

HOW TO READ THE STANDARD OF TURNING INSERTS

● How this section page is organized

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

Finish Cutting→Light Cutting→Medium Cutting→Rough 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→Rough→Heavy) and contain recommended breakers for each application.

Finish Cutting : — Light Cutting : — Medium Cutting : —
 Rough Cutting : — Heavy Cutting : —

GRADE APPLICATION RECOMMENDED FOR EACH WORK MATERIAL
 cutting conditions suitable for each type of work material is shown as a general guide to select the grade.
 ● : Stable Cutting ● : General Cutting ✖ : Unstable Cutting

SHAPE & ANGLE MARK

PRODUCT SECTION

INDICATION OF NEGATIVE/ POSITIVE TYPE

TITLE OF PRODUCT ACCORDING TO THE INSERT TYPE

TURNING INSERTS [NEGATIVE]

80° CN TYPE INSERTS WITH HOLE

CHIP CONTROL RANGE FOR WORK MATERIALS

Work Material

Shape

Order Number (ISO) Number

RE (inch)

Chip Breaker

Stock Status

USA Stock ● **Stocked in Japan** ● **19 inserts in one case**

LEGEND FOR STOCK STATUS MARK
 is shown on the left hand page of each double-page spread.

CUTTING APPLICATION
 is shown in order of: Finish→Light→Medium→Rough→Heavy.

PHOTO OF INSERT

INDICATION OF CHIPBREAKER
 indicates the designation for a chipbreaker.

INSERT NUMBER

INSERT GRADES

STOCK STATUS

CHIP BREAKER
 GRADES
 IDENTIFICATION

PAGE REFERENCE
 ·CHIP BREAKERS
 ·GRADES
 ·TECHNICAL DATA
 indicates reference pages, on the right hand page of each double-page spread.

APPLICABLE HOLDER PAGE
 indicates reference pages for details of applicable holders.

INSERT CORNER RADIUS (RE)

● To Order : Please specify insert number and grade.

INSERT STANDARDS

INSERT GRADES

IDENTIFICATION	A002
HOLE GEOMETRY	A004
PRECISION BREAKER STANDARD	A008
TOOL NAVI	A013
OPTIMUM GRADES AND CHIP BREAKERS FOR EXTERNAL TURNING ...	A014
PRECISION BREAKER SYSTEM	A030
WIPER INSERT.....	A032
GRADES FOR TURNING	A034
TURNING APPLICATION RANGE	A035
COATED CARBIDE (CVD)	A038
COATED CARBIDE (PVD)	A040
CERMET	A041
COATED CERMET	A042
CEMENTED CARBIDE	A043
MICRO-GRAIN CEMENTED CARBIDE	A044
CLASSIFICATION.....	A046
RECOMMENDED CUTTING CONDITIONS	A080

STANDARD OF INSERTS

NEGATIVE INSERTS WITH HOLE

CN○○TYPE...	RHOMBIC 80°	A104
DN○○TYPE...	RHOMBIC 55°	A112
RN○○TYPE...	ROUND	A119
SN○○TYPE...	SQUARE 90°	A120
TN○○TYPE...	TRIANGULAR 60°	A126
VN○○TYPE...	RHOMBIC 35°	A134
WN○○TYPE...	TRIGON 80°	A138

NEGATIVE INSERTS WITHOUT HOLE

KN○○TYPE...	PARALLELOGRAM 55°...	A143
CN○○TYPE...	RHOMBIC 80°	A144
SN○○TYPE...	SQUARE 90°	A145
TN○○TYPE...	TRIANGULAR 60°	A146

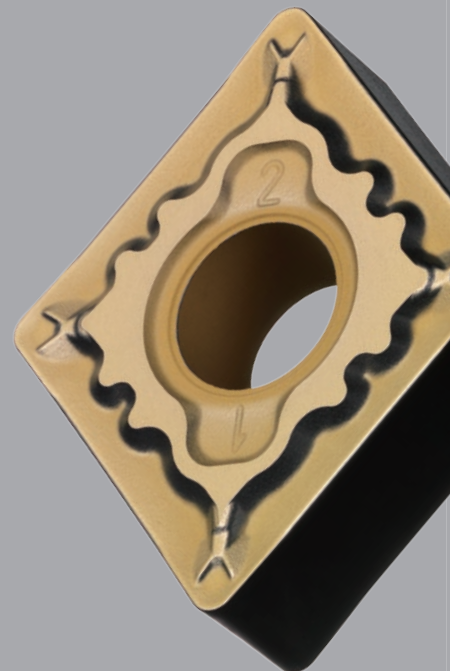
POSITIVE INSERTS WITH HOLE

CC○○TYPE...	RHOMBIC 80°	A147
CP○○TYPE...	RHOMBIC 80°	A156
DC○○TYPE...	RHOMBIC 55°	A158
DE○○TYPE...	RHOMBIC 55°	A166
RC○○TYPE...	ROUND	A167

SC○○TYPE...	SQUARE 90°	A168
SP○○TYPE...	SQUARE 90°	A170
TC○○TYPE...	TRIANGULAR 60°	A171
TE○○TYPE...	TRIANGULAR 60°	A175
TP○○TYPE...	TRIANGULAR 60°	A176
VB○○TYPE...	RHOMBIC 35°	A179
VC○○TYPE...	RHOMBIC 35°	A184
VD○○TYPE...	RHOMBIC 35°	A187
VP○○TYPE...	RHOMBIC 35°	A188
WB○○TYPE...	TRIGON 80°	A189
WC○○TYPE...	TRIGON 80°	A190
WP○○TYPE...	TRIGON 80°	A191
XC○○TYPE...	RHOMBIC 25°	A192

POSITIVE INSERTS WITHOUT HOLE

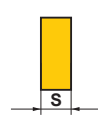
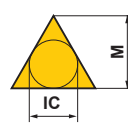
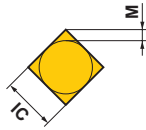
RTG TYPE.....		A193
SP○○TYPE...	SQUARE 90°	A194
TC○○TYPE...	TRIANGULAR 60°	A195
TP○○TYPE...	TRIANGULAR 60°	A196



IDENTIFICATION

Symbol	Insert Shape	
H	Hexagonal	
O	Octagonal	
P	Pentagonal	
S	Square	
T	Triangular	
C	Rhombic 80°	
D	Rhombic 55°	
E	Rhombic 75°	
F	Rhombic 50°	
M	Rhombic 86°	
V	Rhombic 35°	
W	Trigon	
L	Rectangular	
A	Parallelogram 85°	
B	Parallelogram 82°	
K	Parallelogram 55°	
R	Round	
X	Special	

① Symbol for Insert Shape

Triangular insert with a facet
(Secondary Cutting Edge)

③ Symbol for Tolerance Class

Symbol	Tolerance of Nose Height M (inch)	Tolerance of Inscribed Circle IC (inch)	Tolerance of Thickness S (inch)
A	±.0002	±.001	±.001
F	±.0002	±.0005	±.001
C	±.0005	±.001	±.001
H	±.0005	±.0005	±.001
E	±.001	±.001	±.001
G	±.001	±.001	±.005
J	±.002	±.002	±.005
K*	±.0005	±.002 – ±.006	±.001
L*	±.001	±.002 – ±.006	±.001
M*	±.003 – ±.007	±.002 – ±.006	±.005
N*	±.003 – ±.007	±.002 – ±.006	±.001
U*	±.005 – ±.015	±.003 – ±.01	±.005

*As a rule, the sides of these inserts are as sintered.
Tolerance differs with insert size. For the accuracy of
class M, refer to the table on the right.

Detail of M Class Insert Tolerance
●Tolerance of Nose Height M (inch)

I.C.	Triangular	Square	Rhombic 80°	Rhombic 55°	Rhombic 35°	Round
.250	±.003	±.003	±.003	±.004	±.0063	—
.375	±.003	±.003	±.003	±.004	±.0063	—
.500	±.005	±.005	±.005	±.006	—	—
.625	±.006	±.006	±.006	±.007	—	—
.750	±.006	±.006	±.006	±.007	—	—
1.000	—	±.007	—	—	—	—
1.250	—	±.008	—	—	—	—

●Tolerance of Inscribed Circle IC (inch)

I.C.	Triangular	Square	Rhombic 80°	Rhombic 55°	Rhombic 35°	Round
.250	±.002	±.002	±.002	±.002	±.002	—
.375	±.002	±.002	±.002	±.002	±.002	±.002
.500	±.003	±.003	±.003	±.003	—	±.003
.625	±.004	±.004	±.004	±.004	—	±.004
.750	±.004	±.004	±.004	±.004	—	±.004
1.000	—	±.005	—	—	—	±.005
1.250	—	±.006	—	—	—	±.006

③ Symbol for Tolerance Class

INCH	T	N	M	G
METRIC	T	N	M	G

② Symbol for Relief Angle

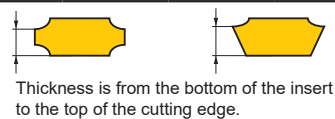
Symbol	Relief Angle
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
O	Other Relief Angle
Major Relief Angle	

④ Symbol for Chipbreaker and Clamping System

Inch						Metric					
Figure	I.C. .250" and over	I.C. under .250"	Symbol	Hole	Hole Configuration	Chip Breaker	Figure	Symbol	Hole	Hole Configuration	Chip Breaker
	A	D	W	With Hole	Cylindrical Hole + One Countersink (40—60°)	No		A	With Hole	Cylindrical Hole	No
	M	P	T	With Hole	Cylindrical Hole + One Countersink (40—60°)	One Sided		M	With Hole	Cylindrical Hole	One Sided
	G	K	Q	With Hole	Cylindrical Hole + Double Countersink (40—60°)	No		G	With Hole	Cylindrical Hole	Double Sided
	N	E	U	With Hole	Cylindrical Hole + One Countersink (70—90°)	Double Sided		N	Without Hole	—	No
	R	S	B	With Hole	Cylindrical Hole + One Countersink (70—90°)	No		R	Without Hole	—	One Sided
	F	L	H	With Hole	Cylindrical Hole + One Countersink (70—90°)	One Sided		F	Without Hole	—	Double Sided
Special Design	X	X	C	With Hole	Cylindrical Hole + Double Countersink (70—90°)	No		X	—	—	—
			J	With Hole	Cylindrical Hole + Double Countersink (70—90°)	Double Sided					Special Design

Inch		Diameter of Inscribed Circle (inch)	Metric						
I.C. .250" and over	I.C. under .250"								
	1.2	.156		02		04	03	03	06
	1.5	.187		L3	08	05	04	04	08
	1.8	.219		03	09	06	05	05	09
2		.250		04	11	07	06	06	11
2.5		.313		05	13	09	08	07	13
3		.375	09	06	16	11	09	09	16
4		.500	12	08	22	15	12	12	22
5		.625		10		19	16	15	27
6		.750	19	13		23	19	19	33
7		.875				27	22	22	38
8		1.000	25			31	25	25	44
10		1.250	31			38	32	31	54
		6.00mm	06						
		8.00mm	08						
		10.00mm	10						
		12.00mm	12						
		16.00mm	16						
		20.00mm	20						
		25.00mm	25						
		32.00mm	32						

⑤ Symbol for Insert Size



Inch		Thickness (inch)	Metric
I.C. .250" and over	I.C. under .250"		
—	0.9	.055	S1
—	1	.063	01
—	1.1	.070	T0
—	1.2	.078	T1
—	1.5	.094	02
—	1.8	.109	T2
2	—	.125	03
2.5	—	.156	T3
3	—	.187	04
3.5	—	.219	05
4	—	.25	06
5	—	.313	07
6	—	.375	09

⑥ Symbol for Insert Thickness

⑤	⑥			⑩
4	3	2	(E)	(N) - MP
22	04	08	(E)	(N) - MP

⑩ Symbol for Chip Breaker

LP	MP	RP
		
LM	MM	RM
		
LK	MK	RK
		
LS	MS	RS
		
FP	LP	MP
		
MA	SW	MW
		
HZ	HX	HV
		

⑦ Symbol for Insert Corner Configuration

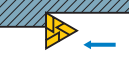
Inch	Corner Radius (inch)	Metric
V0	Sharp Nose	00
V3	.0012	V3
V5	.002	V5
0.2	.004	01
0.5	.008	02
1	.016	04
2	.031	08
3	.047	12
4	.063	16
5	.079	20
6	.094	24
7	.110	28
8	.126	32
00	Round Insert	M0

⑧ Symbol for Cutting Edge Condition

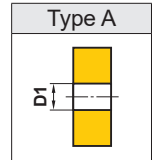
Figure	Cutting Edge	Symbol
	Sharp Cutting Edges	F
	Round Cutting Edges	E
	Chamfered Cutting Edges	T
	Chamfered and Rounded Cutting Edges	S
—	(-) Corner R tolerance	M

Mitsubishi Materials omit the honing symbol.

⑨ Symbol for Cutting Direction

Figure	Hand	Symbol
	Right	R
	Left	L
	Neutral	N

HOLE GEOMETRY

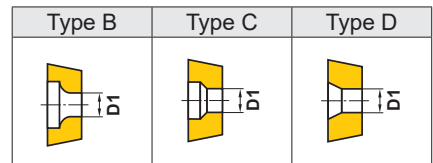


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TURNING INSERTS

NEGATIVE

Insert Number		(ISO) Number		Dimension (inch)	Hole Type
				D1	
CNGA CNGG CNMA CNMG CNMM CNMP	32 $\circ$	CNGA CNGG CNMA CNMG CNMM CNMP	0903 $\circ$	.150	A
	33 $\circ$		0904 $\circ$	.150	A
	43 $\circ$		1204 $\circ$	.203	A
	54 $\circ$		1606 $\circ$	.250	A
	64 $\circ$		1906 $\circ$	.312	A
	86 $\circ$		2509 $\circ$	.359	A
DNGA DNMG DNMA DNMG DNMM DNMX	33 $\circ$	DNGA DNMG DNMA DNMG DNMM DNMX	1104 $\circ$	.150	A
	43 $\circ$		1504 $\circ$	.203	A
	44 $\circ$		1506 $\circ$	.203	A
SNGA SNGG SNMA SNMG SNMM	32 $\circ$	SNGA SNGG SNMA SNMG SNMM	0903 $\circ$	.150	A
	43 $\circ$		1204 $\circ$	.203	A
	54 $\circ$		1506 $\circ$	.250	A
	64 $\circ$		1906 $\circ$	.312	A
	85 $\circ$		2507 $\circ$	.359	A
	86 $\circ$		2509 $\circ$	.359	A
TNGA TNGG TNMA TNMG TNMM TNMX	22 $\circ$	TNGA TNGG TNMA TNMG TNMM TNMX	1103 $\circ$	.089	A
	32 $\circ$		1603 $\circ$	.150	A
	33 $\circ$		1604 $\circ$	.150	A
	43 $\circ$		2204 $\circ$	.203	A
	54 $\circ$		2706 $\circ$	.250	A
	66 $\circ$		3309 $\circ$	.312	A
VNGA VNGG VNGM VNMG VNMM	33 $\circ$	VNGA VNGG VNGM VNMG VNMM	1604 $\circ$	.150	A
WNMA WNMG	32 $\circ$	WNMA WNMG	0603 $\circ$	.150	A
	32.5 $\circ$		06T3 $\circ$	.150	A
	33 $\circ$		0604 $\circ$	.150	A
	43 $\circ$		0804 $\circ$	.203	A
RNMG	43	RNMG	120400	.203	A



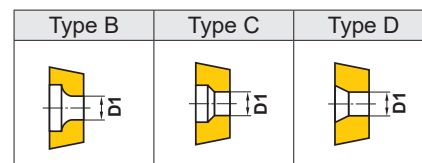
POSITIVE

Insert Number		(ISO) Number		Dimension (inch)	Hole Type
				D1	
CCET CCGT CCGW	21.5 ⁰	CCET CCGT CCGW	0602 ⁰⁰	.110	B
	32.5 ⁰		09T3 ⁰⁰	.173	B
	43 ⁰		1204 ⁰⁰	.217	B
CCGH CCMH	21.5 ⁰	CCGH CCMH	0602 ⁰⁰	.110	B
CCGT	03S1 ⁰⁰	CCGT	03S1 ⁰⁰	.079	B
	04T0 ⁰⁰		04T0 ⁰⁰	.094	B
CCMT	21.5 ⁰	CCMT	0602 ⁰⁰	.110	B
	2.52 ⁰		0803 ⁰⁰	.134	B
	32.5 ⁰		09T3 ⁰⁰	.173	B
	43 ⁰		1204 ⁰⁰	.217	B
CCMW	21.5 ⁰	CCMW	0602 ⁰⁰	.110	B
	32.5 ⁰		09T3 ⁰⁰	.173	B
	43 ⁰		1204 ⁰⁰	.217	B
CPGT	2.51.5 ⁰	CPGT	0802 ⁰⁰	.134	B
	32 ⁰		0903 ⁰⁰	.173	B
CPMH	2.51.5 ⁰	CPMH	0802 ⁰⁰	.138	D
	32 ⁰		0903 ⁰⁰	.177	D
CPMT	21.5 ⁰	CPMT	0602 ⁰⁰	.110	B
	32.5 ⁰		09T3 ⁰⁰	.173	B
CPMX	2.51.5 ⁰	CPMX	0802 ⁰⁰	.138	D
	32 ⁰		0903 ⁰⁰	.181	D
DCET DCGT DCGW	21.5 ⁰	DCET DCGT DCGW	0702 ⁰⁰	.110	B
	32.5 ⁰		11T3 ⁰⁰	.173	B
DCMT DCMW	21.5 ⁰	DCMT DCMW	0702 ⁰⁰	.110	B
	32.5 ⁰		11T3 ⁰⁰	.173	B
	43 ⁰		1504 ⁰⁰	.217	B
DEGX	43 ⁰	DEGX	1504 ⁰⁰	.201	C
RCMX	1003M0	RCMX	1003M0	.142	D
	1204M0		1204M0	.165	D
	1606M0		1606M0	.205	D
	2006M0		2006M0	.256	D
	2507M0		2507M0	.283	D
	3209M0		3209M0	.374	D

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TURNING INSERTS

HOLE GEOMETRY

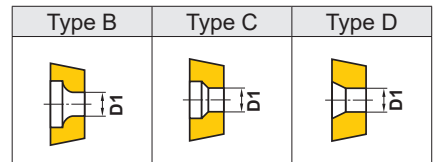


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POSITIVE

TURNING INSERTS

Insert Number		(ISO) Number		Dimension (inch)	Hole Type
				D1	
RCMX	1606M0-	RCMX	1606M0-	.205	D
	2006M0-		2006M0-	.256	D
	2507M0-		2507M0-	.283	D
	3209M0-		3209M0-	.374	D
RCGT RCMT	0602M0	RCGT RCMT	0602M0	.110	B
	0803M0		0803M0	.134	B
	10T3M0		10T3M0	.173	B
SCMT SCMW	32.5	SCMT SCMW	09T3	.173	B
	43		1204	.217	B
SPGX	32	SPGX	0903	.189	C
	42		1203	.232	C
SPMT	32	SPMT	0903	.173	B
	42		1203	.217	B
SPMW	32	SPMW	0903	.181	B
	42		1203	.224	B
TCGT	1.21	TCGT	0601	.091	B
	21.5		1102	.110	B
	32.5		16T3	.173	B
TCMT	1.51.5	TCMT	0802	.091	B
	1.81.5		0902	.098	B
	21.5		1102	.110	B
	2.52		1303	.134	B
	32.5		16T3	.173	B
TCMW	21.5	TCMW	1102	.110	B
	2.52		1303	.134	B
	32.5		16T3	.173	B
TEGX	32	TEGX	1603	.169	D
TPGH	1.51.5	TPGH	0802	.094	D
	1.81.5		0902	.114	D
	22		1103	.134	D
	32		1603	.173	D
TPGX	1.51.5	TPGX	0802	.098	C
	1.81.5		0902	.118	C
	22		1103	.138	C
	32		1603	.189	D



POSITIVE

Insert Number		(ISO) Number		Dimension (inch)	Hole Type
				D1	
TPMH	1.51.5	TPMH	0802	.098	D
	1.81.5		0902	.114	D
	22		1103	.134	D
	32		1603	.173	B
TPMT	1.81.5	TPMT	0902	.098	B
	21.5		1102	.110	B
	32.5		16T3	.173	B
TPMX	1.81.5L	TPMX	0902L	.126	C
	22L		1103L	.146	C
	22		1103	.138	C
VBET	22	VBET	1103	.115	B
VBGT	22	VBGT	1103	.115	B
	33		1604	.178	B
VBMT	22	VBMT	1103	.115	B
	33		1604	.173	B
VCGT	1.51.5	VCGT	0802	.097	B
	22		1103	.115	B
	2.520		1303	.134	B
	33		1604	.173	B
VCMT	1.51.5	VCMT	0802	.097	B
	22		1103	.110	B
	33		1604	.173	B
VCMW	22	VCMW	1103	.110	B
	33		1604	.173	B
VDGX	32	VDGX	1603	.177	D
WBGT	1.21	WBGT	0201	.091	B
	1.51.5		L302	.091	B
WCGT	1.21	WCGT	0201	.091	B
	1.51.5		L302	.091	B
	21.5		0402	.110	B
	32.5		06T3	.173	B
WCMT	1.21	WCMT	0201	.091	B
	1.51.5		L302	.091	B
	21.5		0402	.110	B
	32.5		06T3	.173	B
WPGT WPMT	21.5	WPGT WPMT	0402	.110	B
	32		0603	.173	B
XCMT	22	XCMT	1503	.110	B

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TURNING INSERTS

PRECISION BREAKER STANDARD

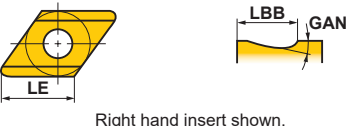
STANDARD FOR LEFT AND RIGHT HAND INSERTS

● NEGATIVE INSERTS

Unit : inch

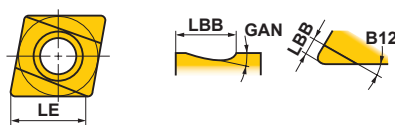
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TURNING INSERTS

Geometry	Insert Number	(ISO) Number	LBB	LE	GAN	B12
 Right hand insert shown.	DNGG431R/L	DNGG150404R/L	.110	.587	15°	—
	DNGG432R/L	DNGG150408R/L	.110	.563	15°	—
	DNGG441R/L	DNGG150604R/L	.110	.587	15°	—
	DNGG442R/L	DNGG150608R/L	.110	.563	15°	—
 Right hand insert shown.	SNGG321R/L	SNGG090304R/L	.071	.063	15°	—
	SNGG322R/L	SNGG090308R/L	.071	.063	15°	—
	SNGG431R/L	SNGG120404R/L	.091	.146	15°	—
	SNGG432R/L	SNGG120408R/L	.091	.146	15°	—
 Right hand insert shown.	TNGG220.5R/L	TNGG110302R/L	.051	.126	15°	—
	TNGG221R/L	TNGG110304R/L	.051	.118	15°	—
	TNGG222R/L	TNGG110308R/L	.051	.106	15°	—
	TNGG321R/L	TNGG160304R/L	.091	.213	15°	—
	TNGG330.5R/L	TNGG160402R/L	.051	.343	15°	—
	TNGG331R/L	TNGG160404R/L	.091	.213	15°	—
	TNGG332R/L	TNGG160408R/L	.091	.201	15°	—
	TNGG431R/L	TNGG220404R/L	.110	.370	15°	—
	TNGG432R/L	TNGG220408R/L	.110	.358	15°	—

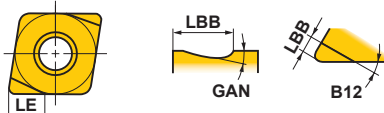
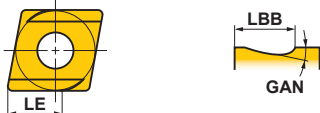
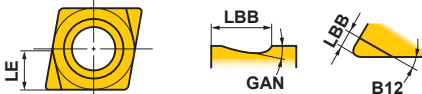
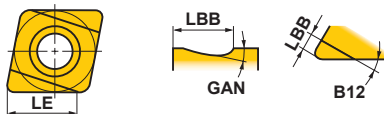
● POSITIVE INSERTS

Unit : inch

Geometry	Insert Number	(ISO) Number	LBB	LE	GAN	B12
 Right hand insert shown.	CCET21.5V3R/LSR	CCET0602V3R/L-SR	.087	.252	30°	20°
	CCET21.50.2R/LSR	CCET060201R/L-SR	.087	.248	30°	20°
	CCET21.50.5R/LSR	CCET060202R/L-SR	.087	.244	30°	20°
	CCET21.51R/LSR	CCET060204R/L-SR	.087	.236	30°	20°
	CCET32.5V3R/LSR	CCET09T3V3R/L-SR	.126	.378	30°	20°
	CCET32.50.2R/LSR	CCET09T301R/L-SR	.126	.374	30°	20°
	CCET32.50.5R/LSR	CCET09T302R/L-SR	.126	.370	30°	20°
	CCET32.51R/LSR	CCET09T304R/L-SR	.126	.362	30°	20°
 Right hand insert shown.	CCET21.5V0R/LSN	CCET060200R/L-SN	.039	.252	20°	—
	CCET21.5V3R/LSN	CCET0602V3R/L-SN	.039	.252	20°	—
	CCET21.50.2R/LSN	CCET060201R/L-SN	.039	.248	20°	—
	CCET21.50.5R/LSN	CCET060202R/L-SN	.039	.244	20°	—
	CCET21.51R/LSN	CCET060204R/L-SN	.039	.236	20°	—
	CCET32.5V0R/LSN	CCET09T300R/L-SN	.059	.378	20°	—
	CCET32.5V3R/LSN	CCET09T3V3R/L-SN	.059	.378	20°	—
	CCET32.50.2R/LSN	CCET09T301R/L-SN	.059	.374	20°	—
	CCET32.50.5R/LSN	CCET09T302R/L-SN	.059	.370	20°	—
	CCET32.51R/LSN	CCET09T304R/L-SN	.059	.362	20°	—

● POSITIVE INSERTS

Unit : inch

Geometry	Insert Number	(ISO) Number	LBB	LE	GAN	B12
 Right hand insert shown.	CCET21.5V3R/LWSN	CCET0602V3R/LW-SN	.039	.252	20°	—
	CCET32.5V3R/LWSN	CCET09T3V3R/LW-SN	.059	.378	20°	—
 Right hand insert shown.	CCGH21.50.5(M)R/LF	CCGH060202(M)R/L-F	.047	.142	15°	20°
	CCGH21.51(M)R/LF	CCGH060204(M)R/L-F	.055	.173	15°	20°
 Right hand insert shown.	CCGT21.5V3RSN	CCGT0602V3R-SN	.039	.118	20°	—
	CCGT21.50.2(M)R/LSN	CCGT060201(M)R/L-SN	.039	.118	20°	—
	CCGT21.50.5(M)R/LSN	CCGT060202(M)R/L-SN	.039	.118	20°	—
	CCGT32.5V3R/LSN	CCGT09T3V3R/L-SN	.059	.197	20°	—
	CCGT32.50.2(M)R/LSN	CCGT09T301(M)R/L-SN	.059	.197	20°	—
	CCGT32.50.5(M)R/LSN	CCGT09T302(M)R/L-SN	.059	.197	20°	—
	CCGT32.51(M)R/LSN	CCGT09T304(M)R/L-SN	.059	.197	20°	—
 Left hand insert only.	CCGT03S1V3L-F	CCGT03S1V3L-F	.031	.055	17°	35°
	CCGT03S101(M)R/L-F	CCGT03S101(M)R/L-F	.031	.055	17°	35°
	CCGT03S102(M)R/L-F	CCGT03S102(M)R/L-F	.031	.059	17°	35°
	CCGT03S104(M)R/L-F	CCGT03S104(M)R/L-F	.031	.063	17°	35°
	CCGT04T0V3L-F	CCGT04T0V3L-F	.039	.067	17°	35°
	CCGT04T001(M)R/L-F	CCGT04T001(M)R/L-F	.039	.071	17°	35°
	CCGT04T002(M)R/L-F	CCGT04T002(M)R/L-F	.039	.071	17°	35°
	CCGT04T004(M)R/L-F	CCGT04T004(M)R/L-F	.039	.079	17°	35°
 Right hand insert shown.	CCGT21.5V3R/LSS	CCGT0602V3R/L-SS	.039	.118	14°	—
	CCGT21.50.2(M)R/LSS	CCGT060201(M)R/L-SS	.039	.118	14°	—
	CCGT21.50.5(M)R/LSS	CCGT060202(M)R/L-SS	.039	.118	14°	—
	CCGT32.5V3R/LSS	CCGT09T3V3R/L-SS	.039	.197	14°	—
	CCGT32.50.2(M)R/LSS	CCGT09T301(M)R/L-SS	.039	.197	14°	—
	CCGT32.50.5(M)R/LSS	CCGT09T302(M)R/L-SS	.039	.197	14°	—
	CCGT32.51MR/L-SS	CCGT09T304MR/L-SS	.039	.197	14°	—
 Right hand insert shown.	CPGT2.51.51R/LF	CPGT080204R/L-F	.071	.217	15°	20°
	CPGT320.5R/LF	CPGT090302R/L-F	.071	.213	15°	20°
	CPGT321R/LF	CPGT090304R/L-F	.071	.217	15°	20°

A

TURNING INSERTS

PRECISION BREAKER STANDARD

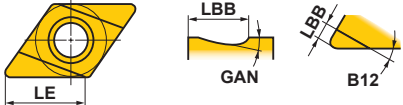
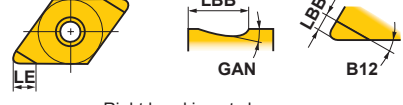
STANDARD FOR LEFT AND RIGHT HAND INSERTS

● POSITIVE INSERTS

Unit : inch

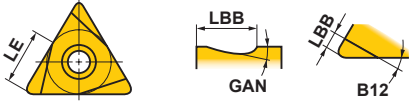
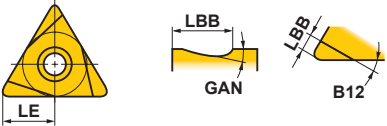
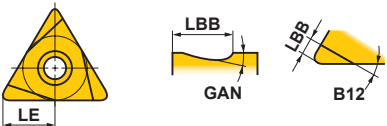
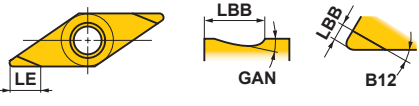
A

TURNING INSERTS

Geometry	Insert Number	(ISO) Number	LBB	LE	GAN	B12
 Right hand insert shown.	DCET21.5V3R/LSR	DCET0702V3R/L-SR	.098	.303	30°	20°
	DCET21.50.2R/LSR	DCET070201R/L-SR	.098	.299	30°	20°
	DCET21.50.5R/LSR	DCET070202R/L-SR	.098	.291	30°	20°
	DCET21.51R/LSR	DCET070204R/L-SR	.098	.280	30°	20°
	DCET32.5V3R/LSR	DCET11T3V3R/L-SR	.146	.457	30°	20°
	DCET32.50.2R/LSR	DCET11T301R/L-SR	.146	.449	30°	20°
	DCET32.50.5R/LSR	DCET11T302R/L-SR	.146	.445	30°	20°
	DCET32.51R/LSR	DCET11T304R/L-SR	.146	.433	30°	20°
 Right hand insert shown.	DCET21.5V0R/LSN	DCET070200R/L-SN	.039	.303	20°	—
	DCET21.5V3R/LSN	DCET0702V3R/L-SN	.039	.303	20°	—
	DCET21.50.2R/LSN	DCET070201R/L-SN	.039	.299	20°	—
	DCET21.50.5R/LSN	DCET070202R/L-SN	.039	.291	20°	—
	DCET21.51R/LSN	DCET070204R/L-SN	.039	.280	20°	—
	DCET32.5V0R/LSN	DCET11T300R/L-SN	.059	.457	20°	—
	DCET32.5V3R/LSN	DCET11T3V3R/L-SN	.059	.457	20°	—
	DCET32.50.2R/LSN	DCET11T301R/L-SN	.059	.449	20°	—
 Right hand insert shown.	DCET21.5V3R/LWSN	DCET0702V3R/LW-SN	.039	.303	20°	—
	DCET32.5V3R/LWSN	DCET11T3V3R/LW-SN	.059	.457	20°	—
 Right hand insert shown.	DCGT21.5V3RSN	DCGT0702V3R-SN	.039	.138	20°	—
	DCGT21.50.2(M)R/LSN	DCGT070201(M)R/L-SN	.039	.138	20°	—
	DCGT21.50.5(M)R/LSN	DCGT070202(M)R/L-SN	.039	.138	20°	—
	DCGT32.5V3R/LSN	DCGT11T3V3R/L-SN	.059	.256	20°	—
	DCGT32.50.2(M)R/LSN	DCGT11T301(M)R/L-SN	.059	.256	20°	—
	DCGT32.50.5(M)R/LSN	DCGT11T302(M)R/L-SN	.059	.256	20°	—
	DCGT32.51(M)R/LSN	DCGT11T304(M)R/L-SN	.059	.256	20°	—
 Right hand insert shown.	DCGT21.50.5R/LF	DCGT070202R/L-F	.039	.118	17°	20°
	DCGT21.51R/LF	DCGT070204R/L-F	.039	.126	17°	20°
	DCGT32.50.5R/LF	DCGT11T302R/L-F	.039	.118	14°	20°
	DCGT32.51R/LF	DCGT11T304R/L-F	.039	.126	14°	20°
 Right hand insert shown.	DCGT21.5V3R/LSS	DCGT0702V3R/L-SS	.039	.138	14°	—
	DCGT21.50.2R/LSS	DCGT070201R/L-SS	.039	.138	14°	—
	DCGT21.50.5(M)R/LSS	DCGT070202(M)R/L-SS	.039	.138	14°	—
	DCGT32.5V3RSS	DCGT11T3V3R-SS	.039	.256	14°	—
	DCGT32.50.2(M)R/LSS	DCGT11T301(M)R/L-SS	.039	.256	14°	—
	DCGT32.50.5(M)R/LSS	DCGT11T302(M)R/L-SS	.039	.256	14°	—
	DCGT32.51MR/LSS	DCGT11T304MR/L-SS	.039	.256	14°	—

● POSITIVE INSERTS

Unit : inch

Geometry	Insert Number	(ISO) Number	LBB	LE	GAN	B12
 Right hand insert shown.	DEGX430.5R/L	DEGX150402R/L	.110	.598	20°	—
	DEGX431R/L	DEGX150404R/L	.110	.587	20°	—
	DEGX432R/L	DEGX150408R/L	.110	.576	20°	—
 Left hand insert only.	TCGT1.21V3LF	TCGT0601V3L-F	.039	.114	14°	20°
	TCGT1.210.2LF	TCGT060101L-F	.039	.118	14°	20°
	TCGT1.210.5R/LF	TCGT060102R/L-F	.039	.118	14°	20°
	TCGT1.211R/LF	TCGT060104R/L-F	.039	.126	14°	20°
 Right hand insert shown.	TEGX320.5R/L	TEGX160302R/L	.079	.236	20°	—
	TEGX321R/L	TEGX160304R/L	.079	.236	20°	—
 Right hand insert shown.	TPGH1.51.50.5R/LFS	TPGH080202R/L-FS	.035	.106	15°	20°
	TPGH1.51.51R/LFS	TPGH080204R/L-FS	.035	.114	15°	20°
	TPGH1.81.50.5R/LFS	TPGH090202R/L-FS	.039	.118	15°	20°
	TPGH1.81.51R/LFS	TPGH090204R/L-FS	.039	.126	15°	20°
	TPGH220.5R/LFS	TPGH110302R/L-FS	.055	.165	15°	20°
	TPGH221R/LFS	TPGH110304R/L-FS	.055	.173	15°	20°
	TPGH321R/LFS	TPGH160304R/L-FS	.079	.240	14°	20°
	TPGH322R/LFS	TPGH160308R/L-FS	.079	.256	14°	20°
 Right hand insert shown.	TPGX1.51.50.5R/L	TPGX080202R/L	.051	.154	10°	20°
	TPGX1.51.51R/L	TPGX080204R/L	.051	.161	10°	20°
	TPGX1.81.50.5R/L	TPGX090202R/L	.063	.189	10°	20°
	TPGX1.81.51R/L	TPGX090204R/L	.063	.197	10°	20°
	TPGX1.81.52R/L	TPGX090208R/L	.055	.185	10°	20°
	TPGX220.5L	TPGX110302L	.071	.213	10°	20°
	TPGX221R/L	TPGX110304R/L	.071	.217	10°	20°
	TPGX222R/L	TPGX110308R/L	.071	.232	10°	20°
 Right hand insert shown.	VCGT1.51.50.5R/LF	VCGT080202R/L-F	.031	.098	13°	20°
	VCGT1.51.51R/LF	VCGT080204R/L-F	.031	.102	13°	20°

A

TURNING INSERTS

PRECISION BREAKER STANDARD

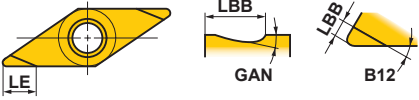
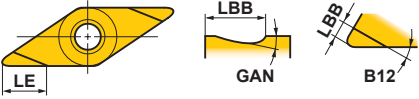
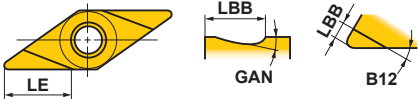
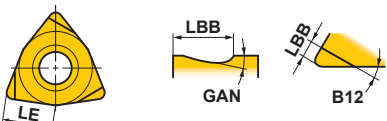
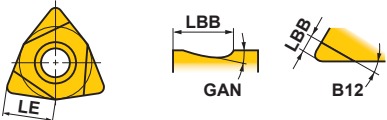
STANDARD FOR LEFT AND RIGHT HAND INSERTS

● POSITIVE INSERTS

Unit : inch

A

TURNING INSERTS

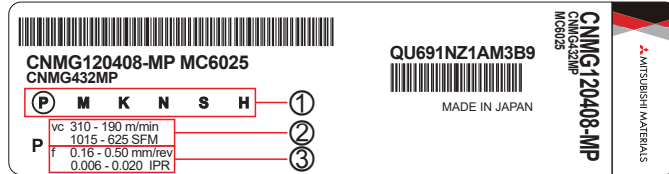
Geometry	Insert Number	(ISO) Number	LBB	LE	GAN	B12
 Right hand insert shown.	VDGX320.5R/L	VDGX160302R/L	.079	.236	25°	20°
	VDGX321R/L	VDGX160304R/L	.079	.240	25°	20°
 Right hand insert shown.	VBGT220.5R/LF	VBGT110302R/L-F	.039	.118	13°	20°
	VBGT221R/LF	VBGT110304R/L-F	.039	.126	13°	20°
	VBGT330.5R/LF	VBGT160402R/L-F	.059	.177	13°	20°
	VBGT331R/LF	VBGT160404R/L-F	.059	.185	13°	20°
 Right hand insert shown.	VBET22V3R/LSR	VBET1103V3R/L-SR	.098	.287	30°	20°
	VBET220.2R/LSR	VBET110301R/L-SR	.098	.287	30°	20°
	VBET220.5R/LSR	VBET110302R/L-SR	.098	.291	30°	20°
	VBET221R/LSR	VBET110304R/L-SR	.098	.299	30°	20°
 Right hand insert shown.	VBET22V0R/LSN	VBET110300R/L-SN	.039	.433	20°	—
	VBET22V3R/LSN	VBET1103V3R/L-SN	.039	.433	20°	—
	VBET220.2R/LSN	VBET110301R/L-SN	.039	.425	20°	—
	VBET220.5R/LSN	VBET110302R/L-SN	.039	.413	20°	—
	VBET221R/LSN	VBET110304R/L-SN	.039	.433	20°	—
 Right hand insert shown.	VBET22V3R/LWSN	VBET1103V3R/LW-SN	.039	.433	20°	—
 Left hand insert shown.	WBG1.21V3LF	WBG1.21V3L-F	.039	.079	13°	30°
	WBG1.210.2LF	WBG1.210.2L-F	.039	.079	13°	30°
	WBG1.210.5LF	WBG1.210.5L-F	.039	.083	13°	30°
	WBG1.211LF	WBG1.211L-F	.039	.087	13°	30°
	WBG1.51.5V3LF	WBG1.51.5V3L-F	.039	.079	13°	30°
	WBG1.51.50.2LF	WBG1.51.50.2L-F	.039	.079	13°	30°
	WBG1.51.50.5R/LF	WBG1.51.50.5R/L-F	.039	.083	13°	30°
	WBG1.51.51R/LF	WBG1.51.51R/L-F	.039	.087	13°	30°
 Right hand insert shown.	WCG1.210.5R/L	WCG1.210.5R/L	.039	.083	15°	30°
	WCG1.211R/L	WCG1.211R/L	.039	.087	15°	30°
	WCG1.51.50.5L	WCG1.51.50.5L	.039	.083	15°	30°
	WCG1.51.51L	WCG1.51.51L	.039	.087	15°	30°

TOOL NAVI

OUTLINE

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

LABEL INDICATION



- *1. The above is an example. There may be inserts recommended for multiple work materials.
- *2. Please contact us for recommended cutting conditions using coefficient values other than the above.

Cutting speed standards

Work Material	Tool Life		Work Material	Hardness
	Life	Performance		
P	90min.	15min.	Carbon steel, alloy steel	180HB
M	90min.	15min.	Stainless steel	180HB
K	90min.	15min.	Cast iron	180HB
S	25min.	5min.	Titanium alloy	320HB
			Ni, Co-based alloy	400HB
H	80min.	10min.	Hardened steel	60HRC

- *3. N : Life based on each grade. For stable conditions choose the performance cutting speed and for unstable choose the tool life feed rate.
- *4. The tool life is based on the following (VB wear). Some materials include elements other than this.

PMKS ••• VB=0.3 mm
H ••• VB=0.1 mm

TOOL LIFE

Cutting speed has a large affect on tool life. **TOOL NAVI** is based on Taylor's equation (relationship $vc \times T_n = C$ between tool grade, cutting conditions, and tool life). Therefore, performance speed and tool life is found for each work material. When the customer requires 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 the 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
MC6015	1.00	0.82	0.72	0.67	0.59
MC6025	1.00	0.83	0.75	0.69	0.62
MC6035	1.00	0.88	0.82	0.78	0.73
MP3025	1.00	0.85	0.77	0.72	0.65
NX2525	1.00	0.87	0.80	0.76	0.70

M Grade (Stainless Steel) cutting speed coefficient values.

Grade \ Tool life	15min	30min	45min	60min	90min
MC7015	1.00	0.83	0.75	0.70	0.63
MC7025	1.00	0.90	0.84	0.80	0.75
MP7035	1.00	0.84	0.76	0.71	0.62
US735	1.00	0.78	0.68	0.61	0.53

HARDNESS OF WORKPIECE

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

Work Material	(Hardness of work material)											
	120HB	140HB	160HB	180HB	200HB	220HB	240HB	260HB	280HB	300HB	320HB	340HB
P	1.34	1.19	1.08	1.00	0.92	0.85	0.80	0.75	0.71	0.68	0.64	0.61
M	1.41	1.23	1.10	1.00	0.91	0.85	0.78	0.72	0.68	0.64	0.61	0.58
K	1.27	1.19	1.09	1.00	0.97	0.91	0.88	0.85	0.81	0.78	0.75	0.72

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)
- N** : Aluminum alloy, Non-ferrous metal
- S** : Material reference : Titanium alloy 320HB, Ni, Co-based alloy 400HB
- H** : Hardened steel 60HRC

Feed rate

Minimum and maximum feed rate settings are based on the chip control range of the chip breaker.

A

TURNING INSERTS

K Grade (Cast Iron) cutting speed coefficient values.

Grade \ Tool life	15min	30min	45min	60min	90min
MC5005	1.00	0.83	0.75	0.70	0.63
MC5015	1.00	0.83	0.75	0.69	0.62

(ex.) Medium cutting of steel
The 1st recommendation : MC6025
Indexable inserts : CNMG432MA
Recommended cutting speed : $vc = 1015 \text{ SFM}$
(Tool life : 15min.)



Tool life required by the customer : 30min.
 $1015 \times 0.83 \approx 840 \text{ SFM}$

OPTIMUM GRADES AND CHIP BREAKERS FOR EXTERNAL TURNING

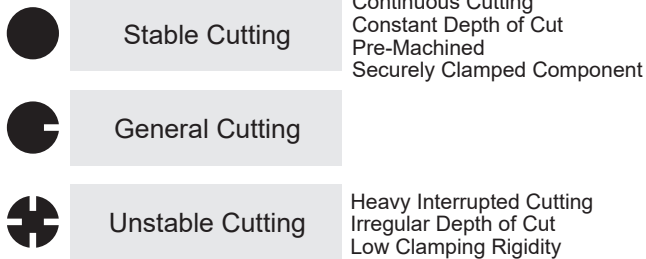
● Selection of optimum inserts for turning

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

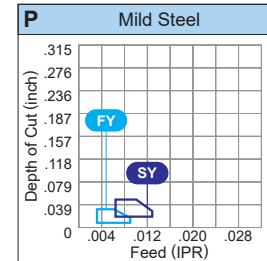
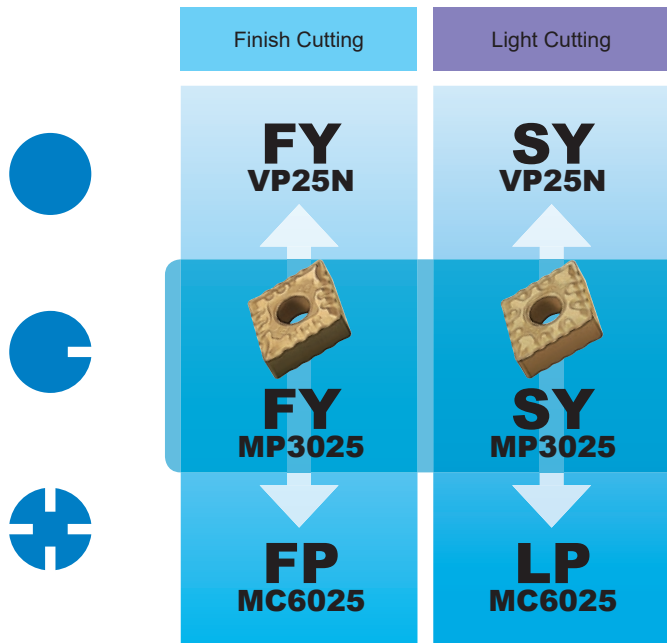
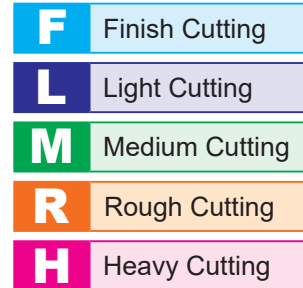
TURNING INSERTS

A

■ CUTTING CONDITIONS



■ CUTTING AREA

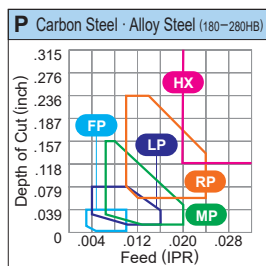


P Mild Steel (EX. : ASTM A283, AISI 1010)

NEGATIVE INSERTS

vc : Cutting speed
f : Feed
ap : Depth of cut.

	Cutting Area	Chip Breaker	Grade	1st Recommendation		
				vc (SFM)	f (IPR)	ap (inch)
● Stable Cutting	F	FY	VP25N	935—1460	.004—.010	.008—.032
	L	SY	VP25N	850—1330	.007—.013	.020—.048
● General Cutting	F	FY	MP3025	900—1380	.004—.010	.008—.032
	L	SY	MP3025	820—1260	.007—.013	.020—.048
● Unstable Cutting	F	FP	MC6025	1030—1670	.003—.010	.004—.040
	L	LP	MC6025	935—1530	.004—.016	.012—.079



- Stable Cutting
- General Cutting
- Unstable Cutting

- F** Finish Cutting
- L** Light Cutting
- M** Medium Cutting
- R** Rough Cutting
- H** Heavy Cutting

A

TURNING INSERTS

	Finish Cutting	Light Cutting	Medium Cutting	Rough Cutting	Heavy Cutting
	FP NX2525	LP MC6015	MP MC6015	RP MC6015	HX MC6025
	FP MP3025	LP MC6015	MP MC6015	RP MC6015	HX MC6025
	FP MC6025	LP MC6025	MP MC6025	RP MC6025	HX MC6035

P Carbon Steel · Alloy Steel (EX. : AISI 1045, AISI 4140)
NEGATIVE INSERTS

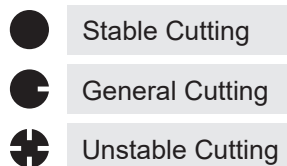
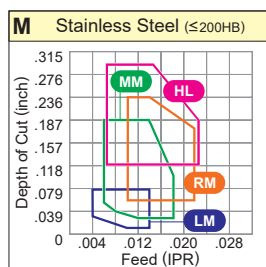
vc : Cutting speed
f : Feed
ap : Depth of cut.

	Cutting Area	Chip Breaker	Grade	1st Recommendation		
				vc (SFM)	f (IPR)	ap (inch)
	F	FP	NX2525	690—985	.004—.010	.004—.040
	L	LP	MC6015	690—1180	.004—.016	.012—.079
	M	MP	MC6015	640—1080	.007—.020	.012—.158
	R	RP	MC6015	605—1015	.010—.024	.060—.237
	H	HX	MC6025	540—870	.020—.050	.119—.434
	F	FP	MP3025	705—1080	.004—.010	.004—.040
	L	LP	MC6015	690—1180	.004—.016	.012—.079
	M	MP	MC6015	640—1080	.007—.020	.012—.158
	R	RP	MC6015	605—1015	.010—.024	.060—.237
	H	HX	MC6025	540—870	.020—.050	.119—.434
	F	FP	MC6025	755—1230	.004—.010	.004—.040
	L	LP	MC6025	690—1130	.004—.016	.012—.079
	M	MP	MC6025	640—1030	.007—.020	.012—.158
	R	RP	MC6025	605—970	.010—.024	.060—.237
	H	HX	MC6035	460—655	.020—.050	.119—.434

OPTIMUM GRADES AND CHIP BREAKERS FOR EXTERNAL TURNING

A

TURNING INSERTS

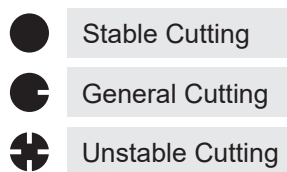
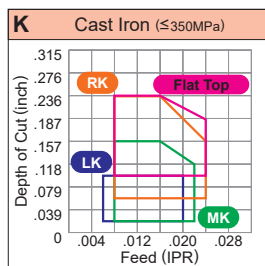


M Stainless Steel (EX. : AISI 304, AISI 306)

NEGATIVE INSERTS

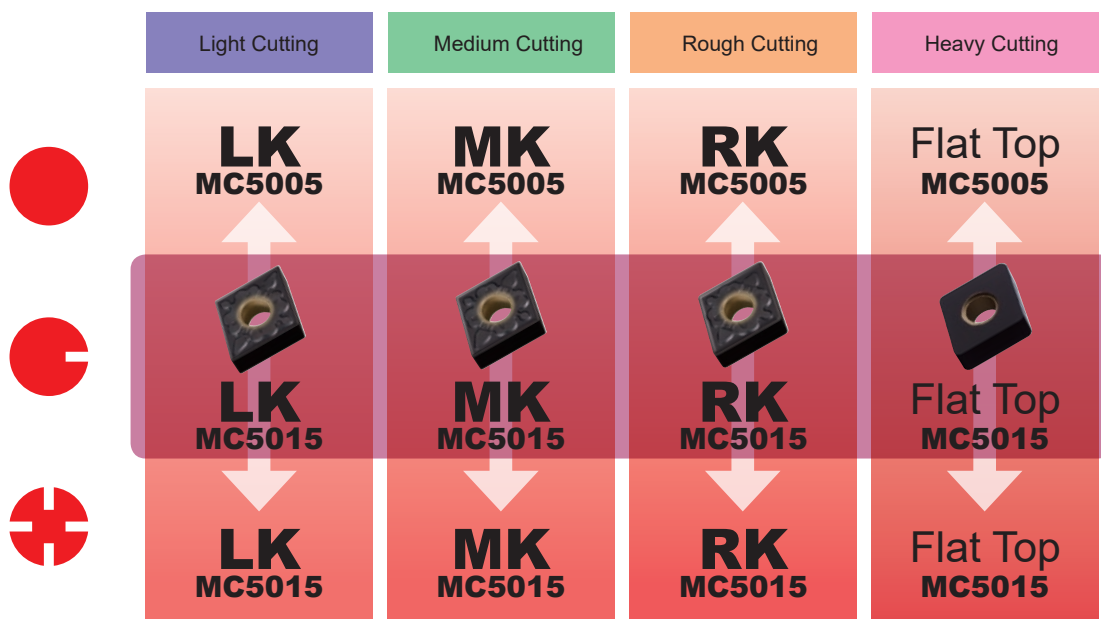
vc : Cutting speed
f : Feed
ap : Depth of cut.

	Cutting Area	Chip Breaker	Grade	1st Recommendation		
				vc (SFM)	f (IPR)	ap (inch)
Stable Cutting	L	LM	MC7015	590—935	.004—.012	.012—.079
	M	MM	MC7015	525—835	.006—.018	.028—.197
	R	RM	MC7015	510—805	.010—.022	.060—.237
	H	HL	US735	245—460	.016—.040	.059—.315
General Cutting	L	LM	MC7025	540—720	.004—.012	.012—.079
	M	MM	MC7025	490—655	.006—.018	.028—.197
	R	RM	MC7025	460—625	.010—.022	.060—.237
	H	HL	US735	245—460	.016—.040	.059—.315
Unstable Cutting	L	LM	MP7035	310—510	.004—.012	.012—.079
	M	MM	MP7035	295—475	.006—.018	.028—.197
	R	RM	MP7035	280—440	.010—.022	.060—.237
	H	HL	US735	245—460	.016—.040	.059—.315



A

TURNING INSERTS



K Cast Iron • Ductile Cast Iron (EX. : AISI No 45 B)

NEGATIVE INSERTS

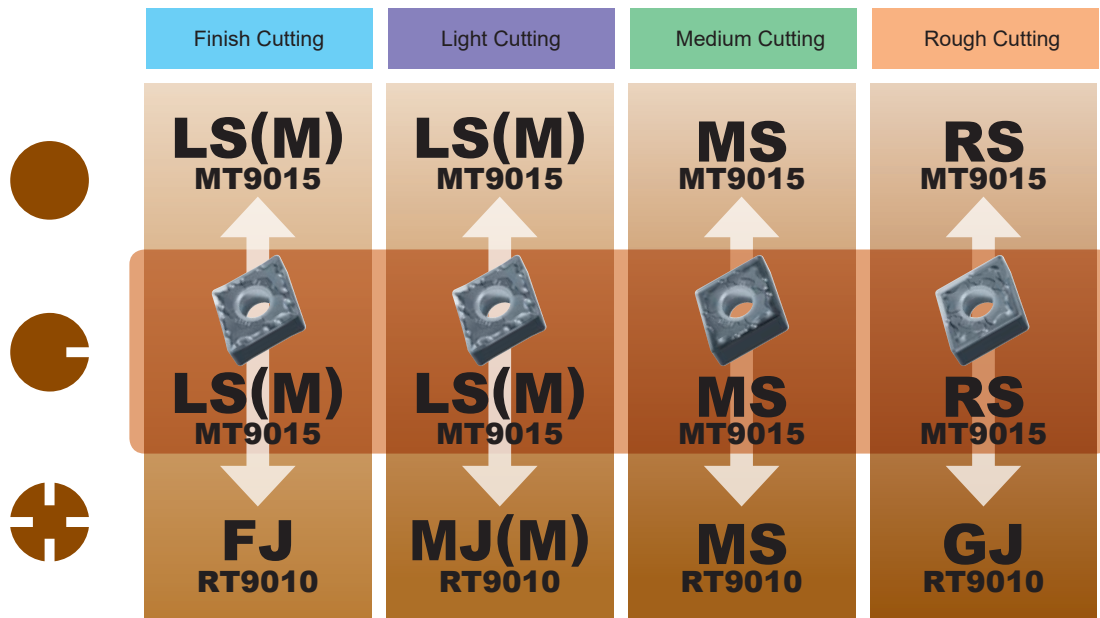
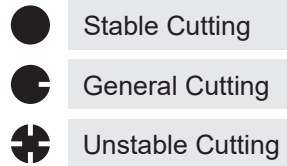
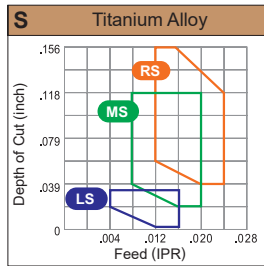
vc : Cutting speed
f : Feed
ap : Depth of cut.

	Cutting Area	Chip Breaker	Grade	1st Recommendation		
				vc (SFM)	f (IPR)	ap (inch)
Stable Cutting	L	LK	MC5005	755—1200	.004—.016	.012—.079
	M	MK	MC5005	690—1100	.008—.022	.036—.158
	R	RK	MC5005	640—1030	.010—.024	.060—.237
	H	Flat Top	MC5005	640—1030	.008—.024	.099—.237
General Cutting	L	LK	MC5015	670—1100	.004—.016	.012—.079
	M	MK	MC5015	620—1000	.008—.022	.036—.158
	R	RK	MC5015	590—935	.010—.024	.060—.237
	H	Flat Top	MC5015	590—935	.008—.024	.099—.237
Unstable Cutting	L	LK	MC5015	670—1100	.004—.016	.012—.079
	M	MK	MC5015	620—1000	.008—.022	.036—.158
	R	RK	MC5015	590—935	.010—.024	.060—.237
	H	Flat Top	MC5015	590—935	.008—.024	.099—.237

OPTIMUM GRADES AND CHIP BREAKERS FOR EXTERNAL TURNING

TURNING INSERTS

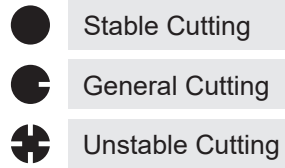
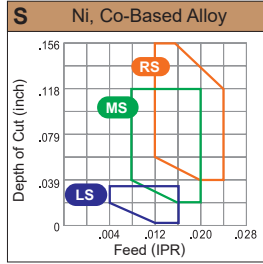
A



S Titanium Alloy (EX. : Ti-6Al-4V)
NEGATIVE INSERTS

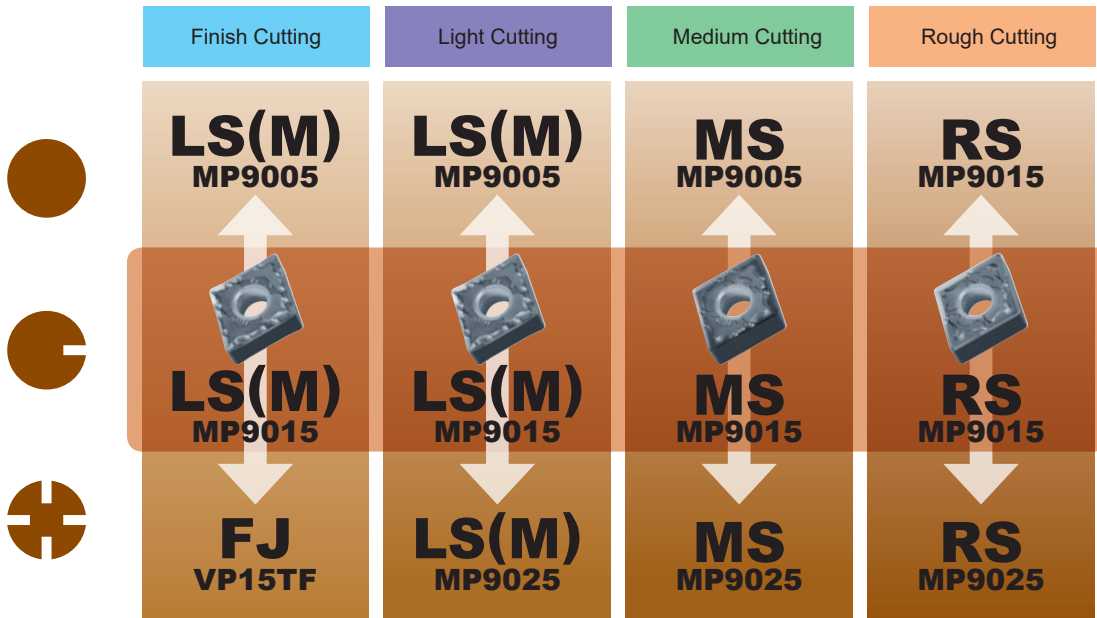
vc : Cutting speed
f : Feed
ap : Depth of cut.

	Cutting Area	Chip Breaker	Grade	1st Recommendation		
				vc (SFM)	f (IPR)	ap (inch)
Stable Cutting	F	LS(M)	MT9015	130—280	.004—.010	.004—.040
	L	LS(M)	MT9015	130—280	.004—.010	.008—.030
	M	MS	MT9015	130—260	.004—.010	.020—.158
	R	RS	MT9015	115—245	.008—.013	.036—.158
General Cutting	F	LS(M)	MT9015	130—280	.004—.010	.004—.040
	L	LS(M)	MT9015	130—280	.004—.010	.008—.030
	M	MS	MT9015	130—260	.004—.010	.020—.158
	R	RS	MT9015	115—245	.008—.013	.036—.158
Unstable Cutting	F	FJ	RT9010	150—310	.003—.008	.004—.040
	L	MJ(M)	RT9010	130—280	.003—.010	.016—.060
	M	MS	RT9010	130—260	.004—.010	.020—.158
	R	GJ	RT9010	115—245	.007—.014	.040—.119



A

TURNING INSERTS



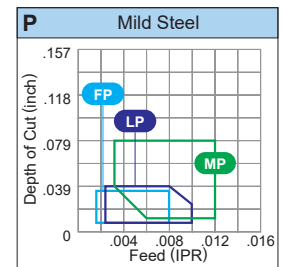
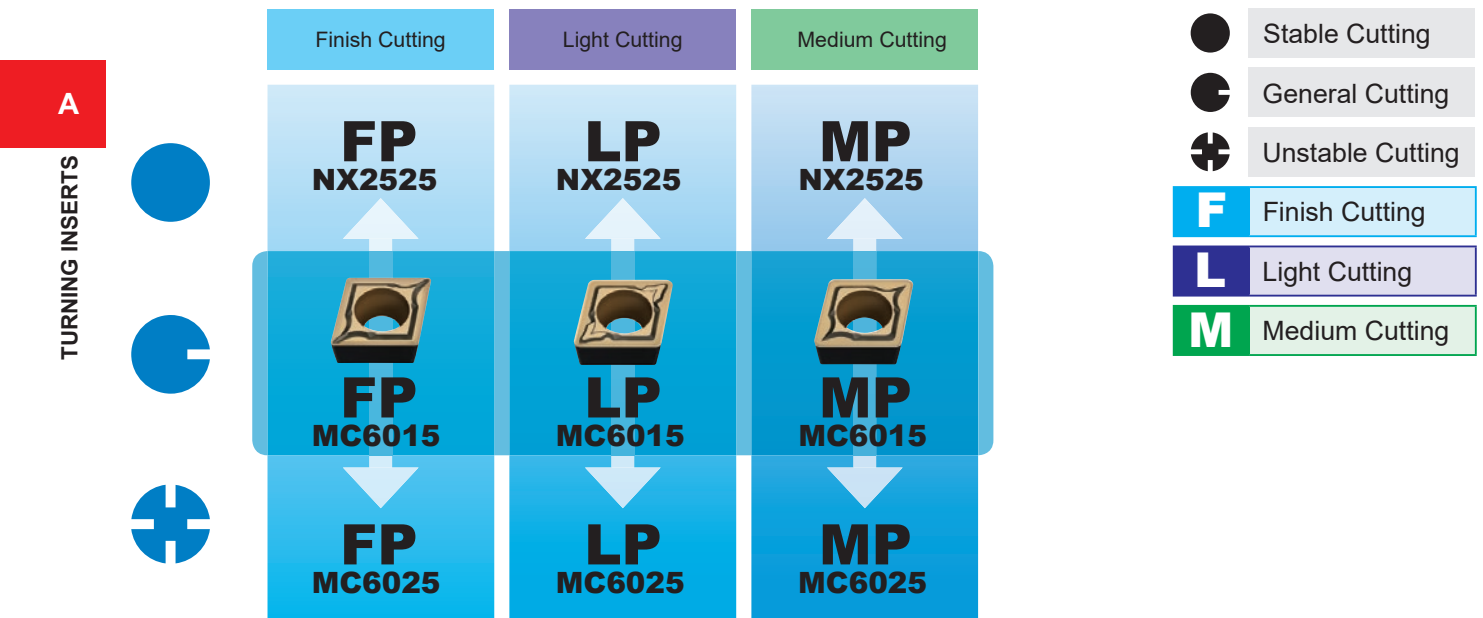
S Ni, Co-Based Alloy (EX. : Inconel718)

NEGATIVE INSERTS

vc : Cutting speed
f : Feed
ap : Depth of cut.

	Cutting Area	Chip Breaker	Grade	1st Recommendation		
				vc (SFM)	f (IPR)	ap (inch)
Stable Cutting	F	LS(M)	MP9005	100—360	.004—.010	.008—.030
	L	LS(M)	MP9005	100—360	.004—.010	.008—.030
	M	MS	MP9005	100—330	.004—.010	.020—.158
	R	RS	MP9015	65—245	.008—.014	.040—.158
General Cutting	F	LS(M)	MP9015	80—280	.004—.010	.008—.030
	L	LS(M)	MP9015	80—280	.004—.010	.008—.030
	M	MS	MP9015	80—260	.004—.010	.020—.158
	R	RS	MP9015	65—245	.008—.014	.040—.158
Unstable Cutting	F	FJ	VP15TF	65—130	.003—.008	.004—.040
	L	LS(M)	MP9025	65—100	.004—.010	.008—.030
	M	MS	MP9025	65—100	.004—.010	.020—.158
	R	RS	MP9025	50—80	.008—.014	.040—.158

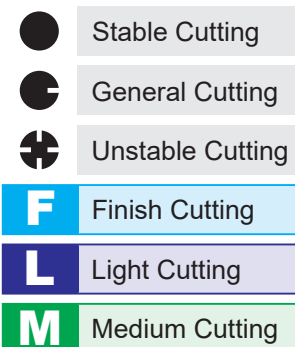
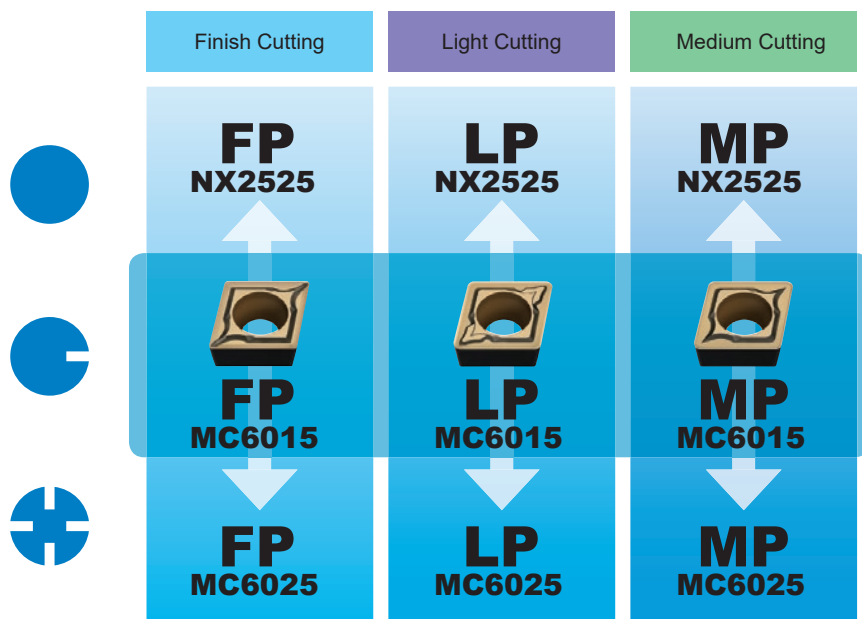
OPTIMUM GRADES AND CHIP BREAKERS FOR EXTERNAL TURNING



P Mild Steel (EX. : ASTM A283, AISI 1010)
7° POSITIVE INSERTS WITH HOLE

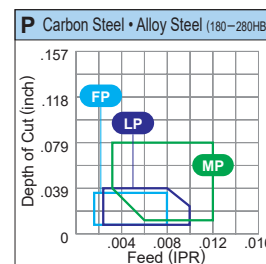
vc : Cutting speed
f : Feed
ap : Depth of cut.

	Cutting Area	Chip Breaker	Grade	1st Recommendation		
				vc (SFM)	f (IPR)	ap (inch)
Stable Cutting	F	FP	NX2525	740—1050	.002—.008	.008—.036
	L	LP	NX2525	740—1050	.003—.010	.008—.040
	M	MP	NX2525	605—885	.004—.012	.012—.079
General Cutting	F	FP	MC6015	920—1395	.002—.008	.008—.036
	L	LP	MC6015	920—1395	.003—.010	.008—.040
	M	MP	MC6015	690—1165	.004—.012	.012—.079
Unstable Cutting	F	FP	MC6025	920—1330	.002—.008	.008—.036
	L	LP	MC6025	920—1330	.003—.010	.008—.040
	M	MP	MC6025	690—1115	.004—.012	.012—.079



A

TURNING INSERTS



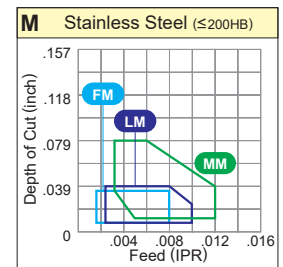
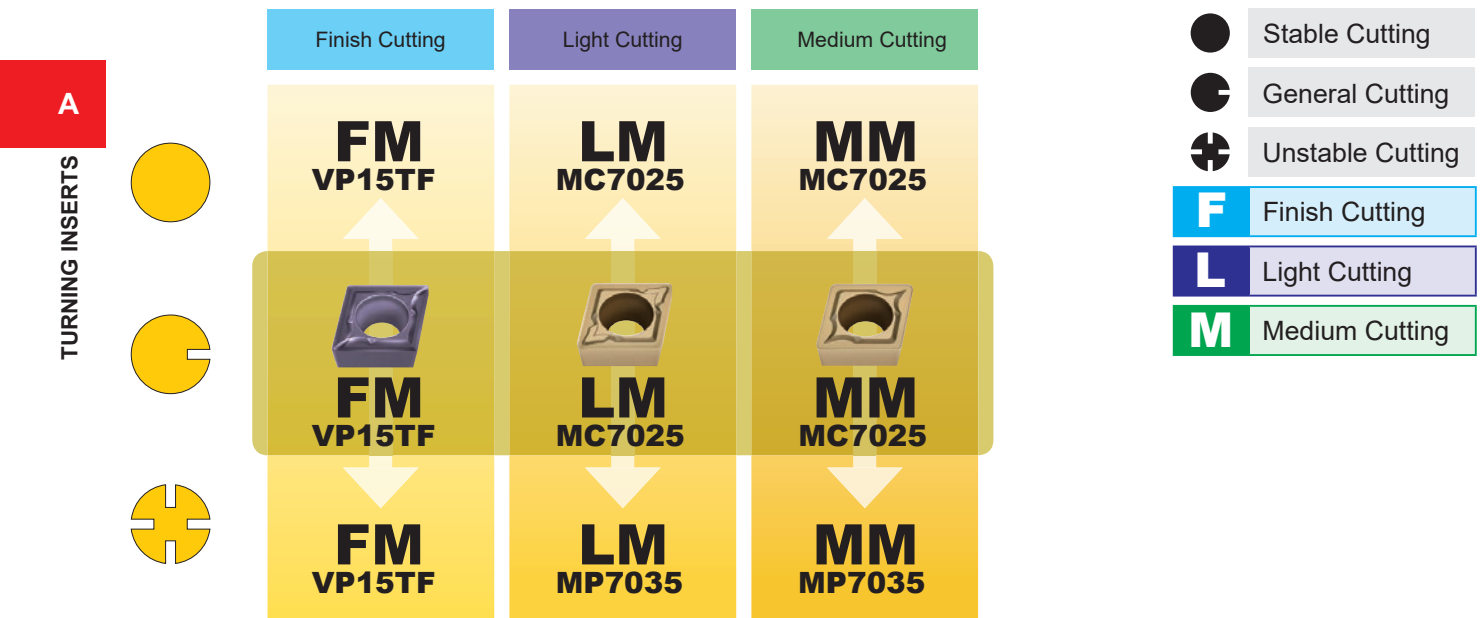
P Carbon Steel • Alloy Steel (EX. : AISI 1045, AISI 4140)

7° POSITIVE INSERTS WITH HOLE

vc : Cutting speed
f : Feed
ap : Depth of cut.

	Cutting Area	Chip Breaker	Grade	1st Recommendation		
				vc (SFM)	f (IPR)	ap (inch)
Stable Cutting	F	FP	NX2525	540—785	.002—.008	.008—.036
	L	LP	NX2525	540—785	.003—.010	.008—.040
	M	MP	NX2525	460—655	.004—.012	.012—.079
General Cutting	F	FP	MC6015	605—1030	.002—.008	.008—.036
	L	LP	MC6015	605—1030	.003—.010	.008—.040
	M	MP	MC6015	510—850	.004—.012	.012—.079
Unstable Cutting	F	FP	MC6025	605—985	.002—.008	.008—.036
	L	LP	MC6025	605—985	.003—.010	.008—.040
	M	MP	MC6025	510—820	.004—.012	.012—.079

OPTIMUM GRADES AND CHIP BREAKERS FOR EXTERNAL TURNING

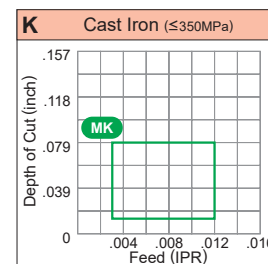


M Stainless Steel (EX. : AISI 304, AISI 306)

7° POSITIVE INSERTS WITH HOLE

vc : Cutting speed
f : Feed
ap : Depth of cut.

	Cutting Area	Chip Breaker	Grade	1st Recommendation		
				vc (SFM)	f (IPR)	ap (inch)
Stable Cutting	F	FM	VP15TF	245—410	.002—.008	.008—.036
	L	LM	MC7025	460—620	.003—.010	.008—.040
	M	MM	MC7025	395—525	.004—.012	.012—.079
General Cutting	F	FM	VP15TF	245—410	.002—.008	.008—.036
	L	LM	MC7025	460—620	.003—.010	.008—.040
	M	MM	MC7025	395—525	.004—.012	.012—.079
Unstable Cutting	F	FM	VP15TF	245—410	.002—.008	.008—.036
	L	LM	MP7035	280—440	.003—.010	.008—.040
	M	MM	MP7035	230—375	.004—.012	.012—.079



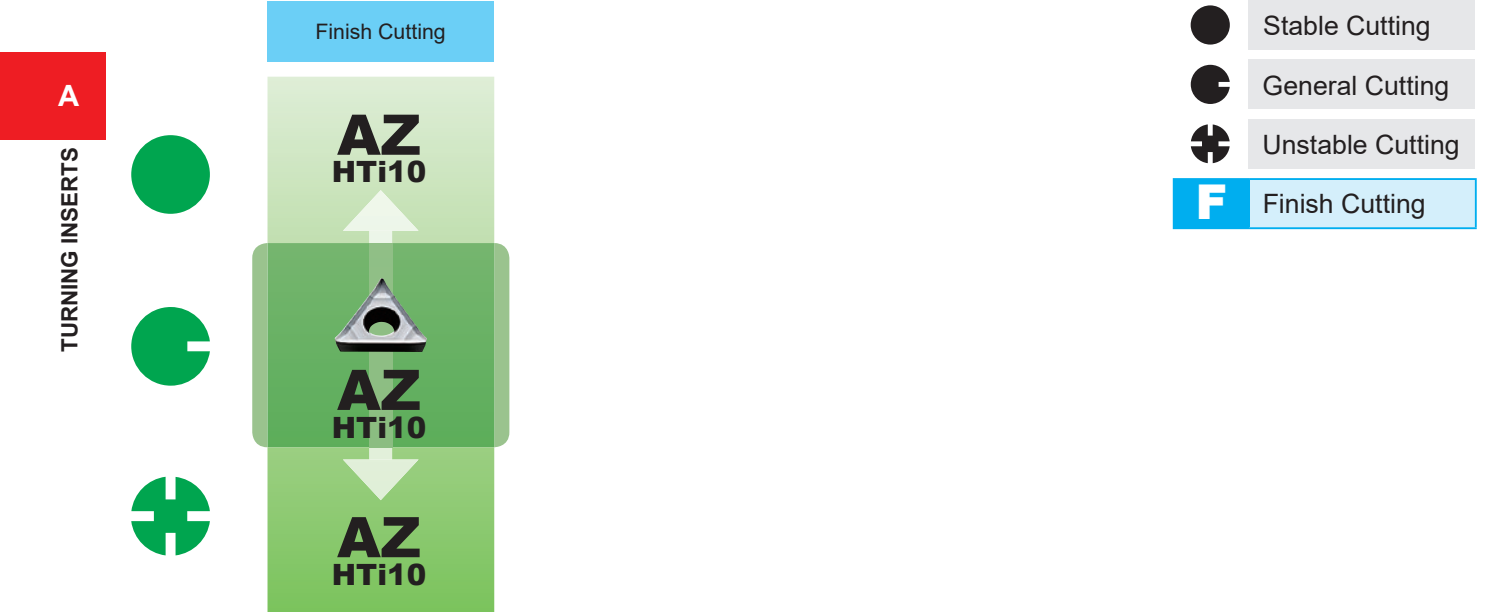
K Cast Iron • Ductile Cast Iron (EX. : AISI No 45 B)

7° POSITIVE INSERTS WITH HOLE

vc : Cutting speed
f : Feed
ap : Depth of cut.

	Cutting Area	Chip Breaker	Grade	1st Recommendation		
				vc (SFM)	f (IPR)	ap (inch)
Stable Cutting	F	MK	MC5005	540—870	.004—.012	.012—.079
	L	MK	MC5005	540—870	.004—.012	.012—.079
	M	MK, Flat Top	MC5005	540—870	.004—.012	.012—.079
General Cutting	F	MK	MC5015	490—745	.004—.012	.012—.079
	L	MK	MC5015	490—745	.004—.012	.012—.079
	M	MK, Flat Top	MC5015	490—745	.004—.012	.012—.079
Unstable Cutting	F	MK	MC5015	490—745	.004—.012	.012—.079
	L	MK	MC5015	490—745	.004—.012	.012—.079
	M	MK, Flat Top	MC5015	490—745	.004—.012	.012—.079

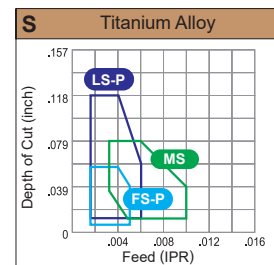
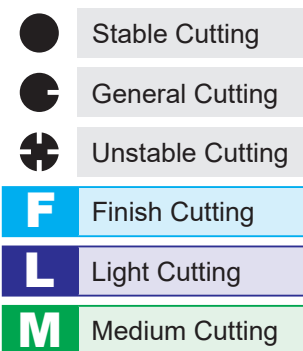
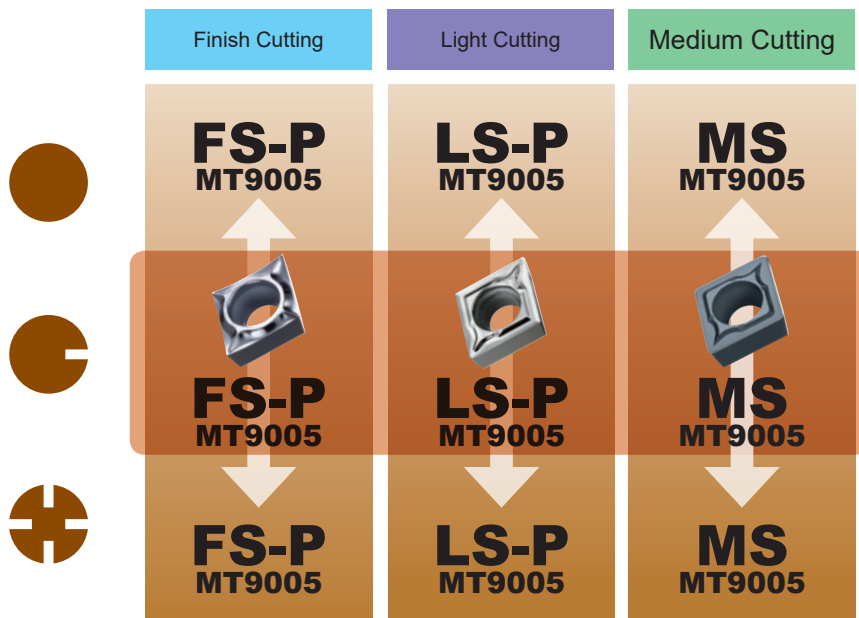
OPTIMUM GRADES AND CHIP BREAKERS FOR EXTERNAL TURNING



N Aluminum Alloy (EX. : A6061, A7075)
7° POSITIVE INSERTS WITH HOLE

vc : Cutting speed
f : Feed
ap : Depth of cut.

	Cutting Area	Chip Breaker	Grade	1st Recommendation		
				vc (SFM)	f (IPR)	ap (inch)
● Stable Cutting	F	AZ	HTi10	985—2295	.004—.016	.008—.119
● General Cutting	F	AZ	HTi10	985—2295	.004—.016	.008—.119
⊕ Unstable Cutting	F	AZ	HTi10	985—2295	.004—.016	.008—.119



vc : Cutting speed
f : Feed
ap : Depth of cut.

S Titanium Alloy (EX. : Ti-6Al-4V)

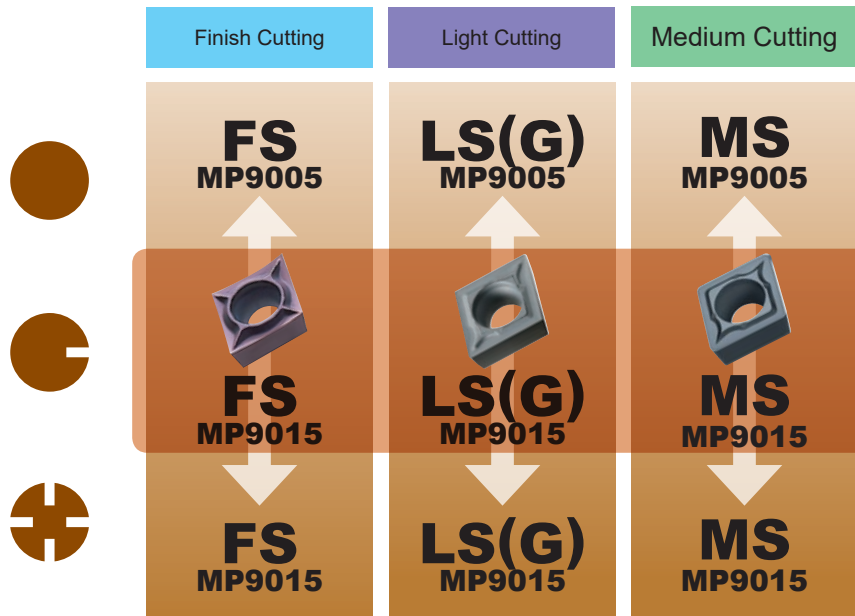
7° POSITIVE INSERTS WITH HOLE

			1st Recommendation			
	Cutting Area	Chip Breaker	Grade	vc (SFM)	f (IPR)	ap (inch)
Stable Cutting	F	FS-P	MT9005	130—260	.002—.005	.008—.056
	L	LS-P	MT9005	130—260	.002—.006	.012—.119
	M	MS	MT9005	115—210	.003—.010	.012—.079
General Cutting	F	FS-P	MT9005	130—260	.002—.005	.008—.056
	L	LS-P	MT9005	130—260	.002—.006	.012—.119
	M	MS	MT9005	115—210	.003—.010	.012—.079
Unstable Cutting	F	FS-P	MT9005	130—260	.002—.005	.008—.056
	L	LS-P	MT9005	130—260	.002—.006	.012—.119
	M	MS	MT9005	115—210	.003—.010	.012—.079

OPTIMUM GRADES AND CHIP BREAKERS FOR EXTERNAL TURNING

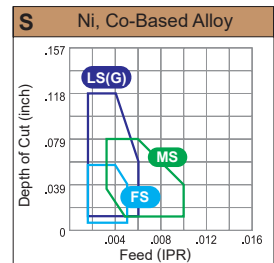
TURNING INSERTS

A



- Stable Cutting
- General Cutting
- Unstable Cutting

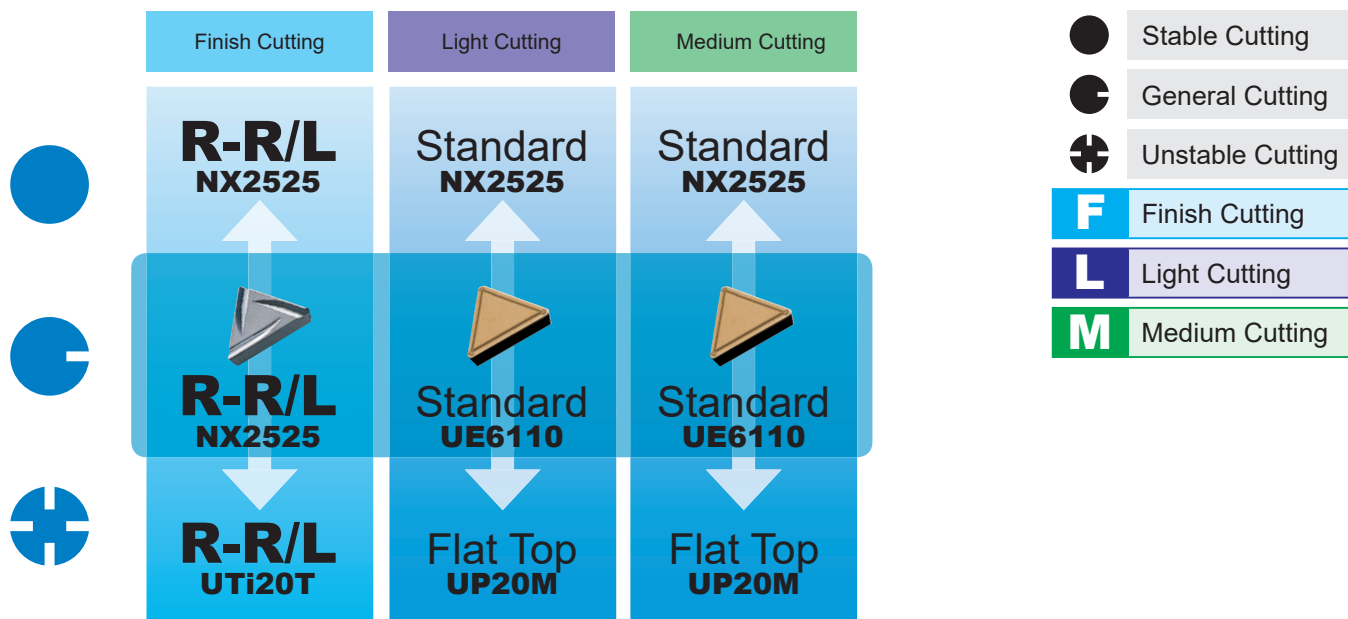
- F** Finish Cutting
- L** Light Cutting
- M** Medium Cutting



vc : Cutting speed
f : Feed
ap : Depth of cut.

S Ni, Co-Based Alloy (EX. : Inconel718)
7° POSITIVE INSERTS WITH HOLE

Cutting Area			1st Recommendation			
		Chip Breaker	Grade	vc (SFM)	f (IPR)	ap (inch)
	F	FS	MP9005	80—310	.002— .005	.008— .056
	L	LS(G)	MP9005	80—310	.002— .006	.012— .119
	M	MS	MP9005	65—260	.003— .010	.012— .079
	F	FS	MP9015	65—245	.002— .005	.008— .056
	L	LS(G)	MP9015	65—245	.002— .006	.012— .119
	M	MS	MP9015	65—195	.003— .010	.012— .079
	F	FS	MP9015	65—245	.002— .005	.008— .056
	L	LS(G)	MP9015	65—245	.002— .006	.012— .119
	M	MS	MP9015	65—195	.003— .010	.012— .079

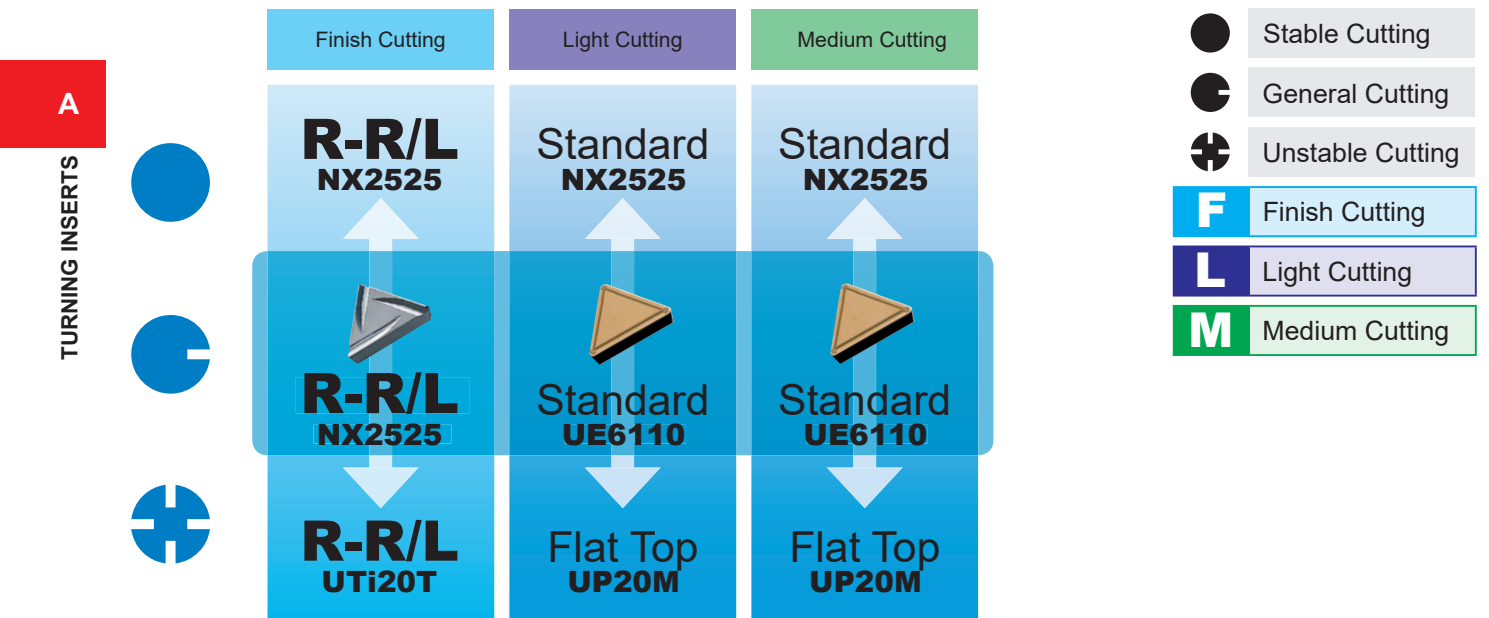


P Mild Steel (EX. : AISI ASTM A283, AISI 1010)
11° POSITIVE INSERTS WITHOUT HOLE

vc : Cutting speed
f : Feed
ap : Depth of cut.

1st Recommendation						
	Cutting Area	Chip Breaker	Grade	vc (SFM)	f (IPR)	ap (inch)
 Stable Cutting	F	R-R/L	NX2525	740—1050	.002—.005	.008—.024
	L	Standard	NX2525	605—885	.004—.012	.012—.079
	M	Standard	NX2525	605—885	.004—.012	.012—.079
 General Cutting	F	R-R/L	NX2525	740—1050	.002—.005	.008—.024
	L	Standard	UE6110	690—1165	.004—.012	.012—.079
	M	Standard	UE6110	690—1165	.004—.012	.012—.079
 Unstable Cutting	F	R-R/L	UTi20T	375—540	.002—.005	.008—.024
	L	Flat Top	UP20M	345—525	.004—.012	.012—.079
	M	Flat Top	UP20M	345—525	.004—.012	.012—.079

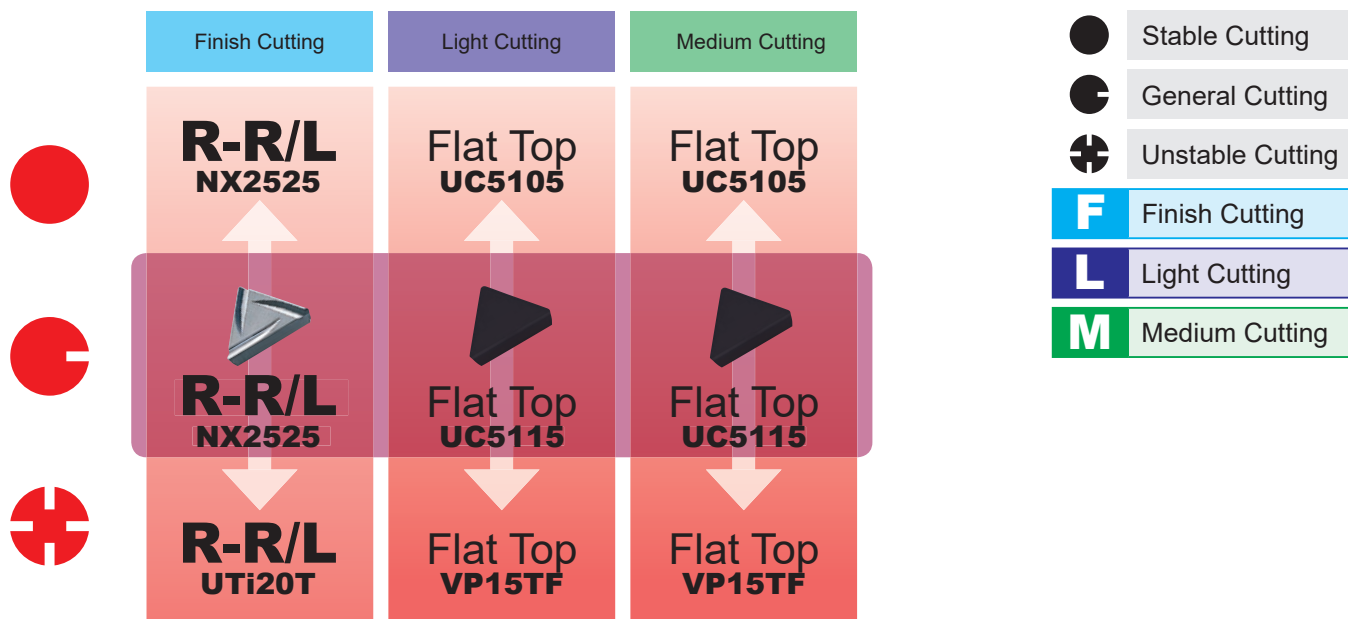
OPTIMUM GRADES AND CHIP BREAKERS FOR EXTERNAL TURNING



P Carbon Steel • Alloy Steel (EX. : AISI 1045, AISI 4140)
11° POSITIVE INSERTS WITHOUT HOLE

vc : Cutting speed
f : Feed
ap : Depth of cut.

	Cutting Area	Chip Breaker	Grade	1st Recommendation		
				vc (SFM)	f (IPR)	ap (inch)
Stable Cutting	F	R-R/L	NX2525	540—785	.002—.005	.008—.024
	L	Standard	NX2525	460—655	.004—.012	.012—.079
	M	Standard	NX2525	460—655	.004—.012	.012—.079
General Cutting	F	R-R/L	NX2525	540—785	.002—.005	.008—.024
	L	Standard	UE6110	510—850	.004—.012	.012—.079
	M	Standard	UE6110	510—850	.004—.012	.012—.079
Unstable Cutting	F	R-R/L	UTi20T	280—395	.002—.005	.008—.024
	L	Flat Top	UP20M	260—395	.004—.012	.012—.079
	M	Flat Top	UP20M	260—395	.004—.012	.012—.079



TURNING INSERTS

K Cast Iron • Ductile Cast Iron (EX. : AISI No 45 B)

11° POSITIVE INSERTS WITHOUT HOLE

vc : Cutting speed
f : Feed
ap : Depth of cut.

	Cutting Area	Chip Breaker	Grade	1st Recommendation		
				vc (SFM)	f (IPR)	ap (inch)
Stable Cutting	F	R-R/L	NX2525	475—655	.002—.005	.008—.024
	L	Flat Top	UC5105	440—805	.004—.012	.012—.079
	M	Flat Top	UC5105	440—805	.004—.012	.012—.079
General Cutting	F	R-R/L	NX2525	475—655	.002—.005	.008—.024
	L	Flat Top	UC5115	425—785	.004—.012	.012—.079
	M	Flat Top	UC5115	425—785	.004—.012	.012—.079
Unstable Cutting	F	R-R/L	UTi20T	260—375	.002—.005	.008—.024
	L	Flat Top	VP15TF	375—525	.004—.012	.012—.079
	M	Flat Top	VP15TF	375—525	.004—.012	.012—.079

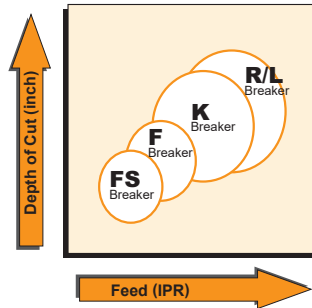
PRECISION BREAKER SYSTEM

ANGULAR AND PARALLEL CHIP BREAKERS (NEGATIVE INSERTS)

■CHIP CONTROL RANGE

TURNING INSERTS

A

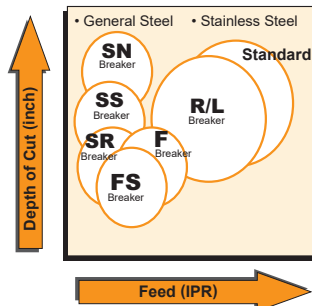


■FEATURES OF CHIP BREAKER

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.				

ANGULAR AND PARALLEL CHIP BREAKERS (POSITIVE INSERTS)

■CHIP CONTROL RANGE



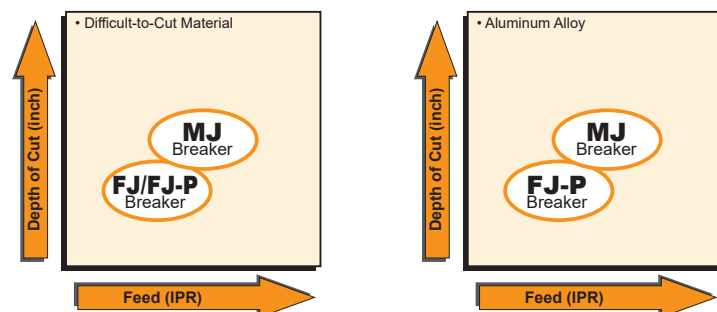
■FEATURES OF CHIP BREAKER

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.					

Breaker	Features	CCGH/CCGT Type	CPGT Type	DCGT Type	TPGH 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.	—		—	—	—	—	—	—	—

3D MOLDED CHIP BREAKERS (NEGATIVE INSERTS)

■CHIP CONTROL RANGE

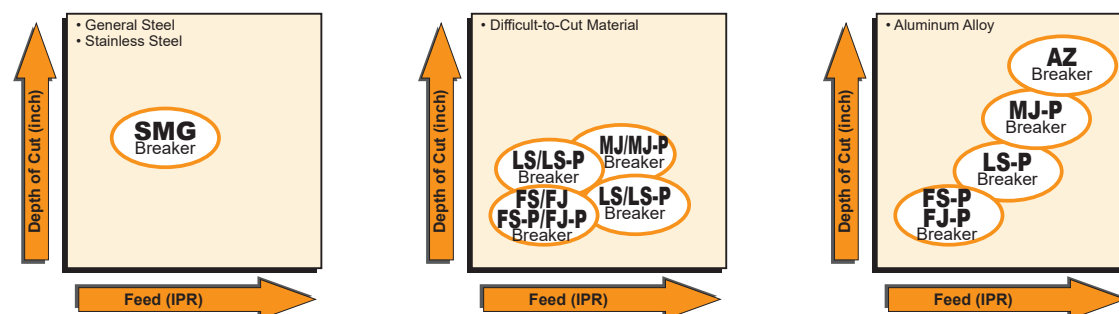


■FEATURES OF CHIP BREAKER

Breaker	Features	CNGG Type	DNGG/DNGM Type	VNGG/VNGM Type
FJ	● Ideal for heat-resistant alloy. ● The sharp edge produces good cutting surface.			
FJ-P	● Ideal for aluminum and copper. ● The sharp edge produces excellent surface finishes.		—	—
MJ	● Ideal for heat-resistant alloy and titanium alloy. ● The sharp edge produces excellent surface finishes.			

3D MOLDED CHIP BREAKERS (POSITIVE INSERTS)

■CHIP CONTROL RANGE



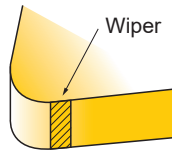
■FEATURES OF CHIP BREAKER

Breaker	Features	CCGT Type	DCGT Type	TCGT Type	VCGT Type	WCGT/RCGT Type
FS	● Ideal for heat-resistant alloys, titanium alloys, and cobalt chrome alloys. ● Sharp cutting edges provide excellent surface precision and finish.			—	—	—
FS-P	● Ideal for titanium alloys and copper alloys. ● Sharp cutting edges provide excellent surface precision and finish.			—	—	—
FJ	● The curved cutting edges support changes in cutting depth-smooth chip discharge and disposal. ● The large rake angle highly suitable for finishing difficult-to-cut materials.			—	—	—
FJ-P	● Ideal for aluminum and copper. ● The sharp edge produces excellent surface finishes.				—	
LS	● Ideal for heat-resistant alloy and titanium alloy and cobalt chrome alloy. ● Breaker protrusion suitable for depth of cut area achieves a wide range of chip control.			—		—
LS-P	● Ideal for aluminum and copper. ● The polished insert face prevents built up edge.			—		—
MJ	● The curved cutting edges support changes in cutting depth-smooth chip discharge and disposal. ● Large rake angle highly suitable for finish- light cutting difficult-to-cut materials.				—	
MJ-P	● Ideal for aluminum and copper. ● The sharp edge produces excellent surface finishes.				—	
SMG	● For medium cutting. ● 3D molded chipbreaker provides good chip control.Breaker geometry appropriate for copying and back turning.			—	—	—
AZ	● 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.					

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 work material can be improved.

● Improving Efficiency

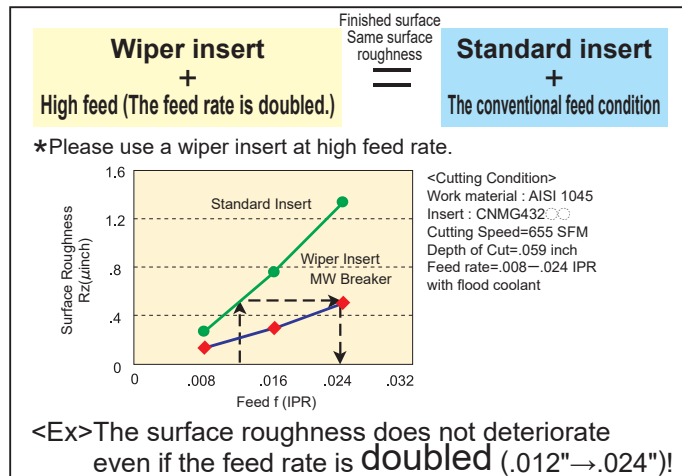
High feed rates not only shortened machining times but also make it possible to combine roughing and finishing operations.

● 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.



■ A wiper insert + machining at high feed rate

- Reduced machining time (per work material)
- Increased number of work material (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)

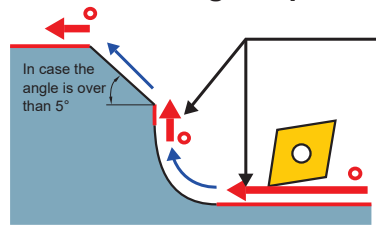
- Reducing cycle times
- Increased productivity
- Avoiding Line-Stoppage

<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.



$$Rz(W) = Rz \times 0.5$$

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

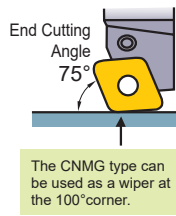
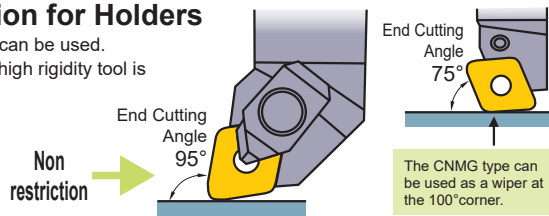
- Effective uses of a wiper insert
- Non effective uses of a wiper insert

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

● No Restriction for Holders

A standard holders can be used.

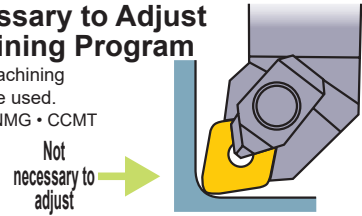
- (★A double clamp, high rigidity tool is recommended.)



● Not Necessary to Adjust the Machining Program

Conventional machining programs can be used.

(The CNMG • WNMG • CCMT types are based on the ISO/ANSI.)

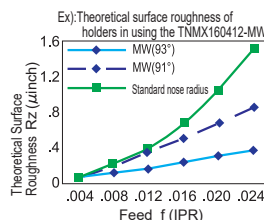
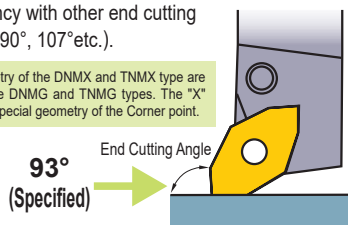


■ Special attention is necessary when using the DNMX • TNMX types due to the special top face geometry

● 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.).

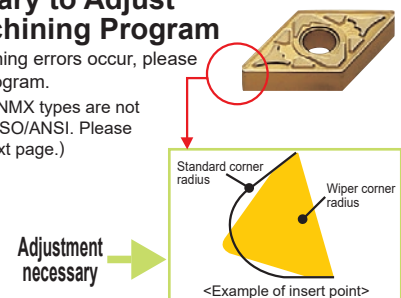
The hole geometry of the DNMX and TNMX type are the same as the DNMG and TNMG types. The "X" represents the special geometry of the Corner point.



● Necessary to Adjust the Machining Program

When machining errors occur, please adjust the program.

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

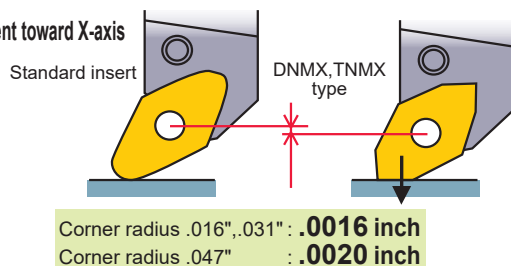


■ Adjustment of machining programs for DNMX • TNMX types

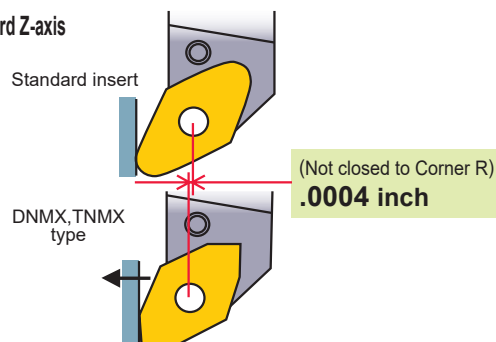
Basic Process) Adjusting Toward X-axis and Z-axis

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

Adjustment toward X-axis



Adjustment toward Z-axis

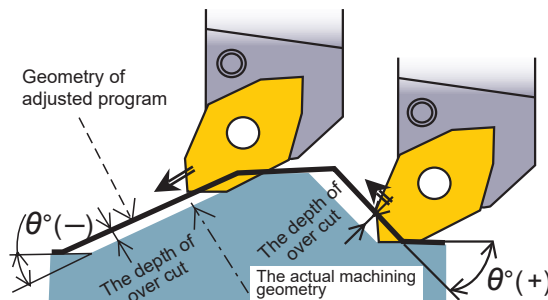


A) Adjusting a Taper

*Necessary to maintain a correct taper.

Adjust the relief angle toward the normal line.

Note1) Adjust the angle toward the normal line in the case where the adjustment number is minus ($\theta = 60^\circ - 70^\circ$) and is not machined completely.



Classification

Nose Radius	Taper Angle θ°															
	-25—-15	-10	-5	0	5	10	15	20—35	40	45	50	55	60—65	70	75—85	90
.047	.0016	.0012	.0004	0	.0008	.0012	.0016	.0020	.0016	.0016	.0008	.0004	-.0004	0	.0004	0
.031	.0012	.0008	.0004	0	.0004	.0008	.0012	.0016	.0012	.0012	.0008	0	-.0004	0	.0004	0
.016	.0008	.0004	.0004	0	.0004	.0004	.0008	.0008	.0008	.0004	.0004	0	-.0004	-.0004	0	0

Values $\rightarrow$ + numbers: adjustment of relief angle, - numbers: adjustment of plunge in angle (inch)

B) Adjusting a Corner R

*Necessary to maintain a correct corner radius.

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

The value of adjustment to work R = Work R + the adjustment value

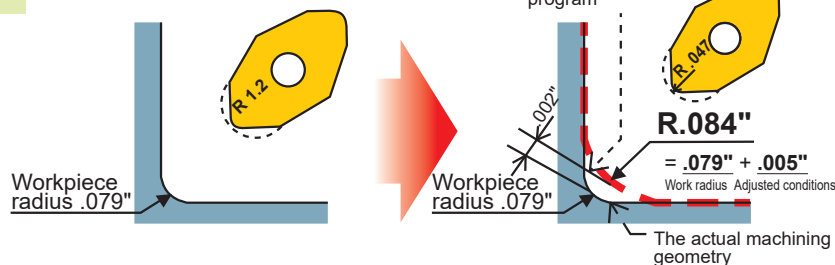
*No adjusting the corner radius in this case.

Ex) : In case of machining R .079" when using a corner R .047" type insert.

The corner radius of the insert

The adjustment amount on the workpiece radius.

Corner Radius .016" $\rightarrow$ Work Radius **+.0020"**
Corner Radius .031" $\rightarrow$ Work Radius **+.0043"**
Corner Radius .047" $\rightarrow$ Work Radius **+.0055"**



In correcting corner radius:

It is not necessary to adjust the machining program, however, machining errors can occur within max. $\pm .0012"$ due to correcting by an approximate number.

The Easy-to-correct Method

Corner Radius Correction

Input the correction number of each corner radius.

The value of corrected corner radius = approximation

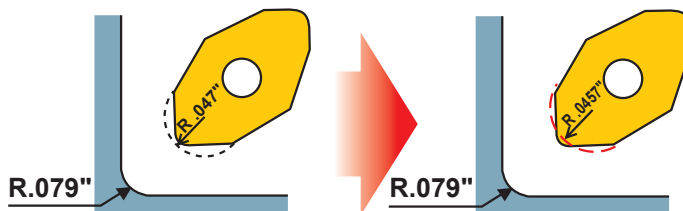
*No adjustment required in machining program.

The corner radius of a insert

The value of corrected corner radius = approximation

Corner Radius .016" $\rightarrow$ **R.0142"**
Corner Radius .031" $\rightarrow$ **R.0299"**
Corner Radius .047" $\rightarrow$ **R.0457"**

Ex): In the case of machining a corner with a radius R .079" when using an insert with a corner radius R .047".



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

A

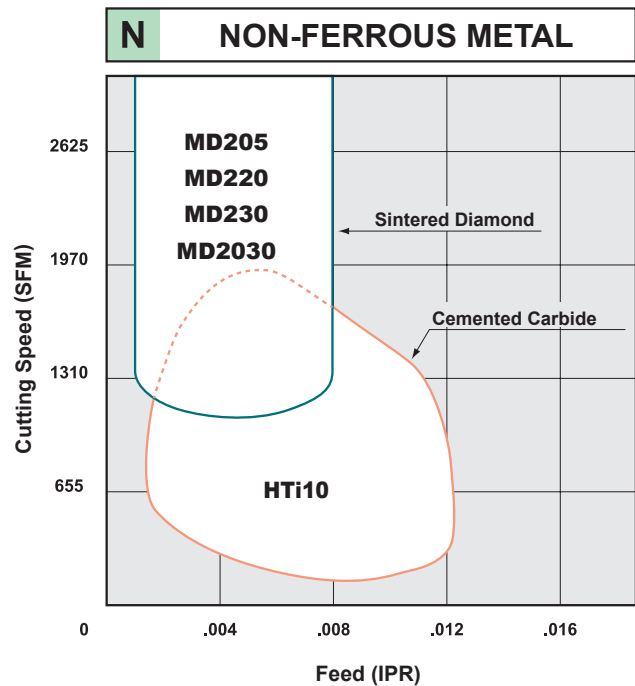
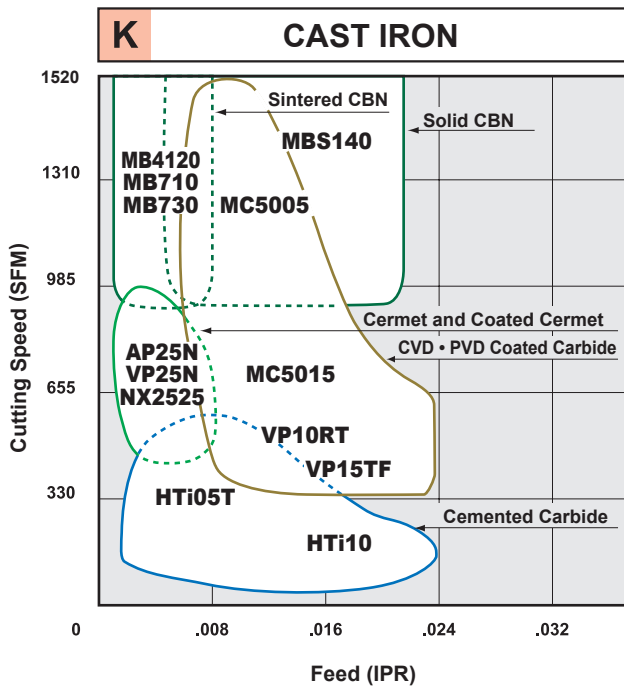
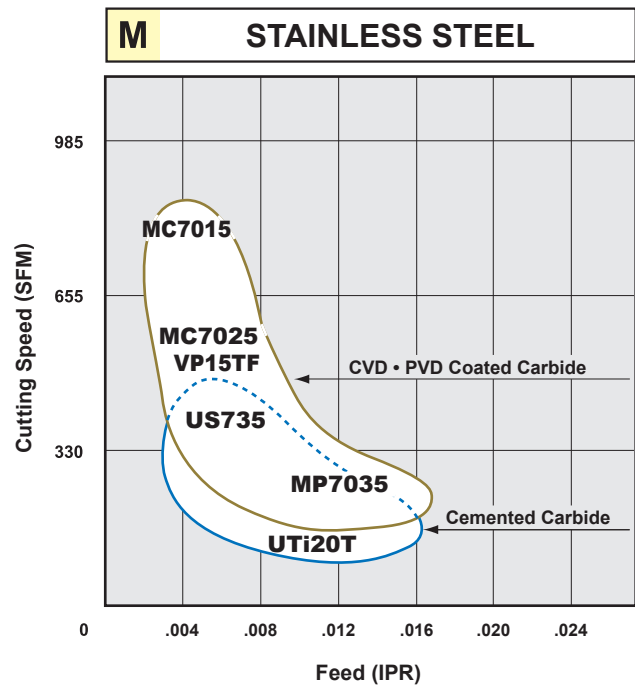
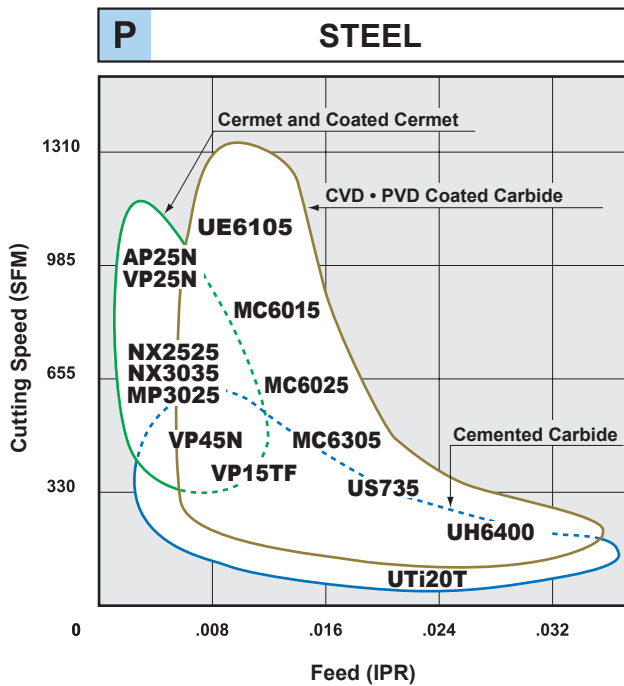
TURNING INSERTS

ISO	Coated Carbide		Cermet	Coated Cermet	Cemented Carbide	Coated CBN	CBN	PCD (Sintered Diamond)
	CVD	PVD						
Steel P	10	UE6105 MC6015 UE6110 MY5015						
	20	MC6025	VP10RT MS6015	AP25N VP25N				
	30	MC6035 UH6400	VP15TF VP20MF VP20RT UP20M	MP3025 VP45N	UTi20T			
	40							
Stainless Steel M	10	MC7015		AP25N VP25N				
	20	MC7025	VP10RT VP15TF VP20MF VP20RT UP20M					
	30	US735	MP7035		UTi20T			
	40							
Cast Iron K	10	MC5005 UC5105 MC5015 UC5115 MY5015	VP10RT	AP25N VP25N	HTi05T HTi10		MB710	
	20		VP15TF VP20RT		UTi20T		MB730 NEW MB4120 MBS140	
	30							
Non-Ferrous Metal N	10							MD205
	20				HTi10			MD220
	30							MD230 MD2030
Heat Resistant Alloy • Ti Alloy S	10	US905	MP9005 VP05RT MP9015 VP10RT NEW MP9025 VP20RT		MT9005 RT9005 MT9015 RT9010		MB730	
	20							
	30							
Hardened Steel H	10					BC8105 BC8110 BC8120	NEW MB8110 NEW MB8120	
	20							
	30					BC8130	NEW MB8130	

TURNING APPLICATION RANGE

A

TURNING INSERTS

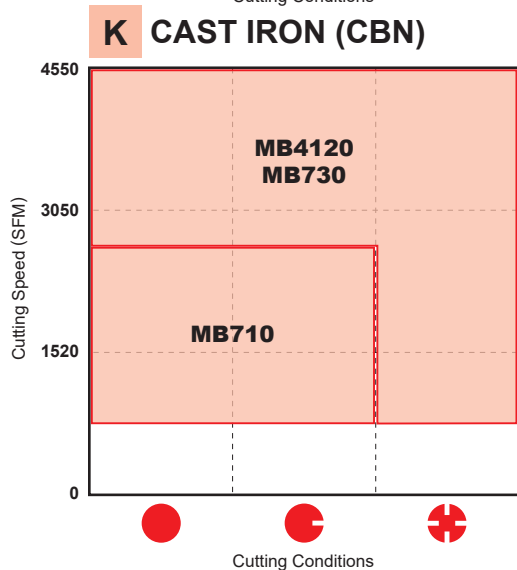
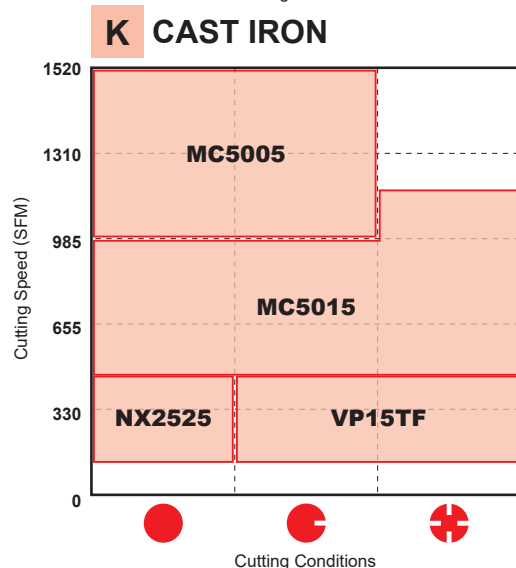
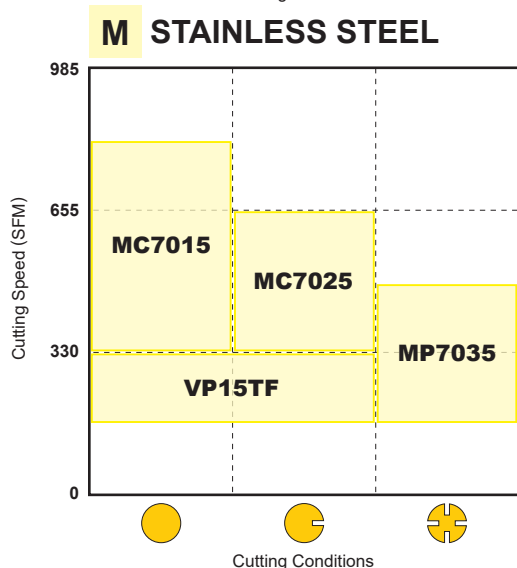
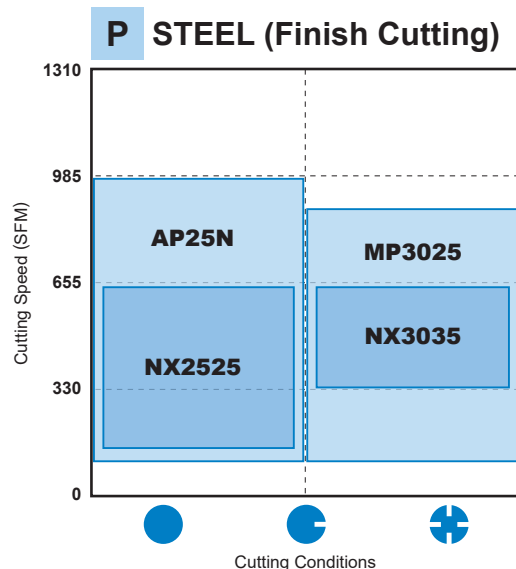
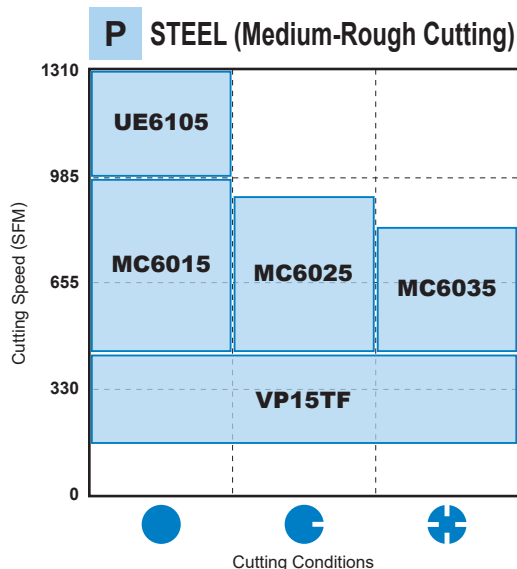


TURNING APPLICATION RANGE

● Recommendation of the insert grade based on cutting speed and conditions for each work material.

A

TURNING INSERTS



CUTTING CONDITIONS



Stable Cutting

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

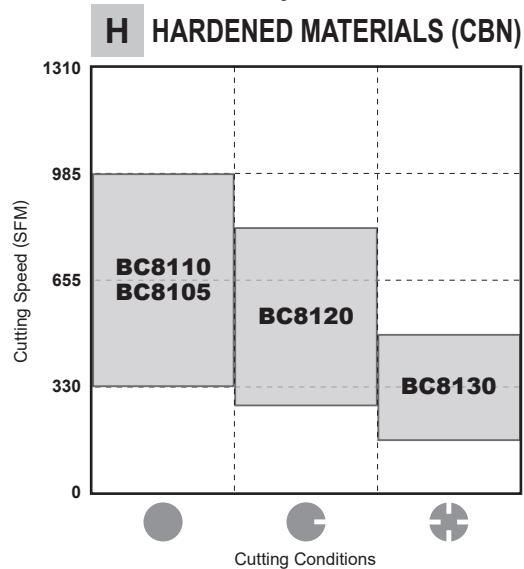
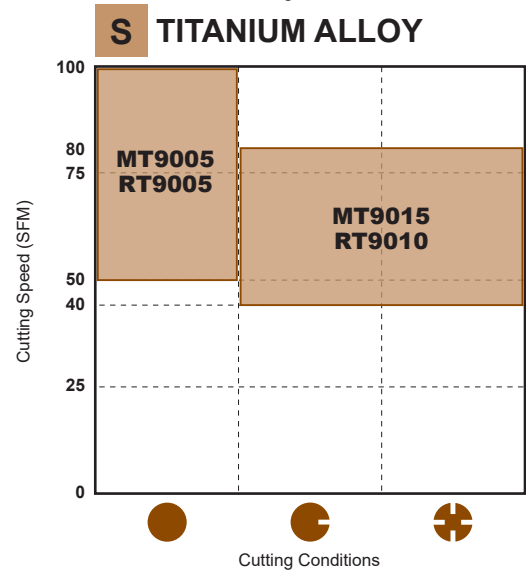
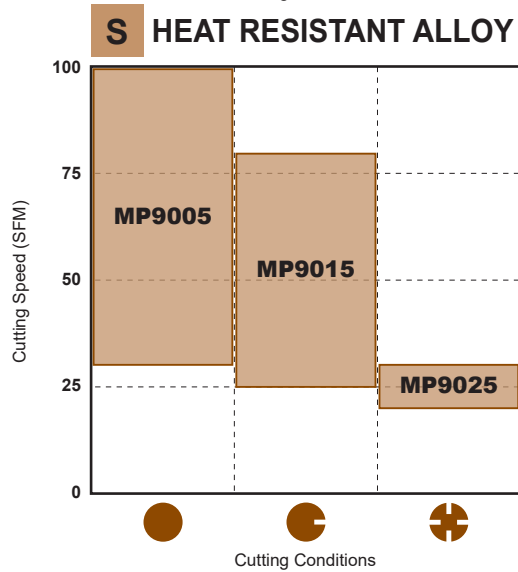
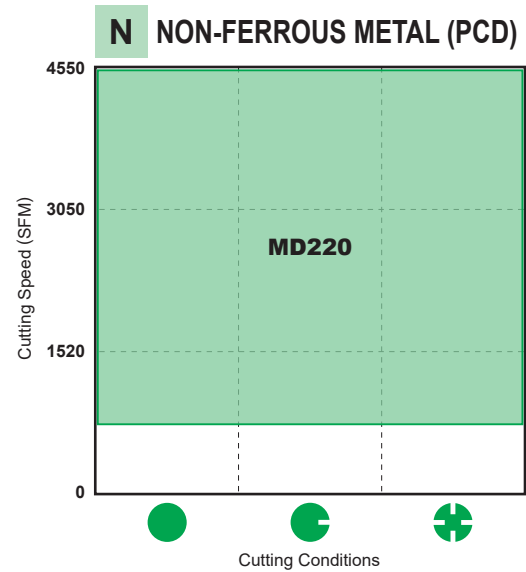
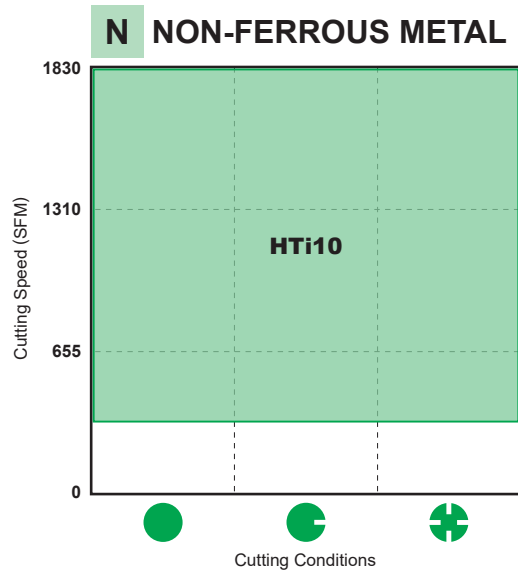


Unstable Cutting

Heavy Interrupted Cutting
Irregular Depth of Cut
Low Clamping Rigidity



General Cutting



A

TURNING INSERTS

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.

SELECTION STANDARD

TURNING

TURNING INSERTS

Work Material	Cutting Mode	Recommended Grade	Recommended Cutting Speed (SFM)	ISO	Application Range
P Steel	Continuous Cutting	UE6105	985 (655 – 1310)	P 10 20 30 40	UE6105 MC6015
		MC6015	820 (490 – 1310)		
	Interrupted Cutting	MC6025	655 (330 – 920)		MC6025 MC6035
		MC6035	490 (260 – 665)		
M Stainless Steel	Continuous Cutting	MC7015	655 (525 – 820)	M 10 20 30 40	MC7015 MC7025 US735
	Continuous and Interrupted Cutting	MC7025	490 (390 – 655)		
		US735	330 (260 – 390)		
K Cast Iron Ductile Cast Iron	Continuous Cutting	MC5005	985 (655 – 1310)	K 10 20 30	MC5005 MC5015
	Interrupted Cutting	MC5015	820 (490 – 985)		
S Heat Resistant Alloy	Continuous and Interrupted Cutting	US905	260 (165 – 330)	S 5	US905

High reliability for a wide range of steel machining.

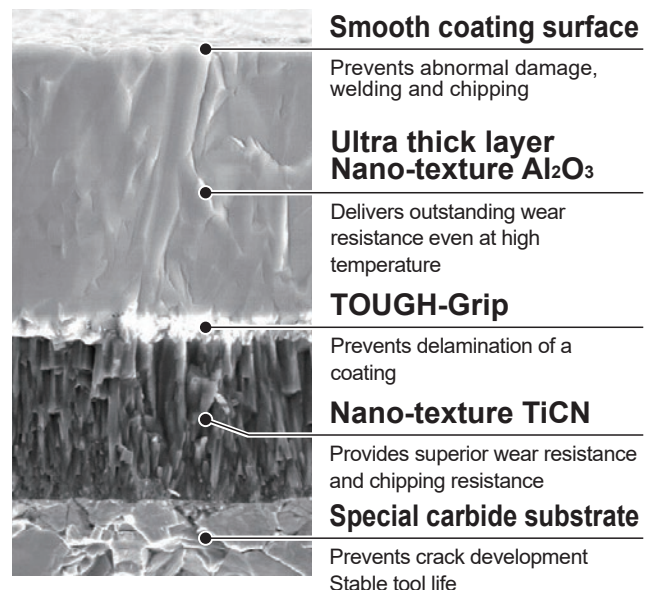
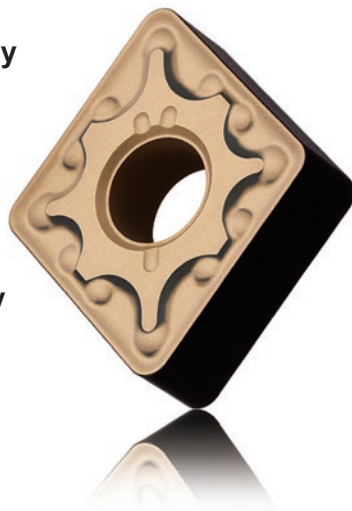
MC6015

Nano-Texture Technology

The optimized crystal growth in linear direction of Nano-texture coating technology maintains fine surface and provides outstanding wear and chipping under high speed cutting conditions.

TOUGH-Grip Technology

The interface between the layers is controlled at the nano level, allowing the TOUGH-grip layer extremely high levels of adhesion to prevent delamination.



■ GRADE CHARACTERISTICS

Work Material	Grade	Substrate	Coating Layer	
		Hardness (HRA)	Composition	Thickness
P Steel	UE6105	90.8	Accumulated TiCN-Al ₂ O ₃ -Ti Compound	Thick
	MC6015	90.2	Accumulated TiCN-Al ₂ O ₃ -Ti Compound	Thick
	UE6110	90.3	Accumulated TiCN-Al ₂ O ₃ -Ti Compound	Thick
	MC6025	90.2	Accumulated TiCN-Al ₂ O ₃ -Ti Compound	Thick
	MC6035	89.5	Accumulated TiCN-Al ₂ O ₃ -Ti Compound	Thick
	UH6400	89.5	Accumulated TiCN-Al ₂ O ₃ -Ti Compound	Thick
M Stainless Steel	MC7015	90.7	TiCN-Al ₂ O ₃ -TiN	Thin
	MC7025	89.4	TiCN-Al ₂ O ₃ -TiN	Thin
	US735	89.0	Ti Compound	Thin
K Cast Iron Ductile Cast Iron	MC5005	91.0	TiCN-Al ₂ O ₃	Thick
	UC5105	92.2	TiCN-Al ₂ O ₃	Thick
	MC5015	91.0	TiCN-Al ₂ O ₃	Thick
	UC5115	91.0	TiCN-Al ₂ O ₃	Thick
S Heat Resistant Alloy	US905	92.2	TiCN-Al ₂ O ₃ -TiN	Thin

Note 1) Hardness shows representative value of the substrate.

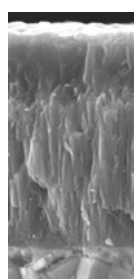
For interrupted cutting, medium to low surface speeds

MC6035

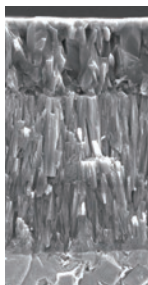
Prevents severe damage for increased stability

The smooth coating surface provides excellent welding resistance.

With the thickened TiCN, MC6035 also achieves superior wear resistance for increased stability.



MC6035



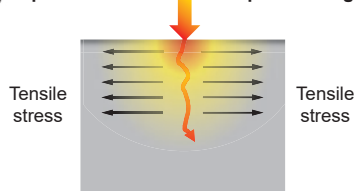
MC6025



Reducing the effect of severe fracturing

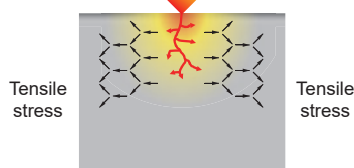
By reducing the tensile stress in the coating layer during interrupted cutting, crack development caused by impact stress is prevented.

Impact stress when interrupted cutting



Conventional coating

Impact stress when interrupted cutting



MC6035

Conventional products tend to result in fracturing because impact stress is transmitted deep into the coating layer during interrupted cutting.

MC6035 has succeeded in alleviating tensile stress in the coating layer therefore, cracks that can develop by impact stress can be prevented when interrupted cutting.

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 substrate.

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TURNING INSERTS

SELECTION STANDARD

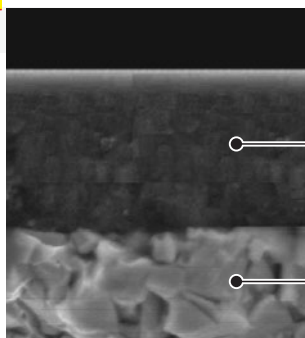
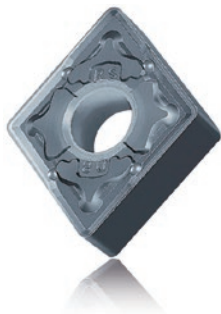
TURNING

Work Material	Recommended Grade	Recommended Cutting Speed (SFM)	ISO	Application Range
P Steel	VP10RT	390 (330 – 490)	P 10 20 30 40	VP10RT VP15TF UP20M
	VP15TF	390 (330 – 490)		
	UP20M	390 (330 – 490)		
M Stainless Steel	VP10RT	390 (330 – 490)	M 10 20 30 40	VP10RT VP15TF UP20M MP7035
	VP15TF	390 (330 – 490)		
	UP20M	390 (330 – 490)		
	MP7035	390 (330 – 490)		
K Cast Iron	VP10RT	390 (330 – 490)	K 10 20 30	VP10RT VP15TF VP20RT
	VP15TF	390 (330 – 490)		
	VP20RT	390 (330 – 490)		
S Heat Resistant Alloy	MP9005	195 (100 – 300)	S 10 20 30	MP9005 MP9015 NEW MP9025
	MP9015	160 (80 – 260)		
	MP9025	80 (65 – 100)		

ISO Turning Inserts for Difficult to Cut Materials

NEW

MP9005/MP9015/MP9025



High Al-(Al,Ti)N single layer coating

Special carbide substrate

ISO Grade	Grade	Concept	Application
S01	MP9005	Top-quality grade focusing on wear resistance	Heat Resistant Alloy Finish-Medium Cutting
S10	MP9015	First recommendation for general applications	Heat Resistant Alloy Medium-Rough Cutting
S30	NEW MP9025	Prevents severe damage for increased stability	Heat Resistant Alloy Interrupted • Light-Rough Cutting

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.

SELECTION STANDARD

TURNING

Work Material	Cutting Mode	Recommended Grade	Recommended Cutting Speed (SFM)	ISO	Application Range
P Steel	Continuous Cutting	NX2525	720 (590 – 820)	P 10 20	
	Interrupted Cutting	NX3035	655 (620 – 850)		
K Cast Iron Ductile Cast Iron	Finishing	NX2525	590 (490 – 690)	K 10 20	

A

TURNING INSERTS

GRADE CHARACTERISTICS

Grade	Hardness (HRA)
NX2525	92.2
NX3035	91.5

Note 1) Hardness shows representative value of the substrate.

COATED CERMET

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

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TURNING INSERTS

SELECTION STANDARD

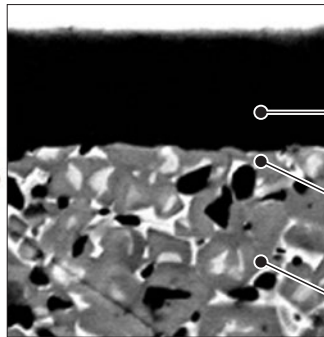
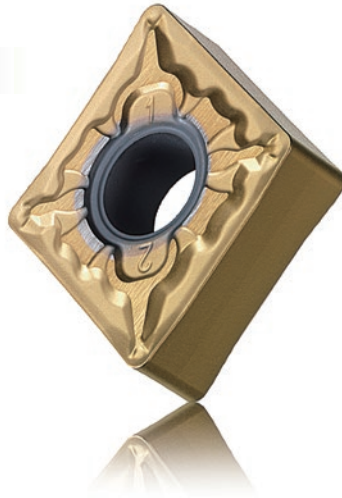
TURNING

Work Material	Cutting Mode	Recommended Grade	Recommended Cutting Speed (SFM)	ISO	Application Range
P Steel	Continuous Cutting	VP25N AP25N	785 (620 – 950)	P 10 20 30	VP25N AP25N MP3025
	Interrupted Cutting	MP3025	755 (590 – 920)		
K Cast Iron Ductile Cast Iron	Finishing	VP25N AP25N	525 (360 – 755)	K 10 20	VP25N AP25N

Effective for production of small parts.

MP3025

MP3025 provides improved adhesion for coating layer due to the newly-developed special substrate. Uniform flank wear allows prolonged machining that maintains excellent surface finish.



Ti-compound PVD coating provides excellent wear and welding resistance.

Substrate surface provides excellent adhesion strength for coating layer.

Substrate with superior fracture resistance and thermal shock resistance.

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.

■ SELECTION STANDARD

● TURNING

Work Material	Recommended Grade	Recommended Cutting Speed (SFM)	ISO	Application Range
P Steel	UTi20T	330 (195 – 425)	10	
			20	
			30	UTi20T
M Stainless Steel	UTi20T	330 (195 – 425)	10	
			20	
			30	UTi20T
K Cast Iron	HTi05T	395 (260 – 490)	10	HTi05T
	HTi10	330 (165 – 490)	20	HTi10
	UTi20T	330 (165 – 490)	30	UTi20T
N Non-Ferrous Metal	HTi10	985 (330 – 1970)	10	
			20	HTi10
			30	
S Heat Resistant Alloy Ti Alloy	MT9005 RT9005	230 (165 – 330)	10	MT9005 RT9005
	MT9015 RT9010	195 (130 – 260)	20	MT9015 RT9010
			30	

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TURNING INSERTS

■ MAIN COMPONENT AND APPLICATION

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)
P M	UTi20T	90.5
K N	HTi05T	92.5
	HTi10	92.0
S	MT9005/RT9005	92.2
	MT9015/RT9010	92.0

Note 1) Hardness shows representative value of the substrate.

MICRO-GRAIN CEMENTED CARBIDE

- Compared to general cemented carbide, micro-grain alloy has higher wear resistance and higher toughness.

A

TURNING INSERTS

SELECTION STANDARD

Cutting Tool	Recommended Grade	Work Material
Turning Inserts Milling Inserts Carbide Drills	TF15	Steel Cast Iron

GRADE CHARACTERISTICS

Grade	Grade Characteristics *		ISO	Wear Resistance	Fracture Resistance	Corrosion Resistance
	Hardness (HRA)	T.R.S (Gpa)				
TF15	91.0	4.0	K20	◎	○	◎

* After HIP

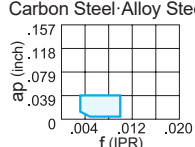
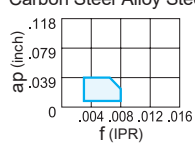
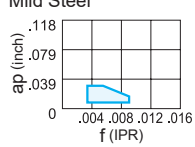
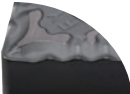
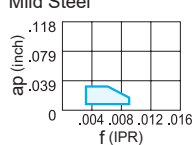
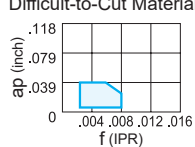
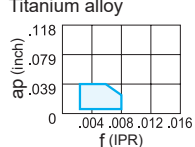
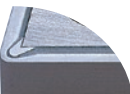
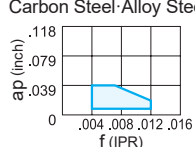
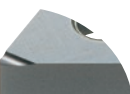
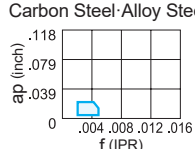
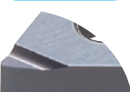
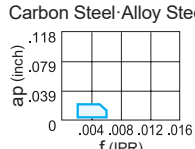
Note 1) Hardness shows representative value of the substrate.

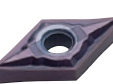
CLASSIFICATION

NEGATIVE INSERTS WITH HOLE

A

TURNING INSERTS

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry		
Finish Cutting	M Class	FP 	For finish cutting of steel Offers good chip control in wide cutting conditions Stable chip control in wide range. Available to both general and low carbon steel cuttings. A good surface finish through the 20° positive high rake angle.	Carbon Steel-Alloy Steel 	Corner 20° Flank 20° CNMG432FP	
		FH 	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 	Corner 12° Flank 12° CNMG432FH	
		FS 	Alternative breaker for finishing mild steel Double sided chipbreaker. Stable chip control even at small depth of cut. Sharp edge gives best performance.	Mild Steel 	Corner 16° Flank 8° CNMG432FS	
		FY 	Recommendation for finishing mild steel Double sided chipbreaker. Effectively controls chips. Suitable for mild steel finishing.	Mild Steel 	Corner 15° Flank 15° 0.008" CNMG432FY	
	G Class	FJ 	Recommendation for finishing difficult-to-cut materials Double sided chipbreaker. Ideal for heat-resistant alloy. The sharp edge produces good cutting surface. The curved edge allows smooth chip discharge.	Difficult-to-Cut Materials 	Corner 14° Flank 9° CNGG431FJ	
		FJ-P 	Recommendation for finishing titanium alloy Double sided chipbreaker. Ideal for aluminum and copper. The sharp edge produces excellent surface finishes. The curved edge allows smooth chip discharge. The polished insert face prevents built up edge.	Titanium alloy 	Corner 14° Flank 9° CNGG431FJ-P	
		PK 	Alternative breaker 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 	Corner 15° Flank 15° CNGG431PK	
		R/L FS 	Precise finishing Double sided chipbreaker. A narrow angled chipbreaker for good control. The sharp edge produces a good surface finish.	Carbon Steel-Alloy Steel 	Flank 14° TNGG331RFS	
		R/L F 	Finishing Double sided chipbreaker. Angled chipbreaker controls chip flow. The sharp edge produces a good chip discharge.	Carbon Steel-Alloy Steel 	Flank 14° TNGG331RF	

	Rhombic 80° 	Rhombic 55° 	Square 90° 	Triangular 60° 	Rhombic 35° 	Trigon 80° 	Round 
	CNMG_FP  ↻ A104	DNMG_FP  ↻ A112	SNMG_FP  ↻ A120	TNMG_FP  ↻ A126	VNMG_FP  ↻ A134	WNMG_FP  ↻ A138	
	CNMG_FH  ↻ A104	DNMG_FH  ↻ A112	SNMG_FH  ↻ A120	TNMG_FH  ↻ A126	VNMG_FH  ↻ A134	WNMG_FH  ↻ A138	
	CNMG_FS  ↻ A104	DNMG_FS  ↻ A112	SNMG_FS  ↻ A120	TNMG_FS  ↻ A126	VNMG_FS  ↻ A134	WNMG_FS  ↻ A138	
	CNMG_FY  ↻ A104	DNMG_FY  ↻ A112		TNMG_FY  ↻ A126		WNMG_FY  ↻ A138	
	CNGG_FJ  ↻ A104	DNMG_FJ  ↻ A112			VNMG_FJ  ↻ A134		
	CNGG_FJ-P  ↻ A104						
	CNGG_PK  ↻ A105	DNMG_PK  ↻ A113		TNMG_PK  ↻ A126			
				TNMG_R/L FS  ↻ A126			
				TNMG_R/L F  ↻ A127	VNMG_R/L-F  ↻ A134		

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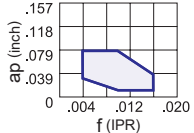
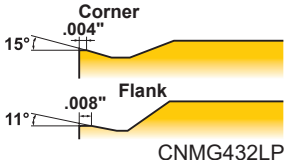
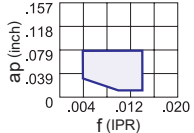
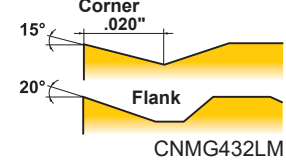
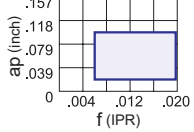
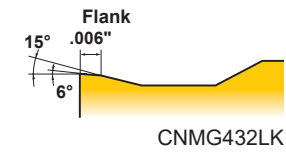
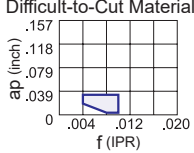
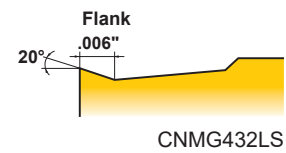
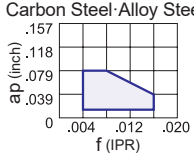
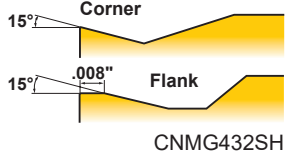
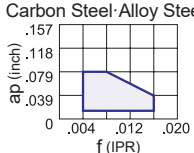
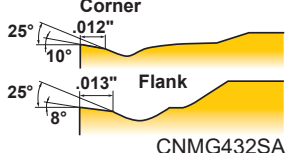
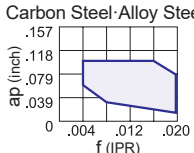
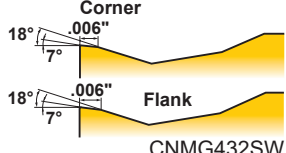
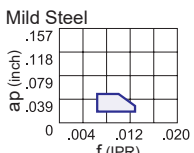
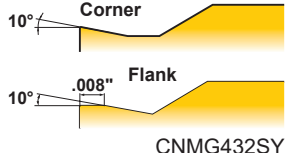
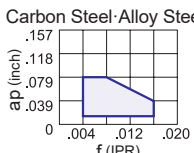
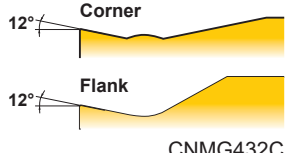
TURNING INSERTS

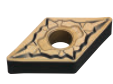
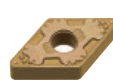
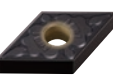
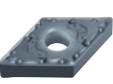
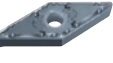
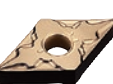
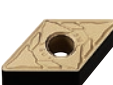
CLASSIFICATION

NEGATIVE INSERTS WITH HOLE

A

TURNING INSERTS

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry
Light Cutting	M Class	LP 	Recommendation for light cutting of carbon steel and alloy steel Double sided chipbreaker. Stable chip control in light cutting range. The curved edge allows smooth chip discharge.	Carbon Steel-Alloy Steel   CNMG432LP
		LM 	Recommendation for light cutting of stainless steel Double sided chipbreaker. Stable chip control in light cutting range. Breaker with high rake angle provides excellent burr control.	Stainless Steel   CNMG432LM
		LK 	Recommendation for light cutting of cast iron Narrow positive land provides low cutting resistance and excellent finish.	Cast Iron   CNMG432LK
		LS 	Recommendation for light cutting of difficult-to-cut materials Enhanced chip disposal for depth of cut smaller than the corner R.	Difficult-to-Cut Materials   CNMG432LS
		SH 	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   CNMG432SH
		SA 	Alternative breaker 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   CNMG432SA
		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   CNMG432SW
		SY 	Recommendation for light cutting of mild steel Double sided chipbreaker. Effectively controls chips. Recommended for workpieces in the 200–300HB range.	Mild Steel   CNMG432SY
		C 	Alternative breaker for light cutting of carbon steel and alloy steel Double sided chipbreaker. Can be used at small depth of cuts. The curved edge allows smooth chip discharge.	Carbon Steel-Alloy Steel   CNMG432C

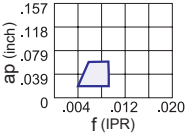
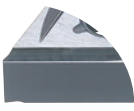
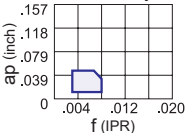
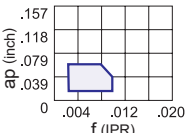
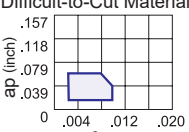
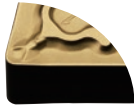
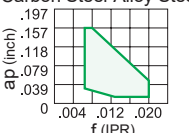
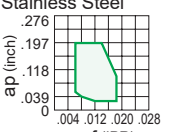
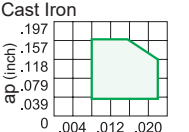
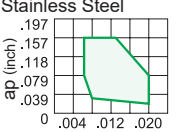
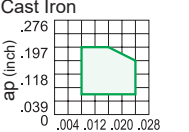
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	CNMG_LM  ↻ A105	DNMG_LM  ↻ A113	SNMG_LM  ↻ A120	TNMG_LM  ↻ A127	VNMG_LM  ↻ A135	WNMG_LM  ↻ A138	
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	CNMG_SH  ↻ A105	DNMG_SH  ↻ A113	SNMG_SH  ↻ A121	TNMG_SH  ↻ A127	VNMG_SH  ↻ A135	WNMG_SH  ↻ A139	
	CNMG_SA  ↻ A105	DNMG_SA  ↻ A114	SNMG_SA  ↻ A121	TNMG_SA  ↻ A127	VNMG_SA  ↻ A135	WNMG_SA  ↻ A139	
	CNMG_SW  ↻ A105	DNMX_SW  ↻ A114		TNMX_SW  ↻ A127		WNMG_SW  ↻ A139	
	CNMG_SY  ↻ A106	DNMG_SY  ↻ A114	SNMG_SY  ↻ A121	TNMG_SY  ↻ A128		WNMG_SY  ↻ A139	
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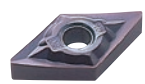
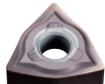
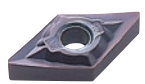
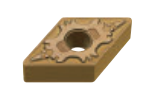
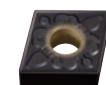
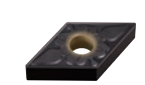
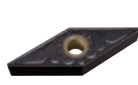
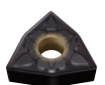
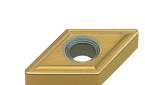
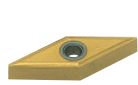
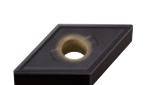
CLASSIFICATION

NEGATIVE INSERTS WITH HOLE

A

TURNING INSERTS

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry	
Light Cutting	M Class	R/L 1G 	Alternative chipbreaker for light cutting of carbon steel and alloy steel Double sided chipbreaker. Angled chipbreaker controls chip flow. Excellent chip control at low to medium feed rates.	Carbon Steel-Alloy Steel  15° Flank .008" SNMG432R1G	
		R/L K 	Light cutting Double sided chipbreaker. Parallel chipbreaker. Excellent chip control at low to medium feed rates.	Carbon Steel-Alloy Steel  14° Flank .010" TNMG331RK	
		MJ 	Recommendation for light cutting of difficult-to-cut materials Double sided chipbreaker. Ideal for heat-resistant alloy and titanium alloy. The sharp edge produces excellent surface finishes. The curved edge allows smooth chip discharge.	Difficult-to-Cut Materials  13° Corner 9° Flank CNMG432MJ	
		MJ 	Recommendation for light cutting of difficult-to-cut materials Double sided chipbreaker, Single sided chipbreaker. G class insert tolerance is suitable for workpieces requiring close dimensional tolerances. Ideal for heat-resistant alloy and titanium alloy. The sharp edge produces excellent surface finishes.	Difficult-to-Cut Materials  13° Corner 9° Flank CNGG432MJ	
Medium Cutting	M Class	MP 	Alternative breaker 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. Good balance of sharpness and strength.	Carbon Steel-Alloy Steel  15° Corner 11° Flank .006" .008" CNMG432MP	
		MM 	Breaker with high rake angle reduces burr formation Double sided chipbreaker. Simulation analysis technology assisted in the development of an optimized cutting edge land geometry, preventing plastic deformation and extending tool life.	Stainless Steel  6° Corner 10° Flank .012" .012" CNMG432MM	
		MK 	Recommendation for medium cutting of cast iron Optimum balance between sharpness and high edge strength for general use.	Cast Iron  15° Flank 3° .010" CNMG432MK	
		GM 	Alternative chip breaker for light to medium cutting of stainless steel Double sided chipbreaker. Alternate chip breaker to main chip breakers LM and MM. Excellent notch wear resistance for light to medium cutting.	Stainless Steel  25° Corner 15° 25° Flank .020" .020" CNMG432GM	
		GK 	Recommendation for rough cutting of cast iron Positive land increases welding resistance and suppresses chip welding and abrasion at low speed cutting.	Cast Iron  15° Flank .010" CNMG432GK	

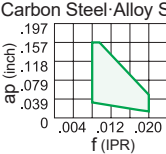
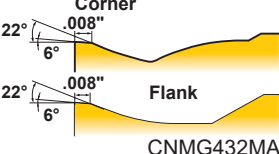
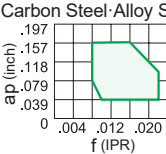
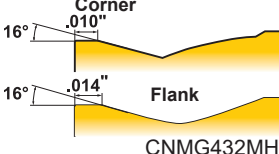
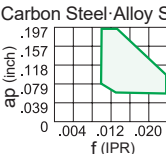
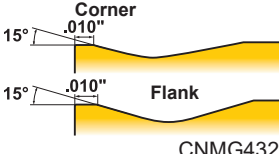
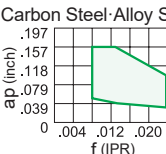
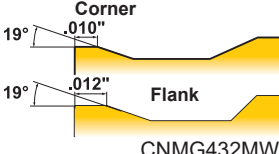
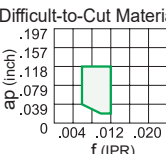
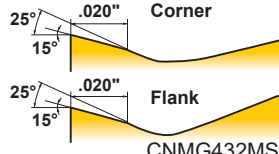
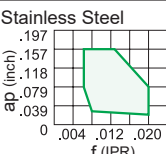
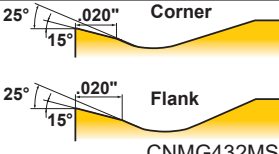
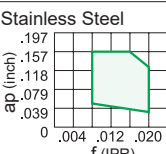
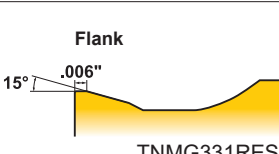
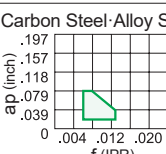
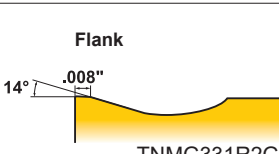
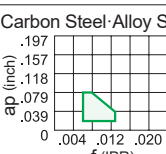
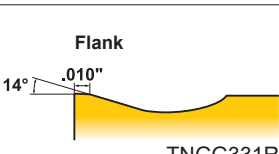
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				TNGG_R/L K  ↻ A128			
	CNMG_MJ  ↻ A106	DNMG_MJ  ↻ A114		TNMG_MJ  ↻ A128	VNMG_MJ  ↻ A135	WNMG_MJ  ↻ A139	
	CNGG_MJ  ↻ A106	DNGM_MJ  ↻ A115			VNGM_MJ  ↻ A135		
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	CNMG_MM  ↻ A107	DNMG_MM  ↻ A115	SNMG_MM  ↻ A121	TNMG_MM  ↻ A129	VNMG_MM  ↻ A136	WNMG_MM  ↻ A140	
	CNMG_MK  ↻ A107	DNMG_MK  ↻ A115	SNMG_MK  ↻ A122	TNMG_MK  ↻ A129	VNMG_MK  ↻ A136	WNMG_MK  ↻ A140	
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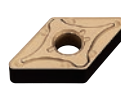
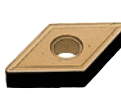
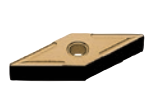
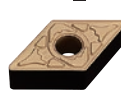
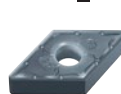
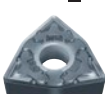
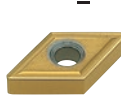
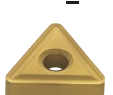
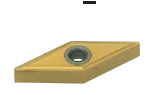
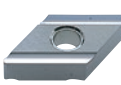
CLASSIFICATION

NEGATIVE INSERTS WITH HOLE

A

TURNING INSERTS

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry
Medium Cutting	M Class	MA 	Recommendation for medium cutting of carbon steel and alloy steel First recommendation for finish to light cutting of cast iron Double sided chipbreaker. Positive land provides sharp cutting action.	Carbon Steel-Alloy Steel  
		MH 	Recommendation for medium-heavy cutting of mild steel Alternative breaker for medium cutting of carbon steel and alloy steel Double sided chipbreaker. Flat land offers high edge strength. A wide chip pocket prevents chip jamming at large depth of cut.	Carbon Steel-Alloy Steel  
		Standard 	Recommendation for medium cutting of cast iron Alternative breaker for medium cutting of carbon steel and alloy steel Double sided chipbreaker. Flat land offers high edge strength.	Carbon Steel-Alloy Steel  
		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.	Carbon Steel-Alloy Steel  
		MS 	First recommendation for medium cutting of difficult-to-cut materials, Alternative chip breaker for medium cutting of stainless steel. A large two-step rake corner creates chips without squeezing and entangled shapes. Applicable to MP9005, MP9015, MP9025, MT9015	Difficult-to-Cut Materials  
		MS 	Alternative chipbreaker for medium cutting of stainless steel, mild steel and difficult-to-cut materials The sharp edge gives best performance. Flat top breaker shape offers high edge strength. Applicable to grades other than MP9005, MP9015, MP9025, MT9015	Stainless Steel  
		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.	Stainless Steel  
		R/L 2G 	Alternative chipbreaker for medium cutting of carbon steel and alloy steel Double sided chipbreaker. Parallel chipbreaker controls chip flow. Good chip control for medium feed rates.	Carbon Steel-Alloy Steel  
	G Class	R/L 	Medium cutting Double sided chipbreaker. Parallel chipbreaker. Good chip control for medium feed rate.	Carbon Steel-Alloy Steel  

	Rhombic 80° 	Rhombic 55° 	Square 90° 	Triangular 60° 	Rhombic 35° 	Trigon 80° 	Round 
	CNMG_MA  ↻ A107	DNMG_MA  ↻ A116	SNMG_MA  ↻ A122	TNMG_MA  ↻ A129	VNMG_MA  ↻ A136	WNMG_MA  ↻ A141	
	CNMG_MH  ↻ A108	DNMG_MH  ↻ A116	SNMG_MH  ↻ A122	TNMG_MH  ↻ A129	VNMG_MH  ↻ A136	WNMG_MH  ↻ A141	
	CNMG  ↻ A108	DNMG  ↻ A116	SNMG  ↻ A123	TNMG  ↻ A129	VNMG  ↻ A137	WNMG  ↻ A141	RNMG  ↻ A119
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	CNMG_MS  ↻ A108	DNMG_MS  ↻ A117	SNMG_MS  ↻ A123	TNMG_MS  ↻ A130	VNMG_MS  ↻ A137	WNMG_MS  ↻ A141	
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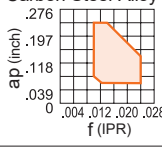
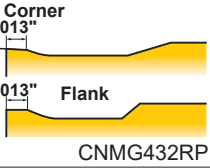
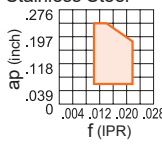
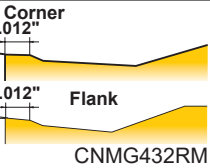
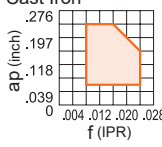
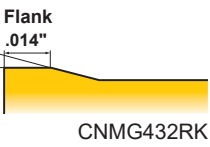
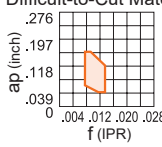
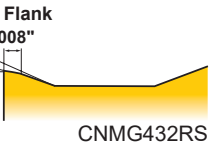
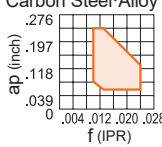
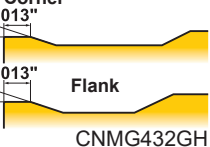
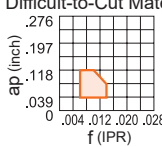
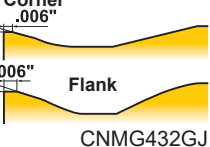
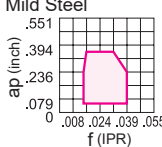
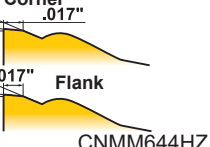
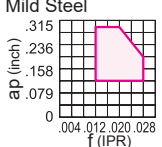
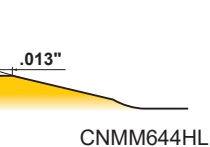
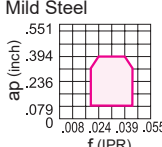
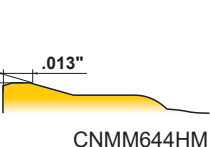
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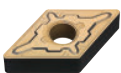
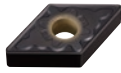
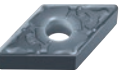
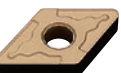
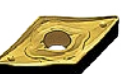
CLASSIFICATION

NEGATIVE INSERTS WITH HOLE

A

TURNING INSERTS

Application	Tolerance	Breaker Name and Picture	Features		Cross Section Geometry	
Rough Cutting	M Class	RP 	Recommendation for rough cutting of carbon and alloy steel Double sided chipbreaker. For interrupted cutting and cutting through scale. Good balance of cutting edge strength and low cutting resistance.	Carbon Steel-Alloy Steel 		CNMG432RP
		RM 	Recommendation for rough cutting of stainless steel Double sided chipbreaker. Excellent fracture resistance during interrupted cutting due to the optimum cutting edge land angle and honing geometry.	Stainless Steel 		CNMG432RM
		RK 	Recommendation for rough cutting of cast iron Seating surface and wide land 3 or more times that of conventional products provides high cutting stability for interrupted machining and scale removal.	Cast Iron 		CNMG432RK
		RS 	Recommendation for rough cutting of difficult-to-cut materials Seating surface and land width 3 or more times that of conventional products and provides high cutting stability for interrupted machining and scale removal.	Difficult-to-Cut Materials 		CNMG432RS
		GH 	Recommendation for rough cutting of carbon steel, alloy steel and stainless steel Double sided chipbreaker. For interrupted cut and removing scale. A combination of wide land and large chip pocket allows high feeds.	Carbon Steel-Alloy Steel 		CNMG432GH
		GJ 	Recommendation for rough cutting of difficult-to-cut materials Double sided chipbreaker. Excellent balance of edge sharpness and strength. Edge geometry with high face wear resistance.	Difficult-to-Cut Materials 		CNMG432GJ
Heavy Cutting	M Class	HZ 	Recommendation for heavy cutting of mild steel and stainless steel Single sided chipbreaker. Appropriate for 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 		CNMM644HZ
		HL 	Recommendation for mild steel and stainless steel Low resistance due to narrow flat land. Achieves high chip breaking ability.	Mild Steel 		CNMM644HL
		HM 	Assist breaker for mild steel and stainless steel Flat land provides outstanding balance between cutting edge strength and sharpness.	Mild Steel 		CNMM644HM

	Rhombic 80° 	Rhombic 55° 	Square 90° 	Triangular 60° 	Rhombic 35° 	Trigon 80° 	Round 
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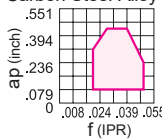
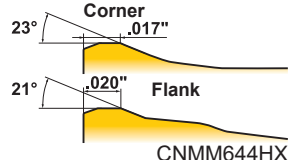
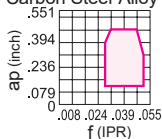
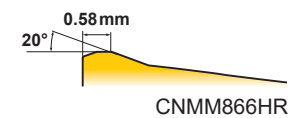
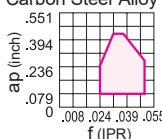
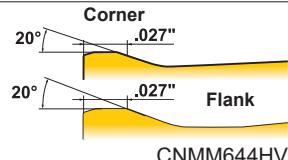
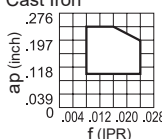
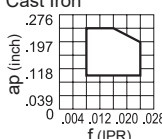
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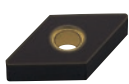
CLASSIFICATION

NEGATIVE INSERTS WITH HOLE

TURNING INSERTS

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Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry	
Heavy Cutting	M Class	HX 	Recommendation for heavy cutting of carbon steel and alloy steel Single sided chipbreaker. Appropriate for the medium range of the heavy cutting region. The flat edge and chamfer provide a balance of sharpness and strength. Variable land and a wavy chipbreaker for good chip control.	Carbon Steel-Alloy Steel   CNMM644HX	
		HR 	Assist breaker for general steel and alloy steel High cutting edge strength. Excellent chip discharge even with high feed and high depth of cut.	Carbon Steel-Alloy Steel   CNMM866HR	
		HV 	Alternative chipbreaker for heavy cutting of carbon steel and alloy steel Single sided chipbreaker. Appropriate for 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   CNMM644HV	
	For Cast Iron	Flat Top 	Recommendation for rough cutting of cast iron Double sided flat insert. Most effective in unstable machining i.e. interrupted cuts due to high edge strength and stable fitting on the shim.	Cast Iron   CNMA432	
		Flat Top 	For cast iron Double sided flat insert. Most effective in unstable machining i.e. interrupted cuts due to high edge strength and stable fitting on the shim. G class tolerance for use on workpieces requiring close tolerances.	Cast Iron   DNGA432	

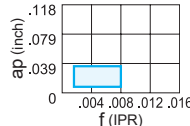
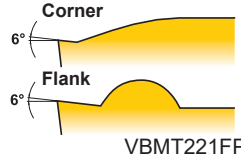
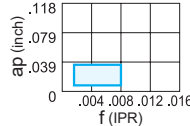
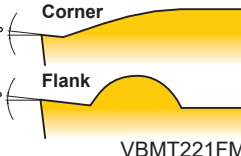
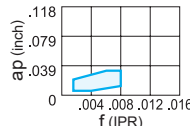
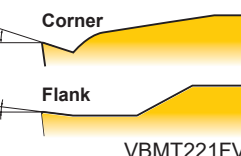
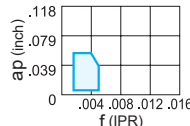
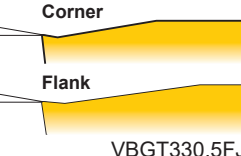
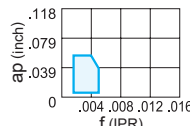
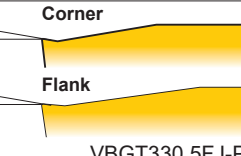
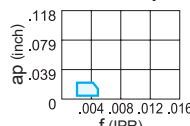
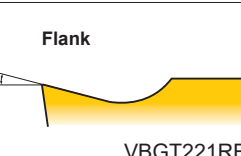
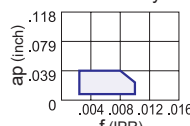
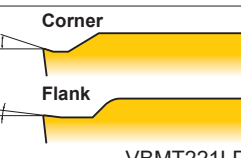
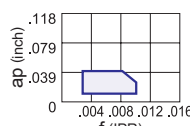
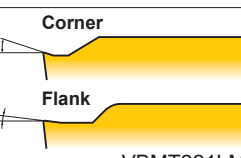
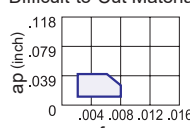
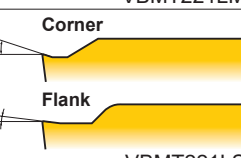
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	CNMM_HR  ➡ A111		SNMM_HR  ➡ A125				
	CNMM_HV  ➡ A111		SNMM_HV  ➡ A125				
	CNMA  ➡ A111	DNMA  ➡ A118	SNMA  ➡ A125	TNMA  ➡ A132	VNMA  ➡ A137	WNMA  ➡ A142	
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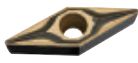
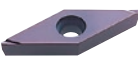
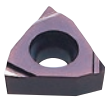
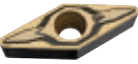
CLASSIFICATION

5° POSITIVE INSERTS WITH HOLE

A

TURNING INSERTS

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry		
Finish Cutting	M Class	FP 	Recommendation for finishing carbon steel and alloy steel Chip breaker peninsula controls chips even at small depth of cut. Maintains the edge strength at the corner and prevents sudden fractures.	Carbon Steel-Alloy Steel 	 VBMT221FP	
		FM 	Recommendation for finishing stainless steel Chip breaker peninsula controls chips even at small depth of cut. Maintains the edge strength at the corner and prevents sudden fractures.	Stainless Steel 	 VBMT221FM	
		FV 	Recommendation for finishing carbon steel, alloy steel, mild steel and stainless steel Suitable for low depth of cut and feed rate applications. Sharp cutting edge and low resistance design provide excellent cutting performance.	Carbon Steel-Alloy Steel 	 VBMT221FV	
	G Class	FJ 	Finishing difficult-to-cut materials The curved cutting edges support changes in cutting depth, smooth chip discharge and disposal. The high rake angle is highly suitable for finishing difficult-to-cut materials.	Difficult-to-Cut Materials 	 VBGT330.5FJ	
		FJ-P 	Finishing titanium alloy Ideal for aluminum and copper. The sharp edge produces excellent surface finishes. The curved edge allows smooth chip discharge. The polished insert face prevents built up edge.	Titanium alloy 	 VBGT330.5FJ-P	
		R/L F 	Finishing carbon steel and alloy steel Angled chipbreaker controls chip flow. Sharp cutting edge produces excellent surface finishes.	Carbon Steel-Alloy Steel 	 VBGT221RF	
Light Cutting	M Class	LP 	Recommendation for light cutting of carbon and alloy steel Sharp cutting edge due to a high rake angle. Prevents chip welding on cutting edge and controls cloudiness of surface finish. Chip breaker peninsula matched to depth of cut capability provides excellent chip control.	Carbon Steel-Alloy Steel 	 VBMT221LP	
		LM 	Recommendation for light cutting of stainless steel Sharp cutting edge due to a high rake angle. Prevents chip welding on cutting edge and controls cloudiness of surface finish. Chip breaker peninsula matched to depth of cut capability provides excellent chip control.	Stainless Steel 	 VBMT221LM	
		LS 	Recommendation for light cutting of difficult-to-cut materials Sharp cutting edge due to a large rake angle. Breaker protrusion suitable for depth of cut area achieves a wide range of chip control.	Difficult-to-Cut Materials 	 VBMT221LS	

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					VBMT_FM  ↻ A179		
					VBMT_FV  ↻ A179		
					VBGT_FJ  ↻ A179		
					VBGT_FJ-P  ↻ A179		
					VBGT_R/L F  ↻ A180	WBGT_R/L F  ↻ A189	
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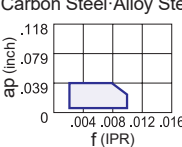
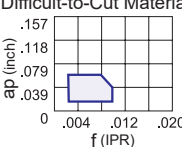
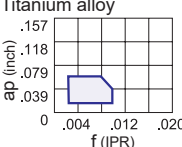
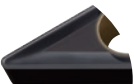
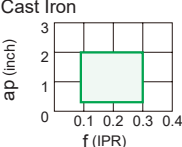
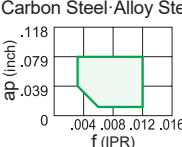
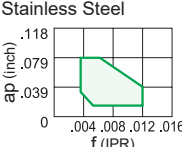
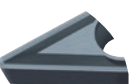
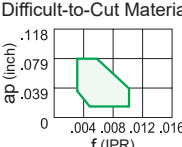
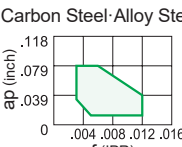
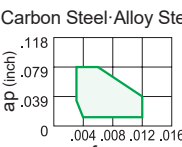
TURNING INSERTS

CLASSIFICATION

5° POSITIVE INSERTS WITH HOLE

A

TURNING INSERTS

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry	
Light Cutting	M Class	SV 	Light cutting of carbon steel, alloy steel, mild steel and stainless steel The double breaker design promotes chip discharge for mild steel low depth of cut applications.	Carbon Steel-Alloy Steel 	18° Corner 8° Flank VBMT221SV
		MJ 	Light cutting of difficult-to-cut materials Ideal for heat-resistant alloy and titanium alloy The curved cutting edges support changes in cutting depth, smooth chip discharge and disposal. The high rake angle is highly suitable for finish-light cutting difficult-to-cut materials.	Difficult-to-Cut Materials 	13° Corner 9° Flank VBGT331MJ
		MJ-P 	Light cutting for titanium alloy Ideal for aluminum and copper. The sharp edge produces excellent surface finishes. The curved edge allows smooth chip discharge. The polished insert face prevents built up edge.	Titanium alloy 	13° Corner 9° Flank VBGT331MJ-P
	G Class	MK 	Recommendation for medium cutting of cast iron Optimum balance between sharpness and high edge strength for general use.	Cast Iron 	18° Flank 0.1 VBMT331MK
		MP 	Recommendation for light cutting of carbon and alloy steel Small, flat, land at cutting edge provides an excellent balance of wear and fracture resistance. The wide chip gullet decreases cutting resistance, reduces vibration and chip jamming in elevated depth of cut applications.	Carbon Steel-Alloy Steel 	18° Corner 18° Flank VBMT331MP
		MM 	Recommendation for medium cutting of stainless steel Good balance of wear resistance and fracture resistance because of the flat land cutting edge. A wide chip pocket controls increasing of the cutting resistance and reduces vibration and chip jamming even at large depth of cut.	Stainless Steel 	18° Corner 18° Flank VBMT331MM
		MS 	Recommendation for medium cutting of difficult-to-cut materials A wide chip pocket controls increasing of the cutting resistance and reduces vibration and chip jamming even at large depth of cut.	Difficult-to-Cut Materials 	18° Corner 18° Flank VBMT331MS
		Standard 	Medium cutting of carbon steel, alloy steel and stainless steel The high rake angle combined with a small flat land provide a balance of strength and sharpness.	Carbon Steel-Alloy Steel 	18° Corner 18° Flank VBMT331
		MV 	Medium cutting of carbon steel, alloy steel, mild steel and stainless steel A positive land and the high rake angle provides sharp cutting edge performance. The double breakers and round-shaped dots in the rake face provide a wide range of chip control.	Carbon Steel-Alloy Steel 	18° Corner 10° Flank VBMT331MV
Medium Cutting	M Class				

	Rhombic 80° 	Rhombic 55° 	Square 90° 	Triangular 60° 	Rhombic 35° 	Trigon 80° 	Round 
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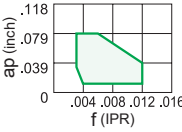
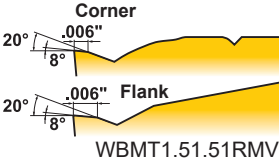
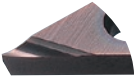
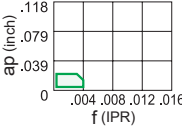
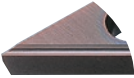
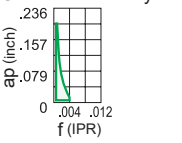
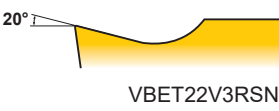
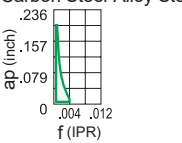
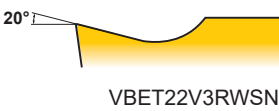
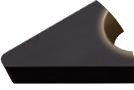
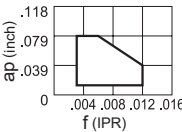
TURNING INSERTS

CLASSIFICATION

5° POSITIVE INSERTS WITH HOLE

TURNING INSERTS

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Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry	
Medium Cutting	M Class	R/L MV 	Medium cutting of carbon steel, alloy steel, mild steel and stainless steel A positive land and the high rake angle provides sharp cutting edge performance. The double breakers and round-shaped dots in the rake face provide a wide range of chip control.	Carbon Steel-Alloy Steel  ap (inch) f (IPR)	 Corner .006" 20° 8° 20° 8° Flank .006" WBMT1.51.51RMV
		R/L SR 	Medium cutting for Swiss type lathe machining Features a high angled chipbreaker. Low resistance insert design controls chip flow.	Carbon Steel-Alloy Steel  ap (inch) f (IPR)	 Flank 30° VBET22V3RSR
		R/L SN 	General purpose for Swiss type lathe machining The parallel chipbreaker. Excellent chip control for low to medium feed rates.	Carbon Steel-Alloy Steel  ap (inch) f (IPR)	 Flank 20° VBET22V3RSN
		R/LW SN 	General purpose for Swiss type lathe machining The parallel chipbreaker. Excellent chip control for low to medium feed rates. The wiper produces good surface finishes.	Carbon Steel-Alloy Steel  ap (inch) f (IPR)	 Flank 20° VBET22V3RWSN
	For Cast Iron	Flat Top 	Heavy cutting of cast iron Flat top. Most effective for unstable machining due to its high edge strength.	Cast Iron  ap (inch) f (IPR)	 0° VBMW332

	Rhombic 80° 	Rhombic 55° 	Square 90° 	Triangular 60° 	Rhombic 35° 	Trigon 80° 	Round 
						WBMT_R/L MV  ➡ A189	
					VBET_R/L SR  ➡ A183		
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					VBMW  ➡ A183		

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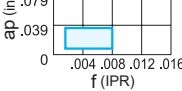
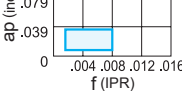
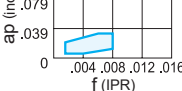
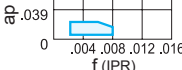
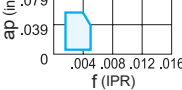
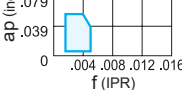
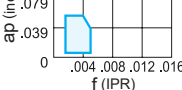
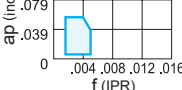
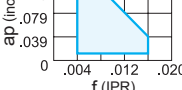
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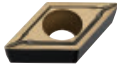
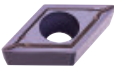
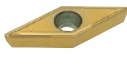
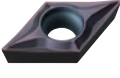
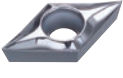
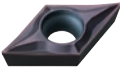
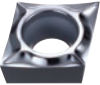
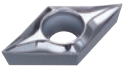
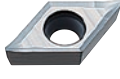
CLASSIFICATION

7° POSITIVE INSERTS WITH HOLE

A

TURNING INSERTS

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry	
Finish Cutting	M Class	FP 	Recommendation for finishing carbon steel and alloy steel Chip breaker peninsula controls chips even at small depth of cut. Maintains the edge strength at the corner and prevents sudden fractures.	Carbon Steel-Alloy Steel ap (inch) .118 .079 .039 0 f (IPR) .004 .008 .012 .016 	6° Corner 6° Flank CCMT32.51FP
		FM 	Recommendation for finishing stainless steel Chip breaker peninsula controls chips even at small depth of cut. Maintains the edge strength at the corner and prevents sudden fractures.	Stainless Steel ap (inch) .118 .079 .039 0 f (IPR) .004 .008 .012 .016 	6° Corner 6° Flank CCMT32.51FM
		FV 	Recommendation for finishing carbon steel, alloy steel and mild steel Sharp cutting edge and low resistance design provides excellent cutting performance. Suitable for low depth of cut and feed rate applications.	Carbon Steel-Alloy Steel ap (inch) .118 .079 .039 0 f (IPR) .004 .008 .012 .016 	18° Corner 8° Flank CCMT32.51FV
		SVX 	Alternative chipbreaker for 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 ap (inch) .118 .079 .039 0 f (IPR) .004 .008 .012 .016 	18° Corner 8° Flank XCMT221SVX
	G Class	FS 	Recommendation for finishing difficult-to-cut materials Ideal for heat-resistant alloys, titanium alloys, and cobalt chrome alloys. Sharp cutting edges provide excellent surface precision and finish. Highly efficient chip discharge is possible due to curved cutting edges.	Difficult-to-Cut Materials ap (inch) .118 .079 .039 0 f (IPR) .004 .008 .012 .016 	14° Corner 9° Flank CCGT32.50.5FS
		FS-P 	Recommendation for finishing titanium alloy Ideal for titanium alloys and copper alloys. Sharp cutting edges provide excellent surface precision and finish. Highly efficient chip discharge is possible due to curved cutting edges. Polished (mirror-surface) finish of insert surfaces drastically improves welding resistance extending tool life.	Titanium alloy ap (inch) .118 .079 .039 0 f (IPR) .004 .008 .012 .016 	14° Corner 9° Flank CCGT32.50.5FS-P
		FJ 	Recommendation for finishing difficult-to-cut materials The curved cutting edges support changes in cutting depth and allow smooth chip discharge and disposal. The high rake angle is highly suitable for finishing difficult-to-cut materials.	Difficult-to-Cut Materials ap (inch) .118 .079 .039 0 f (IPR) .004 .008 .012 .016 	14° Corner 9° Flank CCGT32.50.5FJ
		FJ-P 	Finishing titanium alloy Ideal for aluminum and copper. The sharp edge produces excellent surface finishes. The curved edge allows smooth chip discharge. The polished insert face prevents built up edge.	Titanium alloy ap (inch) .118 .079 .039 0 f (IPR) .004 .008 .012 .016 	14° Corner 14° Flank CCGT32.50.5FJ-P
		AZ 	Recommendation for aluminum 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. The polished insert face prevents built up edge.	Aluminum Alloy ap (inch) .157 .118 .079 .039 0 f (IPR) .004 .012 .020 	30° Flank DCGT32.50.5AZ

	Rhombic 80° 	Rhombic 55° 	Square 90° 	Triangular 60° 	Rhombic 35° 	Trigon 80° 	Rhombic 25° 	Round 
	CCMT_FP  ➡ A147	DCMT_FP  ➡ A158	SCMT_FP  ➡ A168	TCMT_FP  ➡ A171	VCMT_FP  ➡ A184			
	CCMT_FM  ➡ A147	DCMT_FM  ➡ A158	SCMT_FM  ➡ A168	TCMT_FM  ➡ A171	VCMT_FM  ➡ A184			
	CCMT_FV  ➡ A147	DCMT_FV  ➡ A158	SCMT_FV  ➡ A168	TCMT_FV  ➡ A171	VCMT_FV  ➡ A184			
							XCMT_SVX  ➡ A192	
	CCGT_FS  ➡ A147	DCGT_FS  ➡ A159						
	CCGT_FS-P  ➡ A147	DCGT_FS-P  ➡ A159						
	CCGT_FJ  ➡ A147	DCGT_FJ  ➡ A158						
	CCGT_FJ-P  ➡ A147	DCGT_FJ-P  ➡ A158		TCGT_FJ-P  ➡ A171		WCGT_FJ-P  ➡ A190		
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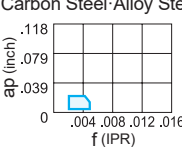
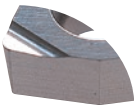
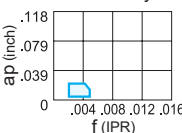
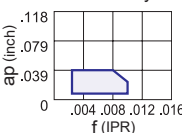
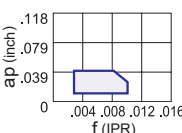
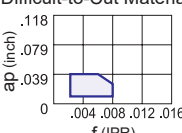
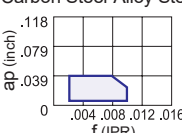
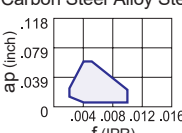
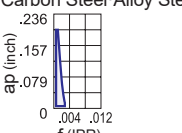
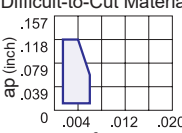
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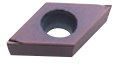
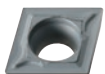
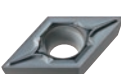
CLASSIFICATION

7° POSITIVE INSERTS WITH HOLE

A

TURNING INSERTS

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry	
Finish Cutting	G Class	R/L F 	Chipbreaker for finishing Lead chipbreaker controls chip flow. Sharp cutting edge gives a good surface finish.	Carbon Steel-Alloy Steel  17° Flank CCGT03S102L-F	
		R/L 	Finishing Angled chipbreaker. Excellent chip control at low feed rates.	Carbon Steel-Alloy Steel  15° Flank WCGT1.211R	
Light Cutting	M Class	LP 	Recommendation for light cutting of carbon and alloy steel Sharp cutting edge due to a high rake angle. Prevents chip welding on cutting edge and controls cloudiness of surface finish. Chip breaker peninsula matched to depth of cut capability provides excellent chip control.	Carbon Steel-Alloy Steel  18° 8° Corner Flank CCMT32.52LP	
		LM 	Recommendation for light cutting of stainless steel Sharp cutting edge due to a high rake angle. Prevents chip welding on cutting edge and controls cloudiness of surface finish. Chip breaker peninsula matched to depth of cut capability provides excellent chip control.	Stainless Steel  18° 8° Corner Flank CCMT32.52LM	
		LS 	Recommendation for light cutting of difficult-to-cut materials Sharp cutting edge due to a large rake angle. Breaker protrusion suitable for depth of cut area achieves a wide range of chip control.	Difficult-to-Cut Materials  18° 8° Corner Flank CCMT32.52LS	
		SV 	Alternative chipbreaker for light cutting of carbon steel, alloy steel, mild steel and stainless steel The double breaker design promotes chip control in mild steel and low depth of cut machining applications.	Carbon Steel-Alloy Steel  18° 8° Corner Flank CCMH21.51SV	
		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  20° 12° 0.005" 16° 8° 0.005" Corner Flank CCMT32.51SW	
		R/L SS 	Chipbreaker for light cutting of automatic lathe machining A parallel chipbreaker. Excellent chip control at low feed rates.	Carbon Steel-Alloy Steel  14° Flank CCGT32.50.5RSS	
	G Class	LS 	Recommendation for light cutting of difficult-to-cut materials Ideal for heat-resistant alloy and titanium alloy and cobalt chrome alloy. The parallel cutting edge. Breaker protrusion suitable for depth of cut area achieves a wide range of chip control.	Difficult-to-Cut Materials  12° 6° Corner Flank CCGT32.51MLS	

	Rhombic 80° 	Rhombic 55° 	Square 90° 	Triangular 60° 	Rhombic 35° 	Trigon 80° 	Rhombic 25° 	Round 
	CCGT_L F CCGH_R/L F  ↻ A148, A149	DCGT_R/L F  ↻ A159		TCGT_R/L F  ↻ A172	VCGT_R/L F  ↻ A184			
						WCGT_R/L  ↻ A190		
	CCMT_LP  ↻ A149	DCMT_LP  ↻ A159	SCMT_LP  ↻ A168	TCMT_LP  ↻ A172	VCMT_LP  ↻ A185			
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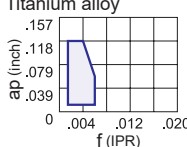
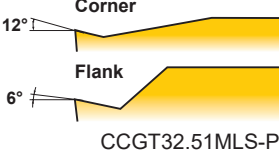
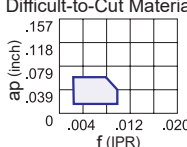
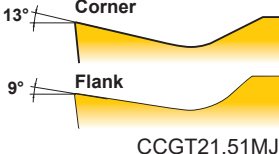
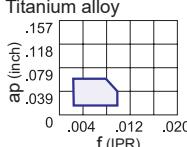
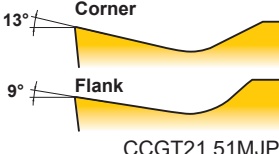
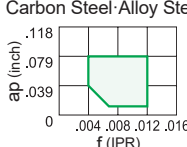
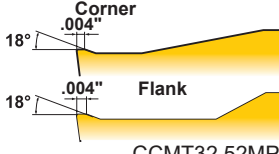
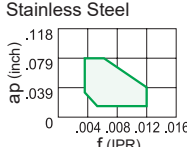
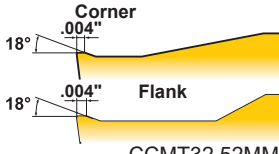
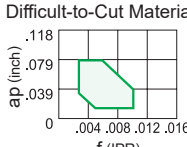
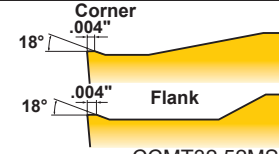
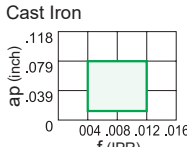
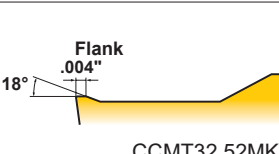
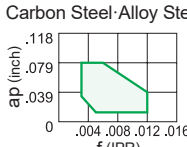
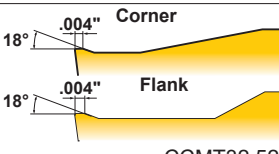
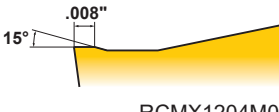
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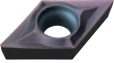
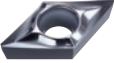
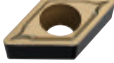
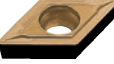
CLASSIFICATION

7° POSITIVE INSERTS WITH HOLE

A

TURNING INSERTS

Application	Tolerance	Breaker Name and Picture	Features		Cross Section Geometry	
Light Cutting	G Class	LS-P 	Recommendation for light cutting of titanium alloy Ideal for aluminum and copper. The parallel cutting edge. Breaker protrusion suitable for depth of cut area achieves a wide range of chip control. The polished insert face prevents built up edge.	Titanium alloy 	 CCGT32.51MLS-P	
		MJ 	Light cutting of difficult-to-cut materials Ideal for heat-resistant alloy and titanium alloy The curved cutting edges support changes in cutting depth-smooth chip discharge and disposal. The high rake angle is highly suitable for finish- light cutting difficult-to-cut materials.	Difficult-to-Cut Materials 	 CCGT21.51MJ	
		MJ-P 	Light cutting for titanium alloy Ideal for aluminum and copper. The sharp edge produces excellent surface finishes. The curved edge allows smooth chip discharge. The polished insert face prevents built up edge.	Titanium alloy 	 CCGT21.51MJ-P	
Medium Cutting	M Class	MP 	Recommendation for medium cutting of carbon and alloy steel The small flat land at cutting edge provides an excellent balance of wear and fracture resistance. The wide chip gullet decreases cutting resistance, reduces vibration and chip jamming in elevated depth of cut applications.	Carbon Steel-Alloy Steel 	 CCMT32.52MP	
		MM 	Recommendation for medium cutting of stainless steel The small flat land at cutting edge provides an excellent balance of wear and fracture resistance. The wide chip gullet decreases cutting resistance, reduces vibration and chip jamming in elevated depth of cut applications.	Stainless Steel 	 CCMT32.52MM	
		MS 	First recommendation for medium cutting of difficult-to-cut materials A wide chip pocket controls increasing of the cutting resistance and reduces vibration and chip jamming even at large depth of cut.	Difficult-to-Cut Materials 	 CCMT32.52MS	
		MK 	Recommendation for medium cutting of cast iron Optimum balance between sharpness and high edge strength for general use.	Cast Iron 	 CCMT32.52MK	
		Standard 	Recommendation for medium cutting of carbon steel, alloy steel, mild steel, stainless steel and cast iron The high rake angle combined with a small, flat land provide a balance of strength and sharpness.	Carbon Steel-Alloy Steel 	 CCMT32.52	
					 RCMX1204M0	

	Rhombic 80° 	Rhombic 55° 	Square 90° 	Triangular 60° 	Rhombic 35° 	Trigon 80° 	Rhombic 25° 	Round 
	CCGT_LS-P  ➡ A151	DCGT_LS-P  ➡ A161			VCGT_LS-P  ➡ A185			
	CCGT_MJ  ➡ A151	DCGT_MJ  ➡ A161		TCGT_MJ  ➡ A173		WCGT_MJ  ➡ A190		
	CCGT_MJ-P  ➡ A151	DCGT_MJ-P  ➡ A161		TCGT_MJ-P  ➡ A173		WCGT_MJ-P  ➡ A190		
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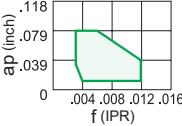
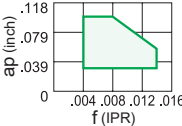
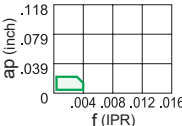
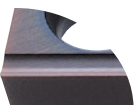
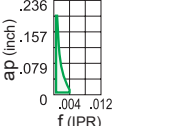
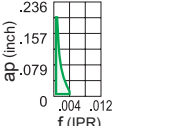
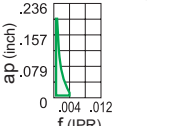
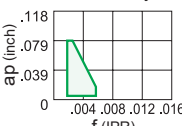
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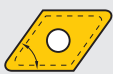
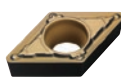
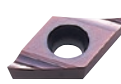
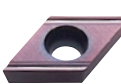
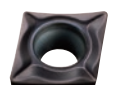
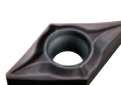
CLASSIFICATION

7° POSITIVE INSERTS WITH HOLE

A

TURNING INSERTS

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry	
Medium Cutting	M Class	MV 	Alternative chipbreaker for medium cutting of carbon steel, alloy steel, mild steel and stainless steel A positive land and the high rake angle provides sharp cutting edge performance. The double breakers and round-shape in the rake face provide a wide range of chip control.	Carbon Steel-Alloy Steel 	Corner 20° 12° .007" Flank 20° 12° .007" CCMH21.51MV
		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 	Corner 18° 7° .008" Flank 18° 7° .008" CCMT32.52MW
	E Class	R/L SR 	Medium cutting for Swiss style lathe machining A wide angled chipbreaker. Low resistance insert design controls chip flow.	Carbon Steel-Alloy Steel 	Flank 30° CCET32.5V3RSR
		R/L SN 	General purpose for Swiss style lathe machining The parallel chipbreaker. Excellent chip control at low to medium feed rates.	Carbon Steel-Alloy Steel 	Flank 20° CCET32.5V3RSN
	G Class	R/L SN 	General purpose for Swiss style lathe machining The parallel chipbreaker. Excellent chip control for low to medium feed rates.	Carbon Steel-Alloy Steel 	Flank 20° CCGT32.5V3RSN
	E Class	R/LW SN 	General purpose for Swiss style lathe machining The parallel chipbreaker. Excellent chip control for low to medium feed rates. The wiper produces good surface finish.	Carbon Steel-Alloy Steel 	Flank 20° CCET31.5V3RWSN
	G Class	SMG 	Medium cutting for Swiss style lathes machining 3D molded chipbreaker provides good chip control. G class insert gives sharp cutting action, allowing high precision machining. Breaker geometry appropriate for copying and back turning. M = minus radius tolerance	Carbon Steel-Alloy Steel 	Corner 14° Flank 9° CCGT32.51MSMG

	Rhombic 80° 	Rhombic 55° 	Square 90° 	Triangular 60° 	Rhombic 35° 	Trigon 80° 	Round 
	CCMH_MV  ➡ A152	DCMT_MV  ➡ A162			VCMT_MV  ➡ A186		
	CCMT_MW  ➡ A152						
	CCET_R/L SR  ➡ A153	DCET_R/L SR  ➡ A163					
	CCET_R/L SN  ➡ A153	DCET_R/L SN  ➡ A163					
	CCGT_R/L SN  ➡ A154	DCGT_R/L SN  ➡ A164					
	CCET_R/LW SN  ➡ A154	DCET_R/LW SN  ➡ A164					
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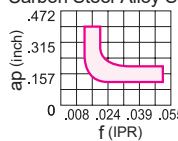
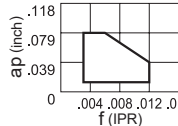
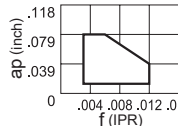
TURNING INSERTS

CLASSIFICATION

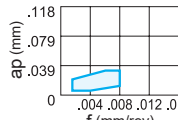
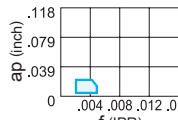
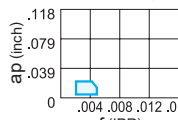
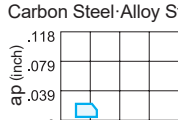
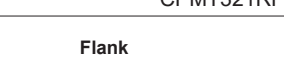
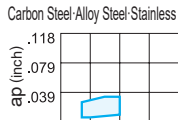
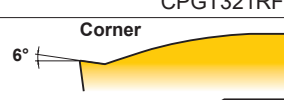
7° POSITIVE INSERTS WITH HOLE

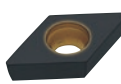
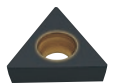
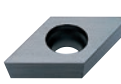
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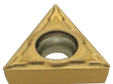
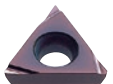
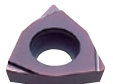
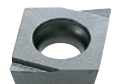
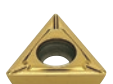
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Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry	
Heavy Cutting	M Class	RR 	Heavy cutting of carbon steel and alloy steel A wide groove chipbreaker prevents chips from jamming at large depths of cut. Small dimples improve chip control at small depths of cut.	Carbon Steel-Alloy Steel 	 RCMX2006M0-RR
		Flat Top 	For cast iron Most effective in unstable machining due to high edge strength.	Cast Iron 	 CCMW32.52
		Flat Top 	For cast iron Most effective in unstable machining due to high edge strength. G class tolerance for use on workpieces requiring close tolerances.	Cast Iron 	 CCGW32.5V0

11° POSITIVE INSERTS WITH HOLE

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry	
Finish Cutting	M Class	FV 	Recommendation for finishing carbon steel, alloy steel, mild steel and stainless steel Suitable for low depth of cut and low feed rate applications. Sharp cutting edge and low resistance design achieves excellent cutting performance.	Carbon Steel-Alloy Steel 	 CPMH321FV
	G Class	R/L FS 	Recommendation for finishing carbon steel, alloy steel, stainless steel, cast iron and aluminum alloy Small angled chipbreaker. For precision finishing. Sharp cutting edge produces excellent surface finishes.	Carbon Steel-Alloy Steel 	 TPGH1.81.51RFS
	M Class	R/L F 	Finishing carbon steel and alloy steel Angled chipbreaker controls chip flow. Sharp cutting edge produces excellent surface finishes.	Carbon Steel-Alloy Steel 	 CPMT321RF
	G Class	R/L F 	Finishing carbon steel and alloy steel Angled chipbreaker controls chip flow. Sharp cutting edge produces excellent surface finishes.	Carbon Steel-Alloy Steel 	 CPGT321RF
	M Class	SQ 	Finishing carbon steel, alloy steel and stainless steel For small depth of cut and low feed.	Carbon Steel-Alloy Steel-Stainless Steel 	 CPMT32.51SQ

	Rhombic 80° 	Rhombic 55° 	Square 90° 	Triangular 60° 	Rhombic 35° 	Trigon 80° 	Round 
							RCMX_RR  ➡ A167
	CCMW  ➡ A155	DCMW  ➡ A165	SCMW  ➡ A169	TCMW  ➡ A174	VCMW  ➡ A186		
	CCGW  ➡ A155	DCGW  ➡ A165		TCGW  ➡ A174			

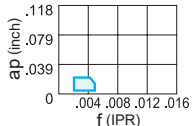
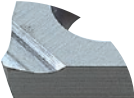
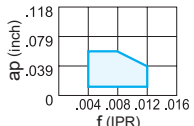
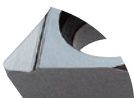
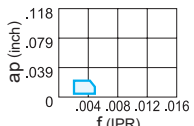
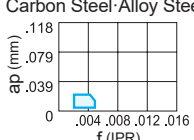
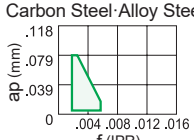
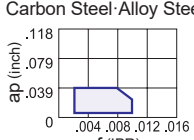
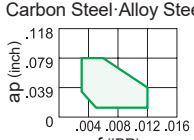
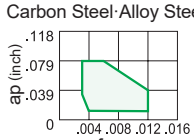
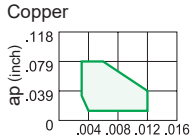
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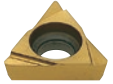
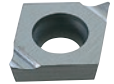
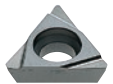
CLASSIFICATION

11° POSITIVE INSERTS WITH HOLE

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TURNING INSERTS

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry	
Finish Cutting	G Class	R/L 	Chipbreaker for finishing Lead chipbreaker controls chip flow. Good chip control for low to medium feed rates.	Carbon Steel-Alloy Steel ap (inch) .118 .079 .039 0 f (IPR) .004 .008 .012 .016  Flank 10° TPGX1.81.51R	
		Standard 	Finishing aluminum alloy Lead chipbreaker controls chip flow. Good chip control for low to medium feed rates.	Aluminum Alloy ap (inch) .118 .079 .039 0 f (IPR) .004 .008 .012 .016  Flank 25° CPGT321	
	M Class	L 	Finishing Angled chipbreaker controls chip flow. Good chip control for low to medium feed rates.	Carbon Steel-Alloy Steel ap (inch) .118 .079 .039 0 f (IPR) .004 .008 .012 .016  Flank 10° TPMX1.81.51L	
	E Class	SRF 	Finishing Lead chipbreaker controls chip flow. Sharp cutting edge produces excellent surface finishes.	Carbon Steel-Alloy Steel ap (mm) .118 .079 .039 0 f (IPR) .004 .008 .012 .016  Flank 15° VPET1.51.50.2RSRF	
	G Class	SMG 	Medium cutting for Swiss style lathes machining 3D molded chipbreaker provides good chip control. G class insert gives sharp cutting action, allowing high precision machining. Breaker geometry appropriate for copying and back turning. M = minus radius tolerance	Carbon Steel-Alloy Steel ap (mm) .118 .079 .039 0 f (IPR) .004 .008 .012 .016  Corner 11° Flank 11° VPGT1.51.50.2MSMG	
Light Cutting	M Class	SV 	Recommendation for light cutting of carbon steel, alloy steel, mild steel, stainless steel and cast iron The double breaker design promotes chip discharge for mild steel and low depth of cut machining applications.	Carbon Steel-Alloy Steel ap (inch) .118 .079 .039 0 f (IPR) .004 .008 .012 .016  Corner 18° Flank 8° CPMH32.51SV	
Medium Cutting	M Class	Standard 	Alternative chipbreaker for medium cutting of carbon steel, alloy steel and stainless steel Standard, general purpose chipbreaker.	Carbon Steel-Alloy Steel ap (inch) .118 .079 .039 0 f (IPR) .004 .008 .012 .016  Corner 10° Flank 10° CPMX321	
		MV 	Recommendation for medium cutting of carbon steel, alloy steel, mild steel, stainless steel and cast iron A positive land and the high rake angle provides sharp cutting edge performance. Double breakers in the rake face achieve a wide range of chip control.	Carbon Steel-Alloy Steel ap (inch) .118 .079 .039 0 f (IPR) .004 .008 .012 .016  Corner 20° .008" 8° Flank 20° .008" 8° CPMH321MV	
		MQ 	Medium cutting of carbon steel, alloy steel and stainless steel Can be used under a wide range of cutting conditions.	Copper ap (inch) .118 .079 .039 0 f (IPR) .004 .008 .012 .016  Corner 20° .006" 6° Flank 20° .006" 6° CPMT32.51MQ	

	Rhombic 80° 	Rhombic 55° 	Square 90° 	Triangular 60° 	Rhombic 35° 	Trigon 80° 	Round 
				TPGX_R/L  ↻ A177			
	CPGT  ↻ A156						
				TPMX_L  ↻ A177			
					VPET_R/L SRF  ↻ A188		
					VPGT_SMG  ↻ A188		
	CPMH_SV  ↻ A156			TPMH_SV  ↻ A177			
	CPMX  ↻ A157		SPMT  ↻ A170	TPMX  ↻ A178			
	CPMH_MV  ↻ A157			TPMH_MV  ↻ A178		WPMT_MV  ↻ A191	
	CPMT_MQ  ↻ A157			TPMT_MQ  ↻ A178			

A

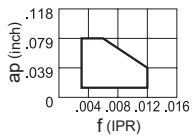
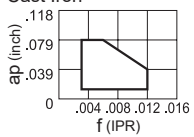
TURNING INSERTS

CLASSIFICATION

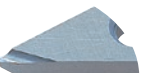
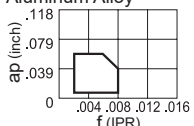
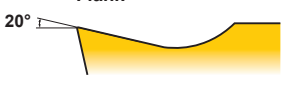
11° POSITIVE INSERTS WITH HOLE

TURNING INSERTS

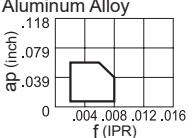
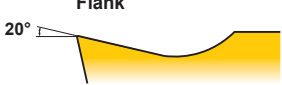
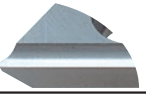
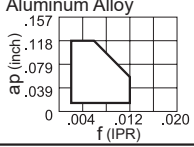
A

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry	
For Cast Iron	M Class	Flat Top 	Heavy cutting of cast iron Flat top. Most effective for unstable machining due to high edge strength.	Cast Iron 	0°  SPMW432
	G Class	Flat Top 	For cast iron Most effective in unstable machining due to high edge strength. G class tolerance allows use on workpieces requiring close tolerances.	Cast Iron 	0°  SPGX432

15° POSITIVE INSERTS WITH HOLE

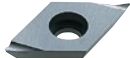
Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry	
For Aluminum Alloy	G Class	R/L 	For aluminum cutting Angled chipbreaker. Sharp cutting edge produces excellent surface finishes.	Aluminum Alloy 	20°  VDGX320.5R

20° POSITIVE INSERTS WITH HOLE

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry	
For Aluminum Alloy	G Class	R/L F 	For aluminum cutting Angled chipbreaker. Sharp cutting edge produces excellent surface finishes.	Aluminum Alloy 	20°  DEGX431RF
		R/L 	For aluminum cutting Parallel chipbreaker. Sharp cutting edge produces excellent surface finishes.	Aluminum Alloy 	25°  DEGX431R

	Rhombic 80° 	Rhombic 55° 	Square 90° 	Triangular 60° 	Rhombic 35° 	Trigon 80° 	Round 
			SPMW 				
			➡ A170 SPGX 	TPGX 			
			➡ A170	➡ A178			

	Rhombic 80° 	Rhombic 55° 	Square 90° 	Triangular 60° 	Rhombic 35° 	Trigon 80° 	Round 
					VDGX_R/L 		
					➡ A187		

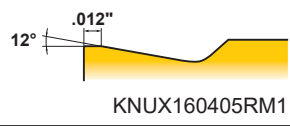
	Rhombic 80° 	Rhombic 55° 	Square 90° 	Triangular 60° 	Rhombic 35° 	Trigon 80° 	Round 
		DEGX_R/L F 					
		➡ A166					
		DEGX_R/L 		TEGX_R/L 			
		➡ A166		➡ A175			

CLASSIFICATION

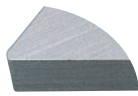
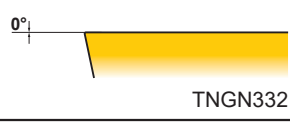
NEGATIVE INSERTS WITHOUT HOLE

TURNING INSERTS

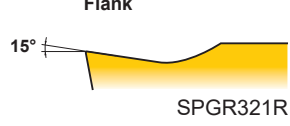
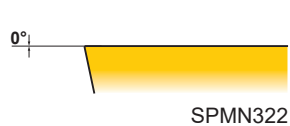
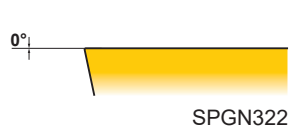
A

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry
Medium Cutting	M Class	M1 	Medium cutting of carbon steel and alloy steel Single sided chipbreaker. Can be used for copying. An angled chipbreaker for controlling chip flow. (M1)	Carbon Steel-Alloy Steel ap (inch) .276 .197 .118 .039 f (IPR) .004 .012 .020 .028  12° Flank .012" KNUX160405RM1
		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 ap (inch) .276 .197 .118 .039 f (IPR) .004 .012 .020 .028  0° SNMN432
		Flat Top 	For cast iron Double sided flat insert. Most effective for unstable machining due to high edge strength and stable insert clamping. Use on workpieces requiring close tolerance inserts.	Cast Iron ap (inch) .276 .197 .118 .039 f (IPR) .004 .012 .020 .028  0° SNGN432

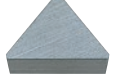
7° POSITIVE INSERTS WITHOUT HOLE

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry
For Cast Iron	G Class	Flat Top 	For cast iron Double sided flat insert. Most effective for unstable machining due to high edge strength and stable insert clamping. Use on workpieces requiring close tolerance inserts.	Cast Iron ap (inch) .118 .079 .039 f (IPR) .004 .008 .012 .016  0° TNGN332

11° POSITIVE INSERTS WITHOUT HOLE

Application	Tolerance	Breaker Name and Picture	Features	Cross Section Geometry
Finish Cutting	G Class	R/L 	Finishing A parallel chipbreaker. Good chip control for low to medium feed rates.	Carbon Steel-Alloy Steel ap (inch) .118 .079 .039 f (IPR) .004 .008 .012 .016  15° Flank SPGR321R
Light to Medium Cutting	M Class	Standard 	Light to medium cutting of carbon steel, alloy steel and stainless steel Standard, general purpose chipbreaker.	Carbon Steel-Alloy Steel ap (inch) .118 .079 .039 f (IPR) .004 .008 .012 .016  0° Corner 0° Flank SPMR322
	M Class	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 ap (inch) .118 .079 .039 f (IPR) .004 .008 .012 .016  0° SPMN322
For Cast Iron	G Class	Flat Top 	For cast iron Flat top. Most effective for unstable machining due to high edge strength and stable insert clamping. Use on workpieces requiring close tolerance inserts.	Cast Iron ap (inch) .118 .079 .039 f (IPR) .004 .008 .012 .016  0° SPGN322

	Rhombic 80° 	Square 90° 	Triangular 60° 	Parallelogram 55° 
				KNUX_M1  ↻ A143
	CNMN  ↻ A144	SNMN  ↻ A145	TNMN  ↻ A146	
		SNG  ↻ A145	TNG  ↻ A146	

	Triangular 60° 
	TCG  ↻ A195

SPECIAL PURPOSE INSERTS

	Square 90° 	Triangular 60° 
	SPGR_R  ↻ A194	TPGR_R/L  ↻ A196
	SPMR  ↻ A194	TPMR  ↻ A196
	SPMN  ↻ A194	TPMN  ↻ A196
	SPG  ↻ A194	TPG  ↻ A197

Application	Tolerance	Tool Holder Type	Inserts
Special	G Class	TL Type	RTG  ↻ A193

TURNING INSERTS

RECOMMENDED CUTTING CONDITIONS

■ NEGATIVE INSERT TYPE

Breaker : Std : Standard Flat : Flat Top

Work Material	Hardness	Cutting Mode	Priority	Breaker	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)
P								
Mild Steel (ANSI ASTM A283, AISI 1010)	≤180HB	●	F	1	FY	VP25N	935—1475	.004—.009
		●	F	2	FY	NX2525	885—1260	.004—.009
		●	F	3	FS	NX2525	885—1260	.004—.009
		●	L	1	SY	VP25N	850—1345	.006—.013
		●	L	2	SY	NX2525	805—1150	.006—.013
		●	F	1	FY	MP3025	900—1395	.004—.009
		●	F	2	FY	NX3035	850—1215	.004—.009
		●	F	3	FS	NX2525	885—1260	.004—.009
		●	L	1	SY	MP3025	835—1260	.006—.013
		●	L	2	SY	NX3035	785—1115	.006—.013
		✚	F	1	FP	MC6025	935—1525	.004—.009
		✚	L	1	LP	MC6025	850—1395	.006—.013
Carbon Steel • Alloy Steel (AISI 1045, AISI 4140)	180 280HB	●	F	1	FP	NX2525	690—985	.003—.010
		●	F	2	FH	AP25N	720—1130	.003—.008
		●	F	3	FH	NX2525	690—985	.003—.008
		●	F	4	R/L-F	MP3025	705—1080	.002—.006
		●	F	5	PK	NX2525	655—935	.004—.012
		●	L	1	LP	MC6015	690—1180	.004—.016
		●	L	2	LP	UE6105	740—1345	.004—.016
		●	L	3	SH	UE6105	740—1345	.004—.016
		●	L	4	LP	MP3025	640—985	.004—.016
		●	L	5	SH	AP25N	655—1030	.004—.016
		●	L	6	SH	NX2525	620—900	.004—.016
		●	L	7	SA	UE6105	740—1345	.004—.016
		●	L	8	SA	NX2525	620—900	.004—.016
		●	L	9	SW	UE6105	740—1345	.004—.020
		●	L	10	SW	MP3025	640—985	.004—.020
		●	L	11	SW	NX2525	620—900	.004—.020
		●	L	12	R/L-K	MP3025	640—985	.003—.008
		●	M	1	MP	MC6015	640—1080	.006—.020
		●	M	2	MP	UE6105	670—1230	.006—.020
		●	M	3	MP	MP3025	590—900	.006—.020
		●	M	4	MA	UE6105	670—1230	.008—.020
		●	M	5	MH	UE6105	670—1230	.008—.022
		●	M	6	Std	UE6105	670—1230	.010—.024
		●	M	7	Std	MP3025	590—900	.010—.024
		●	M	8	Std	NX2525	575—820	.010—.024
		●	M	9	Std	UTi20T	295—425	.010—.024
		●	M	10	MW	UE6105	670—1230	.008—.024
		●	M	11	R/L	MP3025	590—900	.006—.013
		●	R	1	RP	MC6015	605—1015	.010—.024
		●	R	2	RP	UE6105	620—1165	.010—.024
		●	R	3	GH	UE6105	620—1165	.010—.024
		●	H	1	HX	MC6025	540—870	.020—.050
		●	H	2	HX	UE6110	540—920	.020—.050
		●	H	3	HV	MC6025	440—720	.028—.051

CUTTING CONDITIONS : ● : Stable Cutting ● : General Cutting ✚ : Unstable Cutting

CUTTING AREA : F : Finish Cutting L : Light Cutting M : Medium Cutting R : Rough Cutting H : Heavy Cutting

Work Material	Hardness	Cutting Mode	Priority	Breaker	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)
Carbon Steel • Alloy Steel (AISI 1045, AISI 4140)	180 280HB	●	H	4	HV	UE6110	440—755	.028—.051
		●	H	5	HZ	MC6025	540—870	.016—.047
		●	H	6	HZ	UE6110	540—920	.016—.047
		●	H	7	HL	MC6025	540—870	.016—.039
		●	H	8	HM	MC6025	540—870	.020—.043
		●	F	1	FP	MP3025	705—1080	.003—.010
		●	F	2	FH	MP3025	705—1080	.003—.008
		●	F	3	FH	NX3035	655—935	.003—.008
		●	F	4	FH	UE6110	755—1295	.003—.008
		●	L	1	LP	MC6015	690—1180	.004—.016
		●	L	2	SH	MC6015	690—1180	.004—.016
		●	L	3	SA	MC6015	690—1180	.004—.016
		●	L	4	LP	UE6110	690—1180	.004—.016
		●	L	5	SH	UE6110	690—1180	.004—.016
		●	L	6	SA	UE6110	690—1180	.004—.016
		●	L	7	LP	MP3025	640—985	.004—.016
		●	L	8	SH	NX3035	605—850	.004—.016
		●	L	9	SA	NX3035	605—850	.004—.016
		●	L	10	SW	MC6015	690—1180	.004—.020
		●	L	11	SW	UE6110	690—1180	.004—.020
		●	L	12	SW	NX3035	605—850	.004—.020
		●	M	1	MP	MC6015	640—1080	.006—.020
		●	M	2	MA	MC6015	640—1080	.008—.020
		●	M	3	MH	MC6015	640—1080	.008—.022
		●	M	4	Std	MC6015	640—1080	.010—.024
		●	M	5	MP	UE6110	640—1080	.006—.020
		●	M	6	MA	UE6110	640—1080	.008—.020
		●	M	7	MA	NX3035	560—785	.008—.020
		●	M	8	MH	UE6110	640—1080	.008—.022
		●	M	9	Std	UE6110	640—1080	.010—.024
		●	M	10	Std	NX3035	560—785	.010—.024
		●	M	11	MW	MC6015	640—1080	.008—.024
		●	M	12	MW	UE6110	640—1080	.008—.024
		●	R	1	RP	MC6015	605—1015	.010—.024
		●	R	2	RP	UE6110	605—1015	.010—.024
		●	R	3	GH	UE6110	605—1015	.010—.024
		●	H	1	HX	MC6025	540—870	.020—.050
		●	H	2	HV	MC6025	440—720	.028—.051
		●	H	3	HZ	MC6025	540—870	.016—.047
		●	H	4	HL	MC6025	540—870	.016—.039
		●	H	5	HM	MC6025	540—870	.020—.043
		●	H	6	HR	MC6025	440—720	.028—.051
		●	H	7	HZ	UE6110	540—920	.016—.047
		✱	F	1	FP	MC6025	755—1230	.003—.010
		✱	F	2	FP	MC6015	755—1295	.003—.010
		✱	F	3	FH	UE6110	755—1295	.003—.008

RECOMMENDED CUTTING CONDITIONS

NEGATIVE INSERT TYPE

Breaker : Std : Standard Flat : Flat Top

Work Material	Hardness	Cutting Mode		Priority	Breaker	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)
P									
Carbon Steel • Alloy Steel (AISI 1045, AISI 4140)	180 280HB	✚	L	1	LP	MC6025	690—1130	.004—.016	.012—.079
		✚	L	2	LP	MC6035	605—850	.004—.016	.012—.079
		✚	L	3	SH	MC6025	690—1130	.004—.016	.012—.079
		✚	L	4	SA	MC6025	690—1130	.004—.016	.012—.079
		✚	M	1	MP	MC6025	640—1030	.006—.020	.012—.157
		✚	M	2	MP	MC6035	560—785	.006—.020	.012—.157
		✚	M	3	MA	MC6025	640—1030	.008—.020	.012—.157
		✚	M	4	MA	MC6035	560—785	.008—.020	.012—.157
		✚	M	5	MH	MC6025	640—1030	.008—.022	.039—.157
		✚	M	6	MH	MC6035	560—785	.008—.022	.039—.157
		✚	M	7	Std	MC6025	640—1030	.010—.024	.059—.197
		✚	M	8	Std	MC6035	560—785	.010—.024	.059—.197
		✚	M	9	MW	MC6025	640—1030	.008—.024	.035—.157
		✚	R	1	RP	MC6025	605—970	.010—.024	.059—.236
		✚	R	2	RP	MC6035	525—740	.010—.024	.059—.236
		✚	H	1	HX	MC6035	460—655	.020—.050	.118—.433
		✚	H	2	HX	UH6400	460—640	.020—.050	.118—.433
		✚	H	3	HV	MC6035	375—540	.028—.051	.157—.472
		✚	H	4	HV	UH6400	375—525	.028—.051	.157—.472
		✚	H	5	HZ	MC6035	460—655	.016—.047	.079—.394
		✚	H	6	HZ	UH6400	460—640	.016—.047	.079—.394
		✚	H	7	HL	MC6035	460—655	.016—.039	.059—.315
		✚	H	8	HM	MC6035	460—655	.020—.043	.079—.394
		✚	H	9	HR	MC6035	375—540	.028—.051	.118—.472

CUTTING CONDITIONS : ● : Stable Cutting ● : General Cutting ✚ : Unstable Cutting
CUTTING AREA : F : Finish Cutting L : Light Cutting M : Medium Cutting R : Rough Cutting H : Heavy Cutting

Work Material	Hardness	Cutting Mode	Priority	Breaker	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (Inch)	
M									
Austenitic Stainless Steel (AISI 304, AISI 316)	≤200HB	●	L	1	LM	MC7015	590—935	.004—.012	.012—.079
		●	L	2	SH	US735	310—605	.004—.016	.012—.079
		●	L	3	SH	NX2525	210—440	.004—.016	.012—.079
		●	M	1	MM	MC7015	540—850	.006—.018	.028—.197
		●	M	2	GM	MC7015	540—850	.006—.020	.020—.157
		●	R	1	RM	MC7015	510—805	.010—.022	.059—.236
		●	H	1	HL	US735	245—460	.016—.039	.059—.315
		●	H	2	HL	US735	245—460	.016—.039	.059—.315
		●	L	1	LM	MC7025	540—720	.004—.012	.012—.079
		●	L	2	SH	US735	310—605	.004—.016	.012—.079
		●	M	1	MM	MC7025	490—655	.006—.018	.028—.197
		●	M	2	GM	MC7025	490—655	.006—.020	.020—.157
		●	M	3	MA	MC7025	490—655	.008—.020	.012—.157
		●	M	4	MS	US735	295—560	.006—.020	.020—.157
		●	M	5	MA	US735	295—560	.008—.020	.012—.157
		●	R	1	RM	MC7025	460—620	.010—.022	.059—.236
		●	R	2	GH	US735	280—525	.010—.024	.059—.236
		●	H	1	HL	US735	245—460	.016—.039	.059—.315
		●	H	2	HM	US735	245—460	.020—.043	.079—.394
		✚	L	1	LM	MP7035	310—510	.004—.012	.012—.079
		✚	L	2	SH	US735	310—605	.004—.016	.012—.079
		✚	M	1	MM	MP7035	295—475	.006—.018	.028—.197
		✚	M	2	GM	MP7035	295—475	.006—.020	.020—.157
		✚	M	3	MA	MP7035	295—475	.008—.020	.012—.157
		✚	M	4	MS	US735	295—560	.006—.020	.020—.157
		✚	M	5	MS	VP15TF	260—440	.006—.020	.020—.157
		✚	M	6	MS	UP20M	330—490	.006—.020	.020—.157
		✚	M	7	MS	UTi20T	260—375	.006—.020	.020—.157
		✚	M	8	MA	VP15TF	260—440	.008—.020	.012—.157
		✚	M	9	Std	VP15TF	260—440	.010—.024	.059—.197
		✚	R	1	RM	MP7035	280—440	.010—.022	.059—.236
		✚	R	2	GH	US735	280—525	.010—.024	.059—.236
		✚	H	1	HL	US735	245—460	.016—.039	.059—.315
		✚	H	2	HM	US735	245—460	.020—.043	.079—.394

TURNING INSERTS

RECOMMENDED CUTTING CONDITIONS

■ NEGATIVE INSERT TYPE

Breaker : Std : Standard Flat : Flat Top

Work Material	Hardness	Cutting Mode	Priority	Breaker	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)	
M									
Austenitic Stainless Steel (AISI 304LN, AISI 316LN)	>200HB	●	L	1	LM	MC7015	490—785	.004—.012	.012—.079
		●	L	2	SH	US735	260—510	.004—.016	.012—.079
		●	L	3	SH	NX2525	180—375	.004—.016	.012—.079
		●	M	1	MM	MC7015	440—705	.006—.018	.028—.197
		●	M	2	GM	MC7015	440—705	.006—.020	.020—.157
		●	R	1	RM	MC7015	425—670	.010—.022	.059—.236
		●	H	1	HL	US735	195—395	.016—.039	.059—.315
		●	H	2	HM	US735	195—395	.020—.043	.079—.394
		●	L	1	LM	MC7025	440—590	.004—.012	.012—.079
		●	L	2	SH	US735	260—510	.004—.016	.012—.079
		●	M	1	MM	MC7025	410—540	.006—.018	.028—.197
		●	M	2	GM	MC7025	410—540	.006—.020	.020—.157
		●	M	3	MA	MC7025	410—540	.008—.020	.012—.157
		●	M	4	MS	US735	245—460	.006—.020	.020—.157
		●	M	5	MA	US735	245—460	.008—.020	.012—.157
		●	R	1	RM	MC7025	375—510	.010—.022	.059—.236
		●	R	2	GH	US735	230—440	.010—.024	.059—.236
		●	H	1	HL	US735	195—395	.016—.039	.059—.315
		●	H	2	HM	US735	195—395	.020—.043	.079—.394
		✚	L	1	LM	MP7035	260—425	.004—.012	.012—.079
		✚	L	2	SH	US735	260—510	.004—.016	.012—.079
		✚	M	1	MM	MP7035	245—395	.006—.018	.028—.197
		✚	M	2	GM	MP7035	245—395	.006—.020	.020—.157
		✚	M	3	MA	MP7035	245—395	.008—.020	.012—.157
		✚	M	4	MS	US735	245—460	.006—.020	.020—.157
		✚	M	5	MS	VP15TF	210—360	.006—.020	.020—.157
		✚	M	6	MS	UP20M	260—410	.006—.020	.020—.157
		✚	M	7	MS	UTi20T	210—310	.006—.020	.020—.157
		✚	M	8	MA	VP15TF	210—360	.008—.020	.012—.157
		✚	M	9	Std	VP15TF	210—360	.010—.024	.059—.197
		✚	R	1	RM	MP7035	230—375	.010—.022	.059—.236
		✚	R	2	GH	US735	230—440	.010—.024	.059—.236
		✚	H	1	HL	US735	195—395	.016—.039	.059—.315
		✚	H	2	HM	US735	195—395	.020—.043	.079—.394

CUTTING CONDITIONS : ● : Stable Cutting ● : General Cutting ✚ : Unstable Cutting

CUTTING AREA : F : Finish Cutting L : Light Cutting M : Medium Cutting R : Rough Cutting H : Heavy Cutting

Work Material	Hardness	Cutting Mode	Priority	Breaker	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)	
M									
Two-phase Stainless Steel (AISI 329)	≤280HB	●	L	1	LM	MC7015	395—620	.004—.012	.012—.079
		●	L	2	SH	US735	210—410	.004—.016	.012—.079
		●	L	3	SH	NX2525	130—295	.004—.016	.012—.079
		●	M	1	MM	MC7015	360—575	.006—.018	.028—.197
		●	M	2	GM	MC7015	360—575	.006—.020	.020—.157
		●	R	1	RM	MC7015	345—540	.010—.022	.059—.236
		●	H	1	HL	US735	165—310	.016—.039	.059—.315
		●	H	2	HM	US735	165—310	.020—.043	.079—.394
		●	L	1	LM	MC7025	360—475	.004—.012	.012—.079
		●	L	2	SH	US735	210—410	.004—.016	.012—.079
		●	M	1	MM	MC7025	330—440	.006—.018	.028—.197
		●	M	2	GM	MC7025	330—440	.006—.020	.020—.157
		●	M	3	MA	MC7025	330—440	.008—.020	.012—.157
		●	M	4	MS	US735	195—375	.006—.020	.020—.157
		●	M	5	MA	US735	195—375	.008—.020	.012—.157
		●	R	1	RM	MC7025	310—410	.010—.022	.059—.236
		●	R	2	GH	US735	180—345	.010—.024	.059—.236
		●	H	1	HL	US735	165—310	.016—.039	.059—.315
		●	H	2	HM	US735	165—310	.020—.043	.079—.394
		✚	L	1	LM	MP7035	210—345	.004—.012	.012—.079
		✚	L	2	SH	US735	210—410	.004—.016	.012—.079
		✚	M	1	MM	MP7035	195—310	.006—.018	.028—.197
		✚	M	2	GM	MP7035	195—310	.006—.020	.020—.157
		✚	M	3	MA	MP7035	195—310	.008—.020	.012—.157
		✚	M	4	MS	US735	195—375	.006—.020	.020—.157
		✚	M	5	MS	VP15TF	165—295	.006—.020	.020—.157
		✚	M	6	MS	UP20M	210—330	.006—.020	.020—.157
		✚	M	7	MS	UTi20T	165—245	.006—.020	.020—.157
		✚	M	8	MA	VP15TF	165—295	.008—.020	.012—.157
		✚	M	9	Std	VP15TF	165—295	.010—.024	.059—.197
		✚	R	1	RM	MP7035	180—295	.010—.022	.059—.236
		✚	R	2	GH	US735	180—345	.010—.024	.059—.236
		✚	H	1	HL	US735	165—310	.016—.039	.059—.315
		✚	H	2	HM	US735	165—310	.020—.043	.079—.394

TURNING INSERTS

RECOMMENDED CUTTING CONDITIONS

■ NEGATIVE INSERT TYPE

Breaker : Std : Standard Flat : Flat Top

Work Material	Hardness	Cutting Mode		Priority	Breaker	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)
M									
Ferritic and Martensitic Stainless Steel (AISI 410, AISI 430)	≤200HB	●	L	1	LM	MC7015	590—935	.004—.012	.012—.079
		●	L	2	SH	US735	310—605	.004—.016	.012—.079
		●	L	3	SH	NX2525	210—440	.004—.016	.012—.079
		●	M	1	MM	MC7015	540—850	.006—.018	.028—.197
		●	M	2	GM	MC7015	540—850	.006—.020	.020—.157
		●	R	1	RM	MC7015	510—805	.010—.022	.059—.236
		●	H	1	HL	US735	245—460	.016—.039	.059—.315
		●	H	2	HM	US735	245—460	.020—.043	.079—.394
		●	L	1	LM	MC7025	540—720	.004—.012	.012—.079
		●	L	2	SH	US735	310—605	.004—.016	.012—.079
		●	M	1	MM	MC7025	490—655	.006—.018	.028—.197
		●	M	2	GM	MC7025	490—655	.006—.020	.020—.157
		●	M	3	MA	MC7025	490—655	.008—.020	.012—.157
		●	M	4	MA	US735	295—560	.008—.020	.012—.157
		●	M	5	MS	US735	295—560	.006—.020	.020—.157
		●	R	1	RM	MC7025	460—620	.010—.022	.059—.236
		●	R	2	GH	US735	280—525	.010—.024	.059—.236
		●	H	1	HL	US735	245—460	.016—.039	.059—.315
		●	H	2	HM	US735	245—460	.020—.043	.079—.394
		✚	L	1	LM	MP7035	310—510	.004—.012	.012—.079
		✚	L	2	SH	US735	310—605	.004—.016	.012—.079
		✚	M	1	MM	MP7035	295—475	.006—.018	.028—.197
		✚	M	2	GM	MP7035	295—475	.006—.020	.020—.157
		✚	M	3	MA	MP7035	295—475	.008—.020	.012—.157
		✚	M	4	MS	US735	295—560	.006—.020	.020—.157
		✚	M	5	MS	VP15TF	260—440	.006—.020	.020—.157
		✚	M	6	MS	UP20M	330—490	.006—.020	.020—.157
		✚	M	7	MS	UTi20T	260—375	.006—.020	.020—.157
		✚	M	8	MA	VP15TF	260—440	.008—.020	.012—.157
		✚	M	9	Std	VP15TF	260—440	.010—.024	.059—.197
		✚	R	1	RM	MP7035	280—440	.010—.022	.059—.236
		✚	R	2	GH	US735	280—525	.010—.024	.059—.236
		✚	H	1	HL	US735	245—460	.016—.039	.059—.315
		✚	H	2	HM	US735	245—460	.020—.043	.079—.394

CUTTING CONDITIONS : ● : Stable Cutting ● : General Cutting ✚ : Unstable Cutting

CUTTING AREA : F : Finish Cutting L : Light Cutting M : Medium Cutting R : Rough Cutting H : Heavy Cutting

Work Material	Hardness	Cutting Mode	Priority	Breaker	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)
M								
Ferritic and Martensitic Stainless Steel (AISI 431, AISI 420)	>200HB	●	L	1	LM	MC7015	490—785	.004—.012
		●	L	2	SH	US735	260—510	.004—.016
		●	L	3	SH	NX2525	180—375	.004—.016
		●	M	1	MM	MC7015	440—705	.006—.018
		●	M	2	GM	MC7015	440—705	.006—.020
		●	R	1	RM	MC7015	425—670	.010—.022
		●	H	1	HL	US735	195—395	.016—.039
		●	H	2	HM	US735	195—395	.020—.043
		●	L	1	LM	MC7025	440—590	.004—.012
		●	L	2	SH	US735	260—510	.004—.016
		●	M	1	MM	MC7025	410—540	.006—.018
		●	M	2	MA	MC7025	410—540	.008—.020
		●	M	3	MA	US735	245—460	.008—.020
		●	M	4	MS	US735	245—460	.006—.020
		●	R	1	RM	MC7025	375—510	.010—.022
		●	R	2	GH	US735	230—440	.010—.024
		●	H	1	HL	US735	195—395	.016—.039
		●	H	2	HM	US735	195—395	.020—.043
		✚	L	1	LM	MP7035	260—425	.004—.012
		✚	L	2	SH	US735	260—510	.004—.016
		✚	M	1	MM	MP7035	245—395	.006—.018
		✚	M	2	GM	MP7035	245—395	.006—.020
		✚	M	3	MA	MP7035	245—395	.008—.020
		✚	M	4	MS	US735	245—460	.006—.020
		✚	M	5	MS	VP15TF	210—360	.006—.020
		✚	M	6	MS	UP20M	260—410	.006—.020
		✚	M	7	MS	UTi20T	210—310	.006—.020
		✚	M	8	MA	VP15TF	210—360	.008—.020
		✚	M	9	Std	VP15TF	210—360	.010—.024
		✚	R	1	RM	MP7035	230—375	.010—.022
		✚	R	2	GH	US735	230—440	.010—.024
		✚	H	1	HL	US735	195—395	.016—.039
		✚	H	2	HM	US735	195—395	.020—.043

TURNING INSERTS

RECOMMENDED CUTTING CONDITIONS

■ NEGATIVE INSERT TYPE

Breaker : Std : Standard Flat : Flat Top

Work Material	Hardness	Cutting Mode	Priority	Breaker	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)	
M									
Hardened Stainless Steel (AISI 630, AISI 631)	<450HB	●	L	1	LM	MC7015	330—525	.004—.012	.012—.079
		●	L	2	LS(M)	MP9005	410—575	.004—.010	.008—.031
		●	L	3	SH	US735	180—330	.004—.016	.012—.079
		●	L	4	SH	NX2525	115—245	.004—.016	.012—.079
		●	M	1	MM	MC7015	295—475	.006—.018	.028—.197
		●	M	2	GM	MC7015	295—475	.006—.020	.020—.157
		●	M	3	MS	MP9005	375—525	.006—.020	.020—.157
		●	R	1	RM	MC7015	280—440	.010—.022	.059—.236
		●	H	1	HL	US735	130—260	.016—.039	.059—.315
		●	H	2	HM	US735	130—260	.020—.043	.079—.394
		●	L	1	LM	MC7025	295—395	.004—.012	.012—.079
		●	L	2	SH	US735	180—330	.004—.016	.012—.079
		●	L	3	LS(M)	MP9015	395—540	.004—.010	.008—.031
		●	M	1	MM	MC7025	260—360	.006—.018	.028—.197
		●	M	2	GM	MC7025	260—360	.006—.020	.020—.157
		●	M	3	MA	MC7025	260—360	.008—.020	.012—.157
		●	M	4	MS	US735	165—310	.006—.020	.020—.157
		●	M	5	MA	US735	165—310	.008—.020	.012—.157
		●	M	6	MS	MP9015	360—490	.006—.020	.020—.157
		●	R	1	RM	MC7025	245—345	.010—.022	.059—.236
		●	R	2	GH	US735	150—295	.010—.024	.059—.236
		●	R	3	RS	MP9015	330—460	.008—.014	.039—.157
		●	H	1	HL	US735	130—260	.016—.039	.059—.315
		●	H	2	HM	US735	130—260	.020—.043	.079—.394
		✚	L	1	LM	MP7035	180—280	.004—.012	.012—.079
		✚	L	2	SH	US735	180—330	.004—.016	.012—.079
		✚	L	3	LS(M)	MP9025	260—310	.004—.010	.008—.031
		✚	M	1	MM	MP7035	165—260	.006—.018	.028—.197
		✚	M	2	GM	MP7035	165—260	.006—.020	.020—.157
		✚	M	3	MA	MP7035	165—260	.008—.020	.012—.157
		✚	M	4	MS	US735	165—310	.006—.020	.020—.157
		✚	M	5	MS	VP15TF	130—245	.006—.020	.020—.157
		✚	M	6	MS	UP20M	180—260	.006—.020	.020—.157
		✚	M	7	MS	UTi20T	130—195	.006—.020	.020—.157
		✚	M	8	MA	VP15TF	130—245	.008—.020	.012—.157
		✚	M	9	Std	VP15TF	130—245	.010—.024	.059—.197
		✚	M	10	MS	MP9025	245—295	.006—.020	.020—.157
		✚	R	1	RM	MP7035	150—245	.010—.022	.059—.236
		✚	R	2	GH	US735	150—295	.010—.024	.059—.236
		✚	R	3	RS	MP9025	230—280	.008—.014	.039—.157
		✚	H	1	HL	US735	130—260	.016—.039	.059—.315
		✚	H	2	HM	US735	130—260	.020—.043	.079—.394

CUTTING CONDITIONS : ● : Stable Cutting ● : General Cutting ✚ : Unstable Cutting

CUTTING AREA : F : Finish Cutting L : Light Cutting M : Medium Cutting R : Rough Cutting H : Heavy Cutting

Work Material	Hardness	Cutting Mode	Priority	Breaker	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)	
K									
Gray Cast Iron (AISI No 45 B)	≤350MPa	●	L	1	LK	MC5005	755—1200	.004—.016	.012—.079
		●	L	2	MA	MC5005	690—1100	.008—.020	.012—.157
		●	L	3	MA	UC5105	560—1015	.008—.020	.012—.157
		●	M	1	MK	MC5005	690—1100	.008—.022	.039—.157
		●	M	2	GK	MC5005	690—1100	.010—.024	.059—.197
		●	M	3	Std	UC5105	560—1015	.010—.024	.059—.197
		●	M	4	Std	NX2525	510—690	.010—.024	.059—.197
		●	M	5	MW	MC5005	690—1100	.008—.024	.035—.157
		●	R	1	RK	MC5005	640—1030	.010—.024	.059—.236
		●	R	2	Flat	MC5005	640—1030	.008—.024	.098—.236
		●	R	3	GH	UC5105	525—950	.010—.024	.059—.236
		●	R	4	Flat	UC5105	525—950	.008—.024	.098—.236
		●	R	5	Flat	HTi10	310—460	.008—.024	.098—.236
		●	R	6	Flat	HTi05T	345—605	.008—.024	.098—.236
		●	H	1	Flat	MC5005	640—1030	.008—.024	.098—.236
		●	H	2	Flat	UC5105	525—950	.008—.024	.098—.236
		●	L	1	LK	MC5015	670—1100	.004—.016	.012—.079
		●	L	2	MA	MC5015	620—1000	.008—.020	.012—.157
		●	L	3	MA	UC5115	540—985	.008—.020	.012—.157
		●	L	4	SW	MC5015	670—1100	.004—.020	.012—.098
		●	L	5	SW	UC5115	590—1080	.004—.020	.012—.098
		●	M	1	MK	MC5015	620—1000	.008—.022	.039—.157
		●	M	2	GK	MC5015	620—1000	.010—.024	.059—.197
		●	M	3	Std	UC5115	540—985	.010—.024	.059—.197
		●	M	4	Std	HTi10	345—490	.010—.024	.059—.197
		●	M	5	MH	UC5115	540—985	.008—.022	.039—.157
		●	M	6	MP	UC5115	540—985	.006—.020	.012—.157
		●	M	7	MW	MC5015	620—1000	.008—.024	.035—.157
		●	M	8	MW	UC5115	540—985	.008—.024	.035—.157
		●	R	1	RK	MC5015	590—935	.010—.024	.059—.236
		●	R	2	Flat	MC5015	590—935	.008—.024	.098—.236
		●	R	3	GH	UC5115	510—935	.010—.024	.059—.236
		●	R	4	Flat	UC5115	510—935	.008—.024	.098—.236
		●	H	1	Flat	MC5015	590—935	.008—.024	.098—.236
		●	H	2	Flat	UC5115	510—935	.008—.024	.098—.236
		✚	L	1	LK	MC5015	670—1100	.004—.016	.012—.079
		✚	L	2	MA	MC5015	620—1000	.008—.020	.012—.157
		✚	L	3	MA	UC5115	540—985	.008—.020	.012—.157
		✚	M	1	MK	MC5015	620—1000	.008—.022	.039—.157
		✚	M	2	GK	MC5015	620—1000	.010—.024	.059—.197
		✚	M	3	Std	UC5115	540—985	.010—.024	.059—.197
		✚	M	4	Std	UTi20T	280—395	.010—.024	.059—.197
		✚	R	1	RK	MC5015	590—935	.010—.024	.059—.236
		✚	R	2	Flat	MC5015	590—935	.008—.024	.098—.236
		✚	R	3	GH	UC5115	510—935	.010—.024	.059—.236
		✚	R	4	Flat	UC5115	510—935	.008—.024	.098—.236
		✚	R	5	Flat	UTi20T	260—360	.008—.024	.098—.236
		✚	H	1	Flat	MC5015	590—935	.008—.024	.098—.236
		✚	H	2	Flat	UC5115	510—935	.008—.024	.098—.236

A

TURNING INSERTS

TURNING INSERTS

RECOMMENDED CUTTING CONDITIONS

■ NEGATIVE INSERT TYPE

Breaker : Std : Standard Flat : Flat Top

Work Material	Hardness	Cutting Mode	Priority	Breaker	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)
Ductile Cast Iron	≤450MPa	●	L	1	LK	MC5005	705—1150	.004—.016
		●	L	2	MA	MC5005	640—1030	.008—.020
		●	L	3	MA	UC5105	525—950	.008—.020
		●	M	1	MK	MC5005	640—1030	.008—.022
		●	M	2	GK	MC5005	640—1030	.010—.024
		●	M	3	Std	UC5105	525—950	.010—.024
		●	M	4	Std	NX2525	475—640	.010—.024
		●	R	1	RK	MC5005	605—985	.010—.024
		●	R	2	Flat	MC5005	605—985	.008—.024
		●	R	3	GH	UC5105	490—900	.010—.024
		●	R	4	Flat	UC5105	490—900	.008—.024
		●	R	5	Flat	HTi10	295—440	.008—.024
		●	R	6	Flat	HTi05T	330—575	.008—.024
		●	H	1	Flat	MC5005	605—985	.008—.024
		●	H	2	Flat	UC5105	490—900	.008—.024
		●	L	1	LK	MC5015	640—1030	.004—.016
		●	L	2	MA	MC5015	590—935	.008—.020
		●	L	3	MA	UC5115	510—935	.008—.020
		●	L	4	SW	MC5015	640—1030	.004—.020
		●	L	5	SW	UC5115	560—1015	.004—.020
		●	M	1	MK	MC5015	590—935	.008—.022
		●	M	2	GK	MC5015	590—935	.010—.024
		●	M	3	Std	UC5115	510—935	.010—.024
		●	M	4	Std	HTi10	310—460	.010—.024
		●	M	5	MP	UC5115	510—935	.006—.020
		●	R	1	RK	MC5015	560—900	.010—.024
		●	R	2	Flat	MC5015	560—900	.008—.024
		●	R	3	GH	UC5115	475—885	.010—.024
		●	R	4	Flat	UC5115	475—885	.008—.024
		●	H	1	Flat	MC5015	560—900	.008—.024
		●	H	2	Flat	UC5115	475—885	.008—.024
		✱	L	1	LK	MC5015	640—1030	.004—.016
		✱	L	2	MA	MC5015	590—935	.008—.020
		✱	L	3	MA	UC5115	510—935	.008—.020
		✱	M	1	MK	MC5015	590—935	.008—.022
		✱	M	2	GK	MC5015	590—935	.010—.024
		✱	M	3	Std	UC5115	510—935	.010—.024
		✱	M	4	Std	UTi20T	260—360	.010—.024
		✱	R	1	RK	MC5015	560—900	.010—.024
		✱	R	2	Flat	MC5015	560—900	.008—.024
		✱	R	3	GH	UC5115	475—885	.010—.024
		✱	R	4	Flat	UC5115	475—885	.008—.024
		✱	R	5	Flat	UTi20T	245—345	.008—.024
		✱	H	1	Flat	MC5015	560—900	.008—.024
		✱	H	2	Flat	UC5115	475—885	.008—.024

CUTTING CONDITIONS : ● : Stable Cutting ● : General Cutting ✱ : Unstable Cutting

CUTTING AREA : F : Finish Cutting L : Light Cutting M : Medium Cutting R : Rough Cutting H : Heavy Cutting

Work Material	Hardness	Cutting Mode	Priority	Breaker	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)
K								
Ductile Cast Iron	≤800MPa	●	L	1	LK	MC5005	640—1015	.004—.016
		●	L	2	MA	MC5005	575—920	.008—.020
		●	L	3	MA	UC5105	460—850	.008—.020
		●	M	1	MK	MC5005	575—920	.008—.022
		●	M	2	GK	MC5005	575—920	.010—.024
		●	M	3	Std	UC5105	460—850	.010—.024
		●	M	4	Std	NX2525	425—575	.010—.024
		●	R	1	RK	MC5005	540—885	.010—.024
		●	R	2	Flat	MC5005	540—885	.008—.024
		●	R	3	GH	UC5105	440—820	.010—.024
		●	R	4	Flat	UC5105	440—820	.008—.024
		●	R	5	Flat	HTi10	260—395	.008—.024
		●	R	6	Flat	HTi05T	295—510	.008—.024
		●	H	1	Flat	MC5005	540—885	.008—.024
		●	H	2	Flat	UC5105	440—820	.008—.024
		●	L	1	LK	MC5015	575—935	.004—.016
		●	L	2	MA	MC5015	525—835	.008—.020
		●	L	3	MA	UC5115	460—835	.008—.020
		●	L	4	SW	MC5015	575—935	.004—.020
		●	L	5	SW	UC5115	490—920	.004—.020
		●	M	1	MK	MC5015	525—835	.008—.022
		●	M	2	GK	MC5015	525—835	.010—.024
		●	M	3	Std	UC5115	460—835	.010—.024
		●	M	4	Std	HTi10	280—410	.010—.024
		●	M	5	MP	UC5115	460—835	.006—.020
		●	R	1	RK	MC5015	490—805	.010—.024
		●	R	2	Flat	MC5015	490—805	.008—.024
		●	R	3	GH	UC5115	425—785	.010—.024
		●	R	4	Flat	UC5115	425—785	.008—.024
		●	H	1	Flat	MC5015	490—805	.008—.024
		●	H	2	Flat	UC5115	425—785	.008—.024
		✚	L	1	LK	MC5015	575—935	.004—.016
		✚	L	2	MA	MC5015	525—835	.008—.020
		✚	L	3	MA	UC5115	460—835	.008—.020
		✚	M	1	MK	MC5015	525—835	.008—.022
		✚	M	2	GK	MC5015	525—835	.010—.024
		✚	M	3	Std	UC5115	460—835	.010—.024
		✚	M	4	Std	UTi20T	230—330	.010—.024
		✚	R	1	RK	MC5015	490—805	.010—.024
		✚	R	2	Flat	MC5015	490—805	.008—.024
		✚	R	3	GH	UC5115	425—785	.010—.024
		✚	R	4	Flat	UC5115	425—785	.008—.024
		✚	R	5	Flat	UTi20T	210—310	.008—.024
		✚	H	1	Flat	MC5015	490—805	.008—.024
		✚	H	2	Flat	UC5115	425—785	.008—.024

RECOMMENDED CUTTING CONDITIONS

NEGATIVE INSERT TYPE

Breaker : Std : Standard Flat : Flat Top

Work Material	Hardness	Cutting Mode	Priority	Breaker	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)
S								
Titanium Alloy (Ti-6Al-4V)	—	●	F	1	LS(M)	MT9015	130—280	.004—.010
		●	F	2	FJ	RT9010	150—310	.003—.008
		●	L	1	LS(M)	MT9015	130—280	.004—.010
		●	L	2	MJ(M)	RT9010	130—280	.003—.010
		●	M	1	MS	MT9015	130—260	.004—.010
		●	M	2	MS	RT9010	130—260	.004—.010
		●	R	1	RS	MT9015	115—245	.008—.014
		●	R	2	GJ	RT9010	115—245	.006—.014
		●	F	1	LS(M)	MT9015	130—280	.004—.010
		●	F	2	FJ	RT9010	150—310	.003—.008
		●	L	1	LS(M)	MT9015	130—280	.004—.010
		●	L	2	MJ(M)	RT9010	130—280	.003—.010
		●	L	3	MJ(G)	RT9010	130—280	.003—.010
		●	M	1	MS	MT9015	130—260	.004—.010
		●	M	2	MS	RT9010	130—260	.004—.010
		●	R	1	RS	MT9015	115—245	.008—.014
		●	R	2	GJ	RT9010	115—245	.006—.014
		✚	F	1	FJ	RT9010	150—310	.003—.008
		✚	L	1	MJ(M)	RT9010	130—280	.003—.010
		✚	L	2	MJ(G)	RT9010	130—280	.003—.010
		✚	M	1	MS	RT9010	130—260	.004—.010
		✚	R	1	GJ	RT9010	115—245	.006—.014

CUTTING CONDITIONS : ● : Stable Cutting ● : General Cutting ✚ : Unstable Cutting
CUTTING AREA : F : Finish Cutting L : Light Cutting M : Medium Cutting R : Rough Cutting H : Heavy Cutting

Work Material	Hardness	Cutting Mode	Priority	Breaker	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)
S								
Heat Resistant Alloy (Inconel718)	—	●	F	1	LS(M)	MP9005	100—360	.004—.010
		●	F	2	FJ	VP10RT	100—195	.003—.008
		●	L	1	LS(M)	MP9005	100—360	.004—.010
		●	L	2	MJ(M)	MP9005	100—360	.003—.010
		●	L	3	MJ(M)	VP05RT	100—210	.003—.010
		●	L	4	MJ(M)	US905	180—360	.003—.010
		●	L	5	MJ(G)	VP10RT	80—180	.003—.010
		●	M	1	MS	MP9005	100—330	.004—.010
		●	M	2	MS	VP05RT	100—195	.004—.010
		●	M	3	MS	US905	165—330	.004—.010
		●	R	1	RS	MP9015	65—245	.008—.014
		●	R	2	GJ	VP10RT	65—150	.006—.014
		●	R	3	GJ	US905	150—310	.006—.014
		●	F	1	LS(M)	MP9015	80—280	.004—.010
		●	F	2	FJ	VP10RT	100—195	.003—.008
		●	L	1	LS(M)	MP9015	80—280	.004—.010
		●	L	2	MJ(M)	MP9015	80—280	.003—.010
		●	L	3	MJ(M)	VP10RT	80—180	.003—.010
		●	M	1	MS	MP9015	80—260	.004—.010
		●	M	2	MA	MP9015	80—260	.004—.012
		●	M	3	MS	VP10RT	80—165	.004—.010
		●	R	1	RS	MP9015	65—245	.008—.014
		●	R	2	GJ	VP10RT	65—150	.006—.014
		✚	F	1	FJ	VP15TF	65—130	.003—.008
		✚	L	1	LS(M)	MP9025	65—100	.004—.010
		✚	L	2	MJ(G)	VP15TF	65—115	.003—.010
		✚	M	1	MS	MP9025	65—100	.004—.010
		✚	M	2	MA	MP9025	65—100	.004—.012
		✚	M	3	MS	VP15TF	65—115	.004—.010
		✚	R	1	RS	MP9025	50—80	.008—.014
		✚	R	2	GJ	VP15TF	50—100	.006—.014

A

TURNING INSERTS

TURNING INSERTS

RECOMMENDED CUTTING CONDITIONS

7° POSITIVE INSERT TYPE

Breaker : Std : Standard Flat : Flat Top

Work Material	Hardness	Cutting Mode	Priority	Breaker	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)	
P									
Mild Steel (AISI ASTM A283, AISI 1010)	≤180HB	●	F	1	FP	NX2525	740—1050	.002—.008	.008—.035
		●	F	2	FV	NX2525	740—1050	.002—.008	.008—.035
		●	F	3	R/L-F	MP3025	755—1165	.002—.005	.004—.020
		●	L	1	LP	NX2525	740—1050	.002—.010	.008—.039
		●	L	2	Std	UE6110	690—1165	.003—.012	.012—.079
		●	L	3	MV	MP3025	620—970	.003—.012	.012—.079
		●	L	4	Std	MP3025	620—970	.003—.012	.012—.079
		●	M	1	MP	NX2525	605—885	.003—.012	.012—.079
		●	F	1	FP	MC6015	820—1395	.002—.008	.008—.035
		●	F	2	FP	UE6110	820—1395	.002—.008	.008—.035
		●	F	3	FP	MP3025	755—1165	.002—.008	.008—.035
		●	F	4	FV	MP3025	755—1165	.002—.008	.008—.035
		●	F	5	FV	NX3035	720—1015	.002—.008	.008—.035
		●	L	1	LP	MC6015	820—1395	.002—.010	.008—.039
		●	L	2	LP	UE6110	820—1395	.002—.010	.008—.039
		●	L	3	LP	MP3025	755—1165	.002—.010	.008—.039
		●	L	4	Std	UE6110	690—1165	.003—.012	.012—.079
		●	L	5	SW	MC6015	820—1395	.002—.009	.008—.059
		●	L	6	SW	MP3025	755—1165	.002—.009	.008—.059
		●	M	1	MP	MC6015	690—1165	.003—.012	.012—.079
		●	M	2	MP	UE6110	690—1165	.003—.012	.012—.079
		●	M	3	MP	MP3025	620—970	.003—.012	.012—.079
		●	M	4	MW	MC6015	690—1165	.004—.014	.031—.098
		✱	F	1	FP	MC6025	820—1330	.002—.008	.008—.035
		✱	L	1	LP	MC6025	820—1330	.002—.010	.008—.039
		✱	L	2	SV	MC6025	820—1330	.002—.010	.008—.039
		✱	L	3	SW	MC6025	820—1330	.002—.009	.008—.059
		✱	M	1	MP	MC6025	690—1115	.003—.012	.012—.079
✱	M	2	MW	MC6025	690—1115	.004—.014	.031—.098		
Carbon Steel • Alloy Steel (AISI 1045, AISI 4140)	180 280HB	●	F	1	FP	NX2525	540—785	.002—.008	.008—.035
		●	F	2	FV	NX2525	540—785	.002—.008	.008—.035
		●	F	3	R/L-F	MP3025	560—850	.002—.005	.004—.020
		●	L	1	LP	NX2525	540—785	.002—.010	.008—.039
		●	L	2	Std	UE6110	510—850	.003—.012	.012—.079
		●	L	3	MV	MP3025	460—720	.003—.012	.012—.079
		●	L	4	Std	MP3025	460—720	.003—.012	.012—.079
		●	L	5	SV	MP3025	560—850	.002—.010	.008—.039
		●	L	6	SW	MP3025	560—850	.002—.009	.008—.059
		●	M	1	MP	NX2525	460—655	.003—.012	.012—.079
		●	M	2	MW	MP3025	460—720	.004—.014	.031—.098
		●	F	1	FP	MC6015	605—1030	.002—.008	.008—.035
		●	F	2	FP	UE6110	605—1030	.002—.008	.008—.035
		●	F	3	FP	MP3025	560—850	.002—.008	.008—.035
		●	F	4	FV	MP3025	560—850	.002—.008	.008—.035
		●	F	5	FV	NX3035	525—755	.002—.008	.008—.035

CUTTING CONDITIONS : ● : Stable Cutting ● : General Cutting ✱ : Unstable Cutting

CUTTING AREA : F : Finish Cutting L : Light Cutting M : Medium Cutting R : Rough Cutting H : Heavy Cutting

Work Material	Hardness	Cutting Mode	Priority	Breaker	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)
P								
Carbon Steel • Alloy Steel (AISI 1045, AISI 4140)	180 280HB	☪	L	1	LP	MC6015	605—1030	.002 —.010
		☪	L	2	LP	UE6110	605—1030	.002 —.010
		☪	L	3	LP	MP3025	560—850	.002 —.010
		☪	L	4	Std	UE6110	510—850	.003 —.012
		☪	L	5	SW	MC6015	605—1030	.002 —.009
		☪	L	6	SW	MP3025	560—850	.002 —.009
		☪	M	1	MP	MC6015	510—850	.003 —.012
		☪	M	2	MP	UE6110	510—850	.003 —.012
		☪	M	3	MP	MP3025	460—720	.003 —.012
		☪	M	4	MW	MC6015	510—850	.004 —.014
		☪	F	1	FP	MC6025	605—985	.002 —.008
		☪	L	1	LP	MC6025	605—985	.002 —.010
		☪	L	2	SV	MC6025	605—985	.002 —.010
		☪	L	3	SW	MC6025	605—985	.002 —.009
		☪	M	1	MP	MC6025	510—820	.003 —.012
		☪	M	2	MW	MC6025	510—820	.004 —.014
Carbon Steel • Alloy Steel (AISI 4340)	280 350HB	●	M	1	MP	NX2525	310—460	.003 —.012
		☪	M	1	MP	MC6015	360—605	.003 —.012
		☪	M	2	MP	UE6110	360—605	.003 —.012
		☪	M	3	MP	MP3025	330—510	.003 —.012
		☪	M	1	MP	MC6025	360—575	.003 —.012

TURNING INSERTS

RECOMMENDED CUTTING CONDITIONS

7° POSITIVE INSERT TYPE

Breaker : Std : Standard Flat : Flat Top

Work Material	Hardness	Cutting Mode	Priority	Breaker	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)
M								
Austenitic Stainless Steel (AISI 304, AISI 316)	≤200HB	●	F	1	FM	VP15TF	245—410	.002—.008
		●	F	2	Std	US735	230—440	.003—.012
		●	L	1	LM	MC7025	460—620	.002—.010
		●	L	2	Std	US735	230—440	.003—.012
		●	M	1	MM	MC7025	395—525	.003—.012
		●	F	1	FM	VP15TF	245—410	.002—.008
		●	F	2	Std	US735	230—440	.003—.012
		●	L	1	LM	MC7025	460—620	.002—.010
		●	L	2	Std	US735	230—440	.003—.012
		●	M	1	MM	MC7025	395—525	.003—.012
		✚	F	1	FM	VP15TF	245—410	.002—.008
		✚	F	2	Std	US735	230—440	.003—.012
		✚	L	1	LM	MP7035	280—440	.002—.010
		✚	L	2	LM	VP15TF	245—410	.002—.010
		✚	L	3	Std	US735	230—440	.003—.012
		✚	M	1	MM	MP7035	230—375	.003—.012
		✚	M	2	MM	VP15TF	195—345	.003—.012
Austenitic Stainless Steel (AISI 304LN, AISI 316LN)	>200HB	●	F	1	FM	VP15TF	195—345	.002—.008
		●	F	2	Std	US735	195—360	.003—.012
		●	L	1	LM	MC7025	395—525	.002—.010
		●	L	2	Std	US735	195—360	.003—.012
		●	M	1	MM	MC7025	330—425	.003—.012
		●	F	1	FM	VP15TF	195—345	.002—.008
		●	F	2	Std	US735	195—360	.003—.012
		●	L	1	LM	MC7025	395—525	.002—.010
		●	L	2	Std	US735	195—360	.003—.012
		●	M	1	MM	MC7025	330—425	.003—.012
		✚	F	1	FM	VP15TF	195—345	.002—.008
		✚	F	2	Std	US735	195—360	.003—.012
		✚	L	1	LM	MP7035	230—375	.002—.010
		✚	L	2	LM	VP15TF	195—345	.002—.010
		✚	L	3	Std	US735	195—360	.003—.012
		✚	M	1	MM	MP7035	195—310	.003—.012
		✚	M	2	MM	VP15TF	165—295	.003—.012
Two-phase Stainless Steel (AISI 329)	≤280HB	●	F	1	FM	VP15TF	165—280	.002—.008
		●	F	2	Std	US735	150—295	.003—.012
		●	L	1	LM	MC7025	310—425	.002—.010
		●	L	2	Std	US735	150—295	.003—.012
		●	M	1	MM	MC7025	260—345	.003—.012
		●	F	1	FM	VP15TF	165—280	.002—.008
		●	F	2	Std	US735	150—295	.003—.012
		●	L	1	LM	MC7025	310—425	.002—.010
		●	L	2	Std	US735	150—295	.003—.012
		●	M	1	MM	MC7025	260—345	.003—.012
		✚	F	1	FM	VP15TF	165—280	.002—.008
		✚	F	2	Std	US735	150—295	.003—.012
		✚	L	1	LM	MP7035	180—295	.002—.010

CUTTING CONDITIONS : ● : Stable Cutting ● : General Cutting ✚ : Unstable Cutting

CUTTING AREA : F : Finish Cutting L : Light Cutting M : Medium Cutting R : Rough Cutting H : Heavy Cutting

Work Material	Hardness	Cutting Mode	Priority	Breaker	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)	
M									
Two-phase Stainless Steel (AISI 329)	≤280HB	✚	L	2	LM	VP15TF	165—280	.002—.010	.008—.039
		✚	L	3	Std	US735	150—295	.003—.012	.012—.079
		✚	M	1	MM	MP7035	150—245	.003—.012	.012—.079
		✚	M	2	MM	VP15TF	130—230	.003—.012	.012—.079
Ferritic and Martensitic Stainless Steel (AISI 410, AISI 430)	≤200HB	●	F	1	FM	VP15TF	245—410	.002—.008	.008—.035
		●	F	2	Std	US735	230—440	.003—.012	.012—.079
		●	L	1	LM	MC7025	460—620	.002—.010	.008—.039
		●	L	2	Std	US735	230—440	.003—.012	.012—.079
		●	M	1	MM	MC7025	395—525	.003—.012	.012—.079
		☑	F	1	FM	VP15TF	245—410	.002—.008	.008—.035
		☑	F	2	Std	US735	230—440	.003—.012	.012—.079
		☑	L	1	LM	MC7025	460—620	.002—.010	.008—.039
		☑	L	2	Std	US735	230—440	.003—.012	.012—.079
		☑	M	1	MM	MC7025	395—525	.003—.012	.012—.079
		✚	F	1	FM	VP15TF	245—410	.002—.008	.008—.035
		✚	F	2	Std	US735	230—440	.003—.012	.012—.079
		✚	L	1	LM	MP7035	280—440	.002—.010	.008—.039
		✚	L	2	LM	VP15TF	245—410	.002—.010	.008—.039
		✚	L	3	Std	US735	230—440	.003—.012	.012—.079
		✚	M	1	MM	MP7035	230—375	.003—.012	.012—.079
		✚	M	2	MM	VP15TF	195—345	.003—.012	.012—.079
Ferritic and Martensitic Stainless Steel (AISI 431, AISI 420)	>200HB	●	F	1	FM	VP15TF	195—345	.002—.008	.008—.035
		●	F	2	Std	US735	195—360	.003—.012	.012—.079
		●	L	1	LM	MC7025	395—525	.002—.010	.008—.039
		●	L	2	Std	US735	195—360	.003—.012	.012—.079
		●	M	1	MM	MC7025	330—425	.003—.012	.012—.079
		☑	F	1	FM	VP15TF	195—345	.002—.008	.008—.035
		☑	F	2	Std	US735	195—360	.003—.012	.012—.079
		☑	L	1	LM	MC7025	395—525	.002—.010	.008—.039
		☑	L	2	Std	US735	195—360	.003—.012	.012—.079
		☑	M	1	MM	MC7025	330—425	.003—.012	.012—.079
		✚	F	1	FM	VP15TF	195—345	.002—.008	.008—.035
		✚	F	2	Std	US735	195—360	.003—.012	.012—.079
		✚	L	1	LM	MP7035	230—375	.002—.010	.008—.039
		✚	L	2	LM	VP15TF	195—345	.002—.010	.008—.039
		✚	L	3	Std	US735	195—360	.003—.012	.012—.079
		✚	M	1	MM	MP7035	195—310	.003—.012	.012—.079
		✚	M	2	MM	VP15TF	165—295	.003—.012	.012—.079
Hardened Stainless Steel (AISI 630, AISI 631)	<450HB	●	F	1	FM	VP15TF	130—230	.002—.008	.008—.035
		●	F	2	Std	US735	130—245	.003—.012	.012—.079
		●	L	1	LM	MC7025	260—345	.002—.010	.008—.039
		●	L	2	LS(M)	MP9015	345—460	.002—.008	.008—.039
		●	L	3	Std	US735	130—245	.003—.012	.012—.079
		●	M	1	MM	MC7025	210—280	.003—.012	.012—.079
		●	M	2	MS	MP9015	280—395	.003—.010	.012—.079

A

TURNING INSERTS

RECOMMENDED CUTTING CONDITIONS

7° POSITIVE INSERT TYPE

Breaker : Std : Standard Flat : Flat Top

Work Material	Hardness	Cutting Mode		Priority	Breaker	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)
M									
Hardened Stainless Steel (AISI 630, AISI 631)	<450HB	●	F	1	FM	VP15TF	130—230	.002—.008	.008—.035
		●	F	2	Std	US735	130—245	.003—.012	.012—.079
		●	L	1	LM	MC7025	260—345	.002—.010	.008—.039
		●	L	2	LS(M)	MP9015	345—460	.002—.008	.008—.039
		●	L	3	Std	US735	130—245	.003—.012	.012—.079
		●	M	1	MM	MC7025	210—280	.003—.012	.012—.079
		●	M	2	MS	MP9015	280—395	.003—.010	.012—.079
		✚	F	1	FM	VP15TF	130—230	.002—.008	.008—.035
		✚	F	2	Std	US735	130—245	.003—.012	.012—.079
		✚	L	1	LM	MP7035	150—245	.002—.010	.008—.039
		✚	L	2	LM	VP15TF	130—230	.002—.010	.008—.039
		✚	L	3	Std	US735	130—245	.003—.012	.012—.079
		✚	M	1	MM	MP7035	130—195	.003—.012	.012—.079
		✚	M	2	MM	VP15TF	115—195	.003—.012	.012—.079

CUTTING CONDITIONS : ● : Stable Cutting ● : General Cutting ✚ : Unstable Cutting
CUTTING AREA : F : Finish Cutting L : Light Cutting M : Medium Cutting R : Rough Cutting H : Heavy Cutting

Work Material	Hardness	Cutting Mode	Priority	Breaker	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)
K								
Gray Cast Iron (AISI No 45 B)	≤350MPa	●	F	1	MK	MC5005	540—870	.003—.012
		●	L	1	MK	MC5005	540—870	.012—.079
		●	M	1	Flat	MC5005	540—870	.012—.079
		●	F	1	MK	MC5015	490—785	.003—.012
		●	F	2	Std	UC5115	425—785	.012—.079
		●	L	1	MK	MC5015	490—785	.003—.012
		●	L	2	Std	UC5115	425—785	.012—.079
		●	M	1	Flat	MC5015	490—785	.003—.012
		●	M	2	Flat	UC5115	425—785	.012—.079
		✚	F	1	MK	MC5015	490—785	.003—.012
		✚	F	2	Std	UC5115	425—785	.012—.079
		✚	L	1	MK	MC5015	490—785	.003—.012
		✚	L	2	Std	UC5115	425—785	.012—.079
		✚	M	1	Flat	MC5015	490—785	.003—.012
		✚	M	2	Flat	UC5115	425—785	.012—.079
Ductile Cast Iron	≤450MPa	●	F	1	MK	MC5005	510—820	.003—.012
		●	L	1	MK	MC5005	510—820	.012—.079
		●	M	1	Flat	MC5005	510—820	.012—.079
		●	F	1	MK	MC5015	460—755	.003—.012
		●	F	2	Std	UC5115	410—740	.012—.079
		●	L	1	MK	MC5015	460—755	.003—.012
		●	L	2	Std	UC5115	410—740	.012—.079
		●	M	1	Flat	MC5015	460—755	.003—.012
		●	M	2	Flat	UC5115	410—740	.012—.079
		✚	F	1	MK	MC5015	460—755	.003—.012
		✚	F	2	Std	UC5115	410—740	.012—.079
		✚	L	1	MK	MC5015	460—755	.003—.012
		✚	L	2	Std	UC5115	410—740	.012—.079
		✚	M	1	Flat	MC5015	460—755	.003—.012
		✚	M	2	Flat	UC5115	410—740	.012—.079
	≤800MPa	●	F	1	MK	MC5005	460—740	.003—.012
		●	L	1	MK	MC5005	460—740	.012—.079
		●	M	1	Flat	MC5005	460—740	.012—.079
		●	F	1	MK	MC5015	410—670	.003—.012
		●	F	2	Std	UC5115	360—655	.012—.079
		●	L	1	MK	MC5015	410—670	.003—.012
		●	L	2	Std	UC5115	360—655	.012—.079
		●	M	1	Flat	MC5015	410—670	.003—.012
		●	M	2	Flat	UC5115	360—655	.012—.079
		✚	F	1	MK	MC5015	410—670	.003—.012
		✚	F	2	Std	UC5115	360—655	.012—.079
		✚	L	1	MK	MC5015	410—670	.003—.012
		✚	L	2	Std	UC5115	360—655	.012—.079
		✚	M	1	Flat	MC5015	410—670	.003—.012
		✚	M	2	Flat	UC5115	360—655	.012—.079

RECOMMENDED CUTTING CONDITIONS

7° POSITIVE INSERT TYPE

Breaker : Std : Standard Flat : Flat Top

Work Material	Hardness	Cutting Mode	Priority	Breaker	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)
N								
Aluminum Alloy (A6061, A7075)	Si<5%	●	F	1	AZ	HTi10	985—2295	.004— .016
		●	F	1	AZ	HTi10	985—2295	.004— .016
		⚙	F	1	AZ	HTi10	985—2295	.004— .016
Aluminum Alloy (AC4B)	5%≤Si≤10%	●	F	1	AZ	HTi10	985—2295	.004— .016
		●	F	1	AZ	HTi10	985—2295	.004— .016
		⚙	F	1	AZ	HTi10	985—2295	.004— .016
Aluminum Alloy (ADC12, A390)	Si>10%	●	F	1	AZ	HTi10	985—2295	.004— .016
		●	F	1	AZ	HTi10	985—2295	.004— .016
		⚙	F	1	AZ	HTi10	985—2295	.004— .016

A

TURNING INSERTS

CUTTING CONDITIONS : ● : Stable Cutting ● : General Cutting ⚙ : Unstable Cutting
CUTTING AREA : F : Finish Cutting L : Light Cutting M : Medium Cutting R : Rough Cutting H : Heavy Cutting

Work Material	Hardness	Cutting Mode	Priority	Breaker	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)	
S									
Titanium Alloy (Ti-6Al-4V)	—	●	F	1	FS-P	MT9005	130—260	.002—.005	.008—.055
		●	F	2	FJ	RT9010	115—245	.002—.005	.008—.055
		●	L	1	LS-P	MT9005	130—260	.002—.006	.012—.118
		●	L	2	LS(M)	MT9005	130—260	.002—.008	.008—.039
		●	M	1	MS	MT9005	115—210	.003—.010	.012—.079
		●	F	1	FS-P	MT9005	130—260	.002—.005	.008—.055
		●	F	2	FJ	RT9010	115—245	.002—.005	.008—.055
		●	L	1	LS-P	MT9005	130—260	.002—.006	.012—.118
		●	L	2	LS(M)	MT9005	130—260	.002—.008	.008—.039
		●	M	1	MS	MT9005	115—210	.003—.010	.012—.079
		✚	F	1	FS-P	MT9005	130—260	.002—.005	.008—.055
		✚	F	2	FJ	RT9010	115—245	.002—.005	.008—.055
		✚	L	1	LS-P	MT9005	130—260	.002—.006	.012—.118
		✚	L	2	LS(M)	MT9005	130—260	.002—.008	.008—.039
		✚	M	1	MS	MT9005	115—210	.003—.010	.012—.079
S									
Heat Resistant Alloy (Inconel718)	—	●	F	1	FS	MP9005	80—310	.002—.005	.008—.055
		●	F	2	FJ	VP10RT	65—150	.002—.005	.008—.055
		●	L	1	LS(G)	MP9005	80—310	.002—.006	.012—.118
		●	L	2	LS(M)	MP9005	80—310	.002—.008	.008—.039
		●	M	1	MS	MP9005	65—260	.003—.010	.012—.079
		●	F	1	FS	MP9015	65—245	.002—.005	.008—.055
		●	F	2	FJ	VP10RT	65—150	.002—.005	.008—.055
		●	L	1	LS(G)	MP9015	65—245	.002—.006	.012—.118
		●	L	2	LS(M)	MP9015	65—245	.002—.008	.008—.039
		●	M	1	MS	MP9015	65—195	.003—.010	.012—.079
		✚	F	1	FS	MP9015	65—245	.002—.005	.008—.055
		✚	F	2	FJ	VP10RT	65—150	.002—.005	.008—.055
		✚	L	1	LS(G)	MP9015	65—245	.002—.006	.012—.118
		✚	L	2	LS(M)	MP9015	65—245	.002—.008	.008—.039
		✚	M	1	MS	MP9015	65—195	.003—.010	.012—.079

A

TURNING INSERTS

RECOMMENDED CUTTING CONDITIONS

■ 11° POSITIVE INSERT TYPE

Breaker : Std : Standard Flat : Flat Top

Work Material	Hardness	Cutting Mode	Priority	Breaker	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)
P								
Mild Steel (AISI ASTM A283, AISI 1010)	≤180HB	●	F	1	R-R/L	NX2525	740—1050	.002—.005
		●	L	1	R-Std	NX2525	605—885	.003—.012
		●	M	1	R-Std	NX2525	605—885	.003—.012
		●	F	1	R-R/L	NX2525	740—1050	.002—.005
		●	L	1	R-Std	UE6110	690—1165	.003—.012
		●	L	2	R-Std	MP3025	620—970	.003—.012
		●	L	3	R-Std	NX3035	590—835	.003—.012
		●	M	1	R-Std	UE6110	690—1165	.003—.012
		●	M	2	R-Std	MP3025	620—970	.003—.012
		●	M	3	R-Std	NX3035	590—835	.003—.012
		✚	F	1	R-R/L	UTi20T	375—540	.002—.005
		✚	L	1	N-Flat	UP20M	345—525	.003—.012
		✚	M	1	N-Flat	UP20M	345—525	.003—.012
		●	F	1	R-R/L	NX2525	540—785	.002—.005
Carbon Steel • Alloy Steel (AISI 1045, AISI 4140)	180 280HB	●	L	1	R-Std	NX2525	460—655	.003—.012
		●	M	1	R-Std	NX2525	460—655	.003—.012
		●	F	1	R-R/L	NX2525	540—785	.002—.005
		●	L	1	R-Std	UE6110	510—850	.003—.012
		●	L	2	R-Std	MP3025	460—720	.003—.012
		●	L	3	R-Std	NX3035	440—620	.003—.012
		●	M	1	R-Std	UE6110	510—850	.003—.012
		●	M	2	R-Std	MP3025	460—720	.003—.012
		●	M	3	R-Std	NX3035	440—620	.003—.012
		✚	F	1	R-R/L	UTi20T	280—395	.002—.005
		✚	L	1	N-Flat	UP20M	260—395	.003—.012
		✚	M	1	N-Flat	UP20M	260—395	.003—.012

CUTTING CONDITIONS : ● : Stable Cutting ● : General Cutting ✚ : Unstable Cutting

CUTTING AREA : F : Finish Cutting L : Light Cutting M : Medium Cutting R : Rough Cutting H : Heavy Cutting

Work Material	Hardness	Cutting Mode	Priority	Breaker	Grade	Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)
K								
Gray Cast Iron (AISI No 45B)	≤350MPa	●	F	1	R-R/L	NX2525	475—655	.002—.005
		●	L	1	N-Flat	UC5105	440—805	.003—.012
		●	L	2	N-Flat	NX2525	395—540	.003—.012
		●	L	3	R-Std	NX2525	395—540	.003—.012
		●	M	1	N-Flat	UC5105	440—805	.003—.012
		●	M	2	N-Flat	NX2525	395—540	.003—.012
		●	M	3	R-Std	NX2525	395—540	.003—.012
		●	F	1	R-R/L	NX2525	475—655	.002—.005
		●	F	2	R-R/L	HTi10	330—460	.002—.005
		●	L	1	N-Flat	UC5115	425—785	.003—.012
		●	L	2	N-Flat	UE6110	410—655	.003—.012
		●	M	1	N-Flat	UC5115	425—785	.003—.012
		●	M	2	N-Flat	UE6110	410—655	.003—.012
		✚	F	1	R-R/L	UTi20T	260—375	.002—.005
		✚	L	1	N-Flat	VP15TF	375—525	.003—.012
		✚	M	1	N-Flat	VP15TF	375—525	.003—.012
Ductile Cast Iron	≤450MPa	●	F	1	R-R/L	NX2525	460—620	.002—.005
		●	L	1	N-Flat	UC5105	410—770	.003—.012
		●	L	2	N-Flat	NX2525	375—510	.003—.012
		●	L	3	R-Std	NX2525	375—510	.003—.012
		●	M	1	N-Flat	UC5105	410—770	.003—.012
		●	M	2	N-Flat	NX2525	375—510	.003—.012
		●	M	3	R-Std	NX2525	375—510	.003—.012
		●	F	1	R-R/L	NX2525	460—620	.002—.005
		●	F	2	R-R/L	HTi10	310—440	.002—.005
		●	L	1	N-Flat	UC5115	410—740	.003—.012
		●	L	2	N-Flat	UE6110	395—620	.003—.012
		●	M	1	N-Flat	UC5115	410—740	.003—.012
		●	M	2	N-Flat	UE6110	395—620	.003—.012
		✚	F	1	R-R/L	UTi20T	245—345	.002—.005
		✚	L	1	N-Flat	VP15TF	360—490	.003—.012
		✚	M	1	N-Flat	VP15TF	360—490	.003—.012
	≤800MPa	●	F	1	R-R/L	NX2525	410—560	.002—.005
		●	L	1	N-Flat	UC5105	375—690	.003—.012
		●	L	2	N-Flat	NX2525	345—460	.003—.012
		●	L	3	R-Std	NX2525	345—460	.003—.012
		●	M	1	N-Flat	UC5105	375—690	.003—.012
		●	M	2	N-Flat	NX2525	345—460	.003—.012
		●	M	3	R-Std	NX2525	345—460	.003—.012
		●	F	1	R-R/L	NX2525	410—560	.002—.005
		●	F	2	R-R/L	HTi10	280—395	.002—.005
		●	L	1	N-Flat	UC5115	360—655	.003—.012
		●	L	2	N-Flat	UE6110	345—560	.003—.012
		●	M	1	N-Flat	UC5115	360—655	.003—.012
		●	M	2	N-Flat	UE6110	345—560	.003—.012
		✚	F	1	R-R/L	UTi20T	210—310	.002—.005
		✚	L	1	N-Flat	VP15TF	310—440	.003—.012
		✚	M	1	N-Flat	VP15TF	310—440	.003—.012

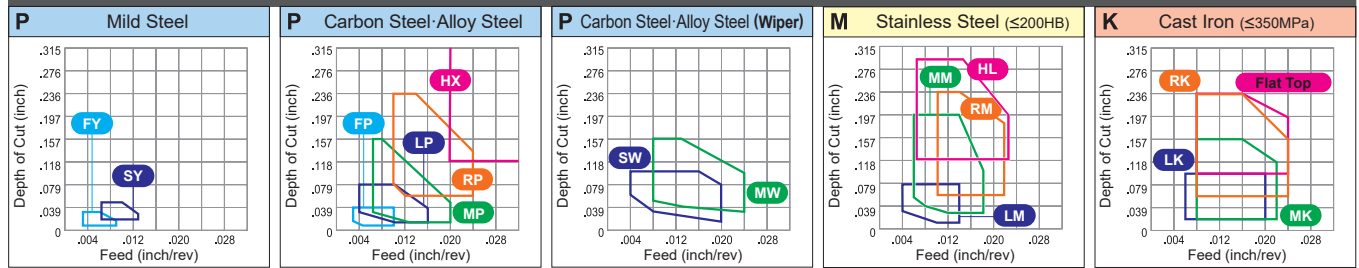
TURNING INSERTS [NEGATIVE]



CNMG 4 3 0.5 FP
Size Thickness Corner Radius Chip Breaker
*Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting --- Light Cutting --- Medium Cutting --- Rough Cutting --- Heavy Cutting ---



Cutting Conditions : ● Stable Cutting ● General Cutting ✚ Unstable Cutting

Work Material	P	Steel																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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● = NEW

Cutting Conditions : ● 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	Order Number	(ISO) Number	RE (inch)	Coated																Cermet	Coated Cermert		Carbide			Applicable Holder Page																
				UE6105 UE6110 MC6015 MC6025 MC6035 UH6400 MS6015 MC7015 MC7025 MP7035 US735 US905 MC5005 MC5015 UC5105 UC5115 MP9005 MP9015 NEW MP9025 VP05RT VP10RT VP15TF UP20M NX2525 NX3035 MP3025 AP25N VP25N UTi20T HTi05T HTi10 MT9015 RT9005 RT9010																																						
PK  Finish Cutting	CNMG431PK	CNMG120404-PK	.016																													★						C006 —009 E021 E024 H006 —008				
LP  Light Cutting	CNMG431LP	CNMG120404-LP	.016	●●●●●																										●				C006 —009 E021 E024 H006 —008								
	CNMG432LP	CNMG120408-LP	.031	●●●●●																										●				C006 —009 E021 E024 H006 —008								
	CNMG433LP	CNMG120412-LP	.047	●●●●●																														C006 —009 E021 E024 H006 —008								
																																							C006 —009 E021 E024 H006 —008			
LM  Light Cutting	CNMG431LM	CNMG120404-LM	.016					●●●																										C006 —009 E021 E024 H006 —008								
	CNMG432LM	CNMG120408-LM	.031					●●●																										C006 —009 E021 E024 H006 —008								
	CNMG433LM	CNMG120412-LM	.047					●●●																										C006 —009 E021 E024 H006 —008								
																																							C006 —009 E021 E024 H006 —008			
LK  Light Cutting	CNMG431LK	CNMG120404-LK	.016									●●																										C006 —009 E021 E024 H006 —008				
	CNMG432LK	CNMG120408-LK	.031									●●																										C006 —009 E021 E024 H006 —008				
	CNMG433LK	CNMG120412-LK	.047									●●																										C006 —009 E021 E024 H006 —008				
																																							C006 —009 E021 E024 H006 —008			
LS  Light Cutting	NEW CNMG321LS	CNMG090304-LS	.016													●●																										C006 —009 E021 E024 H006 —008
	NEW CNMG322LS	CNMG090308-LS	.031													●●																										C006 —009 E021 E024 H006 —008
	NEW CNMG430.5LS	CNMG120402-LS	.008													●●																							●			C006 —009 E021 E024 H006 —008
	CNMG431LS	CNMG120404-LS	.016													●●●																							●			C006 —009 E021 E024 H006 —008
	CNMG432LS	CNMG120408-LS	.031													●●●																							●			C006 —009 E021 E024 H006 —008
																																							C006 —009 E021 E024 H006 —008			
SH  Light Cutting	CNMG32.51SH	CNMG09T304-SH	.016	★								★																										C006 —009 E021 E024 H006 —008				
	CNMG32.52SH	CNMG09T308-SH	.031	★																																		C006 —009 E021 E024 H006 —008				
	CNMG431SH	CNMG120404-SH	.016	●●●●●								●								●				★●				★							C006 —009 E021 E024 H006 —008							
	CNMG432SH	CNMG120408-SH	.031	●●●●●								●								●				★●				★							C006 —009 E021 E024 H006 —008							
	CNMG433SH	CNMG120412-SH	.047	●●●●●																															C006 —009 E021 E024 H006 —008							
																																							C006 —009 E021 E024 H006 —008			
SA  Light Cutting	CNMG431SA	CNMG120404-SA	.016	●●●●●								●																				★●					C006 —009 E021 E024 H006 —008					
	CNMG432SA	CNMG120408-SA	.031	●●●●●								●																				★●					C006 —009 E021 E024 H006 —008					
	CNMG433SA	CNMG120412-SA	.047	●●●●●																												●					C006 —009 E021 E024 H006 —008					
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SW (With Wiper)  Light Cutting	* CNMG431SW	CNMG120404-SW	.016	●●●												●●●																				★●●					C006 —009 E021 E024 H006 —008	
	* CNMG432SW	CNMG120408-SW	.031	●●●												●●●																				★●●					C006 —009 E021 E024 H006 —008	
	* CNMG433SW	CNMG120412-SW	.047	●●●																																●●●					C006 —009 E021 E024 H006 —008	
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*Please refer to page A032 before using the SW breaker (wiper insert).

● = NEW

CHIP BREAKER ➤ A046
GRADES ➤ A034
IDENTIFICATION ➤ A002

A

TURNING INSERTS

NEG

WITH HOLE

C

D

R

S

T

V

W

TURNING INSERTS [NEGATIVE]

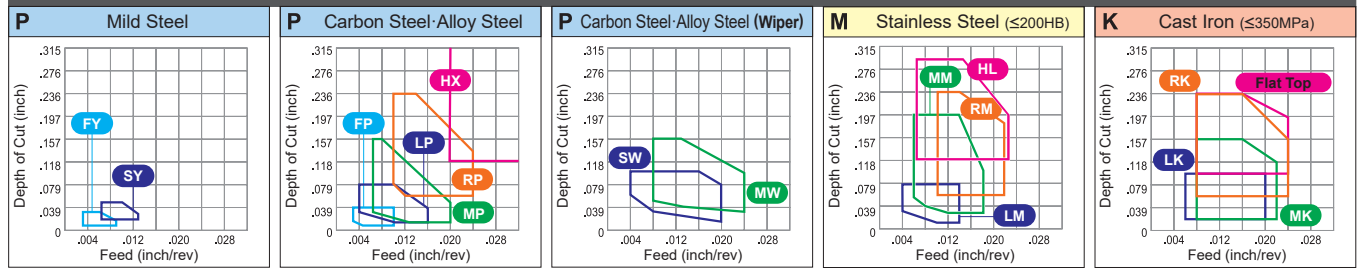


CNMG 4 3 1 SY

Size Thickness Corner Radius Chip Breaker
*Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting --- Light Cutting --- Medium Cutting --- Rough Cutting --- Heavy Cutting ---



Cutting Conditions : ● Stable Cutting ● General Cutting ✦ Unstable Cutting

Work Material			RE (inch)	Coated															Cermet		Coated Cermet		Carbide		Applicable Holder Page														
	P	Steel		UE6105	UE6110	MC6015	MC6025	MC6035	UH6400	MS6015	MC7015	MC7025	MP7035	US735	US905	MC5005	MC5015	UC5105	UC5115	MP9005	MP9015	NEW MP9025	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	MP3025	AP25N	VP25N	UT120T	HT105T	HT110	MT9015	RT9005	RT9010		
SY	CNMG431SY	CNMG120404-SY	.016																								★		●	★									C006
	CNMG432SY	CNMG120408-SY	.031																								★		●	★									C006
C	CNMG431C	CNMG120404-C	.016																								★	●											C006
	CNMG432C	CNMG120408-C	.031																								★	●											C006
MJ	CNMG431MJ	CNMG120404-MJ	.016											★						●	●		●	●														C006	
	CNMG432MJ	CNMG120408-MJ	.031										★							●	●		●	●														C006	
	CNMG433MJ	CNMG120412-MJ	.047										★							●	●		●	●	★	★												E021	
	CNMG434MJ	CNMG120416-MJ	.063										★							●	●		●	●	★	★												E024	
MJ	CNMG431MJ	CNMG120404-MJ	.016																																				C006
	CNMG432MJ	CNMG120408-MJ	.031																																				C006
MP	CNMG431MP	CNMG120404-MP	.016	●	●	●	●	●												●									●										C006
	CNMG432MP	CNMG120408-MP	.031	●	●	●	●	●												●									●										C006
	CNMG433MP	CNMG120412-MP	.047	●	●	●	●	●												●									●										E021
	CNMG434MP	CNMG120416-MP	.063	●	●	●	●	●												●									●										E024
	CNMG542MP	CNMG160608-MP	.031	●	●															●																			H006
	CNMG543MP	CNMG160612-MP	.047	●	●															●																			C006
MP	CNMG544MP	CNMG160616-MP	.063	●	●															●																			C006

● = NEW

Cutting Conditions : ● Stable Cutting ● General Cutting ✚ Unstable Cutting

Work Material	P	Steel																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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● = NEW

CHIP BREAKER ➤ A046
GRADES ➤ A034
IDENTIFICATION ➤ A002

A

TURNING INSERTS

NEG

WITH HOLE

C

D

R

S

T

V

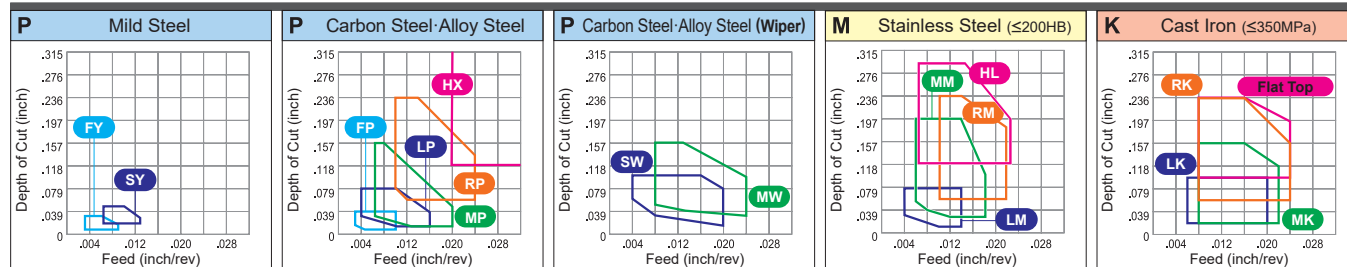
W

A107

**80° CN TYPE INSERTS
WITH HOLE**

Size Thickness Corner Radius Chip Breaker
*Please refer to page A002.

Finish Cutting... Light Cutting... Medium Cutting... Rough Cutting... Heavy Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

[illegible]

*1 Please refer to page A032 before using the MW breaker (wiper insert).

● = NEW

[illegible]

*2 New design MS breaker : MP9005, MP9015, MP9025, MT9015

● = NEW

CHIP BREAKER	➤ A046
GRADES	➤ A034
IDENTIFICATION	➤ A002

TURNING INSERTS [NEGATIVE]

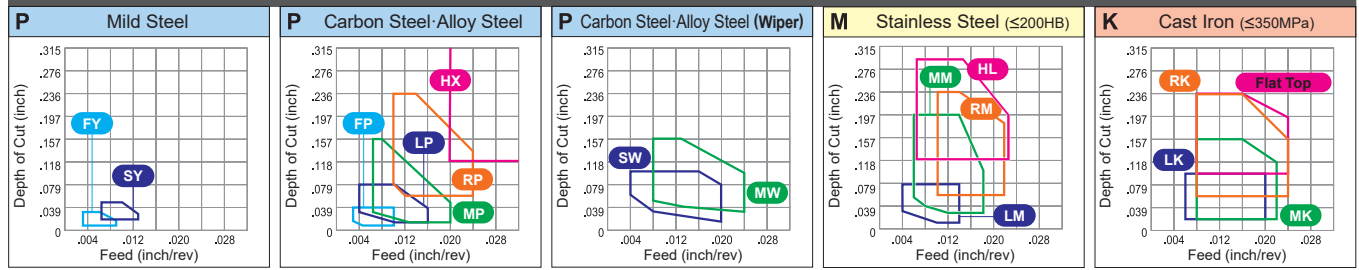


CNMG 4 3 2 GH

Size Thickness Corner Radius Chip Breaker
*Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting --- Light Cutting --- Medium Cutting --- Rough Cutting --- Heavy Cutting ---



Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

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CHIP BREAKER ➤ A046
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TURNING INSERTS

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TURNING INSERTS [NEGATIVE]

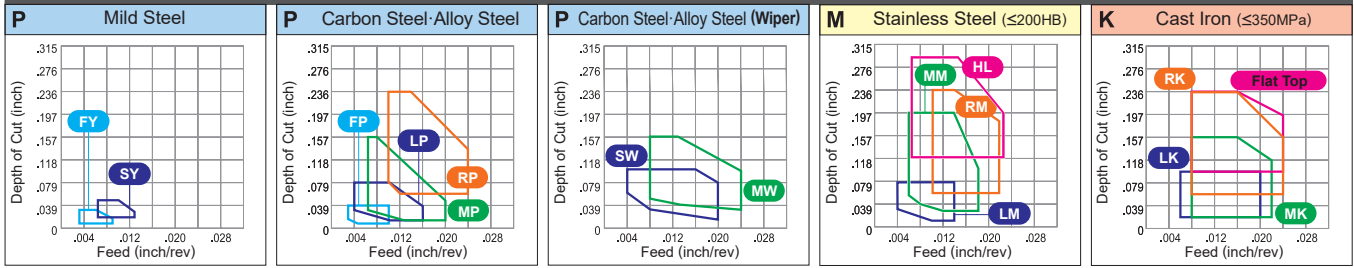


DN TYPE INSERTS WITH HOLE

DNMG 4 3 0.5 FP
 Size Thickness Corner Radius Chip Breaker
 *Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting... Light Cutting... Medium Cutting... Rough Cutting... Heavy Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ✚ Unstable Cutting

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Cutting Conditions : ● Stable Cutting ● General Cutting ✚ Unstable Cutting

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Shape	S	Heat-resistant Alloy, Titanium Alloy																																			
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	DNMG432LP	DNMG150408-LP	.031	●	●	●	●	●																													
	DNMG433LP	DNMG150412-LP	.047	●	●	●	●	●																													
	DNMG441LP	DNMG150604-LP	.016	●	●	●	●	●																													
	DNMG442LP	DNMG150608-LP	.031	●	●	●	●	●																													
	DNMG443LP	DNMG150612-LP	.047	●	●	●	●	●																													
LM	DNMG331LM	DNMG110404-LM	.016						●	●	●																									C010 —012 E021 E024 H009 —011	
	DNMG332LM	DNMG110408-LM	.031						●	●	●																										
Light Cutting	DNMG431LM	DNMG120404-LM	.016						●	●	●																										
	DNMG432LM	DNMG150408-LM	.031						●	●	●																										
	DNMG433LM	DNMG150412-LM	.047						●	●	●																										
	DNMG441LM	DNMG150604-LM	.016						●	●	●																										
	DNMG442LM	DNMG150608-LM	.031						●	●	●																										
	DNMG443LM	DNMG150612-LM	.047						●	●	●																										
LK	DNMG332LK	DNMG110408-LK	.031											★	●																					C010 —012 E021 E024 H009 —011	
	DNMG431LK	DNMG150404-LK	.016											●	●																						
Light Cutting	DNMG432LK	DNMG150408-LK	.031											●	●																						
	DNMG433LK	DNMG150412-LK	.047											●	●																						
	DNMG441LK	DNMG150604-LK	.016											●	●																						
	DNMG442LK	DNMG150608-LK	.031											●	●																						
	DNMG443LK	DNMG150612-LK	.047											●	●																						
LS	NEW DNMG430.5LS	DNMG150402-LS	.008																●	●	●															C010 —012 E021 E024 H009 —011	
	DNMG431LS	DNMG150404-LS	.016																●	●	●																
Light Cutting	DNMG432LS	DNMG150408-LS	.031																●	●	●																
	DNMG441LS	DNMG150604-LS	.016																●	●	●																
	DNMG442LS	DNMG150608-LS	.031																●	●	●																
SH	DNMG331SH	DNMG110404-SH	.016	●	●							★																									C010 —012 E021 E024 H009 —011
	DNMG332SH	DNMG110408-SH	.031	●	●							●																									
Light Cutting	DNMG431SH	DNMG150404-SH	.016	●	●	●	●					●				●										★	●	★									
	DNMG432SH	DNMG150408-SH	.031	●	●	●	●					●				●										★	●	★									
	DNMG433SH	DNMG150412-SH	.047	●	●	●	●					●				★										★		★									
	DNMG441SH	DNMG150604-SH	.016	★	★																																
	DNMG442SH	DNMG150608-SH	.031	★	★											★																					
	DNMG443SH	DNMG150612-SH	.047	★	★											★																					

● = NEW

CHIP BREAKER ➤ A046
GRADES ➤ A034
IDENTIFICATION ➤ A002

A

TURNING INSERTS

NEG

WITH HOLE

C

D

R

S

T

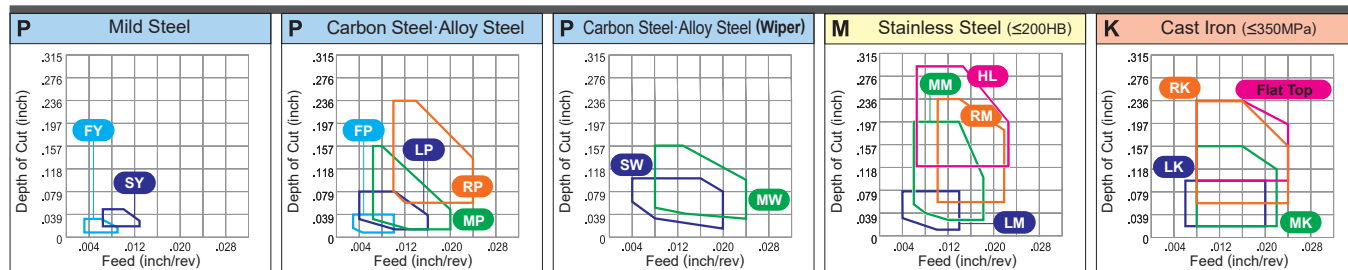
V

W

DN TYPE INSERTS WITH HOLE

Size Thickness Corner Radius Chip Breaker
*Please refer to page A002.

Finish Cutting... Light Cutting... Medium Cutting... Rough Cutting... Heavy Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	P	Steel	</																
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*Please refer to page A032 before using the SW breaker (wiper insert).

● = NEW

● : USA Stock ★ : Stocked in Japan

<10 inserts in one case>

Cutting Conditions : ● Stable Cutting ◐ General Cutting ⊕ Unstable Cutting

[illegible]

● = NEW

CHIP BREAKER	➤ A046
GRADES	➤ A034
IDENTIFICATION	➤ A002

TURNING INSERTS

WITH HOLE

E

1

F

S

1

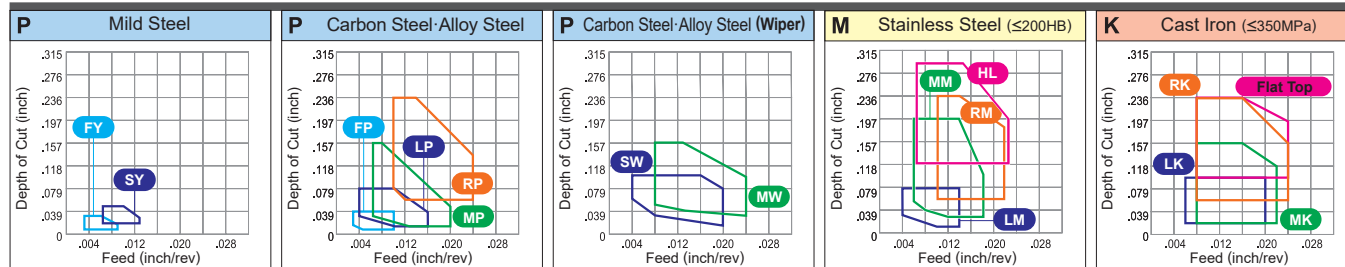
V

v

DN TYPE INSERTS WITH HOLE

Size Thickness Corner Radius Chip Breaker
*Please refer to page A002.

Finish Cutting... Light Cutting... Medium Cutting... Rough Cutting... Heavy Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

[illegible]

*1 Please refer to page A032 before using the MW breaker (wiper insert).

● = NEW

● : USA Stock ★ : Stocked in Japan
<10 inserts in one case>

TURNING INSERTS

NEG

WITH HOLE

E

D

■

9

1

V

117

TURNING INSERTS [NEGATIVE]



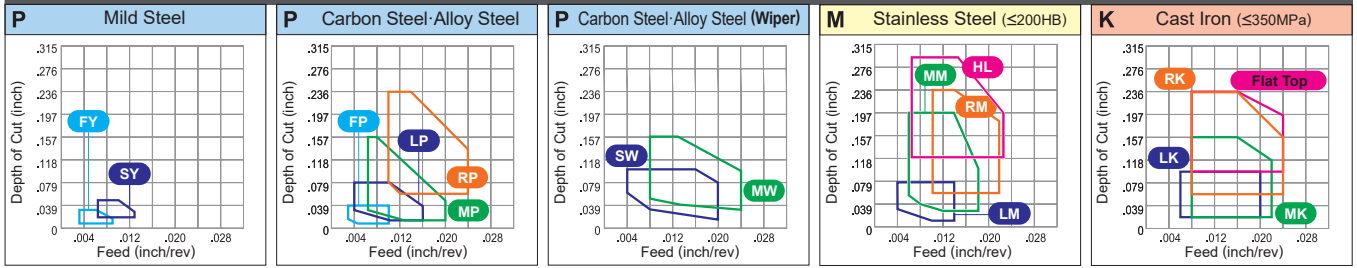
DN TYPE INSERTS WITH HOLE

DNMG 4 3 2 GJ

Size Thickness Corner Radius Chip Breaker
*Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting... Light Cutting... Medium Cutting... Rough Cutting... Heavy Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ✦ Unstable Cutting

Work Material	P	Steel																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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● : USA Stock ★ : Stocked in Japan
<10 inserts in one case>

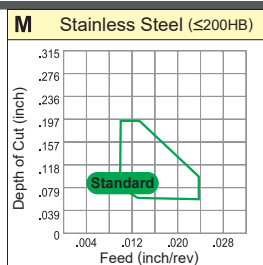
● = NEW



Size Thickness

*Please refer to page A002.

Medium Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

[illegible]

● = NEW

TURNING INSERTS

WITH HOLE

C

D

R

S

T

V

W

CHIP BREAKER	➤ A046
GRADES	➤ A034
IDENTIFICATION	➤ A002

A119

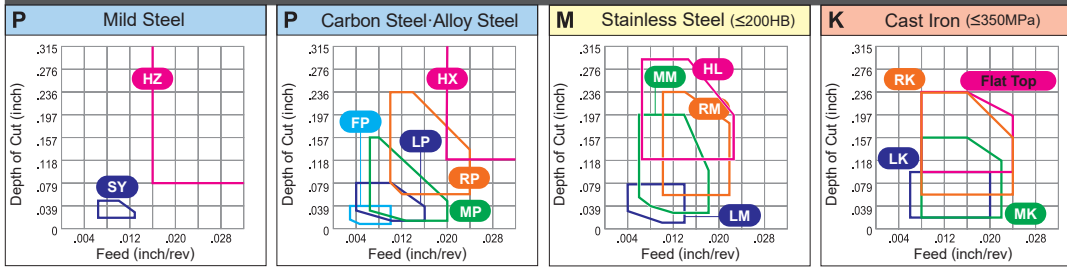
TURNING INSERTS [NEGATIVE]



SNMG 4 3 1 FP
Size Thickness Corner Radius Chip Breaker
*Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting... Light Cutting... Medium Cutting... Rough Cutting... Heavy Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ✦ Unstable Cutting

Work Material	P	Steel																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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● = NEW

Cutting Conditions : ● Stable Cutting ● General Cutting ✚ Unstable Cutting

Work Material	P	Steel																
	M	Stainless Steel																
Shape	K	Cast Iron																
	N	Non-Ferrous Metal																
Shape	S	Heat-resistant Alloy, Titanium Alloy																
	Order Number	(ISO) Number	RE (inch)															
SH	SNMG431SH	SNMG120404-SH	.016															
				UE6105	UE6110	MC6015	MC6025	MC6035	UH6400	MS6015	MC7015	MC7025	MP7035	US735	US905	MC5005	MC5015	UC5105
SA	SNMG431SA	SNMG120404-SA	.016															
				UE6105	UE6110	MC6015	MC6025	MC6035	UH6400	MS6015	MC7015	MC7025	MP7035	US735	US905	MC5005	MC5015	UC5105
SY	SNMG432SY	SNMG120408-SY	.031															
				UE6105	UE6110	MC6015	MC6025	MC6035	UH6400	MS6015	MC7015	MC7025	MP7035	US735	US905	MC5005	MC5015	UC5105
C	SNMG321C	SNMG090304-C	.016															
				UE6105	UE6110	MC6015	MC6025	MC6035	UH6400	MS6015	MC7015	MC7025	MP7035	US735	US905	MC5005	MC5015	UC5105
R/L 1G	SNMG431R1G	SNMG120404R-1G	.016															
				UE6105	UE6110	MC6015	MC6025	MC6035	UH6400	MS6015	MC7015	MC7025	MP7035	US735	US905	MC5005	MC5015	UC5105
MP	SNMG431MP	SNMG120404-MP	.016															
				UE6105	UE6110	MC6015	MC6025	MC6035	UH6400	MS6015	MC7015	MC7025	MP7035	US735	US905	MC5005	MC5015	UC5105
MM	SNMG432MM	SNMG120408-MM	.031															
				UE6105	UE6110	MC6015	MC6025	MC6035	UH6400	MS6015	MC7015	MC7025	MP7035	US735	US905	MC5005	MC5015	UC5105

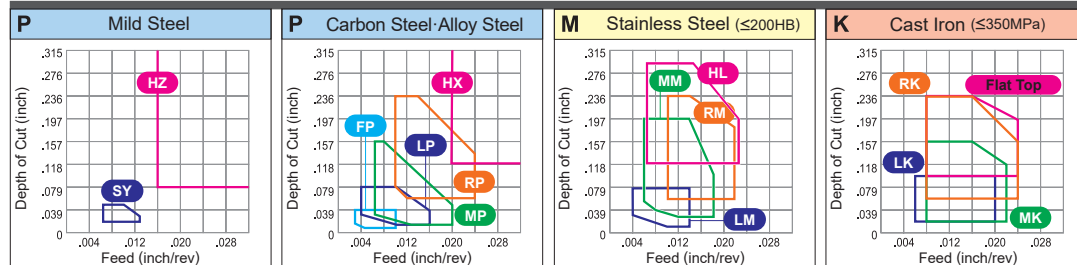
● = NEW

CHIP BREAKER ➤ A046
GRADES ➤ A034
IDENTIFICATION ➤ A002

 90° SN TYPE INSERTS WITH HOLE

Size Thickness Corner Radius Chip Breaker
*Please refer to page A002.

Finish Cutting... Light Cutting... Medium Cutting... Rough Cutting... Heavy Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

[illegible]

● = NEW

● : USA Stock ★ : Stocked in Japan
<10 inserts in one case>

Cutting Conditions : ● Stable Cutting ● General Cutting ✚ Unstable Cutting

Work Material																																						
	P	Steel	UE6105	UE6110	MC6015	MC6025	MC6035	UH6400	MS6015	MC7015	MC7025	MP7035	US735	US905	MC5005	MC5015	UC5105	UC5115	MP9005	MP9015	MP9025	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	MP3025	AP25N	VP25N	UTi20T	HTi05T	HTi10	MT9015	RT9005	RT9010		
Shape	Order Number	(ISO) Number	RE (inch)	Coated										Cermets		Coated Cermets		Carbide					Applicable Holder Page															
	Standard	SNMG321	SNMG090304	.016	★	●	●	●																	★	●	●			●	★	★						
		SNMG322	SNMG090308	.031	★	●	●	●																		★	●	●			●	★	★					
		SNMG431	SNMG120404	.016	●	●	●	●																		★	●	●			●	★	★					
		SNMG432	SNMG120408	.031	●	●	●	●	●								★	★							●	★	●	●			●	★	★					
		SNMG433	SNMG120412	.047	●	●	●	●	●								★	★								●	●			●	★							
		SNMG434	SNMG120416	.063		●	●	●	●								●	●								●				●								
		SNMG435	SNMG120420	.079			●	●	●																													
		SNMG543	SNMG150612	.047	●	●	●	●	●								●	●																				
		SNMG544	SNMG150616	.063			●	●	●																													
	Medium Cutting	SNMG643	SNMG190612	.047	●	●	●	●	●							★	★														●							
		SNMG644	SNMG190616	.063	★	●	●	●	●								★														●							
	MS	* SNMG431MS	SNMG120404-MS	.016															●	●															●			
		* SNMG432MS	SNMG120408-MS	.031															●	●	●														●			
		* SNMG433MS	SNMG120412-MS	.047															●	●	●	●													●			
		* SNMG543MS	SNMG150612-MS	.047															●	●															●			
	Medium Cutting	NEW SNMG643MS	SNMG190612-MS	.047															●	●															●			
	MS	SNMG321MS	SNMG090304-MS	.016								★																										
		SNMG322MS	SNMG090308-MS	.031								★																										
		SNMG431MS	SNMG120404-MS	.016	★							●																										
		SNMG432MS	SNMG120408-MS	.031	●							●	●											★	★	★	●				●					●		
		SNMG433MS	SNMG120412-MS	.047	★							●	●											★	★	★												
	Medium Cutting	SNMG434MS	SNMG120416-MS	.063								★																										
		SNMG644MS	SNMG190616-MS	.063								★																										
	R/L	SNGG321R	SNGG090304R	.016																						★	★			★	★							
		SNGG321L	SNGG090304L	.016																						★	★			★								
		SNGG322R	SNGG090308R	.031																						★	★											
		SNGG322L	SNGG090308L	.031																						★	★											
		SNGG431R	SNGG120404R	.016																						★	★	●		★								
		SNGG431L	SNGG120404L	.016																						★	★	●		★								
		SNGG432R	SNGG120408R	.031																						★	★	●										
	Medium Cutting	SNGG432L	SNGG120408L	.031																						★	★	●		★	★							
	RP	SNMG432RP	SNMG120408-RP	.031	●	●	●	●	●																													
		SNMG433RP	SNMG120412-RP	.047	●	●	●	●	●																													
		SNMG434RP	SNMG120416-RP	.063	●	●	●	●	●																													
		SNMG543RP	SNMG150612-RP	.047	●	●	●	●	●																													
		SNMG544RP	SNMG150616-RP	.063	●	●	●	●	●																													
		SNMG643RP	SNMG190612-RP	.047	●	●	●	●	●																													
	Rough Cutting	SNMG644RP	SNMG190616-RP	.063	●	●	●	●	●																													

*New design MS breaker : MP9005, MP9015, MP9025, MT9015

● = NEW

CHIP BREAKER ➤ A046
GRADES ➤ A034
IDENTIFICATION ➤ A002

A

TURNING INSERTS

NEG

WITH HOLE

C

D

R

S

T

V

W

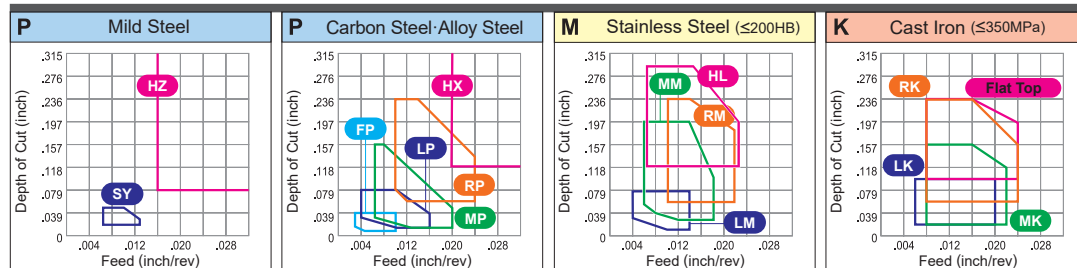
90°

SN TYPE INSERTS WITH HOLE

SNMG 4 3 2 RM

Size Thickness Corner Radius Chip Breaker
*Please refer to page A002.

Finish Cutting... Light Cutting... Medium Cutting... Rough Cutting... Heavy Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

[illegible]

A124 ● : USA Stock ★ : Stocked in Japan <10 inserts in one case>

● = NEW

Cutting Conditions : ● Stable Cutting ● General Cutting ✚ Unstable Cutting

Work Material	P	Steel																
	M	Stainless Steel																
Shape	K	Cast Iron																
	N	Non-Ferrous Metal																
Shape	S	Heat-resistant Alloy, Titanium Alloy																
	RE (inch)																	
			Coated														Cermet	Coated Cermet
																	Carbide	
			UE6105	UE6110	MC6015	MC6025	MC6035	UH6400	MS6015	MC7015	MC7025	MP7035	US735	US905	MC5005	MC5015	UC5105	UC5115
			MP9005	MP9015	MP9025	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	MP3025	AP25N	VP25N	UT120T	HT105T	HT110	MT9015
			RT9010															
																	Applicable Holder Page	
	HX	SNMM432HX	SNMM120408-HX	.031	★ ★													
		SNMM433HX	SNMM120412-HX	.047	★ ★													
		SNMM543HX	SNMM150612-HX	.047	★ ★													
		SNMM643HX	SNMM190612-HX	.047	● ★ ★ ★													
		SNMM644HX	SNMM190616-HX	.063	● ★ ★ ★													
		SNMM646HX	SNMM190624-HX	.094	● ★ ★ ★													
		SNMM856HX	SNMM250724-HX	.094	● ★ ★ ★													
		SNMM866HX	SNMM250924-HX	.094	● ★ ★ ★													
	HV	SNMM644HV	SNMM190616-HV	.063	● ★ ★ ★													
		SNMM646HV	SNMM190624-HV	.094	● ★ ★ ★													
		SNMM856HV	SNMM250724-HV	.094	● ★ ★ ★													
		SNMM866HV	SNMM250924-HV	.094	● ★ ★													
	HL	SNMM432HL	SNMM120408-HL	.031	★ ★					★								
		SNMM433HL	SNMM120412-HL	.047	★ ★					★								
		SNMM543HL	SNMM150612-HL	.047	★ ★					★								
		SNMM643HL	SNMM190612-HL	.047	★ ★					★								
		SNMM644HL	SNMM190616-HL	.063	★ ★					★								
		SNMM646HL	SNMM190624-HL	.094	★ ★					★								
	HM	SNMM543HM	SNMM150612-HM	.047	★ ★					★								
		SNMM643HM	SNMM190612-HM	.047	★ ★					★								
		SNMM644HM	SNMM190616-HM	.063	★ ★					★								
		SNMM646HM	SNMM190624-HM	.094	★ ★					★								
		SNMM856HM	SNMM250724-HM	.094	★ ★													
		SNMM866HM	SNMM250924-HM	.094	★ ★													
	HR	SNMM856HR	SNMM250724-HR	.094	★ ★													
		SNMM866HR	SNMM250924-HR	.094	★ ★													
	Flat Top	SNMA321	SNMA090304	.016													★	
		SNMA322	SNMA090308	.031						● ● ● ●							●	
		SNMA432	SNMA120408	.031						● ● ● ●							● ★ ★	
		SNMA433	SNMA120412	.047						● ● ● ●							★	
		SNMA434	SNMA120416	.063						● ● ● ●								
		SNMA543	SNMA150612	.047						★ ● ●								
		SNMA544	SNMA150616	.063						★ ●								
		SNMA643	SNMA190612	.047						● ● ● ●								
		SNMA644	SNMA190616	.063						● ● ● ●								
	Flat Top	SNGA321	SNGA090304	.016											★			
		SNGA431	SNGA120404	.016													★	
		SNGA432	SNGA120408	.031											★		★ ★	

● = NEW

CHIP BREAKER > A046

GRADES > A034

IDENTIFICATION > A002

A

TURNING INSERTS

NEG

WITH HOLE

C

D

R

S

T

V

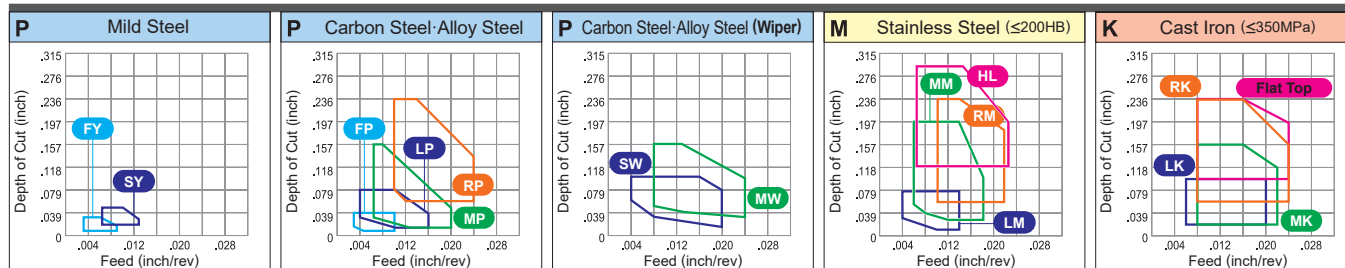
W

60°

TN TYPE INSERTS WITH HOLE

Size Thickness Corner Radius Chip Breaker
*Please refer to page A002.

Finish Cutting... Light Cutting... Medium Cutting... Rough Cutting... Heavy Cutting...



Cutting Conditions : ● 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	Order Number	(ISO) Number	RE (inch)	Coated																Cermet	Coated Cermet	Carbide				Applicable Holder Page											
				UE610S	UE610M	MC6015	MC6025	UH6400	MS6015	MC7015	MC7025	MP7035	US735	US905	MC5005	MC5015	UC5105	UC5115	MP9005	MP9015	NEW MP9025	VP05RT	VP10RT	VP15TF	UP20M		NX2525	NX3035	MP3025	AP25N	VP25N	UT120T	HT105T	MT19015	RT9005	RT19010	
 Finish Cutting	TNMG330.5FP	TNMG160402-FP	.008		●	●																		★		●										C018—023 E022 E025	
	TNMG331FP	TNMG160404-FP	.016		●	●																		★		●											
	TNMG332FP	TNMG160408-FP	.031		●	●																		★		●											
	NEW TNMG333FP	TNMG160412-FP	.047		●	●																		★		●											
 Finish Cutting	TNMG221FH	TNMG110304-FH	.016																						★											C018—023 E022 E025	
	TNMG330.5FH	TNMG160402-FH	.008	●																					●	●	●										
	TNMG331FH	TNMG160404-FH	.016	●																					★	●	●	●									
	TNMG332FH	TNMG160408-FH	.031	●																					★	●	●	●									
 Finish Cutting	TNMG331FS	TNMG160404-FS	.016																						★											C018—023 E022 E025	
	TNMG332FS	TNMG160408-FS	.031																						●												
 Finish Cutting	TNMG331FY	TNMG160404-FY	.016																						★	●	●	★									C018—023 E022 E025
	TNMG332FY	TNMG160408-FY	.031																						★		●	★									
 Finish Cutting	TNMG331PK	TNMG160404-PK	.016																							★										C018—023 E022 E025	
	TNMG332PK	TNMG160408-PK	.031																							★											

● = NEW

● : USA Stock ★ : Stocked in Japan
<10 inserts in one case>

Cutting Conditions : ● Stable Cutting ◐ General Cutting ⊕ Unstable Cutting

[illegible]

*Please refer to page A032 before using the SW breaker (wiper insert).

● = NEW

CHIP BREAKER	➤ A046
GRADES	➤ A034
IDENTIFICATION	➤ A002

A127

A

TURNING INSERTS

NEG

WITH HOLE

E

1

F

S

1

V

W

TURNING INSERTS [NEGATIVE]



60°

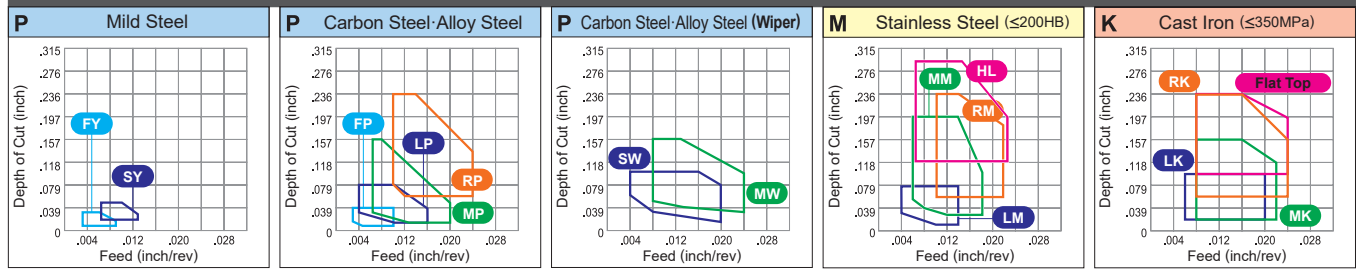
TN TYPE INSERTS WITH HOLE

TNMG 3 3 1 SY

Size Thickness Corner Radius Chip Breaker
*Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting--- Light Cutting--- Medium Cutting--- Rough Cutting--- Heavy Cutting---



Cutting Conditions : ● Stable Cutting ● General Cutting ✦ Unstable Cutting

Work Material			RE (inch)	Coated															Cermets		Coated Cermets		Carbides		Applicable Holder Page
	P	Steel		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	M	Stainless Steel																							
	K	Cast Iron																							
	N	Non-Ferrous Metal																							
	S	Heat-resistant Alloy, Titanium Alloy																							
Shape	Order Number	(ISO) Number	RE (inch)	Coated															Cermets		Coated Cermets		Carbides		Applicable Holder Page
SY Light Cutting	TNMG331SY	TNMG160404-SY	.016																★	●	★	●			C018 —023 E022 E025
	TNMG332SY	TNMG160408-SY	.031																★	●	★	●			
C Light Cutting	TNMG331C	TNMG160404-C	.016																★	●					C018 —023 E022 E025
	TNMG332C	TNMG160408-C	.031																★	●					
	TNMG431C	TNMG220404-C	.016																★	●	●				
	TNMG432C	TNMG220408-C	.031																	●					
R/L 1G Light Cutting	TNMG331R1G	TNMG160404R-1G	.016																★						C018 —023 E022 E025
	TNMG331L1G	TNMG160404L-1G	.016																★						
	TNMG431R1G	TNMG220404R-1G	.016																★						
	TNMG431L1G	TNMG220404L-1G	.016																★						
R/L K Light Cutting	TNMG330.5RK	TNMG160402R-K	.008																★	★	●				C018 —023 E022 E025
	TNMG330.5LK	TNMG160402L-K	.008																★	★	●				
	TNMG331RK	TNMG160404R-K	.016																★	★	●				
	TNMG331LK	TNMG160404L-K	.016																	★	●				
	TNMG332LK	TNMG160408L-K	.031																		●				
	TNMG332RK	TNMG160408R-K	.031																		●				
MJ Light Cutting	TNMG331MJ	TNMG160404-MJ	.016							★				●	●	●								●	C018 —023 E022 E025
	TNMG332MJ	TNMG160408-MJ	.031							★				●	●	●								●	
	TNMG333MJ	TNMG160412-MJ	.047							★				●	●	●	★	★							
MP Medium Cutting	TNMG331MP	TNMG160404-MP	.016	●	●	●	●	●						●							●				C018 —023 E022 E025
	TNMG332MP	TNMG160408-MP	.031	●	●	●	●	●						●							●				
	TNMG333MP	TNMG160412-MP	.047	●	●	●	●	●						●							●				
	TNMG432MP	TNMG220408-MP	.031	●	●	●	●	●						●											
	TNMG433MP	TNMG220412-MP	.047	●	●	●	●	●						●											

● = NEW

● : USA Stock ★ : Stocked in Japan
<10 inserts in one case>

*Please refer to page A002.

Finish Cutting... Light Cutting... Medium Cutting... Rough Cutting... Heavy Cutting...



● = NEW

<10 inserts in one case>

Cutting Conditions : ● Stable Cutting ◐ General Cutting ⊕ Unstable Cutting

[illegible]

● = NEW

CHIP BREAKER	➤ A046
GRADES	➤ A034
IDENTIFICATION	➤ A002

A131

A

TURNING INSERTS

NEG

WITH HOLE

E

D

F

S

1

V

w

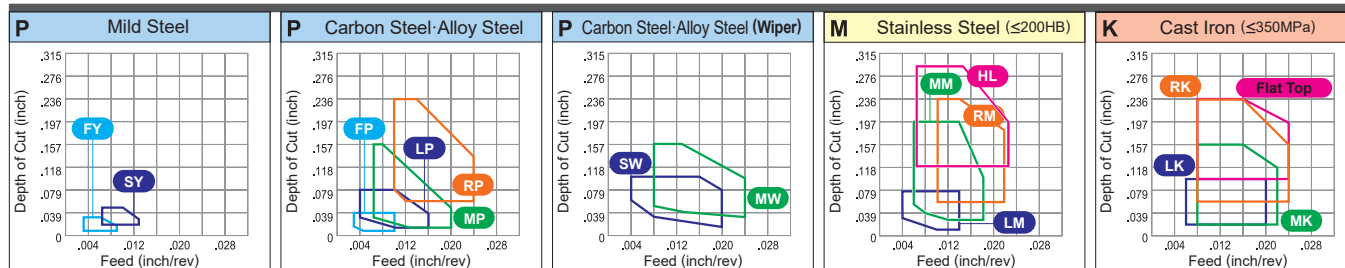
60°

TN TYPE INSERTS WITH HOLE

TNMG 3 3 2 RS

Size Thickness Corner Radius Chip Breaker
*Please refer to page A002.

Finish Cutting... Light Cutting... Medium Cutting... Rough Cutting... Heavy Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

[illegible]

● = NEW

● : USA Stock ★ : Stocked in Japan
<10 inserts in one case>

Cutting Conditions : ● 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	Order Number	(ISO) Number	RE (inch)	Coated																	Cermet	Coated Cermet	Carbide				Applicable Holder Page											
				UE6105	UE6110	MC6015	MC6025	MC6035	UH6400	MS6015	MC7015	MC7025	MP7035	US735	US905	MC5005	MC5015	UC5105	UC5115	MP9005	MP9015	MP9025	VP05RT	VP10RT	VP15TF	UP20M		NX2525	NX3035	MP3025	AP25N	VP25N	UTi20T	HTi05T	HTi10	MT9015	RT9005	RT9010
 Flat Top	TNGA221	TNGA110304	.016																																			
	TNGA222	TNGA110308	.031																																			
	TNGA330.5	TNGA160402	.008																																			
	TNGA331	TNGA160404	.016																																			
	TNGA332	TNGA160408	.031																																			
	TNGA431	TNGA220404	.016																																			
	TNGA432	TNGA220408	.031																																			

● = NEW

A

TURNING INSERTS

NEG

WITH HOLE

C

D

R

S

T

V

W

CHIP BREAKER > A046
GRADES > A034
IDENTIFICATION > A002

A133

TURNING INSERTS [NEGATIVE]



35°

VN TYPE INSERTS WITH HOLE

VNMG

3

3

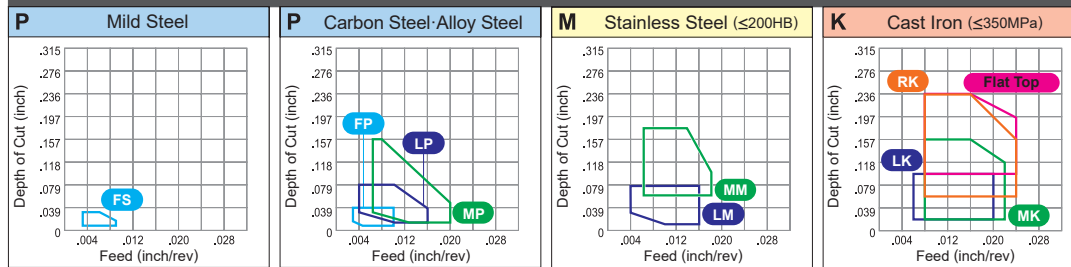
0.5

FP

Size Thickness Corner Radius Chip Breaker
*Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting... Light Cutting... Medium Cutting... Rough Cutting... Heavy Cutting...



Cutting Conditions : ● 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	Order Number	(ISO) Number	RE (inch)	Coated														Cermet	Coated Cermet	Carbide				Applicable Holder Page			
	VNMG330.5FP	VNMG160402-FP	.008	●	●													★	●								
	VNMG331FP	VNMG160404-FP	.016	●	●													★	●								C024
	VNMG332FP	VNMG160408-FP	.031	●	●													★	●								C025
	NEW VNMG333FP	VNMG160412-FP	.047	●	●													★	●								E023
	VNMG330.5FH	VNMG160402-FH	.008	●														●	●								
	VNMG331FH	VNMG160404-FH	.016	★														★	●	★							C024
	VNMG332FH	VNMG160408-FH	.031	★														★	●	★							C025
																											E023
	VNMG331FS	VNMG160404-FS	.016															★	●								C024
	VNMG332FS	VNMG160408-FS	.031															★	●								C025
																											E023
																											E026
	VNGG33V5FJ	VNGG1604V5-FJ	.002															●							●		
	VNGG330.2FJ	VNGG160401-FJ	.004															●							●		C024
	VNGG330.5FJ	VNGG160402-FJ	.008															●							●		C025
																											E023
	VNGG330.5RF	VNGG160402R-F	.008															●	●	●							
	VNGG330.5LF	VNGG160402L-F	.008															●	●	●							C024
	VNGG331RF	VNGG160404R-F	.016															●	●	●							C025
	VNGG331LF	VNGG160404L-F	.016															●	●	●							E023
	VNMG331LP	VNMG160404-LP	.016	●	●	●	●	●											●								C024
	VNMG332LP	VNMG160408-LP	.031	●	●	●	●	●											●								C025
																											E023
																											E026

● = NEW

● : USA Stock ★ : Stocked in Japan
<10 inserts in one case>

Cutting Conditions : ● Stable Cutting ● General Cutting ✚ Unstable Cutting

Work Material	P	Steel																
	M	Stainless Steel																
Shape	K	Cast Iron																
	N	Non-Ferrous Metal																
Shape	S	Heat-resistant Alloy, Titanium Alloy																
	RE (inch)																	
Shape	Order Number	(ISO) Number	RE (inch)															
				Coated	Cermet	Coated Cermet	Carbide											
LM	VNMG331LM	VNMG160404-LM	.016	UE6105	UE6110	MC6015	MC6025	MC6035	UH6400	MS6015	MC7015	MC7025	MP7035	US735	US905	MC5005	MC5015	UC5105
	VNMG332LM	VNMG160408-LM	.031															
LK	VNMG331LK	VNMG160404-LK	.016															
	VNMG332LK	VNMG160408-LK	.031															
LS	NEW VNMG330.5LS	VNMG160402-LS	.008															
	VNMG331LS	VNMG160404-LS	.016															
SH	VNMG331SH	VNMG160404-SH	.016	● ★ ● ●														
	VNMG332SH	VNMG160408-SH	.031	● ★ ● ●														
SA	VNMG331SA	VNMG160404-SA	.016	● ●														
	VNMG332SA	VNMG160408-SA	.031	● ●														
MJ	VNMG331MJ	VNMG160404-MJ	.016															
	VNMG332MJ	VNMG160408-MJ	.031															
MJ	VNMG333MJ	VNMG160412-MJ	.047															
MP	VNMG331MP	VNMG160404-MP	.016	● ● ● ● ●														
	VNMG332MP	VNMG160408-MP	.031	● ● ● ● ●														
MP	VNMG333MP	VNMG160412-MP	.047	● ● ● ● ●														

● = NEW

CHIP BREAKER > A046
GRADES > A034
IDENTIFICATION > A002

A

TURNING INSERTS

NEG

WITH HOLE

C

D

R

S

T

V

W

TURNING INSERTS [NEGATIVE]



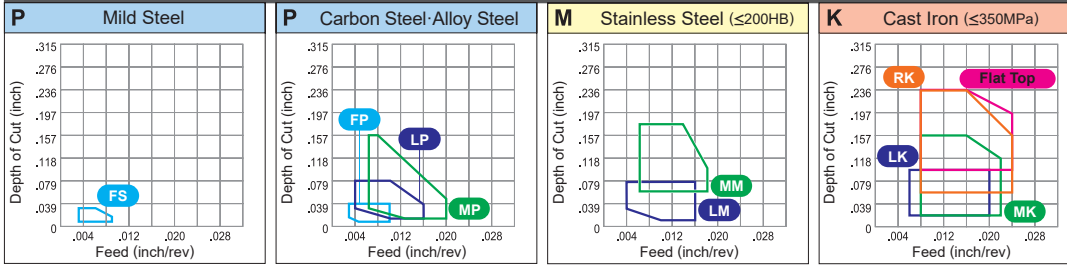
35° VN TYPE INSERTS WITH HOLE

VNMG 3 3 2 MM

Size Thickness Corner Radius Chip Breaker
*Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting... Light Cutting... Medium Cutting... Rough Cutting... Heavy Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	P	Steel																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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● = NEW

Cutting Conditions : ● Stable Cutting ● General Cutting ✚ Unstable Cutting

Work Material	P	Steel																												
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*New design MS breaker : MP9005, MP9015, MP9025, MT9015

● = NEW

CHIP BREAKER ➤ A046
GRADES ➤ A034
IDENTIFICATION ➤ A002

A

TURNING INSERTS

NEG

WITH HOLE

C

D

R

S

T

V

W

A137

TURNING INSERTS [NEGATIVE]



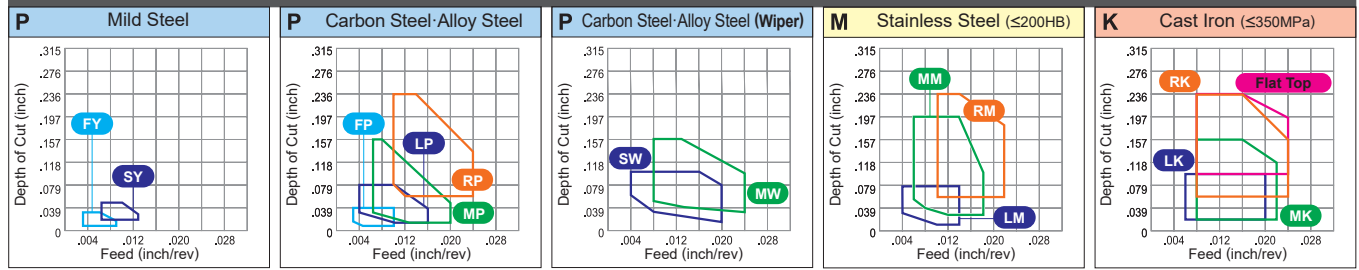
80° WN TYPE INSERTS WITH HOLE

WNMG 4 3 0.5 FP

Size Thickness Corner Radius Chip Breaker
*Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting... Light Cutting... Medium Cutting... Rough Cutting... Heavy Cutting...



Cutting Conditions : ● 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	Order Number	(ISO) Number	RE (inch)	Coated																		Cermet	Coated Cermet		Carbide			Applicable Holder Page									
				UE6105	UE6110	MC6015	MC6025	MC6035	UH6400	MS6015	MC7015	MC7025	MP7035	US735	US905	MC5005	MC5015	UC5105	UC5115	MP9005	MP9015	NEW MP9025	VP05RT	VP10RT	VP15TF	UP20M	NX2525		NX3035	MP3025	AP25N	VP25N	UTi20T	HTi05T	HTi10	MT9015	RT9005
 Finish Cutting	WNMG430.5FP	WNMG080402-FP	.008		●	●																				★		●									
	WNMG431FP	WNMG080404-FP	.016		●	●																				★		●									C027
	WNMG432FP	WNMG080408-FP	.031		●	●																				★		●									E023
	NEW WNMG433FP	WNMG080412-FP	.047		●	●																				★		●									E026
																																					E027
 Finish Cutting	WNMG431FH	WNMG080404-FH	.016		●																					★		●									
	WNMG432FH	WNMG080408-FH	.031		●																					★		●	●								
																																					C027
 Finish Cutting	WNMG431FS	WNMG080404-FS	.016																							★											
	WNMG432FS	WNMG080408-FS	.031																							★											
 Finish Cutting	WNMG431FY	WNMG080404-FY	.016																							★		●									
	WNMG432FY	WNMG080408-FY	.031																							★		●		★							
 Light Cutting	WNMG331LP	WNMG060404-LP	.016	●	●	●	●	●																				●									
	WNMG332LP	WNMG060408-LP	.031	●	●	●	●	●																				●									
	WNMG32.51LP	WNMG06T304-LP	.016	●	●	●	●	●																				●									
	WNMG32.52LP	WNMG06T308-LP	.031	●	●	●	●	●																				●									
	WNMG431LP	WNMG080404-LP	.016	●	●	●	●	●																				●									
	WNMG432LP	WNMG080408-LP	.031	●	●	●	●	●																				●									
	WNMG433LP	WNMG080412-LP	.047	●	●	●	●	●																													
 Light Cutting	WNMG331LM	WNMG060404-LM	.016						●	●	●																										
	WNMG332LM	WNMG060408-LM	.031						●	●	●																										
	WNMG431LM	WNMG080404-LM	.016						●	●	●																										
	WNMG432LM	WNMG080408-LM	.031						●	●	●																										

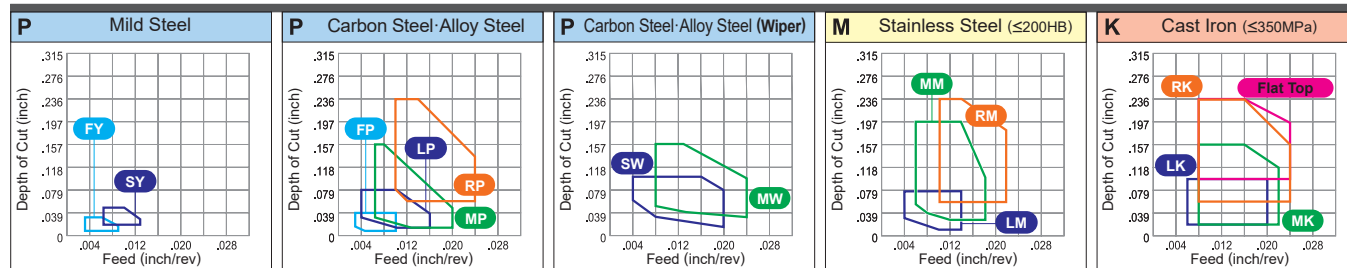
● : USA Stock ★ : Stocked in Japan
<10 inserts in one case>

● = NEW

WNMG 3 2.5 1 MP
Size Thickness Corner Radius Chip Breaker
*Please refer to page A002.

Size Thickness Corner Radius Chip Breaker
*Please refer to page A002

Finish Cutting... Light Cutting... Medium Cutting... Rough Cutting... Heavy Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

[illegible]

● = NEW

● : USA Stock ★ : Stocked in Japan
<10 inserts in one case>

Cutting Conditions : ● Stable Cutting ● General Cutting ✚ Unstable Cutting

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*1 Please refer to page A032 before using the MW breaker (wiper insert).

*2 New design MS breaker : MP9005, MP9015, MP9025, MT9015

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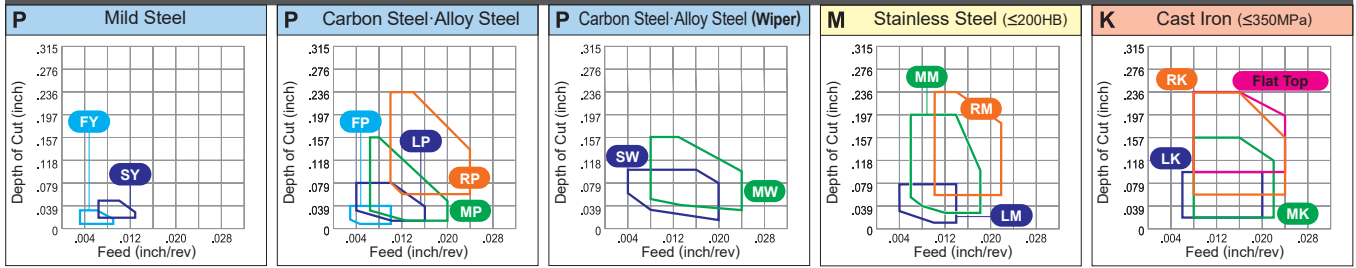
WN TYPE INSERTS WITH HOLE

WNMG 3 3 2 RM

Size Thickness Corner Radius Chip Breaker
*Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting... Light Cutting... Medium Cutting... Rough Cutting... Heavy Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

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● = NEW

● : USA Stock ★ : Stocked in Japan
<10 inserts in one case>

[illegible]

● = NEW

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TURNING INSERTS [NEGATIVE]



80° CN TYPE INSERTS WITHOUT HOLE

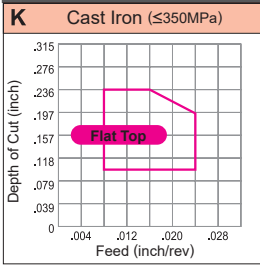
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Size Thickness Corner Radius

*Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Heavy Cutting...



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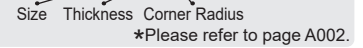
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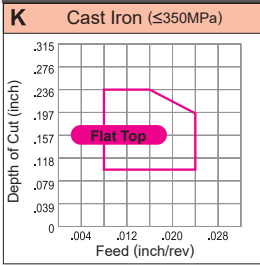
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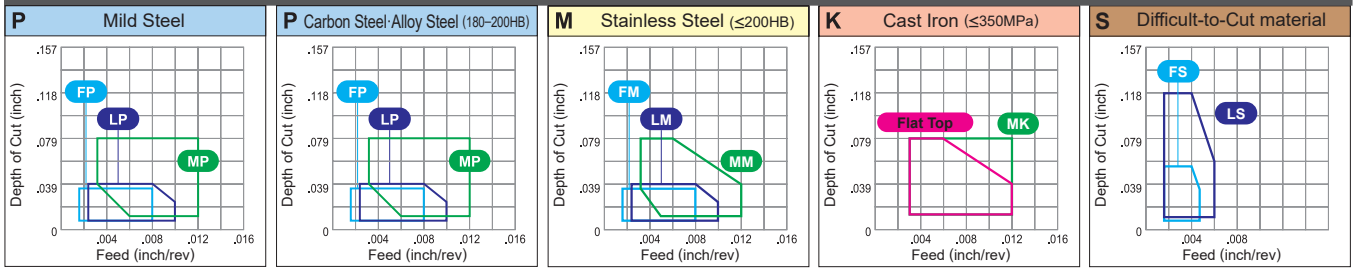
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CHIP CONTROL RANGE FOR WORK MATERIALS

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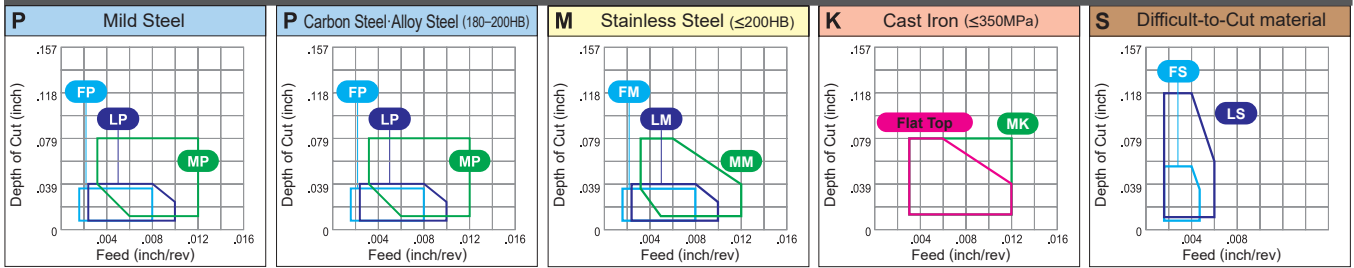
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Size Thickness Corner Radius Chip Breaker
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CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting... Light Cutting... Medium Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ✖ Unstable Cutting

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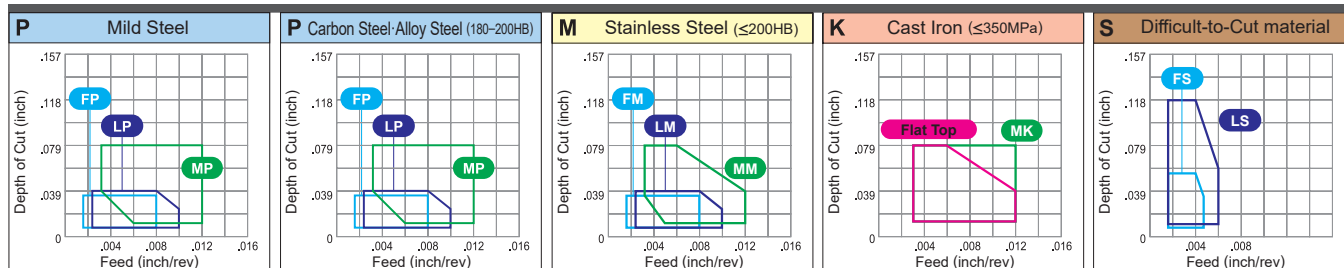
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*Please refer to page A002.

Finish Cutting... Light Cutting... Medium Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ⊞ Unstable Cutting

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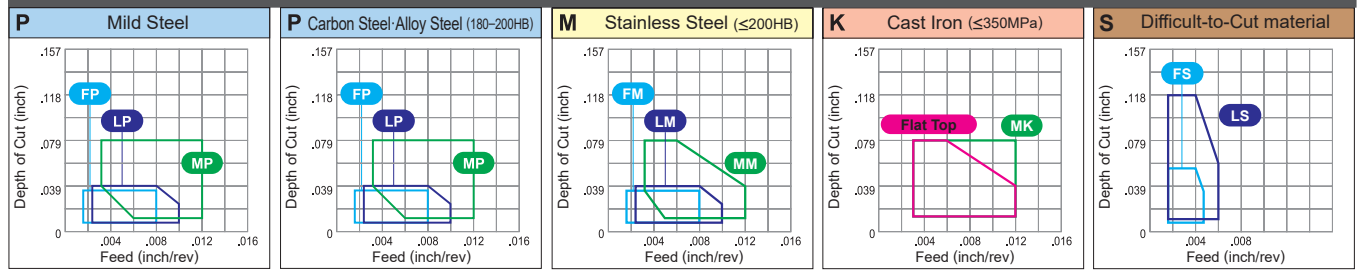
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CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting... Light Cutting... Medium Cutting...



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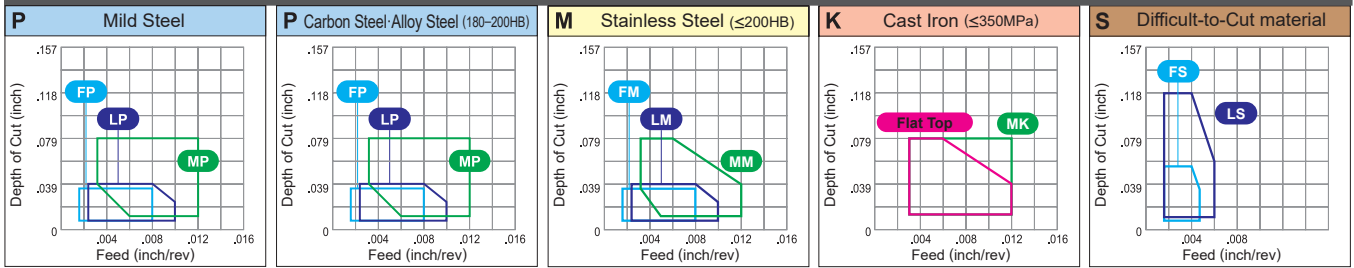
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*Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting... Light Cutting... Medium Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ✦ Unstable Cutting

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*Please refer to page A032 before using the R/LW SN breaker (wiper insert).

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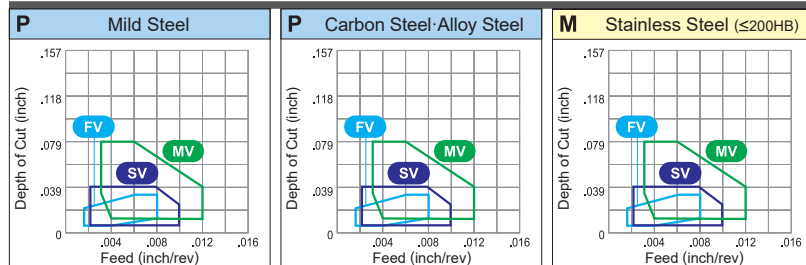
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A155

Size Thickness Corner Radius Chip Breaker
*Please refer to page A002.

Finish Cutting... Light Cutting... Medium Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

[illegible]

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● : USA Stock ★ : Stocked in Japan
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A157

TURNING INSERTS [POSITIVE]

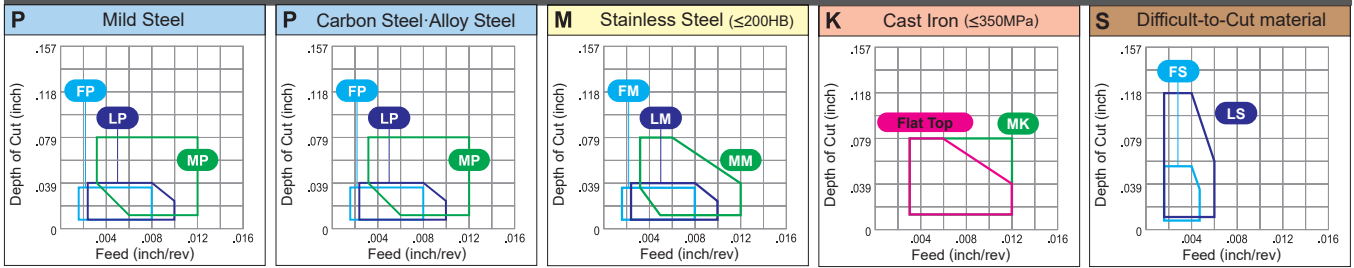


DC TYPE INSERTS WITH HOLE

DCMT **2** **1.5** **0.5** **FP**
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 : ● Stable Cutting ● General Cutting ✖ Unstable Cutting

FS, LS : G class inserts

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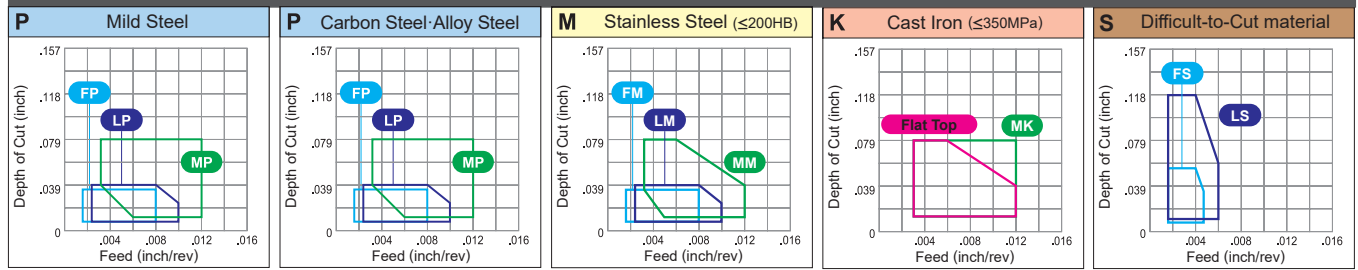
TURNING INSERTS [POSITIVE]



DCMT **2** **1.5** **0.5** **LS**
 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 : ● Stable Cutting ● General Cutting ✖ Unstable Cutting

FS, LS : G class inserts

Work Material	P	Steel	M	Stainless Steel	K	Cast Iron	N	Non-Ferrous Metal	S	Heat-resistant Alloy, Titanium Alloy																	
Shape	Order Number	(ISO) Number	RE (inch)																								
LS	DCMT21.50.5LS	DCMT070202-LS	.008																								
	DCMT21.51LS	DCMT070204-LS	.016																								
	DCMT32.50.5LS	DCMT11T302-LS	.008																								
	DCMT32.51LS	DCMT11T304-LS	.016																								
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SV	DCMT21.50.5SV	DCMT070202-SV	.008																								
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	DCMT32.50.5SV	DCMT11T302-SV	.008	★																							
	DCMT32.51SV	DCMT11T304-SV	.016	★																							
Light Cutting SV	DCMT32.52SV	DCMT11T308-SV	.031	★																							
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	DCGT21.50.2RSS	DCGT070201R-SS	.004																								
	DCGT21.50.2LSS	DCGT070201L-SS	.004																								
R/L SS	DCGT21.50.5RSS	DCGT070202R-SS	.008																								
	DCGT21.50.5LSS	DCGT070202L-SS	.008																								
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	DCGT32.50.2RSS	DCGT11T301R-SS	.004																								
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	DCGT32.50.2MRSS	DCGT11T301MR-SS	.003																								
Light Cutting R/L SS	NEW DCGT32.50.2MLSS	DCGT11T301ML-SS	.003																								
	DCGT32.50.5MRSS	DCGT11T302MR-SS	.007																								
	NEW DCGT32.50.5MLSS	DCGT11T302ML-SS	.007																								
	DCGT32.51MRSS	DCGT11T304MR-SS	.015																								
	NEW DCGT32.51MLSS	DCGT11T304ML-SS	.015																								

● = NEW

● = NEW

X

A161

TURNING INSERTS [POSITIVE]

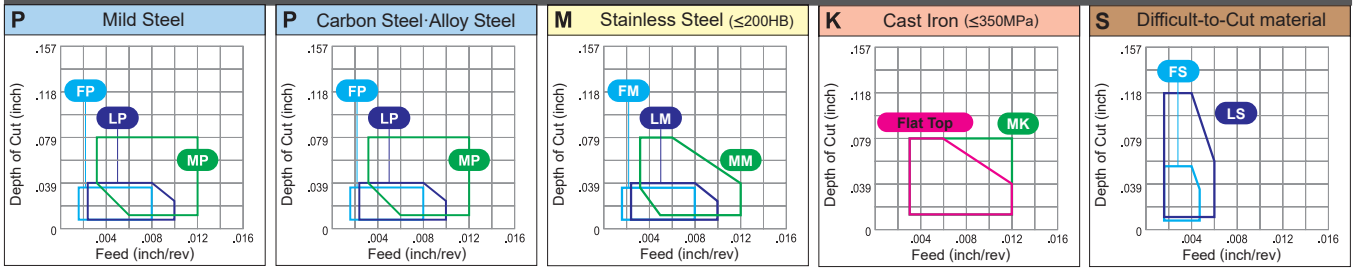


DC TYPE INSERTS WITH HOLE

DCMT **2** **1.5** **1** **MS**
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 : ● Stable Cutting ● General Cutting ✦ Unstable Cutting

FS, LS : G class inserts

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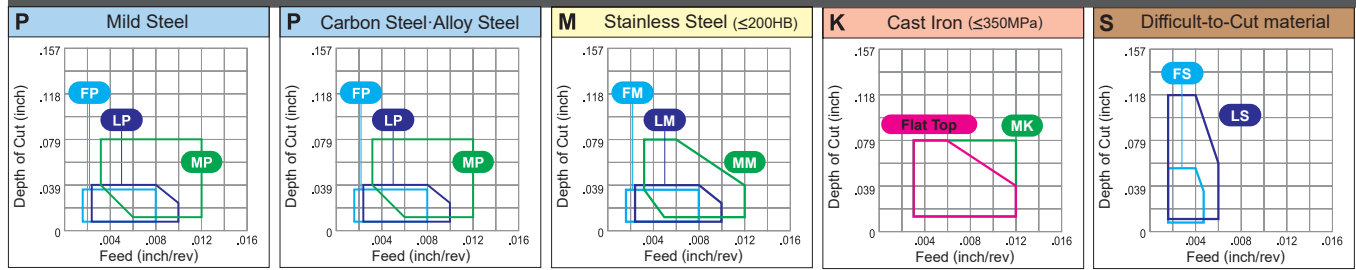
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CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting... Light Cutting... Medium Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ✦ Unstable Cutting

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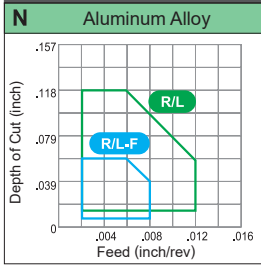
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CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting--- Medium Cutting---



TURNING INSERTS

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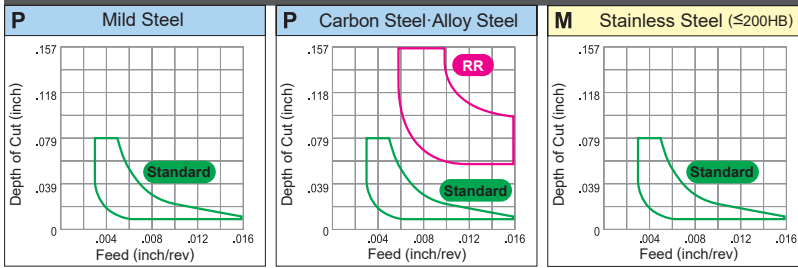
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CHIP CONTROL RANGE FOR WORK MATERIALS

Medium Cutting... Heavy Cutting...



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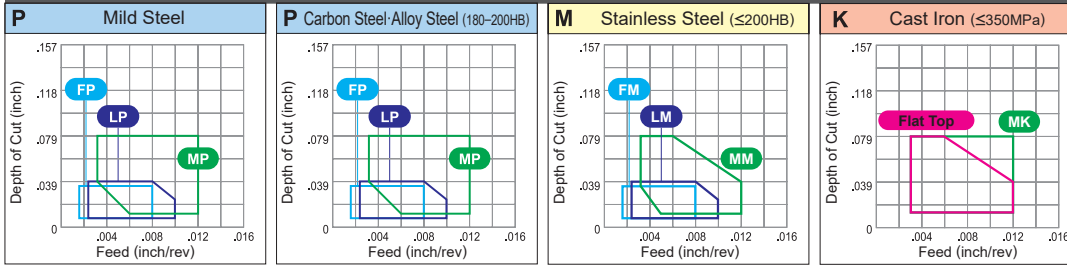
90° SC TYPE INSERTS WITH HOLE

SCMT 3 2.5 1 FP

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 : ● Stable Cutting ● General Cutting ✦ Unstable Cutting

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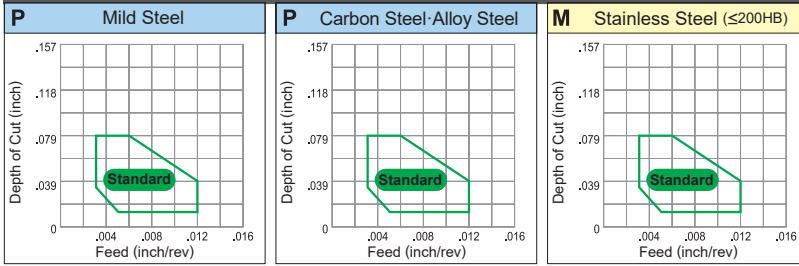
TURNING INSERTS [POSITIVE]



SPMT 3 2 1
Size Thickness Corner Radius
*Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Medium Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ✦ Unstable Cutting

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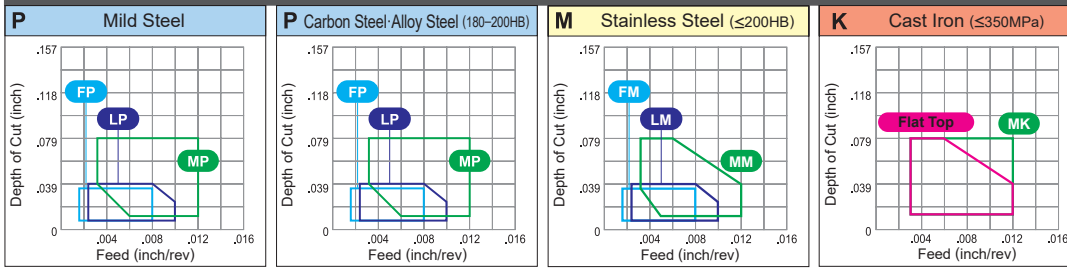
TC TYPE INSERTS WITH HOLE

TCMT 1.8 1.5 0.5 FP

 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 : ● Stable Cutting ● General Cutting ✦ Unstable Cutting

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Shape	Order Number	(ISO) Number	RE (inch)	Coated																Cermet	Coated Cermet		Carbide				Applicable Holder Page																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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 CHIP BREAKER ➤ A064
 GRADES ➤ A034
 IDENTIFICATION ➤ A002

A

TURNING INSERTS

 POSI
 7°

WITH HOLE

C

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S

T

V

W

X

A171

TURNING INSERTS [POSITIVE]



60°

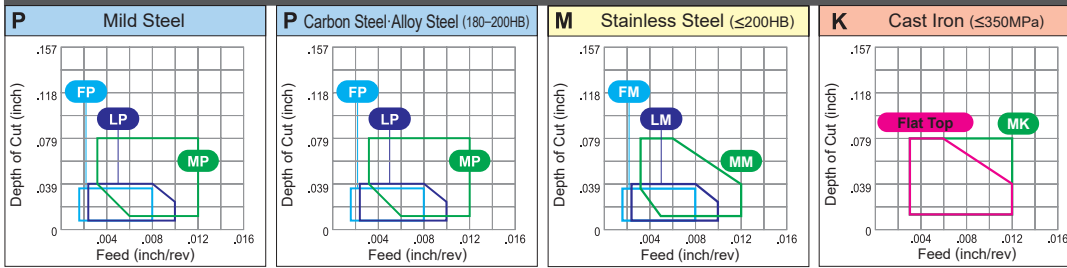
TC TYPE INSERTS WITH HOLE

TCGT 1.2 1 V3 L F

Size Thickness Corner Radius R/L Chip Breaker
*Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting... Light Cutting... Medium Cutting...



Cutting Conditions : ● 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	Order Number	(ISO) Number	RE (inch)	Coated																Cermet	Coated Cermet			Carbide					Applicable Holder Page									
				UE6105	UE6110	MC6015	MC6025	UH6400	MS6015	MC7025	MP7035	US735	US905	MC5005	MC5015	UC5105	UC5115	MP9005	MP9015	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	MP3025	AP25N	VP25N		VP45N	UTi20T	HTi05T	HTi10	TF15	MT9005	RT9005	RT9010	
Finish Cutting	R/L F	TCGT1.21V3LF	TCGT0601V3L-F	.0012																					★													E030
		TCGT1.210.2LF	TCGT060101L-F	.004																			●		★													
		TCGT1.210.5RF	TCGT060102R-F	.008																			★		★							★						
		TCGT1.210.5LF	TCGT060102L-F	.008																			●		★							●						
		TCGT1.211RF	TCGT060104R-F	.016																					★						★							
		TCGT1.211LF	TCGT060104L-F	.016																			●		★						●							
		NEW TCGT1.210.2MRF	TCGT060101MR-F	.003					●																													E030
		NEW TCGT1.210.2MLF	TCGT060101ML-F	.003					●																													
		NEW TCGT1.210.5MRF	TCGT060102MR-F	.007					●																													
		NEW TCGT1.210.5MLF	TCGT060102ML-F	.007					●																													
	NEW TCGT1.211MRF	TCGT060104MR-F	.015					●																														
	NEW TCGT1.211MLF	TCGT060104ML-F	.015					●																														
Light Cutting	LP	TCMT1.81.51LP	TCMT090204-LP	.016	●	●	●																		●	●												C035 E015 E016 E044
		TCMT1.81.52LP	TCMT090208-LP	.031	●	●	●																		●	●												
		TCMT21.51LP	TCMT110204-LP	.016	●	●	●																		●	●												
		TCMT21.52LP	TCMT110208-LP	.031	●	●	●																		●	●												
		TCMT32.51LP	TCMT16T304-LP	.016	●	●	●																			●	●											
		TCMT32.52LP	TCMT16T308-LP	.031	●	●	●																			●	●											
Light Cutting	LM	TCMT1.81.51LM	TCMT090204-LM	.016						●	●												●														C035 E015 E016 E044	
		TCMT1.81.52LM	TCMT090208-LM	.031							●	●											●															
		TCMT21.51LM	TCMT110204-LM	.016							●	●											●															
		TCMT21.52LM	TCMT110208-LM	.031							●	●											●															
		TCMT32.51LM	TCMT16T304-LM	.016							●	●											●															
		TCMT32.52LM	TCMT16T308-LM	.031							●	●											●															
Light Cutting	LS	TCMT1.81.50.5LS	TCMT090202-LS	.008															●	●															●		C035 E015 E016 E044	
		TCMT21.50.5LS	TCMT110202-LS	.008															●	●														●				

● = NEW

● : USA Stock ★ : Stocked in Japan
<10 inserts in one case>

TURNING INSERTS [POSITIVE]



60°

TC TYPE INSERTS WITH HOLE

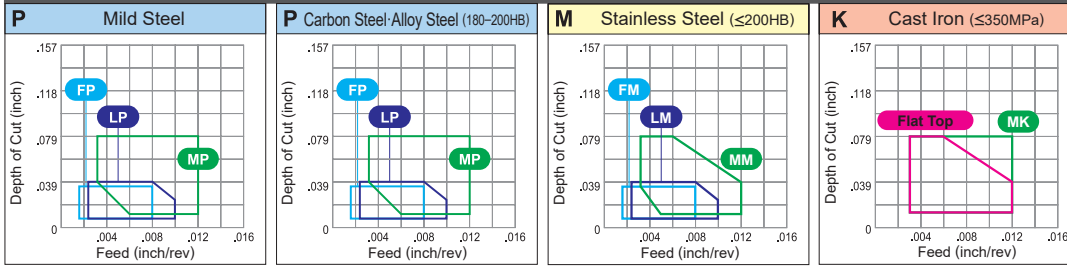
TCMT 1.5 1.5 1

Size Thickness Corner Radius

*Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting... Light Cutting... Medium Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ✦ Unstable Cutting

Work Material	P	M	K	N	S																		
Steel	Steel					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Stainless Steel																						
	Cast Iron																						
	Non-Ferrous Metal																						
	Heat-resistant Alloy, Titanium Alloy																						
Shape	Order Number	(ISO) Number	RE (inch)																				
Standard	TCMT1.51.51	TCMT080204	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	TCMT1.81.51	TCMT090204	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	TCMT21.50.5	TCMT110202	.008	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	TCMT21.51	TCMT110204	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	TCMT21.52	TCMT110208	.031	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	TCMT2.520.5	TCMT130302	.008	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	TCMT2.521	TCMT130304	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	TCMT32.51	TCMT16T304	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	TCMT32.52	TCMT16T308	.031	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	TCMT32.53	TCMT16T312	.047	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Flat Top	TCMW21.51	TCMW110204	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	TCMW2.521	TCMW130304	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	TCMW32.51	TCMW16T304	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	TCMW32.52	TCMW16T308	.031	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	TCMW32.53	TCMW16T312	.047	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Flat Top	TCGW21.51	TCGW110204	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	TCGW21.51E	TCGW110204E	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	TCGW21.52	TCGW110208	.031	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	TCGW21.52E	TCGW110208E	.031	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

● = NEW

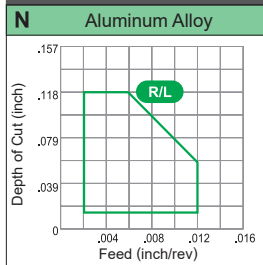


60° TE TYPE INSERTS WITH HOLE

TEGX 3 2 0.5 R
 Size Thickness Corner Radius R/L
 *Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Medium Cutting...



Cutting Conditions : ● 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	Order Number	(ISO) Number	RE (inch)	Coated										Applicable Holder Page	
				UE6105	UE6110	MC6015	MC6025	UH6400	MS6015	MC7025	MP7035	US735	US905		
 Medium Cutting	TEGX320.5R	TEGX160302R	.008	●	●	●	●	●	●	●	●	●	●	C042 E028	
	TEGX320.5L	TEGX160302L	.008	●	●	●	●	●	●	●	●	●	●		
	TEGX321R	TEGX160304R	.016	●	●	●	●	●	●	●	●	●	●		
	TEGX321L	TEGX160304L	.016	●	●	●	●	●	●	●	●	●	●		
				Cermet										C042 E028	
				Coated Cermet											
				Carbide											

● = NEW

A

TURNING INSERTS

POSI 20°

WITH HOLE

C

D

R

S

T

V

W

X

CHIP BREAKER > A076
 GRADES > A034
 IDENTIFICATION > A002

A175

TURNING INSERTS [POSITIVE]



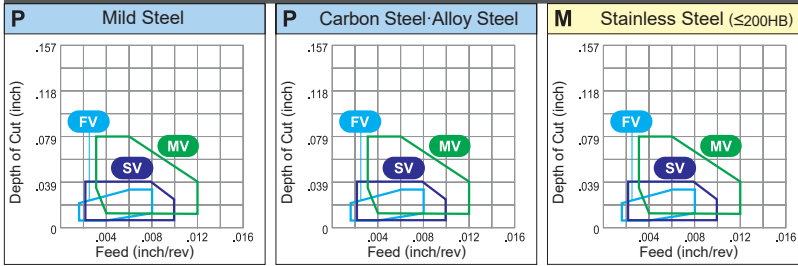
60°

TP TYPE INSERTS
WITH HOLE

TPMH 1.5 1.5 0.5 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 : ● Stable Cutting ● General Cutting ✚ Unstable Cutting

Work Material	P	Steel																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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● : USA Stock ★ : Stocked in Japan
<10 inserts in one case>

● = NEW

60°

TP

TYPE INSERTS WITH HOLE

TPMH

1.5

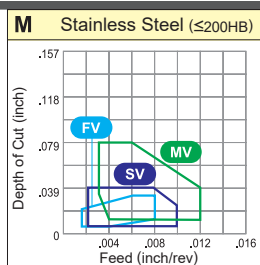
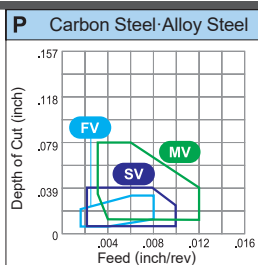
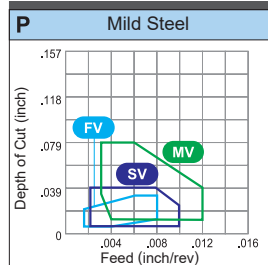
1.5

0.5

MV

Size Thickness Corner Radius Chip Breaker
*Please refer to page A002.

Finish Cutting... Light Cutting... Medium Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

[illegible]

● = NEW

● : USA Stock ★ : Stocked in Japan
<10 inserts in one case>

CHIP BREAKER

➤ **A072**

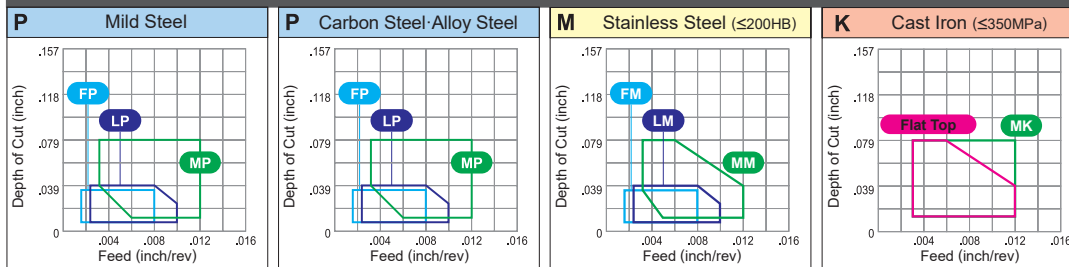
35° VB TYPE INSERTS WITH HOLE

VBMT 2 2 0.5 FP

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 : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

[illegible]

● = NEW

CHIP BREAKER	➤ A058
GRADES	➤ A034
IDENTIFICATION	➤ A002

A179

A

TURNING INSERTS

POSI
5°

WITH HOLE

c

D

R

S

T

V

W

X

TURNING INSERTS [POSITIVE]



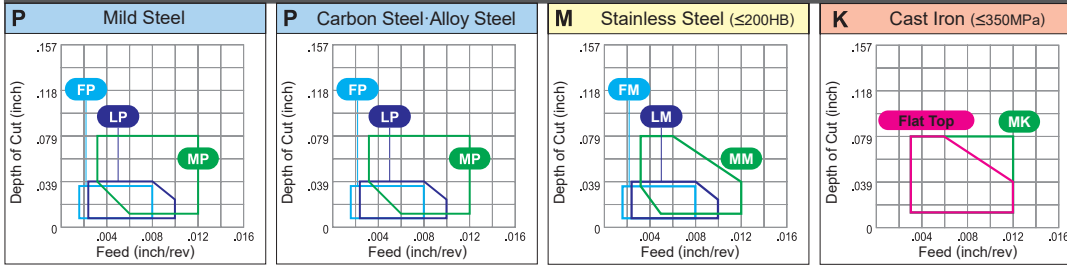
35°

VB TYPE INSERTS WITH HOLE

VBGT 2 2 0.5 R F
Size Thickness Corner Radius R/L Chip Breaker
*Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting... Light Cutting... Medium Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ✦ Unstable Cutting

Work Material	P	Steel																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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● = NEW

● = NEW

X

A181

TURNING INSERTS [POSITIVE]



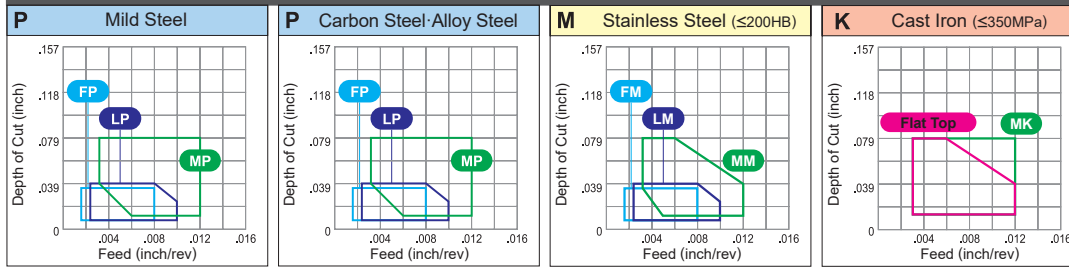
35° VB TYPE INSERTS WITH HOLE

VBMT 3 3 1 MM

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 : ● Stable Cutting ● General Cutting ✚ Unstable Cutting

Work Material			RE (inch)																	Applicable Holder Page																		
	P	M		Coated		Cermet		Coated Cermet		Carbide																												
	Steel	Stainless Steel		UE6105	UE6110	MC6015	MC6025	UH6400	MS6015	MC7025	MP7035	US735	US905	MC5005	MC5015	UC5105	UC5115	MP9005	MP9015	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	MP3025	AP25N	VP25N	VP45N	UT120T	HT105T	HT110	TF15	MT9005	RT9005	RT9010		
MM	VBMT331MM	VBMT160404-MM	.016																																			
	VBMT332MM	VBMT160408-MM	.031																																			
MS	NEW VBMT330.5MS	VBMT160402-MS	.008																																			
	VBMT331MS	VBMT160404-MS	.016																																			
	VBMT332MS	VBMT160408-MS	.031																																			
	NEW VBMT333MS	VBMT160412-MS	.047																																			
MK	VBMT331MK	VBMT160404-MK	.016																																			
	VBMT332MK	VBMT160408-MK	.031																																			
Standard	VBMT331	VBMT160404	.016																																			
	VBMT332	VBMT160408	.031																																			
MV	VBMT221MV	VBMT110304-MV	.016																																			
	VBMT222MV	VBMT110308-MV	.031																																			
	VBMT331MV	VBMT160404-MV	.016																																			
	VBMT332MV	VBMT160408-MV	.031																																			

● = NEW

● : USA Stock ★ : Stocked in Japan
<10 inserts in one case>

● = NEW

A183

TURNING INSERTS [POSITIVE]



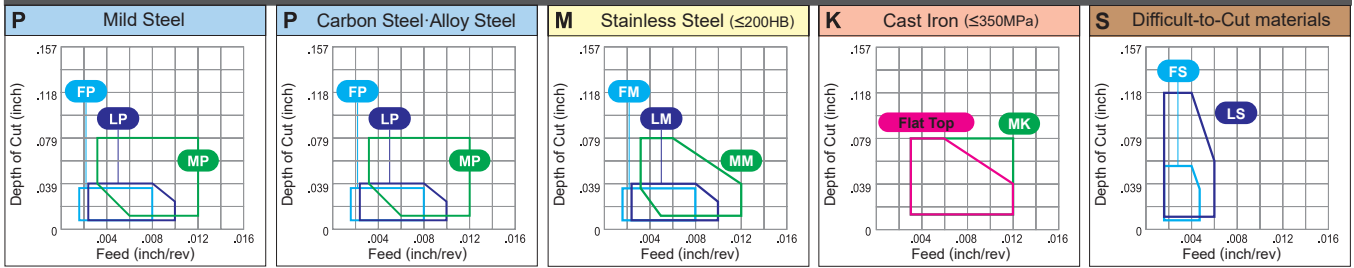
35° VC TYPE INSERTS WITH HOLE

VCMT 2 2 0.5 FP

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 : ● Stable Cutting ● General Cutting ✦ Unstable Cutting

FS, LS : G class inserts

Work Material	P	M	K	N	S																		
	Steel	Stainless Steel	Cast Iron	Non-Ferrous Metal	Heat-resistant Alloy, Titanium Alloy	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Shape	Order Number	(ISO) Number	RE (inch)																			Applicable Holder Page	
				Coated	Cermet	Coated Cermet	Carbide																
	VCMT220.5FP	VCMT110302-FP	.008	●	●	●																C036	
	VCMT221FP	VCMT110304-FP	.016	●	●	●																D011	
	VCMT331FP	VCMT160404-FP	.016	●	●	●																D048	
	VCMT332FP	VCMT160408-FP	.031	●	●	●																D049	
	VCMT220.5FM	VCMT110302-FM	.008																			E016	
	VCMT221FM	VCMT110304-FM	.016																			E017	
	VCMT331FM	VCMT160404-FM	.016																			E046	
	VCMT332FM	VCMT160408-FM	.031																			E046	
	VCMT1.51.50.5FV	VCMT080202-FV	.008		●																	C036	
	VCMT1.51.51FV	VCMT080204-FV	.016		●																	E009	
	VCMT331FV	VCMT160404-FV	.016	★																		E010	
	VCMT332FV	VCMT160408-FV	.031	★																		E016	
	VCGT331AZ	VCGT160404-AZ	.016																			E017	
	VCGT332AZ	VCGT160408-AZ	.031																			E046	
	VCGT333AZ	VCGT160412-AZ	.047																			E046	
	VCGT1.51.50.5RF	VCGT080202R-F	.008																			E009	
	VCGT1.51.50.5LF	VCGT080202L-F	.008																			E010	
	VCGT1.51.51RF	VCGT080204R-F	.016																				
	VCGT1.51.51LF	VCGT080204L-F	.016																				

● = NEW

● = NEW

A185

X

TURNING INSERTS [POSITIVE]

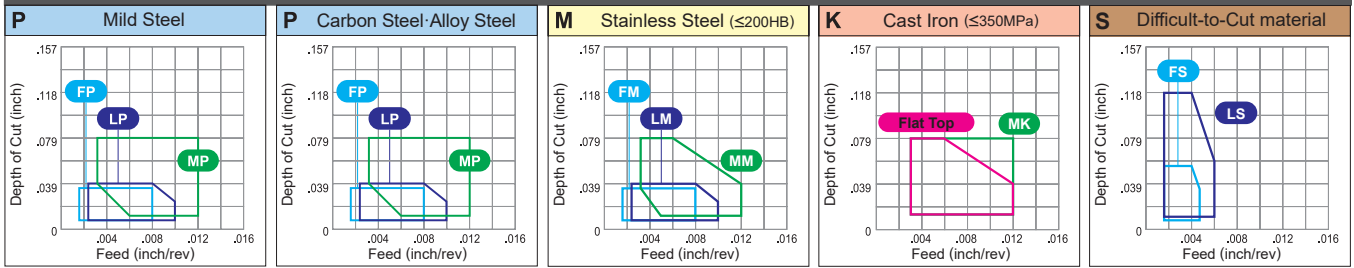


35° VC TYPE INSERTS WITH HOLE

VCMT 2 2 0.5 MS
 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 : ● Stable Cutting ● General Cutting ✦ Unstable Cutting

FS, LS : G class inserts

Work Material	P	M	K	N	S																
	Steel	Stainless Steel	Cast Iron	Non-Ferrous Metal	Heat-resistant Alloy, Titanium Alloy	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Shape	Order Number	(ISO) Number	RE (inch)																	Applicable Holder Page	
				Coated	Cermet	Coated Cermet	Carbide														
Medium Cutting	NEW VCMT220.5MS	VCMT110302-MS	.008	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	C036 D011 E016 E017 E046	
	NEW VCMT221MS	VCMT110304-MS	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	NEW VCMT222MS	VCMT110308-MS	.031	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	VCMT331MS	VCMT160404-MS	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	VCMT332MS	VCMT160408-MS	.031	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Medium Cutting	VCMT331MK	VCMT160404-MK	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	C036 E016 E017 E046	
	VCMT332MK	VCMT160408-MK	.031	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Medium Cutting	VCMT221	VCMT110304	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	C036 D011 D048 D049 E016 E017 E046	
	VCMT331	VCMT160404	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	VCMT332	VCMT160408	.031	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	VCMT333	VCMT160412	.047	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Medium Cutting	VCMT1.51.50.5MV	VCMT080202-MV	.008	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	E009 E010	
	VCMT1.51.51MV	VCMT080204-MV	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Flat Top	VCMW221	VCMW110304	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	C036 D011 D048 D049 E016 E017 E046	
	VCMW331	VCMW160404	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	VCMW332	VCMW160408	.031	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		

● = NEW

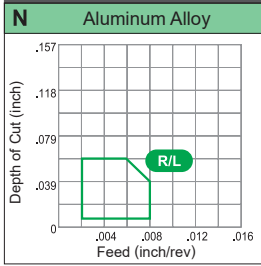


35° VD TYPE INSERTS WITH HOLE

VDGX **3** **2** **0.5** **R**
 Size Thickness Corner Radius R/L
 *Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Medium Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	P	Steel	UE6105	UE6110	MC6015	MC6025	UH6400	MS6015	MC7025	MP7035	US735	US905	MC5005	MC5015	UC5105	UC5115	MP9005	MP9015	VP05RT	VP10RT	VP15TF	UP20M	NX2525	NX3035	MP3025	AP25N	VP25N	VP45N	UT120T	HT105T	HT110	TF15	MT9005	RT9005	RT9010	Applicable Holder Page
	M	Stainless Steel	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Work Material	K	Cast Iron	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Applicable Holder Page	
	N	Non-Ferrous Metal	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Work Material	S	Heat-resistant Alloy, Titanium Alloy	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	Applicable Holder Page	
	S	Heat-resistant Alloy, Titanium Alloy	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Shape	Order Number	(ISO) Number	RE (inch)	Coated																		Cermet	Coated Cermet			Carbide								C043		
R/L	VDGX320.5R	VDGX160302R	.008	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
	VDGX320.5L	VDGX160302L	.008	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	VDGX321R	VDGX160304R	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	VDGX321L	VDGX160304L	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		

● = NEW

A

TURNING INSERTS

POSI 15°

WITH HOLE

C

D

R

S

T

V

W

X

CHIP BREAKER > A076
 GRADES > A034
 IDENTIFICATION > A002

A187

TURNING INSERTS [POSITIVE]



35°

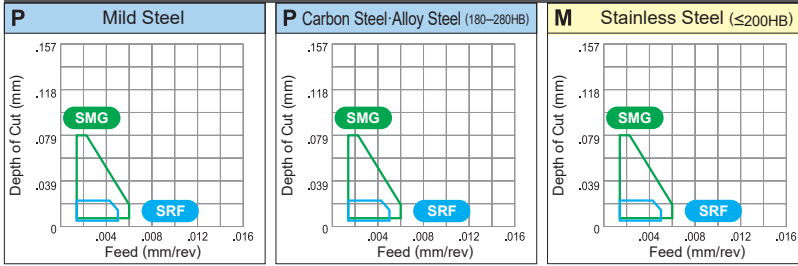
VP TYPE INSERTS WITH HOLE

VPET 1.5 1.5 0.2 R SRF

Size Thickness Corner Radius R/L Chip Breaker
*Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting... Medium Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ✦ Unstable Cutting

Work Material	P	Steel	</															
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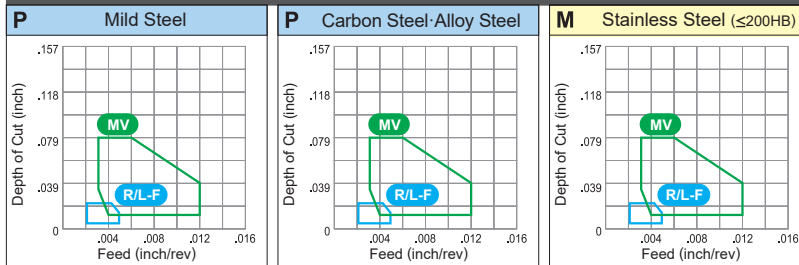
● = NEW



80°

**WB TYPE INSERTS
WITH HOLE****WBGT****1.2****1****V3****L****F**Size Thickness Corner Radius R/L Chip Breaker
*Please refer to page A002.**CHIP CONTROL RANGE FOR WORK MATERIALS**

Finish Cutting... Medium Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ✚ Unstable Cutting

Work Material	P	Steel																
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● = NEW

A

TURNING INSERTS

POSI
5°WITH
HOLE

C

D

R

S

T

V

W

X

CHIP BREAKER ➤ A058

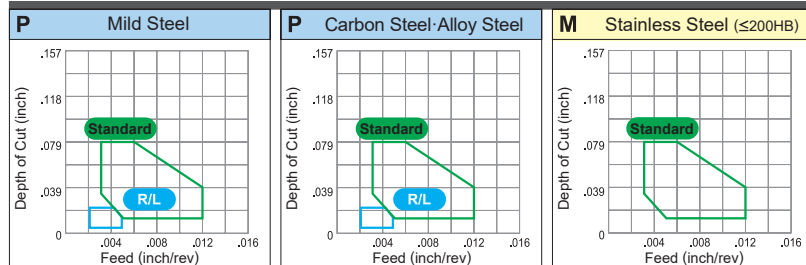
GRADES ➤ A034

IDENTIFICATION ➤ A002

A189

Size Thickness Corner Radius Chip Breaker
*Please refer to page A002.

Finish Cutting... Medium Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

[illegible]

● = NEW

● : USA Stock ★ : Stocked in Japan
<10 inserts in one case>

CHIP BREAKER

➤ **A064**



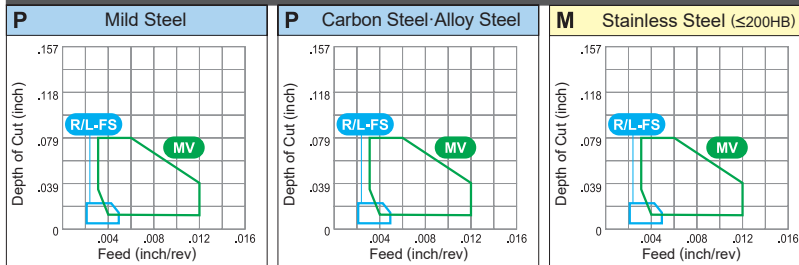
80° WP TYPE INSERTS WITH HOLE

WPGT 2 1.5 1 R FS

Size Thickness Corner Radius R/L Chip Breaker
*Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting... Medium Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ✦ Unstable Cutting

Work Material	P	Steel																
	M	Stainless Steel																
Shape	K	Cast Iron																
	N	Non-Ferrous Metal																
Shape	S	Heat-resistant Alloy, Titanium Alloy																
Shape	Order Number	(ISO) Number	RE (inch)	Coated														Applicable Holder Page
				UE6105	UE6110	MC6015	MC6025	UH6400	MS6015	MC7025	MP7035	US735	US905	MC5005	MC5015	UC5105	UC5115	
	WPGT21.51RFS	WPGT040204R-FS	.016															E009
	WPGT21.51LFS	WPGT040204L-FS	.016															
	WPGT321RFS	WPGT060304R-FS	.016															
	WPGT321LFS	WPGT060304L-FS	.016															
	WPMT21.50.5MV	WPMT040202-MV	.008			●												E009
	WPMT21.51MV	WPMT040204-MV	.016			●												
	WPMT321MV	WPMT060304-MV	.016			●												
	WPMT322MV	WPMT060308-MV	.031			●												

● = NEW

A

TURNING INSERTS

POSI 11°

WITH HOLE

C

D

R

S

T

V

W

X

CHIP BREAKER ➤ A072
GRADES ➤ A034
IDENTIFICATION ➤ A002

A191

TURNING INSERTS [POSITIVE]



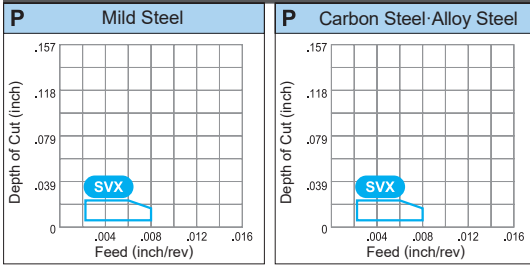
25°

XC TYPE INSERTS
WITH HOLE

XCMT 2 2 0.5 SVX
Size Thickness Corner Radius Chip Breaker
*Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting...



TURNING INSERTS

POSITIVE
7°

WITH HOLE

C

D

R

S

T

V

W

X

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	P	Steel																				
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● = NEW



Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

[illegible]

 = **NEW**

TURNING INSERTS

WITHOUT HOLE

WITHOUT HOLE

C

D

9

W

—

CHIP BREAKER	➤ A079
GRADES	➤ A034
IDENTIFICATION	➤ A002

A193

TURNING INSERTS [POSITIVE]



90°

SP TYPE INSERTS WITHOUT HOLE

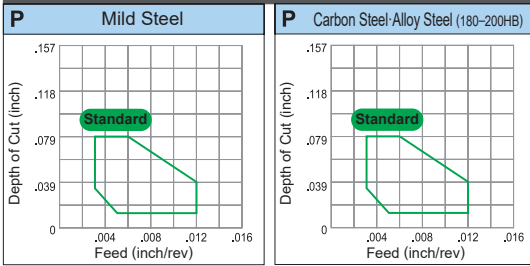
SPGR 3 2 1 R

Size Thickness Corner Radius R/L

*Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Medium Cutting...



Cutting Conditions : ● Stable Cutting ● General Cutting ✚ Unstable Cutting

Work Material	P	Steel																
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● = NEW

● : USA Stock ★ : Stocked in Japan
<10 inserts in one case>



1

Size Thickness Corner Radius

*Please refer to page A002.

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

[illegible]

● = NEW

TURNING INSERTS

POSI
7°

WITHOUT HOLE

C

D

A

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X

CHIP BREAKER	➤ A078
GRADES	➤ A034
IDENTIFICATION	➤ A002

A195

TURNING INSERTS [POSITIVE]

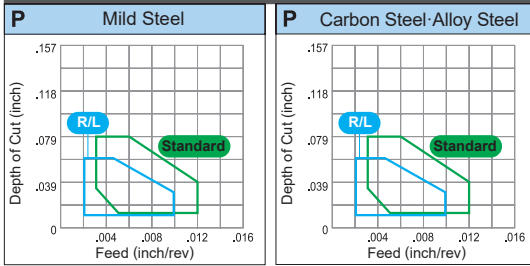


60° TP TYPE INSERTS WITHOUT HOLE

TPGR 2 2 1 R
 Size Thickness Corner Radius R/L
 *Please refer to page A002.

CHIP CONTROL RANGE FOR WORK MATERIALS

Finish Cutting... Medium Cutting...



TURNING INSERTS

POS 11°

WITHOUT HOLE

C

D

R

S

T

V

W

X

Cutting Conditions : ● Stable Cutting ● General Cutting ✦ Unstable Cutting

Work Material	P	Steel																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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● = NEW

