B
	1204○○	5.5	7.5	R	B
CCMT	0602○○	2.8	3.8	R	B
	0803○○	3.4	4.5	R	B
	09T3○○	4.4	6.0	R	B
	1204○○	5.5	7.5	R	B
CCGW CCMW	03S1○○	2.0	2.9	R	B
	04T0○○	2.4	3.5	R	B
	0602○○	2.8	3.8	R	B
	09T3○○	4.4	6.0	R	B
	1204○○	5.5	7.5	R	B
CPGT	0802○○	3.4	4.5	R	B
	0903○○	4.4	6.0	R	B
CPGB CPMB CPMH	0802○○	3.5	5.3	78°	D
	0903○○	4.5	6.3	78°	D
CPMX	0802○○	3.5	5.6	78°	D
	0903○○	4.6	6.6	80°	D
DCET DCGT	0702○○	2.8	3.8	R	B
	11T3○○	4.4	6.0	R	B
DCGW DCMW DCMT	0702○○	2.8	3.8	R	B
	11T3○○	4.4	6.0	R	B
	1504○○	5.5	7.5	R	B
DEGX	1504○○	5.1	7.0	85°	C
RCMX	1003M0	3.6	4.6	21°	D
	1204M0	4.2	5.4	21°	D
	1606M0	5.2	6.7	21°	D
	2006M0	6.5	8.0	21°	D
	2507M0	7.2	9.1	21°	D
	3209M0	9.5	11.7	21°	D

Type A	Type B	Type C	Type D
			

POSITIVE

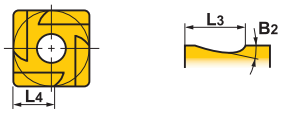
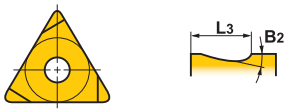
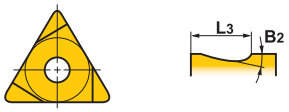
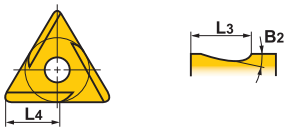
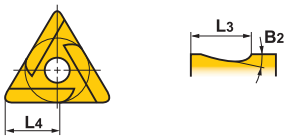
Insert Number		Dimensions (mm)			Hole Type
		D2	D3	B (°)	
RCGT RCMT	0602M0	2.8	3.8	R	B
	0803M0	3.4	4.5	R	B
	10T3M0	4.4	6.0	R	B
RGGM	2004M0	5.6	7.5	53°	C
SCMT SCMW	09T3○○	4.4	6.0	R	B
	1204○○	5.5	7.5	R	B
SPMW	0903○○	4.6	6.0	R	B
	1203○○	5.7	7.5	R	B
SPMT	0903○○	4.4	6.0	R	B
	1203○○	5.5	7.5	R	B
SPGX	0903○○	4.5	6.4	58°	D
	1203○○	5.9	7.7	58°	D
TCGT TCMT TCGW TCMW	0601○○	2.3	3.2	R	B
	0802○○	2.3	3.0	R	B
	0902○○	2.5	3.3	R	B
	1102○○	2.8	3.8	R	B
	1303○○	3.4	4.5	R	B
	16T3○○	4.4	6.0	R	B
TEGX	1603○○	4.4	6.1	88°	D
TPGX	0802○○	2.5	3.8	88°	C
	0902○○	3.0	4.3	88°	C
	1103○○	3.5	4.8	88°	C
	1603○○	4.8	6.5	58°	D
TPMX	0802○○	2.7	3.8	88°	C
	0902○○	3.2	4.3	88°	C
	1103○○	3.7	4.8	88°	C
	1603○○	4.8	6.4	58°	D
TPGB TPMB TPGH TPMH	0802○○	2.4	4.0	78°	D
	0902○○	2.9	4.3	78°	D
	1103○○	3.4	4.8	78°	D
	1603○○	4.4	6.5	78°	D
TPGT	1603○○	4.4	6.0	R	B
TPGV	0902○○	2.8	3.8	R	B
	1103○○	3.4	4.5	R	B

Insert Number		Dimensions (mm)			Hole Type
		D2	D3	B (°)	
VBET VBGT VBMT VBGW	1103○○	2.9	3.8	R	B
	1604○○	4.4	6.0	R	B
VCGT VCMT VCGW VCMW	0802○○	2.4	3.2	R	B
	1103○○	2.8	3.8	R	B
	1604○○	4.4	6.0	R	B
	2205○○	7.5	5.5	R	B
VDGX	1603○○	4.5	6.1	88°	D
WBGT WBMT	0201○○	2.3	3.2	R	B
	L302○○	2.3	3.2	R	B
WCGT WCMT WCGW WCMW	0201○○	2.3	3.0	R	B
	L302○○	2.3	3.0	R	B
	0402○○	2.8	3.8	R	B
	06T3○○	4.4	6.0	R	B
WPGT WPMT	0402○○	2.8	3.8	R	B
	0603○○	4.4	6.0	R	B
XCMT	1503○○	2.8	3.8	R	B

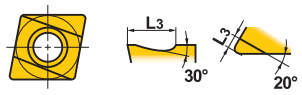
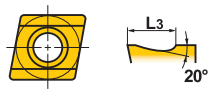
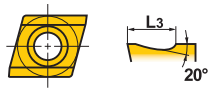
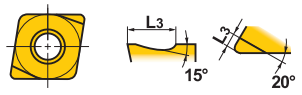
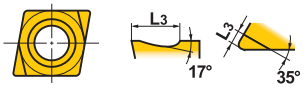
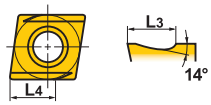
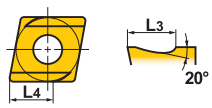
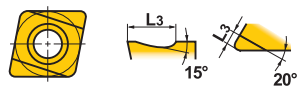
PRECISION BREAKER SYSTEM

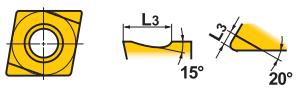
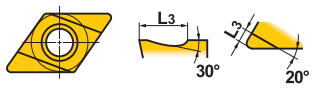
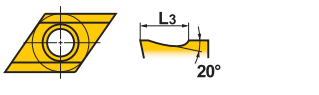
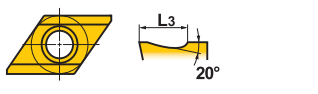
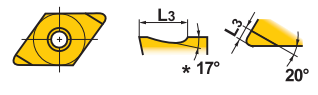
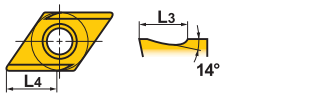
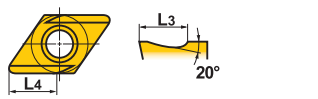
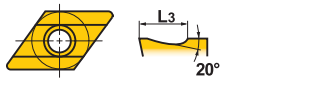
STANDARD OF INSERTS WITH HAND OF TOOL

NEGATIVE INSERTS

Geometry	Insert Number	L_3	L_4	B_2	B_7
 Right hand insert shown.	**DNGG150404R/L**	2.8	–	15	–
	150408R/L	2.8	–	15	–
 Right hand insert shown.	**SNGG090304R/L**	1.8	1.6	15	–
	090308R/L	1.8	1.6	15	–
	120404R/L	2.3	3.7	15	–
	120408R/L	2.3	3.7	15	–
 Right hand insert shown.	**TNGG160402R/L-FS**	1.3	–	15	30
	160404R/L-FS	1.3	–	15	30
	160408R/L-FS	1.3	–	15	30
 Right hand insert shown.	**TNGG160402R/L-F**	2.5	–	15	30
	160404R/L-F	2.5	–	15	30
	160408R/L-F	2.5	–	15	30
 Right hand insert shown.	**TNGG160402R/L-K**	1.5	7.1	15	–
	160404R/L-K	1.5	5.4	15	–
	160408R/L-K	1.5	5.1	15	–
 Right hand insert shown.	**TNGG110302R/L**	1.3	3.2	15	–
	110304R/L	1.3	3.0	15	–
	110308R/L	1.3	2.7	15	–
	160304R/L	2.3	5.4	15	–
	160308R/L	2.3	5.1	15	–
	160402R/L	1.3	8.7	15	–
	160404R/L	2.3	5.4	15	–
	160408R/L	2.3	5.1	15	–
	160412R/L	2.3	4.8	15	–
	220404R/L	2.8	9.4	15	–
	220408R/L	2.8	9.1	15	–
	220412R/L	2.8	8.8	15	–
 Right hand insert shown.	**VNGG160404R/L**	1.8	–	15	–
	160408R	1.8	–	15	–

POSITIVE INSERTS

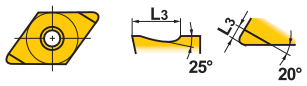
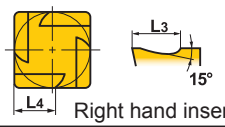
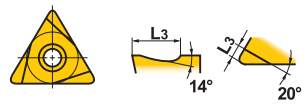
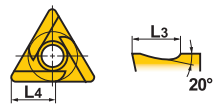
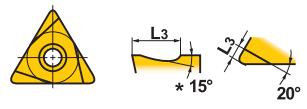
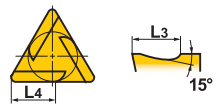
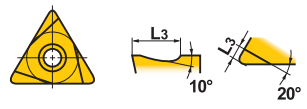
Geometry	Insert Number	L3	L4
 Right hand insert shown.	CCET0602V3R/L-SR	2.2	—
	060201R/L-SR	2.2	—
	060202R/L-SR	2.2	—
	060204R/L-SR	2.2	—
	09T3V3R/L-SR	3.2	—
	09T301R/L-SR	3.2	—
	09T302R/L-SR	3.2	—
	09T304R/L-SR	3.2	—
 Right hand insert shown.	CCET060200R/L-SN	1.0	—
	0602V3R/L-SN	1.0	—
	060201R/L-SN	1.0	—
	060202R/L-SN	1.0	—
	060204R/L-SN	1.0	—
	09T300R/L-SN	1.5	—
	09T3V3R/L-SN	1.5	—
	09T301R/L-SN	1.5	—
	09T302R/L-SN	1.5	—
	09T304R/L-SN	1.5	—
 Right hand insert shown.	CCET0602V3R/LW-SN	1.0	—
	09T3V3R/LW-SN	1.5	—
 Right hand insert shown.	CCGH060202R/L-F	1.2	—
	060204R/L-F	1.4	—
 Left hand insert shown.	CCGT03S1V3L-F	0.8	—
	03S101L-F	0.8	—
	03S102L-F	0.8	—
	03S104L-F	0.8	—
	04T0V3L-F	1.0	—
	04T001L-F	1.0	—
	04T002L-F	1.0	—
	04T004L-F	1.0	—
 Right hand insert shown.	CCGT0602V3R/L-SS	1.0	3.0
	060201R/L-SS	1.0	3.0
	060202R/L-SS	1.0	3.0
	09T3V3R/L-SS	1.0	5.0
	09T301R/L-SS	1.0	5.0
	09T302R/L-SS	1.0	5.0
 Right hand insert shown.	CCGT0602V3R-SN	1.0	3.0
	060201R/L-SN	1.0	3.0
	060202R/L-SN	1.0	3.0
	09T3V3R/L-SN	1.5	5.0
	09T301R/L-SN	1.5	5.0
	09T302R/L-SN	1.5	5.0
	09T304R/L-SN	1.5	5.0
 Right hand insert shown.	CPGT080204R/L-F	0.6	—
	090302R/L-F	0.8	—
	090304R/L-F	0.8	—

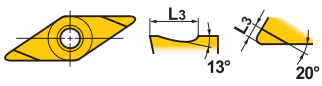
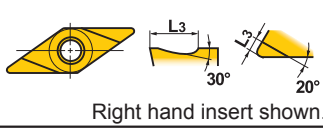
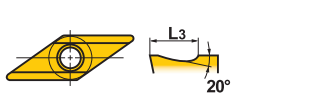
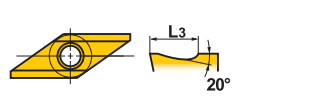
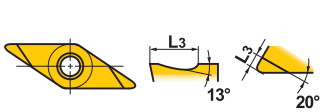
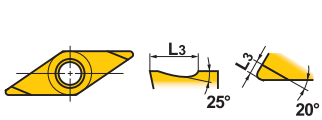
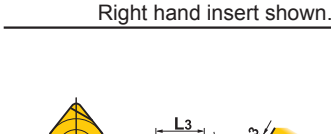
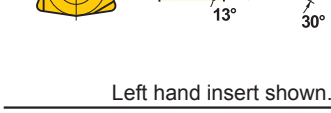
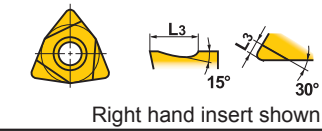
Geometry	Insert Number	L3	L4
 Right hand insert shown.	CPMH080204R/L-F	1.0	—
	090304R/L-F	1.4	—
 Right hand insert shown.	DCET0702V3R/L-SR	2.5	—
	070201R/L-SR	2.5	—
	070202R/L-SR	2.5	—
	070204R/L-SR	2.5	—
	11T3V3R/L-SR	3.7	—
	11T301R/L-SR	3.7	—
	11T302R/L-SR	3.7	—
	11T304R/L-SR	3.7	—
 Right hand insert shown.	DCET070200R/L-SN	1.0	—
	0702V3R/L-SN	1.0	—
	070201R/L-SN	1.0	—
	070202R/L-SN	1.0	—
	070204R/L-SN	1.0	—
	11T300R/L-SN	1.5	—
	11T3V3R/L-SN	1.5	—
	11T301R/L-SN	1.5	—
	11T302R/L-SN	1.5	—
	11T304R/L-SN	1.5	—
 Right hand insert shown.	DCET0702V3R/LW-SN	1.0	—
	11T3V3R/LW-SN	1.5	—
 *DCGT11T3□□type : 14° Right hand insert shown.	DCGT070202R/L-F	1.0	—
	070204R/L-F	1.0	—
	11T302R/L-F	1.0	—
	11T304R/L-F	1.0	—
 Right hand insert shown.	DCGT0702V3R/L-SS	1.0	3.5
	070201R/L-SS	1.0	3.5
	070202R/L-SS	1.0	3.5
	11T3V3R-SS	1.0	6.5
	11T301R-SS	1.0	6.5
	11T302R-SS	1.0	6.5
 Right hand insert shown.	DCGT0702V3R-SN	1.0	3.5
	070201R-SN	1.0	3.5
	070202R/L-SN	1.0	3.5
	11T3V3R/L-SN	1.5	6.5
	11T301R/L-SN	1.5	6.5
	11T302R/L-SN	1.5	6.5
	11T304R/L-SN	1.5	6.5
 Right hand insert shown.	DEGX150402R/L	2.8	—
	150404R/L	2.8	—

PRECISION BREAKER SYSTEM

STANDARD OF INSERTS WITH HAND OF TOOL

POSITIVE INSERTS

Geometry	Insert Number	L3	L4
 Right hand insert shown.	DEGX150402R/L-F	2.5	—
	150404R/L-F	2.5	—
 Right hand insert shown.	SPGR090304R/L	1.8	1.6
 Left hand insert shown.	TCGT0601V3L-F	1.0	—
	060101L-F	1.0	—
	060102R/L-F	1.0	—
	060104R/L-F	1.0	—
 Right hand insert shown.	TEGX160302R/L	2.0	6.0
	160304R/L	2.0	6.0
 ✱TPGH1603□□type : 14° Right hand insert shown.	TPGH080202R/L-FS	0.9	—
	080204R/L-FS	0.9	—
	090202R/L-FS	1.0	—
	090204R/L-FS	1.0	—
	110302R/L-FS	1.4	—
	110304R/L-FS	1.4	—
	160304R/L-FS	2.0	—
	160308R/L-FS	2.0	—
 Right hand insert shown.	TPGR110304R/L	1.3	3.0
	160304R/L	2.3	5.4
	160308R/L	2.3	5.1
 Right hand insert shown.	TPGX080202R/L	1.3	—
	080204R/L	1.3	—
	090202R/L	1.6	—
	090204R/L	1.6	—
	090208R/L	1.4	—
	110302R/L	1.8	—
	110304R/L	1.8	—
	110308R/L	1.8	—

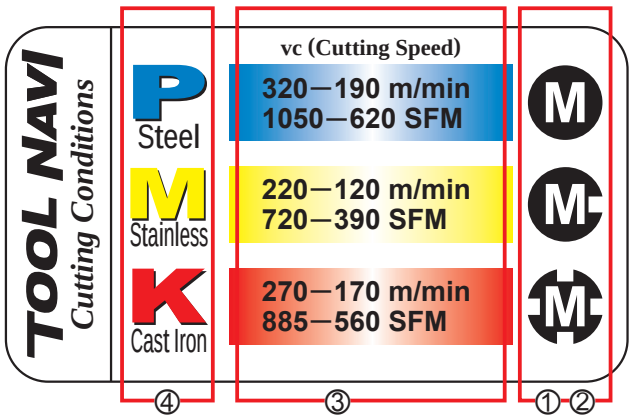
Geometry	Insert Number	L3	L4
 Right hand insert shown.	VBGT110302R/L-F	1.0	—
	110304R/L-F	1.0	—
	160402R/L-F	1.5	—
	160404R/L-F	1.5	—
 Right hand insert shown.	VBET1103V3R/L-SR	2.5	—
	110301R/L-SR	2.5	—
	110302R/L-SR	2.5	—
	110304R/L-SR	2.5	—
 Right hand insert shown.	VBET110300R/L-SN	1.0	—
	1103V3R/L-SN	1.0	—
	110301R/L-SN	1.0	—
	110302R/L-SN	1.0	—
	110304R/L-SN	1.0	
 Right hand insert shown.	VBET1103V3R/LW-SN	1.0	—
 Right hand insert shown.	VCGT080202R/L-F	0.8	—
	080204R/L-F	0.8	—
 Right hand insert shown.	VDGX160302R/L	2.0	—
	160304R/L	2.0	—
 Left hand insert shown.	WBGT0201V3L-F	1.0	—
	020101L-F	1.0	—
	020102L-F	1.0	—
	020104L-F	1.0	—
	L302V3L-F	1.0	—
	L30201L-F	1.0	—
	L30202R/L-F	1.0	—
	L30204R/L-F	1.0	—
 Right hand insert shown.	WCGT020102R/L	1.0	—
	020104R/L	1.0	—
	L30202R/L	1.0	—
	L30204R/L	1.0	—
 Right hand insert shown.	WPGT040202R/L-FS	1.0	—
	040204R/L-FS	1.0	—
	060304R/L-FS	1.0	—
	060308R/L-FS	1.0	—

TOOL NAVI

OUTLINE

TOOL NAVI supports our customers with information and suitable cutting conditions for each work material by selecting an optimal indexable insert together with the optional tool.

LABEL INDICATION



① Cutting conditions

● Stable cutting ◔ General cutting ✠ Unstable cutting

② Cutting areas

F : Finishing (ap≤0.5mm) **S** : Light Cutting (ap=0.5—1.5mm)
M : Medium Cutting (ap=1.5—4.0mm) **G** : Rough Cutting (ap=4.0—7.0mm)

③ Cutting speed standards

(Performance versus tool life)
● Calculations based on maximum performance : Tool life is 15min.
● Calculation based on maximum tool life : Tool life is 90min.

④ Work materials

P : Steel (Material reference : Carbon steel, alloy steel 180HB)
M : Stainless steel (Material reference : Austenitic stainless steel 180HB)
K : Cast iron (Material reference : Gray cast iron, ductile cast iron 180HB)

TOOL LIFE

Cutting speed affects tool life. Mitsubishi's TOOL NAVI suggests cutting speeds for 15—90 minute tool life and is based on Taylor's equation (Relationship for tool grade, cutting conditions and tool life). When the customer requires a different tool life, obtain coefficient values of the grade you use from the charts below. Multiply the coefficient values by the cutting speed to calculate a new cutting speed.

P Grade (Steel) cutting speed coefficient values.

Grade \ Tool life	15min	30min	45min	60min	90min
UE6105	1.00	0.79	0.69	0.63	0.55
UE6110	1.00	0.82	0.72	0.67	0.59
UE6020	1.00	0.83	0.74	0.69	0.62
UE6035	1.00	0.88	0.82	0.78	0.73
AP25N	1.00	0.84	0.76	0.71	0.64
VP25N	1.00	0.84	0.76	0.71	0.64

M Grade (Stainless Steel) cutting speed coefficient values.

Grade \ Tool life	15min	30min	45min	60min	90min
US735	1.00	0.78	0.68	0.61	0.53
US7020	1.00	0.70	0.57	0.49	0.40
VP15TF	1.00	0.78	0.67	0.61	0.52
AP25N	1.00	0.76	0.65	0.57	0.49

K Grade (Cast Iron) cutting speed coefficient values.

Grade \ Tool life	15min	30min	45min	60min	90min
UC5105	1.00	0.79	0.69	0.63	0.55
UC5115	1.00	0.79	0.69	0.63	0.55
AP25N	1.00	0.87	0.80	0.75	0.69
VP25N	1.00	0.87	0.80	0.75	0.69

(ex.) Medium cutting of steel
The 1st recommendation : UE6110
Indexable inserts : CNMG120408-MA
Recommended cutting speed : vc=325m/min
(Tool life : 15min.)

⬇

Tool life required by the customer : 30min.

325×0.82≒267m/min

HARDNESS OF THE WORK MATERIAL

Hardness of the work material also affects tool life. Mitsubishi's TOOL NAVI suggests cutting speed variations when hardness differs. Obtain the suitable coefficient value for each type of work material from the chart below. Multiply the coefficient value by the recommended cutting speed of the grade you use to calculate a new cutting speed.

Work material	Soft ← (Hardness of workpiece) → Hard			
	140HB	180HB	220HB	260HB
P	1.19	1.0	0.85	0.75
M	1.23	1.0	0.85	0.72
K	1.19	1.0	0.91	0.85

CLASSIFICATION OF GRADES AND CHIP BREAKERS FOR TURNING

Selection of optimum inserts for turning

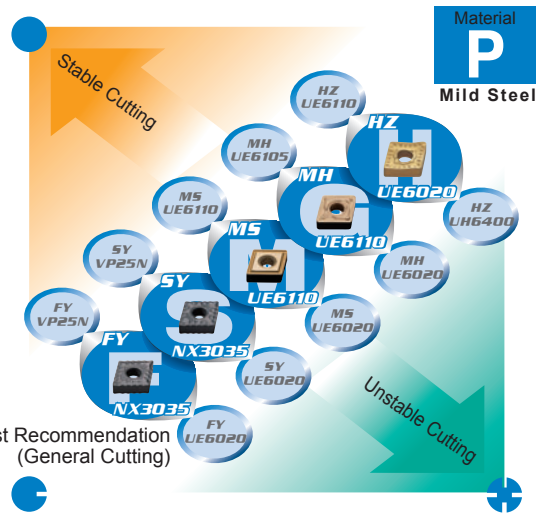
The following diagrams show for each type of work material, the optimal combination of suitable grades and chip breakers for each application area in turning.

CUTTING CONDITIONS

Stable Cutting	Continuous Cutting Constant Depth of Cut Pre-Machined Securely Clamped Component Cutting
General Cutting	
Unstable Cutting	Heavy Interrupted Cutting Irregular Depth of Cut Low Clamping Rigidity Cutting

CUTTING AREA

F	Finish Cutting	(ap≤0.5mm)
S	Light Cutting	(ap=0.5—1.5mm)
M	Medium Cutting	(ap=1.5—4.0mm)
G	Semi-Heavy Cutting	(ap=4.0—7.0mm)
H	Heavy Cutting	(ap=7.0—10mm)

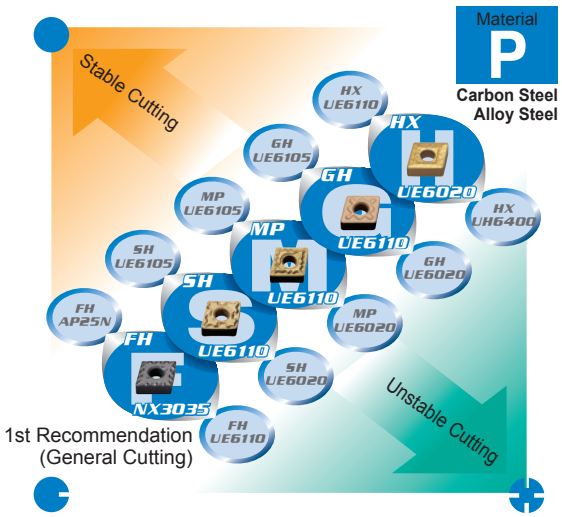


P Mild Steel

NEGATIVE INSERTS

vc : Cutting Speed
f : Feed
ap : Depth of Cut

	Cutting Area	1st Recommendation Chip Breaker	Grade	vc (m/min)	f (mm/rev)	Heavy Wear	Fracture	Long Chips	Chip Jamming
Stable Cutting	F	**FY**	**VP25N**	300—470	0.08—0.22	**vc** ↘	FY NX3035	**f** ↗ , **vc** ↘	SY VP25N
	S	**SY**	**VP25N**	260—410	0.16—0.32	**vc** ↘	SY NX3035	FY VP25N	MS NX3035
	M	**MS**	**UE6110**	260—440	0.16—0.50	**vc** ↘	MS UE6020	SY VP25N	MH UE6110
	G	**MH**	**UE6105**	270—495	0.20—0.55	**vc** ↘	MH UE6110	MA UE6105	GH UE6105
	H	**HZ**	**UE6110**	200—335	0.40—1.20	**vc** ↘	HZ UE6020	GH UE6110	HX UE6110
General Cutting	F	**FY**	**NX3035**	275—385	0.08—0.22	FY VP25N	FY UE6020	**f** ↗ , **vc** ↘	SY NX3035
	S	**SY**	**NX3035**	235—335	0.16—0.32	SY VP25N	SY UE6020	FY NX3035	MS NX3035
	M	**MS**	**UE6110**	260—440	0.16—0.50	**vc** ↘	MS UE6020	SY UE6020	MH UE6110
	G	**MH**	**UE6110**	255—435	0.20—0.55	MH UE6105	MH UE6020	MA UE6110	GH UE6110
	H	**HZ**	**UE6020**	190—305	0.40—1.20	HZ UE6110	HZ UH6400	GH UE6020	HX UE6020
Unstable Cutting	F	**FY**	**UE6020**	295—485	0.08—0.22	FY NX3035	SY UE6020	**f** ↗ , **vc** ↘	SY UE6020
	S	**SY**	**UE6020**	260—420	0.16—0.32	SY NX3035	MS UE6020	FY UE6020	MS UE6020
	M	**MS**	**UE6020**	245—400	0.16—0.50	MS UE6110	MH UE6020	SY UE6020	MH UE6020
	G	**MH**	**UE6020**	240—395	0.20—0.55	MH UE6110	MH UE6035	MA UE6020	GH UE6020
	H	**HZ**	**UH6400**	165—240	0.40—1.20	HZ UE6020	**ap, f** ↘	GH UE6020	HX UH6400



- Stable Cutting
- General Cutting
- Unstable Cutting
- F Finish Cutting
- S Light Cutting
- M Medium Cutting
- G Semi-Heavy Cutting
- H Heavy Cutting

P Carbon Steel • Alloy Steel

NEGATIVE INSERTS

vc : Cutting Speed
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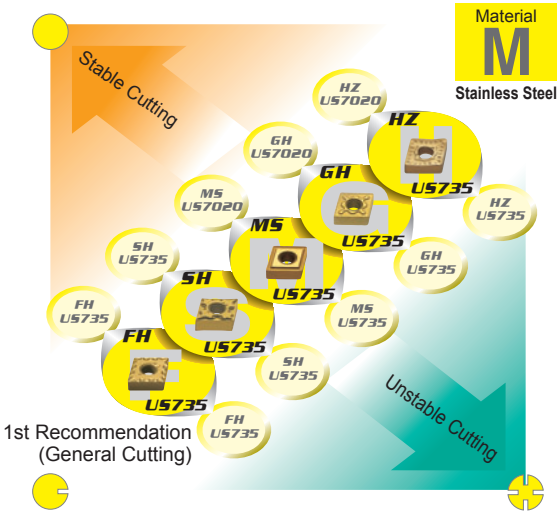
ap : Depth of Cut

	Cutting Area	1st Recommendation Chip Breaker	Grade	vc (m/min)	f (mm/rev)	Heavy Wear	Fracture	Long Chips	Chip Jamming
Stable Cutting	F	FH	AP25N	230—360	0.08—0.20	vc ↘	FH NX3035	f ↗	SH AP25N
	S	SH	UE6105	220—405	0.10—0.40	vc ↘	SH UE6110	FH UE6110	MP UE6105
	M	MP	UE6105	200—370	0.16—0.50	vc ↘	MP UE6110	SH UE6105	MH UE6105
	G	GH	UE6105	180—335	0.25—0.60	vc ↘	GH UE6110	MH UE6105	HZ UE6110
	H	HX	UE6110	145—245	0.45—1.25	vc ↘	HX UE6020	HZ UE6110	HV UE6110
General Cutting	F	FH	NX3035	210—295	0.08—0.20	FH AP25N	FH UE6110	f ↗	SH NX3035
	S	SH	UE6110	210—355	0.10—0.40	SH UE6105	SH UE6020	FH UE6110	MP UE6110
	M	MP	UE6110	190—325	0.16—0.50	MP UE6105	MP UE6020	SH UE6110	MH UE6110
	G	GH	UE6110	170—290	0.25—0.60	GH UE6105	GH UE6020	MH UE6110	HZ UE6110
	H	HX	UE6020	140—225	0.45—1.25	HX UE6110	HX UH6400	HZ UE6020	HV UE6020
Unstable Cutting	F	FH	UE6110	240—410	0.08—0.20	vc ↘	FH UE6020	f ↗	SH UE6110
	S	SH	UE6020	200—325	0.10—0.40	SH UE6110	MP UE6020	FH UE6020	MP UE6020
	M	MP	UE6020	180—295	0.16—0.50	MP UE6110	MH UE6020	SH UE6020	MH UE6020
	G	GH	UE6020	165—265	0.25—0.60	GH UE6110	GH US735	MH UE6020	HZ UE6020
	H	HX	UH6400	125—180	0.45—1.25	HX UE6020	ap, f ↘	HZ UH6400	HV UH6400

CLASSIFICATION OF GRADES AND CHIP BREAKERS FOR TURNING



- Stable Cutting
- General Cutting
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- F Finish Cutting
- S Light Cutting
- M Medium Cutting
- G Semi-Heavy Cutting
- H Heavy Cutting

M Stainless Steel

NEGATIVE INSERTS

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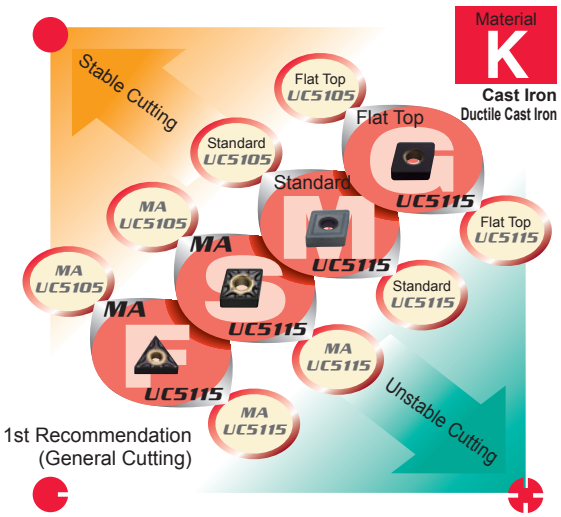
	Cutting Area	1st Recommendation Chip Breaker	Grade	vc (m/min)	f (mm/rev)	Heavy Wear	Fracture	Long Chips	Chip Jamming
Stable Cutting	F	FH	US735	110—210	0.08—0.20	vc ↘	SH US735	—	SH US735
	S	SH	US735	95—185	0.10—0.40	vc ↘	MS US735	FH US735	MS US7020
	M	MS	US7020	95—245	0.16—0.50	vc ↘	MS US735	MA US7020	MH US7020
	G	GH	US7020	85—220	0.25—0.60	vc ↘	GH US735	MH US7020	f ↘
	H	HZ	US7020	75—185	0.40—1.20	vc ↘	HZ US735	GH US7020	f ↘
General Cutting	F	FH	US735	110—210	0.08—0.20	vc ↘	SH US735	—	SH US735
	S	SH	US735	95—185	0.10—0.40	vc ↘	MS US735	FH US735	MS US735
	M	MS	US735	85—165	0.16—0.50	MS US7020	MA US735	MA US735	GH US735
	G	GH	US735	80—150	0.25—0.60	GH US7020	ap, f ↘	MA US735	f ↘
	H	HZ	US735	65—125	0.40—1.20	HZ US7020	ap, f ↘	GH US735	f ↘
Unstable Cutting	F	FH	US735	110—210	0.08—0.20	vc ↘	SH US735	—	SH US735
	S	SH	US735	95—185	0.10—0.40	vc ↘	MS US735	FH US735	MS US735
	M	MS	US735	85—165	0.16—0.50	MS US7020	MA US735	MA US735	GH US735
	G	GH	US735	80—150	0.25—0.60	GH US7020	ap, f ↘	MA US735	f ↘
	H	HZ	US735	65—125	0.40—1.20	HZ US7020	ap, f ↘	GH US735	f ↘



- Stable Cutting
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K Cast Iron • Ductile Cast Iron

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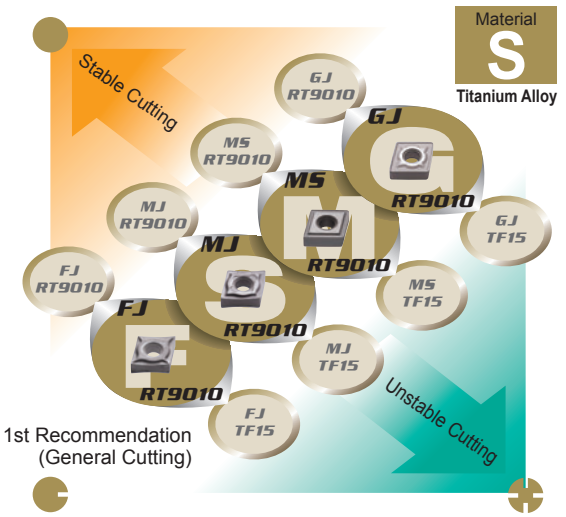
	Cutting Area	1st Recommendation Chip Breaker	Grade	vc (m/min)	f (mm/rev)	Heavy Wear		Fracture	
Stable Cutting	F	MA	UC5105	165—305	0.20—0.50	vc ↘		MA	UC5115
	S	MA	UC5105	165—305	0.20—0.50	vc ↘		MA	UC5115
	M	Standard	UC5105	165—305	0.25—0.60	vc ↘		Standard	UC5115
	G	Flat Top	UC5105	155—290	0.20—0.60	vc ↘		Flat Top	UC5115
General Cutting	F	MA	UC5115	160—295	0.20—0.50	MA	UC5105	Standard	UC5115
	S	MA	UC5115	160—295	0.20—0.50	MA	UC5105	Standard	UC5115
	M	Standard	UC5115	160—295	0.25—0.60	Standard	UC5105	Flat Top	UC5115
	G	Flat Top	UC5115	155—280	0.20—0.60	Flat Top	UC5105	ap, f ↘	
Unstable Cutting	F	MA	UC5115	160—295	0.20—0.50	MA	UC5105	Standard	UC5115
	S	MA	UC5115	160—295	0.20—0.50	MA	UC5105	Standard	UC5115
	M	Standard	UC5115	160—295	0.25—0.60	Standard	UC5105	Flat Top	UC5115
	G	Flat Top	UC5115	155—280	0.20—0.60	Flat Top	UC5105	ap, f ↘	

CLASSIFICATION OF GRADES AND CHIP BREAKERS FOR TURNING



- Stable Cutting
- General Cutting
- Unstable Cutting
- F Finish Cutting
- S Light Cutting
- M Medium Cutting
- G Semi-Heavy Cutting

S Titanium Alloy

NEGATIVE INSERTS

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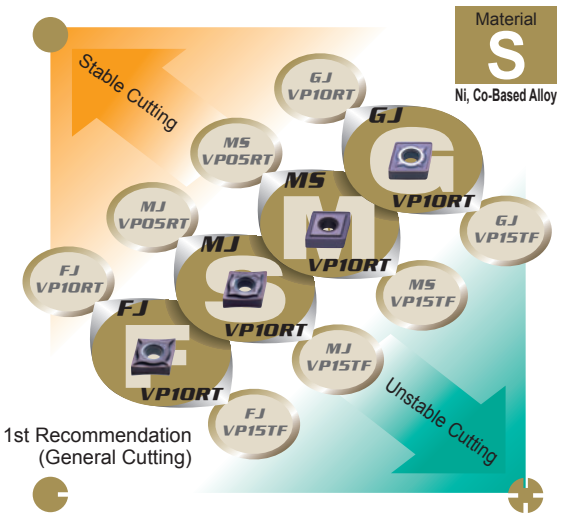
	Cutting Area	1st Recommendation Chip Breaker	Grade	vc (m/min)	f (mm/rev)	Heavy Wear	Fracture	Long Chips	Chip Jamming
Stable Cutting	F	FJ	RT9010	50—100	0.06—0.20	vc ↘	FJ TF15	—	MJ RT9010
	S	MJ	RT9010	40—90	0.06—0.25	vc ↘	MJ TF15	FJ RT9010	f ↘
	M	MS	RT9010	40—80	0.10—0.25	vc ↘	MS TF15	—	GJ RT9010
	G	GJ	RT9010	40—70	0.16—0.35	vc ↘	GJ TF15	—	f ↘
General Cutting	F	FJ	RT9010	50—100	0.06—0.20	vc ↘	FJ TF15	—	MJ RT9010
	S	MJ	RT9010	40—90	0.06—0.25	vc ↘	MJ TF15	FJ RT9010	f ↘
	M	MS	RT9010	40—80	0.10—0.25	vc ↘	MS TF15	—	GJ RT9010
	G	GJ	RT9010	40—70	0.16—0.35	vc ↘	GJ TF15	—	f ↘
Unstable Cutting	F	FJ	TF15	40—80	0.06—0.20	FJ RT9010	MJ TF15	—	MJ TF15
	S	MJ	TF15	30—70	0.06—0.25	MJ RT9010	MS TF15	FJ TF15	f ↘
	M	MS	TF15	30—60	0.10—0.25	MS RT9010	GJ TF15	—	GJ TF15
	G	GJ	TF15	30—50	0.16—0.35	GJ RT9010	ap, f ↘	—	f ↘



- Stable Cutting
- General Cutting
- Unstable Cutting
- F Finish Cutting
- S Light Cutting
- M Medium Cutting
- G Semi-Heavy Cutting

S Ni, Co-Based Alloy

NEGATIVE INSERTS

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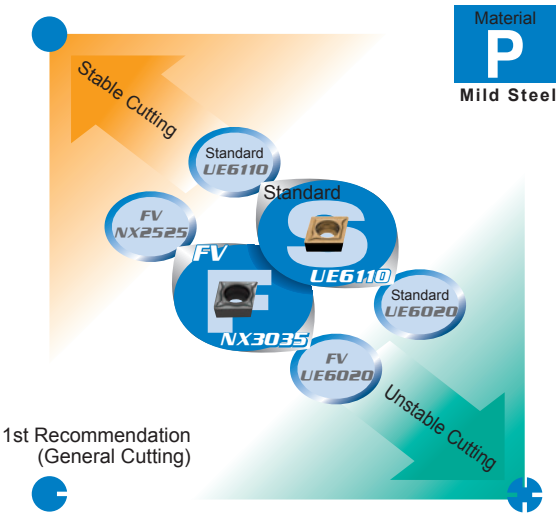
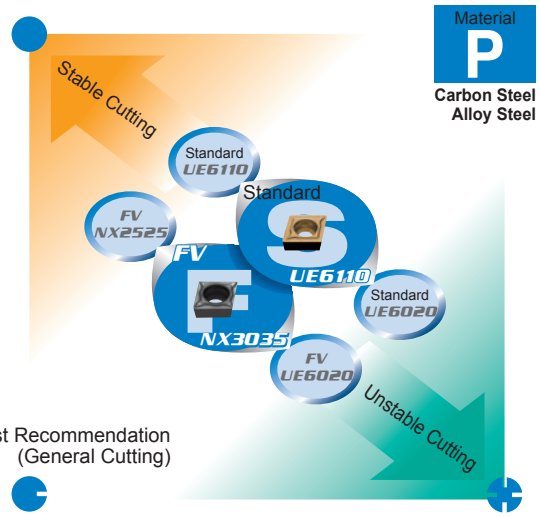
	Cutting Area	1st Recommendation Chip Breaker	Grade	vc (m/min)	f (mm/rev)	Heavy Wear	Fracture	Long Chips	Chip Jamming
Stable Cutting	F	**FJ**	**VP10RT**	20—60	0.06—0.20	**vc** ↘	FJ VP15TF	—	MJ VP10RT
	S	**MJ**	**VP05RT**	30—70	0.06—0.25	MJ US905	MJ VP10RT	FJ VP10RT	**f** ↘
	M	**MS**	**VP05RT**	30—70	0.10—0.25	MS US905	MS VP10RT	—	GJ VP10RT
	G	**GJ**	**VP10RT**	20—40	0.16—0.35	GJ US905	GJ VP15TF	—	**f** ↘
General Cutting	F	**FJ**	**VP10RT**	20—60	0.06—0.20	**vc** ↘	FJ VP15TF	—	MJ VP10RT
	S	**MJ**	**VP10RT**	20—50	0.06—0.25	MJ VP05RT	MJ VP15TF	FJ VP10RT	**f** ↘
	M	**MS**	**VP10RT**	20—50	0.10—0.25	MS VP05RT	MS VP15TF	—	GJ VP10RT
	G	**GJ**	**VP10RT**	20—40	0.16—0.35	GJ US905	GJ VP15TF	—	**f** ↘
Unstable Cutting	F	**FJ**	**VP15TF**	20—60	0.06—0.20	FJ VP10RT	MJ VP15TF	—	MJ VP15TF
	S	**MJ**	**VP15TF**	20—50	0.06—0.25	MJ VP10RT	MS VP15TF	FJ VP15TF	**f** ↘
	M	**MS**	**VP15TF**	20—50	0.10—0.25	MS VP10RT	GJ VP15TF	—	GJ VP15TF
	G	**GJ**	**VP15TF**	20—40	0.16—0.35	GJ VP10RT	**ap, f** ↘	—	**f** ↘

CLASSIFICATION OF GRADES AND CHIP BREAKERS FOR TURNING

Stable Cutting
General Cutting
Unstable Cutting

F Finish Cutting
S Light Cutting





P Mild Steel

7°POSITIVE INSERT TYPE

vc : Cutting Speed
f : Feed

	Cutting Area	1st Recommendation Chip Breaker	Grade	vc (m/min)	f (mm/rev)	Heavy Wear	Fracture	Long Chips	Chip Jamming
Stable Cutting	F	FV	NX2525	230—330	0.04—0.20	FV AP25N	FV NX3035	f ↗, vc ↘	Standard NX2525
	S	Standard	UE6110	215—360	0.06—0.30	vc ↘	Standard UE6020	FV UE6020	f ↘
General Cutting	F	FV	NX3035	220—315	0.04—0.20	FV NX2525	FV UE6020	f ↗, vc ↘	Standard UE6110
	S	Standard	UE6110	215—360	0.06—0.30	vc ↘	Standard UE6020	FV UE6020	f ↘
Unstable Cutting	F	FV	UE6020	240—395	0.04—0.20	vc ↘	Standard UE6020	f ↗, vc ↘	Standard UE6020
	S	Standard	UE6020	200—330	0.06—0.30	Standard UE6110	Standard US735	FV UE6020	f ↘

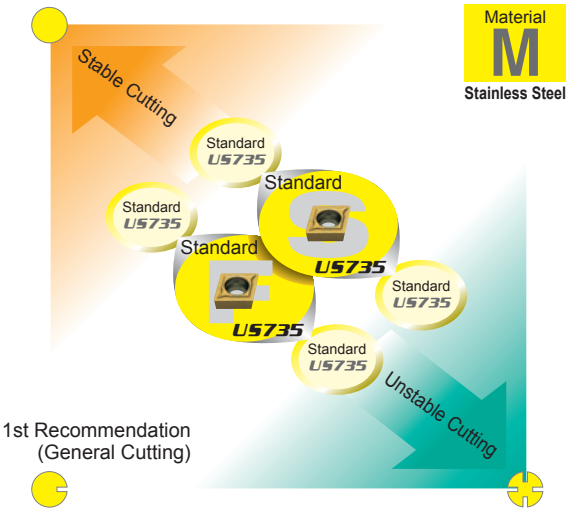
P Carbon Steel • Alloy Steel

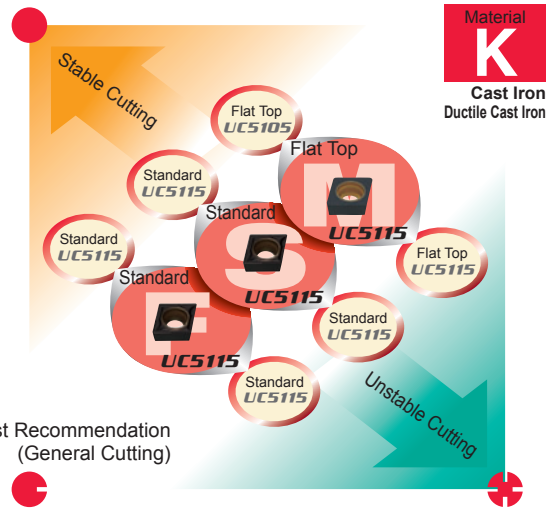
7°POSITIVE INSERT TYPE

vc : Cutting Speed
f : Feed

	Cutting Area	1st Recommendation Chip Breaker	Grade	vc (m/min)	f (mm/rev)	Heavy Wear	Fracture	Long Chips	Chip Jamming
Stable Cutting	F	FV	NX2525	170—245	0.04—0.20	FV AP25N	FV NX3035	f ↗, vc ↘	Standard NX2525
	S	Standard	UE6110	160—270	0.06—0.30	vc ↘	Standard UE6020	FV UE6020	f ↘
General Cutting	F	FV	NX3035	165—235	0.04—0.20	FV NX2525	FV UE6020	f ↗, vc ↘	Standard UE6110
	S	Standard	UE6110	160—270	0.06—0.30	vc ↘	Standard UE6020	FV UE6020	f ↘
Unstable Cutting	F	FV	UE6020	180—295	0.04—0.20	vc ↘	Standard UE6020	f ↗, vc ↘	Standard UE6020
	S	Standard	UE6020	150—245	0.06—0.30	Standard UE6110	Standard US735	FV UE6020	f ↘

Stable Cutting	F Finish Cutting
General Cutting	S Light Cutting
Unstable Cutting	M Medium Cutting





M Stainless Steel

7°POSITIVE INSERT TYPE

vc : Cutting Speed
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ap : Depth of Cut

	Cutting Area	1st Recommendation Chip Breaker	Grade	vc (m/min)	f (mm/rev)	Heavy Wear	Fracture	Long Chips	Chip Jamming
Stable Cutting	F	Standard	US735	70—140	0.06—0.30	vc ↘	ap, f ↘	f ↗, vc ↘	f ↘
	S	Standard	US735	70—140	0.06—0.30	vc ↘	ap, f ↘	f ↗, vc ↘	f ↘
General Cutting	F	Standard	US735	70—140	0.06—0.30	vc ↘	ap, f ↘	f ↗, vc ↘	f ↘
	S	Standard	US735	70—140	0.06—0.30	vc ↘	ap, f ↘	f ↗, vc ↘	f ↘
Unstable Cutting	F	Standard	US735	70—140	0.06—0.30	vc ↘	ap, f ↘	f ↗, vc ↘	f ↘
	S	Standard	US735	70—140	0.06—0.30	vc ↘	ap, f ↘	f ↗, vc ↘	f ↘

K Cast Iron • Ductile Cast Iron

7°POSITIVE INSERT TYPE

vc : Cutting Speed
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	Cutting Area	1st Recommendation Chip Breaker	Grade	vc (m/min)	f (mm/rev)	Heavy Wear	Fracture
Stable Cutting	F	Standard	UC5115	135—245	0.06—0.30	vc ↘	Standard UE6110
	S	Standard	UC5115	135—245	0.06—0.30	vc ↘	Standard UE6110
	M	Flat Top	UC5105	140—255	0.08—0.30	vc ↘	Flat Top UC5115
General Cutting	F	Standard	UC5115	135—245	0.06—0.30	vc ↘	Standard UE6110
	S	Standard	UC5115	135—245	0.06—0.30	vc ↘	Standard UE6110
	M	Flat Top	UC5115	135—245	0.08—0.30	Flat Top UC5105	ap, f ↘
Unstable Cutting	F	Standard	UC5115	135—245	0.06—0.30	vc ↘	Standard UE6110
	S	Standard	UC5115	135—245	0.06—0.30	vc ↘	Standard UE6110
	M	Flat Top	UC5115	135—245	0.08—0.30	Flat Top UC5105	ap, f ↘

CLASSIFICATION OF GRADES AND CHIP BREAKERS FOR TURNING

- Stable Cutting
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- F Finish Cutting

N Aluminium Alloy

7°POSITIVE INSERT TYPE

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	Cutting Area	1st Recommendation Chip Breaker	Grade	vc (m/min)	f (mm/rev)	Heavy Wear	Fracture	Long Chips	Chip Jamming
Stable Cutting	F	AZ	HTi10	300—700	0.10—0.40	vc ↘	ap, f ↘	f ↗, vc ↘	f ↘
General Cutting	F	AZ	HTi10	300—700	0.10—0.40	vc ↘	ap, f ↘	f ↗, vc ↘	f ↘
Unstable Cutting	F	AZ	HTi10	300—700	0.10—0.40	vc ↘	ap, f ↘	f ↗, vc ↘	f ↘

S Titanium Alloy

7°POSITIVE INSERT TYPE

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	Cutting Area	1st Recommendation Chip Breaker	Grade	vc (m/min)	f (mm/rev)	Heavy Wear	Fracture	Chip Jamming
Stable Cutting	F	* FJ	RT9010	40—85	0.04—0.12	vc ↘	ap, f ↘	f ↘
General Cutting	F	* FJ	RT9010	40—85	0.04—0.12	vc ↘	ap, f ↘	f ↘
Unstable Cutting	F	* FJ	RT9010	40—85	0.04—0.12	vc ↘	ap, f ↘	f ↘

*Non stock, produced to order only.

S Ni, Co-Based Alloy

7°POSITIVE INSERT TYPE

vc : Cutting Speed
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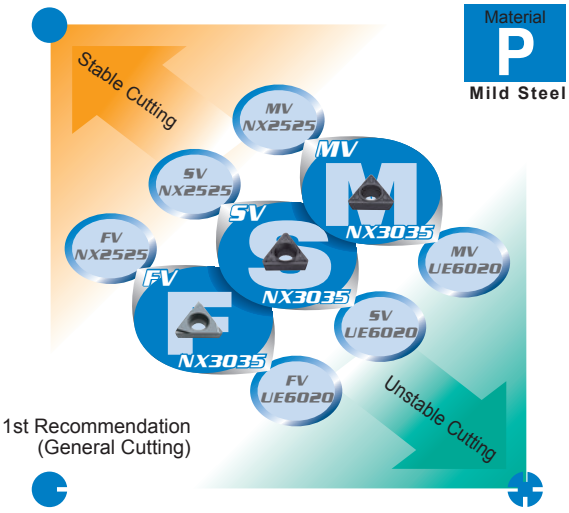
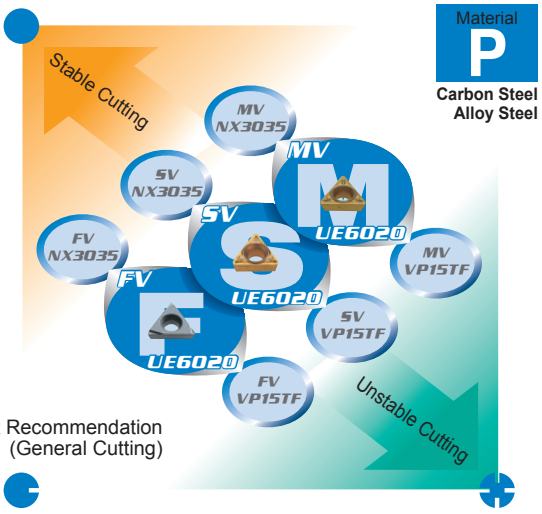
	Cutting Area	1st Recommendation Chip Breaker	Grade	vc (m/min)	f (mm/rev)	Heavy Wear	Fracture	Chip Jamming
Stable Cutting	F	* FJ	VP10RT	20—50	0.04—0.12	vc ↘	ap, f ↘	f ↘
General Cutting	F	* FJ	VP10RT	20—50	0.04—0.12	vc ↘	ap, f ↘	f ↘
Unstable Cutting	F	* FJ	VP10RT	20—50	0.04—0.12	vc ↘	ap, f ↘	f ↘

*Non stock, produced to order only.

Stable Cutting	F Finish Cutting
General Cutting	S Light Cutting
Unstable Cutting	M Medium Cutting





P Mild Steel

11°POSITIVE INSERT TYPE

vc : Cutting Speed
f : Feed
ap : Depth of Cut

	Cutting Area	1st Recommendation Chip Breaker	Grade	vc (m/min)	f (mm/rev)	Heavy Wear	Fracture	Long Chips	Chip Jamming
Stable Cutting	F	FV	NX2525	230—330	0.04—0.20	vc ↘	FV VP15TF	f ↗, vc ↘	f ↘
	S	SV	NX2525	230—330	0.05—0.25	vc ↘	SV NX3035	f ↗, vc ↘	MV NX2525
	M	MV	NX2525	195—275	0.08—0.30	MV AP25N	MV NX3035	SV NX2525	f ↘
General Cutting	F	FV	NX3035	220—315	0.04—0.20	FV NX2525	FV VP15TF	f ↗, vc ↘	f ↘
	S	SV	NX3035	165—235	0.05—0.25	SV NX2525	SV VP45N	f ↗, vc ↘	MV NX3035
	M	MV	NX3035	140—195	0.08—0.30	MV NX2525	MV VP25N	SV NX3035	f ↘
Unstable Cutting	F	FV	UE6020	240—395	0.04—0.20	FV NX3035	ap, f ↘	f ↗, vc ↘	f ↘
	S	SV	UE6020	295—395	0.05—0.25	SV US7020	SV VP15TF	f ↗, vc ↘	MV UE6020
	M	MV	UE6020	150—245	0.08—0.30	MV US7020	MV VP15TF	SV UE6020	f ↘

P Carbon Steel • Alloy Steel

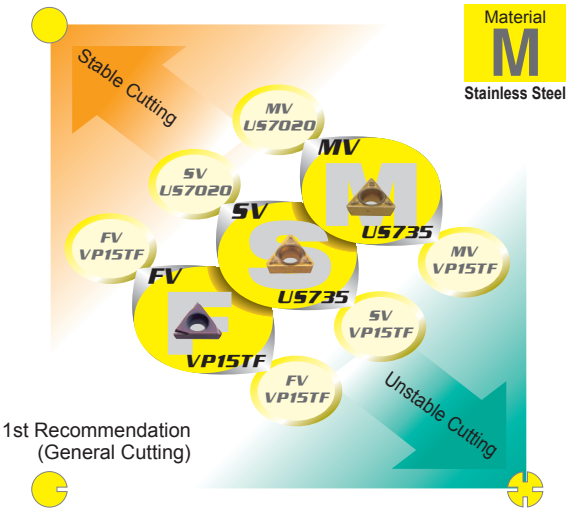
11°POSITIVE INSERT TYPE

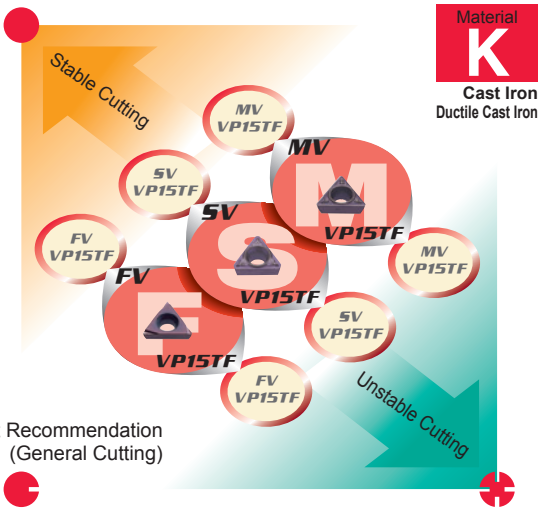
vc : Cutting Speed
f : Feed
ap : Depth of Cut

	Cutting Area	1st Recommendation Chip Breaker	Grade	vc (m/min)	f (mm/rev)	Heavy Wear	Fracture	Long Chips	Chip Jamming
Stable Cutting	F	FV	NX3035	165—235	0.04—0.20	vc ↘	R/L-FS VP15TF	f ↗, vc ↘	f ↘
	S	SV	NX3035	165—235	0.05—0.25	SV NX2525	SV VP45N	f ↗, vc ↘	MV NX3035
	M	MV	NX3035	140—195	0.08—0.30	MV NX2525	MV VP45N	SV NX3035	f ↘
General Cutting	F	FV	UE6020	180—295	0.04—0.20	FV NX3035	R/L-FS VP15TF	f ↗, vc ↘	f ↘
	S	SV	UE6020	180—295	0.05—0.25	SV US7020	SV VP15TF	f ↗, vc ↘	MV UE6020
	M	MV	UE6020	150—245	0.08—0.30	MV US7020	MV VP15TF	SV UE6020	f ↘
Unstable Cutting	F	FV	VP15TF	90—190	0.04—0.20	FV UE6020	ap, f ↘	f ↗, vc ↘	f ↘
	S	SV	VP15TF	90—190	0.05—0.25	SV UE6020	MV VP15TF	f ↗, vc ↘	MV VP15TF
	M	MV	VP15TF	70—150	0.08—0.30	MV UE6020	ap, f ↘	SV VP15TF	f ↘

CLASSIFICATION OF GRADES AND CHIP BREAKERS FOR TURNING

Stable Cutting	F Finish Cutting
General Cutting	S Light Cutting
Unstable Cutting	M Medium Cutting





M Stainless Steel

11°POSITIVE INSERT TYPE

vc : Cutting Speed
f : Feed
ap : Depth of Cut

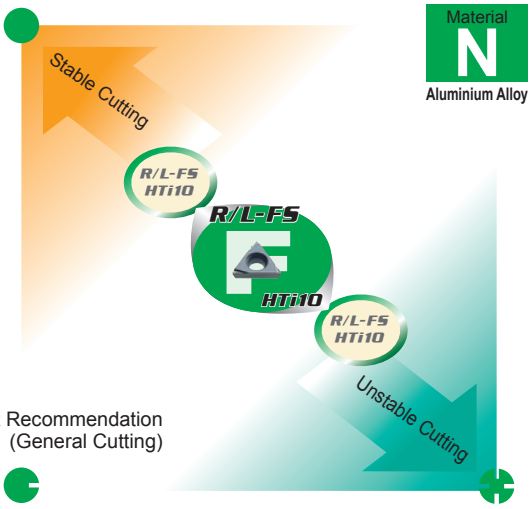
	Cutting Area	1st Recommendation Chip Breaker	Grade	vc (m/min)	f (mm/rev)	Heavy Wear	Fracture	Long Chips	Chip Jamming
Stable Cutting	F	FV	VP15TF	110—190	0.04—0.20	vc ↘	ap, f ↘	—	f ↘
	S	SV	US7020	95—245	0.05—0.25	vc ↘	SV US735	—	MV US7020
	M	MV	US7020	80—205	0.08—0.30	vc ↘	MV US735	SV US7020	f ↘
General Cutting	F	FV	VP15TF	110—190	0.04—0.20	vc ↘	ap, f ↘	—	f ↘
	S	SV	US735	85—165	0.05—0.25	SV US7020	SV VP15TF	—	MV US735
	M	MV	US735	70—140	0.08—0.30	MV US7020	MV VP15TF	SV US735	f ↘
Unstable Cutting	F	FV	VP15TF	110—190	0.04—0.20	vc ↘	ap, f ↘	—	f ↘
	S	SV	VP15TF	110—190	0.05—0.25	SV US7020	MV VP15TF	—	MV VP15TF
	M	MV	VP15TF	80—160	0.08—0.30	MV US7020	ap, f ↘	SV VP15TF	f ↘

K Cast Iron • Ductile Cast Iron

11°POSITIVE INSERT TYPE

vc : Cutting Speed
f : Feed
ap : Depth of Cut

	Cutting Area	1st Recommendation Chip Breaker	Grade	vc (m/min)	f (mm/rev)	Heavy Wear	Fracture
Stable Cutting	F	FV	VP15TF	75—150	0.04—0.20	vc ↘	ap, f ↘
	S	SV	VP15TF	75—150	0.05—0.25	vc ↘	MV VP15TF
	M	MV	VP15TF	60—120	0.08—0.30	vc ↘	ap, f ↘
General Cutting	F	FV	VP15TF	75—150	0.04—0.20	vc ↘	ap, f ↘
	S	SV	VP15TF	75—150	0.05—0.25	vc ↘	MV VP15TF
	M	MV	VP15TF	60—120	0.08—0.30	vc ↘	ap, f ↘
Unstable Cutting	F	FV	VP15TF	75—150	0.04—0.20	vc ↘	ap, f ↘
	S	SV	VP15TF	75—150	0.05—0.25	vc ↘	MV VP15TF
	M	MV	VP15TF	60—120	0.08—0.30	vc ↘	ap, f ↘



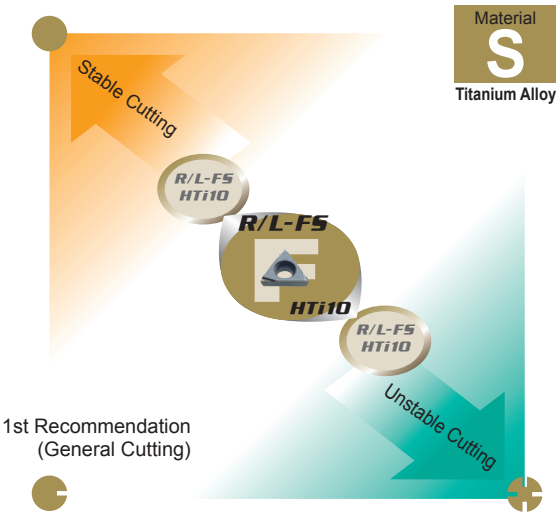
Stable Cutting
General Cutting
Unstable Cutting
F Finish Cutting

N Aluminium Alloy

11°POSITIVE INSERT TYPE

vc : Cutting Speed
f : Feed
ap : Depth of Cut

	Cutting Area	1st Recommendation Chip Breaker	Grade	vc (m/min)	f (mm/rev)	Heavy Wear	Fracture	Long Chips	Chip Jamming
Stable Cutting	F	**R/L-FS**	**HTi10**	200—400	0.05—0.12	vc ↘	ap, f ↘	f ↗ , vc ↘	f ↘
General Cutting	F	**R/L-FS**	**HTi10**	200—400	0.05—0.12	vc ↘	ap, f ↘	f ↗ , vc ↘	f ↘
Unstable Cutting	F	**R/L-FS**	**HTi10**	200—400	0.05—0.12	vc ↘	ap, f ↘	f ↗ , vc ↘	f ↘



S Titanium Alloy

11°POSITIVE INSERT TYPE

vc : Cutting Speed
f : Feed
ap : Depth of Cut

	Cutting Area	1st Recommendation Chip Breaker	Grade	vc (m/min)	f (mm/rev)	Heavy Wear	Fracture	Chip Jamming
Stable Cutting	F	**R/L-FS**	**HTi10**	40—85	0.05—0.12	vc ↘	ap, f ↘	f ↘
General Cutting	F	**R/L-FS**	**HTi10**	40—85	0.05—0.12	vc ↘	ap, f ↘	f ↘
Unstable Cutting	F	**R/L-FS**	**HTi10**	40—85	0.05—0.12	vc ↘	ap, f ↘	f ↘

S Ni, Co-Based Alloy

11°POSITIVE INSERT TYPE

vc : Cutting Speed
f : Feed
ap : Depth of Cut

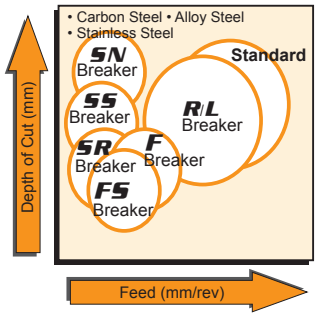
	Cutting Area	1st Recommendation Chip Breaker	Grade	vc (m/min)	f (mm/rev)	Heavy Wear	Fracture	Chip Jamming
Stable Cutting	F	**R/L-FS**	**VP15TF**	20—50	0.05—0.12	vc ↘	ap, f ↘	f ↘
General Cutting	F	**R/L-FS**	**VP15TF**	20—50	0.05—0.12	vc ↘	ap, f ↘	f ↘
Unstable Cutting	F	**R/L-FS**	**VP15TF**	20—50	0.05—0.12	vc ↘	ap, f ↘	f ↘

PRECISION BREAKER SYSTEM

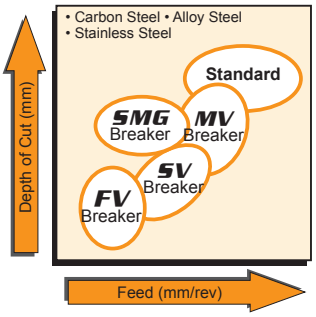
ANGULAR AND PARALLEL CHIP BREAKER

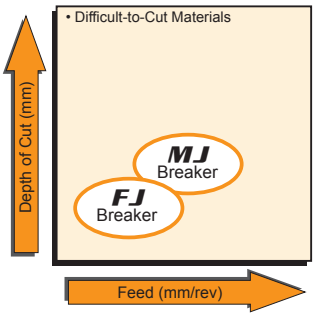
3-D CHIP BREAKER

CHIP CONTROL RANGE



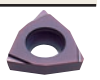
CHIP CONTROL RANGES

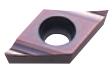
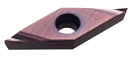
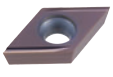
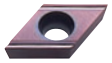
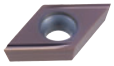
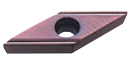




FEATURES OF CHIP BREAKER

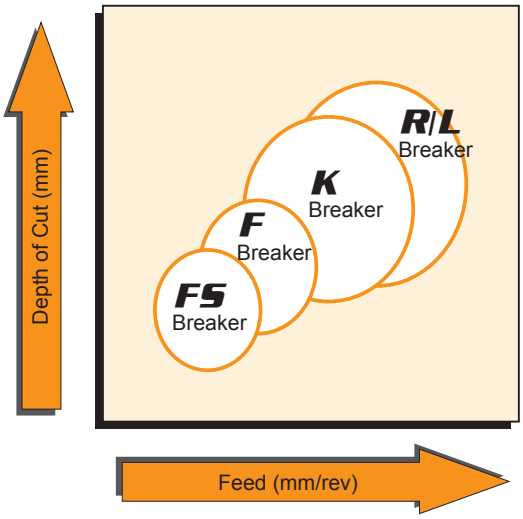
Breaker	Features	CCGH/CCGT Type	CCMH/CCMT CPMH/CPMT Type	DCMT Type	DCGT Type	TCGT/TCMT Type	TPMH Type	VBGT/VBMT Type	VCMT Type	WBMT/WCGT Type
SMG (G class)	● For medium cutting. ● 3D moulded chipbreaker provides good chip control. ● G class insert gives sharp cutting action, allowing high precision machining.		—	—		—	—	—	—	—
FV (M class)	● Sharp cutting edge and low resistance design achieves excellent cutting performance. ● Suitable for low depths of cut and low feed rates.	—			—			—		—
SV (M class)	● For light cutting. ● A peninsular dot ensures chip control at depths of cut under 1mm.	—			—	—		—	—	—
MV (M class)	● A positive insert and the large rake angle achieve sharp cutting edge performance. ● The double breakers and round-shaped dots in the rake face achieve a wide range of chip discharge.	—			—	—				
Standard (M class)	● For medium cutting. ● Balance of edge strength and sharpness due to a combination of a flat land and large rake angle.	—			—		—	—		—
FJ	● The curved edge allows smooth chip discharge. ● The large rake angle highly suitable for finishing difficult-to-cut materials.		—	—			—		—	
MJ	● The curved edge allows smooth chip discharge. ● Large rake angle highly suitable for finish-light cutting difficult-to-cut materials.		—	—			—		—	

Breaker	Features	CCGH/CCGT Type	CPGT Type	DCGT Type	TPGH Type	TPGV/TPGT Type	TCGT Type	VBGT/VCGT Type	WBGT Type	WCGT Type	WPGT Type
FS	● For precision finishing. ● Small width lead breaker for excellent chip control. ● Sharp cutting edge gives a good surface finish.	—	—	—		—	—	—	—	—	
F	● For finish cutting. ● Lead breaker controls chip flow. ● Sharp cutting edge gives a good surface finish.				—					—	—
R/L	● Lead breaker for light cutting. ● Good chip control for low to medium feed rates.	—	—	—	—	—	—	—	—		—
Standard	● For light cutting. ● Good chip control for low to medium feed rates.	—		—	—	—	—	—	—	—	

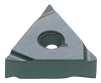
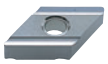
Breaker	Features	**CCET** Type	**CCGT** Type	**DCET** Type	**DCGT** Type	**VBET** Type
SR	● The wide lead breaker for medium cutting is suitable for automatic lathe machining. ● The insert design for low resistance controls chip flow.		—		—	
SS	● The parallel breaker for light cutting is suitable for automatic lathe machining. ● Excellent chip control at low feed rates.	—		—		—
SN	● The parallel breaker for general purpose is suitable for automatic lathe machining. ● Excellent chip control for low to medium feed rates.					

ANGULAR AND PARALLEL CHIP BREAKERS (NEGATIVE INSERTS)

CHIP CONTROL RANGE



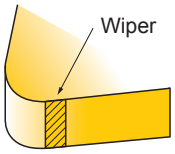
FEATURES OF CHIP BREAKER

Breaker	Features	DNGG Type	SNGG Type	TNGG Type	VNGG Type
FS	● For precision finishing. ● Small width lead breaker for good chip control. ● Sharp cutting edge gives a good surface finish.	—	—		—
F	● For finish cutting. ● Lead breaker controls chip flow. ● Sharp cutting edge gives a good surface finish.	—	—		—
K	● Parallel breaker for light cutting. ● Excellent chip control for low to medium feed rates.	—	—		—
R/L	● Parallel breaker for medium cutting. ● Good chip control for medium feed rates.				

WIPER INSERT

What is a Wiper Insert?

- The wiper insert is designed with a wiper edge that is situated where the straight edge meets the corner radius.
- In comparison to conventional breakers, the surface finish does not deteriorate even if the feed rate is doubled.
- Machining at high feed rates improves cutting efficiency.



●Improving Surface Finish

Under the same machining conditions as conventional breakers, but with the feed rate increased, the surface finish of the workpiece can be improved.

●Improving Efficiency

High feed rates not only shortened machining times but also make it possible to combine roughing and finishing operations.

●Increased Tool Life

When a change to high feed conditions, the time required to cut one component is decreased, thus more parts can be machined with each insert. In addition, the high feed rate prevents rubbing, therefore, delaying the progression of wear and increasing the tool life of the insert.

●Improving Chip Control

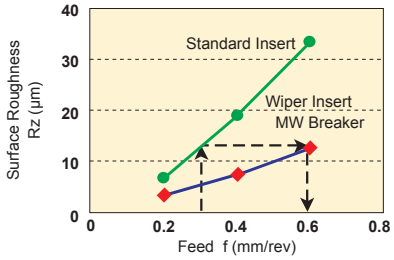
Under high feed conditions, the chips generated become thicker and are more easily broken, thus, chip control is improved.

Wiper insert + High feed (The feed rate is doubled.)

Finished surface Same surface roughness =

Standard insert + The conventional feed condition

*Please use a wiper insert at high feed rate.



<Cutting Conditions>
Workpiece : JIS S45C
Insert : CNMG120408-○○
Cutting Speed=200m/min
Depth of Cut=1.5mm
Feed Speed=0.2—0.6mm/rev
Wet Outer Diameter Cutting

<Ex>The surface roughness does not deteriorate even if the feed rate is doubled (0.3→0.6)!

■A wiper insert + machining at high feed rate

- Reduced machining time (per workpieces)
- Increased number of workpieces (per definitive time period)
- Improving chip control

■A wiper insert + machining at conventional feed rate

- Eliminating the finishing step by roughing and finishing together (Separate roughing and finishing steps → Single-step machining)

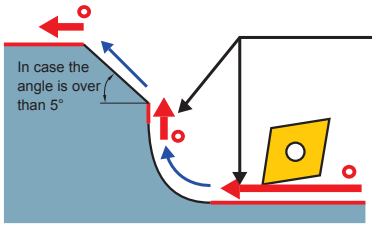
- Reducing cycle times
- Increased productivity
- Avoiding Line-Stoppage

<The realization of Reduced Costs!!>

The estimate of finished surface roughness when using a wiper insert

The effects of wiper inserts on external machining, boring and facing.

*The surface roughness when machining at corner R or taper angle over 5°, is the same as machining with standard inserts.



Rz(W)=Rz×0.5

Rz(W)=Finished surface roughness when using a wiper insert.
Rz : Finished surface roughness from conventional conditions. (When using a standard insert)

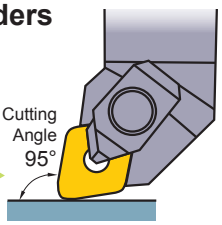
Effective uses of a wiper insert
Non effective uses of a wiper insert

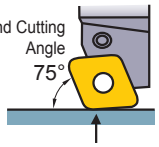
Special attention is not necessary when using CNMG • WNMG • CCMT types

■No Restriction for Holders

A standard holders can be used.
(*A double clamp, high rigidity tool is recommended.)

Non restriction →



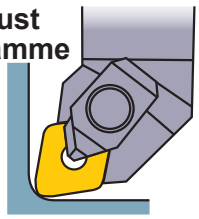


The CNMG type can be used as a wiper at the 100°corner.

■Not Necessary to Adjust the Machining Programme

Conventional machining programmes can be used. (The CNMG • WNMG • CCMT types are based on the ISO/ANSI.)

Not necessary to adjust →



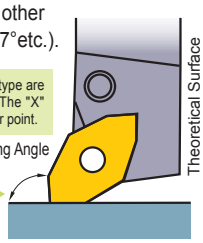
Special attention is necessary when using the DNMX • TNMX types due to the special top face geometry

■Restriction for Holders

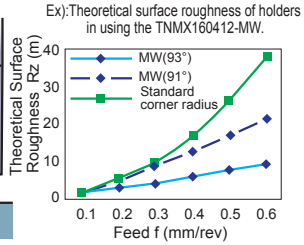
Use a holder with end cutting angle 93° for improving wiper efficiency. A holder with end cutting angle 91° can improve wiper efficiency (see the following figure), however, there is no wiper efficiency with other end cutting angles (60°, 90°, 107°etc.).

The hole geometry of the DNMX and TNMX type are the same as the DNMG and TNMG types. The "X" represents the special geometry of the Corner point.

93° (Specified) →



Ex):Theoretical surface roughness of holders in using the TNMX160412-MW.

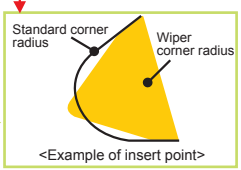


■Necessary to Adjust the Machining Programme

When machining errors occur, please adjust the programme.

(The DNMX • TNMX types are not based on the ISO/ANSI. Please refer to the next page.)

Adjustment necessary →

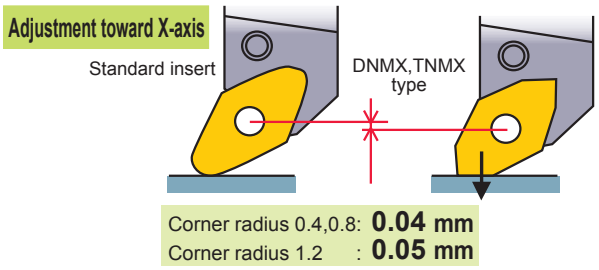


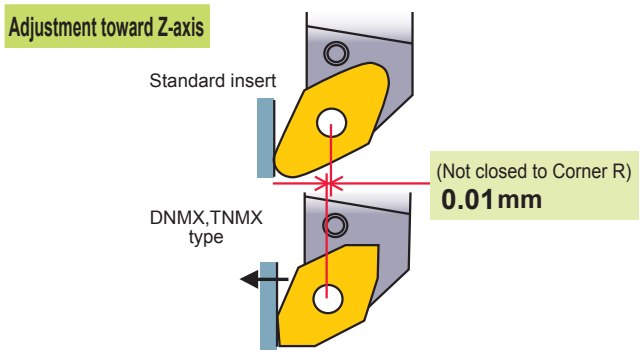
<Example of insert point>

Adjustment of machining programmes for DNMX • TNMX types

Basic Process) Adjusting Toward X-axis and Z-axis

Adjusting the differential between a standard insert and Z-axis / X-axis.

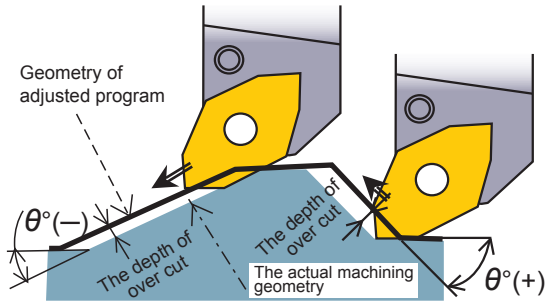




A) Adjusting a Taper *Necessary to maintain a correct taper.

Adjust the relief angle toward the normal line.

Note) Adjust the angle toward the normal line in the case where the adjustment number is minus (θ=60°—70°) and is not machined completely.



Classification

Corner radius	Taper Angleθ°															
	-25—-15	-10	-5	**0**	5	10	15	20—35	40	45	50	55	60—65	70	75—85	**90**
1.2	0.04	0.03	0.01	**0**	0.02	0.03	0.04	0.05	0.04	0.04	0.02	0.01	-0.01	0	0.01	**0**
0.8	0.03	0.02	0.01	**0**	0.01	0.02	0.03	0.04	0.03	0.03	0.02	0	-0.01	0	0.01	**0**
0.4	0.02	0.01	0.01	**0**	0.01	0.01	0.02	0.02	0.02	0.01	0.01	0	-0.01	-0.01	0	**0**

The number→+numbers:adjustment of relief angle, -numbers:adjustment of drive-in angle (mm)

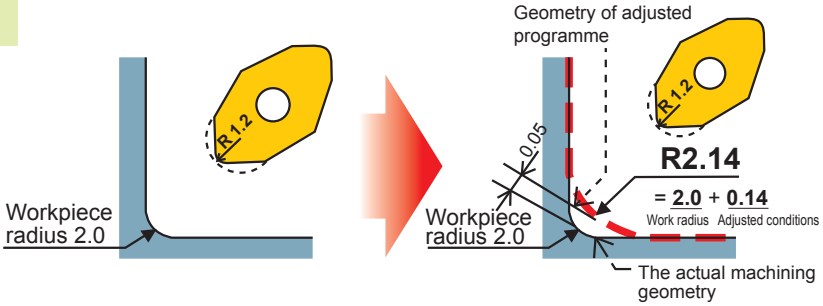
B) Adjusting a Corner R *Necessary to maintain a correct corner radius.

Adjust the work diameter same as the taper to prevent cut-over.

The value of adjustment to work R
= Work R + the adjustment value
*No adjusting the corner radius in this case.

The corner radius of the insert	The adjustment amount on the workpiece radius.
Corner Radius0.4 →	Work Radius **+0.05**(mm)
Corner Radius0.8 →	Work Radius **+0.11**(mm)
Corner Radius1.2 →	Work Radius **+0.14**(mm)

Ex) : In case of machining R 2.0 when using a corner R 1.2 type insert.



The Easy-to-correct Method

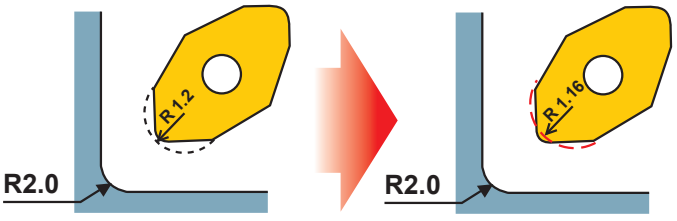
In correcting corner radius:
It is not necessary to adjust the machining program, however, machining errors can occur within max. ±0.03mm due to correcting by an approximate number.

Corner Radius Correction Input the correction number of each corner radius.

The value of corrected corner radius
= approximation
*No adjusting the machining programme in this case.

The corner radius of a insert	The value of corrected corner radius = approximation
Corner Radius0.4 →	**R0.36**(mm)
Corner Radius0.8 →	**R0.76**(mm)
Corner Radius1.2 →	**R1.16**(mm)

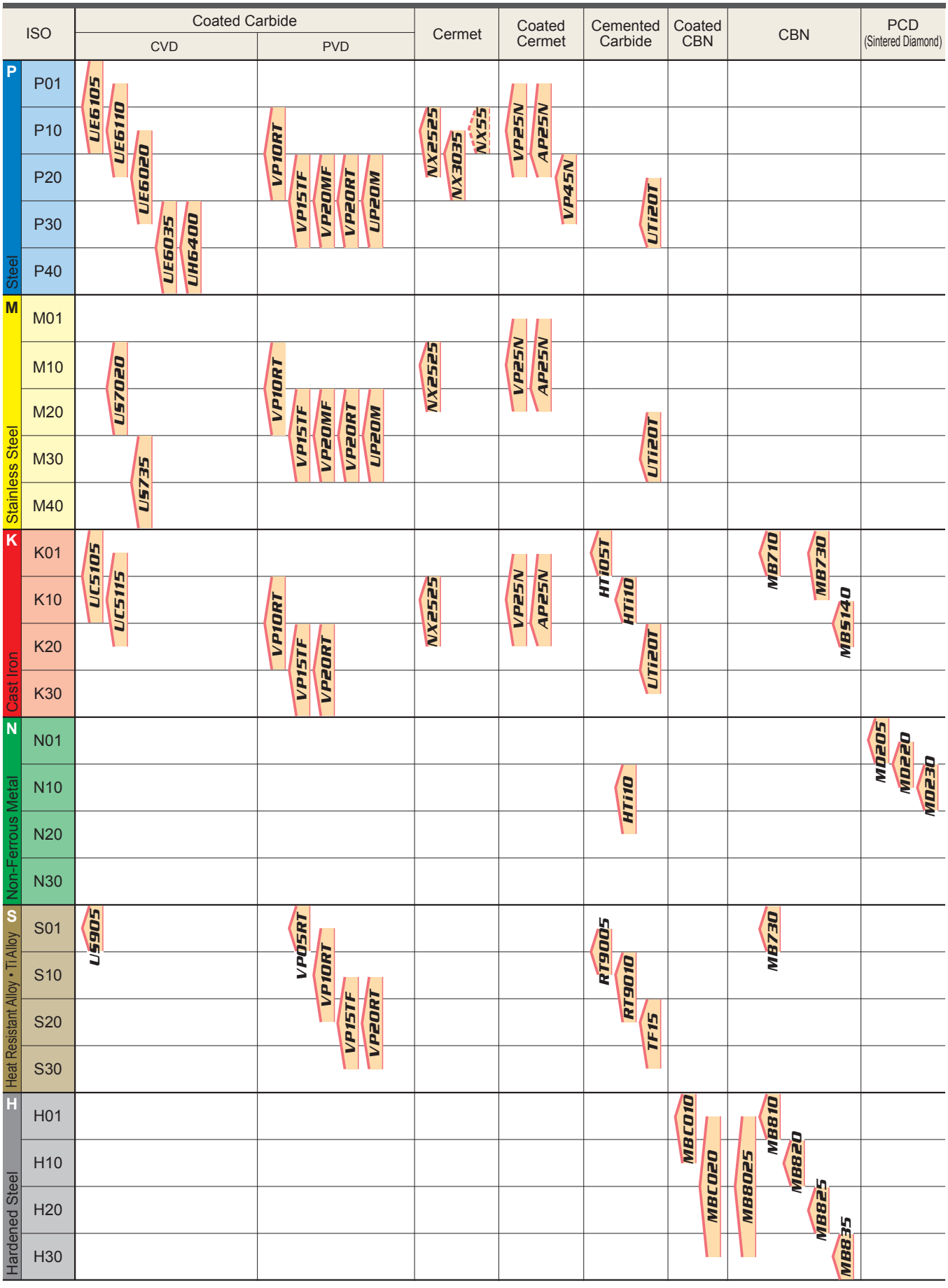
Ex): In the case of machining a corner with a radius R 2.0 when using an insert with a corner radius R 1.2.



Others) The value of correction is same for both DNMX and TNMX. Discriminate them by the size of corner radius.

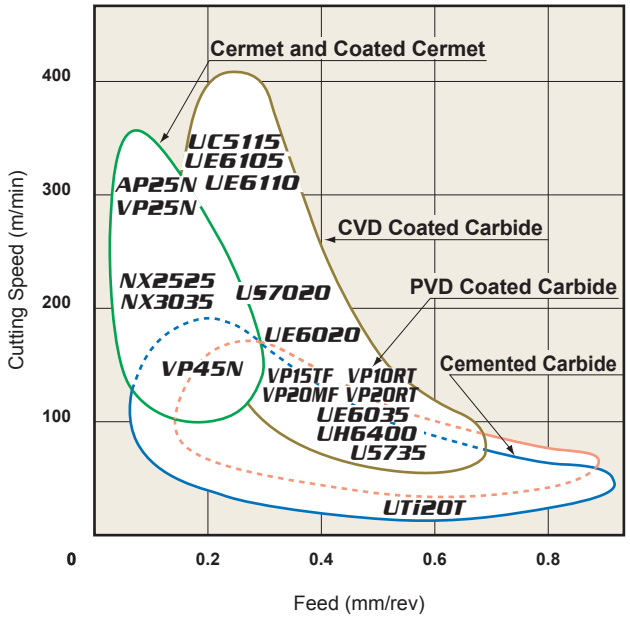
GRADES FOR TURNING

●INDEXABLE INSERT GRADES FOR TURNING

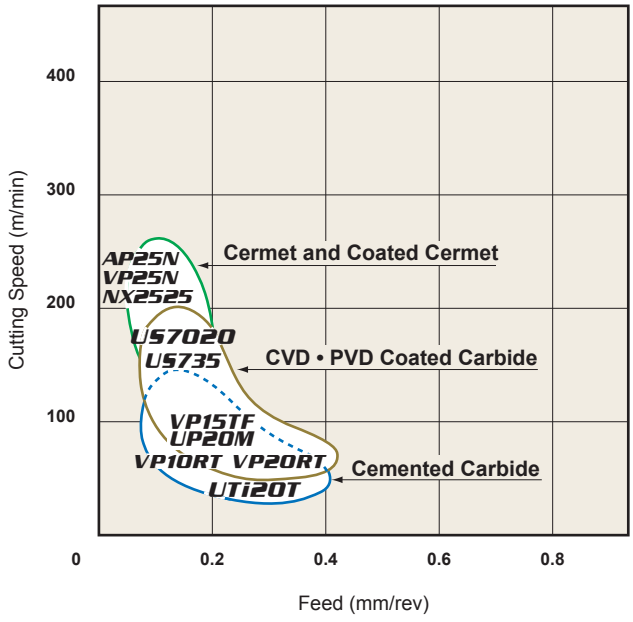


TURNING APPLICATION RANGE

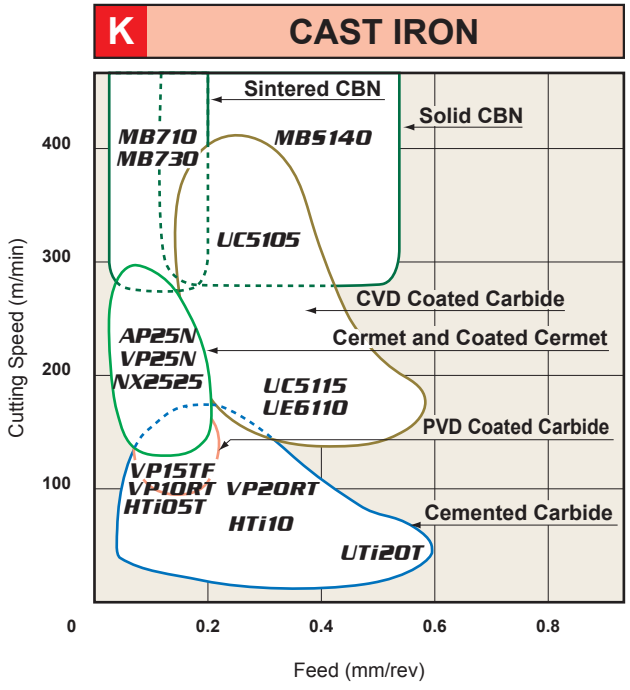
P STEEL



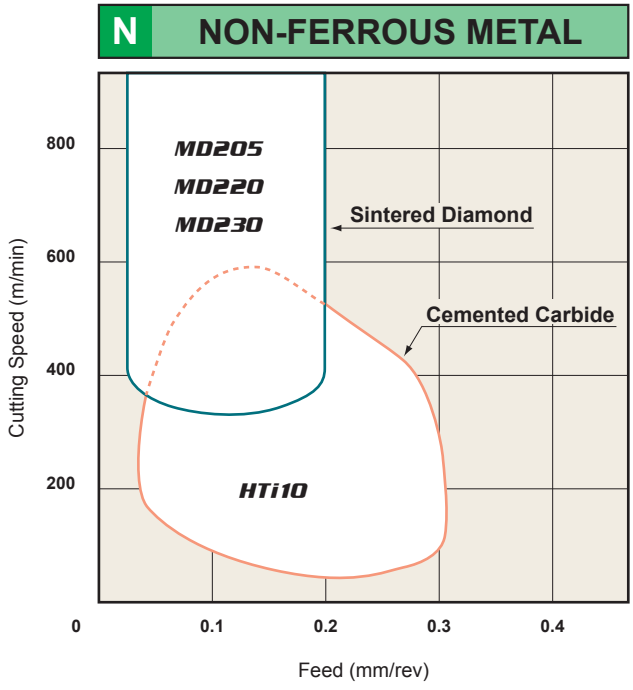
M STAINLESS STEEL



K CAST IRON

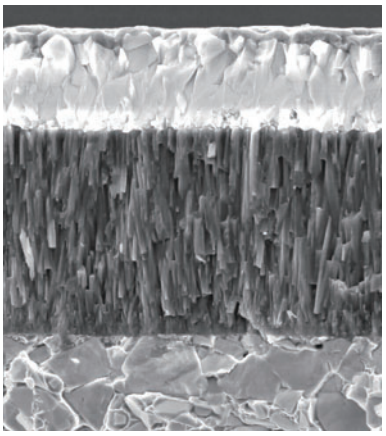


N NON-FERROUS METAL



COATED CARBIDE (CVD)

- Special tough fibrous structure improves wear and fracture resistance.
- It covers a wide application range and thus reduces the number of tools required.



Micro Structure of Coated Carbide **UE6110**

State-of-the-art **"2 in 1 technology"** achieves high wear resistance, high fracture resistance and high stability.

"2 in 1 technology" consists of "Nano-texture coating" and "Black-super smooth coating". The fibrous nanoscale TiCN and the crystal growth controlledAlumina(Al_2O_3) in the "Nano-texture coating" give far superior fracture and wear resistance compared to conventional coatings. "Black-super smooth coating" which is used for the periphery of the insert has an extremely smooth surface and provides stable cutting for prolonged periods without abnormal damage such as welding or chipping.

SELECTION STANDARD

●TURNING

	Work Material	Cutting Mode	Recommended Grade	Recommended Cutting Speed (m/min)	ISO	Application Range
P	Steel	Continuous Cutting	**UE6105**	300 (200 — 400)	P01	UE6105
			UE6110	250 (150 — 400)	P10	UE6110
			UE6020	200 (100 — 250)	P20	UE6020
		Interrupted Cutting	**UE6035**	150 (80 — 200)	P30	UE6035
					P40	UH6400
M	Stainless Steel	Continuous Cutting	**US7020**	170 (120 — 220)	M10	US7020
					M20	
		Continuous and Interrupted Cutting	**US735**	100 (80 — 120)	M30	US735
					M40	
K	Cast Iron Ductile Cast Iron	Continuous Cutting	**UC5105**	300 (200 — 400)	K01	UC5105
					K10	UC5115
		Interrupted Cutting	**UC5115**	250 (150 — 300)	K20	
					K30	
S	Heat Resistant Alloy	Continuous and Interrupted Cutting	**US905**	80 (50 — 100)	S01	US905

■CUTTING CONDITIONS

Stable Cutting

Continuous Cutting
Constant Depth of Cut
Pre-Machined
Securely Clamped Component Cutting

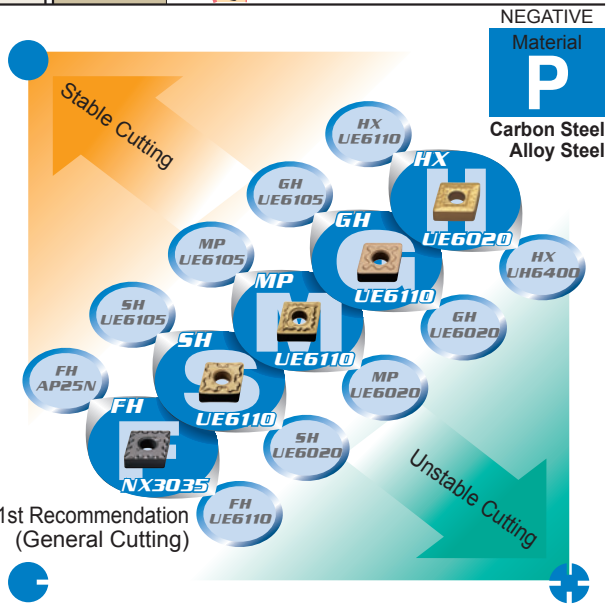
General Cutting

Unstable Cutting

Heavy Interrupted Cutting
Irregular Depth of Cut
Low Clamping Rigidity Cutting

■CUTTING AREA

F	Finish Cutting (ap ≤0.5mm)
S	Light Cutting (ap=0.5—1.5mm)
M	Medium Cutting (ap=1.5—4.0mm)
G	Semi-Heavy Cutting (ap=4.0—7.0mm)
H	Heavy Cutting (ap=7.0—10mm)



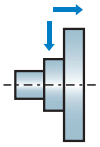
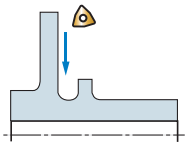
1st Recommendation (General Cutting)

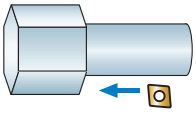
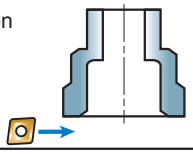
GRADE CHARACTERISTICS

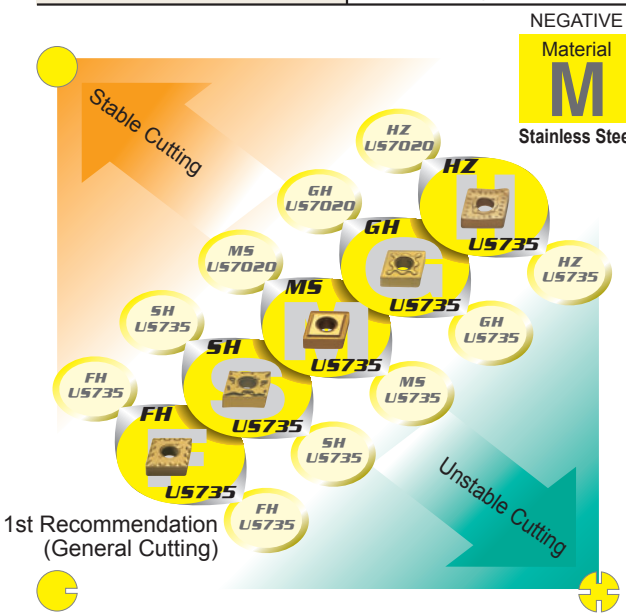
Grade	Substrate			Coating Layer	
	Hardness (HRA)	T.R.S (GPa)	Surface	Composition	Thickness
UC5105	92.2	2.0	–	TiCN-Al2O3	Thick
UC5115	91.0	2.2	–	TiCN-Al2O3	Thick
UE6105	90.8	1.8	Tough	Accumulated TiCN-Al2O3-Ti Compound	Thick
UE6110	90.3	2.0	Tough	Accumulated TiCN-Al2O3-Ti Compound	Thick
UE6020	90.0	2.2	Tough	Accumulated TiCN-Al2O3-Ti Compound	Thick
UE6035	89.5	2.3	Tough	TiCN-Al2O3-TiN	Thick
UH6400	89.5	2.3	Tough	Accumulated TiCN-Al2O3-Ti Compound	Thick
US7020	90.5	2.0	Tough	TiCN-Al2O3-TiN	Thin
US735	89.0	2.6	–	Ti Compound	Thin
US905	92.2	2.0	–	TiCN-Al2O3	Thin

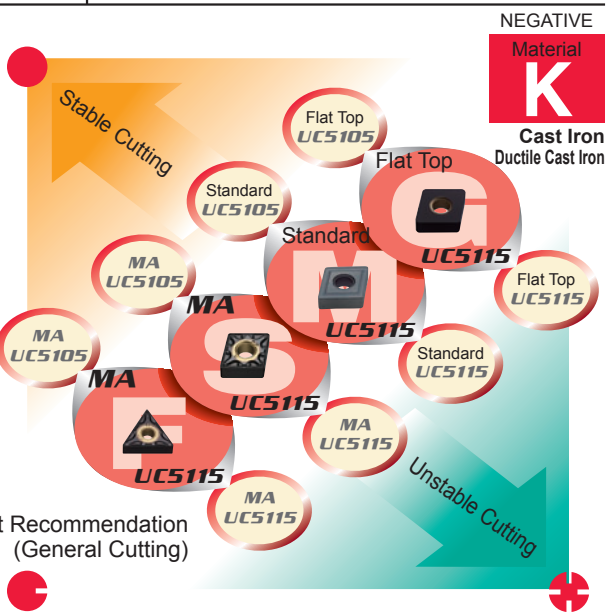
* 1GPa=102kg/mm^2

APPLICATION EXAMPLES

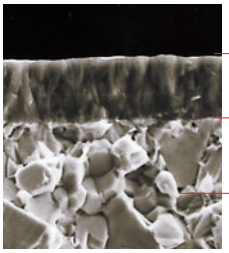
Insert (Grade)		CNMG120416-MA(UE6110)	WNMG080408-MV(UE6020)
Workpiece		Alloy steel (JIS SCM440) 	Alloy steel (JIS SCM420) 
Cutting Conditions	Cutting Speed (m/min)	210	160
	Feed (mm/rev)	0.3	0.25
	Depth of Cut (mm)	3.0	2.0
	Coolant	Wet cutting	Wet cutting
Result		10 20 pieces/corner UE6110 Competitor's P10 coating UE6110 achieved more than double the tool life.	50 100 pieces/corner UE6020 Competitor's P20 coating UE6020 achieved 6 times long tool life.

Insert (Grade)		CNMG120408-MS(US7020)	CNMA120408(UC5105)
Workpiece		Stainless steel (JIS SUS316) 	Gray cast iron (JIS FC300) 
Cutting Conditions	Cutting Speed (m/min)	Conventional coated grade=100, US7020=200	250
	Feed (mm/rev)	0.15–0.2	0.30
	Depth of Cut (mm)	2	2.5
	Coolant	Wet cutting	Wet cutting
Result		40 80 pieces/corner US7020 Previous coated grade US7020 achieved two times longer tool life compared to previous grade when turning in double cutting speed.	250 500 pieces/corner UC5105 Competitor's K01 coating **Large wear** UC5105 achieved more than double the tool life.





COATED CARBIDE (PVD)



- PVD coating prolongs tool life under the same cutting conditions compared to uncoated carbide.
- Coating of tools with sharp edges is possible without softening or changing the edge quality of the subsrate.

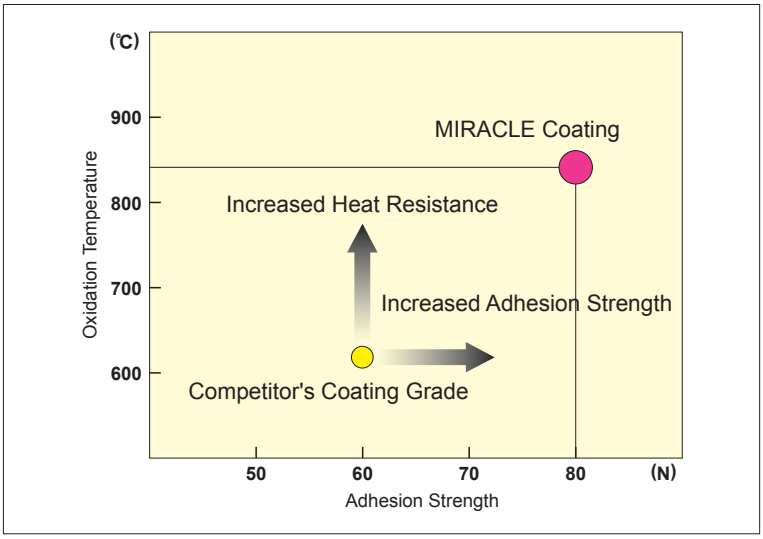
SELECTION STANDARD

TURNING

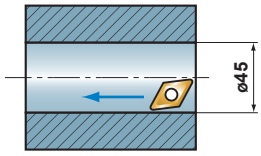
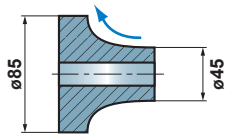
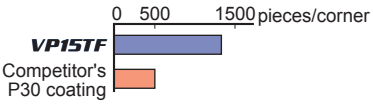
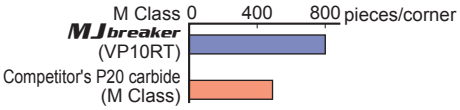
Work Material		Coating Name	Recommended Grade	Recommended Cutting Speed (m/min)	ISO	Application Range
P	Steel	VP Coating	**VP10RT**	120 (100 — 150)	P01	VP10RT
			VP15TF	120 (100 — 150)	P10	VP15TF
			VP20MF	120 (100 — 150)	P20	VP20MF
			VP20RT	120 (100 — 150)	P30	VP20RT
		UP Coating	**UP20M**	120 (100 — 150)	P40	UP20M
M	Stainless Steel	VP Coating	**VP10RT**	120 (100 — 150)	M01	
			VP15TF	120 (100 — 150)	M10	VP10RT
			VP20MF	120 (100 — 150)	M20	VP15TF
			VP20RT	120 (100 — 150)	M30	VP20MF
		UP Coating	**UP20M**	120 (100 — 150)	M40	VP20RT
K	Cast Iron	VP Coating	**VP10RT**	120 (100 — 150)	K01	UP20M
			VP15TF	120 (100 — 150)	K10	VP10RT
			VP20RT	120 (100 — 150)	K20	VP15TF
					K30	VP20RT
S	Heat Resistant Alloy	VP Coating	**VP05RT**	50 (20 — 70)	S01	VP05RT
			VP10RT	40 (20 — 50)	S10	VP10RT
			VP20RT	40 (20 — 50)	S20	VP15TF
			VP15TF	40 (20 — 50)	S30	VP20RT

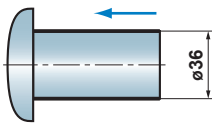
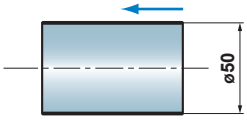
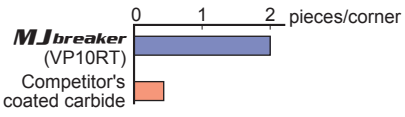
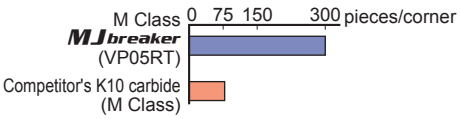
FEATURES OF VP (MIRACLE) COATING

Compared to conventional coating technology, VP (MIRACLE) coating features (Al, Ti) N coating with highly increased heat resistance and adhesion strength.



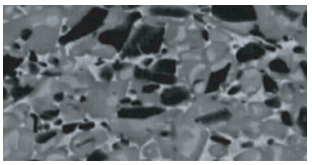
APPLICATION EXAMPLES

Insert (Grade)		DCMT11T304-MV(VP15TF)	CNMG120408-MJ(VP10RT)
Workpiece		Alloy steel 	Stainless Steel (Fan parts) 
Cutting Conditions	Cutting Speed (m/min)	170	200
	Feed (mm/rev)	0.14	0.25
	Depth of Cut (mm)	0.25	0.5
	Coolant	Wet cutting	Wet cutting
Result		 VP15TF does not experience chipping. This enables stable machining and much longer tool life.	 MJ breaker achieved 1.5 times longer tool life.

Insert (Grade)		CNMG120408-MJ(VP10RT)	TNMG160408-MJ(VP05RT)
Workpiece		Inconel 718 (Pin) 	Sintered iron parts (FH655) 
Cutting Conditions	Cutting Speed (m/min)	31	120
	Feed (mm/rev)	0.2	0.05
	Depth of Cut (mm)	2.3	0.5
	Coolant	Wet cutting	Wet cutting
Result		 VP10RT achieved 4 times longer tool life. MJ breaker for excellent chip disposal and vastly increased tool life.	 MJ breaker achieved 5 times longer tool life.

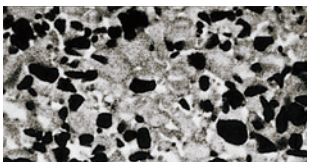
CERMET

- The optimized alloy structure and special alloy binder improves both wear and fracture resistance.
- It covers a wide application range and reduces the number of tools required.
- NX3035 for wet cutting.
- NX2525 for dry cutting.



Micro-Structure of **NX3035**

- NX3035 uses a special alloy substrate in the metal binder phase to deliver highly improved thermal shock resistance.



Micro-Structure of **NX2525**

- NX2525 has high hardened Ti compound particles within it's microstructure therefore the grade has both excellent wear and fracture resistance properties.

SELECTION STANDARD

TURNING

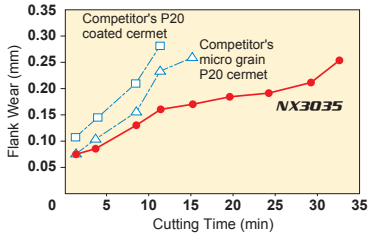
Work Material		Cutting Mode	Recommended Grade	Recommended Cutting Speed (m/min)	ISO	Application Range
P	Steel	Continuous Cutting	**NX2525**	250 (200 — 280)	P01	NX2525 NX3035 NX55
		Interrupted Cutting	**NX3035**	230 (190 — 260)	P10	
					P20	
K	Cast Iron Ductile Cast Iron	Finishing	**NX2525**	210 (170 — 230)	K01	NX2525
					K10	
					K20	

CUTTING PERFORMANCE

Cutting Performance

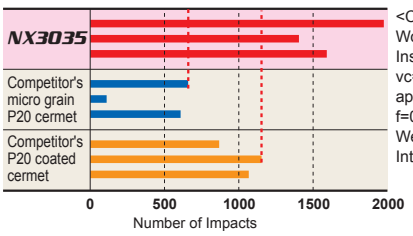
Cutting Speed : vc Depth of Cut : ap
Feed : f

Steel, Continuous Cutting (Wet)



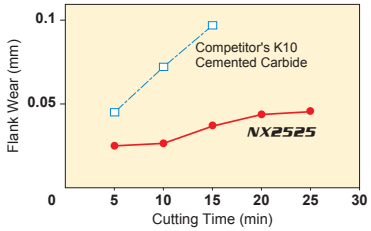
<Cutting Conditions>
Workpiece : JIS S45C
Insert : CNMG120408-○○
vc=250m/min
ap=1.0mm
f=0.15mm/rev
Wet Cutting
External Continuous Cutting

Steel, Interrupted Cutting



<Cutting Conditions>
Workpiece : JIS SCM440
Insert : CNMG120408-○○
vc=200m/min
ap=1.5mm
f=0.2mm/rev
Wet Cutting
Interrupted Cutting

Cast Iron, Continuous Cutting



<Cutting Conditions>
Workpiece : JIS FC300
Insert : CNMG120408
vc=100m/min
ap=1.5mm
f=0.3mm/rev
Wet Cutting

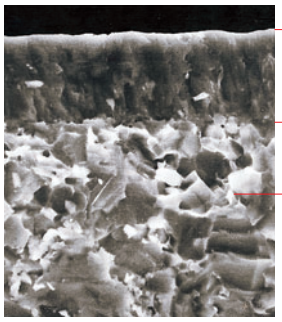
GRADE CHARACTERISTICS

Grade	Substrate			
	Hardness (HRA)	T.R.S (GPa)	Thermal Conductivity (W/m • K) *	Thermal Expansion ($\times 10^{-6}$/K)
NX2525	92.2	2.0	33	7.8
NX3035	91.5	2.1	35	7.8
NX55	91.7	1.8	25	7.8

* 1GPa=102kg/mm^2, 1W/m • K=2.39$\times 10^{-3}$cal/cm • sec • ℃

COATED CERMET

- Coated cermet (PVD coating) has superior wear and fracture resistance, and therefore provides a stable cutting performance.



- Coating Layer
  Outer layer is TiN (Welding resistance)
  Middle layer is (Ti, Al) N Compound. (wear resistance thermal shock resistance)
- Substrate
  Micro Grain Cermet NX2525 (wear resistance and fracture resistance)

Micro-Structure of **AP25N**

SELECTION STANDARD

●TURNING

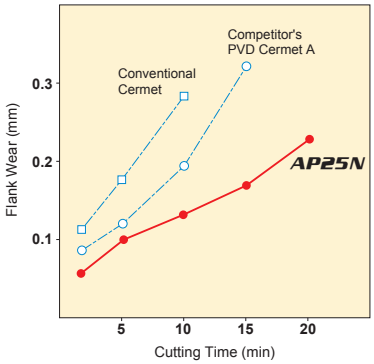
Work Material		Cutting Mode	Recommended Grade	Recommended Cutting Speed (m/min)	ISO	Application Range
P	Steel	Continuous Cutting	**VP25N** **AP25N**	280 (200 — 320)	P01 P10	VP25N, AP25N
		Interrupted Cutting	**VP45N**	180 (140 — 200)	P20 P30	VP45N
K	Cast Iron Ductile Cast Iron	Finishing	**VP25N** **AP25N**	220 (170 — 250)	K01 K10 K20	VP25N, AP25N

CUTTING PERFORMANCE

Cutting Performance

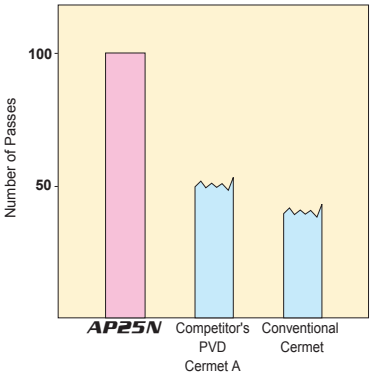
Cutting Speed : vc Depth of Cut : ap
Feed : f

Wear Resistance for Wet Cutting



<Cutting Conditions>
Workpiece : JIS SCM440 (HB230)
Insert : CNMG120408-◌◌
vc=300m/min
ap=0.5mm
f=0.2mm/rev
Wet Cutting

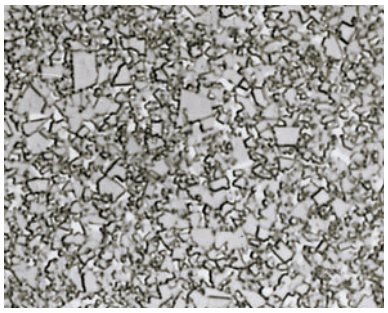
Thermal Shock Resistance for Interrupted Cutting



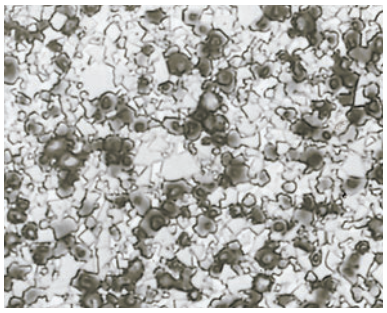
<Cutting Conditions>
Workpiece : JIS SCM440 (HB230)
Insert : CNMG120408-◌◌
vc=200m/min
ap=2.0mm
f=0.3mm/rev
Wet Cutting

CEMENTED CARBIDE

● UTi grades are available for steel and cast iron. HTi grades are available for non-ferrous and non-metal materials and are also suitable for cast iron.



K Class Grade (WC-Co) 10μm



P,M Class Grade (WC-TiC-TaC-Co) 10μm

SELECTION STANDARD

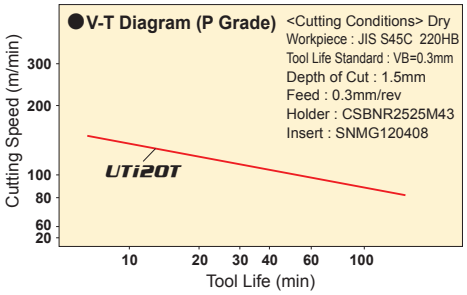
●TURNING

Work Material	Recommended Grade	Recommended Cutting Speed (m/min)	ISO	Application Range
P Steel	**UTi20T**	100 (60 — 130)	P10, P20, P30	UTi20T
M Stainless Steel	**UTi20T**	100 (60 — 130)	M10, M20, M30	UTi20T
K Cast Iron	**HTi05T**	120 (80 — 150)	K01	HTi05T
	HTi10	100 (50 — 150)	K10	HTi10
	UTi20T	100 (50 — 150)	K20, K30	UTi20T
N Non-Ferrous Metal	**HTi10**	600 (400 — 800)	N01, N10, N20, N30	HTi10
S Heat-resistant Alloy Ti Alloy	**RT9005**	70 (50 — 100)	S01	RT9005
	RT9010	60 (40 — 80)	S10	RT9010
	TF15	50 (40 — 70)	S20, S30	TF15

MAIN COMPONENT AND APPLICATION

P series for steel cutting, K series for cast iron cutting and M series for general cutting.

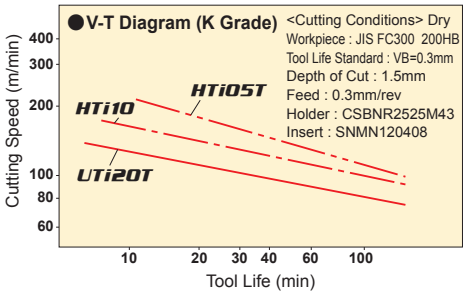
ISO	Main Component	Characteristics	Work Material
P M	WC-TiC-TaC-Co	Heat / deformation resistance.	Carbon steel, alloy steel, stainless steel and cast iron
K N	WC-Co	High rigidity and wear resistance.	Cast iron, non-ferrous metals, and non-metal
S	WC-Co	High heat resistance and wear resistance.	Heat-resistant alloy, Ti alloy



GRADE CHARACTERISTICS

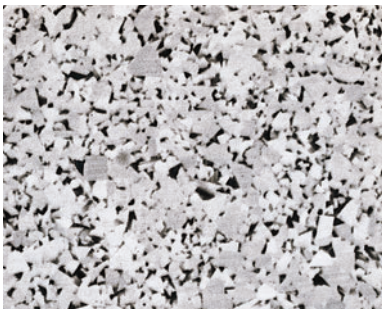
ISO	Grade	Hardness (HRA)	Thermal Conductivity (W/m•K)*	Thermal Expansion (x10^{-6}/K)	Young's Modulus (GPa)*	T.R.S (GPa)*
P M	**UTi20T**	90.5	38	5.5	520	2.0
K N	**HTi05T**	92.5	79	4.5	600	1.5
	HTi10	92.0	79	4.6	630	2.0
S	**RT9005**	92.2	79	4.5	600	2.0
	RT9010	92.0	79	4.6	630	2.2
	TF15	91.5	71	5.3	580	2.5

* 1GPa=102kg/mm^2, 1W/m • K=2.39×10^{-3}cal/cm • sec • ℃



MICRO-GRAIN CEMENTED CARBIDE (SOLID TOOLS)

- Compared to normal cemented carbide, micro-grain types have higher wear resistance and toughness.



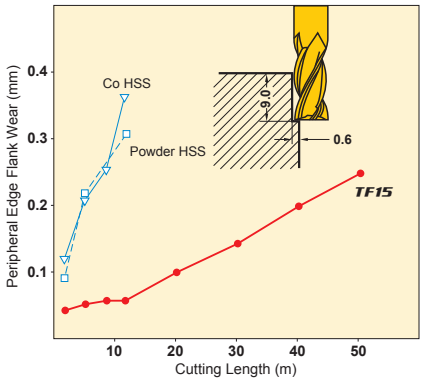
Micro-Structure of **MF10** 2μm

Micro-Structure of **TF15** 2μm

SELECTION STANDARD

Cutting Tool	Recommended Grade	Work Material
PCB miniature drill	**SF10** **MF07** **MF10** **MF20**	Non-Metal
Solid Carbide Drill Turning Inserts Milling Inserts	**TF15**	Steel • Cast Iron
Solid End Mill	**HTi10** **TF15** **MF10**	Steel • Cast Iron
Gear Hob Reamer Tap etc.	**TF15** **MF20** **MF30**	Steel • Cast Iron, etc.

CUTTING PERFORMANCE



<Cutting Conditions>
Workpiece : JIS NAK55(40HRC)
Tool : ϕ6mm, 4 flutes(SED4060 S)
Helical Angle : 30°
vc=30m/min
n=1,600m/min^{-1}
fz=0.02mm/tooth
vf=128mm/min
Depth of Cut in the Axial Direction=9.0mm
Depth of Cut in the Radial Direction=0.6mm
Down Cut, Dry

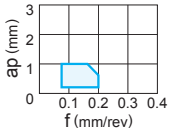
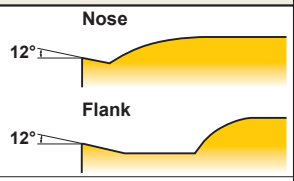
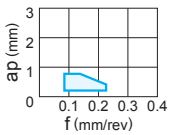
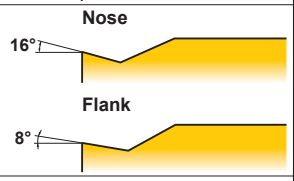
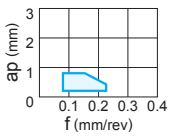
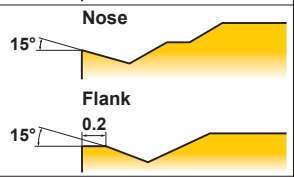
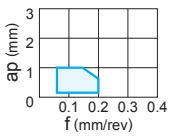
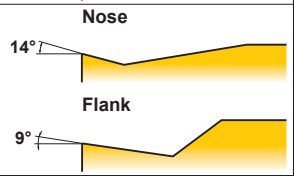
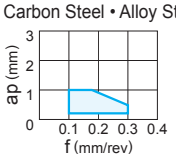
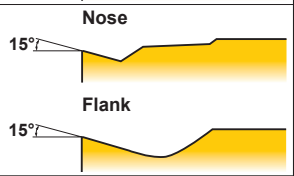
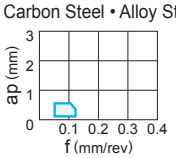
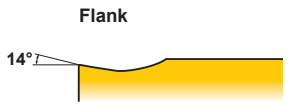
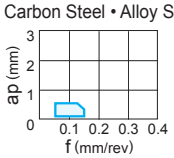
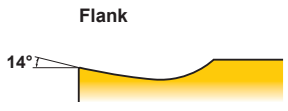
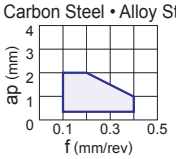
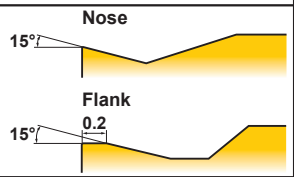
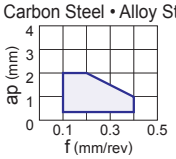
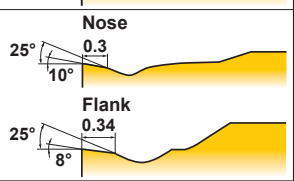
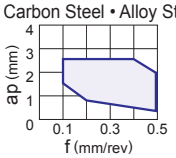
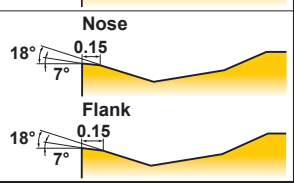
GRADE CHARACTERISTICS

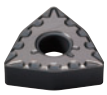
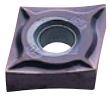
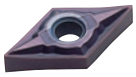
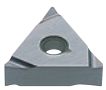
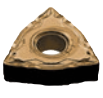
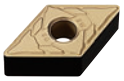
Grade	Grade Characteristics **			ISO	Wear Resistance	Fracture Resistance	Corrosion Resistance
	Specific Gravity	Hardness (HRA)	T.R.S (Gpa) *				
HTi10	**14.9**	92.0	3.2	K10	◎	○	○
TF15	**14.5**	91.0	4.0	K20	◎	○	◎
SF10	**14.9**	92.7	3.8	K01	◎	○	◎
MF07	**14.7**	93.2	3.9	K01	◎	○	◎
MF10	**14.6**	93.0	4.0	K01	◎	○	◎
MF20	**14.2**	92.0	4.4	K10	○	◎	◎
MF30	**13.7**	90.7	4.3	K20	○	◎	◎

* 1GPa=102kg/mm^2
** After HIP

CLASSIFICATION

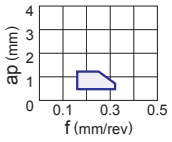
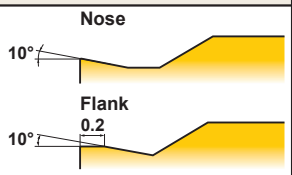
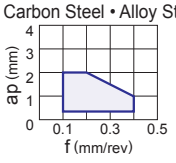
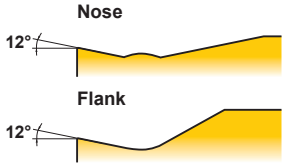
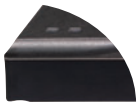
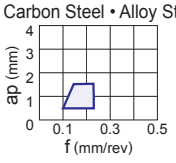
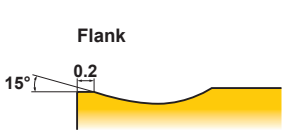
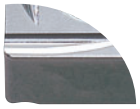
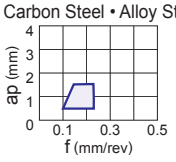
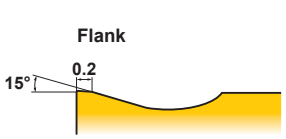
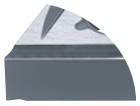
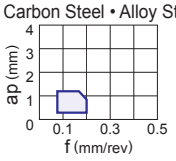
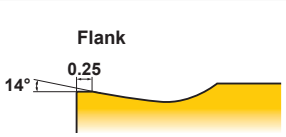
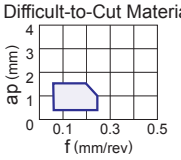
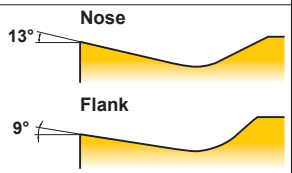
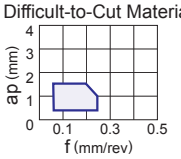
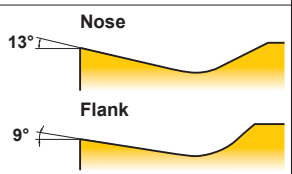
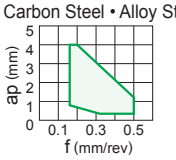
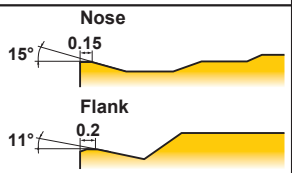
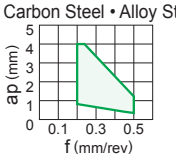
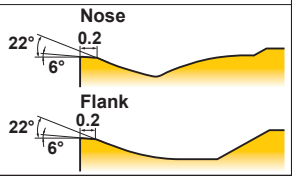
NEGATIVE INSERTS WITH HOLE

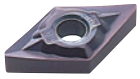
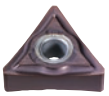
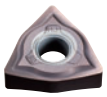
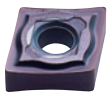
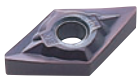
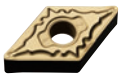
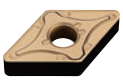
Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry
Finish Cutting	M	**FH** 	**First recommendation for finishing carbon steel, alloy steel and stainless steel** Double sided chipbreaker. Stable chip control even at small depth of cut.	Carbon Steel • Alloy Steel  
		FS 	**Alternative chipbreaker for finishing mild steel** Double sided chipbreaker. Stable chip control even at small depth of cut. Sharp edge gives best performance.	Mild Steel  
		FY 	**First recommendation for finishing mild steel** Double sided chipbreaker. Effectively controls adhesive chips. Suitable for mild steel finishing.	Mild Steel  
	G	**FJ** 	**First recommendation for finishing difficult-to-cut materials** Double sided chipbreaker. Ideal for heat-resistant alloy and titanium alloy. The sharp edge produces good cutting surface. The curved edge allows smooth chip discharge.	Difficult-to-Cut Materials  
		PK 	**Alternative chipbreaker for finishing carbon steel and alloy steel** Double sided chipbreaker. G class insert tolerance is suitable for workpieces requiring close dimensional tolerances. Stable chip control even at small depth of cut.	Carbon Steel • Alloy Steel  
		R/L-FS 	**Precise finishing** Double sided chipbreaker. A narrow lead chipbreaker for good chip control. The sharp edge produces a good surface finish.	Carbon Steel • Alloy Steel  
		R/L-F 	**Finishing** Double sided chipbreaker. Lead chipbreaker controls chip flow. The sharp edge produces a good surface finish.	Carbon Steel • Alloy Steel  
Light Cutting	M	**SH** 	**First recommendation for light cutting of carbon steel, alloy steel and stainless steel** Double sided chipbreaker. Can be used at low depth of cuts and high feed rates. The curved edge allows smooth chip discharge. Recommended for workpieces in the 160—250HB range.	Carbon Steel • Alloy Steel  
		SA 	**Alternative chipbreaker for light cutting of carbon steel and alloy steel** Double sided chipbreaker. Superior chip control at small depth of cuts. Covers copying and back turning with wavy edge. Recommended for workpieces in the 200—300HB range.	Carbon Steel • Alloy Steel  
		SW 	**Wiper insert for light cutting of carbon steel and alloy steel** Double sided chipbreaker. The wiper allows up to two times higher feed. Wiper design for increased productivity and improved surface finish.	Carbon Steel • Alloy Steel  

	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Rhombic 35°	Trigon 80°	Round	Breaker Name and Cross Section
	CNMG_FH  A058	DNMG_FH  A063	SNMG_FH  A069	TNMG_FH  A074	VNMG_FH  A080	WNMG_FH  A082		FH 
	CNMG_FS  A058	DNMG_FS  A063	SNMG_FS  A069	TNMG_FS  A074	VNMG_FS  A080	WNMG_FS  A082		FS 
	CNMG_FY  A058	DNMG_FY  A063	SNMG_FY  A069	TNMG_FY  A074		WNMG_FY  A082		FY 
	CNGG_FJ  A058	DNGG_FJ  A063			VNGG_FJ  A080			FJ 
	CNGG_PK  A058	DNGG_PK  A063	SNGG_PK  A069	TNGG_PK  A074				PK 
				TNGG_R/L-FS  A074				R/L-FS 
				TNGG_R/L-F  A074	VNGG_R/L-F  A080			R/L-F 
	CNMG_SH  A058	DNMG_SH  A063	SNMG_SH  A069	TNMG_SH  A075	VNMG_SH  A080	WNMG_SH  A082		SH 
	CNMG_SA  A059	DNMG_SA  A064	SNMG_SA  A069	TNMG_SA  A075		WNMG_SA  A082		SA 
	CNMG_SW  A059	DNMX_SW  A064		TNMX_SW  A075		WNMG_SW  A082		SW 

CLASSIFICATION

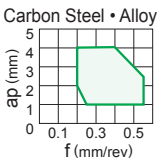
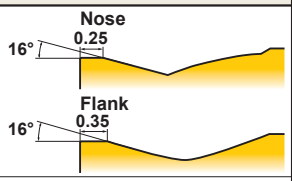
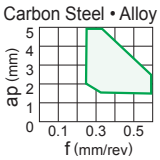
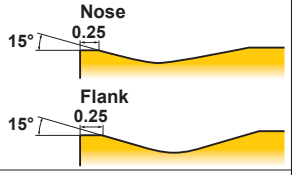
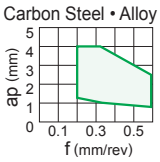
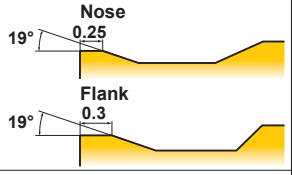
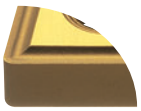
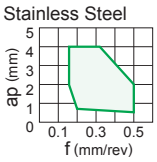
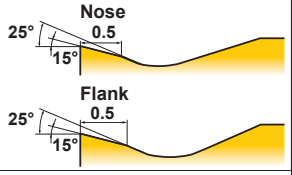
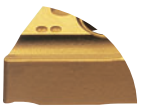
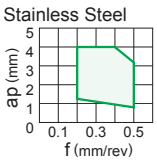
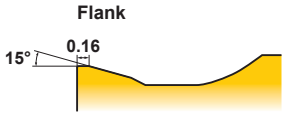
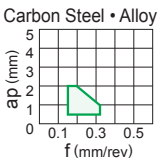
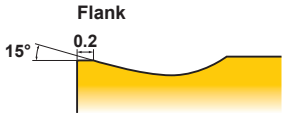
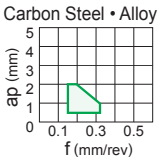
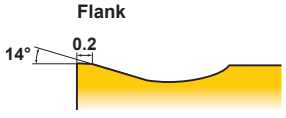
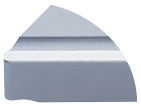
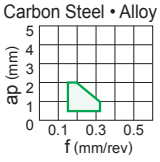
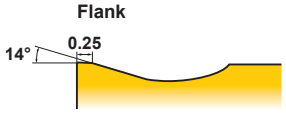
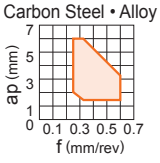
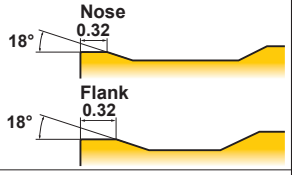
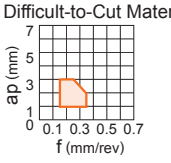
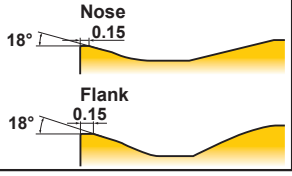
NEGATIVE INSERTS WITH HOLE

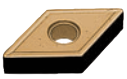
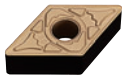
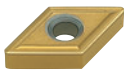
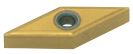
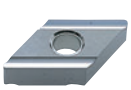
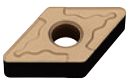
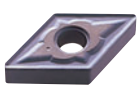
Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry
Light Cutting	M	**SY** 	**First recommendation for light cutting of mild steel** Double sided chipbreaker. Effectively controls adhesive chips. Suitable for mild steel light cutting.	Mild Steel  
		C 	**Alternative chipbreaker for light cutting of carbon steel and alloy steel** Double sided chipbreaker. Suitable for light cutting. The curved edge allows smooth chip discharge.	Carbon Steel • Alloy Steel  
		R/L-1M 	**Alternative chipbreaker for light cutting of carbon steel and alloy steel** Double sided chipbreaker. Parallel chipbreaker controls chip flow. Suitable for finish-light cutting. Moulded chipbreaker.	Carbon Steel • Alloy Steel  
		R/L-1G 	**Alternative chipbreaker for light cutting of carbon steel and alloy steel** Double sided chipbreaker. Parallel chipbreaker controls chip flow. Suitable for finish-light cutting. Precision chipbreaker.	Carbon Steel • Alloy Steel  
	G	**R/L-K** 	**Light cutting** Double sided chipbreaker. Parallel chipbreaker. Excellent chip control at low to medium feed rates.	Carbon Steel • Alloy Steel  
	M	**MJ** 	**First recommendation for light cutting of difficult-to-cut materials** Double sided chipbreaker. Ideal for heat-resistant alloy and titanium alloy. The sharp edge produces a good surface finish. The curved edge allows smooth chip discharge.	Difficult-to-Cut Materials  
	G	**MJ** 	**First recommendation for light cutting of difficult-to-cut materials** Double sided chipbreaker, Single sided chipbreaker (D type, V type). The sharp edge produces a good surface finish. Ideal for heat-resistant alloy and titanium alloy. The curved edge allows smooth chip discharge.	Difficult-to-Cut Materials  
Medium Cutting	M	**MP** 	**First recommendation for medium cutting of carbon steel and alloy steel** Double sided chipbreaker. Suitable for medium to light cutting. Breaker geometry appropriate for copying and back turning. Cutting edge geometry for an optimum balance of sharpness and fracture resistance.	Carbon Steel • Alloy Steel  
		MA 	**First recommendation for medium cutting of carbon steel and alloy steel** **Alternative chipbreaker for finishing and light cutting of cast iron** Double sided chipbreaker. Positive land provides sharp cutting action.	Carbon Steel • Alloy Steel  

	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Rhombic 35°	Trigon 80°	Round	Breaker Name and Cross Section
	CNMG_SY  A059	DNMG_SY  A064	SNMG_SY  A069	TNMG_SY  A075		WNMG_SY  A083		SY 
	CNMG_C  A059	DNMG_C  A064	SNMG_C  A070	TNMG_C  A075		WNMG_C  A083		C 
				TNMG_R/L-1M  A075				R/L-1M 
			SNMG_R/L-1G  A070	TNMG_R/L-1G  A075				R/L-1G 
				TNGG_R/L-K  A075				R/L-K 
	CNMG_MJ  A059	DNMG_MJ  A064		TNMG_MJ  A076	VNMG_MJ  A080	WNMG_MJ  A083		MJ(M) 
	CNGG_MJ  A059	DNGM_MJ  A065			VNGM_MJ  A080			MJ(G) 
	CNMG_MP  A059	DNMG_MP  A065	SNMG_MP  A070	TNMG_MP  A076	VNMG_MP  A081	WNMG_MP  A083		MP 
	CNMG_MA  A059	DNMG_MA  A065	SNMG_MA  A070	TNMG_MA  A076	VNMG_MA  A081	WNMG_MA  A083		MA 

CLASSIFICATION

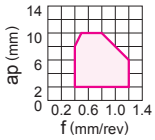
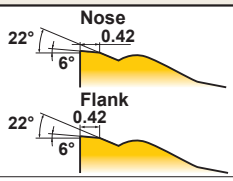
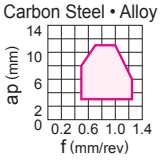
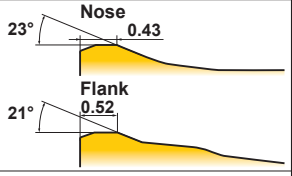
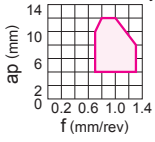
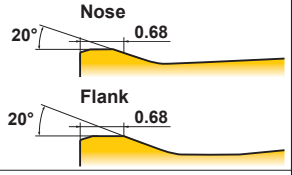
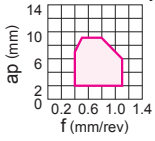
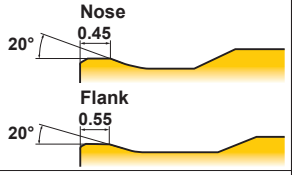
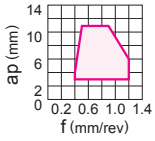
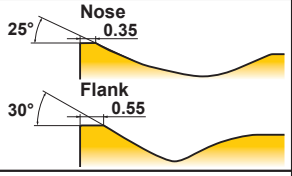
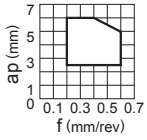
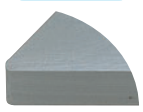
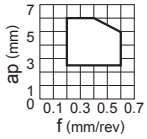
NEGATIVE INSERTS WITH HOLE

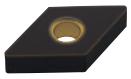
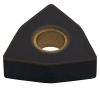
Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry
Medium Cutting	M	**MH** 	**First recommendation for semi-heavy cutting of mild steel** **Alternative chipbreaker for medium cutting of carbon steel and alloy steel** Double sided chipbreaker. Flat land offers high edge strength.	 
		Standard 	**First recommendation for medium cutting of cast iron** **Alternative chipbreaker for medium cutting of carbon steel and alloy steel** Double sided chipbreaker. Flat land offers high edge strength.	 
		MW 	**Wiper insert for medium cutting carbon steel and alloy steel** Double sided chipbreaker. The wiper allows up to two times higher feed. A wide chip pocket prevents chip jamming.	 
		MS 	**First recommendation for medium cutting of stainless steel, mild steel and difficult-to-cut materials** Double sided chipbreaker. The sharp edge gives best performance.	 
		R/L-ES 	**Alternative chipbreaker for medium cutting of stainless steel** Double sided chipbreaker. Good balance of edge strength and sharpness. Right- or left-hand breaker for unidirectional chip control.	 
		R/L-2M 	**Alternative chipbreaker for medium cutting of carbon steel and alloy steel** Double sided chipbreaker. Parallel chipbreaker controls chip flow. Suitable for light to medium cutting. Moulded chipbreaker.	 
		R/L-2G 	**Alternative chipbreaker for medium cutting of carbon steel and alloy steel** Double sided chipbreaker. Parallel chipbreaker controls chip flow. Suitable for light to medium cutting.	 
	G	**R/L** 	**Medium cutting** Double sided chipbreaker. Parallel chipbreaker. Good chip control for medium feed rates.	 
Semi-heavy Cutting	M	**GH** 	**First recommendation for semi-heavy cutting of carbon steel, alloy steel and stainless steel** Double sided chipbreaker. For interrupted cuts and removing scale. A combination of wide land and a large chip pocket allows high feed rates.	 
		GJ 	**First recommendation for semi-heavy cutting of difficult-to-cut materials** Double sided chipbreaker. Excellent balance of edge sharpness and strength. Edge geometry with high face wear resistance.	 

	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Rhombic 35°	Trigon 80°	Round	Breaker Name and Cross Section
	CNMG_MH  A060	DNMG_MH  A065	SNMG_MH  A070	TNMG_MH  A076	VNMG_MH  A081	WNMG_MH  A083		MH 
	CNMG  A060	DNMG  A065	SNMG  A071	TNMG  A077	VNMG  A081	WNMG  A084	RNMG  A068	Standard 
	CNMG_MW  A060	DNMX_MW  A065		TNMX_MW  A077		WNMG_MW  A084		MW 
	CNMG_MS  A060, A061	DNMG_MS  A066	SNMG_MS  A071	TNMG_MS  A077	VNMG_MS  A081	WNMG_MS  A084		MS 
				TNMG_R/L-ES  A077				R/L-ES 
				TNMG_R/L-2M  A077				R/L-2M 
				TNMG_R/L-2G  A077				R/L-2G 
		DNGG_R/L  A066	SNGG_R/L  A071	TNGG_R/L  A078	VNGG_R/L  A081			R/L 
	CNMG_GH  A061	DNMG_GH  A066	SNMG_GH  A071	TNMG_GH  A078		WNMG_GH  A084		GH 
	CNMG_GJ  A061	DNMG_GJ  A066				WNMG_GJ  A084		GJ 

CLASSIFICATION

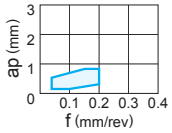
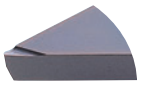
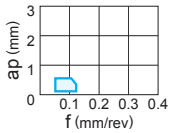
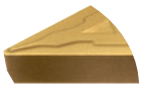
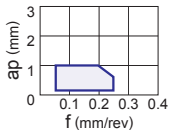
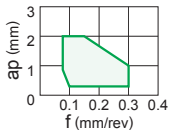
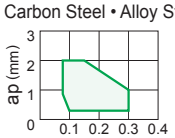
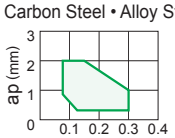
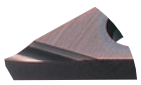
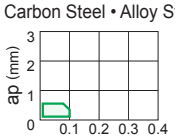
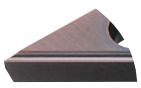
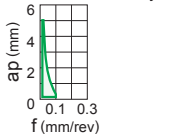
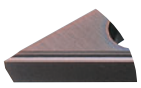
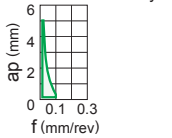
NEGATIVE INSERTS WITH HOLE

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry
Heavy Cutting	M	**HZ** 	**First recommendation for heavy cutting of mild steel and stainless steel** Single sided chipbreaker. Covers the lower end of the heavy cutting region. Low cutting resistance due to positive land and curved edge. Teardrop dots improve chip control without increasing cutting resistance.	Mild Steel  
		HX 	**First recommendation for heavy cutting of carbon steel and alloy steel** Single sided chipbreaker. Covers the medium range of the heavy cutting region. Owing to the straight edge and chamfer, it gives a balance of sharpness and strength. Variable land and a wavy chipbreaker for good chip control.	Carbon Steel • Alloy Steel  
		HV 	**Alternative chipbreaker for heavy cutting of carbon steel and alloy steel** Single sided chipbreaker. Covers the upper end of the heavy cutting region. Wide land and large chamfer offer high edge strength. A wide chipbreaker prevents chip jamming.	Carbon Steel • Alloy Steel  
		HAS 	**Alternative chipbreaker for heavy cutting of carbon steel and alloy steel** Double sided chipbreaker. Cover the lower end through to the medium range of the heavy cutting region. Due to the variable land, it gives a balance of sharpness and strength. A narrow chipbreaker for good chip control.	Carbon Steel • Alloy Steel  
		HXD 	**Alternative chipbreaker for heavy cutting of mild steel and stainless steel** Single sided chipbreaker. Cover the lower end through to the medium range of the heavy cutting region. Balance of sharpness and strength owing to a narrow chamfer and variable land.	Mild Steel  
For Cast Iron	M	**Flat Top** 	**First recommendation for semi-heavy cutting of cast iron** Double sided flat insert. Most effective for unstable machining due to its high edge strength.	Cast Iron  
	G	**Flat Top** 	**For cast iron** Double sided flat insert. Most effective for unstable machining due to its high edge strength. Can be used on workpieces requiring close tolerances due to G class insert tolerance.	Cast Iron  

	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Rhombic 35°	Trigon 80°	Round	Breaker Name and Cross Section
	CNMM_HZ  A061	DNMM_HZ  A066	SNMM_HZ  A071	TNMM_HZ  A079				HZ 
	CNMM_HX  A061		SNMM_HX  A072					HX 
	CNMM_HV  A061		SNMM_HV  A072	TNMM_HV  A079				HV 
	CNMG_HAS  A061		SNMG_HAS  A072					HAS 
	CNMM_HXD  A062		SNMM_HXD  A072					HXD 
	CNMA  A062	DNMA  A067	SNMA  A072	TNMA  A079		WNMA  A084		Flat Top(M) 
		DNGA  A067	SNGA  A073	TNGA  A079	VNGA  A081			Flat Top(G) 

CLASSIFICATION

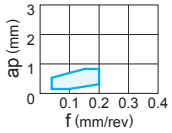
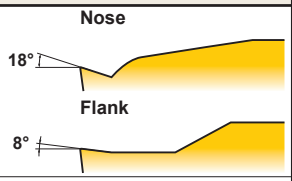
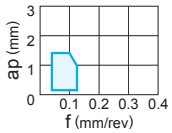
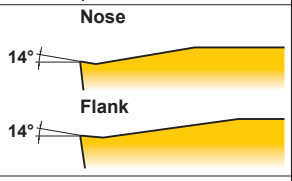
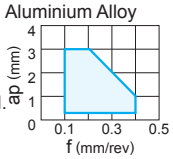
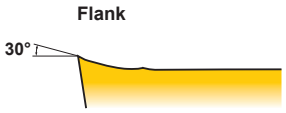
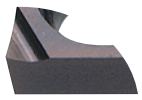
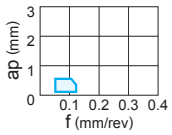
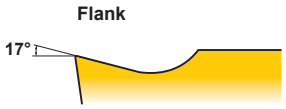
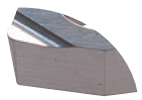
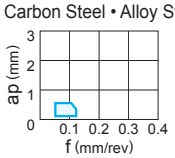
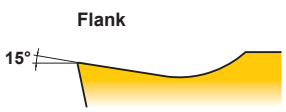
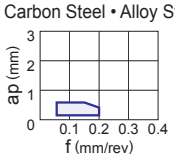
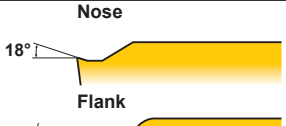
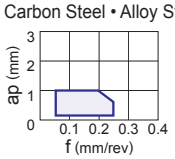
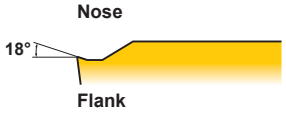
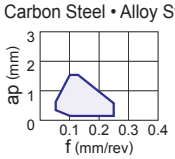
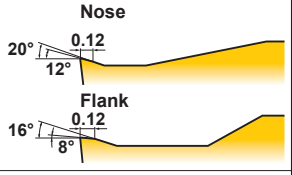
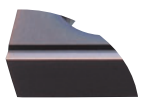
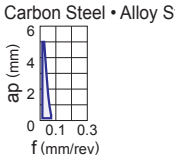
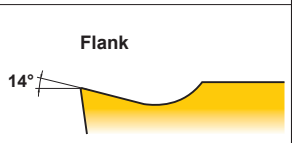
5° POSITIVE INSERTS WITH HOLE

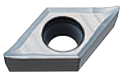
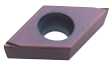
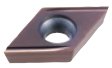
Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry
Finish Cutting	M	NEW **FV** 	**First recommendation for finishing carbon steel, alloy steel, mild steel and stainless steel** Suitable for low depths of cut and low feed rates. Sharp cutting edge and low resistance design achieves excellent cutting performance.	Carbon Steel • Alloy Steel  Nose 18° Flank 8°
	G	**R/L-F** 	**Finishing** Lead chipbreaker controls chip flow. Sharp cutting edge gives a good surface finish.	Carbon Steel • Alloy Steel  Flank 13°
Light Cutting	M	**SV** 	**Light cutting of carbon steel, alloy steel, mild steel and stainless steel** Large rake angle provides sharp cutting action. A peninsular dot ensures chip control at depths of cut under 1mm.	Carbon Steel • Alloy Steel  Nose 18° Flank 8°
Medium Cutting	M	**MV** 	**Medium cutting of carbon steel, alloy steel, mild steel and stainless steel** A positive insert with a large rake angle achieves sharp cutting edge performance. The double breakers and round-shaped dots in the rake face achieve a wide range of chip discharge.	Carbon Steel • Alloy Steel  Nose 18° 0.1 10° Flank 18° 0.1 10°
		R/L-MV 	**Medium cutting of carbon steel, alloy steel, mild steel and stainless steel** A positive insert with a large rake angle achieves sharp cutting edge performance. The double breakers and round-shaped dots in the rake face achieve a wide range of chip discharge.	Carbon Steel • Alloy Steel  Nose 20° 0.16 8° Flank 20° 0.16 8°
		Standard 	**Medium cutting of carbon steel, alloy steel and stainless steel** Balance of edge strength and sharpness due to a combination of a flat land and large rake angle.	Carbon Steel • Alloy Steel  Nose 18° 0.1 Flank 18° 0.1
	E	**R/L-SR** 	**Medium cutting of automatic lathe machining** A wide lead chipbreaker. Insert designed for low resistance chip control.	Carbon Steel • Alloy Steel  Flank 30°
		R/L-SN 	**Medium cutting of automatic lathe machining** A parallel chipbreaker. Excellent chip control for low to medium feed rates.	Carbon Steel • Alloy Steel  Flank 20°
		R/LW-SN 	**Medium cutting of automatic lathe machining** A parallel chipbreaker. Excellent chip control for low to medium feed rates. The wiper produces good cutting surface.	Carbon Steel • Alloy Steel  Flank 20°

	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Rhombic 35°	Trigon 80°	Round	Breaker Name and Cross Section
					VBMT_FV NEW  A108			NEW FV 
					VBGT_R/L-F  A108	WBGT_R/L-F  A113		R/L-F 
					VBMT_SV  A108			SV 
					VBMT_MV  A108			MV 
						WBMT_R/L-MV  A113		R/L-MV 
					VBMT  A108			Standard 
					VBET_R/L-SR  A109			R/L-SR 
					VBET_R/L-SN  A109			R/L-SN 
					VBET_R/LW-SN  A109			R/LW-SN 

CLASSIFICATION

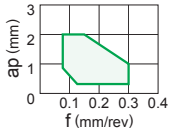
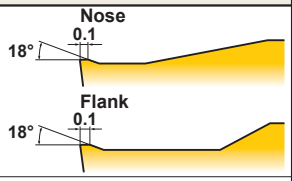
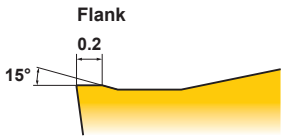
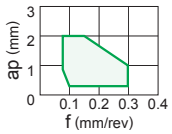
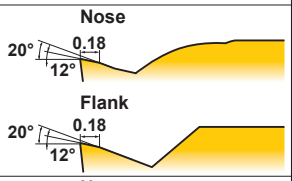
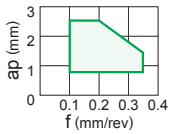
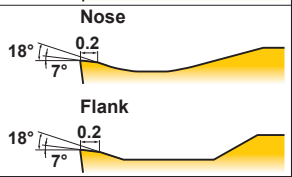
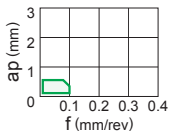
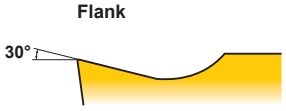
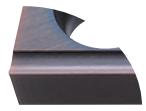
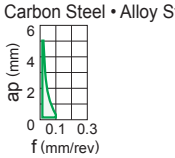
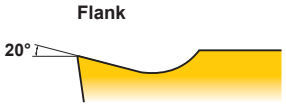
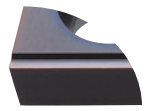
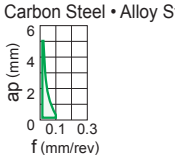
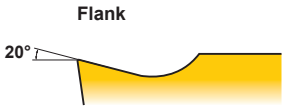
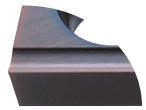
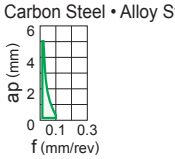
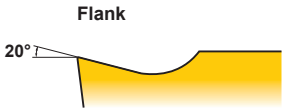
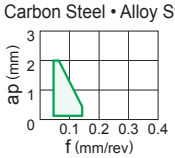
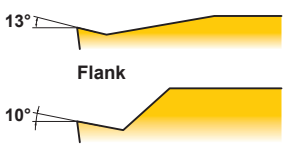
7° POSITIVE INSERTS WITH HOLE

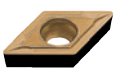
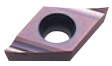
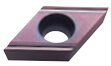
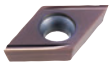
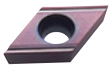
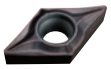
Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry
Finish Cutting	M	**FV** 	**First recommendation for finishing carbon steel, alloy steel, mild steel and stainless steel** Suitable for low depths of cut and low feed rates. Sharp cutting edge and low resistance design achieves excellent cutting performance.	Carbon Steel • Alloy Steel  
Finish Cutting	G	**FJ** 	**First recommendation for finishing difficult-to-cut materials** Ideal for heat-resistant alloy and titanium alloy. The sharp edge produces a good surface finish. The curved edge allows smooth chip discharge.	Difficult-to-Cut Materials  
		AZ 	**For aluminium alloy** The high rake angle and 3D curved cutting edge provides sharpness at the cutting point. Additionally the 3D shape of the rake face enables excellent chip control. Lapping of the top surface gives a mirror finish for improved welding resistance.	Aluminium Alloy  
		R/L-F 	**Finishing** Lead chipbreaker controls chip flow. Sharp cutting edge gives a good surface finish.	Carbon Steel • Alloy Steel  
		R/L 	**Finishing** Lead chipbreaker. Excellent chip control at low feed rates.	Carbon Steel • Alloy Steel  
Light Cutting	M	**SVX** 	**Light cutting of carbon steel and alloy steel** Chip control is improved by having a chip breaker geometry suitable for copying.	Carbon Steel • Alloy Steel  
		SV 	**Alternative chipbreaker for light cutting of carbon steel, alloy steel, mild steel and stainless steel** Large rake angle provides sharp cutting action. A peninsular dot ensures chip control at depths of cut under 1mm.	Carbon Steel • Alloy Steel  
		SW 	**Wiper insert for light cutting of carbon steel, alloy steel, mild steel and stainless steel** The wiper allows up to two times higher feed. Positive land improves sharpness.	Carbon Steel • Alloy Steel  
	G	**R/L-SS** 	**Light cutting of automatic lathe machining** A parallel chipbreaker. Excellent chip control at low feed rates.	Carbon Steel • Alloy Steel  

	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Rhombic 35°	Trigon 80°	Rhombic 25°	Round	Breaker Name and Cross Section
	CCMT_FV  A088	DCMT_FV  A093	SCMT_FV  A101	TCMT_FV  A103	VCMT_FV  A110				FV 
	CCGT_FJ  A088								FJ 
	CCGT_AZ  A088	DCGT_AZ  A093		TCGT_AZ  A103	VCGT_AZ  A110			RCGT_AZ  A098	AZ 
	CCGT_L-F CCGH_R/L-F  A088	DCGT_R/L-F  A093		TCGT_R/L-F  A103	VCGT_R/L-F  A110				R/L-F 
						WCGT_R/L  A114			R/L 
							XCMT_SVX  A116		SVX 
	CCMH_SV  A089	DCMT_SV  A093			VCMT_SV  A110				SV 
	CCMT_SW  A089								SW 
	CCGT_R/L-SS  A089	DCGT_R/L-SS  A093							R/L-SS 

CLASSIFICATION

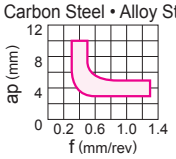
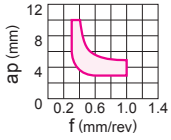
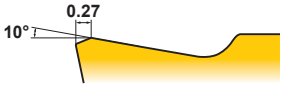
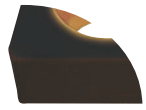
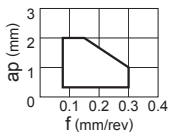
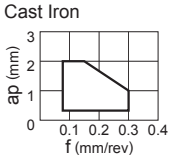
7° POSITIVE INSERTS WITH HOLE

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry
Medium Cutting	M	**Standard** 	**First recommendation for medium cutting of carbon steel, alloy steel, mild steel, stainless steel and cast iron** Balance of edge strength and sharpness due to a combination of a flat land and large rake angle.	Carbon Steel • Alloy Steel   
	M	**MV** 	**Alternative chipbreaker for medium cutting of carbon steel, alloy steel, mild steel and stainless steel** A positive insert and the large rake angle achieve sharp cutting edge performance. The double breakers and round shape in the rake face achieve a wide range of chip discharge.	Carbon Steel • Alloy Steel  
	M	**MW** 	**Wiper insert for medium cutting of carbon steel, alloy steel, mild steel and stainless steel** The wiper allows up to two times higher feed. A wide chip pocket prevents chip jamming.	Carbon Steel • Alloy Steel  
	E	**R/L-SR** 	**Medium cutting of automatic lathe machining** A wide lead chipbreaker. Insert designed for low resistance chip control.	Carbon Steel • Alloy Steel  
	E	**R/L-SN** 	**Medium cutting of automatic lathe machining** A parallel chipbreaker. Excellent chip control at low to medium feed rates. Suitable for precise machining with E class tolerance.	Carbon Steel • Alloy Steel  
	G	**R/L-SN** 	**Medium cutting of automatic lathe machining** A parallel chipbreaker. Excellent chip control at low to medium feed rates.	Carbon Steel • Alloy Steel  
	E	**R/LW-SN** 	**Medium cutting of automatic lathe machining** A parallel chipbreaker. Excellent chip control at low to medium feed rates. The wiper produces a good surface finish.	Carbon Steel • Alloy Steel  
	G	**SMG** 	**Medium cutting of automatic lathe machining** 3D moulded chipbreaker provides good chip control. G class insert gives sharp cutting action, allowing high precision machining. Breaker geometry appropriate for copying and back turning.	Carbon Steel • Alloy Steel  

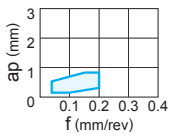
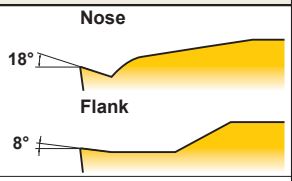
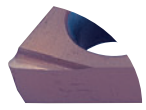
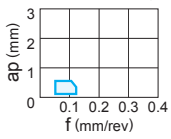
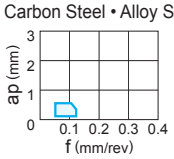
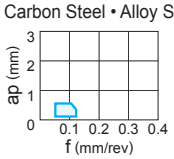
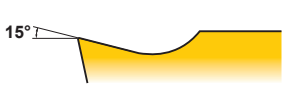
	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Rhombic 35°	Trigon 80°	Round	Breaker Name and Cross Section
	CCMT  A089	DCMT  A094	SCMT  A101	TCMT  A103	VCMT  A110	WCMT  A114	RCMT  A098	Standard
							RCMX  A098	
	CCMH_MV  A089	DCMT_MV  A094			VCMT_MV  A110			MV 
	CCMT_MW  A089							MW 
	CCET_R/L-SR  A090	DCET_R/L-SR  A094						R/L-SR 
	CCET_R/L-SN  A090	DCET_R/L-SN  A095						R/L-SN(E) 
	CCGT_R/L-SN  A091	DCGT_R/L-SN  A095						R/L-SN(G) 
	CCET_R/LW-SN  A091	DCET_R/LW-SN  A095						R/LW-SN 
	CCGT_SMG  A091	DCGT_SMG  A095						SMG 

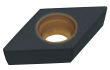
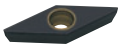
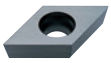
CLASSIFICATION

7° POSITIVE INSERTS WITH HOLE

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry
Heavy Cutting	M	**RR** 	**Heavy cutting of carbon steel and alloy steel** A wide groove chipbreaker prevents chips from jamming at large depths of cut. Small dimples improve chip control at small depths of cut.	Carbon Steel • Alloy Steel  
	M	**RBS** 	**Heavy cutting of mild steel and stainless steel** A wide groove chipbreaker and a sharp angle chipbreaker wall controls chips. Large chamfer provides high edge strength.	Mild Steel  
For Cast Iron	M	**Flat Top** 	**Heavy cutting of cast iron** Flat top. Most effective for unstable machining due to its high edge strength.	Cast Iron  
	G	**Flat Top** 	**For cast iron** Flat top. Most effective for unstable machining due to its high edge strength. Can be used on workpieces requiring close tolerances due to G class insert tolerance.	Cast Iron  

11° POSITIVE INSERTS WITH HOLE

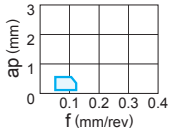
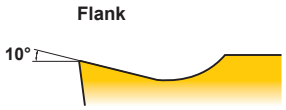
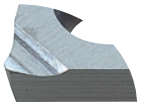
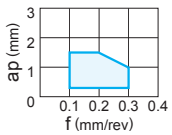
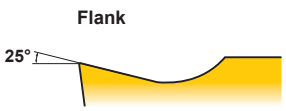
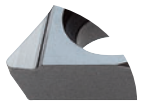
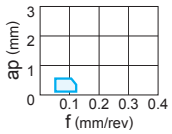
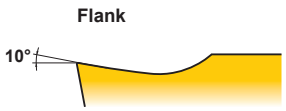
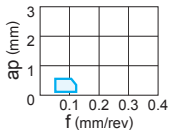
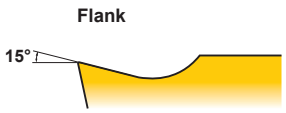
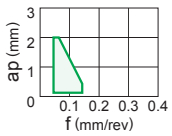
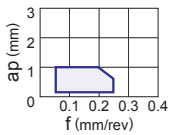
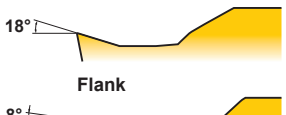
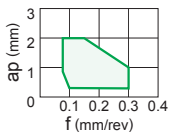
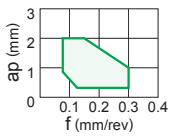
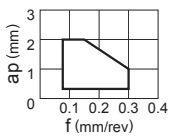
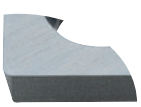
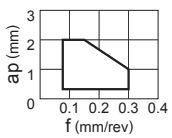
Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry
Finish Cutting	M	NEW **FV** 	**First recommendation for finishing carbon steel, alloy steel, mild steel and stainless steel** Suitable for low depths of cut and low feed rates. Sharp cutting edge and low resistance design achieves excellent cutting performance.	Carbon Steel • Alloy Steel  
	G	**R/L-FS** 	**Alternative chipbreaker for finishing carbon steel, alloy steel, stainless steel, cast iron and aluminium alloy** Small wide lead chipbreaker. Sharp cutting edge gives a good surface finish.	Carbon Steel • Alloy Steel  
	M	**R/L-F** 	**Finishing** Lead chipbreaker controls chip flow. Sharp cutting edge gives a good surface finish.	Carbon Steel • Alloy Steel  
	G	**R/L-F** 	**Finishing** Lead chipbreaker controls chip flow. Sharp cutting edge gives a good surface finish.	Carbon Steel • Alloy Steel  

	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Rhombic 35°	Trigon 80°	Round	Breaker Name and Cross Section
							RCMX_RR  A098	RR 
							RCMX_RBS  A098	RBS 
	CCMW  A091	DCMW  A096	SCMW  A101	TCMW  A103	VCMW  A110			Flat Top(M) 
	CCGW  A091	DCGW  A096						Flat Top(G) 

	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Rhombic 35°	Trigon 80°	Round	Breaker Name and Cross Section
	CPMH_FV NEW  A092			TPMH_FV NEW  A105				FV NEW 
				TPGH_R/L-FS  A105		WPGT_R/L-FS  A115		R/L-FS 
	CPMH_R/L-F  A092							R/L-F(M) 
	CPGT_R/L-F  A092							R/L-F(G) 

CLASSIFICATION

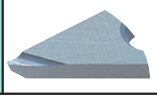
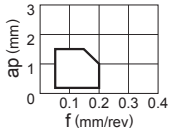
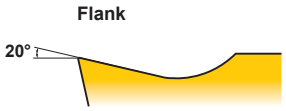
11° POSITIVE INSERTS WITH HOLE

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry
Finish Cutting	G	**R/L** 	**Finishing** Lead chipbreaker controls chip flow. Good chip control for low to medium feed rates.	Carbon Steel • Alloy Steel  
		Standard 	**Finishing** Lead chipbreaker controls chip flow. Good chip control for low to medium feed rates.	Aluminium Alloy  
	M	**L** 	**Finishing** Lead chipbreaker controls chip flow. Good chip control for low to medium feed rates.	Carbon Steel • Alloy Steel  
	E	NEW **SRF** 	**Finishing** Lead chipbreaker controls chip flow. Sharp cutting edge gives a good surface finish.	Carbon Steel • Alloy Steel  
	G	NEW **SMG** 	**Medium cutting of automatic lathe machining** 3D moulded chipbreaker provides good chip control. G class insert gives sharp cutting action, allowing high precision machining. Breaker geometry appropriate for copying and back turning.	Carbon Steel • Alloy Steel  
Light Cutting	M	**SV** 	**First recommendation for light cutting of carbon steel, alloy steel, mild steel, stainless steel and cast iron** Large rake angle provides sharp cutting action. A peninsular dot ensures chip control at depths of cut under 1mm.	Carbon Steel • Alloy Steel  
Medium Cutting	M	**MV** 	**First recommendation for medium cutting of carbon steel, alloy steel, mild steel, stainless steel and cast iron** A positive insert and large rake angle achieves sharp cutting edge performance. Double breakers in the rake face achieve a wide range of chip discharge.	Carbon Steel • Alloy Steel  
		Standard 	**Alternative chipbreaker for medium cutting of carbon steel, alloy steel and stainless steel** Standard, general purpose chipbreaker.	Carbon Steel • Alloy Steel  
For Cast Iron	M	**Flat Top** 	**Heavy cutting of cast iron** Flat top. Most effective for unstable machining due to its high edge strength.	Cast Iron  
	G	**Flat Top** 	**For cast iron** Flat top. Most effective for unstable machining due to its high edge strength. Can be used on workpieces requiring close tolerances due to G class insert tolerance.	Cast Iron  

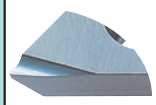
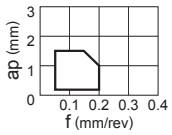
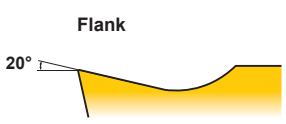
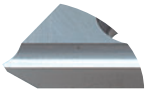
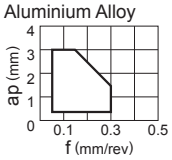
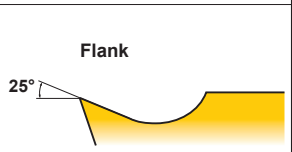
	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Rhombic 35°	Trigon 80°	Round	Breaker Name and Cross Section
				TPGX_R/L  A106				R/L 
	CPGT  A092					WPGT  A115		Standard 
				TPMX_L  A106				L 
					VPET_SRF NEW  A112			NEW SRF 
					VPGT_SMG NEW  A112			NEW SMG 
	CPMH_SV  A092			TPMH_SV  A106				SV 
	CPMH_MV  A092			TPMH_MV  A107		WPMT_MV  A115		MV 
	CPMX  A092		SPMT  A102	TPMX  A107				Standard 
			SPMW  A102					Flat Top(M) 
			SPGX  A102	TPGX  A107				Flat Top(G) 

CLASSIFICATION

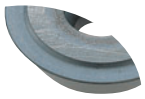
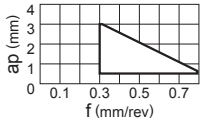
15° POSITIVE INSERTS WITH HOLE

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry
For Aluminium Alloy	G	R/L 	**For aluminium alloy cutting** Lead chipbreaker. Sharp cutting edge gives a good surface finish.	Aluminium Alloy  

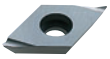
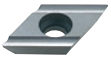
20° POSITIVE INSERTS WITH HOLE

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry
For Aluminium Alloy	G	R/L-F 	**For aluminium alloy cutting** Lead chipbreaker. Sharp cutting edge gives a good surface finish.	Aluminium Alloy  
		R/L 	**For aluminium alloy cutting** A parallel chipbreaker. Sharp cutting edge gives a good surface finish. Good chip control for medium feed rates.	Aluminium Alloy  

30° POSITIVE INSERTS WITH HOLE

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry
General Cutting	G	Standard 	**For difficult-to-cut materials** Ideal for heat-resistant alloy and titanium alloy.	Difficult-to-Cut Materials  

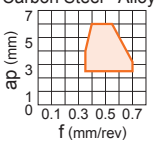
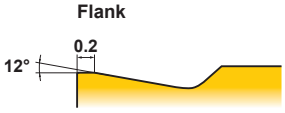
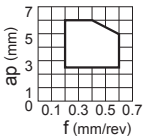
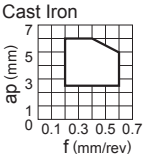
	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Rhombic 35°	Trigon 80°	Round	Breaker Name and Cross Section
					VDGX_R/L  A111			R/L 

	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Rhombic 35°	Trigon 80°	Round	Breaker Name and Cross Section
		DEGX_R/L-F  A097						R/L-F 
		DEGX_R/L  A097		TEGX_R/L  A104				R/L 

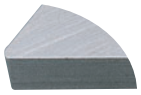
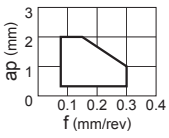
	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Rhombic 35°	Trigon 80°	Round	Breaker Name and Cross Section
							RGGM  A100	Standard 

CLASSIFICATION

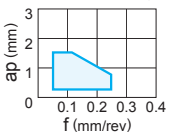
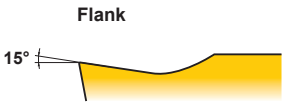
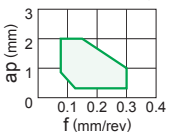
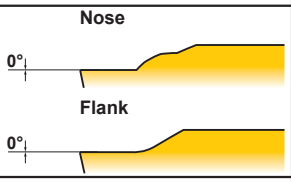
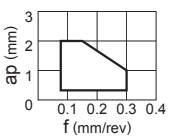
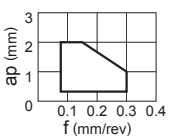
NEGATIVE INSERTS WITHOUT HOLE

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry
Semi-heavy Cutting	M	R/L 	**Semi-heavy cutting of carbon steel and alloy steel** Single sided chipbreaker. Can be used for copying. A parallel chipbreaker for good chip discharge.	Carbon Steel • Alloy Steel  
For Cast Iron	M	Flat Top 	**Heavy cutting of cast iron** Double sided flat insert. Most effective for unstable machining due to high edge strength and stable insert clamping.	Cast Iron  
For Cast Iron	G	Flat Top 	**For cast iron** Double sided flat insert. Most effective for unstable machining due to high edge strength and stable insert clamping. Can be used on workpieces requiring close tolerances due to G class insert tolerance.	Cast Iron  

7° POSITIVE INSERTS WITHOUT HOLE

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry
For Cast Iron	G	Flat Top 	**For cast iron** Double sided flat insert. Most effective for unstable machining due to high edge strength and stable insert clamping. Can be used on workpieces requiring close tolerances due to G class insert tolerance.	Cast Iron  

11° POSITIVE INSERTS WITHOUT HOLE

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry
Finish Cutting	G	R/L 	**Finishing** A parallel chipbreaker. Good chip control for low to medium feed rates.	Carbon Steel • Alloy Steel  
Light to Medium Cutting	M	Standard 	**Light to medium cutting of carbon steel, alloy steel and stainless steel** Standard, general purpose chipbreaker.	Carbon Steel • Alloy Steel  
For Cast Iron	M	Flat Top 	**Heavy cutting of cast iron** Flat top. Most effective for unstable machining due to high edge strength and stable insert clamping.	Cast Iron  
For Cast Iron	G	Flat Top 	**For cast iron** Flat top. Most effective for unstable machining due to high edge strength and stable insert clamping. Can be used on workpieces requiring close tolerances due to G class insert tolerance.	Cast Iron  

SPECIAL PURPOSE INSERTS

Application	Tolerance	Tool Holder Type	Inserts
Special	G	ROTARY Holder	RNGJ, RDGH  A068, A099
		TL Type	RTG  A117
		CF Type	CFT  F115

	Square 90°	Triangular 60°	Parallelogram 55°	Breaker Name and Cross Section
			KNMX_R/L  A085	R/L 
	SNMN  A086	TNMN  A087		Flat Top(M) 
	SNGN  A086	TNGN  A087		Flat Top(G) 

	Square 90°	Triangular 60°		Breaker Name and Cross Section
		TCGN  A119		Flat Top 

	Square 90°	Triangular 60°		Breaker Name and Cross Section
	SPGR_R/L  A118	TPGR_R/L  A120		R/L 
	SPMR  A118	TPMR  A120		Standard 
	SPMN  A118	TPMN  A120		Flat Top(M) 
	SPGN  A118	TPGN  A121		Flat Top(G) 

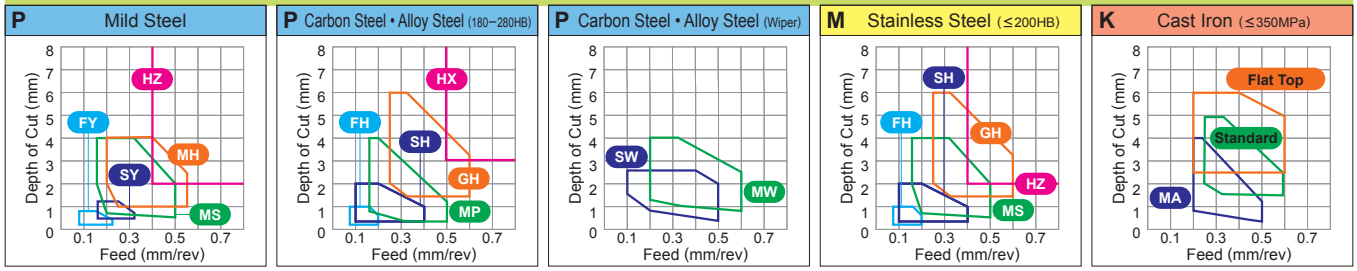
TURNING INSERTS [NEGATIVE]

80° CN TYPE INSERTS WITH HOLE

CNMG 12 04 02- FH
Size Thickness Corner Radius Chip Breaker
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting···· Light Cutting···· Medium Cutting···· Semi-Heavy Cutting···· Heavy Cutting····



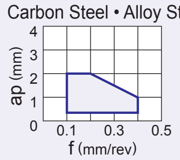
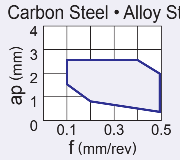
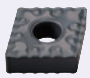
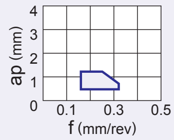
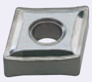
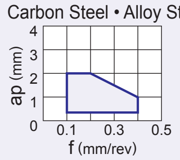
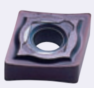
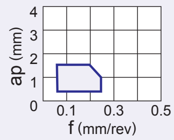
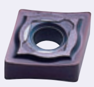
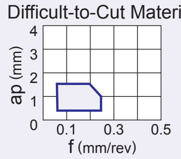
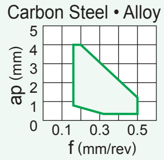
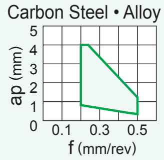
Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material		
P	Steel	● ◔ ✣ ✣ ✣ ○ ◔ ● ● ✣ ✣ ○ ● ◔ ● ● ✣ ✣ ● ● ◔ ◔ ● ◔ ✣
M	Stainless Steel	
K	Cast Iron	
N	Non-ferrous Metal	
S	Heat-resistant Alloy, Titanium Alloy	

Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R Re (mm)	Coated UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	Cermet NX2525	NX3035	NX55	Coated Cermet AP25N	VP25N	Carbide UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	Applicable Holder Page
FH	Carbon Steel • Alloy Steel	**CNMG120402-FH**	0.2	●	●					●								●	●										C010
		120404-FH	0.4	●	●					●								●	●		●								C011
		120408-FH	0.8	●	●					●								●	●		●								E013
		120412-FH	1.2															●			●								E042
																													H006
Finish Cutting																													—008
FS	Mild Steel	**CNMG120404-FS**	0.4		●													●											C010
		120408-FS	0.8		●													●											C011
																													E013
																													E042
																													H006
Finish Cutting																													—008
FY	Mild Steel	**CNMG120404-FY**	0.4		●														●		●								C010
		120408-FY	0.8		●														●		●								C011
																													E013
																													E042
																													H006
Finish Cutting																													—008
FJ	Difficult-to-Cut Materials	**CNGG1204V5-FJ**	0.05												●												●		C010
		120401-FJ	0.1												●												●		C011
		120402-FJ	0.2												●												●		E013
		120404-FJ	0.4												●	●									□		●	●	E042
																													H006
Finish Cutting		**120408-FJ**	0.8												●	●									□		●	●	—008
PK	Carbon Steel • Alloy Steel	**CNGG120404-PK**	0.4															●	▲										C010
		120408-PK	0.8															●	▲										C011
																													E013
																													E042
																													H006
Finish Cutting																													—008
SH	Carbon Steel • Alloy Steel	**CNMG090304-SH**	0.4							□																			
		090308-SH	0.8							□																			C010
		09T304-SH	0.4		●					●																			C011
		09T308-SH	0.8		●					●																			E013
		120404-SH	0.4	●	●	●				●			●					●	●		●								E042
		120408-SH	0.8	●	●	●				●			●					●	●		●								H006
		120412-SH	1.2	●	●	●							□					●	●		●								—008
Light Cutting																													

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
▲ : Inventory maintained in Japan. To be replaced by new products.
(10 inserts in one case)

Cutting Conditions (Guide) : ● : Stable Cutting ◐ : General Cutting ✤ : Unstable Cutting

Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Re (mm)	UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	Applicable Holder Page
			Corner R	Coated														Cermet			Coated Cermet		Carbide						
Work Material	P	Steel		●	◐	✤	✤	✤										●	◐	●	●	●	✤						
	M	Stainless Steel							●	◐						✤	✤	●					✤						
	K	Cast Iron										●	◐					●			●	●	✤	●	◐				
	N	Non-ferrous Metal																							◐	●			
	S	Heat-resistant Alloy, Titanium Alloy									●			●	◐	✤										●	◐	✤	
SA  Light Cutting	Carbon Steel • Alloy Steel 	CNMG120404-SA	0.4	●	●	●													●										C010 C011 E013 E042 H006 —008
		120408-SA	0.8	●	●	●													●										
		120412-SA	1.2	●	●	●													●										
		160608-SA	0.8			□																							
		160612-SA	1.2		●	□																							
* **SW**  Light Cutting (Wiper)	Carbon Steel • Alloy Steel 	CNMG120404-SW	0.4	●	●				●				●					●	●										C010 C011 E013 E042 H006 —008
		120408-SW	0.8	●	●				●				●					●	●										
		120412-SW	1.2	●	●				●									●	●										
SY  Light Cutting	Mild Steel 	CNMG120404-SY	0.4			●													●			●							C010 C011 E013 E042 H006 —008
		120408-SY	0.8			●													●			●							
C  Light Cutting	Carbon Steel • Alloy Steel 	CNMG120404-C	0.4															▲	▲										C010 C011 E013 E042 H006 —008
		120408-C	0.8															▲	▲										
MJ  Light Cutting	Difficult-to-Cut Materials 	CNMG120404-MJ	0.4								●			●	●											□	●		C010 C011 E013 E042 H006 —008
		120408-MJ	0.8								●			●	●											□	●		
		120412-MJ	1.2								●			●	●														
		120416-MJ	1.6								●			●	●														
MJ  Light Cutting	Difficult-to-Cut Materials 	CNGG120404-MJ	0.4							□					●	●									●		●	●	C010 C011 E013 E042 H006 —008
		120408-MJ	0.8							□					●	●									●		●	●	
MP  Medium Cutting	Carbon Steel • Alloy Steel 	CNMG120404-MP	0.4	●	●	●							●																C010 C011 E013 E042 H006 —008
		120408-MP	0.8	●	●	●							●																
		120412-MP	1.2	●	●	●							●																
		120416-MP	1.6	●	●	●							●																
		160608-MP	0.8	●	●	●							●																
		160612-MP	1.2	●	●	●							●																
		160616-MP	1.6	●	●	●							●																
MA  Medium Cutting	Carbon Steel • Alloy Steel 	CNMG120404-MA	0.4	●	●	●	●		●	●		●	●			●			●										C010 C011 E013 E042 H006 —008
		120408-MA	0.8	●	●	●	●		●	●		●	●			●			●										
		120412-MA	1.2	●	●	●	●		●	●		●	●			●			●										
		120416-MA	1.6	●	●	●	●		●	●		●	●																
		160608-MA	0.8	●	●	●	●		□	●			●																
		160612-MA	1.2	●	●	●	●		●	●		●	●																
		160616-MA	1.6	●	●		●		□	●		●	●																
		190612-MA	1.2	●	●	●	●		●	●		●	●																
		190616-MA	1.6		●	●	●		□	●		●	●																

* Please refer to A024 before using the SW breaker (wiper insert).

TURNING INSERTS
NEG
WITH HOLE
C
D
R
S
T
V
W

CHIP BREAKERS ➤ A036
GRADES ➤ A026
IDENTIFICATION ➤ A002

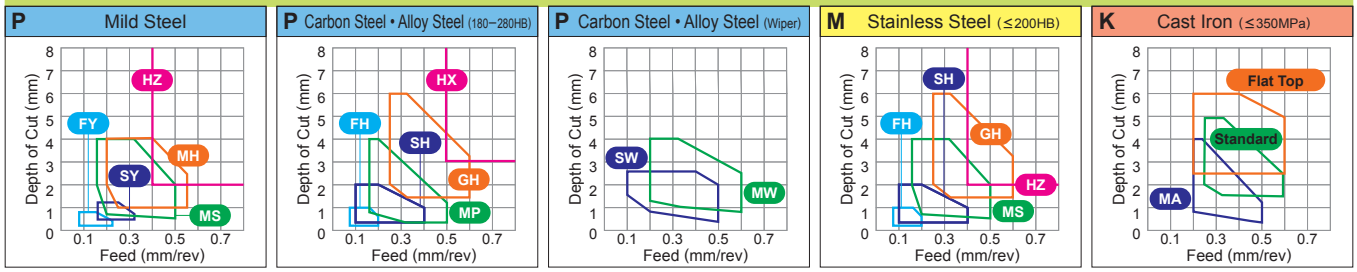
TURNING INSERTS [NEGATIVE]

80° CN TYPE INSERTS WITH HOLE

CNMG 12 04 04- MH
Size / Thickness / Corner Radius / Chip Breaker
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting···· Light Cutting···· Medium Cutting···· Semi-Heavy Cutting···· Heavy Cutting····



Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material		
P	Steel	● ◔ ✣ ✣ ✣ ○ ◔ ✣ ✣ ○ ✣ ● ◔ ● ● ● ✣ ● ● ✣ ● ◔ ● ◔ ● ● ✣
M	Stainless Steel	
K	Cast Iron	
N	Non-ferrous Metal	
S	Heat-resistant Alloy, Titanium Alloy	

Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R Re (mm)	Coated UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	Cermet NX2525	NX3035	NX55	Coated Cermet AP25N	VP25N	Carbide UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	Applicable Holder Page
MH	Carbon Steel • Alloy Steel	**CNMG120404-MH**	0.4	●	●	●	●		●			●																	C010 C011 E013 E042 H006 −008
		120408-MH	0.8	●	●	●	●		●			●																	
		120412-MH	1.2	●	●	●	●		●			●																	
		120416-MH	1.6	●	●	●			●			●																	
		160608-MH	0.8	●	●							●																	
		160612-MH	1.2	●	●	●	●		●			●																	
		160616-MH	1.6	●	●							●																	
		190612-MH	1.2	●	●	●	●		●			●																	
	Medium Cutting	**190616-MH**	1.6	●	●	●						●																	
Standard	Carbon Steel • Alloy Steel	**CNMG090308**	0.8		●																								C010 C011 E013 E042 H006 −008
		09T304	0.4		●													●											
		09T308	0.8		●													●											
		120404	0.4	●	●	●	●					●	●					●	●				●		●				
		120408	0.8	●	●	●	●					●	●			●		●	●				●		●				
		120412	1.2	●	●	●	●					●	●			●		●	●				●		□				
		120416	1.6	●	●		□					●	●																
		160608	0.8	●	●	●	□																						
		160612	1.2	●	●	●	●					●	●										●						
		160616	1.6	●	●	●	●					●	●																
		190608	0.8	●	●	●	●																						
		190612	1.2	●	●	●	●					●	●										●						
		190616	1.6	●	●	●	●					●	●																
	Medium Cutting	**190624**	2.4			□																							
* **MW**	Carbon Steel • Alloy Steel	**CNMG120408-MW**	0.8	●	●	●			●			●	●																C010 C011 E013 E042 H006 −008
		120412-MW	1.2	●	●	●			●			●	●																
	Medium Cutting (Wiper)																												
MS	Stainless Steel	**CNMG090304-MS**	0.4						□	●																			C010 C011 E013 E042 H006 −008
		090308-MS	0.8		●				□	●																			
		09T304-MS	0.4						□	●							□						●						
		09T308-MS	0.8		●				□	●							□						●						
		120404-MS	0.4		●	●			●	●	●			●	●	●	●		●				●		●	□	●	●	
		120408-MS	0.8		●	●			●	●	●			●	●	●	●		●				●		●	□	●	●	
		120412-MS	1.2		●	□			●	●	●			●	●	●	●		●				●			□	●	●	
	Medium Cutting	**120416-MS**	1.6		●				□	□																			

* Please refer to A024 before using the MW breaker (wiper insert).

● : Inventory maintained in Japan. □ : Non stock, produced to order only.

(10 inserts in one case)

Cutting Conditions (Guide) : ● : Stable Cutting ◐ : General Cutting ✣ : Unstable Cutting

Work Material		Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R Re (mm)	Coated: UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	Cermet: NX2525	NX3035	NX55	Coated Cermet: AP25N	VP25N	Carbide: UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	Applicable Holder Page
P	Steel	MS	Stainless Steel	CNMG160604-MS	0.4						□	□																		C010 C011 E013 E042 H006 −008
M	Stainless Steel			160608-MS	0.8						□	●																		
K	Cast Iron			160612-MS	1.2						□	●																		
N	Non-ferrous Metal			190612-MS	1.2						□	●																		
S	Heat-resistant Alloy, Titanium Alloy			190616-MS	1.6						□	●																		
		GH	Carbon Steel • Alloy Steel	CNMG120408-GH	0.8	●	●	●			●	●		●	●															C010 C011 E013 E042 H006 −008
				120412-GH	1.2	●	●	●			●	●		●	●															
				120416-GH	1.6	●	●							●	●															
				160612-GH	1.2	●	●	●			●	●		●	●															
				160616-GH	1.6	●	●							●	●															
				190612-GH	1.2	●	●	●			●	●		●	●															
				190616-GH	1.6	●	●	●			●	●		●	●															
		GJ	Difficult-to-Cut Materials	CNMG120408-GJ	0.8								●				●	●											●	●	C010 C011 E013 E042 H006 −008
				120412-GJ	1.2								●				●	●											●	●	
				120416-GJ	1.6								●				●	●											●	●	
				160612-GJ	1.2								●				●												●		
				190612-GJ	1.2								●				●												●		
				190616-GJ	1.6								●				●												●		
		HZ	Mild Steel	CNMM120408-HZ	0.8		●	●			□	□																		C010 C011 E013 E042 H006 −008
				120412-HZ	1.2		●	●			□	□																		
				160612-HZ	1.2		●	●			□	□																		
				160616-HZ	1.6		●	●			□	□																		
				190612-HZ	1.2		●	●		●	□	□																		
				190616-HZ	1.6		●	●		●	□	□																		
				190624-HZ	2.4		□	□		●																				
		HX	Carbon Steel • Alloy Steel	CNMM160612-HX	1.2		□	□	□																					C010 C011
				160616-HX	1.6		□	□	□																					
				190612-HX	1.2		●	●	□	●																				
				190616-HX	1.6		●	●	□	●																				
				190624-HX	2.4		●	●	□	●																				
				250724-HX	2.4			●	□	●																				
				250732-HX	3.2			□	□	●																				
				250924-HX	2.4		●	●	□	●																				
				250932-HX	3.2			□	□	●																				
		HV	Carbon Steel • Alloy Steel	CNMM190616-HV	1.6		●	●	□	●																				C010 C011
				190624-HV	2.4		●	●	□	●																				
				250724-HV	2.4			●	□	●																				
				250924-HV	2.4		●	●	□	●																				
		HAS	Carbon Steel • Alloy Steel	CNMG250924-HAS	2.4			●		●																				–

CHIP BREAKERS ➤ A036
GRADES ➤ A026
IDENTIFICATION ➤ A002

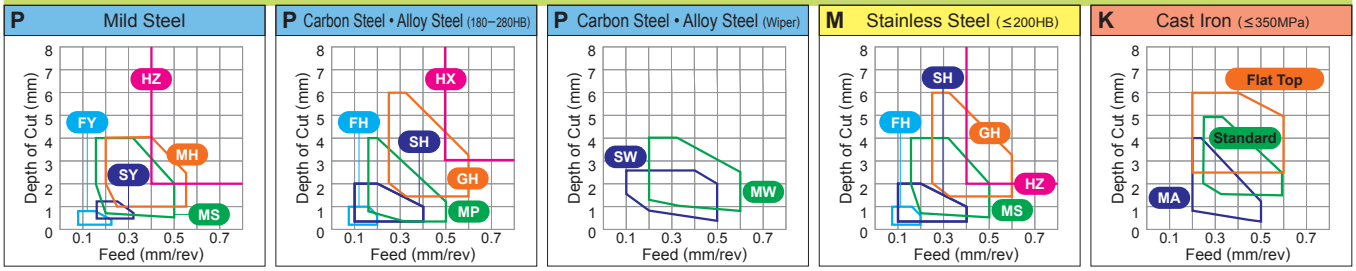
TURNING INSERTS [NEGATIVE]

80° CN TYPE INSERTS WITH HOLE

CNMM 19 06 12- HXD
Size / Thickness / Corner Radius / Chip Breaker
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting···· Light Cutting···· Medium Cutting···· Semi-Heavy Cutting···· Heavy Cutting····

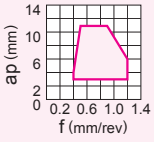


Cutting Conditions (Guide) : ● : Stable Cutting ◕ : General Cutting ✣ : Unstable Cutting

Work Material			Corner R	Coated												Cermet			Coated Cermet		Carbide					Applicable Holder Page
			Re (mm)	UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	
P	Steel	**HXD**																									
M	Stainless Steel																										
K	Cast Iron																										
N	Non-ferrous Metal																										
S	Heat-resistant Alloy, Titanium Alloy																										
		CNMM190612-HXD	1.2			●	●																					C010 C011
		190616-HXD	1.6			●	●																					
		190624-HXD	2.4			●	●																					
		250924-HXD	2.4			●	●																					
		Flat Top																										
		CNMA120404	0.4									●	●											●	●			C010 C011 E013 E042 H006 −008
		120408	0.8									●	●										●	●	●			
		120412	1.2									●	●										□	●	●			
		120416	1.6									●	●															
		160612	1.2									●	●															
		160616	1.6									●	●															
		190612	1.2									●	●												●			
		190616	1.6									●	●															

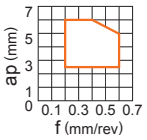
HXD — Heavy Cutting

Mild Steel



Flat Top

Cast Iron



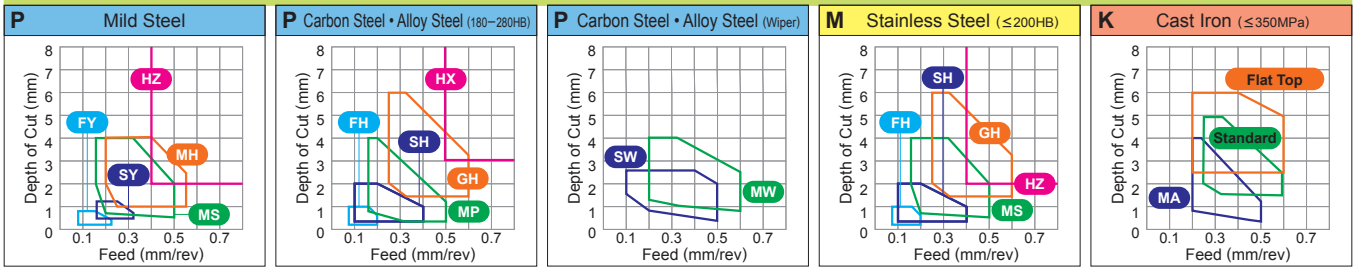
● : Inventory maintained in Japan. □ : Non stock, produced to order only.
▲ : Inventory maintained in Japan. To be replaced by new products.
(10 inserts in one case)

55° DN TYPE INSERTS WITH HOLE

DNMG 15 04 02- FH
Size Thickness Corner Radius Chip Breaker
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting···· Light Cutting···· Medium Cutting···· Semi-Heavy Cutting···· Heavy Cutting····



Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material			Corner R	Coated												Cermet		Coated Cermet	Carbide						Applicable Holder Page
			Re (mm)	UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	
P	Steel			●	◔	✣	✣	✣		○	◔				✣	✣		●	◔	●	●	●	✣						
M	Stainless Steel								○	◔								○			✣								
K	Cast Iron											●	◔					●			●	●	✣	●	◔				
N	Non-ferrous Metal																								◔	●			
S	Heat-resistant Alloy, Titanium Alloy										●			●	◔	✣											◔	✣	
FH	Carbon Steel • Alloy Steel	**DNMG150402-FH**	0.2	●	●				●									●	●										C012 C013 E013 E036 −038 E041 E042 H009 −011
Finish Cutting		**150404-FH**	0.4	●	●				●									●	●		●								
		150408-FH	0.8	●	●				●									●	●		●								
		150602-FH	0.2	●	●				●									●	●										
		150604-FH	0.4	●	●				●									●	●										
		150608-FH	0.8	●	●				●									●	●										
FS	Mild Steel	**DNMG150404-FS**	0.4		●													●											C012 C013 E013 E036 −038 E041 E042 H009 −011
Finish Cutting		**150408-FS**	0.8		●													●											
FY	Mild Steel	**DNMG150404-FY**	0.4		●														●			●							C012 C013 E013 E036 −038 E041 E042 H009 −011
Finish Cutting		**150408-FY**	0.8		●														●			●							
		150604-FY	0.4		●														●			●							
		150608-FY	0.8		●														●			●							
FJ	Difficult-to-Cut Materials	**DNGG150404-FJ**	0.4											●	●									□		●	●		C012 C013 E013 E036 −038 E041 E042 H009 −011
Finish Cutting		**150408-FJ**	0.8											●	●									□		●	●		
PK	Carbon Steel • Alloy Steel	**DNGG150404-PK**	0.4															●	▲										C012 C013 E013 E036 −038 E041 E042 H009 −011
Finish Cutting		**150408-PK**	0.8															●	▲										
SH	Carbon Steel • Alloy Steel	**DNMG110404-SH**	0.4	●	●				●																				C012 C013 E013 E036 −038 E041 E042 H009 −011
Light Cutting		**110408-SH**	0.8	●	●				●																				
		150404-SH	0.4	●	●	●			●			●						●	●		●								
		150408-SH	0.8	●	●	●			●			●						●	●		●								
		150412-SH	1.2	●	●	●			●			●						●	●		●								
		150604-SH	0.4	●	●							□							●										
		150608-SH	0.8	●	●							●							●										
		150612-SH	1.2	●	●							●							●										

CHIP BREAKERS ➤ A036
GRADES ➤ A026
IDENTIFICATION ➤ A002

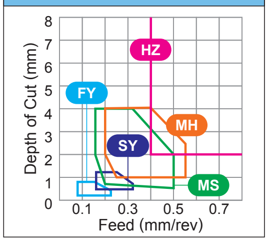
55° DN TYPE INSERTS WITH HOLE

DNMG 15 04 04- SA
Size Thickness Corner Radius Chip Breaker
* Please refer to page A002.

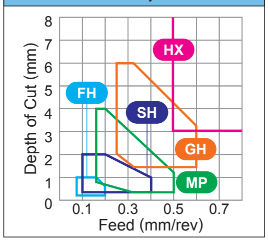
CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting···· Light Cutting···· Medium Cutting···· Semi-Heavy Cutting···· Heavy Cutting····

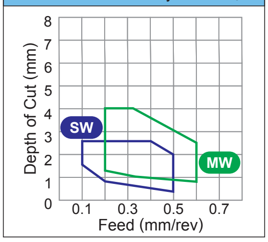
P Mild Steel



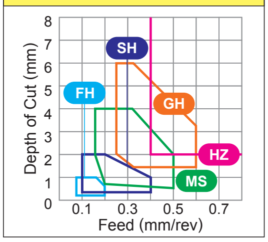
P Carbon Steel • Alloy Steel (180–280HB)



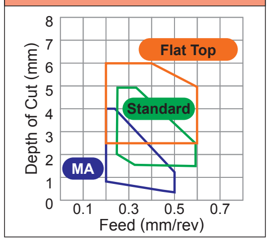
P Carbon Steel • Alloy Steel (Wiper)



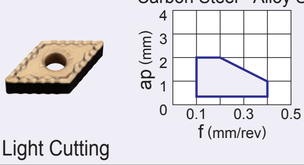
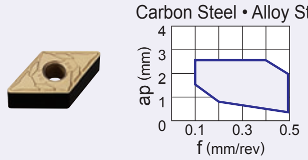
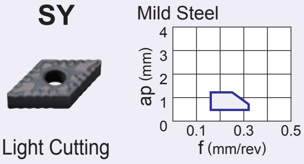
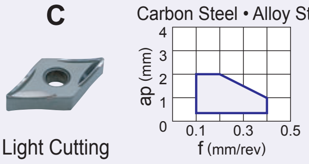
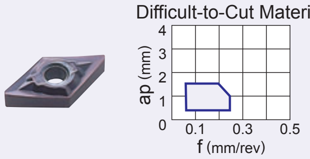
M Stainless Steel (≤200HB)



K Cast Iron (≤350MPa)



Cutting Conditions (Guide) : ● : Stable Cutting ◐ : General Cutting ✤ : Unstable Cutting

Shape / Chip Control Range (ap : Depth of Cut, f : Feed)	Order Number	Corner R Re (mm)	UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	Applicable Holder Page
			Coated														Cermet			Coated Cermet		Carbide						
Work Material: P Steel			●	◐	✤	✤	✤										●	◐	●	●	●	✤						
Work Material: M Stainless Steel								●	◐						✤	✤	●					✤						
Work Material: K Cast Iron											●	◐					●			●	●	✤	●	◐				
Work Material: N Non-ferrous Metal																								◐	●			
Work Material: S Heat-resistant Alloy, Titanium Alloy										●			●	◐	✤										●	◐	✤	
SA Carbon Steel • Alloy Steel  Light Cutting	DNMG150404-SA	0.4	●	●	●													●										C012 C013 E013 E036 —038 E041 E042 H009 —011
	150408-SA	0.8	●	●	●													●										
	150412-SA	1.2	●	●	●													●										
	150604-SA	0.4	●	●	●													●										
	150608-SA	0.8	●	●	●													●										
	150612-SA	1.2	●	●	●													●										
* SW Carbon Steel • Alloy Steel  Light Cutting (Wiper)	DNMX110404-SW	0.4	●																									C012 E013 E036 E038 E041 H009 H011
	110408-SW	0.8	●																									
	150404-SW	0.4	●	●				●									●	●										
	150408-SW	0.8	●	●				●									●	●										
	150412-SW	1.2	●	●				●									●	●										
	150604-SW	0.4	●	●				●									●	●										
	150608-SW	0.8	●	●				●									●	●										
	150612-SW	1.2	●	●				●									●	●										
SY Mild Steel  Light Cutting	DNMG150404-SY	0.4			●													●			●							C012 C013 E013 E036 —038 E041 E042 H009 —011
	150408-SY	0.8			●													●			●							
	150604-SY	0.4			●													●			●							
	150608-SY	0.8			●													●			●							
C Carbon Steel • Alloy Steel  Light Cutting	DNMG150404-C	0.4															▲	▲										C012 C013 E013 E036 —038 E041 E042 H009 —011
	150408-C	0.8															▲	▲										
	150604-C	0.4															▲	▲										
	150608-C	0.8															▲	▲										
MJ Difficult-to-Cut Materials  Light Cutting	DNMG150404-MJ	0.4								●			●	●											□	●		C012 C013 E013 E036 —038 E041 E042 H009 —011
	150408-MJ	0.8								●			●	●											□	●		
	150412-MJ	1.2								●			●	●														
	150416-MJ	1.6								●			●	●														
	150604-MJ	0.4								●			●	●														
	150608-MJ	0.8								●			●	●														
	150612-MJ	1.2								●			●	●														
	150616-MJ	1.6								●			●	●														

* Please refer to A024 before using the SW breaker (wiper insert).

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
▲ : Inventory maintained in Japan. To be replaced by new products.
(10 inserts in one case)

Cutting Conditions (Guide) : ● : Stable Cutting ◐ : General Cutting ✣ : Unstable Cutting

Work Material			Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R Re (mm)	Coated UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	Cermet NX2525	NX3035	NX55	Coated Cermet AP25N	VP25N	Carbide UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	Applicable Holder Page
P	Steel		**MJ**	Difficult-to-Cut Materials	**DNGM150404-MJ**	0.4							□				●	●									●		●	●	C012 C013 E013 E036 −038 E041 E042 H009 −011
M	Stainless Steel				**150408-MJ**	0.8							□				●	●									●		●	●	
K	Cast Iron																														
N	Non-ferrous Metal																														
S	Heat-resistant Alloy, Titanium Alloy																														
			Light Cutting																												
			MP	Carbon Steel • Alloy Steel	**DNMG150404-MP**	0.4	●	●	●						●																C012 C013 E013 E036 −038 E041 E042 H009 −011
					150408-MP	0.8	●	●	●						●																
					150412-MP	1.2	●	●	●						●																
					150416-MP	1.6	●	●	●						●																
					150604-MP	0.4	●	●	●						●																
					150608-MP	0.8	●	●	●						●																
					150612-MP	1.2	●	●	●						●																
			Medium Cutting		**150616-MP**	1.6	●	●	●						●																
			MA	Carbon Steel • Alloy Steel	**DNMG110404-MA**	0.4	●	●																								C012 C013 E013 E036 −038 E041 E042 H009 −011
					110408-MA	0.8	●	●																							
					110412-MA	1.2	●	●																							
					150404-MA	0.4	●	●	●	●		●	●		●	●		●			●										
					150408-MA	0.8	●	●	●	●		●	●		●	●		●			●										
					150412-MA	1.2	●	●	●	●		□	●		●	●					●										
					150416-MA	1.6		●																							
					150604-MA	0.4	●	●	●	□		●	●					●			●										
					150608-MA	0.8	●	●	●	●		●	●		●	●		●			●										
					150612-MA	1.2	●	●	●	□		●	●		●	●					●										
			Medium Cutting		**150616-MA**	1.6		●																							
			MH	Carbon Steel • Alloy Steel	**DNMG150404-MH**	0.4	●	●	●	●		●			●																C012 C013 E013 E036 −038 E041 E042 H009 −011
					150408-MH	0.8	●	●	●	●		●			●																
					150412-MH	1.2	●	●	●	●		●			●																
					150604-MH	0.4	●	●	●			●			●																
					150608-MH	0.8	●	●	●			●			●																
			Medium Cutting		**150612-MH**	1.2	●	●	●			●			●																
			Standard	Carbon Steel • Alloy Steel	**DNMG110408**	0.8		●																								C012 C013 E013 E036 −038 E041 E042 H009 −011
					150404	0.4	●	●	●						●	●				●	●				●		●				
					150408	0.8	●	●	●	●					●	●		●		●	●				●		●				
					150412	1.2	●	●	●	●					●	●		●		●	●										
					150416	1.6		●																							
					150604	0.4	●	●	●						●	●				●	●										
					150608	0.8	●	●	●						●	●		●		●	●						□				
			Medium Cutting		**150612**	1.2	●	●	●						●	●		●		●											
					150616	1.6		●																							
			* **MW**	Carbon Steel • Alloy Steel	**DNMX150408-MW**	0.8	●	●	□			□			●	●															C012 E013 E036 E038 E041 H009 H011
					150412-MW	1.2	●	●	□			□			●	●															
					150608-MW	0.8	●	●	□			●			●	●															
			Medium Cutting (Wiper)		**150612-MW**	1.2	●	●	□			□			□	□															

* Please refer to A024 before using the MW breaker (wiper insert).

CHIP BREAKERS ➤ A036
GRADES ➤ A026
IDENTIFICATION ➤ A002

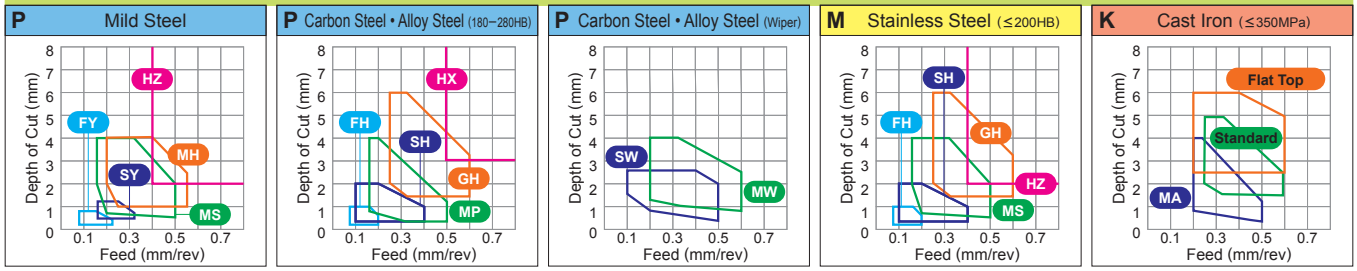
TURNING INSERTS [NEGATIVE]

55° DN TYPE INSERTS WITH HOLE

DNMG 11 04 08- MS
Size Thickness Corner Radius Chip Breaker
* Please refer to page A002.

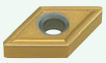
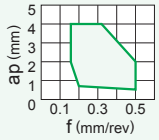
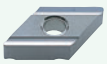
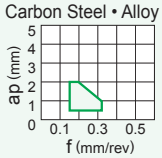
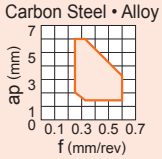
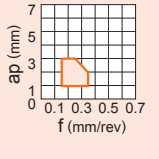
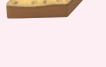
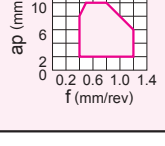
CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting···· Light Cutting···· Medium Cutting···· Semi-Heavy Cutting···· Heavy Cutting····



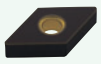
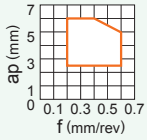
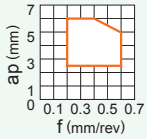
Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material		
P	Steel	● ◔ ✣ ✣ ✣ ○ ◔ ● ● ✣ ✣ ● ◔ ● ● ● ✣ ✣ ● ● ✣ ● ◔ ●
M	Stainless Steel	○ ◔ ✣ ○ ✣
K	Cast Iron	● ◔ ● ● ✣ ● ◔ ● ◔ ●
N	Non-ferrous Metal	
S	Heat-resistant Alloy, Titanium Alloy	● ✣ ✣ ◔ ● ◔

Shape / Chip Control Range (ap : Depth of Cut, f : Feed)	Order Number	Corner R Re (mm)	Coated: UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	Cermet: NX2525	NX3035	NX55	Coated Cermet: AP25N	VP25N	Carbide: UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	Applicable Holder Page
MS	DNMG 110408-MS	0.8	●					□	●																			C012
Stainless Steel	150404-MS	0.4	●	●				●	●	●			●	●	●	●		●				●			□	●	●	C013 E013 E036 −038 E041 E042 H009 −011
	150408-MS	0.8	●	●				●	●	●			●	●	●	●		●				●			□	●	●	
	150412-MS	1.2	●					□	●	●			●	●	●			●							□	●	●	
Medium Cutting	150604-MS	0.4	●					●	●	●			●	●		●		●				□						
	150608-MS	0.8	●					●	●	●			●	●		●		●				□						
	150612-MS	1.2	●							●			●	●				●										
R/L	DNGG 150404R	0.4															●	●	▲			●		●				C012 C013 E013 E036 −038 E041 E042 H009 −011
Carbon Steel • Alloy Steel	150404L	0.4															●	●	▲			●		●				
	150408R	0.8															●	●	▲			●		●				
	150408L	0.8															●	●	▲			●		●				
Medium Cutting	150604R	0.4															●					●						
	150604L	0.4															●											
	150608R	0.8															●											
	150608L	0.8															●											
GH	DNMG 150408-GH	0.8	●	●	●			●	●		●	●																C012 C013 E013 E036 −038 E041 E042 H009 −011
Carbon Steel • Alloy Steel	150412-GH	1.2	●	●	●			●	●		●	●																
	150608-GH	0.8	●	●	●			●	●		●	●																
	150612-GH	1.2	●	●	●			●	●		●	●																
Semi-Heavy Cutting																												
GJ	DNMG 150408-GJ	0.8								●			●	●												●	●	C012 C013 E013 E036 −038 E041 E042 H009 −011
Difficult-to-Cut Materials	150412-GJ	1.2								●			●	●												●	●	
	150416-GJ	1.6								●			●	●												●	●	
	150608-GJ	0.8								●			●															
Semi-Heavy Cutting	150612-GJ	1.2								●			●															
	150616-GJ	1.6								●			●															
HZ	DNMM 150408-HZ	0.8	●	●				□	□																			C012 C013 E013 E036 −038 E041 E042 H009 −011
Mild Steel	150412-HZ	1.2	●	●				□	□																			
	150416-HZ	1.6	●	●				□	□																			
	150608-HZ	0.8	●	●				□	□																			
Heavy Cutting	150612-HZ	1.2	●	●				□	□																			
	150616-HZ	1.6	●	●				□	□																			

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
▲ : Inventory maintained in Japan. To be replaced by new products.
(10 inserts in one case)

Cutting Conditions (Guide) : ● : Stable Cutting ◕ : General Cutting ✣ : Unstable Cutting

Work Material			Corner R	Coated												Cermet			Coated Cermet		Carbide					Applicable Holder Page
				UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	
P	Steel	Shape / Chip Control Range / ap : Depth of Cut / f : Feed	Order Number	Re (mm)																							
M	Stainless Steel	**Flat Top**	**DNMA150404**	0.4								●	●												●			C012 C013 E013 E036 −038 E041 E042 H009 −011
K	Cast Iron	 Cast Iron 	**150408**	0.8								●	●					●						●	●				
N	Non-ferrous Metal		**150412**	1.2								●	●																
S	Heat-resistant Alloy, Titanium Alloy		**150416**	1.6								□	□																
			150608	0.8								●	●																
			150612	1.2								●	●																
		Flat Top	**DNGA150404**	0.4																			□	●	●				C012 C013 E013 E036 −038 E041 E042 H009 −011
		 Cast Iron 	**150408**	0.8																			●	●	●				

CHIP BREAKERS ➤ A036
GRADES ➤ A026
IDENTIFICATION ➤ A002

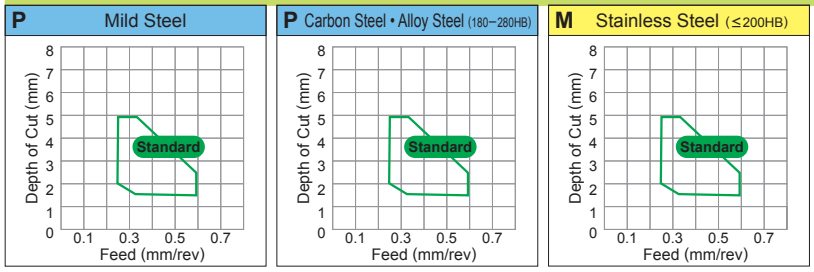
TURNING INSERTS [NEGATIVE]

RN TYPE INSERTS WITH HOLE

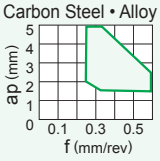
RNMG 09 03 00
Size Thickness Corner Radius
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Medium Cutting ····



Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material			Corner R	Coated												Cermet			Coated Cermet		Carbide						Applicable Holder Page
			Re (mm)	UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	
	P	Steel		●	◔	✣	✣	✣	○	◔						✣	✣	●	◔	●	●	●	✣						
	M	Stainless Steel							○	◔								○					✣						
	K	Cast Iron										●	◔					●			●	●	✣	●	◔				
	N	Non-ferrous Metal																							◔	●			
	S	Heat-resistant Alloy, Titanium Alloy									●			●	◔	✣											●	◔	✣
Standard  Medium Cutting	Chip Control Range ap : Depth of Cut f : Feed 	**RNMG090300**	—	●																								–
		120400	—	●	●																		□						
		150600	—	●																									
		190600	—	●	●			●																					
		250900	—	●				●																					
		310900	—	●																									
M5  For Special Use (For Rotary Tools)		**RNGJ190600-M5**	—							●																	●	C046

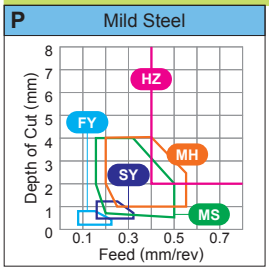
● : Inventory maintained in Japan. □ : Non stock, produced to order only.
▲ : Inventory maintained in Japan. To be replaced by new products.
(10 inserts in one case)

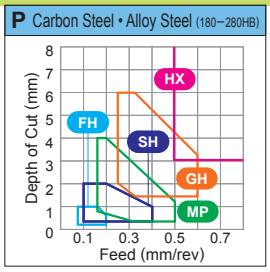
90° SN TYPE INSERTS WITH HOLE

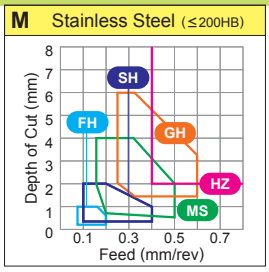
SNMG 09 03 04- FH
Size Thickness Corner Radius Chip Breaker
* Please refer to page A002.

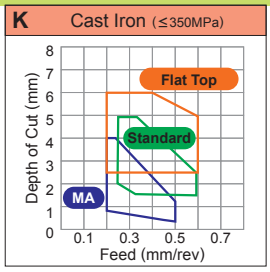
CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting···· Light Cutting···· Medium Cutting···· Semi-Heavy Cutting···· Heavy Cutting····









Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material		Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R Re (mm)	Coated UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	Cermet NX2525	NX3035	NX55	Coated Cermet AP25N	VP25N	Carbide UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	Applicable Holder Page
P	Steel	**FH**	Carbon Steel • Alloy Steel	**SNMG090304-FH**	0.4															●											C014 −018 E014 E035
M	Stainless Steel	Finish Cutting	ap (mm) 0 1 2 3 / f (mm/rev) 0.1 0.2 0.3 0.4	**090308-FH**	0.8															●											
K	Cast Iron			**120404-FH**	0.4		●	●												●	●										
N	Non-ferrous Metal			**120408-FH**	0.8		●	●												●	●										
S	Heat-resistant Alloy, Titanium Alloy																													
		FS	Mild Steel	**SNMG120404-FS**	0.4			●												●											C014 −018 E014 E035
		Finish Cutting	ap (mm) 0 1 2 3 / f (mm/rev) 0.1 0.2 0.3 0.4	**120408-FS**	0.8			●												●											
		FY	Mild Steel	**SNMG120408-FY**	0.8			●													●			●							C014 −018 E014 E035
		Finish Cutting	ap (mm) 0 1 2 3 / f (mm/rev) 0.1 0.2 0.3 0.4																												
		PK	Carbon Steel • Alloy Steel	**SNGG120408-PK**	0.8															□		▲									C014 −018 E014 E035
		Finish Cutting	ap (mm) 0 1 2 3 / f (mm/rev) 0.1 0.2 0.3 0.4																												
		SH	Carbon Steel • Alloy Steel	**SNMG120404-SH**	0.4			●	●						●					●	●		□								C014 −018 E014 E035
		Light Cutting	ap (mm) 0 1 2 3 4 / f (mm/rev) 0.1 0.3 0.5	**120408-SH**	0.8		●	●	●						●					●	●		●								
				120412-SH	1.2			●	●						●					●	●		□								
		SA	Carbon Steel • Alloy Steel	**SNMG120404-SA**	0.4			●	□											●											C014 −018 E014 E035
		Light Cutting	ap (mm) 0 1 2 3 4 / f (mm/rev) 0.1 0.3 0.5	**120408-SA**	0.8		●	●	●											●											
				120412-SA	1.2			●	●											●											
		SY	Mild Steel	**SNMG120408-SY**	0.8			●													●			●							C014 −018 E014 E035
		Light Cutting	ap (mm) 0 1 2 3 4 / f (mm/rev) 0.1 0.3 0.5																												

CHIP BREAKERS ➤ A036
GRADES ➤ A026
IDENTIFICATION ➤ A002

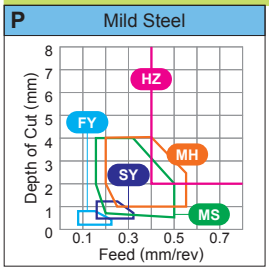
TURNING INSERTS [NEGATIVE]

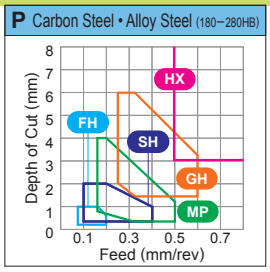
90° SN TYPE INSERTS WITH HOLE

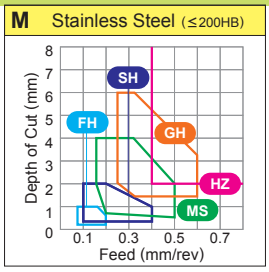
SNMG 09 03 04- C
Size / Thickness / Corner Radius / Chip Breaker
* Please refer to page A002.

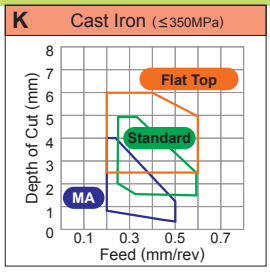
CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting···· Light Cutting···· Medium Cutting···· Semi-Heavy Cutting···· Heavy Cutting····









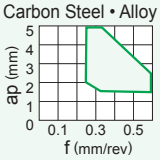
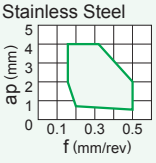
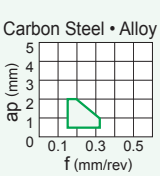
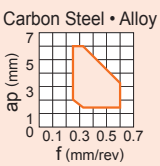
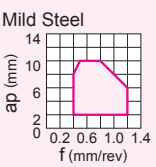
Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material			Coated												Cermet		Coated Cermet	Carbide						Applicable Holder Page
		Corner R Re (mm)	UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	
P	Steel		●	◔	✣	✣	✣										●	◔	●	●	●	✣						
M	Stainless Steel							○	◔						✣	✣	○					✣						
K	Cast Iron										●	◔					●			●	●	✣	●	◔				
N	Non-ferrous Metal																							◔	●			
S	Heat-resistant Alloy, Titanium Alloy									●			●	◔	✣											●	◔	✣
C Light Cutting	Carbon Steel • Alloy Steel ap (mm) f (mm/rev)																											
	SNMG090304-C	0.4															▲											C014 −018 E014 E035
	090308-C	0.8															▲											
	120408-C	0.8															▲	▲										
	120416-C	1.6															▲											
R/L-1G Light Cutting	Carbon Steel • Alloy Steel ap (mm) f (mm/rev)																											
	SNMG120404R-1G	0.4															●											C014 −018 E014 E035
	120404L-1G	0.4															●											
	120408R-1G	0.8															●											
	120408L-1G	0.8															●											
MP Medium Cutting	Carbon Steel • Alloy Steel ap (mm) f (mm/rev)																											
	SNMG120404-MP	0.4	●	●	●						●																	C014 −018 E014 E035
	120408-MP	0.8	●	●	●						●																	
	120412-MP	1.2	●	●	●						●																	
MA Medium Cutting	Carbon Steel • Alloy Steel ap (mm) f (mm/rev)																											
	SNMG120404-MA	0.4	●	●	●	●		□	●			●						●										C014 −018 E014 E035
	120408-MA	0.8	●	●	●	●		●	●		●	●			●			●										
	120412-MA	1.2	●	●	●	●		●	●		●	●						●										
	120416-MA	1.6									●	●																
	150608-MA	0.8	●	●	●	●		□	●																			
	150612-MA	1.2	●	●	●	●		□	●		□	●																
	150616-MA	1.6		●																								
	190612-MA	1.2	●	●	●						●	●																
	190616-MA	1.6	●	●	●	●		□	●		●	●																
MH Medium Cutting	Carbon Steel • Alloy Steel ap (mm) f (mm/rev)																											
	SNMG120404-MH	0.4		●								●																C014 −018 E014 E035
	120408-MH	0.8	●	●	●	●		●				●																
	120412-MH	1.2	●	●	●	●		●				●																
	190612-MH	1.2	●	●	●							●																
	190616-MH	1.6	●	●	●							●																

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
▲ : Inventory maintained in Japan. To be replaced by new products.
(10 inserts in one case)

Cutting Conditions (Guide) : ● : Stable Cutting ◐ : General Cutting ✣ : Unstable Cutting

Work Material: P Steel; M Stainless Steel; K Cast Iron; N Non-ferrous Metal; S Heat-resistant Alloy, Titanium Alloy

Shape / Chip Control Range (ap : Depth of Cut, f : Feed)	Order Number	Corner R Re (mm)	Coated: UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	Cermet: NX2525	NX3035	NX55	Coated Cermet: AP25N	VP25N	Carbide: UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	Applicable Holder Page
Standard	SNMG090304	0.4	●	●	●												●	●				●		●				C014 −018 E014 E035
Carbon Steel • Alloy Steel	090308	0.8	●	●	●												●	●				●	●	●				
	090312	1.2																				●						
	120404	0.4	●	●	●	□											●	●				●		●				
	120408	0.8	●	●	●	●					●	●			●		●	●				●	●	●				
	120412	1.2	●	●	●	●					●	●					●	●				●	●	●				
	120416	1.6		●	●						●	●					●	●				●						
	120420	2.0			●																							
	150412	1.2		□																								
	150612	1.2	●	●	●	●					●	●										●						
	190612	1.2	●	●	●	●					●	●										●						
	190616	1.6	●	●	●	●					●	●										●						
	250724	2.4																				□						
Medium Cutting	250924	2.4																				●						
MS	SNMG090304-MS	0.4						□	●																			C014 −018 E014 E035
Stainless Steel	090308-MS	0.8						□	●																			
	120404-MS	0.4		●				●	●							●		●				●						
	120408-MS	0.8		●	●			●	●	●			●	●	●	●		●				●		□	□	●	□	
	120412-MS	1.2		●				●	●	●			●	●	●			●				●			□	●	□	
	120416-MS	1.6						□	●																			
	150608-MS	0.8						□	□																			
	150612-MS	1.2						□	□																			
Medium Cutting	190616-MS	1.6						□	●																			
R/L	SNGG090304R	0.4															●	●	▲			●		●				C014 −018 E014 E035
Carbon Steel • Alloy Steel	090304L	0.4															●	●	▲			●		●				
	090308R	0.8															●	●	▲			●		●				
	090308L	0.8															●	●				●		●				
	120404R	0.4															●	●	▲			●		●				
	120404L	0.4															●	●	▲			●		●				
	120408R	0.8															●	●	▲			●		●				
	120408L	0.8															●	●	▲			●		●				
	120412R	1.2																	▲					●				
Medium Cutting	120412L	1.2																						●				
GH	SNMG120408-GH	0.8	●	●	●			●	●		●	●																C014 −018 E014 E035
Carbon Steel • Alloy Steel	120412-GH	1.2	●	●	●			●	●		●	●																
	120416-GH	1.6	●	●				●	●																			
	150612-GH	1.2	●	●				●	●																			
	150616-GH	1.6		●																								
	190612-GH	1.2	●	●				●	●																			
Semi-Heavy Cutting	190616-GH	1.6	●	●				●	●																			
HZ	SNMM120408-HZ	0.8		●	●			□	□																			C014 −018 E014 E035
Mild Steel	120412-HZ	1.2		●	●			□	□																			
	150612-HZ	1.2		●	●			□	□																			
	190612-HZ	1.2		●	●		●	□	□																			
	190616-HZ	1.6		●	●		●	□	□																			
Heavy Cutting	190624-HZ	2.4		□	□		●																					

CHIP BREAKERS ➤ A036
GRADES ➤ A026
IDENTIFICATION ➤ A002

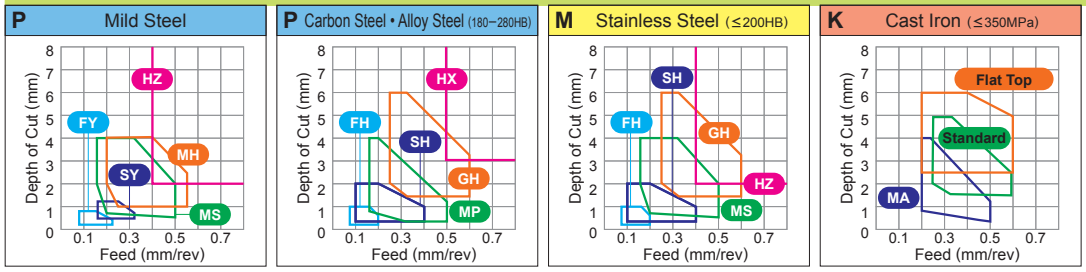
TURNING INSERTS [NEGATIVE]

90° SN TYPE INSERTS WITH HOLE

SNMM 15 06 12- HX
Size / Thickness / Corner Radius / Chip Breaker
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting···· Light Cutting···· Medium Cutting···· Semi-Heavy Cutting···· Heavy Cutting····



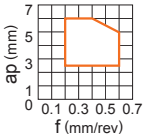
Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material		
P	Steel	
M	Stainless Steel	
K	Cast Iron	
N	Non-ferrous Metal	
S	Heat-resistant Alloy, Titanium Alloy	

Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R Re (mm)	Coated UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	Cermet NX2525	NX3035	NX55	Coated Cermet AP25N	VP25N	Carbide UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	Applicable Holder Page
HX	Carbon Steel • Alloy Steel	SNMM150612-HX	1.2	□	□	□	□																						C014 C016
		150616-HX	1.6	□	□		□																						
		190612-HX	1.2	●	●	□	●																						
		190616-HX	1.6	●	●	□	●																						
		190624-HX	2.4	●	●	□	●																						
		250724-HX	2.4	●	●	□	●																						
		250732-HX	3.2		□	□	●																						
		250924-HX	2.4	●	●	□	●																						
	Heavy Cutting	250932-HX	3.2		□	□	●																						
HV	Carbon Steel • Alloy Steel	SNMM190616-HV	1.6	●	●	□	●																						C014 C016
		190624-HV	2.4	●	●	□	●																						
		250724-HV	2.4	●	●	□	●																						
		250924-HV	2.4	●	●	□	●																						
	Heavy Cutting																												
HAS	Carbon Steel • Alloy Steel	SNMG250924-HAS	2.4		●		●																						–
	Heavy Cutting																												
HXD	Mild Steel	SNMM190612-HXD	1.2		●		●																						C014 C016
		190616-HXD	1.6		●		●																						
		190624-HXD	2.4		●		●																						
		250924-HXD	2.4		●		●																						
	Heavy Cutting																												
Flat Top	Cast Iron	SNMA090304	0.4																					●					C014 –018 E014 E035
		090308	0.8									●	●										●		●				
		090312	1.2																						□				
		120404	0.4																						●				
		120408	0.8									●	●										●	●	●				
		120412	1.2									●	●										●	●	●				
		120416	1.6									●	●											●					
		190612	1.2									●	●																
		190616	1.6									●	●																

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
(10 inserts in one case)

Cutting Conditions (Guide) : ● : Stable Cutting ◐ : General Cutting ✣ : Unstable Cutting

Work Material			Corner R	Coated												Cermet			Coated Cermet		Carbide						Applicable Holder Page
				UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	
P	Steel	Shape / Chip Control Range ap : Depth of Cut f : Feed / Order Number	Re (mm)																								
M	Stainless Steel																										
K	Cast Iron																										
N	Non-ferrous Metal																										
S	Heat-resistant Alloy, Titanium Alloy																										
		Flat Top  Cast Iron 	**SNGA090302**	0.2																	●		●					C014 −018 E014 E035
			090304	0.4													●				●	●	●				
			090308	0.8																	●	●	●				
			120404	0.4													●				●	●	●				
			120408	0.8													●				●	●	●				
			120412	1.2													□					□					

CHIP BREAKERS ➤ A036
GRADES ➤ A026
IDENTIFICATION ➤ A002

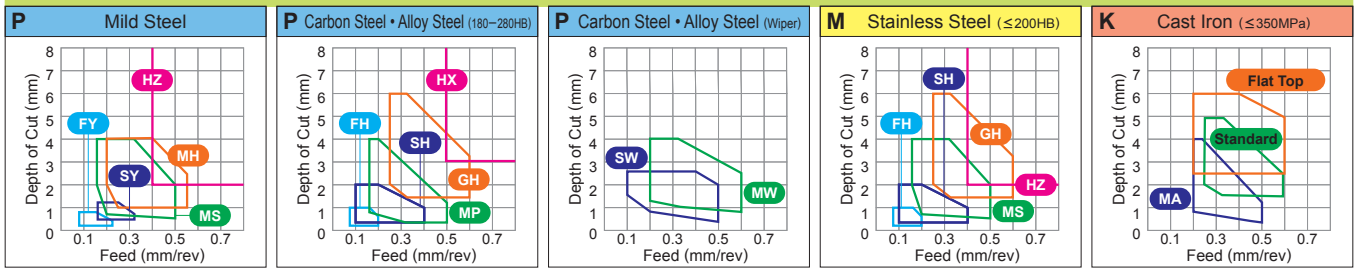
TURNING INSERTS [NEGATIVE]

60° TN TYPE INSERTS WITH HOLE

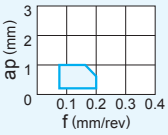
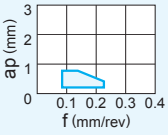
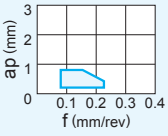
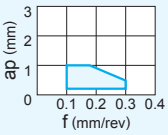
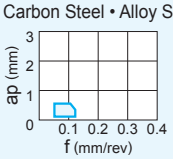
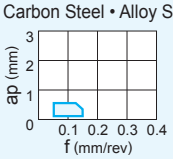
TNMG 11 03 04- FH
Size / Thickness / Corner Radius / Chip Breaker
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting···· Light Cutting···· Medium Cutting···· Semi-Heavy Cutting···· Heavy Cutting····



Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material			Corner R	Coated												Cermet		Coated Cermet	Carbide						Applicable Holder Page
			Re (mm)	UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	
P	Steel			●	◔	✣	✣	✣		○	◔					✣	✣	○			●	◔	●	✣					
M	Stainless Steel								●	◔								●					✣						
K	Cast Iron										●	●	◔					●			●	●	✣	●	◔				
N	Non-ferrous Metal																								◔	●			
S	Heat-resistant Alloy, Titanium Alloy										●			●	◔	✣											●	◔	✣
Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number																											
FH	Carbon Steel • Alloy Steel	**TNMG110304-FH**	0.4															●			□								C020 –025 E014 E035 E041
		**160402-FH**	0.2		●	●				●								●	●										
		160404-FH	0.4		●	●				●								●	●		●								
		160408-FH	0.8		●	●				●								●	●		●								
Finish Cutting																													
FS	Mild Steel	**TNMG160404-FS**	0.4			●												●											C020 –025 E014 E035 E041
		**160408-FS**	0.8			●												●											
Finish Cutting																													
FY	Mild Steel	**TNMG160404-FY**	0.4			●													●			●							C020 –025 E014 E035 E041
		**160408-FY**	0.8			●													●			●							
Finish Cutting																													
PK	Carbon Steel • Alloy Steel	**TNGG160404-PK**	0.4															●	▲										C020 –025 E014 E035 E041
		**160408-PK**	0.8															●	▲										
Finish Cutting																													
R/L-FS	Carbon Steel • Alloy Steel	**TNGG160402R-FS**	0.2															●											C020 –025 E014 E035 E041
		**160402L-FS**	0.2															●											
		160404R-FS	0.4															●											
		160404L-FS	0.4															●											
		160408R-FS	0.8															●											
Finish Cutting		**160408L-FS**	0.8															●											
R/L-F	Carbon Steel • Alloy Steel	**TNGG160402R-F**	0.2												●			●	●										C020 –025 E014 E035 E041
		**160402L-F**	0.2												●			●	●										
		160404R-F	0.4												●			●	●										
		160404L-F	0.4												●			●	●										
		160408R-F	0.8												●			●	●										
Finish Cutting		**160408L-F**	0.8												●			●	●										

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
▲ : Inventory maintained in Japan. To be replaced by new products.
(10 inserts in one case)

Cutting Conditions (Guide) : ● : Stable Cutting ◐ : General Cutting ✣ : Unstable Cutting

Work Material			Corner R	Coated												Cermet		Coated Cermet		Carbide						Applicable Holder Page
			Re (mm)	UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	
P	Steel			●	◐	✣	✣	✣	○	◐						✣	✣	●	◐	●	●	●	✣						
M	Stainless Steel																	○					✣						
K	Cast Iron											●	◐					●			●	●	✣	●	◐				
N	Non-ferrous Metal																								◐	●			
S	Heat-resistant Alloy, Titanium Alloy										●			●	◐	✣										●	◐	✣	
SH	Carbon Steel • Alloy Steel	TNMG160404-SH	0.4	●	●	●				●			●					●	●		●								C020 −025 E014 E035 E041
Light Cutting		160408-SH	0.8	●	●	●				●			●					●	●		●								
		160412-SH	1.2															●	●		●								
		220408-SH	0.8	●	●	●				●																			
SA	Carbon Steel • Alloy Steel	TNMG160404-SA	0.4	●	●	●													●										C020 −025 E014 E035 E041
Light Cutting		160408-SA	0.8	●	●	●													●										
		160412-SA	1.2	●	●	●													●										
		220408-SA	0.8	●	●	●																							
		220412-SA	1.2		●	●																							
* **SW**	Carbon Steel • Alloy Steel	TNMX160404-SW	0.4	●	●				●									●	●										C020 C021 C023 E014 E035
Light Cutting (Wiper)		160408-SW	0.8	●	●				●									●	●										
SY	Mild Steel	TNMG160404-SY	0.4		●														●			●							C020 −025 E014 E035 E041
Light Cutting		160408-SY	0.8		●														●			●							
C	Carbon Steel • Alloy Steel	TNMG110308-C	0.8															▲											C020 −025 E014 E035 E041
Light Cutting		160404-C	0.4															▲	▲										
		160408-C	0.8															▲	▲										
		160412-C	1.2															▲											
		220404-C	0.4															▲	▲										
		220408-C	0.8															▲	▲										
R/L-1M	Carbon Steel • Alloy Steel	TNMG160404R-1M	0.4																●										C020 −025 E014 E035 E041
Light Cutting		160404L-1M	0.4																●										
		160408R-1M	0.8																●										
		160408L-1M	0.8																●										
R/L-1G	Carbon Steel • Alloy Steel	TNMG160404R-1G	0.4																●										C020 −025 E014 E035 E041
Light Cutting		160404L-1G	0.4																●										
		160408R-1G	0.8																●										
		160408L-1G	0.8																●										
		220404R-1G	0.4																●										
		220404L-1G	0.4																●										
		220408L-1G	0.8																●										
		220408R-1G	0.8																●										
R/L-K	Carbon Steel • Alloy Steel	TNGG160402R-K	0.2																●	●									C020 −025 E014 E035 E041
Light Cutting		160402L-K	0.2																●	●									
		160404R-K	0.4																●	●									
		160404L-K	0.4																●	●									
		160408R-K	0.8																●	●									
		160408L-K	0.8																●	●									

* Please refer to A024 before using the SW breaker (wiper insert).

CHIP BREAKERS ➤ A036
GRADES ➤ A026
IDENTIFICATION ➤ A002

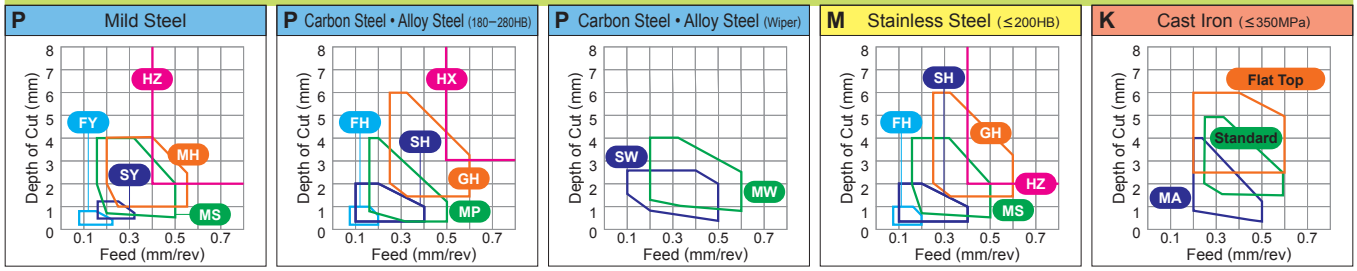
TURNING INSERTS [NEGATIVE]

60° TN TYPE INSERTS WITH HOLE

TNMG 16 04 04- MJ
Size / Thickness / Corner Radius / Chip Breaker
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting···· Light Cutting···· Medium Cutting···· Semi-Heavy Cutting···· Heavy Cutting····



Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material			Coated												Cermet			Coated Cermet		Carbide					Applicable Holder Page
		Corner R Re (mm)	UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	
P	Steel		●	◔	✣	✣	✣	○	◔								●	◔	●	●	●	✣						
M	Stainless Steel										●	◔			✣	✣	○					✣						
K	Cast Iron									●			●	◔			●			●	●	✣	●	◔				
N	Non-ferrous Metal																							◔	●			
S	Heat-resistant Alloy, Titanium Alloy									●			●	◔	✣											●	◔	✣
MJ Light Cutting — Difficult-to-Cut Materials		TNMG160404-MJ	0.4							●			●	●											□	●		C020 —025 E014 E035 E041
		160408-MJ	0.8							●			●	●											□	●		
		160412-MJ	1.2							●			●	●														
MP Medium Cutting — Carbon Steel • Alloy Steel		TNMG160404-MP	0.4	●	●	●						●																C020 —025 E014 E035 E041
		160408-MP	0.8	●	●	●						●																
		160412-MP	1.2	●	●	●						●																
		220408-MP	0.8	●	●	●						●																
		220412-MP	1.2	●	●	●						●																
MA Medium Cutting — Carbon Steel • Alloy Steel		TNMG160404-MA	0.4	●	●	●	●		●	●		●	●			●		●										C020 —025 E014 E035 E041
		160408-MA	0.8	●	●	●	●		●	●		●	●			●		●										
		160412-MA	1.2	●	●	●	●		●	●		●	●					●										
		160416-MA	1.6									●	●															
		220408-MA	0.8	●	●	●	●		●	●		●	●															
		220412-MA	1.2	●	●	●	●		●	●		●	●															
		220416-MA	1.6									●	●															
		270608-MA	0.8	●	●	●	●		□																			
		270612-MA	1.2	●	●	●	●		□	●																		
MH Medium Cutting — Carbon Steel • Alloy Steel		TNMG160404-MH	0.4	●	●	●	●		●			●																C020 —025 E014 E035 E041
		160408-MH	0.8	●	●	●	●		●			●																
		160412-MH	1.2	●	●	●	●		●			●																
		220408-MH	0.8	●	●	●	●		●			●																
		220412-MH	1.2	●	●	●	●		●			●																

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
(10 inserts in one case)

Cutting Conditions (Guide) : ● : Stable Cutting ◐ : General Cutting ✣ : Unstable Cutting

Work Material			Corner R	Coated												Cermet		Coated Cermet		Carbide						Applicable Holder Page
			Re (mm)	UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	
P	Steel			●	◐	✣	✣	✣								✣	✣	●	◐	●	●	●	✣						
M	Stainless Steel								○	◐								○					✣						
K	Cast Iron											●	◐					●			●	●	✣	●	◐				
N	Non-ferrous Metal																								◐	●			
S	Heat-resistant Alloy, Titanium Alloy										●			●	◐	✣										●	◐	✣	
Standard	Chip Control Range ap : Depth of Cut f : Feed	TNMG110304	0.4		●	●							●										●		●				C020 –025 E014 E035 E041
		110308	0.8		●	●							●										●						
		160304	0.4		●	□																	●		●				
		160308	0.8		●	●																	●		●				
		160404	0.4	●	●	●						●	●			●		●	●				●	●	●				
		160408	0.8	●	●	●	●					●	●			●		●	●				●	●	●				
		160412	1.2	●	●	●	●					●	●					●	●				●	●	●				
		160416	1.6		●	□						●	●					●	●										
		160420	2.0									●	●										●						
		220404	0.4	●	●	●													●				●						
		220408	0.8	●	●	●	●					●	●					●	●				●		●				
		220412	1.2	●	●	●	●					●	●										●						
		220416	1.6		●	●						●	●																
		270608	0.8		●																								
		270612	1.2		●	●																	●						
		270616	1.6		●	●																							
		330924	2.4																				●						
Medium Cutting	Carbon Steel • Alloy Steel																												
* **MW**	Carbon Steel • Alloy Steel	TNMX160408-MW	0.8	●	●	□			●			□	●																C020 C021 C023 E014 E035
		160412-MW	1.2	●	●	□			●			●	●																
Medium Cutting (Wiper)																													
MS	Stainless Steel	TNMG160404-MS	0.4		●	●			●	●	●			●	●	●	●		●				●			□	●	□	C020 –025 E014 E035 E041
		160408-MS	0.8		●	●			●	●	●			●	●	●	●		●				●		●	□	●	□	
		160412-MS	1.2		●				●	●	●			●	●		●		●				●						
		220408-MS	0.8		●	□			●	●	●			●	●	●	●						●			□	●	□	
		220412-MS	1.2						□	●																			
Medium Cutting																													
R/L-ES	Stainless Steel	TNMG160404R-ES	0.4						●	●																			C020 –025 E014 E035 E041
		160404L-ES	0.4						●	●																			
		160408R-ES	0.8						●	●																			
		160408L-ES	0.8						●	●																			
		220408R-ES	0.8							●																			
		220408L-ES	0.8							●																			
Medium Cutting	Carbon Steel • Alloy Steel																												
R/L-2M	Carbon Steel • Alloy Steel	TNMG160404R-2M	0.4															●											C020 –025 E014 E035 E041
		160404L-2M	0.4															●											
		160408R-2M	0.8															●											
		160408L-2M	0.8															●											
Medium Cutting	Carbon Steel • Alloy Steel																												
R/L-2G	Carbon Steel • Alloy Steel	TNMG160404R-2G	0.4															●											C020 –025 E014 E035 E041
		160404L-2G	0.4															●											
		160408R-2G	0.8															●											
		160408L-2G	0.8															●											
Medium Cutting	Carbon Steel • Alloy Steel																												

* Please refer to A024 before using the MW breaker (wiper insert).

CHIP BREAKERS ➤ A036
GRADES ➤ A026
IDENTIFICATION ➤ A002

60° TN TYPE INSERTS WITH HOLE

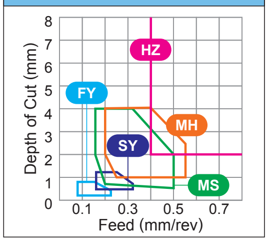
TNGG 11 03 02 R
Size · Thickness · Corner Radius · Chip Breaker
* Please refer to page A002.

TURNING INSERTS · NEG · WITH HOLE · C · D · R · S · T · V · W

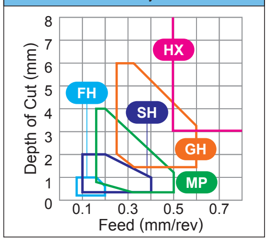
CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting ···· (light blue) Light Cutting ···· (dark blue) Medium Cutting ···· (green) Semi-Heavy Cutting ···· (orange) Heavy Cutting ···· (pink)

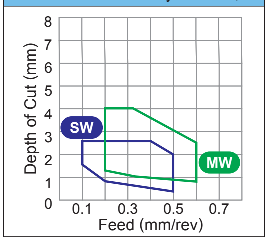
P Mild Steel



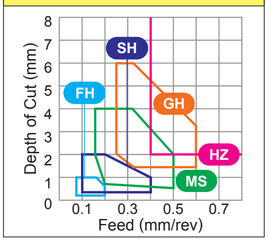
P Carbon Steel • Alloy Steel (180–280HB)



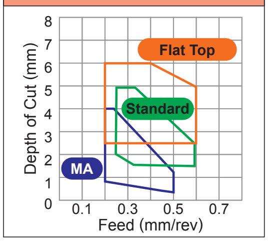
P Carbon Steel • Alloy Steel (Wiper)



M Stainless Steel (≤200HB)



K Cast Iron (≤350MPa)

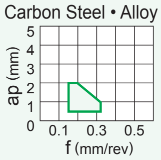


Cutting Conditions (Guide) : ● : Stable Cutting ◐ : General Cutting ✣ : Unstable Cutting

Work Material		UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15
P	Steel	●	◐	✣	✣	✣										●	◐	●	●	●	✣					
M	Stainless Steel						●	◐						✣	✣	●					✣					
K	Cast Iron									●	◐					●			●	●	✣	●	◐			
N	Non-ferrous Metal																						◐	●		
S	Heat-resistant Alloy, Titanium Alloy								●			●	◐	✣										●	◐	✣

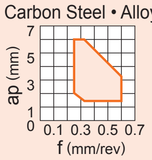
R/L — Medium Cutting

Carbon Steel • Alloy Steel



GH — Semi-Heavy Cutting

Carbon Steel • Alloy Steel



Shape / Chip Control Range (ap : Depth of Cut, f : Feed)

Shape	Order Number	Corner R Re (mm)	UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	Applicable Holder Page
			Coated														Cermet			Coated Cermet		Carbide						
R/L	TNGG110302R	0.2															●	●				●		●				C020—025 E014 E035 E041
	110302L	0.2															●	●						●				
	110304R	0.4															●	●				●		●				
	110304L	0.4															●	●				●		●				
	110308R	0.8															●	●						□				
	110308L	0.8															●	●				□		●				
	160304R	0.4															●	●				●		●				
	160304L	0.4															●	●				●		●				
	160308R	0.8															●	●				●		●				
	160308L	0.8															●	●						●				
	160402R	0.2															●	●	▲			●		●				
	160402L	0.2															●	●	▲			●		●				
	160404R	0.4															●	●	▲			●	●	●				
	160404L	0.4															●	●	▲			●	●	●				
	160408R	0.8															●	●	▲			●	●	●				
	160408L	0.8															●	●	▲			●	●	●				
	160412R	1.2															●	●	▲			●	□	●				
	160412L	1.2															●	●										
	220404R	0.4															●	●	▲			●		●				
	220404L	0.4															●	●	▲			●		●				
	220408R	0.8															●	●	▲			●	●	●				
	220408L	0.8															●	●	▲			●	●	●				
	220412R	1.2																	▲			●						
Medium Cutting	220412L	1.2																				●						
GH	TNMG160408-GH	0.8	●	●	●			●	●		●	●																C020—025 E014 E035 E041
	160412-GH	1.2	●	●	●			●	●		●	●																
	220408-GH	0.8	●	●	●			●	●		●	●																
	220412-GH	1.2	●	●	●			●	●		●	●																
	220416-GH	1.6	●	●	●			●	●																			
	270612-GH	1.2	●	●	●			●	●																			
Semi-Heavy Cutting	270616-GH	1.6	●	●																								

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
▲ : Inventory maintained in Japan. To be replaced by new products.
(10 inserts in one case)

Cutting Conditions (Guide) : ● : Stable Cutting ◐ : General Cutting ✣ : Unstable Cutting

Work Material		Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R Re (mm)	Coated: UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	Cermet: NX2525	NX3035	NX55	Coated Cermet: AP25N	VP25N	Carbide: UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	Applicable Holder Page
P	Steel	HZ	Mild Steel	TNMM160408-HZ	0.8	●	●				□	□																			C020 –025 E014 E035 E041
M	Stainless Steel			220408-HZ	0.8	●	●				□	□																		
K	Cast Iron			220412-HZ	1.2	●	●				□	□																		
N	Non-ferrous Metal			220416-HZ	1.6	●	●				□	□																		
S	Heat-resistant Alloy, Titanium Alloy																													
		HV	Carbon Steel • Alloy Steel	TNMM330924-HV	2.4		□	□																						–
		Flat Top	Cast Iron	TNMA 110304	0.4																					●	●			C020 –025 E014 E035 E041
				110308	0.8															□										
				160308	0.8																				●		●			
				160404	0.4									●	●					●					●	●	●			
				160408	0.8									●	●					●					●	●	●			
				160412	1.2									●	●					●						●	●			
				160416	1.6									●	●											●				
				160420	2.0									●	●										□					
				220404	0.4																					●	●			
				220408	0.8									●	●					●					●	●	●			
				220412	1.2									●	●										●		●			
				220416	1.6									●	●										●					
				220432	3.2																				●					
				270612	1.2																				□					
		Flat Top	Cast Iron	TNGA 110304	0.4															●						□	●			C020 –025 E014 E035 E041
				110308	0.8															●							●			
				160304	0.4																					□	●			
				160308	0.8															●							●			
				160402	0.2															●							●			
				160404	0.4															●					●	●	●			
				160408	0.8															●					●	●	●			
				160412	1.2															●						●	●			
				160416	1.6																						●			
				220404	0.4																				●	□	●			
				220408	0.8															●					●	●	●			
				220412	1.2																				●		●			

CHIP BREAKERS ➤ A036
GRADES ➤ A026
IDENTIFICATION ➤ A002

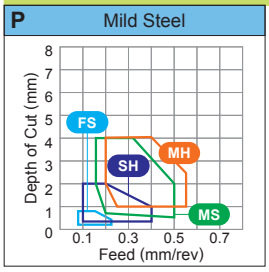
TURNING INSERTS [NEGATIVE]

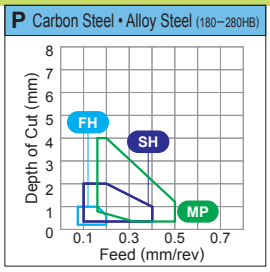
35° VN TYPE INSERTS WITH HOLE

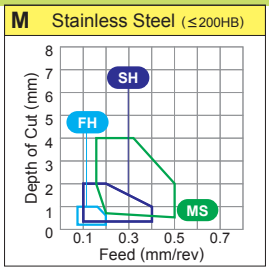
VNMG 16 04 02- FH
Size Thickness Corner Radius Chip Breaker
* Please refer to page A002.

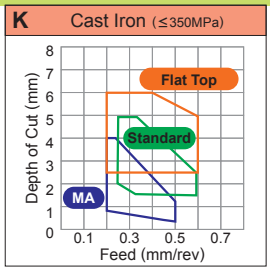
CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting···· Light Cutting···· Medium Cutting···· Semi-Heavy Cutting···· Heavy Cutting····

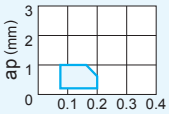
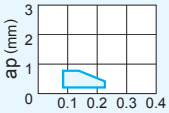
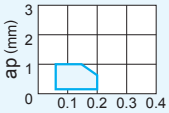
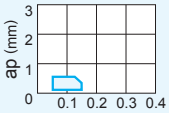
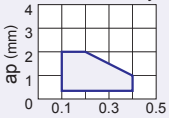
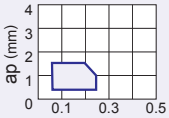
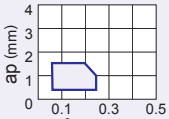








Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material				Coated												Cermet		Coated Cermet	Carbide							Applicable Holder Page
			Corner R																							
Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Re (mm)	UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	
	P Steel			●	◔	✣	✣	✣	○	◔						✣	✣	●	◔	●	●	●	✣						
	M Stainless Steel								○	◔								○					✣						
	K Cast Iron											●	◔					●			●	●	✣	●	◔				
	N Non-ferrous Metal																								◔	●			
	S Heat-resistant Alloy, Titanium Alloy										●				●	◔	✣										●	◔	✣
FH	Carbon Steel • Alloy Steel	VNMG160402-FH	0.2	●	●													●	●										C026 —028 E015 E043
		160404-FH	0.4	●	●													●	●		●								
		160408-FH	0.8	●	●													●	●		●								
Finish Cutting																													
FS	Mild Steel	VNMG160404-FS	0.4		●													●											C026 —028 E015 E043
		160408-FS	0.8		●													●											
Finish Cutting																													
FJ	Difficult-to-Cut Materials	VNGG1604V5-FJ	0.05											●													●		C026 —028 E015 E043
		160401-FJ	0.1											●													●		
		160402-FJ	0.2											●													●		
Finish Cutting																													
R/L-F	Carbon Steel • Alloy Steel	VNGG160402R-F	0.2												●			●	●										C026 —028 E015 E043
		160402L-F	0.2												●			●	●										
		160404R-F	0.4												●			●	●										
		160404L-F	0.4												●			●	●										
Finish Cutting																													
SH	Carbon Steel • Alloy Steel	VNMG160404-SH	0.4	●	●	●												●	●		●								C026 —028 E015 E043
		160408-SH	0.8	●	●	●												●	●		●								
Light Cutting																													
MJ	Difficult-to-Cut Materials	VNMG160404-MJ	0.4								●			●	●											□	●		C026 —028 E015 E043
		160408-MJ	0.8								●			●	●											□	●		
		160412-MJ	1.2								●			●	●														
Light Cutting																													
MJ	Difficult-to-Cut Materials	VNGM160404-MJ	0.4												●												●		C026 —028 E015 E043
		160408-MJ	0.8												●												●		
Light Cutting																													

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
(10 inserts in one case)

Cutting Conditions (Guide) : ● : Stable Cutting ◐ : General Cutting ✣ : Unstable Cutting

Work Material			Corner R	Coated												Cermet			Coated Cermet		Carbide						Applicable Holder Page
				UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	
P	Steel	Shape / Chip Control Range ap : Depth of Cut f : Feed	Re (mm)																								
M	Stainless Steel																										
K	Cast Iron																										
N	Non-ferrous Metal																										
S	Heat-resistant Alloy, Titanium Alloy																										
MP	Carbon Steel • Alloy Steel	**VNMG160404-MP**	0.4	●	●	●							●															C026 −028 E015 E043
Medium Cutting		**160408-MP**	0.8	●	●	●							●															
		160412-MP	1.2	●	●	●							●															
MA	Carbon Steel • Alloy Steel	**VNMG160404-MA**	0.4	●	●	●			●	●		●	●															C026 −028 E015 E043
Medium Cutting		**160408-MA**	0.8	●	●	●	●		●	●		●	●															
MH	Carbon Steel • Alloy Steel	**VNMG160404-MH**	0.4	●	●	●	●		●				●															C026 −028 E015 E043
Medium Cutting		**160408-MH**	0.8	●	●	●	●		●				●															
Standard	Carbon Steel • Alloy Steel	**VNMG160404**	0.4	●	●	●						●	●			●		●	●				●		●			C026 −028 E015 E043
Medium Cutting		**160408**	0.8	●	●	●						●	●			●		●	●				●		●			
		160412	1.2	●	●							●	●					●	●									
MS	Stainless Steel	**VNMG160404-MS**	0.4		●				●	●	●			●	●		●		●				●			□	●	C026 −028 E015 E043
Medium Cutting		**160408-MS**	0.8		●				●	●	●			●	●		●		●				●			□	●	
R/L	Carbon Steel • Alloy Steel	**VNGG160404R**	0.4															●	●				●		●			C026 −028 E015 E043
Medium Cutting		**160404L**	0.4															●	●				●		●			
		160408R	0.8																				●		●			
Flat Top	Cast Iron	**VNGA160404**	0.4																				□	●	●			C026 −028 E015 E043
		160408	0.8																				●	●	●			

CHIP BREAKERS ➤ A036
GRADES ➤ A026
IDENTIFICATION ➤ A002

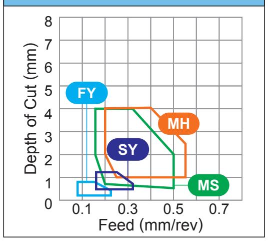
80° WN TYPE INSERTS WITH HOLE

WNMG 08 04 04- FH
Size / Thickness / Corner Radius / Chip Breaker
* Please refer to page A002.

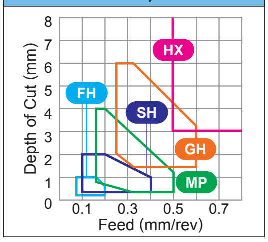
CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting ···· Light Cutting ···· Medium Cutting ···· Semi-Heavy Cutting ···· Heavy Cutting ····

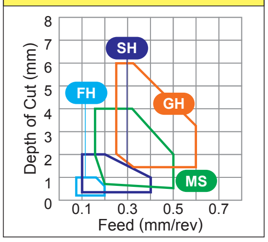
P Mild Steel



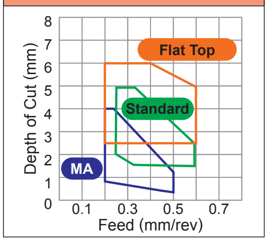
P Carbon Steel • Alloy Steel (180−280HB)



M Stainless Steel (≤200HB)

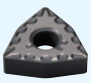
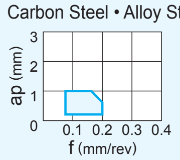
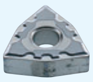
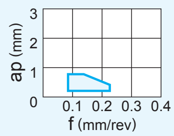
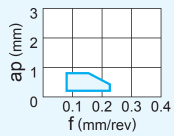
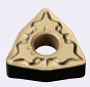
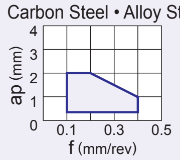
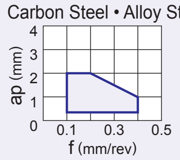
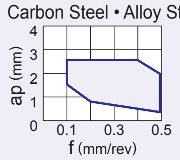


K Cast Iron (≤350MPa)



Cutting Conditions (Guide) : ● : Stable Cutting ◐ : General Cutting ✣ : Unstable Cutting

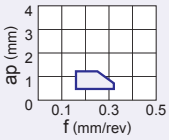
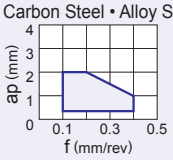
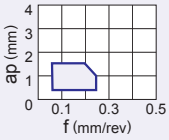
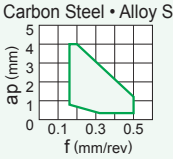
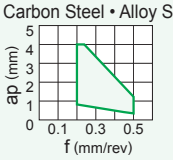
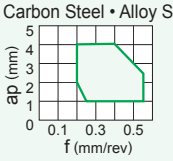
Work Material			UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	
	P	Steel	●	◐	✣	✣	✣										●	◐	●	●	●	✣						
	M	Stainless Steel						●	◐						✣	✣	●					✣						
	K	Cast Iron									●	◐					●			●	●	✣	●	◐				
	N	Non-ferrous Metal																						◐	●			
	S	Heat-resistant Alloy, Titanium Alloy							●				●	◐	✣										●	◐	✣	

Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R Re (mm)	UE6105 (Coated)	UE6110 (Coated)	UE6020 (Coated)	UE6035 (Coated)	UH6400 (Coated)	US7020 (Coated)	US735 (Coated)	US905 (Coated)	UC5105 (Coated)	UC5115 (Coated)	VP05RT (Coated)	VP10RT (Coated)	VP15TF (Coated)	UP20M (Coated)	NX2525 (Cermet)	NX3035 (Cermet)	NX55 (Cermet)	AP25N (Coated Cermet)	VP25N (Coated Cermet)	UTi20T (Carbide)	HTi05T (Carbide)	HTi10 (Carbide)	RT9005 (Carbide)	RT9010 (Carbide)	TF15 (Carbide)	Applicable Holder Page
FH  Finish Cutting	Carbon Steel • Alloy Steel 	WNMG080404-FH	0.4		●	●				●								●	●		●								C029 E015 E037 E039
		080408-FH	0.8		●	●				●								●	●		●								
FS  Finish Cutting	Mild Steel 	WNMG080404-FS	0.4			●												●											C029 E015 E037 E039
		080408-FS	0.8			●												●											
FY  Finish Cutting	Mild Steel 	WNMG080404-FY	0.4			●													●			●							C029 E015 E037 E039
		080408-FY	0.8			●													●			●							
SH  Light Cutting	Carbon Steel • Alloy Steel 	WNMG06T304-SH	0.4	●	●					●																			C029 E015 E037 E039
		06T308-SH	0.8	●	●					●																			
		06T312-SH	1.2		●																								
		060404-SH	0.4	●	●					●																			
		060408-SH	0.8	●	●					●																			
		060412-SH	1.2		●					□																			
		080404-SH	0.4	●	●	●				●			●					●	●		●								
		080408-SH	0.8	●	●	●				●			●					●	●		●								
		080412-SH	1.2	●	●	●				●			●					●	●										
SA  Light Cutting	Carbon Steel • Alloy Steel 	WNMG080404-SA	0.4	●	●	●													●										C029 E015 E037 E039
		080408-SA	0.8	●	●	●													●										
		080412-SA	1.2	●	●	●													●										
* SW  Light Cutting (Wiper)	Carbon Steel • Alloy Steel 	WNMG060404-SW	0.4	●	●				●									●											C029 E015 E037 E039
		060408-SW	0.8	●	●				●									●											
		080404-SW	0.4	●	●				●				●					●	●										
		080408-SW	0.8	●	●				●				●					●	●										
		080412-SW	1.2	●	●				●									●	●										

* Please refer to A024 before using the SW breaker (wiper insert).

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
▲ : Inventory maintained in Japan. To be replaced by new products.
(10 inserts in one case)

Cutting Conditions (Guide) : ● : Stable Cutting ◐ : General Cutting ✣ : Unstable Cutting

Work Material		Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R Re (mm)	Coated: UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	Cermet: NX2525	NX3035	NX55	Coated Cermet: AP25N	VP25N	Carbide: UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	Applicable Holder Page
P	Steel					●	◐	✣	✣	✣	○	◐						✣	✣	●	◐	●	●	●	✣						
M	Stainless Steel																			○					✣						
K	Cast Iron													●	◐					●			●	●	✣	●	◐				
N	Non-ferrous Metal																										◐	●			
S	Heat-resistant Alloy, Titanium Alloy												●			●	◐	✣										●	◐	✣	
SY	Mild Steel	 Light Cutting		**WNMG080404-SY**	0.4			●												●			●								C029 E015 E037 E039
				080408-SY	0.8			●												●			●								
C	Carbon Steel • Alloy Steel	 Light Cutting		**WNMG080404-C**	0.4															▲	▲										C029 E015 E037 E039
				080408-C	0.8																▲										
MJ	Difficult-to-Cut Materials	 Light Cutting		**WNMG080408-MJ**	0.8							●				●	●														C029 E015 E037 E039
				080412-MJ	1.2							●				●	●														
				080416-MJ	1.6							●				●	●														
MP	Carbon Steel • Alloy Steel	 Medium Cutting		**WNMG06T304-MP**	0.4	●	●	●						●																	C029 E015 E037 E039
				06T308-MP	0.8	●	●	●						●																	
				06T312-MP	1.2	●	●	●						●																	
				060404-MP	0.4	●	●	●						●																	
				060408-MP	0.8	●	●	●						●																	
				060412-MP	1.2	●	●	●						●																	
				080404-MP	0.4	●	●	●						●																	
				080408-MP	0.8	●	●	●						●																	
				080412-MP	1.2	●	●	●						●																	
				080416-MP	1.6	●	●	●						●																	
MA	Carbon Steel • Alloy Steel	 Medium Cutting		**WNMG06T304-MA**	0.4	●	●				□	●																			C029 E015 E037 E039
				06T308-MA	0.8	●	●				□	●																			
				06T312-MA	1.2	●	●				□	●																			
				060404-MA	0.4	●	●				□	●																			
				060408-MA	0.8	●	●				□	●																			
				060412-MA	1.2	●	●				□	●																			
				080404-MA	0.4	●	●	●	□		●	●		●	●			●			●										
				080408-MA	0.8	●	●	●	●		●	●		●	●			●			●										
				080412-MA	1.2	●	●	●	●		●	●		●	●			●			●										
				080416-MA	1.6	●	●							●	●																
				100612-MA	1.2			●	●		□																				
				100616-MA	1.6						□																				
MH	Carbon Steel • Alloy Steel	 Medium Cutting		**WNMG080404-MH**	0.4	●	●	●	●		●			●																	C029 E015 E037 E039
				080408-MH	0.8	●	●	●	●		●			●																	
				080412-MH	1.2	●	●	●	●		●			●																	

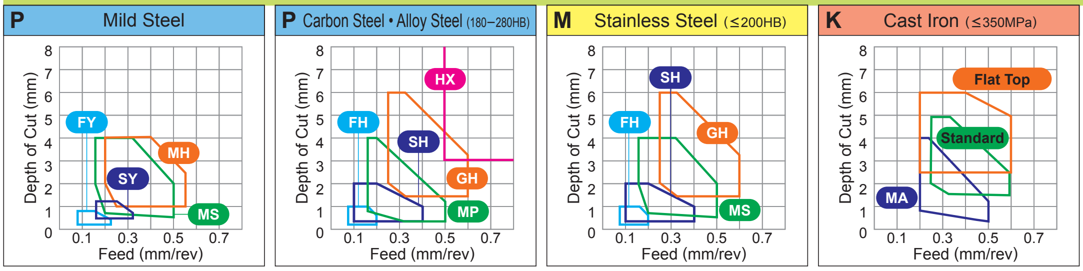
CHIP BREAKERS ➤ A036
GRADES ➤ A026
IDENTIFICATION ➤ A002

80° WN TYPE INSERTS WITH HOLE

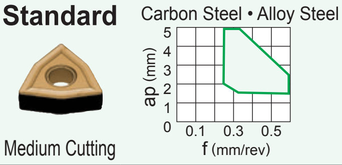
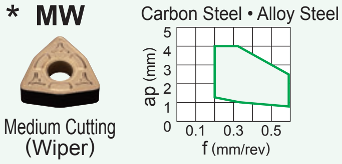
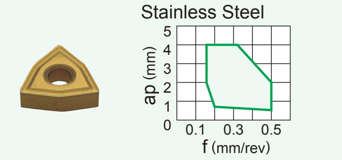
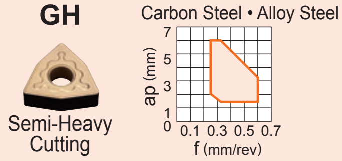
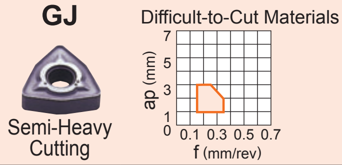
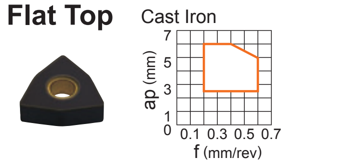
WNMG 08 04 04
Size Thickness Corner Radius
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting···· Light Cutting···· Medium Cutting···· Semi-Heavy Cutting···· Heavy Cutting····



Cutting Conditions (Guide) : ● : Stable Cutting ◐ : General Cutting ✤ : Unstable Cutting

Work Material			UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	
P Steel			●	◐	✤	✤	✤										●	◐	●	●	●	✤						
M Stainless Steel								●	◐						✤	✤	●					✤						
K Cast Iron											●	◐					●			●	●	✤	●	◐				
N Non-ferrous Metal																								◐	●			
S Heat-resistant Alloy, Titanium Alloy									●			●	◐	✤											●	◐	✤	
Shape / Chip Control Range (ap : Depth of Cut, f : Feed)	**Order Number**	**Corner R Re (mm)**	Coated														Cermet			Coated Cermet		Carbide						**Applicable Holder Page**
Standard Carbon Steel • Alloy Steel, Medium Cutting 	WNMG080404	0.4	●	●	●						●	●					●	●				●						C029 E015 E037 E039
	080408	0.8	●	●	●						●	●			●		●	●				●		□				
	080412	1.2	●	●	●						●	●			●		●	●				●						
	080416	1.6									●	●																
* **MW** Carbon Steel • Alloy Steel, Medium Cutting (Wiper) 	WNMG060408-MW	0.8	●	●	●			□			●	●																C029 E015 E037 E039
	060412-MW	1.2	●	●	□			□			●	●																
	080408-MW	0.8	●	●	●			●			●	●																
	080412-MW	1.2	●	●				●			●	●																
MS Stainless Steel, Medium Cutting 	WNMG06T304-MS	0.4		●				●	●																			C029 E015 E037 E039
	06T308-MS	0.8		●				●	●																			
	060404-MS	0.4		●				●	●																			
	060408-MS	0.8		●				●	●																			
	080404-MS	0.4		●	●			●	●									●										
	080408-MS	0.8		●	●			●	●	●			●	●	●	●		●				●			□	●	□	
	080412-MS	1.2		●	□			●	●	●			●	●				●										
GH Carbon Steel • Alloy Steel, Semi-Heavy Cutting 	WNMG080408-GH	0.8	●	●	●			●	●		●	●																C029 E015 E037 E039
	080412-GH	1.2	●	●	●			●	●		●	●																
GJ Difficult-to-Cut Materials, Semi-Heavy Cutting 	WNMG080408-GJ	0.8								●				●												●		C029 E015 E037 E039
	080412-GJ	1.2								●				●												●		
	080416-GJ	1.6								●				●												●		
	100612-GJ	1.2												●												●		
Flat Top Cast Iron 	WNMA080404	0.4									●	●												●				C029 E015 E037 E039
	080408	0.8									●	●										●		●				
	080412	1.2									●	●																
	080416	1.6									●	●																

* Please refer to A024 before using the MW breaker (wiper insert).

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
(10 inserts in one case)

CHIP BREAKERS ➤ A036
GRADES ➤ A026
IDENTIFICATION ➤ A002

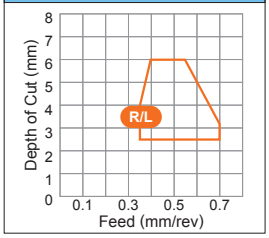
55° KN TYPE INSERTS WITHOUT HOLE

KNMX 19 05 04 R
Size Thickness Corner Radius Chip Breaker
* Please refer to page A002.

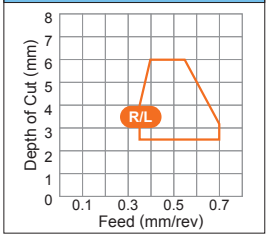
CHIP CONTROL RANGE FOR WORK MATERIALS

Semi-Heavy Cutting ····

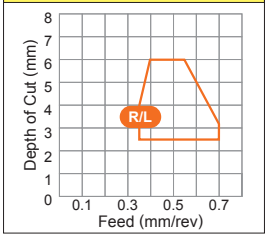
P Mild Steel



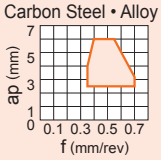
P Carbon Steel • Alloy Steel (180–280HB)



M Stainless Steel (≤200HB)



Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material		Order Number	Corner R Re (mm)	Coated												Cermet			Coated Cermet		Carbide					Applicable Holder Page
				UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	
	P Steel			●	◔	✣	✣	✣									✣	●	◔	●	●	✣	✣						
	M Stainless Steel								○	◔							✣	○				✣							
	K Cast Iron											●	◔					●			●	●	✣	●	◔				
R/L  Semi-Heavy Cutting	Carbon Steel • Alloy Steel 	**KNMX190504R**	0.4	●																							–
		190508R	0.8	●																		●					
		190508L	0.8																			●					
		190512R	1.2	●																							

TURNING INSERTS [NEGATIVE]

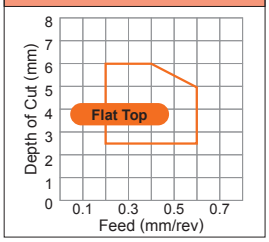
90° SN TYPE INSERTS WITHOUT HOLE

SNMN 09 03 04
Size Thickness Corner Radius
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Semi-Heavy Cutting ····

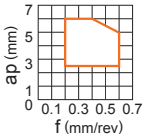
K Cast Iron (≤350MPa)



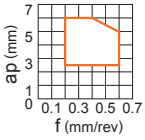
Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material			Coated												Cermet		Coated Cermet		Carbide					Applicable Holder Page
		Corner R Re (mm)	UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	
P	Steel		●	◔	✣	✣	✣										●	◔	●	●	●	✣						
M	Stainless Steel							○	◔						✣	✣	○					✣						
K	Cast Iron										●	◔					●			●	●	✣	●	◔				
N	Non-ferrous Metal																							◔	●			
S	Heat-resistant Alloy, Titanium Alloy									●			●	◔	✣											●	◔	✣
Flat Top	Shape / Chip Control Range ap : Depth of Cut f : Feed	Order Number																										
		SNMN090304	0.4																				□					C015 C018 C019
		090308	0.8																			□						
		120308	0.8																					●				
		120408	0.8								●	●					●					●	●	●				
		120412	1.2								●	●					●					●	□	●				
		120416	1.6								●	●										●						
		120420	2.0																				●					
		150412	1.2																			●						
		190412	1.2																			●						
Flat Top		**SNGN090304**	0.4																					●				
		090308	0.8																					●				
		120308	0.8																					●				C015 C018 C019
		120404	0.4														●		▲			●	●	●				
		120408	0.8														●		▲			●	●	●				
		120412	1.2														●					□	●	●				

Cast Iron



Cast Iron



● : Inventory maintained in Japan. □ : Non stock, produced to order only.
▲ : Inventory maintained in Japan. To be replaced by new products.
(10 inserts in one case)

CHIP BREAKERS ➤ A056
GRADES ➤ A026
IDENTIFICATION ➤ A002

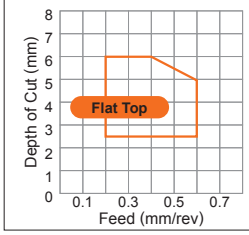
60° TN TYPE INSERTS WITHOUT HOLE

TNMN 16 03 08
Size Thickness Corner Radius
* Please refer to page A002.

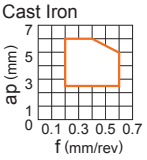
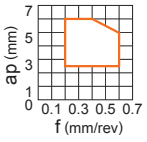
CHIP CONTROL RANGE FOR WORK MATERIALS

Semi-Heavy Cutting····

K Cast Iron (≤350MPa)



Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material			Corner R	Coated												Cermet			Coated Cermet		Carbide					Applicable Holder Page
				UE6105	UE6110	UE6020	UE6035	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	UTi20T	HTi05T	HTi10	RT9005	RT9010	TF15	
P	Steel	Shape / Chip Control Range ap : Depth of Cut f : Feed	Re (mm)																								
M	Stainless Steel	**Flat Top**	TNMN160308															●					●	□					C022 C024
K	Cast Iron	Cast Iron	160408	0.8								●	●					●					●	□					
N	Non-ferrous Metal		160412	1.2								●	●																
S	Heat-resistant Alloy, Titanium Alloy		160416	1.6								●	●																
			160420	2.0								●	●																
			220408	0.8													□	●					●						
			220412	1.2																			●						
		Flat Top	TNGN110304	0.4														●							●				C022 C024
		Cast Iron	110308	0.8																					●				
			160304	0.4																			●		●				
			160308	0.8														●					●		●				
			160404	0.4																			●		●				
			160408	0.8														●					●		●				
			160412	1.2																					●				

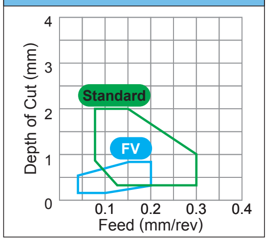
80° CC TYPE INSERTS WITH HOLE

CCMT 06 02 02- FV
Size / Thickness / Corner Radius / Chip Breaker
* Please refer to page A002.

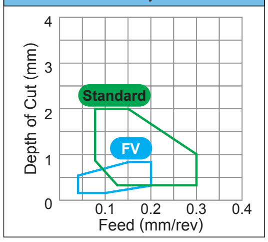
CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting ···· Light Cutting ···· Medium Cutting ····

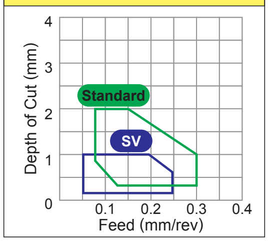
P Mild Steel



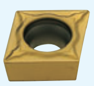
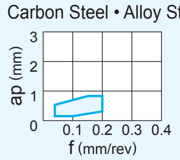
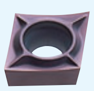
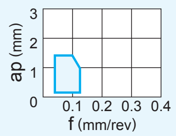
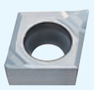
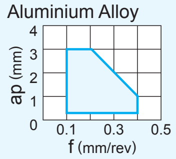
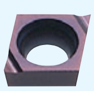
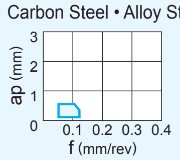
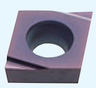
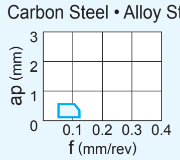
P Carbon Steel • Alloy Steel (180−280HB)



M Stainless Steel (≤200HB)



Cutting Conditions (Guide) : ● : Stable Cutting ◐ : General Cutting ✣ : Unstable Cutting

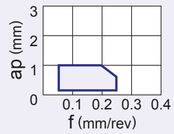
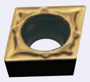
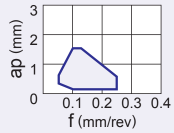
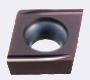
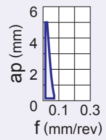
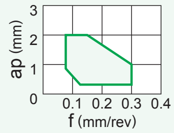
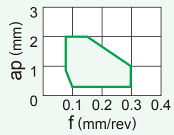
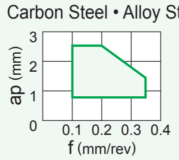
Shape	Chip Control Range (ap : Depth of Cut, f : Feed)	Order Number	Corner R Re (mm)	UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	Applicable Holder Page
				Coated													Cermet			Coated Cermet			Carbide					
Work Material		P	Steel	●	◐	✣	✣										●	◐	●	●	●	◐	✣					
		M	Stainless Steel					●	◐						✣	✣	●						✣					
		K	Cast Iron								●	◐					●			●	●		✣	●	◐			
		N	Non-ferrous Metal																						◐			
		S	Heat-resistant Alloy, Titanium Alloy							●			●	◐	✣											◐	✣	
FV  Finish Cutting	Carbon Steel • Alloy Steel 	CCMT060202-FV	0.2			●									●		●	●		●		●						C030 D008 E006 E030 E034
		060204-FV	0.4			●									●		●	●		●		●						
		09T302-FV	0.2			●											●	●				●						
		09T304-FV	0.4			●											●	●		●		●						
		09T308-FV	0.8			●											●	●		●		●						
FJ  Finish Cutting	Difficult-to-Cut Materials 	CCGT0602V5-FJ	0.05											●														C030 D008 E006 E030 E034
		060201-FJ	0.1											●														
		060202-FJ	0.2											●														
		09T3V5-FJ	0.05											●														
		09T301-FJ	0.1											●												●		
		09T302-FJ	0.2											●												●		
		09T304-FJ	0.4											●												●		
AZ  Finish Cutting	Aluminium Alloy 	CCGT060202-AZ	0.2																						●			C030 D008 E006 E030 E034
		060204-AZ	0.4																						●			
		09T302-AZ	0.2																						●			
		09T304-AZ	0.4																						●			
		09T308-AZ	0.8																						●			
		120402-AZ	0.2																						●			
		120404-AZ	0.4																						●			
		120408-AZ	0.8																						●			
L-F  Finish Cutting	Carbon Steel • Alloy Steel 	* CCGT03S1V3L-F	0.03												●		●											E016
		* 03S101L-F	0.1												●		●											
		* 03S102L-F	0.2												●		●											
		* 03S104L-F	0.4												●		●											
		* 04T0V3L-F	0.03												●		●											
		* 04T001L-F	0.1												●		●											
		* 04T002L-F	0.2												●		●											
		* 04T004L-F	0.4												●		●											
R/L-F  Finish Cutting	Carbon Steel • Alloy Steel 	CCGH060202R-F	0.2												●		●			●					●			C030 D008 E006 E030 E034
		060202L-F	0.2												●		●			●					●			
		060204R-F	0.4												●		●			●					●			
		060204L-F	0.4												●		●			●					●			

* Diameter of inscribed circle is special. (For SCLC type)

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
(10 inserts in one case)

Cutting Conditions (Guide) : ● : Stable Cutting ◐ : General Cutting ✤ : Unstable Cutting

Work Material		UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15
P	Steel	●	◐	✤	✤										●	◐	●	●	●	◐	✤				
M	Stainless Steel					●	◐						✤	✤	●						✤				
K	Cast Iron								●	◐					●			●	●		✤	●	◐		
N	Non-ferrous Metal																						◐		
S	Heat-resistant Alloy, Titanium Alloy							●			●	◐	✤											◐	✤

Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R Re (mm)	Coated													Cermet			Coated Cermet			Carbide					Applicable Holder Page
				UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
SV  Light Cutting	Carbon Steel • Alloy Steel 	**CCMH060202-SV**	0.2			●		●	●						●		●	●				●						C030 D008 E006 E030 E034
		060204-SV	0.4			●		●	●						●		●	●				●						
* **SW**  Light Cutting (Wiper)	Carbon Steel • Alloy Steel 	**CCMT 060202-SW**	0.2		●	●		●									●				●							C030 D008 E006 E030 E034
		060204-SW	0.4		●	●		●				●					●				●							
		09T302-SW	0.2		●	●		●				●					●				●							
		09T304-SW	0.4		●	●		●				●					●				●							
R/L-SS  Light Cutting	Carbon Steel • Alloy Steel 	**CCGT 0602V3R-SS**	0.03												●													C030 D008 E006 E030 E034
		0602V3L-SS	0.03												●													
		060201R-SS	0.1												●													
		060201L-SS	0.1												●													
		060202R-SS	0.2												●													
		060202L-SS	0.2												●													
		09T3V3R-SS	0.03												●													
		09T3V3L-SS	0.03												●													
		09T301R-SS	0.1												●													
		09T301L-SS	0.1												●													
		09T302R-SS	0.2												●													
		09T302L-SS	0.2												●													
Standard  Medium Cutting	Carbon Steel • Alloy Steel 	**CCMT 060202**	0.2		●	●			●								●	●		●			●					C030 D008 E006 E030 E034
		060204	0.4	●	●	●			●			●			●	●	●	●		●			●					
		060208	0.8		●	●			●			●			●		●			□			●					
		080302	0.2		●																							
		080304	0.4		●	□			●								●	●		●			●					
		080308	0.8		●	□			●								□			□			●					
		09T302	0.2		●	●			●								●	●		●								
		09T304	0.4	●	●	●			●			●			●		●	●		●			●					
		09T308	0.8	●	●	●			●			●			●	●	●	●		●			●					
		120404	0.4	●	●	●			●			●			●		●	●		●			●					
		120408	0.8	●	●	●			●			●			●		●	●		●			●					
		120412	1.2		●	●			●			●					□	●		□								
MV  Medium Cutting	Carbon Steel • Alloy Steel 	**CCMH060202-MV**	0.2			●		●	●						●		●	●		●		●						C030 D008 E006 E030 E034
		060204-MV	0.4			●		●	●						●		●	●		●		●						
* **MW**  Medium Cutting (Wiper)	Carbon Steel • Alloy Steel 	**CCMT 060204-MW**	0.4			●		●									●				●							C030 D008 E006 E030 E034
		060208-MW	0.8		●	●		●									●				●							
		09T304-MW	0.4		●	●		●									●				●							
		09T308-MW	0.8		●	●		●									●				●							
		120404-MW	0.4		●	●		●				●					●				●							
		120408-MW	0.8		●	●		●				●					●				●							

* Please refer to A024 before using the SW•MW breaker (wiper insert).

CHIP BREAKERS ➤ A046
GRADES ➤ A026
IDENTIFICATION ➤ A002

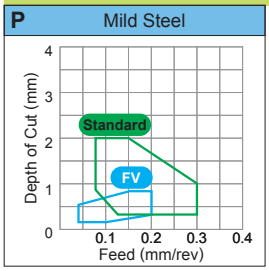
TURNING INSERTS [POSITIVE]

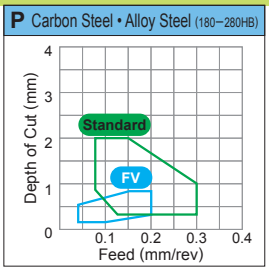
80° CC TYPE INSERTS WITH HOLE

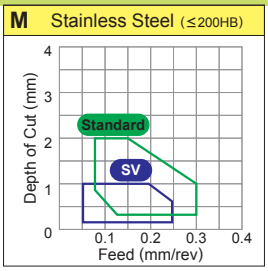
CCET 06 02 V3 R-SR
Size Thickness Corner Radius Chip Breaker
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting···· Light Cutting···· Medium Cutting····



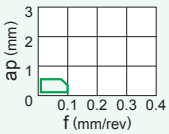




Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

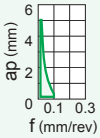
Work Material			Coated											Cermet			Coated Cermet			Carbide					Applicable Holder Page
		Corner R Re (mm)	UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
P	Steel		●	◔	✣	✣								✣	✣	●	◔	●	●	●	◔	✣					
M	Stainless Steel						●	◔								○						✣					
K	Cast Iron								●	◔						●			●	●		✣	●	◔			
N	Non-ferrous Metal																							◔			
S	Heat-resistant Alloy, Titanium Alloy								●			●	◔	✣											◔	✣	
Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number																									
R/L-SR		CCET0602V3R-SR	0.03										●			●								●			C030 D008 E006 E030 E034
		0602V3L-SR	0.03										●			●								●			
		060201R-SR	0.1										●			●								●			
		060201L-SR	0.1										●			●								●			
		060202R-SR	0.2										●			●								●			
		060202L-SR	0.2										●			●								●			
		060204R-SR	0.4										●			●								●			
		060204L-SR	0.4										●			●								●			
		09T3V3R-SR	0.03										●			●								●			
		09T3V3L-SR	0.03										●			●								●			
		09T301R-SR	0.1										●			●								●			
		09T301L-SR	0.1										●			●								●			
		09T302R-SR	0.2										●			●								●			
		09T302L-SR	0.2										●			●								●			
		09T304R-SR	0.4										●			●								●			
		09T304L-SR	0.4										●			●								●			
R/L-SN		CCET060200R-SN	0										●			●								●			C030 D008 E006 E030 E034
		060200L-SN	0										●			●								●			
		0602V3R-SN	0.03										●			●								●			
		0602V3L-SN	0.03										●			●								●			
		060201R-SN	0.1										●			●								●			
		060201L-SN	0.1										●			●								●			
		060202R-SN	0.2										●			●								●			
		060202L-SN	0.2										●			●								●			
		060204R-SN	0.4										●			●								●			
		060204L-SN	0.4										●			●								●			
		09T300R-SN	0										●			●								●			
		09T300L-SN	0										●			●								●			
		09T3V3R-SN	0.03										●			●								●			
		09T3V3L-SN	0.03										●			●								●			
		09T301R-SN	0.1										●			●								●			
		09T301L-SN	0.1										●			●								●			
		09T302R-SN	0.2										●			●								●			
		09T302L-SN	0.2										●			●								●			
		09T304R-SN	0.4										●			●								●			
		09T304L-SN	0.4										●			●								●			

Carbon Steel • Alloy Steel



Medium Cutting

Carbon Steel • Alloy Steel



Medium Cutting

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
▲ : Inventory maintained in Japan. To be replaced by new products.
(10 inserts in one case)

Cutting Conditions (Guide) : ● : Stable Cutting ◐ : General Cutting ✣ : Unstable Cutting

Work Material			Coated											Cermet			Coated Cermet			Carbide					Applicable Holder Page
		Corner R	UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
P	Steel		●	◐	✣	✣								✣	✣	●	◐	●	●	●	◐	✣					
M	Stainless Steel						●	◐								◐						✣					
K	Cast Iron									●	◐					●			●	●		✣	●	◐			
N	Non-ferrous Metal																							◐			
S	Heat-resistant Alloy, Titanium Alloy								●			●	◐	✣											◐	✣	
Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Re (mm)																								
R/L-SN	Carbon Steel • Alloy Steel	**CCGT0602V3R-SN**	0.03											●													C030 D008 E006 E030 E034
		060201R-SN	0.1											●													
		060201L-SN	0.1											●													
		060202R-SN	0.2											●													
		060202L-SN	0.2											●													
		09T3V3R-SN	0.03											●													
		09T3V3L-SN	0.03											●													
		09T301R-SN	0.1											●													
		09T301L-SN	0.1											●													
		09T302R-SN	0.2											●													
		09T302L-SN	0.2											●													
		09T304R-SN	0.4											●													
Medium Cutting		**09T304L-SN**	0.4											●													
R/LW-SN *	Carbon Steel • Alloy Steel	**CCET0602V3RW-SN**	0.03											●													C030 D008 E006 E030 E034
		0602V3LW-SN	0.03											●													
		09T3V3RW-SN	0.03											●													
Medium Cutting (Wiper)		**09T3V3LW-SN**	0.03											●													
SMG	Carbon Steel • Alloy Steel	**CCGT060202M-SMG**	0.2											●													C030 D008 E006 E030 E034
		060204M-SMG	0.4											●													
Medium Cutting																											
Flat Top	Cast Iron	**CCMW060202**	0.2																					●			C030 D008 E006 E030 E034
		060204	0.4							●	●											●		●			
		09T304	0.4							●	●													●			
		09T308	0.8							●	●											●		●			
		120404	0.4							●	●													●			
		120408	0.8							●	●													●			
		120412	1.2							□	●																
Flat Top	Cast Iron	**CCGW060200**	0													●		▲									C030 D008 E006 E030 E034
		0602V5	0.05													●		▲									
		09T300	0													●		▲									
		09T3V5	0.05													●		▲									

* Please refer to A024 before using the R/LW-SN breaker (wiper insert).

CHIP BREAKERS ➤ A046
GRADES ➤ A026
IDENTIFICATION ➤ A002

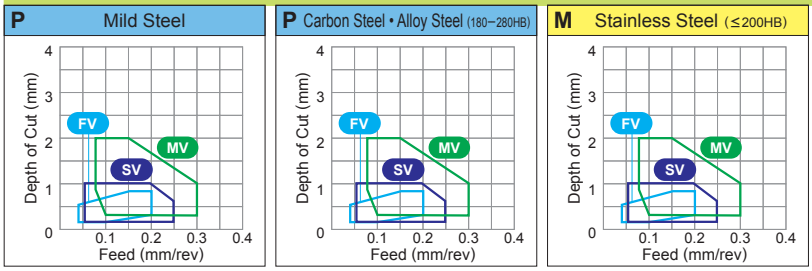
TURNING INSERTS [POSITIVE]

80° CP TYPE INSERTS WITH HOLE

CPMH 08 02 02- FV
Size Thickness Corner Radius Chip Breaker
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting···· Light Cutting···· Medium Cutting····



Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material			Coated											Cermet			Coated Cermet			Carbide					Applicable Holder Page
P	Steel		●	◔	✣	✣							✣	✣	●	◔	●	●	◔	✣					
M	Stainless Steel						○	◔					✣	✣	○					✣					
K	Cast Iron								●	◔					●		●	●		✣	●	◔			
N	Non-ferrous Metal																						◔		
S	Heat-resistant Alloy, Titanium Alloy										●		◔	✣										◔	✣
Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R Re (mm)	UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
FV NEW	Carbon Steel • Alloy Steel	CPMH080202-FV	0.2		●									●			●	●									
		080204-FV	0.4		●									●			●	●									
		090302-FV	0.2		●									●			●	●									E006
		090304-FV	0.4		●									●			●	●									
		090308-FV	0.8		●									●			●	●									
R/L-F	Carbon Steel • Alloy Steel	CPMH080204R-F	0.4											●			●		□					●			
		080204L-F	0.4											●			●		●					●			
		090304R-F	0.4											●			●		□					●			E006
		090304L-F	0.4											●			●		●					●			
R/L-F	Carbon Steel • Alloy Steel	CPGT 080204R-F	0.4														●						□				
		080204L-F	0.4														●						□				
		090302R-F	0.2														●										–
		090302L-F	0.2														●						●				
		090304R-F	0.4														●						□				
		090304L-F	0.4														●						●				
Standard	Aluminium Alloy	CPGT 080202	0.2																					●			
		080204	0.4																					●			
		090302	0.2																					●			–
		090304	0.4																					●			
SV	Carbon Steel • Alloy Steel	CPMH080202-SV	0.2		●			●	●					●			●	●			●						
		080204-SV	0.4		●			●	●					●			●	●			●						
		090302-SV	0.2		●			●	●					●			●	●			●						E006
		090304-SV	0.4		●			●	●					●			●	●			●						
		090308-SV	0.8		●			●	●					●			●	●			●						
MV	Carbon Steel • Alloy Steel	CPMH080204-MV	0.4		●			●	●					●			●	●		●	●						
		080208-MV	0.8		●			●	●					●			●	●		●	●						
		090304-MV	0.4		●			●	●					●			●	●		●	●						E006
		090308-MV	0.8		●			●	●					●			●	●		●	●						
Standard	Carbon Steel • Alloy Steel	CPMX080204	0.4	●	□										●		●	●					●				
		080208	0.8	●	□										●		●	●					●				
		090304	0.4	●	●										●		●	●					●				E006
		090308	0.8	●	●										●		●	●					●				

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
(10 inserts in one case)

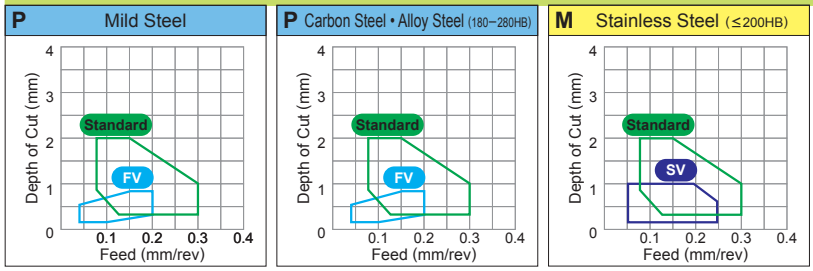
CHIP BREAKERS ➤ A050

55° DC TYPE INSERTS WITH HOLE

DCMT 07 02 02- FV
Size Thickness Corner Radius Chip Breaker
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting···· Light Cutting···· Medium Cutting····



Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material		Steel	Stainless Steel	Cast Iron	Non-ferrous Metal	Heat-resistant Alloy, Titanium Alloy
		P	M	K	N	S

Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R Re (mm)	Coated											Cermet			Coated Cermet			Carbide					Applicable Holder Page
				UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
FV	Carbon Steel • Alloy Steel	DCMT070202-FV	0.2	●	●									●			●	●		●							C031
		070204-FV	0.4	●	●									●			●	●		●							D009
		NEW 070208-FV	0.8		●									●			●	●									D026
		NEW 11T302-FV	0.2		●									●			●	●									E008
		11T304-FV	0.4	●	●									●			●	●		●							E009
		11T308-FV	0.8	●	●									●			●	●		●							E029
																											E031
AZ	Aluminium Alloy	DCGT070202-AZ	0.2																					●			C031
		070204-AZ	0.4																					●			D009
		11T302-AZ	0.2																					●			D026
		11T304-AZ	0.4																					●			E008
		11T308-AZ	0.8																					●			E009
																											E029
																											E031
R/L-F	Carbon Steel • Alloy Steel	DCGT070202R-F	0.2											●			●			□				●			C031
		070202L-F	0.2											●			●			●				●			D009
		070204R-F	0.4											●			●			□				●			D026
		070204L-F	0.4											●			●			●				●			E008
		11T302R-F	0.2											●			●			□				●			E009
		11T302L-F	0.2											●			●			●				●			E029
		11T304R-F	0.4											●			●			□				●			E031
		11T304L-F	0.4											●			●			●				●			
SV	Carbon Steel • Alloy Steel	DCMT070202-SV	0.2		□	●		●	●					●			●	●				●					C031
		070204-SV	0.4		●	●		●	●					●			●	●				●					D009
		070208-SV	0.8		●	●		●	●					●			●	●				●					D026
		11T302-SV	0.2		●	●		●	●					●			●	●				●					E008
		11T304-SV	0.4		●	●		●	●					●			●	●				●					E009
		11T308-SV	0.8		●	●		●	●					●			●	●				●					E029
																											E031
R/L-SS	Carbon Steel • Alloy Steel	DCGT0702V3R-SS	0.03											●													C031
		0702V3L-SS	0.03											●													D009
		070201R-SS	0.1											●													D026
		070201L-SS	0.1											●													E008
		070202R-SS	0.2											●													E009
		070202L-SS	0.2											●													E029
		11T3V3R-SS	0.03											●													E031
		11T301R-SS	0.1											●													
		11T302R-SS	0.2											●													

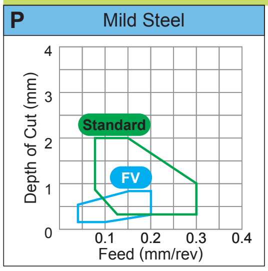
CHIP BREAKERS ➤ A046
GRADES ➤ A026
IDENTIFICATION ➤ A002

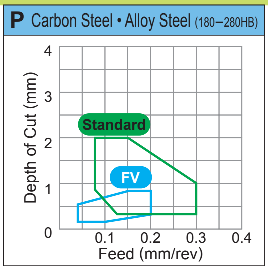
55° DC TYPE INSERTS WITH HOLE

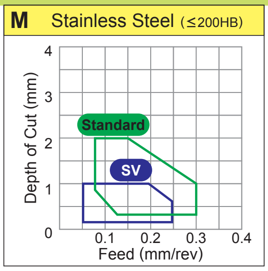
DCMT 07 02 02
Size · Thickness · Corner Radius
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting ···· (light blue) Light Cutting ···· (dark blue) Medium Cutting ···· (green)



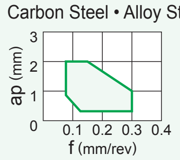


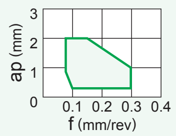


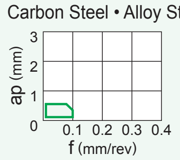
Cutting Conditions (Guide) : ● : Stable Cutting ◐ : General Cutting ✤ : Unstable Cutting

Work Material		UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15
P	Steel	●	◐	✤	✤										●	◐	●	●	●	◐	✤				
M	Stainless Steel					●	◐						✤	✤	●						✤				
K	Cast Iron								●	◐					●			●	●		✤	●	◐		
N	Non-ferrous Metal																						◐		
S	Heat-resistant Alloy, Titanium Alloy							●			●	◐	✤											◐	✤

Grade groups: Coated (UE6105 – UP20M), Cermet (NX2525 – NX55), Coated Cermet (AP25N – VP45N), Carbide (UTi20T – TF15)

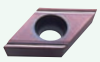
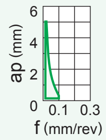
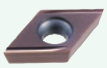
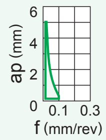
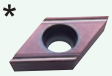
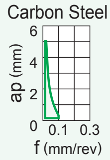
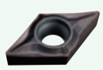
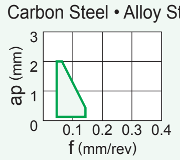



Shape / Chip Control Range (ap : Depth of Cut, f : Feed)	Order Number	Corner R Re (mm)	UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	Applicable Holder Page
Standard (Medium Cutting)	DCMT070202	0.2		●	●			●								●	●		●			●					C031 D009 D026 E008 E009 E029 E031
	070204	0.4	●	●	●			●			●			●		●	●		●			●					
	070208	0.8		●				●			●					●	●		●								
	11T302	0.2		●	●			●								●	●		●			●					
	11T304	0.4	●	●	●			●			●			●		●	●		●			●					
	11T308	0.8	●	●	●			●			●			●	□	●	●		●			●					
	11T312	1.2		●																							
	150404	0.4		●	●			●			●					●	●		●			●					
	150408	0.8		●	●			●			●					●	●		●			●					
	150412	1.2		●	□			□														□					
MV (Medium Cutting)	DCMT070202-MV	0.2		●	●		●	●						●		●	●		●		●						C031 D009 D026 E008 E009 E029 E031
	070204-MV	0.4		●	●		●	●						●		●	●		●		●						
	070208-MV	0.8		●	●		●	●						●		●	●		●		●						
	11T302-MV	0.2		●	●		●	●						●		●	●		●		●						
	11T304-MV	0.4		●	●		●	●						●		●	●		●		●						
	11T308-MV	0.8		●	●		●	●						●		●	●		●		●						
R/L-SR (Medium Cutting)	DCET 0702V3R-SR	0.03												●		●								●			C031 D009 D026 E008 E009 E029 E031
	0702V3L-SR	0.03												●		●								●			
	070201R-SR	0.1												●		●								●			
	070201L-SR	0.1												●		●								●			
	070202R-SR	0.2												●		●								●			
	070202L-SR	0.2												●		●								●			
	070204R-SR	0.4												●		●								●			
	070204L-SR	0.4												●		●								●			
	11T3V3R-SR	0.03												●		●								●			
	11T3V3L-SR	0.03												●		●								●			
	11T301R-SR	0.1												●		●								●			
	11T301L-SR	0.1												●		●								●			
	11T302R-SR	0.2												●		●								●			
	11T302L-SR	0.2												●		●								●			
	11T304R-SR	0.4												●		●								●			
	11T304L-SR	0.4												●		●								●			

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
(10 inserts in one case)

Cutting Conditions (Guide) : ● : Stable Cutting ◐ : General Cutting ✤ : Unstable Cutting

Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R Re (mm)	UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	Applicable Holder Page
Work Material	P	Steel		●	◐	✤	✤										●	◐	●	●	●	◐	✤					
	M	Stainless Steel						●	◐						✤	✤	●						✤					
	K	Cast Iron									●	◐					●			●	●		✤	●	◐			
	N	Non-ferrous Metal																							◐			
	S	Heat-resistant Alloy, Titanium Alloy							●			●	◐	✤											◐	✤	
				Coated													Cermet			Coated Cermet			Carbide					
R/L-SN  Medium Cutting	Carbon Steel • Alloy Steel 	DCET070200R-SN	0												●		●								●			C031 D009 D026 E008 E009 E029 E031
		070200L-SN	0												●		●								●			
		0702V3R-SN	0.03												●		●								●			
		0702V3L-SN	0.03												●		●								●			
		070201R-SN	0.1												●		●								●			
		070201L-SN	0.1												●		●								●			
		070202R-SN	0.2												●		●								●			
		070202L-SN	0.2												●		●								●			
		070204R-SN	0.4												●		●								●			
		070204L-SN	0.4												●		●								●			
		11T300R-SN	0												●		●								●			
		11T300L-SN	0												●		●								●			
		11T3V3R-SN	0.03												●		●								●			
		11T3V3L-SN	0.03												●		●								●			
		11T301R-SN	0.1												●		●								●			
		11T301L-SN	0.1												●		●								●			
		11T302R-SN	0.2												●		●								●			
		11T302L-SN	0.2												●		●								●			
		11T304R-SN	0.4												●		●								●			
		11T304L-SN	0.4												●		●								●			
R/L-SN  Medium Cutting	Carbon Steel • Alloy Steel 	DCGT0702V3R-SN	0.03												●													C031 D009 D026 E008 E009 E029 E031
		070201R-SN	0.1												●													
		070202R-SN	0.2												●													
		070202L-SN	0.2												●													
		11T3V3R-SN	0.03												●													
		11T3V3L-SN	0.03												●													
		11T301R-SN	0.1												●													
		11T301L-SN	0.1												●													
		11T302R-SN	0.2												●													
		11T302L-SN	0.2												●													
		11T304R-SN	0.4												●													
		11T304L-SN	0.4												●													
R/LW-SN *  Medium Cutting (Wiper)	Carbon Steel • Alloy Steel 	DCET0702V3RW-SN	0.03												●													C031 D009 D026 E008 E009 E029 E031
		0702V3LW-SN	0.03												●													
		11T3V3RW-SN	0.03												●													
		11T3V3LW-SN	0.03												●													
SMG  Medium Cutting	Carbon Steel • Alloy Steel 	DCGT070202M-SMG	0.2												●													C031 D009 D026 E008 E009 E029 E031
		070204M-SMG	0.4												●													
		11T302M-SMG	0.2												●													
		11T304M-SMG	0.4												●													

* Please refer to A024 before using the R/LW-SN breaker (wiper insert).

CHIP BREAKERS ➤ A046
GRADES ➤ A026
IDENTIFICATION ➤ A002

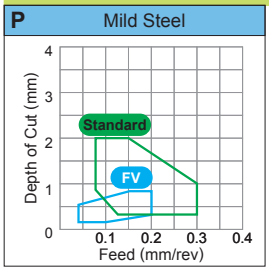
TURNING INSERTS [POSITIVE]

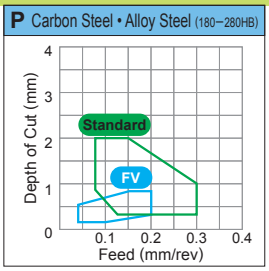
55° DC TYPE INSERTS WITH HOLE

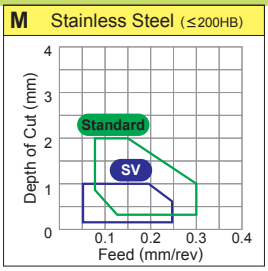
DCMW 07 02 02
Size Thickness Corner Radius
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting···· Light Cutting···· Medium Cutting····







Cutting Conditions (Guide) : ● : Stable Cutting ◕ : General Cutting ✣ : Unstable Cutting

Work Material			Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R Re (mm)	Coated										Cermet		Coated Cermet			Carbide					Applicable Holder Page
							UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
P	Steel		Flat Top	Cast Iron	DCMW070202	0.2																						□			C031
M	Stainless Steel				070204	0.4								●	●													●			D009
K	Cast Iron				11T304	0.4								●	●											●		●			D026
N	Non-ferrous Metal				11T308	0.8								●	●													●			E008
S	Heat-resistant Alloy, Titanium Alloy				150404	0.4									□													●			E009
					150408	0.8								□	□													●			E029
																															E031
P	Steel		Flat Top	Cast Iron	DCGW070200	0														●		▲									C031
M	Stainless Steel				0702V5	0.05														●		▲									D009
K	Cast Iron				11T300	0														●		▲									D026
N	Non-ferrous Metal				11T3V5	0.05														●		▲									E008
S	Heat-resistant Alloy, Titanium Alloy																														E009
																															E029
																															E031

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
▲ : Inventory maintained in Japan. To be replaced by new products.
(10 inserts in one case)

CHIP BREAKERS ➤ A046

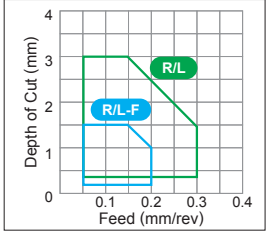
55° DE TYPE INSERTS WITH HOLE

DEGX 15 04 02 R-F
Size / Thickness / Corner Radius / Chip Breaker
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting ···· Medium Cutting ····

N Aluminium Alloy



Cutting Conditions (Guide) : ● : Stable Cutting ◕ : General Cutting ✣ : Unstable Cutting

Work Material			Corner R	Coated											Cermet			Coated Cermet			Carbide					Applicable Holder Page
Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Re (mm)	UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
	P Steel			●	◕	✣	✣										●	◕	●	●	●	◕	✣					
	M Stainless Steel							○	◕						✣	✣	○						✣					
	K Cast Iron									●	◕						●			●	●		✣	●	◕			
	N Non-ferrous Metal																								◕			
	S Heat-resistant Alloy, Titanium Alloy									●			●	◕	✣											◕	✣	
R/L-F	Aluminium Alloy	**DEGX150402R-F**	0.2																						●			C042
Finish Cutting (For Aluminium Alloy)		**150402L-F**	0.2																						●			
		150404R-F	0.4																						●			
		150404L-F	0.4																						●			
R/L	Aluminium Alloy	**DEGX150402R**	0.2																						●			C042
Medium Cutting (For Aluminium Alloy)		**150402L**	0.2																						●			
		150404R	0.4																						●			
		150404L	0.4																						●			

CHIP BREAKERS ➤ A054
GRADES ➤ A026
IDENTIFICATION ➤ A002

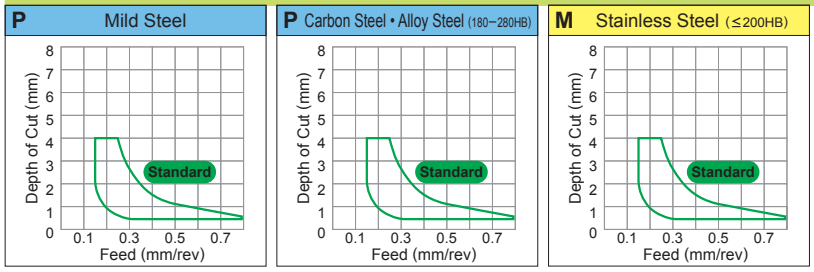
TURNING INSERTS [POSITIVE]

RC TYPE INSERTS WITH HOLE

RCGT 08 03 M0- AZ
Size · Thickness · Corner Radius · Chip Breaker
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Medium Cutting ····



Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material			Corner R	Coated											Cermet			Coated Cermet			Carbide					Applicable Holder Page
			Re (mm)	UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
	P	Steel		●	◔	✣	✣										●	◔	●	●	●	◔	✣					
	M	Stainless Steel						○	◔						✣	✣	○						✣					
	K	Cast Iron								●	◔						●			●	●		✣	●	◔			
	N	Non-ferrous Metal																							◔		
	S	Heat-resistant Alloy, Titanium Alloy							●				●	◔	✣											◔	✣	
AZ Finish Cutting	Aluminium Alloy	RCGT 0803M0-AZ	—																					●				C033
		10T3M0-AZ	—																					●				
Standard Medium Cutting	Carbon Steel • Alloy Steel	RCMT 0602M0	—		●												●	●					●					C033
		0803M0	—		●				●								●	●					●					
Standard Medium Cutting	Carbon Steel • Alloy Steel	RCMX 1003M0	—		●	●			●	●			●	●			●	●					●					C032 H012
		1204M0	—	●	●	●			●	●		●	●	●			●	●					●					
		1606M0	—	●	●	●	●		●	●			●	●									□					
		2006M0	—	●	●	●	●		●														●					
		2507M0	—	●	●	●	●																					
		3209M0	—	●	●	●	●																					
RR Heavy Cutting	Carbon Steel • Alloy Steel	RCMX 1606M0-RR	—		●	●	●		●																			C032
		2006M0-RR	—		●	●	●		●																			
		2507M0-RR	—		●	●	●		●																			
		3209M0-RR	—		●	●	●		□																			
RBS Heavy Cutting	Mild Steel	RCMX 1606M0-RBS	—				●																					C032
		2006M0-RBS	—				●																					
		2507M0-RBS	—				●																					
		3209M0-RBS	—				●																					

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
(10 inserts in one case)

CHIP BREAKERS ➤ A046

RD TYPE INSERTS WITH HOLE

RDGH 12 04 00- M4
Size Thickness Corner Radius Chip Breaker
* Please refer to page A002.

Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material			Coated											Cermet			Coated Cermet			Carbide					Applicable Holder Page
			UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
P	Steel	● ◔ ✣ ✣					○ ◔			● ◔			✣ ✣	○	● ◔ ●			● ● ◔	✣							
M	Stainless Steel																					✣					
K	Cast Iron									● ◔				●			● ●	✣	●	◔							
N	Non-ferrous Metal																						◔				
S	Heat-resistant Alloy, Titanium Alloy							●			● ◔ ✣													◔ ✣			

Shape — Chip Control Range: ap : Depth of Cut, f : Feed

Shape	Order Number	Corner R Re (mm)	Applicable Holder Page
M4  For Special Use (For Rotary Tools)	RDGH120400-M4	–	C045

GRADES ➤ A026
IDENTIFICATION ➤ A002

TURNING INSERTS [POSITIVE]

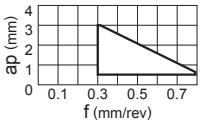
RG TYPE INSERTS WITH HOLE

RGGM 20 04 M0
Size / Thickness / Corner Radius
* Please refer to page A002.

Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material			Corner R	Coated										Cermet			Coated Cermet			Carbide					Applicable Holder Page
Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Re (mm)	UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
P	Steel			●	◔	✣	✣								✣	✣	●	◔	●	●	●	◔	✣					
M	Stainless Steel							○	◔								○						✣					
K	Cast Iron										●	◔					●			●	●		✣	●	◔			
N	Non-ferrous Metal																								◔			
S	Heat-resistant Alloy, Titanium Alloy									●			●	◔	✣											◔	✣	
Standard	Difficult-to-Cut Materials	**RGGM2004M0**	—																				●		●			—

(For General Cutting)



● : Inventory maintained in Japan. □ : Non stock, produced to order only.
(10 inserts in one case)

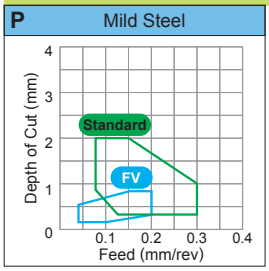
CHIP BREAKERS ➤ A054

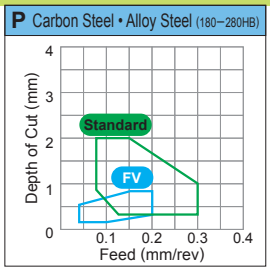
90° SC TYPE INSERTS WITH HOLE

SCMT 09 T3 04- FV
Size Thickness Corner Radius Chip Breaker
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting···· Medium Cutting····





Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material		Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R Re (mm)	Coated: UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	Cermet: NX2525	NX3035	NX55	Coated Cermet: AP25N	VP25N	VP45N	Carbide: UTi20T	HTi05T	HTi10	RT9010	TF15	Applicable Holder Page
P	Steel																												
M	Stainless Steel																												
K	Cast Iron																												
N	Non-ferrous Metal																												
S	Heat-resistant Alloy, Titanium Alloy																												
		FV Finish Cutting	Carbon Steel • Alloy Steel	**SCMT09T304-FV**	0.4			●											●	●		●		●							C034 E033
		Standard Medium Cutting	Carbon Steel • Alloy Steel	**SCMT09T304**	0.4	●	●	●			●			●					●	●		●			●					C034 E033
				09T308	0.8	●	●	●			●			●					●	●		●			●					
				120404	0.4	●	●	●			●			●					●	●		●			●					
				120408	0.8	●	●	●			●			●					●	●		●			●					
				120412	1.2		●							□																
		Flat Top	Cast Iron	**SCMW09T304**	0.4								●	●											●		●			C034 E033
				09T308	0.8								●	●													□			
				120404	0.4								●	●																
				120408	0.8								●	●													□			
				120412	1.2								□																	

CHIP BREAKERS ➤ A046
GRADES ➤ A026
IDENTIFICATION ➤ A002

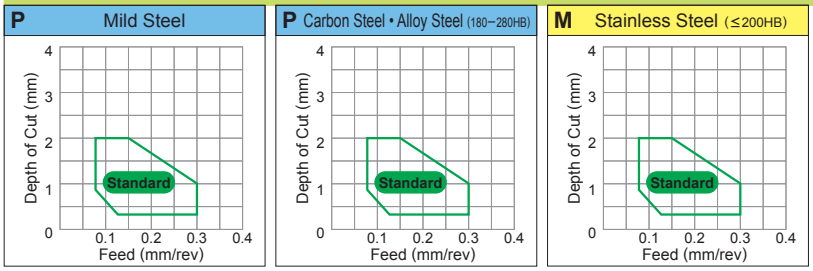
TURNING INSERTS [POSITIVE]

90° SP TYPE INSERTS WITH HOLE

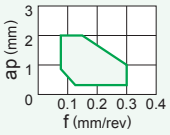
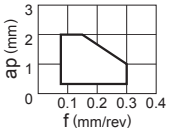
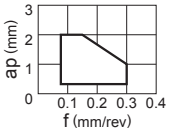
SPMT 09 03 04
Size Thickness Corner Radius
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Medium Cutting ····



Cutting Conditions (Guide) : ● : Stable Cutting ◕ : General Cutting ✣ : Unstable Cutting

Work Material		Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R Re (mm)	Coated: UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	Cermet: NX2525	NX3035	NX55	Coated Cermet: AP25N	VP25N	VP45N	Carbide: UTi20T	HTi05T	HTi10	RT9010	TF15	Applicable Holder Page
P	Steel																												
M	Stainless Steel																												
K	Cast Iron																												
N	Non-ferrous Metal																												
S	Heat-resistant Alloy, Titanium Alloy																												
Standard	Carbon Steel • Alloy Steel	 Medium Cutting		**SPMT090304**	0.4													●											–
				090308	0.8													●											
				120304	0.4													●											
				120308	0.8													●						●					
Flat Top	Cast Iron			**SPMW090304**	0.4											●	●	●							●		●		–
				090308	0.8											●	●	●							●		●		
				120304	0.4											●	●	●							●		●		
				120308	0.8											●	●	●							●		●		
Flat Top	Cast Iron			**SPGX090304**	0.4													●								●		–
				090308	0.8													●	▲							●		
				120304	0.4																					●		
				120308	0.8																					●		

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
▲ : Inventory maintained in Japan. To be replaced by new products.
(10 inserts in one case)

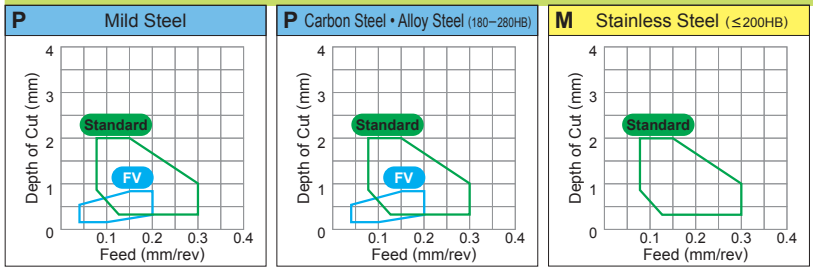
CHIP BREAKERS ➤ A050

60° TC TYPE INSERTS WITH HOLE

TCMT 11 02 04- FV
Size / Thickness / Corner Radius / Chip Breaker
* Please refer to page A002.

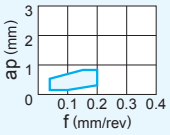
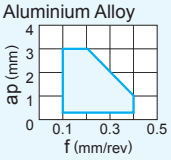
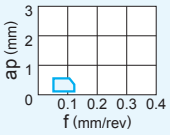
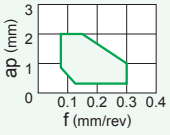
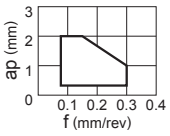
CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting ···· Medium Cutting ····



Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material		Steel	Stainless Steel	Cast Iron	Non-ferrous Metal	Heat-resistant Alloy, Titanium Alloy
		P	M	K	N	S

Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R Re (mm)	Coated: UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	Cermet: NX2525	NX3035	NX55	Coated Cermet: AP25N	VP25N	VP45N	Carbide: UTi20T	HTi05T	HTi10	RT9010	TF15	Applicable Holder Page
FV	Carbon Steel • Alloy Steel	**TCMT110204-FV**	0.4			●											●	●		●		●						C035 E028
		**16T304-FV**	0.4			●											●	●		●		●						
Finish Cutting																												
AZ	Aluminium Alloy	**TCGT110202-AZ**	0.2																						●			C035 E028
		**110204-AZ**	0.4																						●			
		110208-AZ	0.8																						●			
		16T302-AZ	0.2																						●			
		16T304-AZ	0.4																						●			
Finish Cutting		**16T308-AZ**	0.8																						●			
R/L-F	Carbon Steel • Alloy Steel	**TCGT0601V3L-F**	0.03												□		●											E017
		**060101L-F**	0.1												●		●											
		060102R-F	0.2												●		●						●		●			
		060102L-F	0.2												●		●						●		●			
		060104R-F	0.4												□		●						●		●			
Finish Cutting		**060104L-F**	0.4												●		●						●		●			
Standard	Carbon Steel • Alloy Steel	**TCMT080204**	0.4			□		□									□	●		□			●					C035 E028
		**090204**	0.4		●	●		●									●	●		●			●					
		110202	0.2		●	●		●							●		●	●		●			□					
		110204	0.4	●	●	●		●			●				●		●	●		●			●					
		110208	0.8	●	●										●													
		130302	0.2			□		□									□	●		●								
		130304	0.4		●	□		●									●	●		●			●					
		16T304	0.4	●	●	●		●			●				●		●	●		●			●					
		16T308	0.8	●	●	●		●			●				●		●	●		●			●					
Medium Cutting		**16T312**	1.2		●																							
Flat Top	Cast Iron	**TCMW110204**	0.4								●	●													●			C035 E028
		**130304**	0.4																						●			
		16T304	0.4								●	●													●			
		16T308	0.8								●	●													●			

CHIP BREAKERS ➤ A046
GRADES ➤ A026
IDENTIFICATION ➤ A002

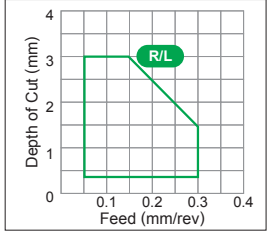
60° TE TYPE INSERTS WITH HOLE

TEGX 16 03 02 R
Size Thickness Corner Radius Chip Breaker
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Medium Cutting ····

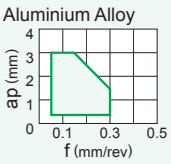
N Aluminium Alloy



Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material			Coated											Cermet			Coated Cermet			Carbide					Applicable Holder Page
	P	Steel	●	◔	✣	✣											●	◔	●	●	●	◔	✣			
	M	Stainless Steel					○	◔									○									
	K	Cast Iron							●	◔							●			●	●	◔				
	N	Non-ferrous Metal																				◔				
	S	Heat-resistant Alloy, Titanium Alloy						●			●	◔	✣										◔	✣		
Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R Re (mm)	UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
R/L	Aluminium Alloy	TEGX160302R	0.2																					●		C043 E040
		160302L	0.2																					●		
		160304R	0.4																					●		
		160304L	0.4																					●		

Medium Cutting (For Aluminium Alloy)



● : Inventory maintained in Japan. □ : Non stock, produced to order only.
(10 inserts in one case)

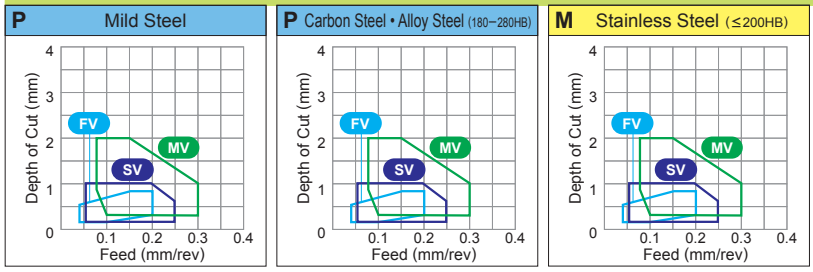
CHIP BREAKERS ➤ A054

60° TP TYPE INSERTS WITH HOLE

TPMH 08 02 02- FV
Size Thickness Corner Radius Chip Breaker
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting···· Light Cutting···· Medium Cutting····



Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material			Coated											Cermet			Coated Cermet			Carbide					Applicable Holder Page
	P	Steel	●	◔	✣	✣								●	◔	●	●	●	◔	✣					
	M	Stainless Steel					○	◔					✣	✣	○					✣					
	K	Cast Iron							●	◔					●		●	●		✣	●	◔		◔	
	N	Non-ferrous Metal																					◔		
	S	Heat-resistant Alloy, Titanium Alloy						●			●	◔	✣											◔	✣
Shape / Chip Control Range ap : Depth of Cut f : Feed		Order Number	Corner R Re (mm)	UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
FV NEW		TPMH080202-FV	0.2		●									●			●	●									
		080204-FV	0.4		●									●			●	●									
		090202-FV	0.2		●									●			●	●									
		090204-FV	0.4		●									●			●	●									
		110302-FV	0.2		●									●			●	●									
		110304-FV	0.4		●									●			●	●									
		110308-FV	0.8		●									●			●	●									
		160302-FV	0.2		●									●			●	●									
		160304-FV	0.4		●									●			●	●									
		160308-FV	0.8		●									●			●	●									
Finish Cutting																											E007
R/L-FS		TPGH080202R-FS	0.2											●			●	□						●			
		080202L-FS	0.2											●			●	●						●			
		080204R-FS	0.4											●			●	□						●			
		080204L-FS	0.4											●			●	●						●			
		090202R-FS	0.2											●			●	□						●			
		090202L-FS	0.2											●			●	●						●			
		090204R-FS	0.4											●			●	□						●			
		090204L-FS	0.4											●			●	●						●			
		110302R-FS	0.2											●			●	□						●			
		110302L-FS	0.2											●			●	●						●			
		110304R-FS	0.4											●			●	□						●			
		110304L-FS	0.4											●			●	●						●			
		160304R-FS	0.4											●			●	□						●			
		160304L-FS	0.4											●			●	●						●			
		160308R-FS	0.8											●			●	□						●			
Finish Cutting		160308L-FS	0.8											●			●	●						●			

Carbon Steel • Alloy Steel
ap (mm) 0 1 2 3
f (mm/rev) 0.1 0.2 0.3 0.4

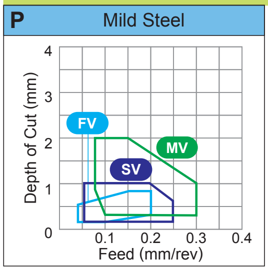
CHIP BREAKERS ➤ A050
GRADES ➤ A026
IDENTIFICATION ➤ A002

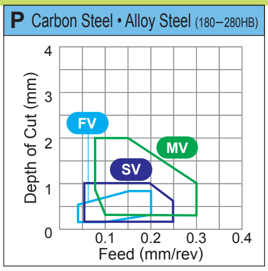
60° TP TYPE INSERTS WITH HOLE

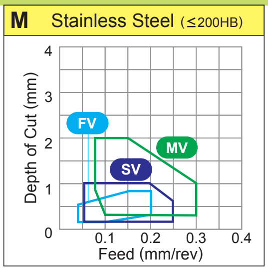
TPGX 08 02 02 R
Size Thickness Corner Radius Chip Breaker
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

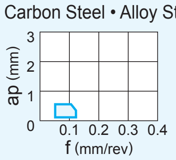
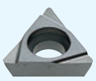
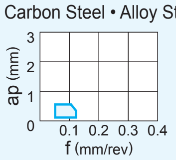
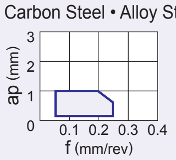
Finish Cutting ···· Light Cutting ···· Medium Cutting ····







Cutting Conditions (Guide) : ● : Stable Cutting ◐ : General Cutting ✤ : Unstable Cutting

Shape / Chip Control Range (ap : Depth of Cut, f : Feed)	Order Number	Corner R Re (mm)	UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	Applicable Holder Page
			Coated													Cermet			Coated Cermet			Carbide					
Work Material	P Steel		●	◐	✤	✤										●	◐	●	●	●	◐	✤					
	M Stainless Steel						●	◐						✤	✤	●						✤					
	K Cast Iron									●	◐					●			●	●		✤	●	◐			
	N Non-ferrous Metal																							◐			
	S Heat-resistant Alloy, Titanium Alloy								●			●	◐	✤											◐	✤	
R/L	TPGX080202R	0.2														●											E025
	080202L	0.2														●		▲				●		●			
	080204R	0.4													●	●						●		●			
	080204L	0.4													●	●		▲				●		●			
	090202R	0.2														●		▲				●		●			
	090202L	0.2														●		▲				●	□	●			
Carbon Steel • Alloy Steel	090204R	0.4													●	●		▲				●	□	●			
	090204L	0.4													●	●		▲				●	●	●			
 	090208R	0.8														●						●		●			
	090208L	0.8													●	●		▲				●		●			
	110302R	0.2														●						□	●	●			
	110302L	0.2														●		▲				●	●	●			
	110304R	0.4													●	●		▲				●		●			
	110304L	0.4													●	●		▲				●		●			
	110308R	0.8														●						●		●			
Finish Cutting	110308L	0.8													●	●		▲				●	●	●			
L (Carbon Steel • Alloy Steel)	TPMX080202L	0.2														□											E025
 	080204L	0.4														□											
	090204L	0.4														●											
Finish Cutting	110304L	0.4														●											
SV	TPMH080202-SV	0.2			●		●	●						●		●	●				●						E007
	080204-SV	0.4			●		●	●						●		●	●				●						
	090202-SV	0.2			●		●	●						●		●	●				●						
Carbon Steel • Alloy Steel	090204-SV	0.4			●		●	●						●		●	●				●						
 	110302-SV	0.2			●		●	●						●		●	●				●						
	110304-SV	0.4			●		●	●						●		●	●				●						
	110308-SV	0.8			●		●	●						●		●	●				●						
	160302-SV	0.2			●		●	●						●		●	●				●						
	160304-SV	0.4			●		●	●						●		●	●				●						
Light Cutting	160308-SV	0.8			●		●	●						●		●	●				●						

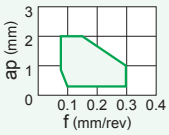
Mini chart labels (each): ap (mm) 0 1 2 3; f (mm/rev) 0.1 0.2 0.3 0.4

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
▲ : Inventory maintained in Japan. To be replaced by new products.
(10 inserts in one case)

Cutting Conditions (Guide) : ● : Stable Cutting ◐ : General Cutting ✣ : Unstable Cutting

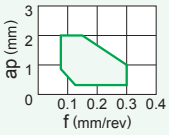
Work Material			Coated											Cermet			Coated Cermet			Carbide					Applicable Holder Page
		Corner R Re (mm)	UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
P	Steel		●	◐	✣	✣								✣	✣	●	◐	●	●	●	◐	✣					
M	Stainless Steel						●	◐								◐						✣					
K	Cast Iron									●	◐					●			●	●		✣	●	◐			
N	Non-ferrous Metal																							◐			
S	Heat-resistant Alloy, Titanium Alloy								●			●	◐	✣											◐	✣	
Shape	**Chip Control Range** ap : Depth of Cut f : Feed	**Order Number**																									
MV		TPMH080202-MV	0.2		●		●	●						●		●	●		●		●						E007
		080204-MV	0.4		●		●	●						●		●	●		●		●						
		090202-MV	0.2		●		●	●						●		●	●		●		●						
		090204-MV	0.4		●		●	●						●		●	●		●		●						
		090208-MV	0.8		●									●			●										
		110302-MV	0.2		●		●	●						●		●	●		●		●						
		110304-MV	0.4		●		●	●						●		●	●		●		●						
		110308-MV	0.8		●		●	●						●		●	●		●		●						
		160304-MV	0.4		●		●	●						●		●	●		●		●						
		160308-MV	0.8		●		●	●						●		●	●		●		●						
Standard		TPMX110304	0.4													●	●					□					E025
		110308	0.8													●	●										
Flat Top		TPGX080202	0.2																					●			E025
		080204	0.4											●	●	●						●		●			
		080208	0.8													●						●		●			
		090202	0.2																			●		●			
		090204	0.4											●		●		▲				●		●			
		090208	0.8											●		●						●	●	●			
		110302	0.2																					●			
		110304	0.4											●	●	●		▲				●	●	●			
		110308	0.8											●		●						●	●	●			
		160304	0.4											□		●						●		●			
		160308	0.8																			●		●			

Carbon Steel • Alloy Steel



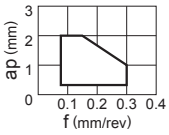
Medium Cutting

Carbon Steel • Alloy Steel



Medium Cutting

Cast Iron



CHIP BREAKERS ➤ A050
GRADES ➤ A026
IDENTIFICATION ➤ A002

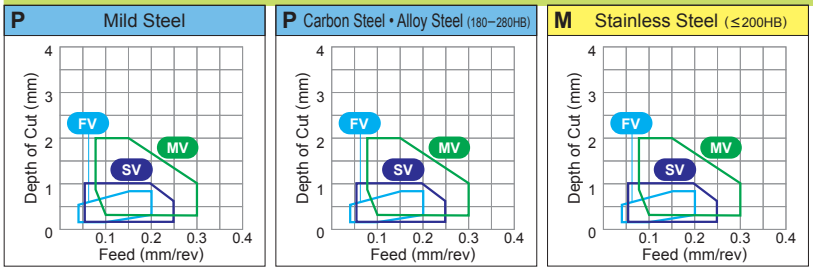
TURNING INSERTS [POSITIVE]

35° VB TYPE INSERTS WITH HOLE

VBMT 11 03 04- FV
Size Thickness Corner Radius Chip Breaker
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting···· Light Cutting···· Medium Cutting····



Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material			Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R Re (mm)	Coated										Cermet			Coated Cermet			Carbide					Applicable Holder Page
							UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
P	Steel		FV NEW	Carbon Steel • Alloy Steel	VBMT110304-FV	0.4		●									●			●	●									D010 D011 E011 E012 H013
M	Stainless Steel			Finish Cutting	110308-FV	0.8		●									●			●	●								
K	Cast Iron				160404-FV	0.4		●									●			●	●								
N	Non-ferrous Metal				160408-FV	0.8		●									●			●	●								
S	Heat-resistant Alloy, Titanium Alloy		R/L-F	Carbon Steel • Alloy Steel	VBGT110302R-F	0.2											●			●			●				●		D010 D011 E011 E012 H013
					110302L-F	0.2											●			●			●				●		
				Finish Cutting	110304R-F	0.4											●			●			●				●		
					110304L-F	0.4											●			●			●				●		
					160402R-F	0.2											●			●			●				●		
					160402L-F	0.2											●			●			●				●		
					160404R-F	0.4											●			●			●				●		
					160404L-F	0.4											●			●			●				●		
			SV	Carbon Steel • Alloy Steel	VBMT110304-SV	0.4		●									●				●								D010 D011 E011 E012 H013
					110308-SV	0.8		●									●				●								
				Light Cutting	160404-SV	0.4		●									●				●								
					160408-SV	0.8		●									●				●								
			MV	Carbon Steel • Alloy Steel	VBMT110304-MV	0.4		●		●	●						●			●	●		●	●					D010 D011 E011 E012 H013
					110308-MV	0.8		●		●	●						●			●	●		●	●					
				Medium Cutting	160404-MV	0.4		●		●	●						●			●	●		●	●					
					160408-MV	0.8		●		●	●						●			●	●		●	●					
			Standard	Carbon Steel • Alloy Steel	VBMT160404	0.4	●																						D010 D011 E011 H013
					160408	0.8	●																						
				Medium Cutting																									

● : Inventory maintained in Japan. (10 inserts in one case)

Cutting Conditions (Guide) : ● : Stable Cutting ◕ : General Cutting ✣ : Unstable Cutting

Work Material			Corner R	Coated											Cermet			Coated Cermet			Carbide					Applicable Holder Page
				UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
P	Steel			●	◕	✣	✣								✣	✣	●	◕	●	●	●	◕	✣					
M	Stainless Steel							●	◕								●						✣					
K	Cast Iron										●	◕					●			●	●		✣	●	◕			
N	Non-ferrous Metal																								◕			
S	Heat-resistant Alloy, Titanium Alloy									●			●	◕	✣											◕	✣	
Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Re (mm)																									
R/L-SR	Carbon Steel • Alloy Steel ap (mm) 3 2 1 0 0.1 0.2 0.3 0.4 f (mm/rev) Medium Cutting	**VBET1103V3R-SR**	0.03											●		●								●			D010 D011 E011 E012
		1103V3L-SR	0.03											●		●								●			
		110301R-SR	0.1											●		●								●			
		110301L-SR	0.1											●		●								●			
		110302R-SR	0.2											●		●								●			
		110302L-SR	0.2											●		●								●			
		110304R-SR	0.4											●		●								●			
		110304L-SR	0.4											●		●								●			
R/L-SN	Carbon Steel • Alloy Steel ap (mm) 6 4 2 0 0.1 0.3 f (mm/rev) Medium Cutting	**VBET110300R-SN**	0											●		●								●			D010 D011 E011 E012
		110300L-SN	0											●		●								●			
		1103V3R-SN	0.03											●		●								●			
		1103V3L-SN	0.03											●		●								●			
		110301R-SN	0.1											●		●								●			
		110301L-SN	0.1											●		●								●			
		110302R-SN	0.2											●		●								●			
		110302L-SN	0.2											●		●								●			
		110304R-SN	0.4											●		●								●			
		110304L-SN	0.4											●		●								●			
R/LW-SN *	Carbon Steel • Alloy Steel ap (mm) 6 4 2 0 0.1 0.3 f (mm/rev) Medium Cutting (Wiper)	**VBET1103V3RW-SN**	0.03											●													D010 D011 E011
		1103V3LW-SN	0.03											●													

* Please refer to A024 before using the R/LW-SN breaker (wiper insert).

CHIP BREAKERS ➤ A044
GRADES ➤ A026
IDENTIFICATION ➤ A002

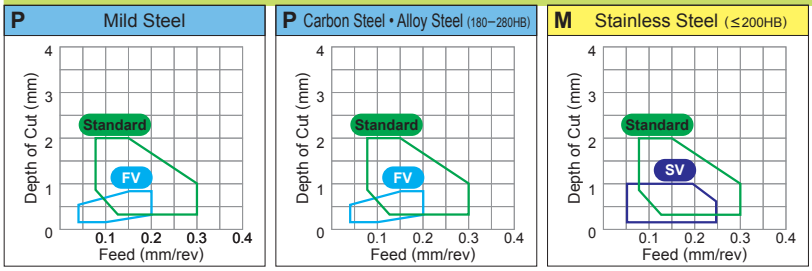
TURNING INSERTS [POSITIVE]

35° VC TYPE INSERTS WITH HOLE

VCMT 08 02 02- FV
Size Thickness Corner Radius Chip Breaker
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting···· Light Cutting···· Medium Cutting····



Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material			Coated											Cermet			Coated Cermet			Carbide					Applicable Holder Page
P	Steel		●	◔	✣	✣							✣	✣		●	◔	●	●	◔	●	✣				
M	Stainless Steel						●	◔					✣	✣		○						✣				
K	Cast Iron								●	◔						●			●	●		✣	●	◔	◔	
N	Non-ferrous Metal																								
S	Heat-resistant Alloy, Titanium Alloy										●		◔	✣										◔	✣
Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R Re (mm)	UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
FV	Carbon Steel • Alloy Steel	NEW VCMT080202-FV	0.2			●								●			●	●									C036 C037 E032 E033
		NEW 080204-FV	0.4			●								●			●	●									
		160404-FV	0.4		●	●											●	●		●							
		160408-FV	0.8		●	●											●	●		●							
Finish Cutting																											
AZ	Aluminium Alloy	VCGT160404-AZ	0.4																					●			C036 C037 E032 E033
		160408-AZ	0.8																					●			
		160412-AZ	1.2																					●			
		220530-AZ	3.0																					●			
Finish Cutting																											
R/L-F	Carbon Steel • Alloy Steel	VCGT080202R-F	0.2											●			●		●					●			E011 E012
		080202L-F	0.2											●			●		●					●			
		080204R-F	0.4											●			●		●					●			
		080204L-F	0.4											●			●		●					●			
Finish Cutting																											
SV	Carbon Steel • Alloy Steel	VCMT080202-SV	0.2			●								●				●									E011 E012
		080204-SV	0.4			●								●				●									
Light Cutting																											
Standard	Carbon Steel • Alloy Steel	VCMT110304	0.4		●	●			●					●			●	●		●			●		●		C036 C037 E032 E033
		160404	0.4	●	●	●			●			●		●			●	●		●			●		●		
		160408	0.8	●	●	●			●			●		●			●	●		●			●		●		
		160412	1.2		●	●			●								●	●		●							
Medium Cutting																											
MV	Carbon Steel • Alloy Steel	VCMT080202-MV	0.2			●			●	●				●			●	●		●	●						E011 E012
		080204-MV	0.4			●			●	●				●			●	●		●	●						
Medium Cutting																											
Flat Top	Cast Iron	VCMW110304	0.4																					●			C036 C037 E032 E033
		160404	0.4			□					●	●												●			
		160408	0.8			□					●	●												●			

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
(10 inserts in one case)

CHIP BREAKERS ➤ A046

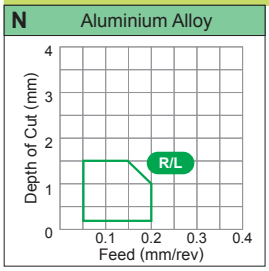
35° VD TYPE INSERTS WITH HOLE

VDGX 16 03 02 R
Size Thickness Corner Radius Chip Breaker
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Medium Cutting ····

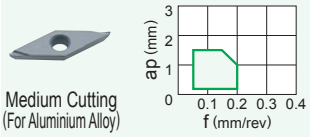
N Aluminium Alloy



Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material			Coated											Cermet			Coated Cermet			Carbide					Applicable Holder Page
			UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
P	Steel		●	◔	✣	✣								✣	✣	●	◔	●	●	●	◔	✣					
M	Stainless Steel						○	◔						✣	✣	○						✣					
K	Cast Iron								●	◔	●					●			●	●		✣	●	◔			
N	Non-ferrous Metal																							◔			
S	Heat-resistant Alloy, Titanium Alloy								●			●	◔	✣											◔	✣	
Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R Re (mm)																								
R/L	Aluminium Alloy	VDGX160302R	0.2																					●			C044
		160302L	0.2																					●			
		160304R	0.4																					●			
		160304L	0.4																					●			

Medium Cutting (For Aluminium Alloy)



CHIP BREAKERS ➤ A054
GRADES ➤ A026
IDENTIFICATION ➤ A002

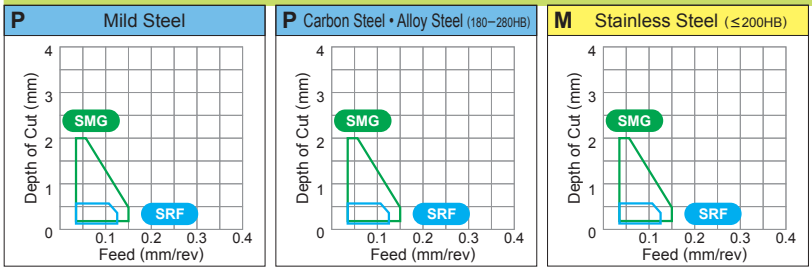
TURNING INSERTS [POSITIVE]

35° VP TYPE INSERTS WITH HOLE

VPET 08 02 01 R-SRF
Size Thickness Corner Radius Chip Breaker
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

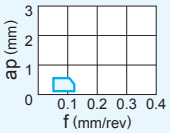
Finish Cutting···· Medium Cutting····



Cutting Conditions (Guide) : ● : Stable Cutting ◕ : General Cutting ✣ : Unstable Cutting

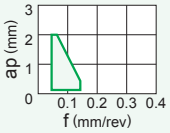
Work Material			Coated											Cermet			Coated Cermet			Carbide					Applicable Holder Page
Shape / Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R Re (mm)	UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
R/L-SRF NEW	VPET 080201R-SRF	0.1												●													D010 D011
	080201L-SRF	0.1												●													
	080202R-SRF	0.2												●													
	080202L-SRF	0.2												●													
	1103V3R-SRF	0.03												●													
	1103V3L-SRF	0.03												●													
	110301R-SRF	0.1												●													
	110301L-SRF	0.1												●													
	110302R-SRF	0.2												●													
	110302L-SRF	0.2												●													
SMG NEW Carbon Steel • Alloy Steel	VPGT080201M-SMG	0.1												●													D010 D011
	080202M-SMG	0.2												●													
	110301M-SMG	0.1												●													
	110302M-SMG	0.2												●													

Carbon Steel • Alloy Steel



Finish Cutting

Carbon Steel • Alloy Steel



Medium Cutting

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
(10 inserts in one case)

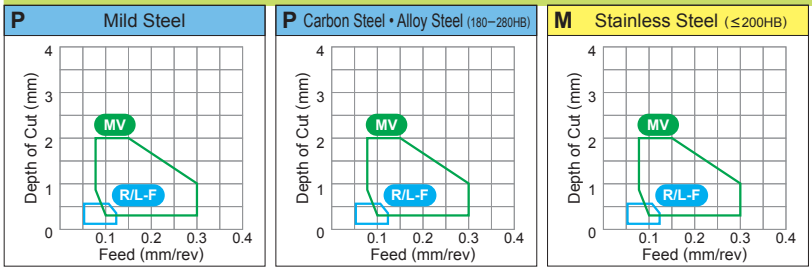
CHIP BREAKERS ➤ A052

80° WB TYPE INSERTS WITH HOLE

WBGT 02 01 V3 L-F
Size / Thickness / Corner Radius / Chip Breaker
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting···· Medium Cutting····

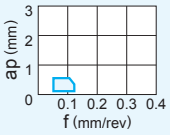


Cutting Conditions (Guide) : ● : Stable Cutting ◕ : General Cutting ✣ : Unstable Cutting

Work Material			Corner R	Coated											Cermet			Coated Cermet			Carbide					Applicable Holder Page
			Re (mm)	UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
	P	Steel		●	◕	✣	✣									✣	●	◕	●	●	●	◕	✣					
	M	Stainless Steel						○	◕							✣	✣	○					✣					
	K	Cast Iron								●	◕						●			●	●		✣	●	◕			
	N	Non-ferrous Metal																							◕		
	S	Heat-resistant Alloy, Titanium Alloy								●			●	◕	✣											◕	✣	
R/L-F		**WBGT0201V3L-F**	0.03											●			●											
		020101L-F	0.1											●			●											
		020102L-F	0.2											●			●											
		020104L-F	0.4											●			●											
		L302V3L-F	0.03											●			●											E010 E016
		L30201L-F	0.1											●			●											
		L30202R-F	0.2											●			●			□				●				
		L30202L-F	0.2											●			●			□				●				
		L30204R-F	0.4											●			●			□				●				
		L30204L-F	0.4											●			●			□				●				
R/L-MV		**WBMTL30202R-MV**	0.2			●		●	●					●			●	●		□		●						
		L30202L-MV	0.2			●		●	●					●			●	●		□		●						
		L30204R-MV	0.4			●		●	●					●			●	●		□		●						
		L30204L-MV	0.4			●		●	●					●			●	●		□		●						

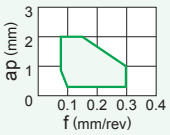
R/L-F — Finish Cutting

Carbon Steel • Alloy Steel



R/L-MV — Medium Cutting

Carbon Steel • Alloy Steel



CHIP BREAKERS ➤ A044
GRADES ➤ A026
IDENTIFICATION ➤ A002

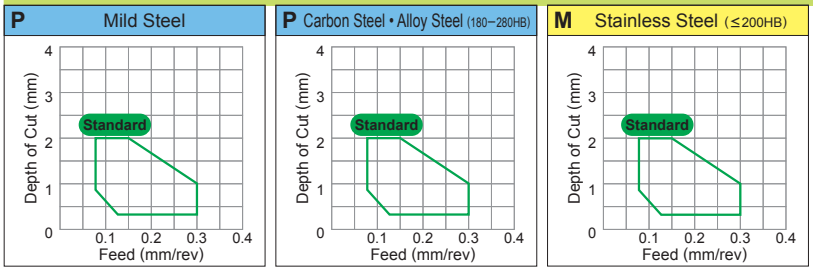
TURNING INSERTS [POSITIVE]

80° WC TYPE INSERTS WITH HOLE

WCGT 02 01 02 R
Size Thickness Corner Radius Chip Breaker
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Medium Cutting ····

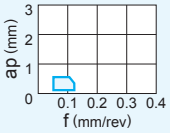


Cutting Conditions (Guide) : ● : Stable Cutting ◕ : General Cutting ✣ : Unstable Cutting

Work Material			Coated											Cermet			Coated Cermet			Carbide					Applicable Holder Page
	P	Steel	●	◕	✣	✣								●	◕	●	●	●	◕	✣					
	M	Stainless Steel					○	◕					✣	○						✣					
	K	Cast Iron							●	◕				●			●	●		✣	●	◕			
	N	Non-ferrous Metal																				◕			
	S	Heat-resistant Alloy, Titanium Alloy						●			●	◕	✣										◕	✣	
Shape / Chip Control Range ap : Depth of Cut f : Feed		Order Number	Corner R Re (mm)	UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
R/L		**WCGT020102R**	0.2														●		▲						●			E027
		020102L	0.2														●		▲						●			
		020104R	0.4														●		▲						□			
		020104L	0.4														●		▲						●			
		L30202R	0.2														●		▲						●			
		L30202L	0.2														●		▲						●			
		L30204R	0.4														●		▲						□			
		L30204L	0.4														●		▲						●			
Standard		**WCMT020102**	0.2		●	●			●								●	●		●			●					E027
		020104	0.4		●	●			●								●	●		●			●					
		L30202	0.2		●				●								●	●		●			●					
		L30204	0.4		●				●								●	●		●			●					
		040202	0.2		●	●			●								●	●		●			●					
		040204	0.4		●	●			●								●	●		●			●					
		040208	0.8			●																						
		06T304	0.4		●	●			●								●	●		●			●					
		06T308	0.8		●	●			●								●	●		●			●					

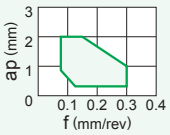
R/L — Finish Cutting

Carbon Steel • Alloy Steel



Standard — Medium Cutting

Carbon Steel • Alloy Steel



● : Inventory maintained in Japan. □ : Non stock, produced to order only.
▲ : Inventory maintained in Japan. To be replaced by new products.
(10 inserts in one case)

CHIP BREAKERS ➤ A046

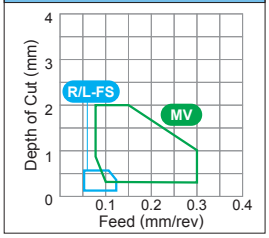
80° WP TYPE INSERTS WITH HOLE

WPGT 04 02 02 R-FS
Size / Thickness / Corner Radius / Chip Breaker
* Please refer to page A002.

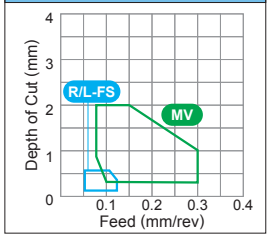
CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting···· Medium Cutting····

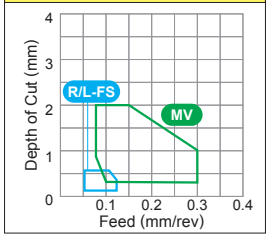
P Mild Steel



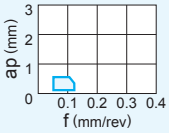
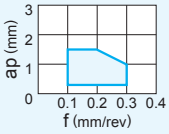
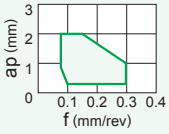
P Carbon Steel • Alloy Steel (180–280HB)



M Stainless Steel (≤200HB)



Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material			Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R Re (mm)	Coated										Cermet			Coated Cermet			Carbide					Applicable Holder Page
							UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
P	Steel		**R/L-FS**	Carbon Steel • Alloy Steel	**WPGT040202R-FS**	0.2											●	●		□								●			E010
M	Stainless Steel				**040202L-FS**	0.2											●	●		□								●			
K	Cast Iron				**040204R-FS**	0.4											●	●		□								●			
N	Non-ferrous Metal				**040204L-FS**	0.4											●	●		□								●			
S	Heat-resistant Alloy, Titanium Alloy				**060304R-FS**	0.4											●	●		□								●			
					060304L-FS	0.4											●	●		□								●			
					060308R-FS	0.8											●	●		□								●			
			Finish Cutting		**060308L-FS**	0.8											●	●		□								●			
			Standard	Aluminium Alloy	**WPGT040202**	0.2																						●			E010
					**040204**	0.4																						●			
					060302	0.2																						●			
			Finish Cutting		**060304**	0.4																						●			
			MV	Carbon Steel • Alloy Steel	**WPMT040202-MV**	0.2		●			●	●					●			●	●		□		●						E010
					**040204-MV**	0.4		●			●	●					●			●	●		□		●						
					060304-MV	0.4		●			●	●					●			●	●		□		●						
			Medium Cutting		**060308-MV**	0.8		●			●	●					●			●	●		□		●						

CHIP BREAKERS ➤ A050
GRADES ➤ A026
IDENTIFICATION ➤ A002

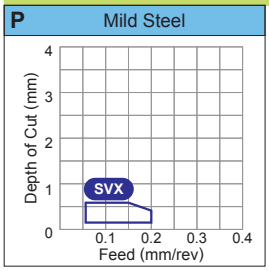
TURNING INSERTS [POSITIVE]

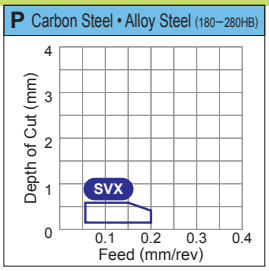
25° XC TYPE INSERTS WITH HOLE

XCMT 15 03 02- SVX
Size Thickness Corner Radius Chip Breaker
* Please refer to page A002.

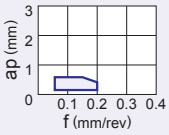
CHIP CONTROL RANGE FOR WORK MATERIALS

Light Cutting ····





Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material			Coated										Cermet			Coated Cermet			Carbide					Applicable Holder Page
			UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
	P	Steel	●	◔	✣	✣										●	◔	●	●	●	◔	✣					
	M	Stainless Steel					●	◔						✣	✣	●						✣					
	K	Cast Iron							●	●	◔					●			●	●		✣	●	◔			
	N	Non-ferrous Metal																						◔			
	S	Heat-resistant Alloy, Titanium Alloy						●				●	◔	✣											◔	✣	
Shape: **SVX**  Light Cutting	Chip Control Range ap : Depth of Cut f : Feed: Carbon Steel • Alloy Steel 	NEW XCMT150302-SVX	Re (mm) 0.2										●														C038
		150304-SVX	0.4		●								●														
		150308-SVX	0.8		●								●														

● : Inventory maintained in Japan. (10 inserts in one case)

CHIP BREAKERS ➤ A046

RTG TYPE INSERTS WITHOUT HOLE

Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material			Coated												Cermet			Coated Cermet			Carbide					Applicable Holder Page
Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R Re (mm)	UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
P	Steel			●	◔	✣	✣								✣	✣	●	◔	●	●	◔	●	✣					
M	Stainless Steel							●	◔								○						✣					
K	Cast Iron										●	◔					●			●	●		✣	●	◔			
N	Non-ferrous Metal																								◔			
S	Heat-resistant Alloy, Titanium Alloy									●			●	◔	✣											◔	✣	
 For Special Use (For TL Holder)		RTG05A	–																				●		●			C047
		06A	–																				●		●			
		07A	–																				●		●			
		08A	–																				●		●			
		10A	–																				●		●			
		12A	–																				●		●			

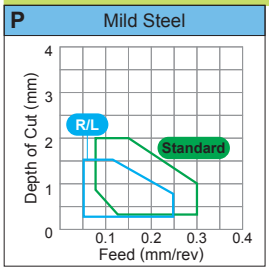
TURNING INSERTS [POSITIVE]

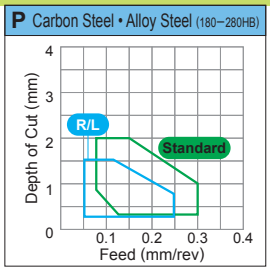
90° SP TYPE INSERTS WITHOUT HOLE

SPGR 09 03 04 R
Size Thickness Corner Radius Chip Breaker
* Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting···· Medium Cutting····





Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material		Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R Re (mm)	Coated: UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	Cermet: NX2525	NX3035	NX55	Coated Cermet: AP25N	VP25N	VP45N	Carbide: UTi20T	HTi05T	HTi10	RT9010	TF15	Applicable Holder Page
P	Steel																												
M	Stainless Steel																												
K	Cast Iron																												
N	Non-ferrous Metal																												
S	Heat-resistant Alloy, Titanium Alloy																												
		R/L	Carbon Steel • Alloy Steel	**SPGR090304R**	0.4																				●		●			C040
				090304L	0.4																				●		●			
		Finish Cutting	ap (mm) 0 1 2 3 / f (mm/rev) 0.1 0.2 0.3 0.4																										
		Standard	Carbon Steel • Alloy Steel	**SPMR090304**	0.4		●	●											●	●										C040
				090308	0.8		●	●											●	●										
				120304	0.4		●	●											●	●										
				120308	0.8		●	●											●	●										
		Light to Medium Cutting	ap (mm) 0 1 2 3 / f (mm/rev) 0.1 0.2 0.3 0.4	**120312**	1.2		●	□																						
		Flat Top		**SPMN090304**	0.4														●						●		●			C040
				090308	0.8		●												●						●		●			
				120304	0.4		●	□									●								●		●			
				120308	0.8		●	●									●	●							●		●			
			Cast Iron	**120312**	1.2		●	●									●								●		●			
			ap (mm) 0 1 2 3 / f (mm/rev) 0.1 0.2 0.3 0.4	**120408**	0.8																				●		●			
				120412	1.2																				●					
				150408	0.8																				●					
				150412	1.2																				●					
				190404	0.4																				●					
				190408	0.8			□									●								●					
				190412	1.2		●	□																	●					
				190416	1.6																				●					
		Flat Top		**SPGN090304**	0.4														●	▲					●		●			C040
				090308	0.8												●		●	▲					●		●			
				120304	0.4															▲					●		●			
				120308	0.8												●			▲					●		●			
			Cast Iron	**120312**	1.2																						●			
			ap (mm) 0 1 2 3 / f (mm/rev) 0.1 0.2 0.3 0.4	**120404**	0.4																						●			
				120408	0.8															▲					●		●			
				120412	1.2															▲										
				150404	0.4																				●					
				150408	0.8															▲					●		●			
				190402	0.2																				●					
				190404	0.4														●	▲					●		●			
				190408	0.8																				●					

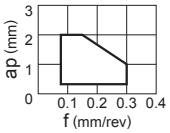
● : Inventory maintained in Japan. □ : Non stock, produced to order only.
▲ : Inventory maintained in Japan. To be replaced by new products.
(10 inserts in one case)

CHIP BREAKERS ➤ A056

60° TC TYPE INSERTS WITHOUT HOLE

TCGN 06 01 04
Size Thickness Corner Radius
* Please refer to page A002.

Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material			Coated										Cermet			Coated Cermet			Carbide				Applicable Holder Page
			UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
	P	Steel	●	◔	✣	✣	○	◔		●	◔			✣	✣	●	◔	●	●	●	◔	✣					
	M	Stainless Steel					○	◔						✣	✣	○						✣					
	K	Cast Iron								●	◔					●			●	●	◔	✣	●	◔			
	N	Non-ferrous Metal																						◔			
	S	Heat-resistant Alloy, Titanium Alloy							●			●	◔	✣											◔	✣	
Shape	Chip Control Range ap : Depth of Cut f : Feed	Order Number	Corner R **Re** (mm)																								
Flat Top	Cast Iron	**TCGN060104**	0.4																					●			–
		**090204**	0.4																					●			
		090208	0.8																					●			

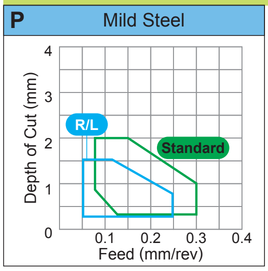
CHIP BREAKERS ➤ A056
GRADES ➤ A026
IDENTIFICATION ➤ A002

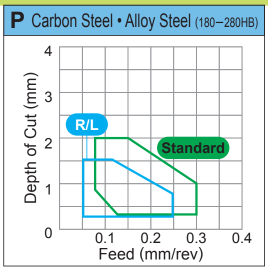
60° TP TYPE INSERTS WITHOUT HOLE

TPGR 11 03 04 R
Size · Thickness · Corner Radius · Chip Breaker
* Please refer to page A002.

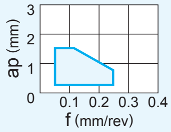
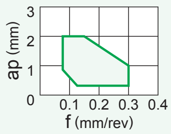
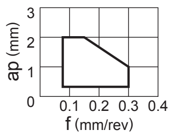
CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting···· (blue) Medium Cutting···· (green)





Cutting Conditions (Guide) : ● : Stable Cutting ◐ : General Cutting ✤ : Unstable Cutting

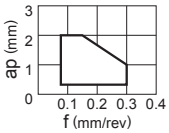
Work Material			UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
P	Steel		●	◐	✤	✤										●	◐	●	●	●	◐	✤					
M	Stainless Steel						●	◐						✤	✤	●						✤					
K	Cast Iron									●	◐					●			●	●		✤	●	◐			
N	Non-ferrous Metal																							◐			
S	Heat-resistant Alloy, Titanium Alloy								●			●	◐	✤											◐	✤	
Shape / Chip Control Range (ap : Depth of Cut, f : Feed)	Order Number	Corner R Re (mm)	Coated													Cermet			Coated Cermet			Carbide					Applicable Holder Page
R/L Carbon Steel • Alloy Steel   Finish Cutting	TPGR110304R	0.4														●		▲				●		●			C041 E026
	110304L	0.4														●		▲				●		●			
	110308L	0.8																						●			
	160304R	0.4														●		▲				●		●			
	160304L	0.4														●		▲				●		●			
	160308R	0.8														●						●		●			
	160308L	0.8														●		▲				●		●			
Standard Carbon Steel • Alloy Steel   Light to Medium Cutting	TPMR090202	0.2														●	●										C041 E026
	090204	0.4		□	□											●	●										
	090208	0.8		□	□												●										
	110302	0.2		□	□											●	●										
	110304	0.4		●	●											●	●										
	110308	0.8		●	●											●	●										
	160304	0.4		●	●											●	●										
	160308	0.8		●	●											●	●										
	160312	1.2		●	●											●	●										
Flat Top Cast Iron  	TPMN110304	0.4		●	□					●	●				●	●						●		●			C041 E026
	110308	0.8		●	□					●	●					●						●		●			
	110312	1.2			□																	□					
	160304	0.4		●	□					●	●			●	●	●						●		●			
	160308	0.8		●	●					●	●			●	●	●						●	●	●			
	160312	1.2		●	□					●	●				●							●		●			
	160316	1.6			□																	●					
	160320	2.0			□																	●					
	160408	0.8			●																	●					
	220404	0.4		●	●																	●					
	220408	0.8		●	●					□	□			●	●							●		●			
	220412	1.2		●	●									●								●		●			
	220416	1.6			□																	●					
	220420	2.0																				●					

● : Inventory maintained in Japan. □ : Non stock, produced to order only.
▲ : Inventory maintained in Japan. To be replaced by new products.
(10 inserts in one case)

Cutting Conditions (Guide) : ● : Stable Cutting ◔ : General Cutting ✣ : Unstable Cutting

Work Material			Coated											Cermet			Coated Cermet			Carbide					Applicable Holder Page
		Corner R Re (mm)	UE6105	UE6110	UE6020	UH6400	US7020	US735	US905	UC5105	UC5115	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	NX55	AP25N	VP25N	VP45N	UTi20T	HTi05T	HTi10	RT9010	TF15	
P	Steel		●	◔	✣	✣								✣	✣	●	◔	●	●	●	◔	✣					
M	Stainless Steel						●	◔								○						✣					
K	Cast Iron									●	◔					●			●	●		✣	●	◔			
N	Non-ferrous Metal																							◔			
S	Heat-resistant Alloy, Titanium Alloy								●			●	◔	✣											◔	✣	
Flat Top																											
		TPGN110302	0.2															▲				●		●			C041 E026
		110304	0.4												●	●		▲				●	●	●			
		110308	0.8												●	●						●	●	●			
		160302	0.2													●		▲				●		●			
		160304	0.4												●	●		▲				●	●	●			
		160308	0.8												●	●		▲				●	●	●			
		160312	1.2																			□		●			
		160316	1.6																					●			
		160404	0.4																			●					
		160408	0.8													□						●		●			
		220404	0.4												●							●		●			
		220408	0.8												●							●		●			
		220412	1.2												●							●		●			

Cast Iron



CHIP BREAKERS ➤ A056
GRADES ➤ A026
IDENTIFICATION ➤ A002